

DANIEL RAIMI
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EDUCATION DUKE UNIVERSITY, Sanford School of Public Policy Durham, NC
Master of Public Policy, May 2012
Master's project: "The potential social impacts of shale gas development in NC"

WESLEYAN UNIVERSITY Middletown, CT
Bachelor of Arts, Departmental Honors in Music, December 2003

EXPERIENCE

- 2016-curr. **RESOURCES FOR THE FUTURE** Washington, D.C.
Director, Equitable Energy Transitions Initiative (2021-curr.)
Fellow (2020-curr.)
Host, Resources Radio podcast (2018-curr.)
Senior Research Associate (2016-2020)
 - Research on a range of energy and environmental policy topics, including oil and gas regulation and taxation, electricity policy, climate damages, and climate policy design.
 - Host of weekly podcast *Resources Radio*, interviewing energy and environmental experts across a broad range of topics.
- 2015-curr. **UNIV. MICHIGAN FORD SCHOOL OF PUBLIC POLICY** Ann Arbor, MI
Lecturer
 - From 2020-curr, taught a 3-credit, 200-level course entitled *Energy, Climate Change, and Society: Technology, markets, and policy*. Enrollment cap: 50.
 - From 2015-2019, taught a 3-credit, 400-level course entitled *Oil and Gas Policy in the United States*. Policy and market issues for oil and gas. Enrollment cap: 25.
- 2015-2016 **UNIVERSITY OF MICHIGAN ENERGY INSTITUTE** Ann Arbor, MI
Research specialist: Energy, Technology, Policy, and Economics
 - Project manager for a university-wide project entitled *Beyond Carbon Neutral*, which identifies and promotes research to advance technologies and policies to reduce atmospheric greenhouse gas concentrations
 - Original research into energy and environmental policy, including global carbon markets and the economic and social effects of carbon capture and sequestration
- 2012-2016 **DUKE UNIVERSITY ENERGY INITIATIVE** Durham, NC
Associate in Research
 - Lead researcher and author on a multi-year project to examine the local government effects of increased oil and gas development in the United States
 - Expertise on state oil and gas tax policy in all major oil- and gas-producing states
 - Co-authored a series of papers on international carbon market design
 - Presentations on shale gas regulation and impacts made to policymakers, industry groups, university groups
 - Other detailed work on shale oil and gas policy and economics; federal energy subsidies; energy projections; energy trade geopolitics
- 2013-2015 **VANDERBILT UNIV. INST. FOR ENERGY AND ENV.** Nashville, TN
Research consultant (part time)
 - Analysis for articles and forthcoming book with Prof. Michael Vandenberg
 - Focus on projected energy and emissions scenarios based on EIA, IEA, IPCC

- 2011-2012 **NC DEPT. OF ENVIRONMENT & NATURAL RESOURCES** Raleigh, NC
Intern, Legislative Affairs (Summer 2011), Consultant (2011-2012)
- Wrote portion of NC State report on potential impacts of shale gas development
 - Policy analysis on state energy policies including RPS, tax incentives, land-use policy, air quality regulation, water quality regulation
- 2011-2012 **RESEARCH TRIANGLE INSTITUTE** Durham, NC
Intern, Energy-Based Economic Development (Fall 2011), Consultant (2012)
- Analysis of energy-related economic development in Southwest PA
 - Consultant on risk assessment tool for state shale gas regulation

BOOKS

- Dec. 2017 “The Fracking Debate: The Risks, Benefits, and Uncertainties of the Shale Revolution.”
Columbia University Press, Center on Global Energy Policy Series. Details at
www.thefrackingdebate.com.

PEER REVIEWED ARTICLES (*denotes corresponding/lead author)

- In review* “Effects of Climate Change on Heat- and Cold-Related Mortality: A Review to Inform the Social Cost of Carbon.” In review at *Environmental Research Letters*.
- In review* “Real World Policies to Support an Equitable Energy Transition.” With Aurora Barone, Sanya Carley, David Foster, Rob Godby, Emily Grubert, Julia Haggerty, Jake Higdon, Michael Kearney, David Konisky, Jennifer Michael, Gilbert Michaud, Sade Nabahe, Nina Peluso, Molly Robertson, and Tony Reames. In review.
- In preparation* “Public finance implications of the energy transition.” In preparation with Emily Grubert, Jake Higdon, Gilbert Metcalf, Sophie Pesek, and Devyani Singh.
- 2021* “[Decommissioning orphaned and abandoned oil and gas wells: New estimates and cost drivers](#).” With Alan Krupnick, Jih-Shyang Shih, and Alexandria Thompson. *Environmental Science and Technology*.
- 2020* “[The climate implications of the shale revolution](#).” *Energy Transitions*.
- 2020* “[Comment on ‘The Intensification of the Water Footprint of Hydraulic Fracturing](#).” *Science Advances*.
- 2020* “[Partisanship and proximity predict opposition to fracking in Colorado](#).” With Alan Krupnick and Morgan Bazilian. *Energy Research and Social Science*.
- 2019 “[Federal Subsidies for Clean Energy](#).” With Richard G. Newell and William A. Pizer. *Energy Economics*, DOI: 10.1016/j.eneco.2019.02.018.
- 2018* “[The Fiscal Impacts of Increased Oil and Gas Development on Local Governments](#).” With Richard G. Newell. *Energy Policy*, vol. 117, pp. 14-24.
- 2017* “[State and local government revenues from oil and gas production](#).” With Richard G. Newell. *Energy Policy*, vol. 112, pp. 12-18.
- 2014 “[Implications of Shale Gas Development for Climate Change](#).” With Richard G. Newell. *Environmental Science and Technology*. Vol. 48, No. 15.
- 2014 “[Carbon Markets: Past, Present, and Future](#).” With Richard G. Newell and William A. Pizer. *Annual Review of Resource Economics*, Vol. 6.
- 2014 “[Carbon Markets: Effective Policy?—Response](#).” With Richard G. Newell and William A. Pizer. *Science*. Vol. 344, No. 6191.
- 2014 “[Carbon Market Lessons and Global Policy Outlook](#).” With Richard G. Newell and William A. Pizer. *Science*. Vol. 343, No. 6177.
- 2013 “[Carbon Markets 15 Year After Kyoto: Lessons Learned, New Challenges](#).” With Richard G. Newell and William A. Pizer. *Journal of Economic Perspectives*, Vol. 27, No. 1.

CONGRESSIONAL COMMENTS AND TESTIMONY

2020 US House Natural Resources Committee, Subcommittee on Energy and Mineral Resources. Invited comments before “[Virtual Forum on Reclaiming Orphaned Oil and Gas Wells: Creating Jobs and Protecting the Environment by Cleaning Up and Plugging Wells.](#)”

REPORTS, CHAPTERS, WORKING PAPERS, AND ISSUE BRIEFS (*denotes lead author)

- 2021* “[Plugging Abandoned Wells: Effects of the Draft Energy Infrastructure Act.](#)” Resources for the Future Issue Brief 21-06.
- 2021* “[Mapping the US Energy Economy to Inform Transition Planning.](#)” Resources for the Future Report.
- 2021* “[Effects of Climate Change on Heat- and Cold-Related Mortality: A Literature Review to Inform Updated Estimates of the Social Cost of Carbon.](#)” Resources for the Future Working Paper 21-12.
- 2021* “[Decommissioning Orphaned and Abandoned Oil and Gas Wells: New Estimates and Cost Drivers.](#)” Posted as working paper on ChemRxiv while under peer review.
- 2021* “[Policy Options to Enable an Equitable Energy Transition.](#)” With Aurora Barone, Sanya Carley, David Foster, Emily Grubert, Julia Haggerty, Jake Higdon, Michael Kearney, David Konisky, Jennifer Michael, Gilbert Michaud, Sade Nabahe, Nina Peluso, Molly Robertson, and Tony Reames. Resources for the Future report.
- 2021 “[Enabling Fairness for Energy Workers and Communities in Transition.](#)” With Wesley Look, Molly Robertson, Jake Higdon, and Daniel Propp. Resources for the Future report.
- 2021* “[Plugging Orphaned Oil and Gas Wells: What We Know and Need to Know.](#)” Resources Magazine.
- 2021 “[Colstrip, Montana: A case study of planning challenges for one isolated coal community.](#)” With Kelli Roemer and Rebecca Glaser. Resources for the Future report.
- 2021* “[Examining Federal Economic Development Support for Coal Communities: Athens, Ohio Region.](#)” With Rebecca Glaser and Gilbert Michaud. Resources for the Future report.
- 2020* “[Jobs, Equity, and Efficiency: Reconciling Priorities in a Transition to a Clean Energy Economy.](#)” Resources Magazine.
- 2020* “[Creating More Jobs and Greener Oil Fields.](#)” Milken Institute Review.
- 2020* “[Environmental and Infrastructure Policies to Enable Fairness for Workers and Communities in Transition.](#)” Resources for the Future report. Published jointly with the Environmental Defense Fund.
- 2020* “[Economic Development Policies to Enable Fairness for Workers and Communities in Transition.](#)” With Wesley Look, Jake Higdon, and Molly Robertson. Resources for the Future report. Published jointly with the Environmental Defense Fund.
- 2020* “[Green Stimulus for Oil and Gas Workers: Considering a Major Federal Effort to Plug Orphaned and Abandoned Wells.](#)” With Neelesh Nerurkar and Jason Bordoff. Resources for the Future Report. Columbia Center on Global Energy Policy and Resources for the Future joint report.
- 2020 “[Global Energy Outlook 2020: Energy Transition or Energy Addition?](#)” With Richard G. Newell, Seth Villanueva, and Brian Prest. Resources for the Future report.
- 2020 “[Global Energy Outlooks Comparison Methods: 2020 Update.](#)” With Richard G. Newell. Resources for the Future report.
- 2020* “[Florida Climate Outlook: Assessing Physical and Economic Impacts through 2040.](#)” With Cora Kingdon and Amelia Keyes. Resources for the Future report.

- 2019* [“Economic volatility in oil producing regions: Exploring impacts and policy options.”](#) With Ron Minsk, Jake Higdon, and Alan Krupnick. Columbia Center on Global Energy Policy and Resources for the Future joint report.
- 2019 [“Global Energy Outlooks 2019: The Next Generation of Energy.”](#) With Richard G. Newell and Gloria Aldana. Resources for the Future report.
- 2019 [“Global Energy Outlooks Comparison Methods: 2019 Update.”](#) With Richard G. Newell. Resources for the Future report.
- 2019* [“The Greenhouse Gas Impacts of Increased US Oil and Gas Production.”](#) Resources for the Future working paper 19-03.
- 2019 [“Plugging the Leaks: Why Existing Financial Incentives Aren't Enough to Reduce Methane.”](#) With Catherine Hausman. Kleinman Center on Energy Policy, University of Pennsylvania Policy Digest.
- 2019 [“Carbon Markets 15 Years After Kyoto: Lessons Learned, New Challenges.”](#) In *Economics of the Environment*, 7th Edition. Robert Stavins, Ed. Edward Elgar Publishing. ISBN 978 1 78897 205 5.
- 2019* [“State and Local Public Revenues from Oil and Gas Production.”](#) The Changing Role of Energy in the U.S. Economy: Energy in America (Washington, DC: CSIS, 2019).
- 2018 [“The New Climate Math: Energy Addition, Subtraction, and Transition.”](#) Resources for the Future Issue Brief. With Richard G. Newell.
- 2018* [“The Shale Revolution and Climate Change.”](#) Resources for the Future Issue Brief.
- 2018* [“The Shale Revolution and Earthquakes.”](#) Resources for the Future Issue Brief.
- 2018* [“The Economic Impacts of the Shale Revolution.”](#) Resources for the Future Issue Brief.
- 2018* [“The Health Impacts of the Shale Revolution.”](#) Resources for the Future Issue Brief.
- 2018* [“The Effects of the Shale Revolution on Local Governments.”](#) Resources for the Future Issue Brief.
- 2018* [“The Shale Revolution and Water Quality.”](#) Resources for the Future Issue Brief.
- 2018 [“Global Energy Outlooks Comparison Methods: 2018 Update.”](#) With Richard G. Newell and Stuart Iler. Resources for the Future report.
- 2018* [“‘Energy Dominance’: The Right Goal for U.S. Policy?”](#) The University of Oxford Institute for Energy Studies, Oxford Energy Forum. Issue 111.
- 2017* [“The local fiscal impacts of a drilling downturn: local government impacts of decreased oil and gas activity in five U.S. shale regions.”](#) With Richard G. Newell. Resources for the Future report.
- 2017* [“Decommissioning U.S. power plants: decisions, costs, and key issues.”](#) Resources for the Future report.
- 2017 [“WHIMBY \(What’s Happening in My Backyard?\): A Community Risk-Benefit Matrix of Unconventional Oil and Gas Development.”](#) With Alan Krupnick, Isabelle Echarte, and Laura Zachary. Resources for the Future Discussion Paper.
- 2016* [“US state and local oil and gas revenues.”](#) With Richard G. Newell. Resources for the Future Policy Brief.
- 2016* [“Local fiscal effects of oil and gas development in eight states.”](#) With Richard G. Newell. Duke Univ. Energy Initiative working paper.
- 2016* [“Local government revenue from oil and gas production.”](#) With Richard G. Newell. Duke Univ. Energy Initiative working paper.
- 2016 [“Global Energy Outlook 2015.”](#) With Richard G. Newell and Yifei Qian. Chapter 1 in *Energy and Security: Strategies for a World in Transition*. Woodrow Wilson Center Press / Johns Hopkins University Press.
- 2016* [“Dunn County and Watford City, N.D.: A case study of the fiscal effects of Bakken shale development.”](#) With Richard G. Newell. Duke Univ. Energy Initiative working paper.

- 2016* [“Colorado’s Piceance Basin: Case Study of Local Public Finance Effects of Oil and Gas Development.”](#) With Richard G. Newell. Duke Univ. Energy Initiative working paper.
- 2015* [“Shale Public Finance: Local Government Revenues and Costs Associated with Oil and Gas Development.”](#) With Richard G. Newell. *National Bureau of Economic Research*. Working paper 21542.
- 2015 [“Oil and Gas Revenue Allocation for Local Governments in Eight States.”](#) With Richard G. Newell. *National Bureau of Economic Research*. Working paper 21615.
- 2014* [“Oil and Gas Revenue Allocation for Local Governments in Eight States.”](#) With Richard G. Newell. Duke Univ. Energy Initiative working paper.
- 2014* [“Shale Public Finance: Local Government Revenues and Costs Associated with Oil and Gas Development.”](#) With Richard G. Newell. Duke Univ. Energy Initiative working paper.
- 2013* “Shale Gas Regulations Comparison Workbook for North Carolina.” Delivered to the *N.C. Mining and Energy Commission*, March 8, 2013.
- 2012 [“Potential Social Impacts of Shale Gas Development in North Carolina.”](#) In *N.C. Oil and Gas Study*, N.C. Department of Environment and Natural Resources.
- 2012 [“Carbon Markets: Past, Present, and Future.”](#) With Richard G. Newell and William A. Pizer. *National Bureau of Economic Research*. Working paper 18504.

SELECTED REVIEWS FOR THE FRACKING DEBATE

“At a time when everything from an otherwise unremarkable scientific report to a seemingly innocuous news item can be subject to intense scrutiny and mistrust, *The Fracking Debate*, a balanced guide to the contentious discussion on fracking, is a welcome resource.”

-Science magazine, Dec. 1, 2017, Vol. 358, Issue 6367, pp. 1138-1139

“A deft, fair analysis that clarifies the issues for both the general public and concerned policy makers.”

-Kirkus reviews (starred review)

“[Raimi] brings a distinctively objective approach to the text, taking care to accurately represent all positions on the issue... Will serve quite well in the classroom; for advanced courses in exploration geology or petroleum engineering, the text will be a valuable supplement to technical texts, providing excellent material for discussion.”

-Choice, 2018

“Read it. Rarely do books about essentially technical energy matters marshal arcane data and peer-reviewed research so digestibly.”

-Petroleum Economist, 2018

“The result is a meticulously researched, yet simplified and thoughtful book that lends a balanced tone to an expansive, complex and polarizing topic.”

-Natural Gas Intelligence, 2018

“Raimi is an excellent writer, and he effortlessly blends his personal experience with an exhaustive review of the most recent literature, with a bit of humor to boot. For any energy practitioner, *The Fracking Debate* is a must read.”

-James B. Blackburn IV, in *Energy Law Journal*, 2018

SELECTED POPULAR PRESS COVERAGE

- 2021 AP. “Fight over Canadian oil rages on after pipeline’s demise.” [Quoted](#) in a widely syndicated story about oil pipelines.
- 2021 Michigan Radio. “Is the Line 5 tunnel a bridge to Michigan's energy future or a bad deal?” [Quoted](#) in a radio/print story on the pipeline.
- 2021 CNN. “How Biden's infrastructure plan could create a jobs boom — in fossil fuels.” Work [cited](#) in a story on federal infrastructure policy.
- 2021 CNBC. “Biden’s climate change plan and the battle for America’s most threatened workers.” [Quoted](#) in a story about federal climate policy and energy transition.
- 2020 Wall Street Journal. “Coronavirus Pandemic Speeds Shift to Cleaner Energy.” [Quoted](#) in story about Covid-19’s effect on the energy transition.
- 2020 Scientific American. “Oil and Gas Companies Announce a New CO₂ Emissions Target.” [Quoted](#) in a story about oil and gas companies and climate change.
- 2020 National Journal. “Dems look to boost oil jobs without the drilling.” [Quoted](#) in story on options to support oil and gas workers and communities.
- 2020 E&E News. “Is gas really better than coal for the climate?” [Quoted](#) in story on methane emissions from oil and gas operations.
- 2020 Fortune. “For boom-bust oil towns, coronavirus is a very different kind of crisis.” [Quoted](#) in story on effects of COVID-19 on oil-producing communities.
- 2020 E&E News. “Oil firms were confronting climate risks. Then the virus hit.” [Quoted](#) in article on implications of COVID-19 on energy investment.
- 2020 Tampa Bay Times [op-ed](#). “Here’s how climate change will affect Florida in the next 20 years.” With Cora Kingdon and Amelia Keyes.
- 2019 [C-Span 1](#) (live) coverage of Global Energy Outlook launch event.
- 2019 Axios [Expert Voices](#) column. “Strait of Hormuz tensions underscore oil market’s global scope.” With Richard G. Newell.
- 2019 E&E News. “Are oil majors serious about cutting emissions?” [Quoted](#) in article on oil and gas methane emissions.
- 2019 Financial Times. “The week in energy: looking for breakthroughs.” [Article](#) describes RFF working paper on the climate impacts of the shale revolution.
- 2019 Axios. “1 Big Thing: The Oil Boom’s Climate Effect.” [Article](#) describes RFF working paper on the climate impacts of the shale revolution.
- 2018 E&E News. “U.S. oil is surging. Here's what it means for the climate.” [Quoted](#) in article on climate impacts of increased domestic oil production.
- 2018 Associated Press (republished in [New York Times](#), [Washington Post](#), and elsewhere). [Quoted](#) in “US Fossil Fuel Exports Spur Growth, Climate Worries.”
- 2018 Axios [Expert Voices](#) column. “U.S. oil exports at record high, but energy independence still elusive.”
- 2018 State Impact PA (NPR affiliates). Work on Shale Research Clearinghouse [cited](#) and quoted in “New Website Aims to Be Clearinghouse for Shale Research.”
- 2018 E&E News. [Quoted](#) in “A Decade of Fracking Research: What Have We Learned?”
- 2018 Stateside, Michigan Radio (NPR affiliate), [interview](#) on *The Fracking Debate*.
- 2018 Failure Magazine. [Q&A](#) on *The Fracking Debate*.
- 2018 Midwest Energy News [Q&A](#) on *The Fracking Debate*.
- 2018 E&E News [Q&A](#) on *The Fracking Debate*.
- 2018 Houston Chronical [Q&A](#) on *The Fracking Debate*.
- 2018 Kleinman Energy Center for Energy Policy [podcast](#) (University of Pennsylvania) interview on *The Fracking Debate*.
- 2018 Resources for the Future [podcast](#) interview on *The Fracking Debate*.
- 2018 Energy 360 [podcast](#) (Center for Strategic and International Studies) interview on *The Fracking Debate*.

- 2018 Axios [Expert Voices](#) column. “Despite renewables growth, there has never been an energy transition.” With Richard G. Newell.
- 2018 Colorado Public Radio [interview](#) on *The Fracking Debate*.
- 2018 The State of Things, WUNC Radio (North Carolina) [interview](#) on *The Fracking Debate*.
- 2018 Columbia Energy Exchange [podcast](#) interview on *The Fracking Debate*.
- 2017 Smart Talk, WITF Radio (Pennsylvania). [Interview](#) on *The Fracking Debate*.
- 2017 NPR All Things Considered. [Quoted](#) in “How the Boom Bust Oil Cycle is Playing Out in North Dakota.”
- 2017 StateImpact PA. [Quoted](#) in “Gas severance tax won’t have big impact in Pennsylvania, says researcher”
- 2017 EnergyWire. [Quoted](#) in “Pa.’s gas tax under attack with lawsuits and banners.”
- 2017 Slate. [Op-ed](#). “Donald Trump Wants Energy ‘Dominance.’ What is That?”
- 2016 Business Insider. [Op-ed](#). “Two Oil and Gas Boomtowns Can Tell Us a Lot About the Economy.”
- 2016 Newsweek. [Op-ed](#). “The Aliso Canyon Methane Leak Needs Plugging Fast.”
- 2016 U.S. News and World Report. [Op-ed](#). “California’s Aliso Canyon Methane Leak: Climate Disaster or Opportunity?”
- 2015 The Conversation. [Op-ed](#). “As U.S. Shuttles Nuclear Power Plants, Cutting Emissions Will Become More Costly.”
- 2015 McClatchy papers. [Interview](#) “Oil Boom a Loser for ND Cities, Counties, Study Finds.”
- 2015 KFYR, North Dakota. Live Radio interview with “Energy Matters.”
- 2014 WUNC. [Quoted](#) in “Fracking Boom: Research Indicates NC Towns Might Not See A Dramatic Impact.”
- 2014 The Guardian (UK). [Op-ed](#). “Lessons from the US: The Benefits of Fracking for Local Government.”
- 2014 Denver Post. [Quoted](#) in “Shale Oil and Gas Revenues and Taxes Bolster Public Finances.”
- 2014 International Business Times. [Quoted](#) in “Fracking: Shale Gas ‘Will Not Alter Climate Change Projections.’”
- 2014 Natural Gas Intelligence. [Quoted](#) in “Duke Researchers: Natural Gas Not a Villain, Not Quite a Hero.”

SELECTED DIGITAL MEDIA AND TOOLS

- Jul. 2019 “Global Energy Outlook.” Database and visualization tool synthesizing long-term energy outlooks from multiple organizations.
www.rff.org/geo
- Oct. 2018 “Shale Research Clearinghouse (SHARC).” Curated database and summaries of studies on the effects of increased U.S. oil and gas production.
www.rff.org/sharc
- Aug. 2015 “Introduction to the oil and gas sector.” Presentation to Duke University Fuqua School of Business students. Over 80,000 YouTube views as of December, 2020.
<https://www.youtube.com/watch?v=k4cVxGndh9g>.

INVITED WORKSHOPS AND PRESENTATIONS

- Jun. 2021 Clean Energy Conversations, University of Michigan Graham Institute for Sustainability. Presentation on energy transition implications for fossil energy communities.
- Jun. 2021 Enabling Fairness for Energy Workers and Communities in Transition. European Institute on Economics and the Environment webinar. With Wesley Look. Milan, Italy.
- Jun. 2021 The Global Energy Outlook: Pathways From Paris. Public event launch at Resources for the Future. Washington, DC.

May 2021 Moderated RFF – Urban Institute event. Environmental Justice: Energy Equity and Transitions. With Anne Junod. Washington, DC.

May 2021 Organized and moderated panel discussion at a roughly 3-hour private workshop on the oil and gas workforce and the energy transition. Jointly sponsored by RFF and Baker Hughes. Featured presentations by leading policymakers, academic, and industry experts.

Mar. 2021 RFF-CMCC webinar. “Assessing the benefits and costs of decommissioning US oil and gas wells.”

Feb. 2021 Clean Energy Conversations, University of Michigan Graham Institute for Sustainability. Presentation on energy transition implications for fossil energy communities.

Dec. 2020 American Geophysical Union Fall Meeting. Presentation on plugging orphaned and abandoned oil and gas wells. Session name: SY054 - Science-Driven Policies to Address Emissions from the Oil and Gas Sector I.

Dec. 2020 University of Southern California Energy Institute. Presenter at Virtual Summit on Renewable Energy Storage in Saline Aquifers Using Idle Oil and Gas Wells.

Oct. 2020 American Association for the Advancement of Sciences (AAAS). Presented on policy options at the virtual workshop titled: Regulators, Industry, and Communities: Analyzing the Challenges of Improperly Abandoned and Orphaned Wells.

Oct. 2020 Advanced Research Projects – Energy (ARPA-E). Preventing or Abating Methane Emissions virtual workshop.

Sep. 2020 IRENA-European Commission expert workshop on Long Term Energy Scenarios. Presentation on Global Energy Outlook.

Aug. 2020 National Governor’s Association Energy Policy Institute. Keynote address on the state of the US energy sector in 2020.

Apr. 2020 Third Way / Our Daily Planet / University of Michigan webinar. Panelist for Responding to the Crisis: The Recovery and a Clean Energy Economy.

Mar. 2020 CERAWeek. Hosted by IHS Markit. Presenting on Global Energy Outlook. Houston, TX. Cancelled due to COVID-19.

Jan. 2020 The History of the Future of Fossil Fuels. Panelist at the University of Florida. Gainesville, FL.

Nov. 2019 37th USAEE/IAEE North American Conference. Moderator of panel on shale gas and tight oil development. Denver, CO.

Oct. 2019 9th Annual Energy Policy Research Conference. Presenter on climate impacts of increased US oil and gas production. Boise, ID.

Sep. 2019 Aspen Institute. Presenter at launch event for “Principled Governance of Shale Resources” report. Washington, DC.

Sep. 2019 Center for Strategic and International Studies. Presenter at “Permian Country” event. Washington, DC.

Aug. 2019 National Conference of State Legislatures. Presenter at annual “Natural Gas Policy Institute.” Chicago, IL.

Jul. 2019 The Global Energy Outlook: The Next Generation of Energy. Public event launch at Resources for the Future. Washington, DC.

May 2019 Renewable Energy Policy Initiative Workshop. The University of Michigan and National Council of State Legislatures. Ann Arbor, MI.

Mar. 2019 Resources for the Future and Columbia University. Economic Volatility in Oil Producing Regions: Exploring Impacts and Public Policy Responses. Organized, led, and presented at workshop. Washington, DC.

Jan. 2019 Federal Energy Regulatory Commission, Washington, DC. Book talk for *The Fracking Debate*.

Jan. 2019 Center for Strategic and International Studies. Workshop on the local economic impacts of energy development. Washington, DC.

Jan. 2019 Colorado School of Mines. Organized and moderated panel on managing economic volatility in oil and gas producing regions. Golden, CO.

Nov. 2018 Resources for the Future and Alfred P. Sloan Energy Conference: Energy Research Insights for Decisionmaking. Organized and moderated panel entitled “Shale Gas and Tight Oil: What Have We Learned, What Are the Gaps, and Where Are We Going?” Washington, DC.

Oct. 2018 Center for Strategic and International Studies. Presentation on state and local government oil and gas tax policies. Washington, DC.

June 2018 Health Effects Institute. Workshop on developing a research agenda on the impacts of unconventional oil and gas development. Denver, CO.

May 2018 Ann Arbor Kiwanis Club. Book talk on *The Fracking Debate*. Ann Arbor, MI.

May 2018 Aspen Institute. Dialogue on stakeholder engagement and oil and gas governance. Aspen, Colorado.

May 2018 Citibank. Transportation and Consumer Industry Commodity Conference. Keynote address on *The Fracking Debate*. New York, NY.

Apr. 2018 Resources for the Future webinar. Six new issue briefs based on *The Fracking Debate*.

Apr. 2018 Reinsurance Association of America Annual Meeting. Presentation on risks of induced seismicity from oil and gas development. New York, NY.

Apr. 2018 Rifle, Colorado Energy and Environment Symposium. Keynote address on *The Fracking Debate*.

Apr. 2018 The Ohio State University. Book talk for *The Fracking Debate*.

Apr. 2018 University of Pennsylvania. Book talk for *The Fracking Debate*.

Mar. 2018 Johns Hopkins School of Advanced and International Studies. Book talk for *The Fracking Debate*.

Mar. 2018 Colorado School of Mines. Book talk for *The Fracking Debate*.

Mar. 2018 University of Colorado-Denver. Book talk for *The Fracking Debate*.

Mar. 2018 Aspen Institute. Initial dialogue on stakeholder engagement in the Alpine High region of Texas. Fort Davis, Texas.

Mar. 2018 Harrisburg University. Book talk for *The Fracking Debate*.

Mar. 2018 Penn State University. Book talk for *The Fracking Debate*.

Feb. 2018 University of Pittsburgh. Book talk for *The Fracking Debate*.

Feb. 2018 Lycoming College, Pennsylvania. Book talk for *The Fracking Debate*.

Feb. 2018 Florida State University College of Law. Book talk for *The Fracking Debate*.

Feb. 2018 Indiana University, School of Environmental and Public Affairs. Book talk for *The Fracking Debate*.

Feb. 2018 Vanderbilt University. Book talk for *The Fracking Debate*.

Jan. 2018 Duke University Energy Initiative and Nicholas Institute for Environmental Policy Solutions. Book talk for *The Fracking Debate*.

Jan. 2018 University of Michigan Ford School of Public Policy. Book talk for *The Fracking Debate*.

Jan. 2018 Resources for the Future. Book launch for *The Fracking Debate*.

Jan. 2018 Columbia University Center on Global Energy Policy. Book launch for *The Fracking Debate*.

Dec. 2017 Ohio University Consortium for Energy, Economy, and Environment. Webinar on Oil and Gas Revenues and Local Impacts Across 16 States.

Nov. 2017 Pennsylvania State University College of Law. Workshop on unconventional oil and gas methane emissions. State College, Pennsylvania.

Nov. 2017 American Academy of Arts and Sciences. Workshop on energy policy in the Great Lakes region. University of Michigan, Ann Arbor, Michigan.

Jul. 2017 Energy Impacts 2017. Poster presentation on US state and local government oil and gas revenues. Ohio State University, Columbus, Ohio.

May 2017 Pennsylvania State University Marcellus Center for Outreach and Research. Webinar on Oil and Gas Revenues and Local Impacts Across 16 States.

2016-2017 Aspen Institute: Unconventional oil and gas governance. A multipart series of meetings to develop frameworks for improving oil and gas governance in the U.S.

Nov. 2016 U.S. Department of Commerce: U.S.-Colombia Workshop on Unconventional Oil and Gas Development. Bogota, Colombia.

Nov. 2016 University of São Paulo: Unconventional Oil and Gas Conference, Exploration and Production Feasibility in Brazil. São Paulo, Brazil.

Jul. 2016 Electric Power Research Institute. Greenhouse Gas Implications of Aliso Canyon Natural Gas Leak. Webinar.

Jun. 2016 U.S. State Department: U.S.-Argentina Workshop on the Sustainable Development of Unconventional Hydrocarbon Resources. Buenos Aires, Argentina.

May 2016 Resources for the Future and Duke University: How oil and gas development impacts local governments and communities. Washington, DC.

Apr. 2015 North Carolina Energy Conference. Raleigh, NC.

Nov. 2014 University of Michigan: Ford School of Public Policy. Ann Arbor, MI.

Oct. 2014 Arkansas Independent Producers and Royalty Owners (AIPRO): Sixth Annual Meeting. Little Rock, AR.

Sep. 2014 King Abdullah Petroleum Studies and Research Center (KAPSARC). Workshop on “Models of Bargaining and Behavior.” Durham, NC.

Sep. 2014 Duke University Fuqua Business School: Energy Industry Fundamentals workshop. Durham, NC.

May 2014 Energy and Environment Symposium: Oil and Gas Education for Local Government. Garfield County, CO.

May 2014 Duke University Energy Research Workshop. Durham, NC.

Mar. 2014 Controlling the Local Impacts of Hydrofracking. Pace University Law School and Yale University. New Haven, CT.

Mar. 2014 Duke University Shale Public Finance Workshop. Durham, NC.

Dec. 2013 Controlling the Local Impacts of Hydrofracking. Pace University Law School and Yale University. White Plains, NY.

May 2012 Shale Gas Extraction Summit on Public Health Implications and Prevention. Research Triangle Environmental Health Collaborative. North Carolina Biotechnology Center, Research Triangle Park, NC.

GRANTS

2020 “Fiscal implications of the energy transition.” \$135,000 for research on public finance impacts of deep decarbonization. Environmental Defense Fund.

2019 “Florida Climate Outlook.” \$65,000 for research on impacts of climate change in Florida through 2040. VoLo Foundation.

2018-2019 “Shale Research Clearinghouse: Phase I.” \$78,000 to develop an online resource for policymakers and the public to understand the effects of oil and gas development. Private donor.

2016-2017 “Shale Public Finance: Phase III.” \$125,000. Extension of previous grant to return to five states examined in previous years. Energy program, Alfred P. Sloan Foundation.

2014-2016 “Shale Public Finance: Phase II.” \$249,000. Extension of previous grant to examine eight additional states; stakeholder workshop. Energy program, Alfred P. Sloan Foundation.

2013-2014 “Shale Public Finance.” \$125,000. Analysis of revenues and costs for local governments experiencing new oil and gas development in eight states; stakeholder workshop. Energy program, Alfred P. Sloan Foundation.

SERVICE

2020-curr. Presidential Advisor, US Association for Energy Economics.
2020-curr. Board member, Liberty Glen Homeowner’s Association. Ann Arbor, MI.
2016-curr. Supervision and mentorship of research assistants at Resources for the Future.
2015-curr. Supervision and mentorship of graduate and undergraduate students at the University of Michigan through summer internship programs.
2015-curr. Various guest lectures at the University of Michigan schools and departments.
2020-2021 National Petroleum Council Study Topic Subcommittee. Member. Washington, DC.
2019 Sub-committee on greenhouse gas emissions accounting, University of Michigan Commission on Carbon Neutrality.
2012-2013 Founded and organized Duke University “Power Trips,” taking groups of students and faculty on experiential learning trips to local and regional energy infrastructure facilities.
2011-2012 Meals-on-wheels volunteer. Participating through Duke University Sanford School of Public Policy.
2011-2012 Durham, NC food bank volunteer.

PROFESSIONAL MEMBERSHIPS

2020-curr. US Association of Environmental and Resource Economics
2019-curr. US Association of Energy Economics

AD HOC REVIEWER

National Science Foundation (grant proposals), *Alfred P. Sloan Foundation* (grant proposals), *Environmental Research Letters*, *Elementa*, *Review of Policy Research*, *Energy Policy*, *International Journal of Sustainable Development Law and Policy*, *Energy Research and Social Science*, *World Development*, *Economic Inquiry*, *The Extractive Industries and Society*, *Choices*, *Health Security*, *Environmental Practice*, *McGill International Journal of Sustainable Development Law and Policy*, various working papers from colleagues at Resources for the Future, University of Texas at Austin, Center for Strategic and International Studies, University of Michigan, Columbia University, and more, multiple book manuscripts from academic publishers Oxford University Press, Elsevier, and Routledge.

TEACHING EXPERIENCE

2019-curr. University of Michigan Ford School of Public Policy. PubPol 250 (3 credits, 65-person cap). Energy and climate change: technology, markets, and policy.
2015-2019 University of Michigan Ford School of Public Policy, University of Michigan Program in the Environment. PubPol / Environ 468 (3 credits, 25-person cap). Oil and Gas Policy in the United States.
2018 Nominated for University of Michigan “Golden Apple” award, the only university-wide student nominations-based award that recognizes outstanding university teaching
2015-2016 University of Michigan School of Natural Resources and Environment. Mentoring a team of graduate students to develop cost curve for carbon dioxide removal technologies.
2014 Mentored group of Duke University master’s in public policy students on project assessing domestic electricity subsidies and policy
2012 Duke University Sanford School “Best teaching assistant” award
2011-2012 TA for core policy analysis course for Duke 1st year master’s in public policy students

2012 TA for national security course for Duke 2nd year master's in public policy students
2011 TA for public management course for Duke 2nd year master's in public policy students
2010-2011 TA for core policy analysis course for Duke undergraduate public policy majors
2009-2011 Fundamentals of jazz improvisation instructor, Duke University String School
2008-2009 Curriculum writer for literacy-through-music program "Rock the Classroom"
2007-2009 Master teacher for literacy-through-music program "Rock the Classroom"

PREVIOUS EXPERIENCE

2004-2011 Independent Music Instructor. New York, NY; Los Angeles, CA; Durham, NC
2007-2009 Music Instructor, Master Teacher, and Curriculum Writer with music-through-literacy program "Rock the Classroom." New York, NY; Los Angeles, CA
2004-2007 Music Instructor and Curriculum Writer with NYC Guitar School. New York, NY
2004-2009 Music Composer, self-employed. New York, NY; Los Angeles, CA

OTHER INTERESTS

Music, travel, tennis, making and drinking cocktails, cooking and eating Sichuan-style food.