

DANIEL RAIMI
(202) 328-5036, raimi@rff.org

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, Equity in the Energy Transition 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: 65.
- 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

2012-2016 **DUKE UNIVERSITY ENERGY INITIATIVE** Durham, NC
Associate in Research

2013-2015 **VANDERBILT UNIV. INST. FOR ENERGY AND ENV.** Nashville, TN
Research consultant (part time)

2011-2012 **NC DEPT. OF ENVIRONMENT & NATURAL RESOURCES** Raleigh, NC
Intern, Legislative Affairs (Summer 2011), Consultant (2011-2012)

2011-2012 **RESEARCH TRIANGLE INSTITUTE** Durham, NC
Intern, Energy-Based Economic Development (Fall 2011), Consultant (2012)

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* “Securing energy sovereignty: A review of key barriers and opportunities for energy-producing Native nations.” With Alana Davicino.
- In review “Matching Geographies and Job Skills in the Energy Transition.” With Jacob Greenspon.
- Accepted “Environmental risks and opportunities of orphaned oil and gas wells in the United States.” With Mary Kang, Jade Boutot, Renee McVay, Kate Roberts, Scott Jasechko, Debra Perrone, Tao Wen, Greg Lackey, Dominic C. DiGuilio, Seth B.C. Shonkoff, James W. Carey, Elise G. Elliott, Donna J. Vorhees, and Adam S. Peltz. *Environmental Research Letters*.
- Accepted* “The fiscal implications of the U.S. transition away from fossil fuels.” With Emily Grubert, Jake Higdon, Gilbert Metcalf, Sophie Pesek, and Devyani Singh. *Review of Environmental Economics and Policy*. Accepted July, 2022. Scheduled for publication in January, 2024.
- 2022* “[Mapping County-Level Exposure and Vulnerability to the US Energy Transition](#).” With Sanya Carley and David Konisky. *Nature Scientific Reports*. DOI:10.1038/s41598-022-19927-6.
- 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*. DOI: 10.1021/acs.est.1c02234.
- 2020* “[The climate implications of the shale revolution](#).” *Energy Transitions*. DOI: 10.1007/s41825-020-00022-1.
- 2020* “[Comment on ‘The Intensification of the Water Footprint of Hydraulic Fracturing](#).”” *Science Advances*. DOI: 10.1126/sciadv.aav2110.
- 2020* “[Partisanship and proximity predict opposition to fracking in Colorado](#).” With Alan Krupnick and Morgan Bazilian. *Energy Research and Social Science*. DOI: 10.1016/j.erss.2020.101441.
- 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 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](#).”

2023 US Senate Budget Committee. Invited testimony at in-person hearing on [“Left Holding the Bag: The Cost of Oil Dependence in a Low-Carbon World.”](#)

AWARDS

2022 [“Best Paper Award.”](#) For [“Decommissioning orphaned and abandoned oil and gas wells: New estimates and cost drivers.”](#) With Alan Krupnick, Jhih-Shyang Shih, and Alexandria Thompson. Awarded joint (one of three) best policy article in Environmental Science and Technology in 2021.

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

- 2023* [“Transportation taxes and energy transitions: Alternative policy designs for funding US road infrastructure and pricing externalities.”](#) With Josh Linn, Ginny McConnell, and Sophie Pesek. RFF Working Paper 23-09.
- 2023* [“Government Revenue from Fossil Fuels in the US: History and Projections.”](#) Written testimony for US Senate Budget Committee hearing titled “Left Holding the Bag: The Cost of Oil Dependence in a Low-Carbon World.”
- 2023* [“Global Energy Outlook 2023: Sowing the Seeds of an Energy Transition.”](#) With Yuqi Zhu, Richard G. Newell, Brian Prest, and Aaron Bergman. Resources for the Future Report.
- 2023* [“Global Energy Outlooks Comparison Methods: 2023 Update.”](#) With Richard G. Newell. Resources for the Future report.
- 2023 [“Policies on the Road to Carbon Neutrality in the Intermountain West.”](#) With Alan Krupnick, Wesley Look, Jhih-Shyang Shih, Seth Villanueva, and Erin Campbell.
- 2022* [“What Is An ‘Energy Community’? Alternative Approaches for Geographically Targeted Energy Policy.”](#) With Sophie Pesek. RFF Report 22-12.
- 2022 [“Matching Geographies and Job Skills in the Energy Transition.”](#) With Jacob Greenspon. RFF Working Paper 22-25.
- 2022* [“Comments to Inform the Interagency Working Group on Coal and Power Plant Communities and Economic Revitalization.”](#) Public Comment.
- 2022* [“Global Energy Outlook 2022: Turning Points and Tension in the Energy Transition.”](#) With Erin Campbell, Richard G. Newell, Brian Prest, Seth Villanueva, and Jordan Wingenroth. Resources for the Future Report.
- 2022* [“Global Energy Outlooks Comparison Methods: 2022 Update.”](#) With Richard G. Newell. Resources for the Future report.
- 2022* [“The fiscal implications of the U.S. transition away from fossil fuels.”](#) With Emily Grubert, Jake Higdon, Gilbert Metcalf, Sophie Pesek, and Devyani Singh. RFF Working Paper 22-3.
- 2021* [“Mapping County-Level Exposure and Vulnerability to the US Energy Transition.”](#) RFF Working Paper 21-36.
- 2021* [“From Fabrics to Fossils: What Can the Decline of US Textiles Manufacturing Teach Us About the Energy Transition?”](#) With Kamil Cook. Resources for the Future Issue Brief 21-11.
- 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 [“Global Energy Outlook 2021: Pathways from Paris”](#) With Richard G. Newel, Seth Villanueva, and Brian Prest. Resources for the Future report.
- 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. Newel, 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

PRESS COVERAGE

Interviewed, quoted, and cited extensively in outlets including CNN (live TV and web), NPR All Things Considered, New York Times, Wall Street Journal, CNBC, C-Span 1, Axios, Financial Times, Associated Press, ClimateOne (NPR), Michigan Radio (NPR), Slate, Business Insider, Newsweek, U.S. News and World Report, The Guardian, Scientific American, National Journal, Fortune, E&E News, Denver Post, Houston Chronicle, State Impact PA (NPR), Tampa Bay Times, Colorado Public Radio (NPR), WUNC Radio (NPR), WITF Radio (NPR), and more.

SELECTED DIGITAL MEDIA AND TOOLS

Dec. 2021 “Mapping US Energy Communities.” Interactive mapping tool that visualizes county-level energy activity, socioeconomic, and environmental justice metrics.

<https://www.rff.org/publications/data-tools/mapping-vulnerable-communities/>

Jul. 2019 “Global Energy Outlook.” Database and visualization tool synthesizing long-term energy outlooks from multiple organizations.

- Oct. 2018 www.rff.org/geo “Shale Research Clearinghouse (SHARC).” Curated database and summaries of studies on the effects of increased U.S. oil and gas production.
- Aug. 2015 www.rff.org/sharc “Introduction to the oil and gas sector.” Presentation to Duke University Fuqua School of Business students. Over 120,000 YouTube views as of January, 2022.
<https://www.youtube.com/watch?v=k4cVxGndh9g>.

INVITED WORKSHOPS AND PRESENTATIONS

- Mar. 2023 Decisionmaking for Demonstration Funding. Private workshop organized by RFF on Department of Energy funding for Hydrogen and Direct Air Capture Hubs.
- Mar. 2023 The Global Energy Outlook: Sowing the Seeds of an Energy Transition. Public event launch at Resources for the Future. Washington, DC.
- Mar. 2023 Identifying High-Priority Opportunities for Research in Multi-Sector Impacts of Energy Transitions. Hosted by the MSD Working Group on Multisector Impacts of the Energy Transition. Webinar.
- Jan. 2023 Activating the Net-Zero Producers Forum: What’s Next? Private workshop organized by the Atlantic Council and KAPSARC. Abu Dhabi, UAE (virtual).
- Nov. 2022 What is an Energy Community? Public RFF Live webinar held by Resources for the Future. Washington, DC.
- Nov. 2022 ESYS/ACATECH (German National Academy of Sciences): “Workshop zum Thema Fracking.” Presentation and discussion on the history, benefits, and costs of shale development (Virtual).
- Sep. 2022 Coursera Massive Online Open Course: “People, Technology, and the Future of Mobility.” Elizabeth Gerber, University of Michigan, Instructor. 9-minute video segment “Impacts of Electrification—Energy Justice Perspective.”
- Jul. 2022 G20 Seminar. Presented at a panel hosted by the government of Indonesia on “Understanding the Needs for an Inclusive Energy Transition Financing.” Jakarta, Indonesia (virtual).
- Jul. 2022 National Academies of Sciences, Engineering, and Medicine. Participated in “Pathways to an Equitable and Just Energy Transition Workshop.” Washington, DC.
- Jun. 2022 Associate for Environmental and Resource Economists annual meeting. Miami, FL. Chaired a session of four papers on “Equity Issues in the Energy Transition.” Was unable to attend due to family medical issue.
- May 2022 The Global Energy Outlook: Turning Points and Tension in the Energy Transition. Public event launch at Resources for the Future. Washington, DC.
- Mar. 2022 IWEST workshop. Hosted by Resources for the Future and Los Alamos National Laboratory. Moderated panel on cross-cutting policies issues in the energy transition.
- Mar. 2022 IWEST workshop. Hosted by University of New Mexico and Los Alamos National Laboratory. Moderated panel on community economic impacts of the energy transition.
- Dec. 2021 Just Transition Forum 2021. Panelist on just transitions in US coal regions. Hosted by the ILO, IEA, and IRENA.
- Nov. 2021 38th USAEE Conference. Moderator of panel on social issues in the energy transition. Virtual conference.
- Sep. 2021 Climate Neutrality Forum – Climate Justice. Panelist. Hosted by University of Oxford, RFF-CMCC, Mercator Research Institute.
- Sep. 2021 Climate Neutrality Forum – Kickoff event. Participant. Hosted by University of Oxford, RFF-CMCC, Mercator Research Institute.
- 2021-2022 American Association for the Advancement of Science, Working Group on Orphaned and Abandoned Oil and Gas Wells. Member.

Aug. 2021 Methane Emissions from Abandoned Oil and Gas Wells. Panelist. Hosted by Fellow Environmental Partners.

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

2022 “Mapping the Timeline of Exposure for Oil and Gas Communities.” \$150,000 for research and analysis from The Wilderness Society.

2022 “Quantifying public revenues from energy in leading US counties.” \$60,000 for research and analysis from The Wilderness Society.

2022	“Convening policymakers and experts on energy transition policy.” \$60,000 for convenings from the Environmental Defense Fund.
2021	“Native Nations in the Energy Transition.” Co-PI on \$475,000 grant from the Alfred P. Sloan Foundation, with roughly \$180,000 for RFF research.
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

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.
2020-2022	Presidential Advisor, US Association for Energy Economics.
2020-2023	Board member, Liberty Glen Homeowner’s Association. Ann Arbor, MI.
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), *American Carbon Registry* (protocols), *Nature Energy*, *Joule*, *Environmental Research Letters*, *Elementa*, *Review of Policy Research*, *Energy Policy*, *International Journal of Sustainable Development Law and Policy*, *Resources Policy*, *Energy Research and Social Science*, *World Development*, *Joule*, *Economic Inquiry*, *The Extractive Industries and Society*, *Choices*, *Health Security*, *Environmental Practice*, *McGill International Journal of Sustainable Development Law and Policy*, book manuscripts from 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.