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Department of Economics

Professor of Economics

RASEI Fellow

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Daniel Thomas Kaffine  
University of Colorado Boulder

## Education

Ph.D. Environmental Science and Management, University of California, Santa Barbara, 2007

M.A. Economics, University of California, Santa Barbara, 2003

B.S. Physics, University of St. Thomas, 2002.

B.A. Mathematics, University of St. Thomas, 2002.

## Employment

2018- Professor, Department of Economics, University of Colorado Boulder

2013- Fellow, Renewable and Sustainable Energy Institute, University of Colorado Boulder

2018-19 Associate Chair of Undergraduate Studies, Department of Economics, University of Colorado Boulder

2013-18 Associate Professor, Department of Economics, University of Colorado Boulder

2013 Associate Professor, Division of Economics and Business, Colorado School of Mines

2007-13 Assistant Professor, Division of Economics and Business, Colorado School of Mines

## Areas of Interest

Environmental and resource economics, property rights, urban economics, dynamic optimization, spatial modeling, renewable energy

## Publications

### *Journal Articles*

Raul Bajo, Antonio Bento, Daniel Kaffine, and Zissis Marmarelis. “Decarbonization strategies and electricity price vulnerability: Lessons from the European Energy Crisis” Accepted, *Nature Sustainability*, 2024.

Daniel Kaffine and Doyoung Park. “Do Competitive Markets Cleanup the US Electricity Sector? Evidence from the Southwest Power Pool.” Accepted, *Energy Journal*, 2024.

Renato Molina, Christopher Costello, and Daniel Kaffine. “Sharing and expanding the co-benefits of conservation.” Accepted, *Ecological Economics*, 2024.

Jonathan Hughes, Daniel Kaffine, and Leah Kaffine. "Decline in Traffic Congestion Increased Crash Severity in the Wake of COVID-19." *Transportation Research Record*, 2677(4): 892-903, 2023

Thomas Ash, Antonio Bento, Daniel Kaffine, Akhil Rao, and Ana Bento. "Disease-economy trade-offs under alternative pandemic control strategies." *Nature Communications*, 13(1): 1-14, 2022.

Peter Maniloff and Daniel Kaffine. "Private monitoring and public enforcement: Evidence from complaints and regulation of oil and gas wells." *Journal of Environmental Economics and Management*, 108: 102473, 2021.

Harrison Fell, Daniel Kaffine, and Kevin Novan. "Emissions, transmission, and the environmental value of renewable energy." *American Economic Journal: Economic Policy*, 13(2): 241-272, 2021.

Sean Ericson, Daniel Kaffine, and Peter Maniloff. "Costs of increasing oil and gas setbacks are initially modest but rise sharply." *Energy Policy*, 146:111749, 2020.

Akhil Rao, Daniel Kaffine, and Matthew Burgess. "Orbital Use Fees could quadruple the value of the space industry." *Proceedings of the National Academy of Sciences*, 117(23): 12756-12762, 2020.

Daniel Kaffine, Brannin McBee, and Sean Ericson. "Intermittency and CO2 reductions from wind energy." *Energy Journal*, 41(5), 2020.

Edward Balistreri, Daniel Kaffine and Hidemichi Yonezawa, "Optimal environmental border adjustments under the General Agreement on Tariffs and Trade." *Environmental and Resource Economics*, 74(3), 1037-1075, 2019.

Daniel Kaffine. "Microclimate effects of wind farms on local crop yields." *Journal of Environmental Economics and Management*, 96: 159-173, 2019.

Julie Lundquist, K.K. DuVivier, Daniel Kaffine, and Jessica Tomaszewski. "Costs and consequences of wind turbine wake effects arising from uncoordinated wind energy development." *Nature Energy*, 4:26–34, 2019.

Jonathan Hughes and Daniel Kaffine. "When should drivers be encouraged to carpool in HOV lanes?" *Economic Inquiry*, 57(1): 667-684, 2019.

Antonio Bento, Teevrat Garg, and Daniel Kaffine. "Emissions reductions or green booms? The general equilibrium effects of a Renewable Portfolio Standard." *Journal of Environmental Economics and Management*, 90: 78-100, 2018.

Christopher Costello and Daniel Kaffine, "Natural resource federalism: Preferences versus connectivity for patchy resources." *Environmental and Resource Economics*, 71(1): 99-126, 2018.

Harrison Fell and Daniel Kaffine, "The Fall of Coal: Joint impacts of fuel prices and renewables on generation and emissions." *American Economic Journal: Economic Policy*, 10(2): 90-116, 2018.

Harrison Fell, Daniel Kaffine, and Daniel Steinberg. "Energy efficiency and intensity standards." *Journal of the Association of Environmental and Resource Economists*, 4(S1): S201–S226, 2017.

Jonathan Hughes and Daniel Kaffine, "When is Increasing Consumption of Common Property Optimal? Sorting, Congestion and Entry in the Commons" *Journal of Environmental Economics and Management*, 81: 227-242, 2017.

Daniel Kaffine and Graham Davis, "A multi-row deletion diagnostic for influential observations in small-sample regressions." *Computational Statistics and Data Analysis*, 108:133-145, 2017.

Christopher Costello and Daniel Kaffine, "Private conservation in TURF-managed fisheries." *Natural Resource Modeling*, 30(1):30-51, 2017.

Kevin McCoy, Vitaliy Krasko, Paul Santi, Daniel Kaffine, and Steffen Rebennack. "Minimizing economic impacts from post-fire debris flows in the western United States." *Natural Hazards*, 83(1):149-176, 2016.

Peifang Yang and Daniel Kaffine, "Community-based tradable permits for localized pollution." *Environmental and Resource Economics*, 65(4):773-788, 2016.

Antonio Bento, Daniel Kaffine, Kevin Roth and Matthew Zaragoza-Watkins. "The Effects of Regulation in the Presence of Multiple Unpriced Externalities: Evidence from the Transportation Sector." *American Economic Journal: Economic Policy*, 6(3): 1-29, 2014.

Nicholas Burger, Daniel Kaffine and Bob Yu. "Did California's hand-held cell phone ban reduce accidents?" *Transportation Research Part A*, 66(1): 162-172, 2014.

Harrison Fell and Daniel Kaffine, "Can decentralized planning really achieve first-best in the presence of environmental spillovers?" *Journal of Environmental Economics and Management*, 68(1): 46-53, 2014.

Daniel Kaffine. "Scrap prices, waste and recycling policy." *Land Economics*, 90(1): 169-180, 2014.

Antonio Bento, Jonathan Hughes, and Daniel Kaffine. "Carpooling and driver responses to fuel price changes: Evidence from traffic flows in Los Angeles." *Journal of Urban Economics*, 77(1):41-56, 2013.

Daniel Kaffine, Brannin McBee and Jozef Lieskovsky. "Emissions savings from wind power generation in Texas." *Energy Journal*, 34(1):155-175, 2013.

Kaylee Acuff and Daniel Kaffine. "Greenhouse gas emissions, waste and recycling policy." *Journal of Environmental Economics and Management*, 65(1): 74-86, 2013.

Antonio Bento, Sofia Franco, and Daniel Kaffine. "The welfare effects of anti-sprawl policies in the presence of urban decline." *Agricultural and Resource Economics Review* 40(3): 439-450, 2011.

Antonio Bento, Sofia Franco, and Daniel Kaffine. "Effectiveness of housing revitalization subsidies in the presence of zoning." *Regional Science and Urban Economics*, 41(3):196-206, 2011.

Bo Yu and Daniel Kaffine. "Blue Laws, DUIs and alcohol related accidents: Regression discontinuity evidence from Colorado." *The Journal of Economics*, 27(1):21-38, 2011.

Antonio Bento, Sofia Franco, and Daniel Kaffine. "Is there a double-dividend from anti-sprawl policies?" *Journal of Environmental Economics and Management*, 61(2):135–152, 2011

Daniel Kaffine and Christopher Costello, "Unitization of spatially-connected renewable resources." *The B.E. Journal of Economic Analysis & Policy*, 11(1):Article 15, 2011.

Daniel Kaffine and Chris Worley. "The Windy Commons?" *Environmental and Resource Economics*, 47(2):151-172, 2010.

Christopher Costello and Daniel Kaffine. "Marine Protected Areas in spatial property rights fisheries." *Australian Journal of Agricultural and Resource Economics* 54(3):321-341, 2010.

Antonio Bento, Sofia Franco, and Daniel Kaffine. "Efficiency and spatial impacts of development taxes: The critical role of alternative revenue-recycling schemes." *American Journal of Agricultural Economics* 91(5):1304-1311, 2009.

Daniel Kaffine. "Quality and the Commons: The Surf Gangs of California." *Journal of Law and Economics*, 52(4):727-743, 2009.

Nicholas Burger and Daniel Kaffine. "Gas prices, traffic, and freeway speeds in Los Angeles." *Review of Economics and Statistics*, 91(3):652-657, 2009.

Christopher Costello and Daniel Kaffine. "Natural resource use with limited-tenure property rights." *Journal of Environmental Economics and Management*, 55(1):20-36, 2008.

Heidi Albers, Michael Goldbach, and Daniel Kaffine. "Implications of agricultural policy for species invasion in shifting cultivation systems." *Environment and Development Economics*, 11(4):429-452, 2006.

Antonio Bento, Sofia Franco, and Daniel Kaffine. "The efficiency and distributional impacts of alternative anti-sprawl policies." *Journal of Urban Economics*, 59(1):121-141, 2006.

#### *Other Publications*

Davis, Casey M., Lacey S. Roberts, Sasha R. Neefe, Ronan Kennedy, Karen Bailey, Kyri Baker, Daniel Kaffine, and Michael F. Toney. "The importance of integrating energy justice into chemistry graduate student research and the associated pathways and barriers." *Nature Chemistry* 16: 1921–1926, 2024

Sean Ericson, Jeffrey Logan, and Daniel Kaffine. *Managing the Electricity-Gas Interface: Current Environment and Emerging Solutions*. No. NREL//TP-6A50-71750. National Renewable Energy Lab (NREL), Golden, CO (United States), 2019.

Edward Balistreri, Daniel Kaffine and Hidemichi Yonezawa. “Consumption rebound could undermine border carbon-adjustment charges.” *Nature Correspondence* 560, 553, 2018.

Daniel Kaffine and Patrick O’Reilly. “What Have We Learned About Extended Producer Responsibility in the Past Decade? A Survey of the Recent EPR Economic Literature.” *OECD Environment Directorate, Working Party on Resource Productivity and Waste ENV/EPOC/WPRPW (2013)7/FINAL*. Paris: Organisation for Economic Co-operation and Development, 2015.

Daniel Kaffine, Brannin McBee, and Jozef Lieskovsky. “Empirical estimates of emissions avoided from wind power generation.” *USAEE Dialogues* 19(1), 2011.

Christopher Worley and Daniel Kaffine. “Spatial Diversification of Wind Farms: System Reliability and Private Incentives.” *Wind Farm: Technical Regulations, Potential Estimation and Siting Assessment* ed. Gaston Orlando Suvire, InTech Publishing, 2011.

Heidi Albers, Amy Ando, and Daniel Kaffine. “Land trusts in the United States: Analyzing abundance.” *Resources*, 154:9-13, 2004.

## **Working Papers and Papers in Review**

Daniel Kaffine and Nicole Mundt. “The distributional benefits of emission reductions from renewable energy.” *Reject and Resubmit, Journal of Political Economy Microeconomics*, 2024.

Akhil Rao, Mark Moretto, Marcus Holzinger, and Brian Weeden. “OPUS: An integrated assessment model for satellites and orbital debris” arXiv:2309.10252, 2023

Harrison Fell, Scott Holladay, and Daniel Kaffine. “Are renewable generators price responsive?”, 2024

Daniel Kaffine, Lucas Ladenburger, and Alessandro Peri. “Travel Choices under Pandemic Federalism,” 2024

## **Book Reviews**

The Politics of the Environment: Ideas, Activism, Policy, (by Neil Carter), book review by Daniel Kaffine, *Energy Journal* 29(3) 2008, 180-182

## **Awards**

Stanford Calderwood Teaching Excellence Award, 2015. (CU)

Lone Mountain Fellowship, PERC. Summer 2011, Summer 2014, Summer 2022.

Mineral and Energy Economics Program Excellence in Teaching Award, AY 2008-2009, 2009-2010, 2010-2011. Undergraduate Program Excellence in Teaching Award AY 2009-2010, 2010-2011, 2011-2012, 2012-2013. (CSM)

Outstanding Faculty Member of the Year, 2013. (CSM)

Summer internship program, Resources For the Future, 2003.

National Science Foundation IGERT Fellowship. Economics and Environmental Science Fellow, 2002-2007.

Society of Professional Journalism: 2001 Mark of Excellence Award, Region 6 Winner – National Finalist, General Column Writing.

## **Presentations**

Do economic principles explain orbital resource use in space?, 2024. University of Kansas KEERE Workshop, Lawrence, Kansas.

Are renewable generators price responsive?, 2024. 12<sup>th</sup> AERE Summer Conference, Washington DC.

Are renewable generators price responsive?, 2024. UC Berkeley POWER conference, Berkeley California.

*OPUS: An Integrated Assessment Model of the Orbital Environment*, 2023. OECD Workshop on the Economics of Space Sustainability, OECD, Paris.

*The distributional benefits of emission reductions from renewable energy*, 2023. American Economics Association, New Orleans, Louisiana.

*The distributional benefits of emission reductions from renewable energy*, 2022. University of Chicago, EPIC workshop.

*The distributional benefits of emission reductions from renewable energy*, 2021. Southern Economics Association, Houston, Texas

*The distributional benefits of emission reductions from renewable energy*, 2021. Oregon State University, Department of Applied Economics seminar.

*The distributional benefits of emission reductions from renewable energy*, 2021. 9<sup>th</sup> AERE Summer Conference.

*The distributional benefits of emission reductions from renewable energy*, 2020. University of Connecticut, Department of Economics seminar.

*Emissions, Transmission, and the Environmental Value of Renewable Energy*, 2020. University of Nevada-Reno, Reno, Nevada.

*Setbacks as policy instruments: Evidence from Colorado oil and gas wells*, 2019. 7<sup>th</sup> AERE Summer Conference, Incline Village, Nevada.

*Emissions, Transmission, and the Environmental Value of Renewable Energy*, 2019. University of Kansas Workshop, Lawrence, Kansas.

*Emissions, Transmission, and the Environmental Value of Renewable Energy*, 2019. Arizona State, CEESP seminar, Tempe, Arizona.

*Good neighbors? Microclimate impacts of wind farms on crop yields*, 2018. Iowa State University, Department seminar, Ames, Iowa.

*Emissions, Transmission, and the Environmental Value of Wind*, 2018. 6<sup>th</sup> World Congress of Environmental and Resource Economists. Gothenburg, Sweden.

*Emissions, Transmission, and the Environmental Value of Wind*, 2018. Penn State, EEEP seminar, College Station, Pennsylvania.

*Good neighbors? Microclimate impacts of wind farms on crop yields*, 2017. Montana State University, department seminar, Bozeman, Montana.

*Good neighbors? Microclimate impacts of wind farms on crop yields*, 2017. University of California, Davis, DEEP seminar, Davis, California.

*Good neighbors? Microclimate impacts of wind farms on crop yields*, 2017. Western Economic Association International 92<sup>nd</sup> Annual Conference, San Diego, California.

*Intermittency and CO2 reductions from wind energy*, 2017. Western Economic Association International 92<sup>nd</sup> Annual Conference, San Diego, California.

*Good neighbors? Microclimate impacts of wind farms on crop yields*, 2017. 6<sup>th</sup> AERE Summer Conference, Pittsburgh, Pennsylvania.

*Good neighbors? Microclimate impacts of wind farms on crop yields*, 2017. Workshop on Environmental and Energy Policy, Logan, Utah.

*Intermittency and CO2 reductions from wind energy*, 2017. Economics of Water and Energy Workshop, San Diego, California.

*Energy efficiency and emission intensity standards*, 2016. Research Roundtable, Searle Center, Northwestern School of Law, Chicago, Illinois.

*Natural Resource Federalism*, 2016. Payne Institute Conference, Denver, Colorado.

*Natural Resource Federalism*, 2015. 15<sup>th</sup> Occasional California Workshop on Environmental and Natural Resource Economics, Santa Barbara, California.

*Energy efficiency and emission intensity standards*, 2015. 4<sup>th</sup> AERE Summer Conference, San Diego, California.

*Natural Resource Federalism*, 2014. PERC Lone Mountain Fellow Presentation, Bozeman, Montana.

*When is Increasing Consumption of Common Property Second Best? Sorting, Congestion and Entry in the Commons*, 2013. TREE seminar, Research Triangle, NC.

*When is Increasing Consumption of Common Property Second Best? Sorting, Congestion and Entry in the Commons*, 2013. Colorado State University, DARE department seminar, Fort Collins, CO.

*Think locally, act locally: Can decentralized planning really achieve first-best in the presence of environmental spillovers?* 2013. CU Environmental and Resource Economics Workshop, Vail, Colorado.

*When is Increasing Consumption of Common Property Second Best? Sorting, Congestion and Entry in the Commons?* 2013. 14<sup>th</sup> Occasional California Workshop on Environmental and Natural Resource Economics, Santa Barbara, California.

*When is Increasing Consumption of Common Property Second Best? Sorting, Congestion and Entry in the Commons*, 2013. LAMETA seminar, Montpellier, France.

*A simple Monte Carlo approach to examine sample robustness in growth regressions*, 2012. University of Wyoming, Department of Economics and Finance seminar, Laramie, Wyoming.

*The suboptimal nature of applying Pigouvian rates as border adjustments*, 2012. 2<sup>nd</sup> AERE Summer Conference, Asheville, North Carolina.

*The suboptimal nature of applying Pigouvian rates as border adjustments*, 2012. 13<sup>th</sup> Occasional California Workshop on Environmental and Natural Resource Economics, Santa Barbara, California.

*Wind power and split estate*, 2011. PERC Lone Mountain Fellow Presentation, Bozeman, Montana.

*Emissions savings from wind power generation: Evidence from Texas, California and the Upper Midwest*, 2011. 1<sup>st</sup> AERE Summer Conference, Seattle, Washington.

*Least-cost policies for waste reduction in the presence of upstream greenhouse gas externalities*, 2010. CU Environmental and Resource Economics Workshop, Vail, Colorado.

*Unintended consequences of allowing solo hybrid drivers into HOV lanes: Evidence from the Clean Air Stickers Program in California*, 2010. 4<sup>th</sup> World Congress of Environmental and Resource Economists. Montreal, Canada.

*Marine Protected Areas in spatial property rights fisheries*, 2009. Innovations in Property Rights for Fisheries Management, PERCshop, Santa Barbara, California.

*Marine Protected Areas in spatial property rights fisheries*, 2009. 12<sup>th</sup> Occasional California Workshop on Environmental and Natural Resource Economics, Santa Barbara, California.



*The Windy Commons?* 2009, Colorado State University, DARE department seminar, Fort Collins, CO

*The Welfare Effects of Anti-Sprawl Policies: The Critical Significance of Revenue-Raising*, 2009, AERE sessions at AAEA meetings, Milwaukee, Wisconsin

*The Windy Commons?* 2009, Cornell University AEM department seminar.

*Quality and the Commons: The surf gangs of California*, 2008. CU Environmental and Resource Economics Workshop. Vail, Colorado.

*Can spatial property rights fix fisheries?* 2008, AERE sessions at AAEA meetings. Orlando, Florida.

*Quality and the Commons: The surf gangs of California*, 2008. 11<sup>th</sup> Occasional California Workshop on Environmental and Natural Resource Economics. Santa Barbara, California.

*Can spatial property rights fix fisheries?* 2007, Baja Biocomplexity Workshop. Santa Barbara, California.

*Spatial property rights and optimal harvest of a renewable resource*, 2006. Baja Biocomplexity Workshop. La Paz, Baja California Sur, Mexico.

*Spatial property rights and optimal harvest of a renewable resource*, 2006. 9<sup>th</sup> Occasional California Workshop on Environmental and Natural Resource Economics. Santa Barbara, California.

*Gas prices, traffic, and freeway speeds in Los Angeles*, 2006. CU Environmental and Resource Economics Workshop. Vail, Colorado.

*Natural resource use with limited-tenure property rights*, 2006. 3<sup>rd</sup> World Congress of Environmental and Resource Economists. Kyoto, Japan.

## **Professional Activities**

Associate Editor: *European Economic Review* 2018-, *Resource and Energy Economics* 2015-

Conferences: Co-Chair of Association of Environmental and Resource Economists (AERE) Summer Conference 2016, Program Committee for AERE Summer Conference 2011-

Editorial Council: *Journal of the Association of Environmental and Resource Economists* 2014-, *Journal of Environmental Economics and Management* 2015-

Membership: Association of Environmental and Resource Economists, American Economic Association

Referee: *American Economic Journal: Economic Policy*, *American Economic Journal: Applied Economics*, *American Journal of Agricultural Economics*, *B.E. Journal of Economic Analysis and Policy*, *Canadian Journal of Economics*, *Climate Policy*, *Coastal Management Journal*, *Communications Earth & Environment*, *Conservation Biology*, *Eastern Economics Journal*,

*Ecological Applications, Ecological Economics, Economic Inquiry, Economics Bulletin, Empirical Economics, Energy Economics, Energy Journal, Energy Policy, Energy Systems, Environmental Economics and Policy Studies, Environmental and Resource Economics, Environmental Science and Technology, European Economic Review, International Economic Review, Journal of Applied Econometrics, Journal of the Association of Environmental and Resource Economists, Journal of Benefit-Cost Analysis, Journal of Development Economics, Journal of Economic History, Journal of Environmental Economics and Management, Journal of Environmental Management, Journal of the European Economic Association, Journal of Industrial Economics, Journal of Institutional and Theoretical Economics, Journal of Policy Analysis and Management, Journal of Political Economy, Journal of Political Economy Microeconomics, Journal of Public Economics, Journal of Regional Science, Journal of Urban Economics, Operations Research, Land Economics, Nature Climate Change, Nature Communications, Nature Energy, Papers in Regional Science, Proceedings of the Natural Academy of Sciences, Regional Science and Urban Economics, Resource and Energy Economics, Resources, Conservation & Recycling, Review of Economics and Statistics, Review of Environmental Economics and Policy, Scandinavian Journal of Economics, Transportation Research Part A, Weather Climate and Society, World Bank Economic Review*

## **Courses Taught**

### *University of Colorado Boulder*

#### Undergraduate

ECON 3535 Natural Resource Economics  
ECON 4535 Natural Resource Economics  
ECON 4848 Applied Econometrics

#### Graduate

ECON 8535 Environmental Economics I  
ECON 8209 Research Methods I

### *Colorado School of Mines*

#### Undergraduate

EBGN 340 Energy and Environmental Policy  
EBGN 409 Mathematical Economics  
EBGN 470 Environmental Economics

#### Graduate

EBGN 509 Mathematical Economics  
EBGN 570 Environmental Economics

## **Thesis Supervision – Primary Advisor**

Christopher Worley, PhD CSM (Regulatory Analyst, Gov.'s Energy Office (CO), Spring 2011)  
Kaylee Acuff, PhD CSM (CFO, MTB, Spring 2013)  
Michael Rice, PhD CSM (Senior Quantitative Developer, SourceGas, Spring 2014)  
Peifang Yang, PhD CSM (Researcher, China University of Petroleum (Beijing) Spring 2014)  
Patrick Gourley, PhD CU (Assistant Professor, University of New Haven, Spring 2016)  
Alexander Hill, PhD CU (Clinical Assistant Professor, Arizona State University, Spring 2017)  
Bentley Clinton, PhD CU (Postdoctoral Associate, MIT Energy Initiative, Summer 2017)  
Seamus Li, PhD CU (Assistant Professor, Hamline University, Spring 2018)  
Akhil Rao, PhD CU (Assistant Professor, Middlebury College, Spring 2019)  
Doyoung Park, PhD CU (Assistant Professor, University of Arkansas, Spring 2019)

Patrick O'Reily, PhD CSM (Visiting Assistant Professor, West Virginia University, Winter 2020)  
Cameron Duff, PhD CU (Economist, IMISG/NOAA, Spring 2020)  
Nicole Mundt, PhD CU (Economist, CAISO, Fall 2020)  
Sean Ericson, PhD CU (Researcher, NREL, Spring 2021)

## **Grants**

“Recycling, Solid Waste, and Public Policy,” Alcoa Foundation, 2010-2012 (\$370,000), co-PI

“Minimizing social and economic impacts of increased post-fire debris-flow occurrence, including climate change effects,” Joint Fire Science Program, DOI, 2012-2014 (\$263,564), PI

“Balancing ecosystem services and resource extraction.” EPA/USGS, 2012-2014. (\$150,000), co-PI

“Good Neighbors: Legal, economic and natural science analyses of wind plant impacts and interactions.” NSF, 2014-2016 (\$248,673), co-PI

“An Integrated Assessment Model for satellite constellations and orbital debris.” NASA, 2022-2023 (\$48,450), co-PI

“Integrated Economic-Debris Modeling of Active Debris Removal to Inform Space Sustainability and Policy.” NASA, 2024-2025 (\$105,700), co-PI

*Updated December 2024*