

# LISA RENNELS

Stanford Energy Postdoctoral Fellowship  
Environmental Social Sciences: Global Environmental Policy  
Doerr School of Sustainability  
Stanford University

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## EDUCATION

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- Ph.D. in [Energy and Resources](#) 2024  
University of California, Berkeley, CA  
Dissertation: *The Economics of Climate Change Under Uncertainty and Engineering the Software for its Research*  
Committee: [David Anthoff](#) (chair), [Maximilian Auffhammer](#), [Sarah Chasins](#), and [Fernando Perez](#)
- M.Sc. in [Computer Science](#) 2022  
University of California, Berkeley, CA  
Thesis: *How Domain Experts Use an Embedded DSL*
- M.Sc. in [Energy and Resources](#) 2019  
University of California, Berkeley, CA  
Thesis: *Global Sensitivity Analysis of Integrated Assessment Models*
- Post-Baccalaureate Certificate in Computer Science 2017  
[Tufts University](#), Medford, MA
- B.S. in [Environmental Studies](#) 2014  
Dartmouth College, Hanover, NH  
Thesis: *Are Payments for Watershed Services Better Off as a Metaphor? A Look at the Northern Forest*

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## RESEARCH & FIELDS

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Climate Change Economics  
Risk, Uncertainty Analysis, and Sensitivity Analysis  
Integrated Assessment Modeling and Social Cost of Greenhouse Gases  
Software Engineering & Development  
Usability and Design of Domain Specific Languages

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## PUBLICATIONS

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### **Peer Reviewed**

14. Qiu, M., Callahan, C.W., Higuera-Mendieta, I., **Rennels, L.**, Parthum, B., Diffenbaugh, N.S., & Burke, M. [Valuing wildfire smoke-related mortality benefits from climate mitigation](#). (2026). *Proceedings of the National Academy of Sciences (forthcoming)*
13. Darnell, C., **Rennels, L.**, Errickson, F., Wong, T.E., & Srikrishnan, V. (2025). [The interplay of future emissions and geophysical uncertainties for projections of sea-level rise](#). *Nature Climate Change*.
12. Prest, B., **Rennels, L.**, Errickson, F., and Anthoff, A. (2024). [Equity weighting increases the social cost of carbon: New government guidelines could transform benefit-cost analysis of US climate policy](#). *Science*, 385(6710), 715-717.
11. Tan, T., **Rennels, L.** & Parthum, B. (2024). [The social costs of hydrofluorocarbons and the benefits from their expedited phase-down](#). *Nature Climate Change*, 14.1, 55-60.
10. **Rennels, L.**, & Chasins, S. E. (2023). [How Domain Experts Use an Embedded DSL](#). *Proceedings of the ACM on Programming Languages*, 7(OOPSLA2), 1499-1530.

9. Rennert, K., Errickson, F. \*, Prest, B. C. \*, **Rennels, L. \***, Newell, R. G., Pizer, W., ... & Anthoff, D. (2022). [Comprehensive Evidence Implies a Higher Social Cost of CO<sub>2</sub>](#). *Nature*, 610(7933), 687-692. \*equal contribution
8. Wong, T. E., Ledna, C., **Rennels, L.**, Sheets, H., Errickson, F. C., Diaz, D., & Anthoff, D. (2022). [Sea Level and Socioeconomic Uncertainty Drives High-End Coastal Adaptation Costs](#). *Earth's Future*, 10(12), e2022EF003061.
7. Wong, T. E., **Rennels, L.**, Errickson, F., Srikrishnan, V., Bakker, A., Keller, K., & Anthoff, D. (2022). [MimiBRICK.jl: A Julia package for the BRICK model for sea-level change in the Mimi integrated modeling framework](#). *Journal of Open Source Software*, 7(76), 4556.
6. Rennert, K., Prest, B. C., Pizer, W. A., Newell, R. G., Anthoff, D., Kingdon, C., **Rennels, L.**, ... & Errickson, F. (2021). [The Social Cost of Carbon: Advances in Long-Term Probabilistic Projections of Population, GDP, Emissions, and Discount Rates](#). *Brookings Papers on Economic Activity*.
5. Melvin, A.M., Larsen, P., Boehlert, B., Neumann, J.E., Chinowsky, P., Espinet, X., Martinich, J., Baumann, M.S., **Rennels, L.**, Bothner, A. and Nicolosky, D.J. (2017). [Climate change damages to Alaska public infrastructure and the economics of proactive adaptation](#). *Proceedings of the National Academy of Sciences*, 114(2), E122-E131.
4. Chapra, S. C., Boehlert, B., Fant, C., Bierman Jr, V. J., Henderson, J., Mills, D., Mas, D., **Rennels, L.**, Jantarasami, L., Martinich, J., Strzepek, K. M., Bierman, V., and Paerl, H. (2017). [Climate change impacts on harmful algal blooms in US freshwaters: a screening-level assessment](#). *Environmental Science & Technology*, 51(16), 8933-8943.
3. Fant, C., Srinivasan, R., Boehlert, B., **Rennels, L.**, Chapra, S. C., Strzepek, K. M., ... and Martinich, J. (2017). [Climate change impacts on US water quality using two models: HAWQS and US basins](#). *Water*, 9(2), 118.
2. Larsen, P. H., Boehlert, B., Eto, J., Hamachi-LaCommare, K., Martinich, J., and **Rennels, L.** (2018). [Projecting future costs to US electric utility customers from power interruptions](#). *Energy*, 147, 1256-1277.
1. Melvin, A. M., Murray, J., Boehlert, B., Martinich, J. A., **Rennels, L.**, and Rupp, T. S. (2017). [Estimating wildfire response costs in Alaska's changing climate](#). *Climatic Change*, 141(4), 783-795.

### **Working Papers**

4. **Rennels, L.**, Kingdon, C., Plevin, R., Rising, J., and Anthoff, D. [Mimi.jl: A Computational Platform for Integrated Assessment Modeling](#). *Resources for the Future Working Paper*.
3. Burke, M., Wilson, A., Avirmed, K., Wallstein, J., Martins, M., Behrer., P., Callahan, C., Childs, M., Choi, J., French, K., Gould, C., Heft-Neal, S., Jing, R., Qiu, M., **Rennels, L.**, and Southworth, E.K. (2025). [Understanding and addressing temperature impacts on mortality](#). *NBER Working Paper w34313*. (Submitted to journal)
2. Kopits., E., Kraynak., D., Parthum, B., **Rennels, L.**, Smith, D., Spink, E., Griffiths., C., Perla., J., Burns., N., Howerton., M. (2025). [Economic Damages from Climate Change to U.S. Populations: Integrating Evidence from Recent Studies](#). *EPA National Center for Environmental Economics Working Paper Series*. (Under Review at journal)
1. Wingenroth, J., **Rennels, L.**, Errickson, F., Anthoff, D., & Prest, B. (2024) [Accounting for Biodiversity Loss Raises the Social Cost of Carbon](#). *Resources for the Future Working Paper*.

### **Under review, submitted, in preparation**

**Rennels, L.**, Errickson, F., Keller, K., Parthum, B., Smith, D., and Anthoff, A. [Considering Robustness to Deep Uncertainties Drives More Rapid Emissions Reductions](#). (Submitted)

**Rennels, L.**, Kingdon, C., Plevin, R., Rising, J., and Anthoff, D. [Mimi.jl: A Computational Platform for Integrated Assessment Modeling](#). (Submitted)

Moore, F., Haqiqi, I., Kong, Q., Kong, **Rennels, L.**, Baldos, U., Ganapathi, H., Huber, M., Hertel, T., [Increased Intensity and Frequency of Heat Stress Lowers Global Labor Productivity and Increases Climate Cost Estimates](#). (Under review).

Freese, L., Virguez, E., Davis, S., **Rennels, L.**, and Caldeira, K. [Country-Level Distribution of Trillions of Dollars in Future Climate Damages from Current Annual Emissions](#). (Under review)

Bressler, D.R., Shimberg, N., **Rennels, L.**, Parthum, B., Smith, D., Errickson, F., & Anthoff, D. Large Disproportional Mortality Impacts on Poor Countries Drive a Higher Equity Weighted Social Cost of CO<sub>2</sub>. (Conditionally Accepted)

Anthoff, D., Druup, M., Haensel, M., Moore, F.C., **Rennels, L.**, Rising, J., & Schaumann, F. Structural Interactions in Integrated Assessment Models.

Errickson, F., Wong, T.E., Keller, K., **Rennels, L.**, & Anthoff, D. Improved climate modeling reduces extreme social cost of carbon estimates.

## AWARDS & HONORS

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Excellence Award Electrical Engineering and Computer Science at UC Berkeley \$5,000 prize awarded	2020
<a href="#">Data Sciences for the 21st Century (DS421)</a> Trainee National Science Foundation	2019
Downey Family Prize for Excellence in Independent Research Dartmouth College Environmental Studies Department	2014

## POSITIONS & TEACHING EXPERIENCE

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Postdoctoral Scholar, Stanford Energy Postdoctoral Fellowship • Co-advised by Professor Marshall Burke and Professor Inês Azevedo	2024 - present
EPA Research Fellow (Oak Ridge Institute for Science and Education) ▪ National Center of Environmental Economics ▪ EPA Research Fellowship to Further Estimation of the Social Cost of Greenhouse Gases	2023-2024
Co-lead for Climate Change Economics Workshop for Teachers ▪ California Global Education Project (CGEP) ▪ Week-long program for high school economics teachers focused on climate change economics	2024
Graduate Student Instructor <a href="#">Energy and Resources Group</a> at University of California, Berkeley, CA <a href="#">ENERES 102</a> Quantitative Aspects of Global Environmental Change <a href="#">ENERES 176</a> Climate Change Economics	2022-2023
Graduate Student Researcher <a href="#">Energy and Resources Group</a> at University of California, Berkeley, CA Project: <i>Social Cost of Carbon Initiative</i> , <i>Resources for the Future</i> , Washington, D.C. University PI: <a href="#">David Anthoff</a> Grantee Organization and PI: <i>Resources for the Future</i> , <a href="#">Kevin Rennert</a> and <a href="#">Brian Prest</a>	2017-2022
Independent Consultant Various independent consulting positions focused on climate change economics, integrated assessment modeling, and software engineering: ▪ For <a href="#">Abt. Global</a> , <a href="#">Eastern Research Group Inc.</a> , and <a href="#">Industrial Economics Inc.</a> ▪ For <a href="#">Resources for the Future</a> , Washington, D.C.: Work as lead modeler and contributing researcher for the Social Cost of Carbon team at RFF to support the U.S. Environmental Protection Agency in developing an updated social cost of carbon (2021-2022) ▪ For <a href="#">Terra.do</a> : Co-design and teach a 6-week online course entitled Climate Change for Software Engineers (2021) ▪ For <a href="#">University of California, Santa Cruz</a> , <a href="#">CA Sustainability Office</a> on project for University of California Office of the President (UCOP): Serve as an expert consultant and technical lead for developing and implementing an equity-weighted social cost of carbon for use within the UC System (2021-2023)	2021 - present

Research Analyst

2014-2022

Industrial Economics, Inc., Cambridge, MA

Work Focus: Climate Change, Water Resources, Economic Valuation, and Implications for Policy Decisions

Primary Clients: U.S. Environmental Protection Agency, World Bank, U.S. Department of Justics, U.S. Department of the Interior

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#### PRESENTATIONS & INVITED TALKS

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**2025:** Resources for the Future Workshop - Charting the Future Research Agenda for the Social Cost of Carbon, AERE – Association of Environmental and Resource Economists Summer Conference, Stanford Energy Postdoctoral Fellowship Symposium, Stanford Data Science internal seminar, DSE – UC Berkeley Data Science and Environment internal seminar, ASSA - Allied Social Science Associations Annual Meeting

**2024:** JuliaCon, AERE - Association of Environmental and Resource Economists Summer Conference, OSWEET - Online Summer Workshop in Environmental, Energy, and Transportation economics hosted by the Association of Environmental and Resource Economists, POPL – Programming for the Planet at ACM SIGPLAN Symposium on Principles of Programming Languages keynote lecture, SBCA - The Society for Benefit-Cost Analysis Workshop on the Social Cost of Carbon, FSE – Stanford Center on Food Security and the Environment internal seminar

**2023:** SPLASH OOPSLA - Systems, Programming, Languages, and Applications: Software for Humanity, EPIC - UC Berkeley Effective Programming, Interaction, and Computation with Data Retreat, NASA Ames Earth Science Division Seminar, EAERE 28<sup>th</sup> Annual Conference of the European Association of Environmental and Resource Economists, CESifo Area Conference on Energy and Climate Economics

**2022:** AGU - American Geophysical Union Fall Meeting, Industrial Economics Inc. Lunch Seminar Series, ENERES176 Climate Change Economics internal lecture

**2019:** JuliaCon

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#### REVIEWER

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Nature, Nature Climate Change, Climate Change Policy, Environmental Research Letters

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#### SERVICE & COMMITTEE MEMBERSHIP

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Programming committee member for Programming for the Planet (PROPL) at SPLASH/ICFP 2025. 2025

Session Chair at American Geophysical Union (AGU) 2024 Fall Meeting  
Advances in Quantifying and Attributing Climate Impacts and Damages  
to Inform Climate Risk Management and Litigation 2024

College of Natural Resources (CNR) Student Mentor  
"Real Talk Buddies" Program, UC Berkeley 2023-2024

Faculty Search Committee Member  
Energy and Resources Group, UC Berkeley 2023

Executive Committee Student Representative  
Energy and Resources Group, UC Berkeley

Alumni Relations Student Representative  
Energy and Resources Group, UC Berkeley 2019-2022

2019-2022

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#### REFERENCES

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David Anthoff, Ph.D. (Energy and Resources Group, UC Berkeley, CA)  
Maximilian Auffhammer, Ph.D. (Dept. of Agriculture & Resource Economics, UC Berkeley, CA)  
Al McGartland, Ph.D. (Environmental Protection Agency, Washington, D.C.)  
Fernando Perez, Ph.D. (Dept. of Statistics, UC Berkeley, CA)  
Kevin Rennert, Ph.D. (Resources for the Future, Washington, D.C.)