

CONTACT INFORMATION	<p>lrennels@berkeley.edu https://www.lisarennels.com Energy and Resources Group Giannini Hall, 345, Berkeley, CA 94720</p>
EDUCATION	<p>Ph.D. in Energy and Resources expected May, 2024 University of California, Berkeley, CA Working Title: <i>Economics of Climate Change Under Uncertainty and Engineering the Software for its Research</i> Committee: David Anthoff (chair), Maximilian Auffhammer, Sarah Chasins, and Fernando Perez</p> <p>M.Sc. in Computer Science 2022 University of California, Berkeley, CA</p> <p>M.Sc. in Energy and Resources 2019 University of California, Berkeley, CA</p> <p>Post-Baccalaureate Certificate in Computer Science 2017 Tufts University, Medford, MA</p> <p>B.S. in Environmental Studies 2014 Dartmouth College, Hanover, NH</p>
RESEARCH & FIELDS	<p>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 Embedded Domain Specific Languages</p>
REFEREED JOURNAL PUBLICATIONS	<ol style="list-style-type: none"> 1. Rennels, L., & Chasins, S. E. (2023). How Domain Experts Use an Embedded DSL. <i>Proceedings of the ACM on Programming Languages</i>, 7(OOPSLA2), 1499-1530. 2. Tan, T., Rennels, L. & Parthum, B. (2024). The social costs of hydrofluorocarbons and the benefits from their expedited phase-down. <i>Nature Climate Change</i>. 3. 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 CO₂. <i>Nature</i>, 610(7933), 687-692. * equal contribution 4. 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. <i>Earth's Future</i>, 10(12), e2022EF003061. 5. 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. <i>Journal of Open Source Software</i>, 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. <i>Brookings Papers on Economic Activity</i>. 7. Melvin, A.M., Larsen, P., Boehlert, B., Neumann, J.E., Chinowsky, P., Espinet, X., Martinich, J., Baumann, M.S., Rennels, L., Bothner, A. and Nicolsky, D.J. (2017). Climate change damages to Alaska public infrastructure and the economics of proactive adaptation. <i>Proceedings of the National Academy of Sciences</i>, 114(2), E122-E131.

8. 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.
9. 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.
10. 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.
11. 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.

SELECT PAPERS
IN
PREPARATION

12. **Rennels, L.**, Errickson, F., Keller, K., Parthum, B., Smith, D., and Anthoff, A. Considering Robustness to Deep Uncertainties Drives More Rapid Emissions Reductions.
13. Prest, B., **Rennels, L.**, Errickson, F., and Anthoff, A. US Government's New Guidance to Address Distributional Equity in Benefit-Cost Analysis Greatly Increases the Social Cost of Carbon Dioxide. *Under Review at Science*.
14. Darnell, C., **Rennels, L.**, Errickson, F., Wong, T.E., & Srikrishnan, V. [Rapid decarbonization reduces but does not eliminate risk of extreme sea level rise due to uncertain Antarctic Ice Sheet marine instability](#). *Under Review at Nature*.
15. **Rennels, L** and Anthoff, A. A Global Sensitivity Analysis of the Social Costs of Greenhouse Gases.
16. 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 CO₂.
17. Anthoff, D., Errickson, F., Prest, B., **Rennels, L.**, & Wingenroth, J. Valuing biodiversity losses as part of the social cost of CO₂.
18. Anthoff, D., Druup, M., Haensel, M., Moore, F.C., **Rennels, L.**, Rising, J., & Schaumann, F. Structural Interactions in Integrated Assessment Models.
19. Errickson, F., Wong, T.E., Keller, K., **Rennels, L.**, & Anthoff, D. Improved climate modeling reduces extreme social cost of carbon estimates.

AWARDS &
HONORS

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

POSITIONS &
TEACHING
EXPERIENCE

- | | |
|--|-----------|
| EPA Research Fellow (Oak Ridge Institute for Science and Education) | 2023-2024 |
| <ul style="list-style-type: none"> ▪ National Center of Environmental Economics ▪ EPA Research Fellowship to Further Estimation of the Social Cost of Greenhouse Gases | |

- Graduate Student Instructor Fall 2022, Spring 2023
[Energy and Resources Group](#) at University of California, Berkeley, CA
[ENERES 102](#) Quantitative Aspects of Global Environmental Change
[ENERES 176](#) Climate Change Economics
- Graduate Student Researcher 2017 - 2022
[Energy and Resources Group](#) at University of California, Berkeley, CA
 Project: *Social Cost of Carbon Initiative*, *Resources for the Future*,
Washington, D.C.
 University PI: [David Anthoff](#)
 Grantee Organization and PI: *Resources for the Future*, [Kevin Rennert](#) and
[Brian Prest](#)
- Independent Consultant 2021 - present
 Various independent consulting positions focused on climate change
 economics, integrated assessment modeling, and software engineering:
 - For [Resources for the Future](#), 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 [Terra.do](#): Co-design and teach a 6-week online course entitled Climate Change for Software Engineers (2021)
 - For [University of California, Santa Cruz, CA Sustainability Office](#) 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)
- 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 Justice, U.S. Department of the Interior

PRESENTATIONS
&
INVITED TALKS

- US government's new guidance to address distributional concerns in benefit-cost analysis greatly increases the social cost of carbon dioxide.* Association of Environmental and Resource Economists (AERE) Summer Conference. Washington, DC. 2024. (forthcoming)
- How Climate Economics Domain Experts Use an Embedded DSL.* JuliaCon. Eindhoven, Netherlands. 2024. (forthcoming)
- Estimating the Social Cost of Methane with the GIVE Model.* Association of Environmental and Resource Economists at OSWEET. Online. 2024.
- GIVE and the Mimi Framework.* The Society for Benefit-Cost Analysis Workshop on the Social Cost of Carbon. Online. 2024.
- Keynote Speech: Building Open Source Software for Climate Change Research — Lessons Learned from Mimi.jl.* Programming for the Planet (PROPL) at ACM SIGPLAN Symposium on Principles of Programming Languages (POPL). London, UK. 2024.
- How Domain Experts use an Embedded DSL.* Systems, Programming, Languages, and Applications: Software for Humanity (SPLASH OOPSLA). Cascais, Portugal. 2023.
- How Domain Experts use an Embedded DSL.* UC Berkeley Effective Programming, Interaction, and Computation with Data (EPIC) Lab Retreat. Berkeley, CA. 2023.

Building Open Source Software for Climate Change Research – Lessons Learned from Mimi.jl. NASA Ames Earth Science Division Seminar. San Jose, CA. 2023.

Estimating the Social Cost of Methane with the GIVE Model. EAERE 2023. Limassol, Cyprus. 2023.

Equity Weighting and Risk Adjusting the Social Cost of Carbon. CESifo Area Conference on Energy and Climate Economics 2023. Munich, Germany. 2023. (with David Anthoff)

Comprehensive Evidence Implies a Higher Social Cost of CO₂. American Geophysical Union (AGU) 2022 Fall Meeting. Chicago, IL. 2022.

Comprehensive Evidence Implies a Higher Social Cost of CO₂. Invited Talk at Industrial Economics Inc. Remote. 2022.

Comprehensive Evidence Implies a Higher Social Cost of CO₂. Guest Lecture in Climate Change Economics (ENERES 176) Course. Berkeley, CA. 2022.

Mimi.jl – Next Generation Climate Economics Modeling. JuliaCon 2019. Baltimore, MD. July 25, 2019. (with Cora Kingdon)

REVIEWER	<ul style="list-style-type: none"> ▪ Nature ▪ Nature Climate Change 	
SERVICE & COMMITTEE MEMBERSHIP	<p>College of Natural Resources (CNR) Student Mentor "Real Talk Buddies" Program, UC Berkeley</p> <p>Faculty Search Committee Member Energy and Resources Group, UC Berkeley</p> <p>Executive Committee Student Representative Energy and Resources Group, UC Berkeley</p> <p>Alumni Relations Student Representative Energy and Resources Group, UC Berkeley</p>	<p>2023-2024</p> <p>2023</p> <p>2019-2022</p> <p>2019-2022</p>
EXPERIENCE	<p>Avoiding and Reducing Long-term Risks of Climate Change: A Technical Report for the Fourth National Climate Assessment. (EPA, 2017)</p> <p>Climate Change Impacts and Risk Analysis (CIRA). (EPA, 2017)</p> <p>Climate Change in the United States: Benefits of Global Action. (EPA, 2017).</p> <p>The Contribution of Water Resources Development and Environmental Management to Uganda's Economy. Kenneth Strzepek, Brent Boehlert, Jacqueline Willwerth, and James Neumann. August 16, 2016.</p> <p>The Costs of Climate Change Impacts and Responses on DOI Sites in the Southeastern United States. Brent Boehlert and Jessica Murray. March 8, 2016.</p> <p><i>For all above contributed to technical work and modeling, results analysis, and experimental design</i></p>	
REFERENCES	<p>David Anthoff, Ph.D. (Professor, Energy and Resources Group, UC Berkeley, CA)</p> <p>Kevin Rennert, Ph.D. (Resources for the Future, Washington, D.C.)</p> <p>Al McGartland, Ph.D. (Environmental Protection Agency, Washington, D.C.)</p> <p>Maximilian Auffhammer, Ph.D. (Professor, Dept. of Agriculture & Resource Economics, UC Berkeley, CA)</p> <p>Sarah Chasins, Ph.D. (Assistant Professor, Computer Science Division at UC Berkeley EECS, CA)</p> <p>Fernando Perez, Ph.D. (Professor, Dept. of Statistics, UC Berkeley, CA)</p>	