

KRISTEN E BROWN

US Environmental Protection Agency
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EDUCATION

University of Colorado at Boulder, Boulder, CO

2016 PhD in Environmental Engineering
Dissertation: The Benefits of Internalizing Air Quality and Greenhouse Gas Externalities in the US Energy System; Committee: Jana Milford, Daven Henze, Greg Frost, Shelly Miller, Michael Hannigan
2013 MS in Mechanical Engineering

University of California at Berkeley, Berkeley, CA

2010 BA in Physics

PROFESSIONAL EXPERIENCE

2016-present US Environmental Protection Agency; Research Triangle Park, NC; Environmental Engineer
2012-2016 University of Colorado Boulder; Boulder, CO; Research Assistant
2014 CU Science Discovery; Boulder, CO; Instructor
2011-2012 University of Colorado Boulder; Boulder, CO; NSF GK-12 Teaching Fellow
2010-2011 University of Colorado Boulder; Boulder, CO; Research Assistant
2008-2010 Space Sciences Laboratory at UC Berkeley; Berkeley, CA; Research Assistant
2005 Lawrence Berkeley National Laboratory; Berkeley, CA; Research Intern

CURRENT RESEARCH PROJECTS

Exploring Future Emission Scenarios

- Using a formal scenario framework defining energy technology preferences
- Modeling the environmental impact of policy, technology, and public opinion
- Analyzing potential unintended consequences of energy policy

Bridging the Gap Between Emissions and Air Quality Modeling

- Creating tools to improve the connectivity of TIMES and CMAQ modeling
- Evaluating the effect of energy emission changes on future US air quality
- Improving the utility of energy scenario modeling

Investigating the Effect of Vehicle Automation on Air Quality

- Evaluating upstream (life cycle) changes in fuel use from automation
- Evaluating emissions differences associated with different driving patterns
- Investigating regional health effects of transportation related emissions

PUBLICATIONS

Peer Reviewed Research Articles

Brown, K., Dodder, R., **2019**. Energy and Emissions Implications of Automated Vehicles in the US Energy System. *Transportation Research Part D: Transport and Environment*. 77, p 132-147. DOI: 10.1016/j.trd.2019.09.003

Brown, K., Loughlin, D., **2019**. Market Sensitivity of Solar-Fossil Hybrid Electricity Generation to Price, Efficiency, Policy, and Fuel Projections, *Clean Technologies and Environmental Policy* 21 (3), p 591-604. DOI: 10.1007/s10098-018-1659-3

Brown, K., Hottle, T., Bandyopadhyay, R., Babae, S., Dodder, R., Kaplan, P.O., Lenox, C., Loughlin, D., **2018**. Evolution of the US Energy System and Related Emissions under Varying Social and Technological Development Paradigms: Plausible Scenarios for Use in Robust Decision Making, *Environmental Science & Technology* 52 (14), p 8027-8038. DOI: 10.1021/acs.est.8b00575

Brown, K., Henze, D., Milford, J., **2017**. How Accounting for Climate and Health Impacts of Emissions Could Change the US Energy System, *Energy Policy* 102, p 396-405. DOI: 10.1016/j.enpol.2016.12.052

Brown, K., Henze, D., Milford, J., **2013**. Accounting for Climate and Air Quality Damages in Future US Electricity Generation Scenarios, *Environmental Science & Technology* 47 (7) p 3065-3072. DOI: 10.1021/es304281g

Peer Reviewed Curriculum

Brown, K., Hippel, B., Perez-Suarez, S.D., Straten, M., Zarske, M.S., Yowell, J., Samson, C., **2012**. Oil on the Ocean, TeachEngineering.org.

Brown, K., Forbes, M., **2012**. Hi Ho, Hi Ho, It's to the Mine We Go, TeachEngineering.org.

Brown, K., **2012**. What Kind of Footprint? Carbon Footprint, TeachEngineering.org.

Conference Proceedings

Brown, K., **2015**. Internalizing Air Quality and Greenhouse Gas Externalities in the US Energy System, *CU STEMinar Journal*, Volume 1, Edition 1.

Brown, K., Henze, D., Milford, J., **2014**. The Effect of Criteria Pollutant and Greenhouse Gas Damage Based Fees on Emissions from the US Energy System, *Community Modeling and Analysis System (CMAS) conference*.

Brown, K., Henze, D., Milford, J., **2014**. Internalizing Life Cycle Externalities in the US Energy System, Proceedings of *LCA XIV*.

Submitted and Draft Manuscripts

Brown, K., Henze, D., Baker, K., Milford, J., Comparing Health Benefit Calculations for Alternative Energy Futures. Manuscript with editor after submitting minor revisions to *Air Quality, Atmosphere and Health*.

Brown, K., The Influence of External Factors on Increased Renewable Electricity Generation. Manuscript undergoing Internal Agency Review before submission.

Brown, K., Dodder, R., Monetized Health Benefits of Regional Emissions Changes Due to Scenarios of Vehicle Automation. Draft Manuscript.

PRESENTATIONS

Invited Talks

- 2020 University of Texas at San Antonio; seminar, San Antonio, TX, February 2020.
- 2020 University of North Carolina; seminar, Chapel Hill, NC, February 2020.
- 2020 Oklahoma State University; seminar, Stillwater, OK, January 2020.
- 2019 Rochester Institute of Technology; seminar, Rochester, NY, December 2019.
- 2019 Center for Energy Studies at Louisiana State University; seminar, Baton Rouge, LA, January 2019.
- 2018 Information Exchange on Connected, Autonomous, Shared, Electric Vehicles; webinar with DOT, DOE, EPA, May 2018.
- 2018 Cal Alumni Club of North Carolina; General education seminar, Durham, NC, April 2018.
- 2016 North Carolina State University; Environmental Water Resources, and Coastal Engineering, seminar, Raleigh, NC, September 2016.
- 2015 Harvard T.H. Chan School of Public Health, Center for Health and the Global Environment, seminar, Boston, MA, June 2015.
- 2014 Internalizing Life Cycle Externalities in the US Energy System, *LCA XIV Conference*, panel presentation, San Francisco, CA.

EPA Presentations to Regulatory Offices

- 2018 Brown, K., Dodder, R., Potential regional impacts of automated vehicles. Office of Transportation and Air Quality, April 2018.
- 2018 Brown, K., Dodder, R., Potential emissions impacts of automated vehicles. Office of Transportation and Air Quality, February 2018.
- 2017 Brown, K., Hottle, T., Bandyopadhyay, R., Babae, S., Impact of various energy pathways on future emissions. Office of Air Quality Planning and Standards, April 2017.

Conference Oral Presentations

- 2020 Brown, K., Dodder, R., Monetized Health Benefits of Regional Emissions Changes Due to Scenarios of Vehicle Automation, *Transportation Research Board (TRB)*, Washington, DC.
- 2019 Brown, K., How External Factors Influence Policy Goals using the Example of Renewable Energy Standards, *United States Association of Energy Economics (USAEE)*, Denver, CO.
- 2019 Brown, K., Comparing Projected and Modeled Health Benefits of Alternative Energy Futures, *Community Modeling and Analysis System (CMAS) conference*, Chapel Hill, NC.
- 2019 Brown, K., Lenox, C., Plausible Energy Scenarios for use in robust decision making, *Energy and Society in Transition*, Tempe, AZ.
- 2019 Brown, K., Dodder, R., Energy and Emissions Implications of Automated Vehicles in the US Energy System, *Transportation Research Board (TRB)*, Washington, DC.
*(Research was selected for presentation, but due to a partial government shutdown neither author was able to attend the conference.)

- 2018 Brown, K., Hottle, T., Bandyopadhyay, R., Babae, S., Dodder, R., Kaplan, P.O., Lenox, C., Loughlin, D., Plausible Energy Scenarios for use in robust decision making, *Community Modeling and Analysis System (CMAS) conference*, Chapel Hill, NC.
- 2017 Brown, K., Loughlin, D., Sensitivity of Solar Fossil Hybrid Electricity Technology Penetration to Price and Efficiency Projections, *United States Association of Energy Economics (USAE)*, Houston, TX.
- 2015 Brown, K., Henze, D., Milford, J., Air Quality Impacts of Damage Based Emissions Fees, *Community Modeling and Analysis System (CMAS) conference*, Chapel Hill, NC.
- 2014 Brown, K., Henze, D., Milford, J., The Effect of Criteria Pollutant and Greenhouse Gas Damage Based Fees on Emissions from the US Energy System, *Community Modeling and Analysis System (CMAS) conference*, Chapel Hill, NC.
- 2014 Brown, K., Henze, D., Milford, J., The Effect of Damage Based Emissions Fees on Future US Emissions, *GEIA Conference*, Boulder, CO.
- 2012 Brown, K., Henze, D., Milford, J., Incorporating Climate and Air Quality Externalities in the US Electricity System, *World Renewable Energy Forum*, Denver, CO.
- 2011 Brown, K., Henze, D., Milford, J., The Effect of Incorporating Air Quality and Climate Externalities in Future US Electricity Scenarios, *American Chemical Society*, Denver, CO.
- 2006 Brown, K., McMahan, M.A., Bleuel, D., Heilbronn, L., Phair, L., Keith III, J., Bernstein, L.A., Ahle, L., Burke, J., Church, J., Lyles, B., Thompson, I., Characterizing Deuteron Breakup on Thin Targets at 20 MeV, *American Physical Society*, Dallas, TX.

Conference Posters

- 2019 Brown, K., Increasing the Use of Near-zero Emission Energy Technologies Depends on Social, Technological, and Policy Factors, *American Geophysical Union*, San Francisco, CA.
- 2019 Brown, K., Energy and Emissions Implications of Automated Vehicles, *UNC 6th Annual Climate Change and Resilience Symposium*, Chapel Hill, NC.
- 2008 Brown, K., Wilber, M., McFadden, J.P., Dispersive Ion Injection Signatures Observed at FAST Altitudes during Times of Northward IMF: Characteristics and Origins, *American Geophysical Union*, San Francisco, CA.

Invited or Competitive Workshop Participation

- 2019 The Effect of Aggregation on Energy System Models. November 6, 2019, Denver, CO. Invited.
- 2019 Modeling the Energy and Environmental Impacts of New Mobility, hosted by MIT CEEPR. October 11, 2019, Cambridge, MA. Invited.
- 2019 Advancing Careers in Academics with Diversity Education and Mentorship in Engineering (ACADEME) professional development program. June 3-13, 2019, Starkville, MS. Competitive.
- 2015 ComSciCon: The Communicating Science Workshop for Graduate Students. June 18-20, 2015. Cambridge, MA. Competitive.

Presentations at the University of Colorado

- 2015 Brown, K., Henze, D., Milford, J., The Effect of Damage Based Emissions Fees on Future US Emissions, Energy Frontiers Conference at the University of Colorado, Boulder, CO, poster.
- 2015 Brown, K., Henze, D., Milford, J., The Effect of Criteria Pollutant and Greenhouse Gas Fees on Emissions from the US Energy System, Graduate Engineering Annual Research Symposium, Boulder, CO, oral.
- 2014 Brown, K., Henze, D., Milford, J., Internalizing Externalities from US Energy Use, STEMinar (CU Boulder STEM graduate student seminar series), Boulder, CO, oral.
- 2013 Brown, K., CU Energy Club Energy Research Panel, Boulder, CO, panel.
- 2013 Brown, K., Henze, D., Milford, J., The Effect of Damage Based Fees on the Future US Energy System, University of Colorado Research Symposium, Boulder, CO, poster.
- 2013 Brown, K., Henze, D., Milford, J., The Effect of Damage Based Fees on Future US Electricity Generation, Energy Frontiers Conference at the University of Colorado, Boulder, CO, poster.
- 2013 Brown, K., Henze, D., Milford, J., The Effect of Damage Based Fees on Future US Electricity Generation, Graduate Engineering Annual Research Symposium, Boulder, CO, oral. Awarded Best Air Quality Talk.
- 2011 Brown, K., Henze, D., Milford, J., The Effect of Accounting for Costs of Air Quality and Climate Impacts on the Future US Electricity Mix, Energy Frontiers Conference at the University of Colorado, Boulder, CO, poster. Awarded 1st Place Energy Policy poster.
- 2011 Brown, K., Henze, D., Milford, J., Accounting for Externalities in the US Electricity System, Graduate Engineering Annual Research Symposium, Boulder, CO, oral.

GRANTS AND FUNDING

Funded Grants

- 2019 Participant in competitive, NSF sponsored, multi-institutional Advancing Careers in Academics with Diversity Education and Mentorship in Engineering (ACADEME) professional development program. Travel grant of \$450 and \$1875 stipend.
- 2015 Grant to attend ComSciCon science communication conference \$400
- 2015 STEMinar grant to present research at other universities \$250

Unfunded Grants

- 2019 Pathfinder Innovation Projects internal grant program for EPA for \$49,000 and 0.5 FTE “Informing Attainment: Directly bridging energy strategies to air quality outcomes” as PI
- 2019 Internal Shark Tank funding competition for \$200,000 “State level air quality modeling based on GCAM” grant writer
- 2018 Pathfinder Innovation Projects internal grant program for the EPA for \$8,000 and 0.35 FTE “Harnessing big data to identify air, energy, and infrastructure disparities” as PI

TEACHING AND OUTREACH

- 2019 Participant in competitive, multi-institutional ACADEME workshop, an NSF sponsored workshop, teaching skills for a successful academic career including teaching and grant writing
- 2017-2019 Contributor to Envirobites.org, a blog that summarizes current environmental research for non-scientists
- 2017-2019 Participant in Science-a-thon, an annual social media campaign to display a day in the life of real scientists
- 2016-2019 Participant in US EPA outreach program, activities include speed mentoring and presentations to students from primary school through graduate school
- 2014-2015 AirWaterGas curriculum development team member; Designed a course for Colorado secondary school teachers to learn about energy, air quality, and climate and how to relate this information to students and their communities
- 2013-2015 Guest lecturer for CU graduate courses “Environmental Law,” “Sustainable Energy” and “Intro to Research”
- 2014 CU Science Discovery instructor; taught 2 science-based summer camps
- 2011-2012 NSF GK-12 Fellow; Designed and taught standards-based curriculum inspired by my research to middle school students, led after school and summer engineering programs for elementary students

PROFESSIONAL SERVICE

Leadership

- 2018-2019 President for US EPA Networking and Leadership Training Organization (NLTO); coordinate officers, run meetings
- 2018 Co-chair for Air Quality, Climate and Energy session at the Community Modeling and Analysis System (CMAS) conference
- 2018 Vice President for US EPA Networking and Leadership Training Organization (NLTO); manage calendar and coordinate the organization’s leadership
- 2017-2019 Secretary for Cal Alumni of North Carolina; charter board member for the local branch of the alumni association; Coordinate with Triangle Ivy Plus Association
- 2017 Council Member for US EPA Networking and Leadership Training Organization (NLTO); helped plan and coordinate training events
- 2014-2015 Vice President of Events for CU Energy Club; planned and coordinated events including professional development opportunities, student networking, and a conference with over 200 attendees

Mentorship

- 2012-2016 Taught graduate students new to the group how to use the MARKAL model. Created info-sheets, provided individual demonstrations, and answered questions.
- 2013 Assisted a foreign student with English proficiency and accent reduction through the International English Center on campus at the request of the student.

Peer Review

2017-2019 Reviewed for Energy Policy
2018-2019 Reviewed for Transportation Research Record
2018 Reviewed for Energy, Sustainability, and Society
2018 Reviewed for PLOS Medicine
2017 Reviewed for Sustainable Cities and Society

Professional Society Memberships

AAAS	American Association for the Advancement of Science	2017-2019
AEESP	Association of Environmental Engineering and Science Professors	2018-2019
AGU	American Geophysical Union	2019
EWSN	Earth Science Women's Network	2015-2019
USAAE	United States Association for Energy Economics	2017-2019

AWARDS AND HONORS

2019 Honorable Mention for Scientific and Technological Achievement Award (STAA) from the EPA
2019 Superior Performance Award from EPA Office of Research and Development
2018 Superior Performance Award from EPA Office of Research and Development
2017 Superior Performance Award from EPA Office of Research and Development
2013 Best Air Quality Talk at the Graduate Engineering Annual Research Symposium at the University of Colorado
2011 First Place Energy Policy Poster at the Energy Frontiers Conference at the University of Colorado

ONLINE PROFILES

Personal Webpage Kristen-BrownPhD.com
Google Scholar scholar.google.com/citations?user=aYAmUNwAAAAJ
Research Gate https://www.researchgate.net/profile/Kristen_Brown19
Publons <https://publons.com/a/1391355/>
LinkedIn www.linkedin.com/in/kristen-brown-2bb01377
SciComm Blog <https://envirobites.org/author/kbrown/>