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Highlights

Current research interests:

- Transport of humans and resources in the Earth-Moon-Mars vicinity
- Space geoengineering using asteroid or lunar dust sun shield at the Earth-Sun L1 point
- Modeling of large-scale space infrastructure systems on the Moon and elsewhere
- Life-cycle energy and cost analysis of space solar power systems
- Development of a generalized framework for sustainable space resource assessment

Self-published a 2016 report on a large-scale Earth-Mars human transport system. Presented a revised version of the analysis of SpaceX's Mars Interplanetary Transport System at the *67th International Astronautical Congress* in Guadalajara, Mexico, in September 2016. Since 2015, has attended five other space conferences/workshops, submitted seven proposals for space research funding to NASA and private entities, and written eight blog posts at Move-Forward.com on space transportation. Featured in Realtor.com article about living on Mars.

Staff Scientist at Lawrence Berkeley National Laboratory (LBNL) since 2009. Have received nearly $10 million in research funding from federal, state and local governmental organizations, nonprofit foundations and universities over the past seven years. Have published 42 peer-reviewed publications since 1995, totaling 1,633 citations and h-index of 20, including two papers in *Nature Climate Change* in 2015 (on shared electric autonomous vehicles) and 2016 (on U.S. climate change commitments). Have published 102 other publications, blogs and interviews, given 134 professional presentations, delivered 16 guest lectures, and taught three semester-length courses, including "Energy and Society" in 2016 at the University of California, Berkeley.

Appointments and Employment

Current

Energy and Resources Group, University of California, Berkeley, November 2016-present
Affiliated faculty member. Interact with students and faculty, occasionally serve on committees.

Emerging Futures, LLC, Berkeley, CA, June 2016-present

Founder, CEO and Chief Scientist. Currently building a business portfolio and pursuing funding in a number of project areas, including space geoengineering, lunar-based laser propulsion, space solar power, and space resource assessment modeling capabilities.

Lawrence Berkeley National Laboratory, Berkeley, CA, 2009-present
Sustainable Energy Systems Group, Sustainable Energy and Environmental Systems Department, Energy Analysis and Environmental Impacts Division
Staff Scientist, December 2011-present; Project Scientist, October 2009-November 2011
Current and pending projects:

1. **Long-term Viability of Natural Gas Storage Facilities** (California Council on Science and Technology): Lead researcher on the future of natural gas storage infrastructure requirements under State greenhouse gas policy (anticipated December 2016).
2. **Life-cycle Energy and Economic Analysis of an H_2O/CO_2-based Photoelectrochemical Fuel Plant**, California Institute of Technology (anticipated December 2016).
3. **SMART Mobility: Analysis and Vehicle Systems** (U.S. Department of Energy, Vehicle Technologies Office): Analysis of automated electric shared vehicle fleets.
4. **Joint Center for Artificial Photosynthesis** (a U.S. DOE energy hub): Leading development of integrated models of full-scale (1 GW) photo-electrochemical fuel plants, including life-cycle energy, materials and cost analysis, and analysis of human and environmental risks.
5. **Low Energy, Low Cost Forward Osmosis for Water Treatment using Geothermal Heat:** Key personnel on a U.S. Department of Energy, Geothermal Technologies Office project.
6. **Building a Healthier and More Robust Future: 2050 Low Carbon Energy Scenarios for California:** Co-Principal Investigator of a California Energy Commission-sponsored research project in collaboration with University of California, Berkeley.
7. **Pathways to More Cost-Effective ZNE Homes:** Co-Principal Investigator of a California Energy Commission-sponsored research project.

Bay Area Air Quality Management District, San Francisco, CA, 2015-present
Independent consultant providing greenhouse gas inventory analysis and projections for the Bay Area, using the California LBNL Greenhouse Gas Analysis of Policies Spreadsheet (CALGAPS) model that I developed.

Past

California Council on Science and Technology, Riverside and Sacramento, CA, 2009-2012
Committee member and independent consultant. Major author of *California's Energy Future: A View to 2050*, and lead author of three follow-up reports.

The Climate Group, London, UK, 2009
Independent consultant for Smart2020 project.

Google.org, San Francisco and Mountain View, CA, 2008-2009
Climate and Energy Technology Manager, RE<C ("Renewable Electricity Cheaper Than Coal") Initiative. Lead author of *Clean Energy 2030,* a proposal to reduce U.S. CO_2 emissions.

Environmental Defense Fund, New York, Oakland and San Francisco, 2005-2008

High Meadows Scientist, Office of Science and Policy. Technical and policy analysis of low-carbon energy technologies, and technical editor of *Earth: The Sequel* about the clean tech sector.

Princeton University, Princeton, NJ, 2001-2005
Research Staff Member, Princeton Environmental Institute. Ocean carbon cycle modeling, wind energy/storage economic analysis, and technical support for Pacala and Socolow wedge paper.

NASA Ames Research Center, Moffett Field, CA, 1999-2001
National Research Council Associate, Earth Sciences Division. Calibration and analysis of laser infrared spectrometry measuring N_2O and CH_4 atmospheric trace gases for ozone loss research.

Education

Ph.D., Chemistry, University of California, Berkeley, 1999. Thesis: *Femtosecond photoelectron spectroscopy: A new tool for the study of anion dynamics*.

B.S., Chemistry and Physics, Haverford College, 1993 *Summa cum laude*

Teaching experience

Taught three semester-length courses and delivered 16 guest lectures since 2001

University of California, Berkeley, 2013-2016
Lecturer, Energy and Resources Group

- ER C100 (cross-listed as Public Policy C184): Energy and Society, June-August 2016

Guest lecturer for Prof. Susan Shaheen, Civil and Environmental Engineering

- CEE256: Transportation Sustainability, "The future of transportation with autonomous taxis," 25 February 2016.

Guest lecturer for Prof. Alexis Bell, Department of Chemical Engineering

- ChE90: Science and Engineering of Sustainable Energy, "Greenhouse gas policy impacts in California," 21 April 2016.
- ChE90: Science and Engineering of Sustainable Energy, "Modeling comprehensive greenhouse gas policy impacts in California," 23 April 2015.

Guest lecturer for Prof. David Dornfeld (deceased), Department of Mechanical Engineering

- ME290I: Sustainable Manufacturing, "Reducing GHG emissions: Modeling a GW-scale solar hydrogen plant based on artificial photosynthesis," 10 March 2015.
- ME290I: Sustainable Manufacturing, "Reducing GHG emissions: Modeling a GW-scale solar hydrogen plant based on artificial photosynthesis," 11 March 2014.

Guest lecturer for Prof. Larry Dale, Energy and Resources Group

- ER290: Climate Change Adaptation and Mitigation, "Greenhouse gas reduction strategies," 16 October 2014.
- ER290: Energy and Development, "Low-carbon energy challenges," 26 February 2013.

Joint Center for Artificial Photosynthesis, Berkeley, CA, 2014

Four guest lectures for 2014 Solar-Fuels Summer School: "Sustainability and Technoeconomic Analysis," 16-20 June.

Princeton University, Princeton, NJ, 2002, 2004
Developed and twice taught "Rethinking Global Warming" (WRI 160), a 14-week, topic-based freshman English course.

Haverford College, Chemistry Department, 2001
Guest lectured on ozone depletion and global warming for two classes of a non-science chemistry course.

Crested Butte Academy, Crested Butte, CO, 2001
Taught high school atmospheric science, held faculty colloquium, and delivered public lecture in a four-day Residency Program.

University of California, Berkeley, Department of Chemistry, 1993-1994
Teaching assistant for undergraduate general chemistry, and graduate-level chemical physics.

Funding

Submitted

1. **Lunar Light: Laser-based launch and propulsion system on the Moon**, NASA Innovative Advanced Concepts, invited for Step B submission, $125,000, November 2016
2. **Photo-electrochemical device for producing hydrogen and oxygen from lunar polar water and sunlight**, WayPaver Foundation, $100,000, October 2016
3. **Thermal management solutions for CO_2 reductions system designed for operation on the Martian surface**, Opus 12, $28,000, October 2016
4. **Prospective life-cycle energy and preliminary technoeconomic scale-up analyses of a space solar power system**, California Institute of Technology, $140,000, September 2016

Rejected

5. **SunShade: Lagrange-point Dust Cloud System Architecture to Reduce Sunlight on Earth for Climate Change Mitigation**, NASA Innovative Advanced Concepts, Step A (no funding requested), October 2016
6. **Life-cycle energy and mass analysis of propellant alternatives produced using indigenous resources on Mars**, NASA Innovative Advanced Concepts, Step A (no funding requested), October 2015
7. **A Survey-Informed Assessment of Potential Impacts of Near-Term Cost and Performance Progress in Commercial Space Technology**, NASA Economic Research for Space Development, $99,950, August 2015

Awarded

Have received nearly $10 million in research funding over the past seven years at LBNL:

1. **Long-term Viability of Natural Gas Storage Facilities,** California Council on Science and Technology, $425,000, December 2016-December 2017 (expected)
2. **Life-cycle energy and economic analysis of an H_2O/CO_2-based photoelectrochemical fuel plant**, California Institute of Technology, $60,000, December 2016-November 2017 (expected)
3. **Smart Mobility: Connected and Automated Vehicles**, U.S. Department of Energy (DOE) Vehicles Technology Office, $82,000, November 2016-September 2017 (uncertain)
4. **Pathways to More Cost-Effective ZNE Homes**, California Energy Commission (CEC), $1,000,000, November 2016-October 2018
5. **Low Energy, Low Cost Forward Osmosis for Geothermal Water Treatment**, DOE Geothermal Technologies Office, $125,000, October 2015-September 2017 (uncertain)
6. **Modeling the Impact of Wildfires on California's Transmission and Distribution Grid**, CEC, $500,000, March 2016-December 2018 (I have since dropped this project)
7. **Scale-up and life-cycle assessment of artificial photosynthesis CO_2 reduction pathway large-scale prototypes**, DOE, $200,000, October 2015-September 2017
8. **U.S.-China Climate Change Announcement and Pledges**, Energy Foundation, $162,500, August 2015-June 2016
9. **Building a Healthier and More Robust Future: 2050 Low Carbon Energy Scenarios for California,** CEC, $700,000, July 2015-June 2017
10. **California LBNL GHG and criteria pollutant Analysis of Policies Spreadsheet**, Bay Area Air Quality Management District, $20,000, April 2015-December 2016
11. **Scale-up and life-cycle assessment of an artificial photosynthesis hydrogen production cell prototype, including analysis of human risks, environmental risks, and sustainability**, DOE, $300,000, September 2013-September 2015
12. **Synthesis of bio-inspired adaptive membranes for direct capture of CO_2 from biogas**, LBNL Lab-Directed Research & Development, $30,000, October 2014-September 2015
13. **Quadrennial Technology Review**, DOE Office of the Under Secretary for Science and Energy, $369,809, September 2014-August 2015
14. **Quadrennial Energy Review**, DOE Office of Energy Policy and Systems Analysis, $25,000, July-September 2014
15. **Greenhouse Gas Policy Analysis Tool Development**, Energy & Environmental Economics, Inc., $99,800, March-December 2014
16. **Electricity Choices**, Mark Heising Foundation, $3,000, July-December 2013
17. **Strategies for Sustainable and Cost-effective Scale-up of Second-Life, Recycling and Disposal Pathways for PEV Battery Packs**, CEC, $250,290 plus $51,000 in match funding, June 2013-March 2015
18. **Estimating Policy-Driven GHG Trajectories in California,** California Air Resources Board, $56,977, April 2013-July 2014
19. **Emerging Technology Assessment Team,** LBNL Lab-Directed Research & Development, $1,523,000, October 2011-September 2013
20. **Appliance Standards Analysis,** DOE Energy Efficiency and Renewable Energy, $3,245,000, October 2010-September 2014
21. **California's Carbon Challenge,** CEC, $635,000, January 2010-August 2013

Articles in preparation or under review

1. Coignard, J., S. Saxena, **J. Greenblatt**, D. Wang, "Clean Vehicles as an Enabler for a Clean Electricity Grid," in review, *Science*, 8 November 2016.

2. **Greenblatt, J. B.**, et al. "The future of low-carbon electricity." Review article in preparation for *Annual Review of Environment and Resources,* to be published in October 2017.

3. **Greenblatt, J. B.,** "Photo-electrochemical hydrogen plants at scale: A life-cycle net energy assessment," In: *Integrated Solar Fuel Generators*, edited by Ian Sharp, Hans Joachim Lewerenz, and Harry Atwater, Royal Society of Chemistry, in review, November 2016.

Articles in peer-reviewed publications[1]

Citation indices as of October 2, 2016
(https://scholar.google.com/citations?user=5iaXyagAAAAJ&hl=en):
Total publications: 42. Total citations: 1,633. H-index: 20, i10-index: 32.
Top six cited publications (see below): 20, 38, 41, 37, 26, 21

1. Yeh, S., C. Yang, M. Gibbs, D. Roland-Holst, **J. Greenblatt,** A. Mahone, D. Wei, G. Brinkman, J. Cunningham, A. Eggert, B. Haley, E. Hart, J. Williams, "A Modeling Comparison of Deep Greenhouse Gas Emissions Reduction Scenarios by 2030 in California," *Energy Strategy Reviews 13* (2016) 169-180. http://dx.doi.org/10.1016/j.esr.2016.10.001.

2. **Greenblatt, J. B.**, M. Wei, "Assessment of the climate commitments and additional mitigation policies of the United States," *Nature Climate Change*, 26 September 2016. http://dx.doi.org/10.1038/nclimate3125. News coverage in Washington Post, Associated Press, Science, Wired, USA Today among others. As of September 28, 2016, in the 98th percentile of the 95,062 tracked articles of a similar age in all journals.

3. Sathre, R., **J. B. Greenblatt,** K. Walczak, I. D. Sharp, J. C. Stevens, J. W. Ager III, F. A. Houle, 2016. "Opportunities to improve the net energy performance of photoelectrochemical water-splitting technology," *Energy and Environmental Science*, *9*: 803-819. DOI: 10.1039/C5EE03040D.

4. Sathre, R., H. Breunig, **J. Greenblatt**, P. Larsen, E. Masanet, T. McKone, N. Quinn, C. Scown, 2016. "Spatially-explicit water balance implications of carbon capture and sequestration," *Environmental Modelling & Software 75* (C), 153-162. DOI: 10.1016/j.envsoft.2015.10.011.

[1] When I got married in 2000, I changed my name from Benjamin Jefferys Greenblatt to Jeffery Buyers Greenblatt. Publications earlier than 2001 use my old name.

5. **Greenblatt, J. B.**, S. Shaheen, 2015. "On-Demand Mobility, Autonomous Vehicles, and Environmental Impacts," *Current Sustainable/Renewable Energy Reports*, 2: 74–81. DOI 10.1007/s40518-015-0038-5.

6. **Greenblatt, J. B.**, S. Saxena, 2015. "Autonomous taxis could greatly reduce greenhouse-gas emissions of US light-duty vehicles," *Nature Climate Change,* 5: 860–863, 6 July. DOI 10.1038/nclimate2685. 900+ page views and 180+ news articles after two weeks of publication. 2,764 page views as of September 19, 2016. In the 99th percentile (ranked 317th) of the 193,077 tracked articles of a similar age in all journals, and in the 97th percentile (ranked 2nd) of the 91 tracked articles of a similar age in *Nature Climate Change*. Cited by 18 as of October 2, 2016. Related publications:
   - Nature video: http://bcove.me/rqju2cee
   - Nature News & Views: http://www.nature.com/nclimate/journal/vaop/ncurrent/full/nclimate2700.html
   - Interview on The Naked Scientists: http://www.thenakedscientists.com/HTML/specials/show/20150713-1/

7. Morrison, G. M., S. L. Yeh, A. R. Eggert, C. C. Yang, J. H. Nelson, **J. B. Greenblatt**, R. Isaac, M. Jacobson, J. Johnston, D. M. Kammen, A. Mileva, J. Moore, D. Roland-Holst, M. Wei, J. P. Weyant, J. H. Williams, R. Williams, C. B. Zapata, 2015. "Comparison of Low-Carbon Pathways for California," *Climatic Change*, DOI 10.1007/s10584-015-1403-5.

8. Yang, H.-C., S. M. Donovan, S. J. Young, **J. B. Greenblatt,** and L.-B. Desroches, 2015. "Assessment of household appliance surveys collected with Amazon Mechanical Turk," *Energy Efficiency*, 4 March. http://link.springer.com/article/10.1007%2Fs12053-015-9334-6.

9. DeForest, N., A. Shehabi, J. O'Donnell, G. Garcia, **J. Greenblatt,** E. S. Lee, S. Selkowitz, and D. J. Milliron, 2015, "United States energy and CO_2 savings potential from deployment of near-infrared electrochromic window glazings." *Building and Environment*, 89: 107–117. http://dx.doi.org/10.1016/j.buildenv.2015.02.021.

10. **Greenblatt, J. B.,** 2015. "Modeling California policy impacts on greenhouse gas emissions," *Energy Policy*, 78: 158–172, 14 January. DOI: 10.1016/j.enpol.2014.12.024.

11. L.-B. Desroches, **J. B. Greenblatt,** S. Pratt, H. Willem, E. Claybaugh, B. Beraki, M. Nagaraju, S.K. Price, S.J. Young, S.M. Donovan. 2014. "Video game console usage and U.S. national energy consumption: Results from a field-metering study," *Energy Efficiency*, 8 (3), 509-526, 23 October. DOI 10.1007/s12053-014-9308-0.

12. Balbus, J. M., **J. B. Greenblatt,** R. Chari, D. Millstein, and K. L. Ebi, 2014. "A wedge-based approach to estimating health co-benefits of climate change mitigation activities in the United States," *Climatic Change*, 127 (2) 199-210. DOI: 10.1007/s10584-014-1262-5.

13. Sathre, R., C. D. Scown, W. R. Morrow III, J. C. Stevens, Ian D. Sharp, Joel W. Ager, K. Walczak, F. A. Houle, and **J. B. Greenblatt,** 2014, "Life-cycle net energy assessment of large-scale hydrogen production via photo-electrochemical water splitting." *Energy and*

Environmental Science, *7*(10), 3264-3278, 16 June. doi:10.1039/C4EE01019A. (Cited by 42 as of September 19, 2016).

14. Shehabi, A., N. DeForest, A. McNeil, E. Masanet, **J. Greenblatt,** E. S Lee, G. Masson, B. A. Helms, D. J. Milliron, 2013, "US energy savings potential from dynamic daylighting control glazings," *Energy and Buildings*, 66: 415-423, doi:10.1016/j.enbuild.2013.07.013.

15. Donovan, S. M., L.-B. Desroches, M. F. Pirie and **J. B. Greenblatt**, 2013, "Determination of Accurate Television Usage Profiles: A U.S. case study." *Energy Efficiency*, doi:10.1007/s12053-013-9222-x (Published online 16 July 2013).

16. Zhai, P., S. Haussener, J. Ager, R. Sathre, K. Walczak, **J. Greenblatt**, and T. McKone, 2013, "Net primary energy balance of a solar-driven photo-electrochemical water-splitting device," *Energy and Environmental Science 6*, 2380-2389. http://dx.doi.org/10.1039/C3EE40880A.

17. Wei, M., J. H. Nelson, **J. B. Greenblatt,** A. Mileva, J. Johnston, M. Ting, C. Yang, C. Jones, J. E. McMahon and D. M. Kammen, 2013, "Deep Carbon Reductions in California Require Electrification and Integration Across Economic Sectors," *Environ. Res. Lett. 8*: 014038. (Cited by 35 as of September 19, 2016).

18. DeForest, N., A. Shehabi, G. Garcia, **J. Greenblatt**, E. Masanet, E. S. Lee, S. Selkowitz, and D. J. Milliron, 2013, "Regional performance targets for transparent near-infrared switching electrochromic window glazings." *Building and Environment, 61*: 160–168, http://dx.doi.org/10.1016/j.buildenv.2012.12.004.

19. **Greenblatt, J. B.,** A. Hopkins, V. Letschert, and M. Blasnik, 2012, "Energy use of U.S. residential refrigerators and freezers: function derivation based on household and climate characteristics." *Energy Efficiency*, published online 9 June, http://dx.doi.org/10.1007/s12053-012-9158-6.

20. **Greenblatt, J. B.,** S. Succar, R. H. Williams, D. C. Denkenberger, and R. H. Socolow, 2007, "Baseload wind energy: Modeling the competition between gas turbines and compressed air energy storage for supplemental generation," *Energy Policy, 35* (3), 1474, http://dx.doi.org/10.1016/j.enpol.2006.03.023. (Cited by 226 as of October 2, 2016)

21. Socolow, R., R. Hotinski, **J. B. Greenblatt**, and S. Pacala, 2004, "Solving the climate problem: Technologies available to curb CO_2 emissions," *Environment, 46* (10), 8-19. (Cited by 95 as of October 2, 2016)

22. Jost, H.-J., M. Loewenstein, **J. B Greenblatt,** J. R Podolske, T. P. Bui, D. F Hurst, J. W Elkins, R. L Herman, C. R Webster, S. M Schauffler, E. L Atlas, P. A Newman, L. R Lait, S. C Wofsy, 2002, "Mixing events revealed by anomalous tracer relationships in the Arctic vortex during winter 1999/2000," *J. Geophys. Res., 107* (D24), ACL 22-1-ACL 22-9, 28 December. doi: 10.1029/2002JD002380.

23. **Greenblatt, J. B.,** et al., 2002, "Tracer-based determination of vortex descent in the 1999-2000 Arctic winter," *J. Geophys. Res., 107* (D20), 8279, doi:10.1029/2001JD000937.

24. **Greenblatt, J. B.,** et al., 2002, "Defining the polar vortex edge from an N_2O:potential temperature correlation," *J. Geophys. Res., 107* (D20), 8268, doi:10.1029/2001JD000575, 2002.

25. Hurst, D. F., S. M. Schauffler, **J. B. Greenblatt**, et al., 2002, "Construction of unified, high-resolution nitrous oxide data set for ER-2 flights during SOLVE*," J. Geophys. Res., 107* (D20), 8271, doi:10.1029/2001JD000417.

26. Rex, M., R., … **J. B. Greenblatt** (position 26), et al., 2002, "Chemical depletion of Arctic ozone in winter 1999/2000," *J. Geophys. Res., 107* (D20), 8276, doi:10.1029/2001JD000533. (Cited by 97 as of October 2, 2016)

27. Drdla, K., B. W. Gandrud, D. Baumgardner, J. C. Wilson, T. P. Bui, D. Hurst, S. M. Schauffler, H. Jost, **J. B. Greenblatt,** C. R. Webster, 2002. "Evidence for the widespread presence of liquid-phase particles during the 1999–2000 Arctic winter," *J. Geophys. Res., 107* (D5), SOL 61-1-SOL 61-17, 16 March, doi: 10.1029/2001JD001127.

28. Gao, R. S., ... **J. B. Greenblatt** (position 17), et al., 2001, "Observational evidence for the role of denitrification in Arctic stratospheric ozone loss," *Geophys. Res. Lett., 28,* 2879-2882.

29. **Greenblatt, B. J.,** M. T. Zanni, and D. M. Neumark, 2000, "Femtosecond photoelectron spectroscopy of $I_2^-(CO_2)_n$ clusters (n=4, 6, 9, 12, 14, 16)," *J. Chem. Phys., 112,* 601.

30. **Greenblatt, B. J.,** M. T. Zanni, and D. M. Neumark, 1999, "Femtosecond photoelectron spectroscopy of $I_2^-(Ar)_n$ clusters (n=6, 9, 12, 16, 20)," *J. Chem. Phys., 111*, 10566.

31. Zanni, M. T., **B. J. Greenblatt,** A. V. Davis and D. M. Neumark, 1999, "Photodissociation studies of I_3^- using photoelectron spectroscopy," *J. Chem. Phys., 111,* 2991.

32. Zanni, M. T., V. S. Batista, **B. J. Greenblatt,** W. H. Miller and D. M. Neumark, 1999, "Femtosecond photoelectron spectroscopy of the I_2^- anion: Characterization of the A' excited state," *J. Chem. Phys., 110,* 3748. (Cited by 64 as of March 5, 2015)

33. Batista, V. S., M. T. Zanni, **B. J. Greenblatt**, D. M. Neumark and W. H. Miller, 1999, "Femtosecond photoelectron spectroscopy of the I_2^- anion: A semiclassical molecular dynamics simulation method," *J. Chem. Phys., 110,* 3736. (Cited by 77 as of March 5, 2015)

34. Zanni, M. T., L. Lehr, **B. J. Greenblatt**, R. Weinkauf and D.M. Neumark, 1999, "Dynamics of charge-transfer-to-solvent precursor states in $I^-(D_2O)_n$ clusters," *Ultrafast Phenomena XI,* edited by T. Elsaesser et al., Springer Series Chem. Phys., 63, 474.

35. Zanni, M. T., **B. J. Greenblatt** and D. M. Neumark, 1998, "Solvent effects of the vibrational frequency of I_2^- in size-selected $I_2^-(Ar)_n$ and $I_2^-(CO_2)_n$ clusters," *J. Chem. Phys., 109*, 9648.

36. Zanni, M. T., **B. J. Greenblatt**, A. V. Davis and D. M. Neumark, 1998, "Photodissociation dynamics of I_3^- using photoelectron spectroscopy," Laser Techniques for State-Selected and State-to-State Chemistry IV, *Proc. SPIE, 3271,* 196.

37. Zanni, M. T., V. S. Batista, **B. J. Greenblatt,** W. H. Miller and D. M. Neumark, 1999, "Femtosecond photoelectron spectroscopy of the I_2^- anion: Characterization of the A' excited state," *J. Chem. Phys., 107*, 7613 (Cited by 101 as of October 2, 2016)

38. **Greenblatt, B. J.,** M. T. Zanni and D. M. Neumark, 1997, "Photodissociation of $I_2^-(Ar)_n$ clusters studied with anion femtosecond photoelectron spectroscopy," *Science, 276*, 1675. (Cited by 146 as of October 2, 2016)

39. **Greenblatt, B. J.,** M. T. Zanni and D. M. Neumark, 1997, "Time-resolved studies of dynamics in molecular and cluster anions," *Faraday Discuss., 108,* 101.

40. Zanni, M. T., T. R. Taylor, **B. J. Greenblatt**, B. Soep and D. M. Neumark, 1997, "Characterization of the I_2^- anion ground state using conventional and femtosecond photoelectron spectroscopy," *J. Chem. Phys., 107*, 7613.

41. **Greenblatt, B. J.,** M. T. Zanni and D. M. Neumark, 1996, "Photodissociation dynamics of the I_2^- anion using femtosecond photoelectron spectroscopy," *Chem. Phys. Lett., 258,* 523. (Cited by 113 as of October 2, 2016)

42. Roelofs, L. D., **B. J. Greenblatt**, and N. Boothe, 1995, "Kinetic prefactors for concerted-mode diffusion: a realistic calculation Au/Au(110)," *Surf. Sci., 334*, 248.

Other publications

Corrections and Errata

1. Balbus, J. M., **J. B. Greenblatt,** R. Chari, D. Millstein, and K. L. Ebi, 2015. "Erratum to: A wedge-based approach to estimating health co-benefits of climate change mitigation activities in the United States," *Climatic Change*, 6 February. DOI: 10.1007/s10584-015-1336-z.

2. **Greenblatt, J. B.,** 2002. "Correction to 'Tracer-based determination of vortex descent in the 1999/2000 Arctic winter' by JB Greenblatt et al.," *Journal of Geophysical Research,,* 107 (D5), SOL 50-1-SOL 50-2, 16 March, doi: 10.1029/2002JD001597.

Book chapters

3. Morrow, W. R. III, **J. B. Greenblatt,** A. Sturges, S. Saxena, A. Gopal, D. Millstein, and N. Shah, "Key factors influencing autonomous vehicles' energy and environmental outcome."

In: *Road Vehicle Automation*, G. Meyer and S. Beiker (eds.), Springer, May 2014. ISBN 978-3-319-05989-1, DOI: 10.1007/978-3-319-05990-7.

4. **Greenblatt, J.,** 2006, "A Vision of U.S. Wedges." In: *Options for Future Climate Policy: Transatlantic Perspectives,* International Network to Advance Climate Talks (INTACT), October.

5. **Greenblatt, J. B.** and J. L. Sarmiento, 2004, "Variability and climate feedback mechanisms in ocean uptake of CO_2." In: *The global carbon cycle: Integrating humans, climate, and the natural world,* C. B. Field and M. R. Raupach, eds., Island Press, Washington, D.C.

Thesis

6. **Greenblatt, B. J.,** 1999, *Femtosecond photoelectron spectroscopy: A New Tool for the Study of Anion Dynamics,* Ph.D. Thesis, University of California, Berkeley.

Reports, white papers and conference proceedings

7. **Greenblatt, J. B.,** 2016. "Energy and Resource Analysis of a Large-Scale Earth-Mars Human Transport System," Paper number IAC-16,D2,8-A5.4,3,x34614, *67th International Astronautical Congress,* Guadalajara, Mexico, 26-30 September. Official weblink pending; download at http://tinyurl.com/IACSpaceXpaper.

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Professional presentations

Upcoming

1. "Satisfying SB32: What will it take to reduce California's greenhouse gas emissions forty percent below 1990 levels by 2030?" Panel participant, *Looking Forward to the Next Ten Years of Climate Law and Policy in California*, Environmental Law Society, University of California, Davis, 10 March 2017.

2. "Assessment of the climate commitments and additional mitigation policies of the United States" (working title), Energy Analysis and Environmental Impacts Division Review, Lawrence Berkeley National Laboratory, 10 January 2017.

Completed

1. Conference participant, *Policies for the Three Transportation Revolutions of Shared, Autonomous and Electrified Vehicles*, University of California, Davis, 15-16 November 2016.

2. "Assessment of the climate commitments and additional mitigation policies of the United States." Invited presentation to the Global Warming Committee of the National Association of Clean Air Agencies, 26 October 2016.

3. "Energy and resource analysis of a large-scale Earth-Mars human transport system." Invited presentation for Session D2.8-A5.4. Space Transportation Solutions for Deep Space Missions, *67th International Astronautical Congress*, Guadalajara, Mexico, 30 September 2016.

4. "Mars resource extraction and transportation to and on Mars." Presentation at *Mars City Design Power Lab* workshop, Mars City Foundation, University of Southern California, Los Angeles, CA, 21 September 2016. http://www.marscityfoundation.org/#!workshop/c1han.

5. "The Trifecta: Shared, Automated, and Electrified." Panel discussion with Prof. Susan Shaheen, moderator. *Bridge SF 2016*, David Brower Center, Berkeley, CA, 8 September 2016. https://bridgesf.sched.org/event/5xEn/panel-the-trifecta-shared-automated-and-electrified.

6. "Balance of system considerations in Mars ISRU fuel/oxygen production," invited speaker and workshop participant, *Addressing the Mars ISRU Challenge: Production of Oxygen and Fuel from CO_2 using Sunlight,* Keck Institute for Space Studies, Caltech, Pasadena, CA, 29 June 2016. http://kiss.caltech.edu/new_website/workshops/isru/isru.html.

7. "Technologies needed to achieve California's 2030 and 2050 greenhouse gas emission goals." Presentation to Energy and Environment committees, *Silicon Valley Leadership Group*, San Jose, 21 April 2016.

8. "On-demand mobility: Enhancing energy-efficiency and adoption." Workshop participant, KAPSARC and Strategic Vision, San Francisco, 31 March 2016. Pre-workshop meeting to *Drivers of Transportation Fuel Demand*, San Francisco, 1 April 2016. https://www.kapsarc.org/workshops/transportation-series/.

9. "Parametric Life-Cycle Analysis of Solar Fuels Systems," Poster presentation, *Joint Center for Artificial Photosynthesis All-Hands Meeting 2016*, Asilomar Conference Center, Pacific Grove, CA, 23 March 2016.

10. "Bringing Star Wars Down to Earth: Energy and Resource Impacts of Real Space Technologies," Energy Technologies Area seminar, Lawrence Berkeley National Laboratory, 11 March 2016.

11. "National Greenhouse Gas Reduction Commitments Under the Paris Agreement," Energy Technologies Area Seminar (with Taryn Fransen, World Resources Institute), Lawrence Berkeley National Laboratory, 24 February 2016.

12. "The Future of Transportation with Autonomous Taxis," Autonomous Vehicles Panel Symposium, *New York University School of Law*, 25 January 2016.

13. "The Future of Transportation with Autonomous Taxis," Presentation to *Natural Resources Defense Council* staff, San Francisco, CA, 19 January 2016.

14. "Analysis of the United States' Intended Nationally Determined Contributions for Reducing Greenhouse Gas Emissions" (Lynn Price presented in my absence), *21st Conference of the Parties (COP-21) Side Event*, United National Framework Convention on Climate Change, Paris, France, 1 December 2015.

15. "The Future of Transportation with Autonomous Taxis," *Automotive Tech.AD Detroit 2015*, Detroit, MI, 16-17 November 2015.

16. "Life-cycle Assessment of Large-scale Artificial Photosynthesis Systems," Presentation to Sempra Energy, Joint Center for Artificial Photosynthesis, Caltech, Pasadena, CA, 13 November 2015.

17. "Shared Autonomy: The Future of Transportation," Contribution to the *Disruptive Innovation Festival*, Ellen MacArthur Foundation, 9 November 2015. https://www.thinkdif.co/emf-stage/shared-autonomy-the-future-of-transportation.

18. "The Future of Personal Mobility: Shared, Electric, and Autonomous Vehicles," Webinar, *ClimateWorks Oil Transportation Research and Intelligence Network*, 6 November.

19. "Alternative Food Production: Human Nutrition From Inedible Materials" (co-presented with Hanna Breunig), Big Top Tent contribution to the *Disruptive Innovation Festival*, Ellen MacArthur Foundation, 2 November 2015. https://www.thinkdif.co/big-top-tent-sessions/alternative-food-production.

20. "Autonomous Vehicles – a game changer in transportation's environmental impacts?" Co-author with Bill Morrow, presenter, American Center for Life Cycle Assessment, LCA XV Conference, Vancouver, BC, Canada, 6-8 October 2015.

21. "Economic and greenhouse gas benefits of autonomous taxis," Presentation to Princeton students and alumni, Lawrence Berkeley National Laboratory, 19 August 2015.

22. "Life-cycle assessment of large-scale artificial photosynthesis systems," Presentation to Panasonic, Joint Center for Artificial Photosynthesis, Caltech, Pasadena, CA, 22 July 2015.

23. "Economic and greenhouse gas benefits of autonomous taxis," GoogleX, Mountain View, CA, 21 July 2015.

24. "Economic and greenhouse gas benefits of autonomous taxis," Silicon Valley Autonomous Vehicle Enthusiasts, Nissan Research Center, Sunnyvale, CA, 15 July 2015. Audio recording at https://itunes.apple.com/us/podcast/driving-innovation-speaker/id672410323?mt=2.

25. "Modeling California policy impacts on greenhouse gas emissions," Stanford Energy Seminar, Precourt Institute for Energy, Stanford University, Stanford, CA, 1 June 2015.

26. "Life-Cycle Net Energy Assessment of Large-Scale Hydrogen Production via Photoelectrochemical Water Splitting," *227th Electrochemical Society (ECS) Meeting*, Chicago, IL, 27 May 2015. http://www.electrochem.org/meetings/biannual/227.

27. "Quadrennial Technology Review Chapter 12: Integrated Assessment," Presentation to staff in the Executive Office of the President and Office of Management and Budget, Eisenhower Executive Office Building, Washington, DC, 28 April 2015.

28. "California policy impacts on greenhouse gas emissions through 2050," Informational Hearing on Climate Change, California State Assembly Budget Subcommittee No. 3: Resources and Transportation, Sacramento, CA, 8 April 2014.

29. "Quadrennial Technology Review Chapter 12: Integrated Assessment," Presentation to Ernest Moniz, Secretary of Energy, U.S. Department of Energy, Washington, DC, 7 April 2015.

30. "Early Technology Appraisal at the Joint Center for Artificial Photosynthesis," *Net Energy Analysis Workshop*, Global Climate & Energy Project, Stanford University, Stanford, CA, 1 April 2015. http://gcep.stanford.edu/events/workshops_NEA2015.html

31. "Quadrennial Technology Review Chapter 12: Integrated Assessment," Presentation to Lynn Orr, Undersecretary for Science and Energy and Michael Knotek, Deputy Undersecretary for Science and Energy, U.S. Department of Energy, Washington, DC, 19 March 2015.

32. "Net energy analysis of large-scale (1 GW) photoelectrochemical water-splitting with solar concentration and III-V active materials," All-Hands Meeting, Joint Center for Artificial Photosynthesis, Pacific Grove, CA, 11 March 2015.

33. "Quadrennial Technology Review-2015. Chapter 12: Integrated Analysis," Public Webinar, U.S. Department of Energy, Washington, DC, 4 March 2015.

34. "Modeling California policy impacts on greenhouse gas emissions." Presentation at California Climate Policy Modeling Forum, University of California, Davis, 23 February 2015.

35. "Life-cycle net energy assessment of large-scale hydrogen production via photoelectrochemical water splitting." Oral presentation, 20th International Conference on Photochemical Conversion and Storage of Solar Energy (IPS-20), Berlin, Germany, 28 July 2014.

36. "California PATHWAYS industrial module and non-energy greenhouse gases." Briefing for California Interagency Review Team, Energy and Environmental Economics, Inc., San Francisco, 17 July 2014.

37. "Modeling California policy impacts on greenhouse gas emissions." Briefing for Natural Resources Defense Council, San Francisco, 17 July 2014.

38. "Modeling California policy impacts on greenhouse gas emissions." Presentation to Silicon Valley Leadership Group, SRI International, Menlo Park, CA, 16 July 2014.

39. "California policy impacts on future greenhouse gas emissions (and related EETD activities)." Briefing for Commissioner David Hochschild, California Energy Commission, Lawrence Berkeley National Laboratory, 1 July 2014.

40. "Modeling California policy impacts on greenhouse gas emissions." Briefing for California Interagency Review Team, Energy and Environmental Economics, Inc., San Francisco, 12 June 2014.

41. “Modeling impacts of California policies on greenhouse gas emissions.” Briefing for Hon. Jennifer Granholm, former Governor of Michigan and currently Distinguished Practitioner of Law and Policy at the Goldman School of Public Policy, UC Berkeley, Lawrence Berkeley National Laboratory, 23 May 2014.

42. “Anticipating and Evaluating Pathways to Low-Carbon Economies.” Presentation to Venkat Narayanamurti, Harvard University, EETD Distinguished Lecture Briefing, Lawrence Berkeley National Laboratory, 2 May 2014.

43. “Anticipating and Evaluating Pathways to Low-Carbon Economies.” Presentation to Earth Sciences Division, Lawrence Berkeley National Laboratory, 21 April 2014.

44. “Scale-up analysis of a GW solar fuels plant.” Oral presentation at the DOE 2014 Site Review, Joint Center for Artificial Photosynthesis, California Institute of Technology, Pasadena, CA, 15 April 2014.

45. “Life-cycle net energy assessment of large-scale hydrogen production via photoelectrochemical water-splitting.” Poster presentation (with co-authors) at the DOE 2014 Site Review, Joint Center for Artificial Photosynthesis, California Institute of Technology, Pasadena, CA, 15 April 2014.

46. “Anticipating and Evaluating Pathways to Low-Carbon Economies.” Keynote presentation, DOE 2014 Annual Review, Environmental Energy Technologies Division, Lawrence Berkeley National Laboratory, 8 April 2014.

47. “Modeling impacts of California policies on greenhouse gas emissions.” Briefing for Hermann Tribukait Vasconcelos (advisor to Mexican government), Lawrence Berkeley National Laboratory, 27 March 2014.

48. “Modeling impacts of California policies on greenhouse gas emissions.” Presentation to California Assemblymember Rob Bonta, Lawrence Berkeley National Laboratory, 20 March 2014.

49. “Energy and environmental implications of full-scale solar hydrogen systems based on artificial photosynthesis.” Presentation to Global Climate and Energy Program, Stanford University, 14 March 2014.

50. “Scale-up analysis of a GW solar fuels plant.” Presentation to Scientific Advisory Board, Joint Center for Artificial Photosynthesis, Lawrence Berkeley National Laboratory, 3 March 2014.

51. “Beyond prototypes: Evaluation of a GW solar fuels plant.” All-hands meeting, Joint Center for Artificial Photosynthesis, Pacific Grove, CA, 21 February 2014.

52. "The Future of Fuels." Session: *Is It Possible to Reduce 80% of Greenhouse Gas Emissions from Energy by 2050?*, AAAS Conference, Chicago, 15 February 2014. https://aaas.confex.com/aaas/2014/webprogram/Session7237.html.

53. "Moving to a low-carbon economy." Panelist, Climate Readiness Summit, Climate Readiness Institute, Berkeley, CA, 11 February 2014.

54. "Energy and environmental implications of full-scale artificial photosynthesis (AP) systems for hydrogen production." Presentation to Strategic Advisory Board, Joint Center for Artificial Photosynthesis, California Institute of Technology, Pasadena, 7 February 2014.

55. "Energy and environmental implications of full-scale artificial photosynthesis (AP) systems for hydrogen production." JCAP Collaboration, Joint Center for Artificial Photosynthesis, Lawrence Berkeley National Laboratory, 17 January 2014.

56. "California's Carbon Challenge: Modeling GHG emissions to 2050" (co-presented with Jimmy Nelson). California Climate Policy Modeling Forum, University of California, Davis, 16-17 December 2013.

57. "The California GHG Inventory Spreadsheet Model." California Climate Policy Modeling Forum, University of California, Davis, 16-17 December 2013.

58. "California GHG Inventory Spreadsheet Model Results." Briefing for staff at Natural Resources Defense Council, San Francisco, CA, 15 November 2013.

59. "California GHG Inventory Spreadsheet Model Results." Briefing for staff at Climate Policy Initiative, San Francisco, CA, 15 November 2013.

60. "Energy and environmental implications of full-scale artificial photosynthesis systems." Industry Day presentation, Joint Center for Artificial Photosynthesis, California Institute of Technology, Pasadena, CA, 7 November 2013.

61. "California GHG Inventory Model Results." Briefing for Governor Brown and staff, Oakland, CA, 27 October 2013.

62. "California Carbon Challenge Phase 2: Summary Results" (with Dan Kammen). Final presentation to the Policy and Technical Advisory Committees of the California Energy Commission, Sacramento, 13 September 2013.

63. "Estimating Policy-Driven GHG Trajectories in California." Briefing for members of the California Air Resources Board, California Energy Commission, and Governor's office of Policy and Research, Sacramento, 19 August 2013.

64. "California's Energy Future 2050 study: Insights for 2030." *Workshop on Evaluation of Electricity System Needs in 2030*, California Energy Commission, Sacramento, 19 August 2013.

65. "California's Energy Future: 2050," *Enhancing Capacity for Low Emission Development Strategies in the Philippines, Executive Exchange, U.S. Energy Association and U.S. Agency for International Development,* Lawrence Berkeley National Laboratory, 5 June 2013.

66. "The Future of Fuels: What will it take to implement new technologies, and how soon must we act?" Media workshop presentation to the *Joint Bio-Energy Institute*, 23 May 2013.

67. "Climate change, clean energy and carbon sequestration," *The Other Sequestration: Reducing Atmospheric Carbon Sustainably,* U.S. Green Building Council, Northern California Chapter, Cabrillo College, Aptos, CA, 1 May.

68. "Guiding LBNL low-carbon technology development with life-cycle energy, economic and environmental impacts analyses: The Emerging Technology Assessment (ETA) Team," *Presentation to the Molecular Foundry,* Lawrence Berkeley National Laboratory, 8 January 2013.

69. "California's Energy Future: Hydrogen, Low-Carbon Fuels and Load Balancing," *Presentation to the Light Capture and Conversion group, Joint Center for Artificial Photosynthesis,* Lawrence Berkeley National Laboratory, 10 December 2012.

70. "Overview of California's Energy Future study," *Presentation to the California Governor's Energy Office, California Independent System Operator, California Energy Commission and California Public Utilities Commission Energy Division,* Lawrence Berkeley National Laboratory, 26 October 2012.

71. "The Role of Carbon Capture and Sequestration in California's Energy Future," *WESTCARB 2012 Business Meeting*, West Coast Regional Carbon Sequestration Partnership, California State University, Bakersfield, 17 October 2012. http://westcarb.org.

72. "California's Energy Future & California's Carbon Challenge projects," *Presentation to Mary Nichols, California Air Resources Board,* Lawrence Berkeley National Laboratory, 26 September 2012.

73. "Guiding LBNL low-carbon technology development with life-cycle energy, economic and environmental impact analyses: The Emerging Technology Assessment (ETA) Team," *Carbon Cycle 2.0 Special Seminar Series,* Lawrence Berkeley National Laboratory, 30 August 2012. http://hosting.epresence.tv/LBL/1/watch/226.aspx.

74. "Ask and You Shall Receive: Consumer Surveys and Field Metering Efforts," Appliance Standards Group Meeting*,* Lawrence Berkeley National Laboratory, 28 June 2012.

75. "The Carbon Cycle 2.0 Emerging Technology Assessment (ETA) Team," *Presentation to the Research Programs Council,* Environmental Energy Technologies Division, Lawrence Berkeley National Laboratory, 27 June 2012.

76. "Overview of California's Energy Future study," *Presentation to National Climate Change Secretariat, Prime Minister's Office of Singapore*, Lawrence Berkeley National Laboratory, 1 May 2012.

77. Panel member, *Forum on California's Renewable Portfolio Standard Progress and Challenges,* Center for Sustainable Cities, University of Southern California, Los Angeles, CA, 25 April 2012.

78. Briefing on *California's Energy Future* report to Commissioner Carla Peterman, *California Energy Commission*, Sacramento, CA, 23 November 2011.

79. Briefing on *California's Energy Future* report to EPA District 9 Administrator Jared Blumenfeld, *U.S. Environmental Protection Agency,* San Francisco, 1 November 2011.

80. Briefing on *California's Energy Future* report to Commissioner Karen Douglas, *California Energy Commission*, Sacramento, CA, 31 October 2011.

81. "California's Energy Future: The View to 2050," Presentation to Natural Resources Defense Council, San Francisco, CA, 30 September 2011.

82. Briefings on *California's Energy Future* report to members of Congress (Reps. Ken Calvert, Lois Capps, David Dreier, Michael Honda, Jerry McNerney, George Miller, Lucille Roybal-Allard, Jackie Speier, Maxine Waters, Henry Waxman; Senators Jeff Bingaman, Barbara Boxer, Lisa Murkowski) and Department of Energy (Mike Davis, Henry Kelly, Arun Majumdar), Washington, DC, 12-13 September 2011.

83. "California's Energy Future: The View to 2050," Presentation (with Jane Long and Burt Richter) to the California Institute, Washington, DC, 13 September 2011.

84. Briefing on *California's Energy Future* report to the Local Government Commission, Sacramento, CA, 1 August 2011.

85. "SPARK: Innovation Education," Presentation to the *Green Schools Program National Local Project Leaders Meeting, Alliance to Save Energy,* Washington, DC, 22 July 2011.

86. "California's Energy Future: A View to 2050," Panel discussion (with other committee members) to the California Environmental Protection Agency, Sacramento, 15 July 2011.

87. "Mobile Sources in California's Energy Future: Getting to 80% Reductions," Presentation to members of the California Air Resources Board, California Environmental Protection Agency, California Energy Commission and California Public Utilities Commission, Sacramento, 15 July 2011.

88. "The Rulemaking Process for U.S. Appliance Efficiency Standards," Presentation (with Mia Forbes Pirie) to the Collaborative Labeling and Appliance Standards Program (CLASP), Washington, DC, 11 July 2011.

89. "California's Energy Future: Reducing GHG emissions 80% below 1990 by 2050," Presentation to Innovation Center Denmark, Lawrence Berkeley National Laboratory, 21 June 2011.

90. "Energy Use of Residential Refrigerators and Freezers: Function Derivation from Household Characteristics," Departmental seminar, Lawrence Berkeley National Laboratory, 20 June 2011.

91. "California's Energy Future: A View to 2050," Invited talk, *Silicon Valley Energy Summit*, Stanford University, 24 June 2011.

92. "Water Heater Replacement Programs: Overhauling the Base," Panelist, *ACEEE Hot Water Forum*, Berkeley, CA, 10-12 May 2011. http://www.aceee.org/conferences/2011/hwf/program.

93. "California's Energy Future," Presenter (with James McMahon and Jane Long), Carbon Cycle 2.0 Seminar Series, *Lawrence Berkeley National Laboratory,* 20 April 2011. http://hosting.epresence.tv/LBL/1/watch/142.aspx.

94. "California's Renewable Energy Future: Aligning Near Term Policy with Long Term Opportunities and Constraint," *Cal-IRES (Integrated Renewable Energy Systems for a Renewable Energy Secure California) Forum,* UC Davis, 4 April 2011, http://cal-ires.ucdavis.edu/files/events/2011-cal-ires-forum/2011-cal-ires-forum-agenda.pdf.

95. "California's Energy Future," Presentation to LBNL Advisory Board, *Lawrence Berkeley National Laboratory,* 29 March 2011.

96. Briefing on forthcoming *California's Energy Future* report to California Air Resources Board, Sacramento, 18 March 2011.

97. Briefing on forthcoming *California's Energy Future* report to Lt. Governor's office, members of California Legislature and the California Energy Commission, Sacramento, 10 March 2011.

98. "Portraits of the California Energy System in 2050: Cutting Emissions by 80 Percent," Panelist, *AAAS Annual Meeting,* Washington, DC, 17-21 February 2011. http://aaas.confex.com/aaas/2011/webprogram/Session2620.html.

99. "Clean Energy Economy and the Environment," Panelist, *Society of Environmental Journalists Annual Conference,* University of Missoula, Missoula, Montana, 16 October 2010. http://www.sej.org/initiatives/sej-annual-conferences/AC2010-agenda-saturday/.

100. "Notice of Proposed Rulemaking for Residential Refrigerators, Refrigerator-Freezers and Freezers," Major presenter (with D. Westphalen, J. Kingman and S. Wagley), Public Meeting, *U.S. Department of Energy,* Washington, DC, 14 October 2010.

http://www1.eere.energy.gov/buildings/appliance_standards/residential/refrigerators_freezers_notice_public_meeting.html/.

101. "Current status of California's Energy Future project," *California Council on Science and Technology Council Meeting*, Sacramento, CA, 26 May 2010.

102. "Putting the Squeeze on Carbon: Stabilization Wedges and the Climate Challenge," Invited lecture, *University of Utah,* Stegner Symposium on Alternative Energy, Salt Lake City, 7-8 March 2008. http://www.ulaw.tv/videos/stegner-symposium-2008-stabilization-wedges-and-the-climate-challenge/389.

103. "Clean Energy 2030," Google Tech Talk series, *Google,* Mountain View, CA, 18 December 2008.

104. "Clean Energy 2030," Invited talk, *Young Professionals in Energy (YPE)* Lecture Series*,* Kelsey Lynn, organizer, PG&E Headquarters, San Francisco, 11 December 2008.

105. "Wind Wedges: Beyond 20% Penetration," *American Wind Energy Association,* Carlsbad, CA, 1-2 November 2007.

106. "Putting the Squeeze on Carbon: Setting Targets, Unleashing Markets, Building Wedges." *League of Women Voters of Fremont, Newark, and Union City,* Fremont, CA, 28 April 2007.

107. "Putting the Squeeze on Carbon: Setting Targets, Unleashing Markets, Building Wedges," Earth Day speaker, *Monterey Institute of International Studies,* Monterey, CA, 21 April 2007.

108. "Drawing the Line: Scientific Objectivity and Sustainability Advocacy," Panelist, *American Association for the Advancement of Science Meeting,* San Francisco, 16 February 2007.

109. "Using the stabilization wedge concept to develop pathways for reducing California's greenhouse gases under AB32," Invited lecture, *California Energy Commission,* Sacramento, 1 December 2006.

110. "Rising to the climate challenge: Stabilization wedges, alternative energy and efficiency in Wyoming," Invited lecture, *Stroock Forum*, Casper College*,* Casper, Wyoming, 9 November 2006.

111. "Driving a wedge through global warming: Existing technologies to bridge the gap between business-as-usual and stable global emissions," Committee on Environmental Improvement, *American Chemical Society Annual Meeting,* San Francisco, 9 September 2006.

112. "Wedge decomposition analysis: Application to SRES and post-SRES scenarios," Poster (with K. Riahi and R. Socolow), *Eighth International Conference on Greenhouse Gas Control Technologies (GHGT-8),* Trondheim, Norway, 19-22 June 2006.

113. "Baseload wind power: Using energy storage to compete against decarbonized coal power in a climate-constrained world," *American Wind Energy Association Conference,* Pittsburgh, 4-7 June 2006.

114. "Storing the wind: Transforming wind energy from niche market to mainstream energy source," Invited lecture, *Stanford University,* 16 May 2006.

115. "Confronting the carbon challenge: A clean and renewable energy future for the U.S.," Earth Day keynote speaker, *William and Mary College,* Williamsburg, VA, 15 April 2006.

116. "Baseload wind power: Partnering with energy storage to compete against decarbonized coal electricity in a greenhouse-constrained world," *Sixth National Council for Science and the Environment,* Energy for a Sustainable and Secure Future, Washington, DC, 26-27 January 2006.

117. "Integrated wind energy with compressed air energy storage for dispatchable generation," *Electrical Energy Storage Applications and Technologies (EESAT) Conference*, San Francisco, 17-19 October 2005.

118. "Baseloading wind power: Competing strategies for dealing with dispatchability and remoteness," Job interview lecture, *Colorado School of Mines,* Golden, 9 May 2005.

119. "Baseloading wind power: Competing strategies for dealing with dispatchability and remoteness," Job interview lecture, *Stanford University,* 21 April 2005.

120. "Wind energy technologies: What do they offer the grid?" Invited lecture, *Wind Energy and Wildlife: The Good, the Bad, the Possible,* Princeton University, 4 May 2005.

121. "Exploring parameters and costs of a wind-compressed air energy storage (CAES) power system with long-distance transmission," *European Wind Energy Association,* London, November 2004.

122. "Baseload wind power: Competition between combined cycle natural gas and compressed air energy storage," Invited lecture, *Imperial College,* London, November 2004.

123. "'Wedges': early mitigation with familiar technology," *Seventh International Conference on Greenhouse Gas Control Technologies (GHGT-7),* Vancouver, September 2004.

124. "Making wind power dispatchable with compressed air energy storage," *World Renewable Energy Conference VIII,* Denver, September 2004.

125. "Toward optimization of a wind/compressed air energy storage (CAES) power system," *Electric Power 2004 Conference,* Baltimore, April 2004.

126. "Inferring air motions in the Arctic winter stratosphere of 1999-2000 from airborne measurements of trace gases," Guest seminar, *Haverford College*, 2001.

127. "Experimental determination of vortex subsidence for the 1999-2000 Arctic winter, and comparison with models," *NOAA Aeronomy Laboratory,* Boulder, Colorado, April 2001.

128. "Defining the polar vortex edge using an N_2O:potential temperature correlation vs. the Nash criterion: A comparison," *National Center for Atmospheric Research,* Boulder, Colorado, April 2001.

129. "Use of high-speed N_2O measurements from SOLVE to refine the Nash definition of the vortex edge," Poster, *American Geophysical Union Meeting,* San Francisco, CA, 15-19 December 2000.

130. "Quantifying subsidence in the 1999-2000 Arctic winter vortex; Defining the vortex boundary using N_2O measurements," *SOLVE Science Meeting,* Palermo, Italy, 25-29 September 2000.

131. "Vortex Descent in the 1999-2000 Arctic Winter Stratosphere Measured During SOLVE," Seminar, *NASA Ames Research Center,* Earth Science Division, 2000.

132. "Vortex Conditions in the Arctic Winter Stratosphere in 1999-2000: ER-2 and Balloon LACE Tracer Measurements During SOLVE," *American Geophysical Union Meeting,* Washington, DC, 30 May-3 June 2000.

133. "Studies of Anion Photodissociation Reactions Using Femtosecond Photoelectron Spectroscopy." Invited seminar, *Beijing University,* China (Sponsor: Prof. Liming Ying), July 1998.

134. "Time-resolved studies of $I_2^-(Ar)_n$ and $I_2^-(CO_2)_n$ photodissociation using femtosecond photoelectron spectroscopy," *American Chemical Society Meeting,* Las Vegas, NV, 1997.

135. "Photoelectron Spectroscopy of I_2^-: 2. Femtosecond Dissociation Dynamics in Mass-Selected Ar and CO_2 Clusters," Poster, *Gordon Research Conference,* Ventura, CA, 1996.

Professional service

Stakeholder advisory group for "50% Off Oil" Study, 2015
Review study by ICF International co-funded by NextGen Climate America, Union of Concerned Scientists and Packard Foundation. The study will examine how California, Oregon and Washington could reduce their petroleum consumption 50% in transportation by 2030.

Participation in University of California's Carbon Neutrality Workshop, 8-9 October 2014, Santa Barbara, CA.

Planning for Quadrennial Energy Review, Department of Energy, 2013-2015: Primary contributor from LBNL; Lead on "Potential of Energy Efficiency" Topic (coordinated writing of white paper in collaboration with other National Labs)

Co-organized session of the AAAS Conference, 2014
Session title: "Is It Possible to Reduce 80% of Greenhouse Gas Emissions from Energy by 2050?"
With Jane Long, Armond Cohen and Steve Hamburg

Contributor to a report on Carbon Capture, Utilization and Storage (CCUS) to the California Energy Commission, 2013: Coordinating the writing of a life-cycle environmental assessment metrics section

Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report, 2013: U.S. government reviewer of Chapter 7 draft (Energy Systems), Working Group III (Mitigation)

Search committee participant for a joint LBNL-UC Berkeley position, 2012: Participated in several candidate interviews and provided feedback to the committee head.

Critical Materials Hub, Lawrence Berkeley National Laboratory, 2012: Backup Lead on Life Cycle and Technology Assessment for a major DOE Hub proposal being led by Pacific Northwest National Laboratory

California Council on Science and Technology, 2009-present:
Committee member of the *California's Energy Future Policy* study, 2012-2013
Committee member, spreadsheet developer and major report author for the *California's Energy Future* study, 2009-2012
Senior Research Fellow, 2012-present

U.S. Global Change Research Program, Southwest Climate Assessment, 2011: Expert reviewer for energy impacts chapter, which will form a part of the 2012 National Climate Assessment.

Sustainable Cities Initiative, Lawrence Berkeley National Laboratory, 2011: Attended meetings of "start-up" planning committee to develop intellectual framework of new LBNL initiative, focused on systems analysis at the city scale.

Rosa Parks Elementary School, Berkeley, CA, 2009: Translated science of local air pollution into comprehensible form for concerned parents

1Sky.org, Scientific Advisory Board, 2008

Frontier Line Western Regional Transmission Expansion Partnership, Economic Subcommittee, 2007: Provided and reviewed data on energy supply technologies for a proposed transmission line between interior Western states and California

Paul Lussier Company, Santa Monica, CA, 2007: Technical consultant for *Final Hour*, an 8-hour documentary on climate change and its solutions

Environmental Defense Fund, 2007: Technical consultant for *Earth: The Sequel*, a book by Fred Krupp and Miriam Horn, about the emerging clean tech sector

Environmental Defense Fund, 2006: Co-organized Science Day conference on biofuels

Siemens-Westinghouse Science Competition, Princeton, NJ, 2003: Judged high-school research projects competing for national awards

EnvironMentors of New Jersey, 2001-2002: Mentored a high school student on environmental science project

Ad-hoc peer reviewer (ongoing): *Applied Energy; Energy Policy; Environmental Science & Technology; Renewable & Sustainable Energy Reviews; Resources, Conservation & Recycling; Wind Energy;* and LBNL internal reviews

Personal

Married, one child (age 14). Nature lover, enjoys cooking, amateur winemaker. Languages: English (native), some French, rudimentary Chinese.