

Sonia Yeh

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Current Positions

Professor, Department of Space, Earth and Environment, Chalmers University of Technology (2017 - present)
Adjunct Professor, Department of Engineering and Public Policy, Carnegie Mellon University (2004-present)
Fellow (non-resident), Payne Institute, Colorado School of Mines, 2018.
Associate Editor, Energy Systems and Policy, Frontiers in Energy Research

Education

Ph.D. Engineering and Public Policy, Carnegie Mellon University, Pittsburgh, PA (2001)
M.S. Environmental Health, Harvard School of Public Health, Boston, MA (1997)
B.S. Environmental Science, Tunghai University, Taichung, Taiwan (1995)

Award and Recognition

- Håkan Frisinger Award, Volvo Research and Educational Foundations (2019)
- Fulbright Distinguished Chair Professor in Alternative Energy Technology, Council for International Exchange of Scholars (CIES), United States Department of State, 2016-2017.
- Adlerbertska visiting professor, Chalmers University of Technology, 2015-2016.
- Academic Federation Award for Excellence in Research (Sole Recipient), University of California, Davis, 2014.
- “[Policy Shapers of the Water-Energy-Food Landscape](#),” one of the forty leaders named by The Global Leadership and Technology Exchange (GLTE), a partnership project between Royal Dutch Shell, Xyntéo and Unilever, 2013-2015.

Research Management and Leadership

- Organizer and cofounder of International Transportation Energy Modeling (ITEM) project, co-sponsored by ITS-Davis, Joint Global Change Research Institute, Pacific Northwest National Laboratory (PNNL), International Institute for Applied Systems Analysis (IIASA), International Council on Clean Transportation (ICCT), International Energy Agency (IEA), (2013-present)
- Organizer and cofounder of California Climate Policy Modeling (CCPM) Dialog, a collaboration between UC Davis, California Air Resources Board, California Governor’s Office, California Energy Commission, Stanford University, UC Berkeley, and LBNL (2013-2015)
- Leadership team, Sustainable Transportation Energy Pathways Program (STEPS), University of California, Davis (2013-2016)
- Track leader, Modeling Analysis, Verification, Regulatory and International Compliance, Sustainable Transportation Energy Pathways Program (STEPS), University of California, Davis (2007-2015)
- Co-task leader, Best Policy and Incentive Strategies for Technical Assistance & Analysis, research program funded by California Energy Commission, Institute of Transportation Studies, University of California Davis (2013-2014)
- Track leader, Integrated Scenario Analysis, Sustainable Transportation Energy Pathways Program (STEPS), University of California, Davis (2007-2014)
- Co-Director, National Low Carbon Fuel Standard Project (2010-2012): Managed a collaboration of six institutions including UC Davis, University of Maine, University of Illinois- Urbana Champaign, Oak

Ridge National Laboratory, Carnegie Mellon University, and International Food Policy Research Institute.

- Principle Investigator, California Low Carbon Fuel Standard Project (2007-2014): co-lead a collaborative team of 27 researchers, faculty and students from UC Davis and UC Berkeley advising the state of California to design and implement a market-based carbon policy, California Low Carbon Fuel Standard (LCFS), targeting greenhouse gas emissions from transportation.

Manuscript in Preparation

1. Standardi, G., Cai, Y., and Yeh, Y. The role of spatial and technological details for energy/carbon mitigation impacts assessment in Computable General Equilibrium models. Working paper.
2. Liao, Y.; Yeh, S.; Jeuken, G., From Individual to Collective Behaviours: Exploring Features of Human Mobility in Space and Time based on Social Media Data. *EPJ Data Science*, in review.
3. Liao, Y., & Yeh, S. Estimating Travel Demand at Various Scales Using Travel Survey, Mobile Phone GPS, and Social Media Data. Working paper.
4. Schäfer, A. & Yeh, S. Factors Affecting Energy Intensity of Passenger Travel and Implications for Future Mobility. Working paper.
5. Verendel, V., & Yeh, S. Traffic congestion of large cities through a large-scale online platform. *Journal of Big Data Analytics in Transportation*. In review.

Journal Publications

1. Teter J, Yeh S, Khanna M, Berndes G. Water impacts of U.S. biofuels: Insights from an assessment combining economic and biophysical models. *PLOS ONE*. **2018**;13(9):e0204298. doi: 10.1371/journal.pone.0204298.
2. Masnadi, M. S., El-Houjeiri, H. M., Schunack, D., Li, Y., Englander, J. G., Badahdah, A., Monfort, J., Anderson, J. E., Wallington, T. J., Bergerson, J. A., Gordon, D., Koomey, J., Przesmitzki, S., Azevedo, I. L., Bi, X., B., Duffy, J. E., Heath, G. A., Keoleian, G. A., McGlade, C., Meehan, D. N., Yeh, S., You, F., Wang, M., Brandt, A. R. Global carbon intensity of crude oil production. *Science*. **2018**, 361(6405): 851-853.
3. Ramea, K., Bunch, D.S., Yang, C., Yeh, S., Ogden, J.M. Integration of vehicle consumer choice in long-term energy systems optimization models. *Energy Economics*, **2018**, 74: 663-676.
4. Zapata, C. B.; Yang, C.; Yeh, S.; Ogden, J.; Kleeman, M. J., Low-carbon energy generates public health savings in California. *Atmos. Chem. Phys.* **2018**, 18 (7), 4817-4830.
5. Zapata, C. B., C. Yang, S. Yeh, J. Ogden and M. J. Kleeman. Estimating Criteria Pollutant Emissions Using the California Regional Multisector Air Quality Emissions (CA-REMARQUE) Model v1.0. *Geosci. Model Dev. (GMD)*. **2018**: 1-38.
6. Tattini, J., K. Ramea, M. Gargiulo, C. Yang, E. S. Yeh, K. Karlsson. Improving the representation of modal choice into bottom-up optimization energy system models–The MoCho-TIMES model. *Applied Energy*, **2018**, 212: 265-282. DOI: 10.1016/j.apenergy.
7. DeCarolis, J., H. Daly, P. Dodds, I. Keppo, F. Li, W. McDowall, S. Pye, N. Strachan, E. Trutnevyte, W. Usher, M. Winning, S. Yeh and M. Zeyringer. Formalizing best practice for energy system optimization modelling. *Applied Energy*, **2017**, 194: 184-198.
8. Standardi, G., Cai, Y., and Yeh, Y. Sensitivity of Modeling Results to Technological and Regional Details: The Case of Italy's Carbon Mitigation Policy. *Energy Economics*, **2017**, 63: 116-128.
9. Yeh, S., Ghandi, A., Scanlon, B., A., Brandt, A. R., Cai, H., Wang, M. Q., Vafi, K., Reedy, R. C. Energy intensity and greenhouse gas emissions from oil production in the Eagle Ford Shale. *Energy & Fuels*, **2017**, 31 (2), pp 1440–1449. DOI: 10.1021/acs.energyfuels.6b02916.

10. Yeh, S., Shankar Mishra, G., Fulton, L., Kyle, P., McCollum, D., Miller, J., Cazzola, P. Detailed assessment of international transport-energy models' structures and projections. *Transportation Research Part D: Special Issue on global transport projections for integrated assessment*, **2017**, 55: 294-309. DOI: <http://dx.doi.org/10.1016/j.trd.2016.11.001>
11. Brandt, A. R., Yeskoo, T., McNally, S., Vafi, K., Yeh, S., Cai, H., Wang, M. Q. Energy intensity and greenhouse gas emissions from tight oil production in the Bakken formation. *Energy & Fuels*, **2016**. DOI: 10.1021/acs.energyfuels.6b01907.
12. Yeh, S., Yang, C., Gibbs, M., Roland-Holst, D., Greenblatt, J., Mahone, A., Wei, D., Brinkman, G., Cunningham, J., Eggert, A., Haley, B., Hart, E., Williams, J. A modeling comparison of deep greenhouse gas emissions reduction scenarios by 2030 in California. *Energy Strategy Reviews*, **2016**, 13-14, pp 169-180.
13. Yeh, S., Cai, Y., Huppman, D., Bernstein, P., Tuladhar, S., Huntington, H.G. North American Natural Gas and Energy Markets in Transition: Insights from Global Models. Special Issue North American Natural Gas Markets in Transition in *Energy Economics*, **2016**, 60, pp 405-415.
14. Yeh, S., Witcover, J., Lade, G., and Sperling, D. A Comprehensive Review of the Low Carbon Fuel Standard Policies: Principles, Programs Status and Future Directions. Invited review paper for *Energy Policy* **2016**, 97:220-234. doi: <http://dx.doi.org/10.1016/j.enpol.2016.07.029>.
15. Tiedeman, K., S. Yeh, B.R. Scanlon, J. Teter, and G.S. Mishra. Recent trends in water use and production for California oil production. *Environmental Science and Technology*. **2016**, 50 (14), pp 7904-7912. doi: 10.1021/acs.est.6b01240
16. Rubin, Edward S., Inês M. L. Azevedo, Paulina Jaramillo, and Sonia Yeh. A review of learning rates for electricity supply technologies. *Energy Policy* **2015**, 86:198-218. doi: <http://dx.doi.org/10.1016/j.enpol.2015.06.011>.
17. J.G. Englander, A.R. Brandt, A. Elgowainy, H. Cai, J. Han, S. Yeh, and M. Wang. Oil sands energy intensity and emissions assessment using facility-level data. *Energy & Fuels* **2015** doi: 10.1021/acs.energyfuels.5b00175.
18. Cai, Hao, Adam R. Brandt, Sonia Yeh, Jacob G. Englander, Jeongwoo Han, Amgad Elgowainy, and Michael Q. Wang. Well-to-Wheels Greenhouse Gas Emissions of Canadian Oil Sands Products: Implications for U.S. Petroleum Fuels. *Environmental Science & Technology* **2015** doi: 10.1021/acs.est.5b01255.
19. Morrison, G. M., S. Yeh, A. R. Eggert, C. Yang, J. H. Nelson, A. Mileva, J. Johnston, D. M. Kammen, J. B. Greenblatt, M. Wei, C. B. Zapata, R. Isaac, M. Z. Jacobson, D. Roland-Holst, R. Williams, J. Moore, J. H. Williams and J. P. Weyant. Comparison of Low-Carbon Pathways for California. *Climatic Change* **2015**, 1-13. doi: 10.1007/s10584-015-1403-5.
20. Yang, C., S. Yeh, K. Ramea, S. Zakerinia, D. L. McCollum, D. S. Bunch and J. M. Ogden. Modeling Optimal Transition Pathways to a Low Carbon Economy in California: California TIMES (CA-TIMES) Model. *Energy Policy* **2015**, 77: 118-130.
21. Daly, H., K. Ramea, A. Chiodi, S. Yeh, M. Gargiulo and B. Ó Gallachóir. Modal Shift of Passenger Transport in a TIMES Model: Application to Ireland and California. *Informing Energy and Climate Policies Using Energy Systems Models*. G. Giannakidis, M. Labriet, B. Ó Gallachóir and G. Tosato, Springer International Publishing **2015**. 30: 279-291. http://link.springer.com/chapter/10.1007/978-3-319-16540-0_16
22. Wicke, B.; van der Hilst, F.; Daioglou, V.; Banse, M.; Beringer, T.; Gerssen-Gondelach, S.; Heijnen, S.; Karssenberg, D.; Laborde, D.; Lippe, M.; van Meijl, H.; Nassar, A.; Powell, J.; Prins, A. G.; Rose, S.; Smeets, E. M. W.; Stehfest, E.; Tyner, W. E.; Versteegen, J. A.; Valin, H.; van Vuuren, D. P.; Yeh, S.; Faaij, A. P. C., Model collaboration for the improved assessment of biomass supply, demand and impacts. *GCB Bioenergy* **2015**, 7 (3):422-437. doi: 10.1111/gcbb.12176.
23. Daly, H. E.; Ramea, K.; Chiodi, A.; Yeh, S.; Gargiulo, M.; Gallachóir, B. Ó., Incorporating travel behaviour and travel time into TIMES energy system model. *Applied Energy* **2014**, 135, 429-439.

24. Mishra, G.; Zakeri, S.; Yeh, S.; Teter, J.; Morrison, G., Mitigating climate change: decomposing the relative roles of energy conservation, technological change, and structural shift. *Energy Economics* **2014**, 44(0): 448-455. DOI: 10.1016/j.eneco.2014.04.024
25. Yui, S.; Yeh, S., Land use change emissions from oil palm expansion in Pará, Brazil depend on proper policy enforcement on deforested lands. *Environmental Research Letters* **2013**, 8 (4), 044031 (9pp).
26. Tittmann, P.; Yeh, S., A framework for assessing the lifecycle greenhouse gas benefits of forest bioenergy and biofuel in an era of forest carbon management. *Journal of Sustainable Forestry* **2013**, 32, 108–129.
27. Yeh, S.; Sperling, D.; (editors), Low carbon fuel policy and analysis. *Energy Policy*, **2013**, 56, 1-4.
28. Yeh, S.; Mishra, G. S.; Morrison, G.; Teter, J.; Quiceno, R.; Gillingham, K., Long-term shifts in lifecycle energy efficiency and carbon intensity. *Environ Sci Technol* **2013**, 47 (6), 2494-501.
29. Witcover, J.; Yeh, S.; Sperling, D., Policy options to address global land use change from biofuels. *Energy Policy* **2013**, 56, 63-74
30. Yeh, S.; Sperling, D.; (editors), Special Issue on National Low Carbon Fuel Standard, *Energy Policy* **2013**, 56, 1-82.
31. Earles, J. M.; Yeh, S.; Skog, K., Timing of carbon emissions from global forest clearance. *Nature Climate Change* **2012** 2(9), 682-685.
32. Yeh, S.; Rubin, E. S., A review of uncertainties in technology experience curves. *Energy Economics* **2012**, 34 (3), 762-771.
33. Yang, C.; Yeh, S., The future of low-carbon transportation fuels. *Physics & Society* **2012**, 41 (3), 10-13.
34. McCollum, D.; Yang, C.; Yeh, S.; Ogden, J., Deep greenhouse gas reduction scenarios for California - Strategic implications from the CA-TIMES energy-economic systems model. *Energy Strategy Reviews* **2012**, 1 (1), 19-32.
35. Chen, X. G.; Khanna, M.; Yeh, S., Stimulating learning-by-doing in advanced biofuels: effectiveness of alternative policies. *Environmental Research Letters* **2012**, 7 (4), 045907.
36. Yeh, S.; Berndes, G.; Mishra, G. S.; Wani, S. P.; Elia Neto, A.; Suh, S.; Karlberg, L.; Heinke, J.; Garg, K. K., Evaluation of water use for bioenergy at different scales. *Biofuels, Bioproducts and Biorefining* **2011**, 5 (4), 361-374.
37. Mishra, G. S.; Yeh, S., Life cycle water consumption and withdrawal requirements of ethanol from corn grain and residues. *Environ Sci Technol* **2011**, 45 (10), 4563-9.
38. Mishra, G. S.; Glassley, W. E.; Yeh, S., Realizing the geothermal electricity potential—water use and consequences. *Environ. Res. Lett.* **2011**, 6, 034023 (8pp).
39. Yeh, S.; Sperling, D., Low carbon fuel standards: Implementation scenarios and challenges. *Energy Policy* **2010**, 38 (11), 6955-6965.
40. Yeh, S.; Jordaan, S. M.; Brandt, A. R.; Turetsky, M. R.; Spatari, S.; Keith, D. W., Land use greenhouse gas emissions from conventional oil production and oil sands. *Environmental Science & Technology* **2010**, 44, 8766-8772.
41. Sperling, D.; Yeh, S., Toward a global low carbon fuel standard. *Transport Policy* **2010**, 17 (1), 47-49.
42. Yeh, S.; Lutsey, N. P.; Parker, N. C., Assessment of technologies to meet a Low Carbon Fuel Standard. *Environmental Science & Technology* **2009**, 43 (18), 6907-6914.
43. Sperling, D.; Yeh, S., Low Carbon Fuel Standards. *Issues in Science and Technology* **2009**, (2), 57-66.
44. Sperling, D.; Yeh, S., Transforming the oil industry into the energy industry. *Access* **2009**, 34, 20-28.
45. Yeh, S.; Farrell, A. E.; Plevin, R. J.; Sanstad, A.; Weyant, J. P., Optimizing U.S. mitigation strategies for the light-duty transportation sector: what we learn from a bottom-up model. *Environmental Science & Technology* **2008**, 42, 8202–8210.
46. Yeh, S.; Rubin, E. S., A centurial history of technological change and learning curves for pulverized coal-fired utility boilers. *Energy* **2007**, 32, 1996–2005.

47. Yeh, S., An empirical analysis on the adoption of alternative fuel vehicles: The case of natural gas. *Energy Policy* **2007**, 35 (11), 5865-5875.
48. Rubin, E. S.; Yeh, S.; Antes, M.; Berkenpas, M.; Davison, J., Use of experience curves to estimate the future cost of power plants with CO₂ capture. *International Journal of Greenhouse Gas Control* **2007**, 1, 188-197.
49. Yeh, S.; Loughlin, D. H.; Shay, C.; Gage, C., An integrated assessment of the impacts of hydrogen economy on transportation, energy use, and air emissions. *Proceedings of the IEEE* **2006**, 94 (10), 1838-1851.
50. Yeh, S.; Rubin, E. S.; Taylor, M. R.; Hounshell, D. A., Technology innovations and experience curves for nitrogen oxides control technologies. *Journal of the Air & Waste Management Association (1995)* **2005**, 55 (12), 1827-38.
51. Rubin, E. S.; Yeh, S.; Hounshell, D. A.; Taylor, M. R., Experience curves for power plant emission control technologies. *International Journal of Energy Technology and Policy* **2004**, 2 (1), 52-69.
52. Rubin, E. S.; Taylor, M. R.; Yeh, S.; Hounshell, D. A., Learning curves for environmental technology and their importance for climate policy analysis. *Energy* **2004**, 29 (9-10), 1551-1559.
53. Yeh, S.; Small, M. J., Incorporating exposure models in probabilistic assessment of the risks of premature mortality from particulate matter. *Journal of Exposure Analysis and Environmental Epidemiology* **2002**, 12, 389-403.
54. Morel, B.; Yeh, S.; Cifuentes, L., Statistical distributions for air pollution applied to the study of the particulate problem in Santiago. *Atmospheric Environment* **1999**, 33 (16), 2575-2585.

Series

1. Yeh, S.; Witcover, J. *Status Review of California's Low Carbon Fuel Standard – May 2016 Issue*. Research Report UCD-ITS-RR-16-01, Institute of Transportation Studies, University of California, Davis: 2016.
2. Yeh, S.; Witcover, J. *Status Review of California's Low Carbon Fuel Standard – April 2015 Issue*. Research Report UCD-ITS-RR-15-07, Institute of Transportation Studies, University of California, Davis: 2015.
3. Yeh, S.; Witcover, J. *Status Review of California's Low Carbon Fuel Standard – July 2014 Issue*. Research Report UCD-ITS-RR-14-09, Institute of Transportation Studies, University of California, Davis: 2014.
4. Yeh, S.; Witcover, J. *Status Review of California's Low Carbon Fuel Standard, January 2014 Issue*. Research Report UCD-ITS-RR-14-01; Institute of Transportation Studies, University of California, Davis, CA: 2014.
5. Yeh, S.; Witcover, J.; Kessler, J. *Status Review of California's Low Carbon Fuel Standard - Spring 2013 (REVISED VERSION)*. Research Report UCD-ITS-RR-13-06; Institute of Transportation Studies, University of California, Davis, CA: 2013.
6. Yeh, S.; Witcover, J. *Status Review of California's Low Carbon Fuel Standard (LCFS) 2011- August 2012*. Research Report UCD-ITS-RP-12-33; Institute of Transportation Studies, University of California, Davis, CA: 2012.

Trade Magazine Articles (Invited)

1. Mishra, G. S.; Yeh, S., Water intensity of corn-based ethanol needs to include DDGS credit. *Ethanol Producer Magazine* 2011, pp 71 - 73.
2. Yeh, S.; Witcover, J., Policy brief: Indirect land-use change from biofuels: Recent developments in modeling and policy landscapes *Carbon Standards in Agricultural Production and Trade* 2010.

Book Chapters

1. Zakerinia S., Yang C., Yeh S. Modeling the Impacts of Deep Decarbonization in California and the Western US: Focus on the Transportation and Electricity Sectors. In: Giannakidis G., Karlsson K.,

- Labriet M., Gallachóir B. (eds) Limiting Global Warming to Well Below 2 °C: Energy System Modelling and Policy Development. Lecture Notes in Energy, **2018**, vol 64. Springer.
2. Yang, C.; Yeh, S., The future of low-carbon transportation fuels. In *Physics of Sustainable Energy II: Using Energy Efficiently and Producing it Renewably*, Hafemeister, D.; Kammen, D.; Goss Levi, B.; Schwartz, P., Eds. Springer: AIP Conference Proceedings, Vol. 1401: 2013.
 3. Sperling, D.; Yeh, S., Toward a global low carbon fuel standard. In *Energy, Transport and the Environment: Addressing the Sustainable Mobility Paradigm*, Inderwildi, O.; King, S. D., Eds. Springer: 2012.
 4. Yeh, S.; Mishra, G. S.; Delucchi, M. A.; Teter, J., Chapter 7: Comparing Land, Water, and Materials Impacts. In *Sustainable Transportation Energy Pathways: A Research Summary for Decision Makers*, Ogden, J.; Anderson, L., Eds. Institute of Transportation Studies, University of California, Davis: 2011.
 5. Yeh, S.; McCollum, D., Chapter 10: Optimizing the Transportation Climate Mitigation Wedge. In *Sustainable Transportation Energy Pathways: A Research Summary for Decision Makers*, Ogden, J.; Anderson, L., Eds. Institute of Transportation Studies, University of California, Davis: 2011.
 6. Yeh, S.; Delucchi, M. A.; Kendall, A.; Witcover, J.; Tittmann, P. W.; Winford, E., Chapter 12: Key Measurement Uncertainties for Biofuel Policy. In *Sustainable Transportation Energy Pathways: A Research Summary for Decision Makers*, Ogden, J.; Anderson, L., Eds. Institute of Transportation Studies, University of California, Davis: 2011.
 7. Yeh, S.; Berndes, G.; Mishra, G. S.; Wani, S.; Neto, A. E.; Suh, S.; Jewitt, G.; Karlberg, L.; Heinke, J.; Kaushal, G., Assessing Water Use Intensity at Various Scale. In *Bioenergy and Water Nexus*, United Nations Environment Programme (UNEP, IEA, Öko-Institute): Paris, France, 2011. [Full Report](#) / [Key Messages](#)
 8. Sperling, D.; Yeh, S., Chapter 11: Toward a Universal Low-Carbon Fuel Standard. In *Sustainable Transportation Energy Pathways: A Research Summary for Decision Makers*, Ogden, J.; Anderson, L., Eds. Institute of Transportation Studies, University of California, Davis: 2011.
 9. Yeh, S.; Rubin, E. S., Uncertainties in Technology Experience Curves for Energy-Economic Models. In *Modeling the Economics of Greenhouse Gas Mitigation: Summary of a Workshop*, Holmes, K. J., Ed. The National Academies Press: Washington D.C.: 2010.
 10. van den Broek, M. A.; Hoefnagels, E. T. A.; Yeh, S.; Junginger, H. M., Carbon capture and storage. In *Technological Learning in the Energy Sector: Lessons for Policy, Industry and Science*, Junginger, M. H.; Sark, W. v.; Faaij, A. P. C., Eds. Edgar Elgar (EE) publishers: 2010.
 11. Lako, P.; Yeh, S.; Broek, M. A. v. d.; Hoefnagels, E. T. A., Pulverized Coal-Fired Power Plant. In *Technological Learning in the Energy Sector: Lessons for Policy, Industry and Science*, Junginger, M. H.; Sark, W. v.; Faaij, A. P. C., Eds. Edgar Elgar (EE) publishers: 2010.
 12. Yeh, S.; Sperling, D., Role of Low Carbon Fuel Standard in reducing U.S. transportation emissions. In *Climate and Transportation Solutions: Findings from the 2009 Asilomar Conference on Transportation and Energy Policy*, Sperling, D.; Cannon, J., Eds. CreateSpace Independent Publishing Platform: 2010.
 13. Yeh, S.; Small, M. J., Statistical models for distributions of ambient fine particulate matter. In *Environmental Security and Environmental Management: The Role of Risk Assessment*, Springer Netherlands: 2006; pp 127-150.

Research Reports (Selected, with extensive peer/stakeholder-reviews)

1. Berndes, G., Abt, B., Asikainen, A., Cowie, A., Dale, V., Egnell, G., Lindner, M., Marelli, L., Paré, D., Pingoud, K. and Yeh, S. Forest biomass, carbon neutrality and climate change mitigation. From Science to Policy 3. European Forest Institute, ISBN: ISBN 978-952-5980-27-1 (print), ISBN 978-952-5980-28-8 (online).
2. Yeh, S., Bunch, D., Ramea, K., Yang, C., Kessler, J., Collantes, G., 2015. Policy and Incentive Strategies to Incentivize Plug-in Electric Vehicle (PEV) adoptions in California. Submitted to

California Energy Commission.

3. Bunch, David S., Kalai Ramea, Sonia Yeh, Christopher Yang (2015) Incorporating Behavioral Effects from Vehicle Choice Models into Bottom-Up Energy Sector Models. Institute of Transportation Studies, University of California, Davis, Research Report UCD-ITS-RR-15-13.
4. EPRI, PRISM 2.0: Modeling Technology Learning for Electricity Supply Technologies (No. 3002000871). Electric Power Research Institute, Palo Alto, CA: 2013.
5. EPRI, PRISM 2.0: Regional Energy and Economic Model Development and Initial Application (No. 3002000128). Electric Power Research Institute, Palo Alto, CA: 2013.
6. Mishra, G. S.; Kyle, P.; Teter, J.; Morrison, G. M.; Kim, S.; Yeh, S. *Transportation Module of Global Change Assessment Model (GCAM): Model Documentation*. Research Report UCD-ITS-RR-13-05; Institute of Transportation Studies, University of California: Davis, CA: 2013.
7. Yeh, S.; Sperling, D.; Griffin, M.; Khana, M.; Leiby, P.; Msangi, S.; Rhodes, J.; Rubin, J. *National Low Carbon Fuel Standard: Policy Design Recommendations*. Research Report UCD-ITS-RR-12-10; Institute of Transportation Studies, University of California, Davis, CA: 2012.
8. Yeh, S.; Sperling, D.; Batka, M.; Griffin, M.; Heres, D. R.; Hung, H.; Khanna, M.; Kocoloski, M.; Leiby, P.; Mishra, G. S.; Msang, S.; Mullins, K.; Onal, H.; Parker, N.; Rhodes, J.; Rubin, J.; Venkatesh, A.; Witcover, J.; Yang, C. *National Low Carbon Fuel Standard: Technical Analysis Report*. Research Report UCD-ITS-RR-12-11; Institute of Transportation Studies, University of California, Davis, CA: 2012.
9. Yeh S. (Chair); Gibbs, H.; Mueller, S.; Nelson, R.; O'Connor, D.; Plevin, R.; Sanchez, S. T.; Yui, S.; Fritsche, U.; Kline, K.; O'Hare, M. *A Report to the California Air Resources Board: Carbon Emission Factors Subworkgroup; Low Carbon Fuel Standard (LCFS) Indirect Land Use Change Expert Workgroup*. Sacramento, CA: 2010.
10. Yeh, S.; Sumner, D. A.; Kaffka, S. R.; Ogden, J. M.; Jenkins, B. M. *Implementing Performance-Based Sustainability Requirements for the Low Carbon Fuel Standard - Key Design Elements and Policy Considerations*. Research Report UCD-ITS-RR-09-42; Institute of Transportation Studies, University of California, Davis, CA: 2009.

Legislative Briefings

1. Testimony to Oregon Senate Committee on Environment and Natural Resources, SB 324. February 2, 2015.
2. "The Relationship and Effectiveness of California's Low Carbon Fuel Standard and the Cap-and-Trade Program in Decarbonizing Fuels," Legislative Briefing to California Assembly and Senate committee leadership staff. Sacramento CA (January 22, 2015).
3. "A National Low Carbon Fuel Policy," Congressional briefings at U.S. Senate, House, and the Carnegie Institute hosted by International Food Policy Research; Green Design Institute of Carnegie Mellon University; Department of Agricultural and Consumer Economics/Energy Biosciences Institute, University of Illinois, Urbana-Champaign; Oak Ridge National Laboratory; Institute of Transportation Studies, University of California, Davis; Margaret Chase Smith Policy Center, and School of Economics, University of Maine. Washington DC (July 19-20, 2012).
4. "Low Carbon Fuel Standards to Complement Cap-and-Trade Initiatives," ITS-Davis Washington DC Policymaker Briefing, Washington DC (January 12, 2009).
5. "Low Carbon Fuel Standards to Complement Cap-and-Trade Initiatives," Northern California Congressional Staff Briefing, ITS-Davis, UC Davis (October 28, 2008).
6. "The Low-Carbon Fuel Standard as Global Warming Solution," Capitol Hill Staff Briefing sponsored by the Select Committee for Energy Independence and Global Warming, Washington DC (September 15, 2008).

Op-ed

- Why a low-carbon fuel standard is good for transportation and California. California Forum. Special to The Bee. Sacramento Bee. February 16, 2017. <http://www.sacbee.com/opinion/california-forum/article132719244.html>

Professional Activities and Service

Committee Services (selected)

- Fulbright Peer Review Committee (2018-)
- Recruitment committee, Assistant Professor in Energy Systems Analysis, Royal Institute of Technology (KTH)(2016)
- Reviewer committee, Large-scale Programme for Energy Research (ENERGIX), The Research Council of Norway (2016)
- Evaluation Advisory Committee for California Energy Commission Alternative and Renewable Fuel and Vehicle Technology Program (2015-2017).
- Steering Committee, University of Michigan Transportation, Energy, Economics and the Environment ("TE3") conference (2015).
- Transportation Energy Committee ADC70 (2008–2017) and Transportation Energy and Alternative Fuels Committee (2007–2008), National Academies' Transportation Research Board.
- California Air Resources Low Carbon Fuel Standard Advisory Panel (2011, 2014).
- Airport Cooperative Research Program Synthesis on Environmental Assessment of High-speed Rail v. Air Transport (ACRP 11-03/Topic S02-08) Advisory Panel, Transportation Research Board, the National Academies (2012).
- California Air Resources Board Low Carbon Fuel Standard Expert Workgroup on Indirect Land Use Change (March-December 2010) – Chair of Emission Factors Subgroup.
- Roundtable on Sustainable Biofuels (RSB) – Greenhouse Gases Working Group and Implementation Working Group (2008-2009), Implementation Expert Group (2009-2012).
- Assembly Bill 118 (Núñez Statutes of 2007, Chapter 750) Alternative and Renewable Fuel and Vehicle Technology Program Sustainability Subworking Group (2008- 2012).

Editorial Boards of Journals

- Progress in Energy, Editorial Board (2019 - present)
- Energy Policy journal, International Advisory Board (2019 - present)
- Associate editor, Frontiers in Energy Systems and Policy (2013 - present)
- Guest editor, Special Issue on Low Carbon Fuel Policy in Energy Policy (May 2013)

Other Services

- Vice ordförande (Vice chairman), Institutionskollegium (Faculty Assembly), Department of Space, Earth and Environment (2018-)
- Reviewer, Future Resilient Systems II – Research Program Proposal, ETH Zurich Research Commission (2017)

Conference/Workshop Organized

- Chair of the program committee, International Energy Workshop (IEW), 2018.
- International Transport Energy Modeling (iTEM) workshop, co-organized by the Chalmers University of Technology, Institute of Transportation Studies (ITS), University of California, Davis, International Transport Forum (ITF)-OECD, International Institute for Applied Systems Analysis (IIASA), and International Energy Agency (IEA), 2014, 2016 and 2017.
- California Climate Policy Modeling (CCPM) Dialog, a collaboration project between UC Davis, California Air Resources Board, California Energy Commission, Stanford University, UC Berkeley, and the Governor's Office. December 2013 and January 2015.

- The Water-Energy Nexus? Science and Policy, American Geophysical Union (AGU) Fall Meeting 2013 and 2014.
- A National Low Carbon Fuel Policy, Briefing at the Carnegie Endowment for International Peace, and Congressional briefings at U.S. Senate and U.S House, Washington DC (July 19-20, 2012).
- Low Carbon Fuel Standard Policy Workshop, Washington DC, August 15-16 2011. (Attended by around 70 invited stakeholders representing oil companies, utilities, biofuel feedstock producers and industry representatives, state lawmakers, Canadian government agencies and Provincial government lawmakers, NGOs and academic scholars).

Teaching

- Global Energy Challenges – Markets, Resources and Technologies. GM Technical Education Program online course for the University of Michigan -Ann Arbor (UM) Master of Engineering in Energy Systems Engineering (ESE) (Spring 2017)
- FFR170 Sustainable Energy Futures, Chalmers University of Technology (2016-present)
- TTP 289A-002 Energy Modeling for Policy Analysis, University of California, Davis (Winter Quarter 2013, 2015)

Media (Twitter (@Sonia_yeh; @NLCFS))

Professional Associations

- International Association of Energy Economics (IAEE) and US Association of Energy Economics (USAEE) (2004-2017)
- Society for Risk Analysis (SRA) (1997-2001)

Extramural Grants and Contracts Since 2007

- | | |
|--|----------------------------|
| • Participant. NAVIGATE: Next generation of AdVanced InteGrated Assessment modelling to support climaTE policy making | €0.3M of
€7M |
| • PI. "The new future of mobility: Using a Synthetic Sweden to study transition pathways to autonomous, shared, and electromobility." The Swedish Research Council Formas. 2019-2022. | 10M Kr
(\$1.2M) |
| • Initiative projects in SFO Transport at Gothenburg University. 2019 | 175k Kt |
| • Co-PI with Devdatt Dubhashi and Frances Sprei. "A Synthetic Sweden Decision Supporting Tool for Future Urban Mobility - Autonomous and Electromobility Infrastructure Planning." Area of Advance in Transport. Chalmers University of Technology. 2017-2018. | 1M Kr
(\$0.12M) |
| • Co-PI with Vihlem Verendel. "Understand Urban Congestions," Areas of Advance in Energy, Transport, and ICT. Chalmers University of Technology. 2017. | 1M Kr
(\$0.12) |
| • Investigator. "MISTRA C-Exist: Non-Emission Products and Services in Sweden," The Swedish Foundation for Strategic Environmental Research (Mistra), 2017- 2020. | 63MKr
(\$7M) |
| • PI. "Making Cities More Sustainable: Using Big and Continuous Data to Understand Urban Mobility and Congestions," The Swedish Research Council Formas. 2017-2019. | 3,000,000Kr
(\$330,000) |
| • PI. "International Transportation Energy Modeling (ITEM) Workshop," The Swedish Research Council Formas. 2017. | 60,000Kr
(\$7,000) |
| • PI. "Utilization Plan for the Car Movement Database," Areas of Advance in Transport, Chalmers University of Technology. 2017-2019. | 2.2MKr
(\$256,000) |

<ul style="list-style-type: none"> • Investigator. "DAISY: streaming big Data Analysis for Sustainable Mobility," Areas of Advance in Energy, Chalmers University of Technology. September 2016- June 2017 	261,000Kr (\$30,500)
<ul style="list-style-type: none"> • PI. "International Transportation Energy Modeling (ITEM) Workshop," Areas of Advance in Energy; and Profile in Technology Governance for Energy Transitions (TEG) Chalmers University of Technology. October 2017. 	150,000Kr (\$17,500)
<ul style="list-style-type: none"> • Co-PI. "Optimal Energy Portfolios to Sustain Economic Advantage, Achieve Greenhouse Gas (GHG) Targets, and Minimize PM2.5," U.S. Environmental Protection Agency. September 2015 – December 2018. 	\$790,000
<ul style="list-style-type: none"> • PI. "Back-casting Induced Land Use Change: What has been the Role of Biofuels in Global Land Use Change," Pacific Ethanol. April – December 2015. 	\$20,000
<ul style="list-style-type: none"> • PI. "Greenhouse Gas Emissions Modeling – California 2030: California Climate Policy Modeling (CCPM) Dialog," California Air Resources Board. January – June 2015. 	\$50,000
<ul style="list-style-type: none"> • Co-PI. "Modeling the Interactive Effects of Policies in Meeting California’s Climate Policy Goals," Pacific Gas and Electric. January - December 2015. 	\$150,000
<ul style="list-style-type: none"> • Co-PI. "International Transport Energy Modeling Workshop," US DOE Vehicle Technologies Office, University of California Research Initiatives, and British Petroleum. October 2014. 	\$28,000
<ul style="list-style-type: none"> • PI. "Lifecycle Greenhouse Gas Emissions of Shale Gas Production in Eagle Ford, TX," Argonne National Laboratory, US Department of Energy. Feb 2013 – June 2015. 	\$105,000
<ul style="list-style-type: none"> • PI. "Land Use Change Impacts and Greenhouse Gas Emissions from Canadian Oil Sands Production," Argonne National Laboratory, US Department of Energy. Feb 2013 – December 2014. 	\$90,000
<ul style="list-style-type: none"> • Co-PI. "California Climate Policy Modeling Dialogue," Pacific Gas and Electric Company’s (PG&E) contribution to Policy Institute for Energy, Environment and the Economy. December 2013. 	\$20,000
<ul style="list-style-type: none"> • Co-PI. "California Climate Policy Modeling Dialogue," Energy Foundation contribution to Policy Institute for Energy, Environment and the Economy. December 2013. 	\$20,000
<ul style="list-style-type: none"> • Co-PI. "Best Policy and Incentive Strategies for Technical Assistance & Analysis, research program" funded by California Energy Commission for the Institute of Transportation Studies, University of California Davis. October 2012 – December 2014. Total of \$2,770,072. 	\$309,965
<ul style="list-style-type: none"> • PI. "Modeling Lifecycle Energy and Greenhouse Gas Emission Balances of Forest Biomass Utilization in California," US. Department of Agriculture. Sep 2011 – April 2014. 	\$114,680
<ul style="list-style-type: none"> • PI. "Congressional Briefing of A National Low Carbon Fuel Standard." July 2012 	\$10,000
<ul style="list-style-type: none"> • PI. "Modeling Lifecycle Energy and Greenhouse Gas Emission Balances of Forest Biomass Utilization in California," California Energy Commission. July 2012 – September 2014. 	\$227,000
<ul style="list-style-type: none"> • PI. "Low Carbon Fuel Standards." California Air Resources Board. March 1, 2012 – August 31, 2013. 	\$300,000
<ul style="list-style-type: none"> • PI. "Future Energy Scenario Analysis and Measurement of Global and Regional WTW Energy Efficiency by Fuel Pathways," Shell Research Limited. Jan – December 2012. 	\$211,859
<ul style="list-style-type: none"> • Co-PI. "Mode Choice in a TIMES model," Energy Technology Systems Analysis Program (ETSAP), International Energy Agency (IEA). January – June, 2012. 	€7000

- PI. "Formulating California Policies of Promoting Global Sustainability of Low Carbon Fuels," David Lucile Packard Foundation. January 2012 - December 2012. \$100,000
- PI. "Reducing Long-term Transportation Greenhouse Gas Emissions through Policy Design of a National Low Carbon Fuel Standard: Important Technical and Policy Challenges," Energy Foundation. Nov 2011 – Nov 2012. \$75,000
- PI. "Modeling Lifecycle Energy and Greenhouse Gas Emission Balances of Forest Biomass Utilization in California," California Energy Commission. September 2011 – March 2013. \$114,680
- PI. "Well-to-Wheel Carbon Footprint of Product Portfolio Project," Shell Research Limited. May – December 2011. \$95,000
- PI. "Spatial Lifecycle Water Footprint and Water Impacts of Future California Transportation Fuels," US Department of Energy/California Energy Commission. May 2011- Oct 2013. \$124,000
- PI. "Meeting the Sustainability Challenges of Future Low Carbon Transportation Fuels in California," David Lucile Packard Foundation. September 2010 - March 2012. \$100,000
- Co-PI. "Design and Analysis of US Low Carbon Fuel Standard," Energy Foundation and Hewlett Foundation. January 2010 – February 2011. UCD leads the five-campus collaboration project (University of Maine, University of Illinois, Urbana-Champaign, Carnegie Mellon University, and the Institute of Food Policy Research Institute) for a total of \$1.2 million. USD received \$400,000. \$1,200,000
- Co-PI. "Modeling Optimal Transition Pathways to a Low Carbon Economy in California: Impacts of Advanced Vehicles and Fuels on the Energy System, " California Air Resources Board. April 2010 – March 2013. \$278,356
- PI. "Low Carbon Transport Fuels: Addressing Current Research and Future Policies Needs," David and Lucile Packard Foundation and the Energy Foundation. August 2009 – April 2010. \$220,000
- PI. "Implementation of the California Low Carbon Fuel Standard," California Air Resources Board and the Energy Foundation. April 1, 2009 – December 2010. \$300,354
- PI. "Low Carbon Fuel Standard Implementation Studies," David and Lucile Packard Foundation and the Energy Foundation. August 2008 – August 2009. \$206,000
- Co-PI. "Implementation of the California Low Carbon Fuel Standard," California Air Resources Board. November 2007 – December 2009. UCD received \$150,000. \$390,000

Previous Experience

- 2016 – 2017, Chalmers, Fulbright Distinguished Chair Professor in Alternative Energy Technology
- 2015 – 2016, Chalmers, Adlerbertska visiting professor
- 2012 – 2017, University of California, Davis, Lecturer, Department of Civil and Environmental Engineering and the Department of Environmental Science and Policy
- 2008 – 2017, University of California, Davis, Faculty affiliate, UC Davis Graduate Group in Ecology (GGE) (2014-2017), UC Davis Graduate Group in Transportation Technology and Policy (TTP) (2008-2017)
- 2007 – 2017, University of California, Davis, Research Scientist, Institute of Transportation Studies
- 2007 – 2008, Lawrence Livermore National Laboratory, Research Scientist, Energy and Environment Directorate
- 2005 – 2007, University of North Carolina at Chapel Hill, Research Director, Carolina Transportation Program

- 2004 – 2007, U.S. Environmental Protection Agency, Fellow, National Risk Management Research Laboratory
- 2004-, Carnegie Mellon University, Adjunct faculty, Department of Engineering and Public Policy
- 2001 – 2003, Carnegie Mellon University, Post-Doctoral Research Fellow, Department of Engineering and Public Policy

Conference/Workshop Keynote/Plenary (selected)

1. "Big and Continuous Data for Improving Mobility and Energy Transitions," Derive Sweden Forum, IBM Client Center, Stockholm, Sweden (May 31, 2017).
2. "Potential Acceptance of Mobility as a Service (MaaS)- Business Models and Consumer Attitudes," IEA workshop on Transport, Energy Efficiency & Behaviour, Paris, France (May 10-11, 2016)
3. "Transportation Developments," 37th International Association for Energy Economics (IAEE) International Conference, New York City (June 15-18, 2014)
4. "Thinking Big Picture: National LCFS Design," and "Learning from Doing: Lessons from California," A Clean Fuel Sector for the Northeast and Mid-Atlantic Policy Options & Immediate Actions to Reduce Transportation Emissions, Pace Energy and Climate Center, Pace Law School, New York. (February 13, 2013)
5. "Long-Term Shifts in Transportation Energy Use and Demand," The Association for the Study of Peak Oil and Gas -USA 2012 Conference, University of Texas at Austin, Austin, TX (Nov 30, 2012).
6. "The Debate over Biofuels: California's Perspective," An International Seminar on Carbon Standards in Agricultural Production and Trade, International Food and Agricultural Trade Policy Council, São Paulo, Brazil (October 25-26, 2010).
7. "Implementing sustainability standards for California's Low Carbon Fuel Standard," 18th European Biomass Conference and Exhibition, Lyon, France (May 3-7, 2010).
8. "Role of Low Carbon Fuel Standards in Reducing (US) Transportation Emissions," Twelfth Biennial Asilomar Conference on Transportation and Energy Policy: Transportation and Climate Policy. Pacific Grove, CA (July 28-31, 2009).
9. "The U.S. Low-Carbon Fuel Legislation as Global Warming Solutions," MPOC 2nd International Palm Oil Trade Fair & Seminar (POTS 2008), Kuala Lumpur, Malaysia (August 24-26, 2008).