

Sonia Yeh

2028 Academic Surge
Buildings
One Shields Avenue, Davis, California 95616
Phone: (530) 754-9000
Fax: (530) 752-6572
slyeh@ucdavis.edu
<http://steps.ucdavis.edu/People/slyeh>

Present Position	Assistant Research Scientist Institute of Transportation Studies University of California Davis
Other Appointments	<ul style="list-style-type: none">• Faculty member, UC Davis Graduate Group in Transportation Technology and Policy (TTP) (2008 to present)• Committee member, Transportation Research Board, National Academy of Science (2006-present)• Adjunct assistant professor, Department of Engineering and Public Policy, Carnegie Mellon University (2004 to present)
Education	<p>Ph.D. Carnegie Mellon University, Pittsburgh, PA (2001) Engineering and Public Policy</p> <p>M.S. Harvard School of Public Health, Boston, MA (1997) Environmental Health</p> <p>B.S. Tunghai University, Taichung, Taiwan (1995) Environmental Science</p>
Publication	<p>Referred Journal Articles</p> <ol style="list-style-type: none">1. Yeh, Sonia, Alex Farrell, Richard Plevin, Alan Sanstad, and John Weyan. 2008. Optimizing the US transportation mitigation strategies: what do we learn from a bottom-up model. <i>Environmental Science & Technology</i>, 42(22): 8202-8210.2. Yeh, Sonia. 2007. An empirical analysis on the adoption of alternative fuel vehicles: The case of natural gas vehicles. <i>Energy Policy</i>, 35(11): 5865-5875.3. Yeh, Sonia, and Edward S. Rubin. 2007. A centennial history of technological change and learning curves for pulverized coal-fired utility boilers. <i>Energy</i>, 32(10): 1996-2005.4. Rubin, Edward S., Sonia Yeh, Matt Antes, John Davison. 2007. Use of Experience Curves to Estimate the Future Cost of Power Plants with CO2 Capture. <i>International Journal of Greenhouse Gas Control</i>, 1(2): 188-197.5. Yeh, Sonia, Daniel Loughlin, Carol Shay, and Cynthia Gage. 2006. Impacts of hydrogen economy on transportation, energy use, and air emissions: an integrated assessment," <i>Proceedings of the IEEE</i>, 94(10): 1838-1851.6. Yeh, Sonia, Edward S. Rubin, Margaret R. Taylor, and David A. Hounshell. 2005. Technology innovations and the experience curve for NO_x control technology. <i>Journal of the Air and Waste Management Association</i>, 55(12):1827-1838.7. Rubin, Edward S., Margaret R. Taylor, Sonia Yeh and David A. Hounshell. 2004. Learning curves for environmental technology and their importance for climate policy analysis. <i>Energy</i> 29(9-10): 1551-1559.8. Rubin, Edward S., Sonia Yeh, Margaret R. Taylor and David A. Hounshell. 2004. Experience curves for power plant emission control technologies. <i>International Journal of Energy Technology and Policy</i> 2(1/2):52-69.9. Yeh, Sonia and Mitchell J. Small. 2002. Incorporating exposure models in probabilistic assessment of the risks of premature mortality from particulate matter. <i>Journal of Exposure Analysis and Environmental Epidemiology</i>, 12:389 - 403.10. Morel, Benoit, Sonia Yeh and Luis Cifuentes. 1999. Statistical distributions for air pollution applied to the study of the particulate problem in Santiago. <i>Atmospheric Environment</i>, 33:2575-2585.

Submitted Manuscript

1. Yeh, Sonia, Nicholas Lutsey, and Nathan Parker. 2009. Strategies to achieve California's Low Carbon Fuel Standard. *Environmental Science & Technology*, submitted.

Other publication (Magazines, Opinions)

1. Sperling, Daniel, and **Sonia Yeh**. 2009. Low Carbon Fuel Standards. *Issues in Science and Technology* 2:57-66.
2. **Yeh, Sonia**, E. S. Rubin, D. A. Hounshell, and M. R. Taylor. 2007. Uncertainties in technology experience curves for integrated assessment models. Available at SSRN: <http://ssrn.com/abstract=1154762>

Peer-reviewed Conference Proceedings

1. Rubin E, Yeh S, Antes M, Berkenpas M and Davison J. Estimating future costs of CO₂ capture systems using historical experience curves. In: *Greenhouse Gas Control Technologies, Proceedings of the eighth international conference on greenhouse gas control technologies, 19–22 June 2006, Trondheim, Norway*. Oxford, UK: Elsevier Ltd.
2. Wei, Yu-Ling, **Sonia Yeh**, Chi-Jong Wu and Chung-Ju Yeh. 1996. Effect of resource recovery upon leachate properties and construction cost of sanitary landfill. *Proceedings of the International Conference on Solid Waste Technology and Management*, pp. 7.

Books, Book Chapter

1. **Yeh, Sonia**, and Mitchell J. Small. 2006. Statistical Models for Distributions of Ambient Fine Particulate Matter. In *Environmental Security and Environmental Management: The Role of Risk Assessment*: Springer Netherlands

Reports

1. **Yeh, Sonia**. 2007. Incorporating Technological Learning in the Coal Utility Environmental Cost (CUECost) Model: Estimating the Future Cost Trends of SO₂, NO_x, and Mercury Control Technologies. Prepared for the Office of Research and Development, National Risk Management Research Laboratory, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina.
2. Rubin, E.S., Antes, M.K., **Yeh, S.**, Berkenpas, M.B., 2006. Estimating Future Trends in the Cost of CO₂ Capture Technologies, Report No. 2006/6. IEA Greenhouse Gas R&D Programme (IEA GHG), Cheltenham, UK.
3. Rubin, Edward S.; Hounshell, David A.; **Yeh, Sonia**; Riahi, K.; and Schrattenholzer, L. 2003. The Effect of Government Actions on Environmental Technology Innovation: Applications to the Integrated Assessment of Carbon Sequestration Technologies. A final report submitted to Office of Biological and Environmental Research, U.S. Department of Energy, Germantown, MD

Legislative Briefing

1. "Low Carbon Fuel Standards to Complement Cap-and-Trade Initiatives," ITS-Davis Washington DC Policymaker Briefing, Washington DC (January 12, 2009).
2. "Low Carbon Fuel Standards to Complement Cap-and-Trade Initiatives," Northern California Congressional Staff Briefing, ITS-Davis, UC Davis (October 28, 2008)
3. "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).

Presentations

Invited Conference/Workshop/Seminar Presentations

- "Sustainable Development of Biofuel Potentials from Forest Biomass Resources: A Framework to Examine the Long-term GHG balances and Sustainability Impacts," The Future of Wood Bioenergy in the United States: Defining Sustainability, Status, Trends and Outlooks for Regional Development. Pinchot Institute for Conservation, Washington DC (February 10-11, 2009)
- "California's Low Carbon Fuel Standard," Columbia-Willamette Clean Cities event,

- Transportation Sector Challenges - A Time of Change, Portland, Oregon. (June 05, 2008).
- "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).
- "Implementing California's Low Carbon Fuel Standard: Technical and Policy Challenges," Low Carbon Fuel Standards Workshop, Toronto, Ontario (June 3-4, 2008).
- "The Role of Lifecycle analysis in Characterizing Sustainability," Joint Forum on Bioenergy Sustainability and Lifecycle Analysis, Sacramento, California (May 28-30, 2008)
- "Modeling California Energy Systems — TIMES Modeling Approach," EPA Region 9 Impacts of Climate Change on Air Quality, Berkeley, CA (May 7, 2008)
- "Use of Experience Curves to Estimate the Future Cost of Power Plants with CO2 Capture," Joint Session DAS/ENRE: Expert Elicitations For Energy Technology. INFORMS Annual Meeting, Seattle, WA (November 14, 2007)
- "A Stochastic Framework for Analyzing Long-run CO2 Abatement Strategies," Joint seminar by the Energy and Resources Group (ERG), University of California, Berkeley CA and Climate Decision Making Center, Carnegie Mellon University, PA (September 17, 2007)
- "Technological Change, Innovation and Policy for Energy and Environmental Technologies," Environmental Studies Seminar, University of California at Santa Cruz, CA (January 29, 2007)
- "Policy and technological change for environmental and energy technologies," Institute of Transportation Studies, University of California at Davis, Davis, CA (September 15, 2006)
- "Hybrid now and hydrogen tomorrow: societal benefits of hybrid-gasoline and hydrogen fuel cell vehicles," Hydrogen Systems Modeling Workshop, Davis, CA (October 4-5, 2005)
- "Hydrogen scenario analysis: impacts on energy and air pollution," Hydrogen Systems Modeling Workshop, Davis, CA (September 20-21, 2004)
- "On the use of experience curves in the integrated assessment models," National Institute for Environmental Studies, Tsukuba, Japan (October 8, 2003)

Conference Presentations

- "Mitigation Strategies for Achieving California's Low Carbon Fuel Standard," IAEE/USAEE, New Orleans (December 2-5, 2008).
- "Optimizing the US transportation wedges: what do we learn from a bottom-up model," International Energy Workshop, Paris, France (June 30- July 2, 2008)
- "An International Study on the Diffusion Patterns of Natural Gas Vehicles," 26th USAEE/IAEE North American Conference, September 24-28, 2006, Ann Arbor, Michigan.
- "An integrated hydrogen analysis: impacts on transportation, energy use, and air emissions," International Energy Workshop, Kyoto, Japan (July 3-8, 2005)
- "An integrated hydrogen analysis: impacts on transportation, energy use, and air emissions," NHA Annual Hydrogen Conference, Washington, DC (March 29-April 1, 2005)
- "The importance of modeling technological change in long-term climate models," Twenty-Sixth Annual APPAM Research Conference, Atlanta, GA (October 28-30, 2004)
- "Fuel infrastructure pathways for fuel cell vehicles: a scenario analysis," The Eighth World Renewable Energy Congress, Denver, Colorado (August 28 - September 3, 2004)
- "Technology experience curves in integrated assessment models and applications to hydrogen scenario analysis," Annual Meeting of the International Energy Workshop, Paris, France (June 22-24, 2004)
- "On the use of experience curves in the integrated assessment models," National Institute for Environmental Studies, Tsukuba, Japan (October 8, 2003)
- "Experience curves for environmental technology and their relationship to government actions," 6th Annual Electric Utilities Environmental Conference on Air Quality & Global Change, Tucson, Arizona (January 12-16, 2003)
- "Integrated uncertainty analysis of particulate matter health risks and costs," Annual Meeting of the Society for Risk Analysis, Seattle, WA (December 2-5, 2001)

	<ul style="list-style-type: none"> • "Incorporating exposure models in probabilistic assessment of the risks of premature mortality from particulate matter," Annual Meeting of the Society for Risk Analysis, Atlanta, GA (December 1999) 	
Conferences/ Meetings Organized	<ol style="list-style-type: none"> 1. UC Expert Forest Biomass Expert Consultation Meeting, Davis, CA (January 23, 2009) 2. Conference parallel session chair: Technological learning and experience curves, International Energy Workshop, Paris, France (June 29- July 1, 2008) 3. UC Round Table Discussion on Modeling Land Use Change Impacts of Future Transportation Fuels, University of California, Davis (March 17, 2008) 4. Conference parallel session chair: Critical Issues of Modeling Hydrogen Transition, International Energy Workshop, Stanford, CA (June 25-27, 2007) 	
Funded Research Projects	<ul style="list-style-type: none"> • PI. "Low Carbon Fuel Standard Implementation Studies," David and Lucile Packard Foundation and the Energy Foundation. August 2008 – May 2009. \$206,030 • Co-PI (with Alex Farrell \$240,000) "Implementation the California Low Carbon Fuel Standard," California Air Resources Board and the Energy Foundation. November 2007 – December 2009. \$150,000 • Co-PI (with Richard White) "Future Water Challenges in a Hydrogen Economy," US DOE Energy Efficiency and Renewable Energy (EERE). UCRL-PRES-235091. October 2007 – September 2008. \$440,000 • "Lifecycle Analysis of the California Air Resources Board's Climate Change Reduction Strategies," California Air Resources Board. July 2007 – June 2009. \$199,561 • PI. "Technological Learning in the Coal Utility Environmental Cost (CUECost) Model: Estimating the Future Cost Trends of SO₂, NO_x, and Mercury Control Technologies," U.S. EPA. July 2006 – November 2006. \$20,000 • PI. "Robertson Seminar Series: Energy and Transportation," a collaborative project between the Carolina Transportation Program, Nicholas School of the Environment and Earth Sciences and the Nicholas Institute of Environmental Policy Solutions of the Duke University. University of North Carolina at Chapel Hill. Fall 2006. Plus matching funds and gifts from Duke University. \$2,000 • Co-applicant and co-investigator. "The Southeastern Transportation Center (STC)," a consortium of 10 universities from five states in DOT region IV. U.S. DOT. August 2006 – July 2009. \$6.25 million • Co-applicant and investigator. "Estimating Future Trends in the Cost of CO₂ Capture Technologies," International Energy Agency Greenhouse Gas R&D Programme, UK. September 2004 – August 2005. \$150,000 • Investigator. "The Effect of Government Actions on Environmental Technology Innovation: Applications to the Integrated Assessment of Carbon Sequestration Technologies." U.S. DOE. July 2000 – June 2003. \$450,000 	
Media	<p>In the News</p> <ul style="list-style-type: none"> • DALLAS, Dec. 22 /PRNewswire-USNewswire/Practical Routes to Meeting Climate Change, Energy Goals <p>Interviews</p> <ul style="list-style-type: none"> • Naomi Lubick "Environmental costs of shipping." <i>Environmental Science and Technology Online News –Policy News</i>, September 19, 2007 	

Experience	<ul style="list-style-type: none"> • Research Scientist, Energy and Environment Directorate, Lawrence Livermore National Laboratory (2007 – 2008) • Research Director, Carolina Transportation Program, University of North Carolina at Chapel Hill (2005-2007) • Oak Ridge Institute for Science and Education Fellow, National Risk Management Research Laboratory, U.S. Environmental Protection Agency (2004-2007) • Post-Doctoral Research Fellow, Department of Engineering and Public Policy, Carnegie Mellon University (2001-2003) • Research Assistant, Research Center of Industrial Safety and Disease, Kaohsiung Medical University (1997 Summer)
Professional Activities and Services	<p>Advisory Committee Member:</p> <ul style="list-style-type: none"> • Assembly Bill 118 (Núñez Statutes of 2007, Chapter 750) Alternative and Renewable Fuel and Vehicle Technology Program Sustainability Subworking Group (2008- present) • Northeast LCFS Advisory Committee (2007-2009) • National Academies' Transportation Research Board <ul style="list-style-type: none"> - Transportation Energy Committee ADC70 (2008 – 20011) - Paper Review Coordinator (2008) - Transportation Energy and Alternative Fuels (2007 – 2008) <p>Reviewer</p> <p><u>Books and Reports</u> (selected):</p> <ul style="list-style-type: none"> - <i>First-order draft of the Working Group 3 contribution to the Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC, 2006);</i> - <i>The Experience with Energy Efficiency Policies and Programmes in IEA Countries: Learning from the Critics (International Energy Agency, 2005)</i> <p><u>Journals</u> (selected):</p> <ul style="list-style-type: none"> - <i>Environmental Research Letters (ERL);</i> - <i>Journal of Comparative Policy Analysis (JCPA);</i> - <i>Environmental Science & Technology (ES&T);</i> - <i>The Energy Journal; Energy Policy;</i> - <i>Atmospheric Environment;</i> - <i>Risk Analysis;</i> - <i>Journal of Exposure Analysis and Environmental Epidemiology;</i> - <i>Journal of the Air and Waste Management Association.</i> <p><u>Others</u> (selected):</p> <ul style="list-style-type: none"> - <i>EPA U.S. Nine Region MARKAL Database, Air Pollution Prevention and Control Division, National Risk Management Research Laboratory, U.S. Environmental Protection Agency (2008).</i> - <i>Proceedings for the 7th International Conference on Greenhouse Gas Control Technologies;</i> - <i>The HyTrans program: A Hydrogen Transition Model, National Transportation Research Center, Oak Ridge National Laboratory (2005 – 2006)</i>
Professional Association	<ul style="list-style-type: none"> • Roundtable for Sustainable Biofuel – Greenhouse Gases Working Group (2008-present) • International Association of Energy Economics (2004-present) • Society for Risk Analysis (1997-2001)