

JAMES H. WILLIAMS

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Education

Ph.D. Energy and Resources, University of California, Berkeley, 1994

M.S. Energy and Resources, University of California, Berkeley, 1986

B.S. Physics, Washington & Lee University, Lexington, VA, 1980

Professional Positions

Chief Scientist, Energy & Environmental Economics, San Francisco, 2010 - present

Associate Professor, Monterey Institute of International Studies, 2008 - present

Senior Consultant, Energy & Environmental Economics, San Francisco, 2005 - 2009

Lecturer, U.C. Berkeley, 2002, 2003, 2006, 2007

Project Manager/Senior Associate, Nautilus Institute, 1997-2000

Post-Doctoral Fellow, U.C. Berkeley and Lawrence Berkeley National Laboratory, 1995-97

Graduate Student Research Assistant, Rocky Mountain Biological Laboratory, 1985

Engineer, MOS Analog Group, National Semiconductor Corp., Santa Clara, CA, 1982-84

Oil and Gas Exploration Field Engineer, Schlumberger Well Services, 1981

Peer-Reviewed Journal Articles

In prep. J.H. Williams, F. Kahrl, Z. Hu, J. Ding, Toward a low carbon electricity system in China, invited article for *Energy Policy* special issue, expected publication date 2011.

In prep. J.H. Williams, S. Von Meier, A. Mahone, L. Alagappan, Infrastructure implications and trade-offs among low-carbon energy pathways: renewables, nuclear energy and carbon capture and storage, invited article for *Energy Policy* special issue, expected publication date 2011.

In prep. B. Haley, J. Ding, T. Espinoza, J. Gallo, A. Kehr, M. Perry, D. Siao, W. Smallen, C. Snyder, M. Torn, J.H. Williams, Greenhouse gas mitigation supply curve for water efficiency measures in California, for submission to *Environmental Science and Technology*, expected publication date 2010.

In prep. J.H. Williams, R. Ghanadan, S. Price, A. Mahone, A. DeBenedictis, W. Morrow, J. Moore, The technology path to deep emissions cuts by 2050: results from a new type of “wedges” model, for submission to *Science*.

Mahone, A., C.K. Woo, J.H. Williams, I. Horowitz (2009), Renewable portfolio standards and cost-effective energy-efficiency investment, *Energy Policy*, 37, 774-777.

Williams, J.H. and F. Kahrl (2008), Electricity reform and sustainable development in China, *Environmental Research Letters*, 3, 044009 1-14.

Von Hippel, D., P. Hayes, J.H. Williams, C. Greacen, M. Sagrillo, and T. Savage (2008), International energy assistance needs and options for the Democratic People’s Republic of Korea (DPRK), *Energy Policy*, 36, 541-552.

- Orans, R., S. Price, J.H. Williams, and C.K. Woo (2007), A Northern California-British Columbia partnership for renewable energy, *Energy Policy*, 35, 3979-3983.
- Williams, J.H. and R. Ghanadan (2006), Electricity reform in developing and transition countries: a reappraisal, *Energy* 31, 815-844.
- Williams, J.H. and N. Dubash (2004), Asian electricity reform in historical perspective, *Pacific Affairs*, 77, 411-436.
- Williams, J.H. and N. Dubash (2004), The political economy of electricity reform in Asia: introduction to *Pacific Affairs* special issue, *Pacific Affairs*, 77, 403-410
- Williams, J.H., and D. Von Hippel (2002), Fuel and famine: rural energy crisis in the Democratic People's Republic of Korea, *Asian Perspective*, 26, 111-140
- Von Hippel, D. and J.H. Williams (2002), Case study of a rural energy survey in the Democratic People's Republic of Korea, *Asian Perspective*, 26, 77-109
- Williams, J.H. (1999), Fang Lizhi's big bang: a physicist and the state in China, *Historical Studies in the Physical and Biological Sciences*, 30, 49-88
- Williams, J.H. (1990), Fang Lizhi's expanding universe, *China Quarterly*, 123, 459-484
- Harte, J. and J.H. Williams (1988), Arctic aerosol and arctic climate, *Journal of Climatic Change*, 13, 161-189

Book Chapters

- Von Hippel, D., T. Suzuki, J. H. Williams, T. Savage, and P. Hayes (2010, forthcoming) Evaluation of the energy security impacts of energy policies, in Benjamin Sovacool, ed., *The Routledge Handbook of Energy Security*, London: Routledge.
- Dubash, N. and J.H. Williams (2006), The political economy of electricity liberalization, in *Transforming Power: Energy as a Social Project*, edited by John Byrne et al., pp.155-189, New Brunswick, NJ: Transaction Publishers.
- Williams, J.H. (2000), Wind power in Inner Mongolia, in *Methodological and Technological Issues in Technology Transfer*, edited by Bert Metz et al., IPCC Working Group 3 Special Report, pp. 387-388, Intergovernmental Panel on Climate Change, Cambridge: Cambridge University Press.

Edited Volumes

- Williams, J.H. and N. Dubash, eds. (2004), The political economy of electricity reform in Asia, special issue of *Pacific Affairs*, 77(1).
- Carson, C., Pollack, E., Westwick, P. and Williams, J.H., eds. (1999), Physicists in the post-war political arena, special issue of *Historical Studies in the Physical and Biological Sciences*, 30(1).
- Williams, J.H., editor and translator (1991), in Fang Lizhi, *Bringing Down the Great Wall: Writings on Science, Culture, and Democracy in China*, 336 pp., New York: Alfred A.Knopf.
- Williams, J.H., editor and translator (1988), Astrophysics and ideology in people's China, special issue of *Chinese Studies in Philosophy*, 19(4).

Reports and Manuals

- F. Kahrl, J.H. Ding, S. Price, J.H. Williams (2010), *Energy Efficiency Power Plant Calculator*, bilingual (Chinese-English) software model and documentation, prepared for the Regulatory Assistance Project and the Natural Resources Defense Council for use in China, <http://china.nrdc.org/library/2010DSMTraining-en>
- A. Mahone, W. Morrow, R. Orans, F. Pearl, S. Price, and J. H. Williams (2010), *After Cap and Trade: An Alternative Climate Policy Strategy for the U.S.*, prepared for the Brookings Institution. An abbreviated version of this report is available at http://www.brookings.edu/papers/2010/0628_cap_trade_pearl.aspx
- A. DeBenedictis, A. Mahone, W. Morrow, S. Price, J.H. Williams (2009), *Meeting California's Long-Term Greenhouse Gas Reduction Goals*, prepared for Hydrogen Energy International, http://www.ethree.com/California_2050.html
- B. Horii, A. Mahone, J. Moore, A. Olson, R. Orans, S. Price, M. Smart, J.H. Williams (2008), *CPUC/CEC Greenhouse Gas Modeling Results and Documentation*, http://www.ethree.com/cpuc_ghg_model.html.
- Goldman, C., N. Hopper, B. Horii, A. Mahone, J. Moore, S. Price, J.H. Williams (2008), *National Action Plan for Energy Efficiency: Guide to Resource Planning with Energy Efficiency*, prepared for U.S. DOE and U.S. EPA, http://www.epa.gov/cleanenergy/documents/resource_planning.pdf
- Williams, J.H., S. Price, J. Moore, W. Morrow (2007), *Draft Methodology for the Evaluation of the Market Transformation Effects of the Self-Generation Incentive Program*, prepared for California Public Utilities Commission.
- Price, S., Dugan, R., E. Kollman, M. McGranahan, J. Moore, J.H. Williams (2006), *Value of Distribution Automation Applications*, report prepared for California Energy Commission, Contract 500-01-025.
- Price, S., E. Kollman, J. Moore, J.H. Williams (2006), *Energy Storage Valuation Tool: Modeling Stakeholder Costs and Benefits*, software and report developed for Electric Power Research Institute.
- Williams, J.H., R. Orans, S. Price, B. Horii, C.K. Woo (2006), *Demand Response Rate and Program Design*, Phase I, report prepared for California Energy Commission, Demand Response Research Center, DRRC-RON-02.
- Williams, J.H., S. Price, C.K. Woo (2005), *A Survey of Time of Use Pricing and Demand Response Programs*, report prepared for U.S. EPA.
- Von Hippel, D., J.H. Williams, and S. Eaton, *Multi-Dimensional Issues in International Electric Power Grid Interconnections* (2005), report prepared for U.N. Department of Economic and Social Affairs, New York: UN/DESA.
- Williams, J.H. (2003), *Our energy future: between Iraq and a hard place*, Nautilus Institute working paper.
- Williams, J.H. (2003), *Our burning path: action or denial on global warming?*, Nautilus Institute working paper.
- Williams, J.H. (2003) *International Best Practices for Assessing and Reducing the Environmental Impacts of High-Voltage Transmission Lines*, report prepared for Third Workshop on Power Grid Interconnection in Northeast Asia, Vladivostok, Russia.

- Von Hippel, D. and J.H. Williams (2003), *Environmental Issues for Regional Power Systems in Northeast Asia*, report prepared for Third Workshop on Power Grid Interconnection in Northeast Asia, Vladivostok, Russia.
- UC/CSU Peak Load Reduction Program (2001), *The University of California and The California State University Summer 2001 Electricity Peak Load Reduction Plan*, report prepared for CEC Contract No. 400-00-019.
- UC/CSU Peak Load Reduction Program (2001), *Photovoltaics For UC And CSU Peak Demand Reduction: A Brief Guide*, report prepared for CEC Contract No. 400-00-019.
- Williams, J.H., D. Von Hippel, and Peter Hayes (2000), *Fuel and Famine: Rural Energy Crisis in the Democratic People's Republic of Korea*, IGCC Policy Paper No. 46, San Diego: Institute on Global Conflict and Cooperation.
- Busch, J.F. , J. Elliott, T. Frank, V. Gratton, T. Starrs, and Williams, J.H. (1998), *Native Power: A Handbook on Renewable Energy and Energy Efficiency for Native American Communities*. Lawrence Berkeley National Lab, LBNL-41004.
- Williams, J.H. (1994), *The Expanding Universe of Fang Lizhi: Science and Politics in Mao's China*. Doctoral dissertation, U.C. Berkeley.
- Williams, J.H. (1986), *A Vehicular Application of the Monolithic Solid Oxide Fuel Cell*. Master's project, U.C. Berkeley.
- Williams, J.H. (1983), *Product and Test Engineer's Handbook for the MM44104 Speech Processor*. MOS Analog Group, National Semiconductor Corporation.

Selected Magazine Articles

- Kammen, D.M. and J.H. Williams (2006), "Plug and Go: Hybrid Electric Cars Drive Away Oil Imports," *California*, 117:5 (September/October 2006) 22.
- Williams, J.H., P. Hayes, D. Von Hippel, C. Greacen, M. Sagrillo. "The Wind Farm in the Cabbage Patch," *Bulletin of the Atomic Scientists*, 55 (May/June 1999) 40-48.
- Williams, J.H., J. Elliott, T. Frank. "Good Energy: Native Americans Lead the Way," *Winds of Change*, 12 (Summer 1997) 14-23
- Williams, J.H. et al. "Tribal College Instructors Learn About Renewable Energy," *Tribal College Journal*, 8:4 (Spring 1997)

Selected Translations (Chinese to English)

- State Electricity Regulatory Commission, *Electricity Regulation Annual Report 2008*, translated for Regulatory Assistance Project by Jim Williams, Ding Jianhua, and Fredrich Kahrl, January 2010
- Dai Qing's acceptance speech, Goldman Environmental Prize Award Ceremony, San Fransisco, April 1993.
- "A Prisoner's Journey," *Newsweek*, September 23, 1991. (Excerpt.)
- "A Man of Unspeakable Thoughts," *New York Times Book Review*, April 21, 1991. (Excerpt.)
- Bringing Down the Great Wall: Writings on Science, Culture, and Democracy in China*, New York: A.A.Knopf, 1991.
- "Peering Over the Great Wall," *Journal of Democracy*, 1(1), 1990.

- "Patriotism and Global Citizenship," in George Hicks, ed., *The Broken Mirror: China After Tiananmen*, London: Longmans, 1991.
- "Keeping the Faith," *The New York Review of Books*, December 21, 1989.
- Fang Lizhi's acceptance speech, Robert F. Kennedy Human Rights Award Ceremony, Washington, D.C., November 1989.
- "Student Tells the Tiananmen Story," *New York Times*, June 12, 1989. (Excerpt.)
- "Beijing: Eyewitness to Massacre," *Washington Post*, June 11, 1989. (Excerpt.)
- "The Expanding Universe of Fang Lizhi: Astrophysics and Ideology in People's China," *Chinese Studies in Philosophy*, 19(4), 1988.

Selected Invited Presentations

- "After Cap and Trade: US Climate Policy Options." Briefing to U.S. Senator Jeff Bingaman, with Ren Orans and Frank Pearl, June 2010.
- "Electricity With Chinese Characteristics: The Complexities of Decarbonizing China's Power Sector," China Environment Forum, Woodrow Wilson Center, Washington, D.C., with FERC Chairman Jon Wellinohof, Fritz Kahrl, and Ding Jianhua, June 2010.
http://www.wilsoncenter.org/index.cfm?fuseaction=events.event_summary&event_id=622580
- "The World in 2050: Technology Pathways to a Low-Carbon Future," Institute for Urban and Environmental Studies, Chinese Academy of Social Sciences, Beijing, June 2010
- "The World in 2050: Technology Pathways to a Low-Carbon Future," Climate Policy Institute, Tsinghua University, Beijing, June 2010
- "Introduction to the Energy Efficiency Power Plant Calculator," Energy Efficiency Power Plant Workshop, Beijing, June 2010
- "Radiation Hazards of Nuclear Energy and Nuclear Weapons," Guest Lectures, ER102 Quantitative Analysis of Global Environmental Problems, U.C. Berkeley, April 2010
- "The World in 2050: Technology Pathways to a Low-Carbon Future," Monterey Institute of International Studies, Environmental Speaker Series, December 2009
- "Meeting California's Greenhouse Gas Reduction Goals in 2050," European Community, Brussels, Belgium, September 2009.
- "Meeting California's Greenhouse Gas Reduction Goals in 2050," California Air Resources Board, (w/ Snuller Price and Bill Morrow), September 2009.
- "Transforming the Global Energy System: The View from California," Sonoma State University, Environmental Forum, May 2009.
- "Transforming the Global Energy System: The View from California," (w/ Snuller Price), World Affairs Council, March 2009.
- "Modeling AB32 in California's Electricity Sector: Impacts and Implications," (w/ Snuller Price), Energy and Resources Group Colloquium, U.C. Berkeley, November 2008.
- "Reducing Greenhouse Gas Emissions from Electricity Generation in California," Guest Lecture, ER254 Electric Power Systems, U.C. Berkeley, April 2008.
- "Climate Change Mitigation and Adaptation: Markets vs. Regulation," U.C. Hastings School of Law, San Francisco, April 2008

- “China’s Energy and Climate Policy,” Guest Lecture, ER291 Climate Policy, U.C. Berkeley, March 2007.
- “The Berkeley Consensus: U.S. and Chinese Perspectives on Global Climate Change,” China-U.S. Climate Change Forum, U.C. Berkeley, May 2006
- “North Korean Energy and Regional Conflict,” School of Journalism, U.C. Berkeley, November 2005
- “Demand Response Pathways,” Workshop on Demand Response Valuation, Title 24 Building Energy Standards Update, California Energy Commission, July 2005.
- “Bad Energy in North Korea: Is Northeast Asian Grid Interconnection a Solution?” School of Advanced International Studies, Johns Hopkins University, February 2005
- “Institutional Dimensions of Electricity Demand Response,” Panelist, Demand Response Research Design Workshop, California Energy Commission/PIER/CIEE, February 2004
- “Energy and Conflict on the Korean Peninsula,” Environmental Studies Seminar, Sonoma State University, May 2003
- “The Social Contract of Electricity,” Political Economy of Power Sector Reform Conference, Stanford University, February 2003
- "Fuel and Famine: North Korea's Rural Energy Crisis," World Affairs Council, San Francisco, November 2000
- “Environmental Security on the Korean Peninsula,” Panelist, Director of Central Intelligence Environmental Center, Arlington, VA, April 2000
- “Solving North Korea’s Rural Energy Crisis,” briefing to South Korean Unification Minister Lim Dong Wan, September 1999
- "Rural Energy and North Korean Stability," Roundtable Symposium on Korea, IGCC/Korean Economic Institute, U.C. San Diego, May 1999
- "An NGO Co-Operative Engagement Project in the DPRK," Conference on Northeast Asian Cooperation, Monterey Institute of International Studies, February 1999.
- "A US NGO Project in Rural North Korea," Emerging from Conflict Conference, Stanley Foundation, Virginia, October 1998.
- "A Chinese Physicist in the Post-War Political Arena," U.C. Berkeley, January 1998.
- “Energy in Native America,” Energy and Resources Group Colloquium, U.C. Berkeley, September 1997
- "Sustainable Energy: Benefits for Tribes," Mni-Sose Intertribal Water Rights Coalition, Rapid City, SD, November 1996
- “The Yurok Solar PV Electrification Project,” invited expert testimony to Yurok Tribal Council, Eureka, CA, September 1995

Courses Taught

- Energy Efficiency Power Plant Calculator Training, June 2010, Workshop on Energy Efficiency Power Plants, Beijing
- Advanced Energy Research Seminar (IP624), Spring 2010, Monterey Institute of International Studies
- Energy and Development Workshop (WKSH8583), Spring 2010, Monterey Institute of International Studies

Greening the Grid: The Present, Past, and Future of Electric Power Systems (IP659), Fall 2009, Monterey Institute of International Studies

Interdisciplinary Energy Analysis (IP548), Spring 2009, Monterey Institute of International Studies

Quantitative Methods in Environmental Science and Policy (IP512), Fall 2008, Spring 2009, Fall 2009, Monterey Institute of International Studies

Climate Change Policy (IP643), Spring 2008 and Fall 2008, Monterey Institute of International Studies

Directed Study (IP698), Spring 2008, Fall 2008, Fall 2009, Spring 2010, Monterey Institute of International Studies

Energy and Environmental Journalism in China (J234), U.C. Berkeley, Spring 2007 (co-taught w/ Orville Schell, Sandy Tolan, Mark Dowie, Rone Tempest)

Quantitative Analysis of Global Environmental Problems (ER102), U.C. Berkeley, 2002, 2003 (co-taught w/ John Harte), 2006 (co-taught w/ Margaret Torn)

Biogeochemistry: Carbon and Nitrogen Cycles (ES320), Colorado College, Spring 1996 (co-taught w/ Margaret Torn)

Renewable Energy and Native American Communities, NAREEP Tribal College Instructor Workshops, 1995-1996

The Political Economy of Energy in Native America (ER290), U.C. Berkeley, 1995-1996 (co-taught w/ Rachel Schurmann)

Advising

Research Advisor, Eric Stoutenberg (Stanford University, Ph.D., E3 Summer Internship) 2010 (topic: Wind Integration in Europe and the U.S.)

Research Advisor, Ben Haley (Monterey Institute of International Studies, M.A., E3 Summer Internship) 2010 (topic: The Nexus Between Water, Energy, and Greenhouse Gas Emissions in California)

Dissertation Committee, Fredrich Kahrl (U.C. Berkeley, Energy and Resources Group, Ph.D.) 2010 (topic: Economics and Policy of China's Energy and Greenhouse Gas Emissions)

Research Advisor, Ding Jianhua (Monterey Institute of International Studies, M.A., E3 Research Intern) 2010 (topic: China's Electric Power System)

Faculty Advisor for Directed Study, Ben Haley (Monterey Institute of International Studies, M.A.) 2010 (topic: Energy and Development)

Faculty Advisor for Directed Study, Claudine Desiree (Monterey Institute of International Studies, M.A.) 2010 (topic: Energy and Development)

Faculty Advisor for Directed Study, Ding Jianhua (Monterey Institute of International Studies, M.A.) 2009 (topic: Environmental Regulation in the U.S.: Lessons for China)

Faculty Advisor for Directed Study, Bridget Nuxoll (Monterey Institute of International Studies, M.A.) 2009 (topic: History of Energy Resources: Coal, Petroleum, and Nuclear Power)

Research Advisor, Anna Monders (Monterey Institute of International Studies, M.A.) 2008 (topic: Arctic Climate Change and International Security)

Faculty Advisor for Directed Study, Neal Reardon (Monterey Institute of International Studies, M.A.) 2008 (topic: Solar Thermal and Wind Power Systems and Site Assessment)

Research Advisor, Jessica Shipley (U.C. Berkeley, Goldman School M.P.A., E3 Summer Internship) 2008 (topic: Achieving Agresssive Emissions Reductions by 2050: Changes and Strategies for the U.S.)

Research Advisor, Zack Subin (U.C. Berkeley, ERG M.S. Project) 2007 (topic: Greenhouse Gas Abatement Supply Curves for California's Transportation Sector)

Switzer Foundation Mentor, Chris Greacen (U.C. Berkeley, ERG Ph.D. Dissertation) 1998-2002 (topic: Renewable Energy, Common Property, and Rural Electricity Provision in Thailand)

Professional Activities

Reviewer, *Environmental Science and Technology*, 2010

Research Proposal Reviewer, Netherlands Organization for Scientific Research (NWO), March 2010

Program Director and Convenor, China-US Climate Change Forum, U.C. Berkeley, Spring 2006

Board of Directors, EcoEquity (US NGO focused on international climate equity issues), 2005 - present

Board of Directors, Palang Thai (Bangkok-based energy and sustainable development NGO), 2004-present

Program Director and Convenor, Workshop on the Political Economy of Asian Electricity Reform, Thailand Environment Institute, Bangkok, Thailand, December 2003

Reviewer, *Energy, the International Journal*, 2005-present

Reviewer, *Pacific Affairs*, 2002-present

Board of Directors, Institute of Sustainable Power, 2001-2002

Organizer and Curriculum Designer, Second Study Tour of DPRK Energy Experts to the U.S. (including first visits by North Koreans to World Bank and U.S. Department of Energy), April 1999

Conference Organizer, Sustainable Energy in North Korea, U.C. Berkeley, April 1999

Conference Organizer, Conference on Clean Coal Technologies in China, Nautilus Institute, Berkeley, CA, January 1999

Conference Convenor and Organizer, Physicists in the Cold War Political Arena, Office of History of Science and Technology, U.C. Berkeley, January 1998

Organizer and Curriculum Designer, First Study Tour of DPRK Energy Experts to the U.S., December 1997

Program Director and Convenor, Berkeley-Princeton Conference on Renewable Energy and Development, May 1997

Organizer and Curriculum Designer, Tribal College Instructor Workshop, Native American Renewable Energy Education Project, Carbondale, CO, August 1996

Scientific Advisor, Citizens for a Better Environment, Oakland, CA 1995-2004

Editorial Advisory Board, *Chinese Studies in Philosophy*, 1993-1997

Honors/Fellowships

Energy and Resources Group Post-Doctoral Fellowship, 1995-97

MacArthur International and Strategic Studies Dissertation Fellowship, 1990-92

Institute on Global Conflict and Cooperation Dissertation Fellowship, 1988-90

Grants and Contracts

Regulatory Assistance Project, *Technical Support for State Electricity Regulatory Commission Analysis of Greenhouse Gas Reduction Policy Options in China's Electricity Sector*, Project Manager and P.I., 2009-2010

Regulatory Assistance Project, *Energy Efficiency Power Plant Calculator for China, Tool Development and Training*, Project Manager and P.I., 2009-2010

Mark Faculty Grant, *Current Developments in U.S. and International Climate Change Policy*, Monterey Institute of International Studies, 2009

Lundeen Faculty Grant, *Arctic Climate Change and International Security*, Monterey Institute of International Studies, 2008

California Public Utilities Commission, *Modeling of Implementation of AB32 (California's Global Warming Solutions Act) in California's Electricity Sector*, P.I. Energy and Environmental Economics, Inc., 2007-2008

California Energy Commission, Public Interest Energy Research Program, *Demand Response Valuation*, P.I. Energy and Environmental Economics, Inc., 2005-2006

California Energy Commission, Public Interest Energy Research Program, *Demand Response Rate Design*, P.I. Energy and Environmental Economics, Inc., 2005-2006

California Energy Commission, *UC/CSU Peak Load Reduction Project*, 2000-2001, P.I. University of California Office of the President/Gruenich Resource Advocates

Department of Energy, *North Korean Energy Study*, 1998-1999, P.I. Peter Hayes

W. Alton Jones Foundation, *North Korean Village Wind Energy Project*, 1997-1999, P.I. Peter Hayes (grant renewed once)

Department of Energy, *Native American Renewable Energy Education Project*, 1995-97, P.I. Neville Cook (grant renewed twice)

Institute on Global Conflict and Cooperation Research Grant, 1986-87, P.I. John Holdren

Certifications

EIT Certificate, California Board for Professional Engineers and Land Surveyors

Photovoltaic Design and Installation, Solar Energy International

Wind Electric System Design and Installation, Solar Energy International

Memberships

American Geophysical Union

IEEE Power and Energy Society

Dissertation Committee

Prof. John Holdren (chair), Prof. Kenneth Jowitt, Prof. Thomas Gold