

# Jim Williams

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***Dr. Williams leads E3's practice in climate change policy and greenhouse gas reduction. He is the lead analyst on the E3 team modeling implementation of AB32 (California's Global Warming Solutions Act) for the California Public Utilities Commission. With more than 20 years experience in the energy industry, he is a specialist in regulatory policy and clean energy technologies, resources, and costs. His practice areas include carbon pricing and market design, renewable generation and transmission, retail rate design for energy efficiency and demand response, and economic modeling/analysis of plug-in hybrid electric vehicles, energy storage, and distribution automation. Dr. Williams is also Associate Professor at the Monterey Institute of International Studies, where he teaches energy and environmental policy, with a focus on energy markets and regulation in Asian developing countries. He received his BS in Physics from Washington and Lee University, and his PhD in Energy and Resources from U.C. Berkeley.***

## **ENERGY & ENVIRONMENTAL ECONOMICS, INC.**

**Senior Consultant**

San Francisco, CA

2005-Present

**Climate Change Policy:** Lead analyst on modeling of electricity sector compliance with AB32 for the California Public Utilities Commission. This work assessed the economic and emissions impacts of different greenhouse gas reduction strategies under consideration by the state, and the findings are a key input to the state's evolving climate policy. The E3 team developed in parallel a sophisticated, publicly available software tool that allows users to create their own greenhouse gas reduction scenarios, based on a detailed representation of the electricity system of western North America. The modeling work was performed in tight coordination with the AB32 regulatory process and subjected to close scrutiny by stakeholders in a formal public comment process.

**Carbon Markets and Pricing:** Modeled electricity sector and multi-sector cap and trade architecture, including a variety of points of regulation, flexibility mechanisms, and entity-specific allowance allocation and auction designs for California state agencies. Analyzed CO<sub>2</sub> price forecasts for Northwest utilities.

**Renewable Resources and Transmission:** Analyzed renewable resource and transmission costs to support CAISO regulatory testimony on the Sunrise Powerlink transmission plan. Analyzed renewable resources and costs for a proposed British Columbia-California transmission line for two western utilities. Developed detailed analysis of wind, solar thermal, geothermal, biomass, and small hydro resource potential, performance, and cost throughout western North America, for a transmission study by consortium of western utility executives.

**Energy Efficiency and Demand Response:** Contributing author of National Action Plan for Energy Efficiency and Guide to Resource Planning with Energy Efficiency for U.S. EPA and U.S. DOE. Conducted extensive surveys of residential, commercial, and industrial rate designs for energy efficiency and demand response for U.S. EPA and a large western utility. Revision of time- and area-specific avoided costs for California's Title 24 building standards. Demand response valuation and program design. Analysis of advanced metering infrastructure.

**Integrated Modeling:** Energy / environmental / economic modeling of California and US greenhouse gas reduction strategies; Western renewable resources and transmission; plug-in hybrid electric vehicles; energy storage systems; demand response from programmable communicating thermostats; and distribution automation.

**Clients Include:** California Public Utilities Commission, California Energy Commission, California Air Resources Board, California Independent System Operator, Electric Power Research Institute, U.S. Environmental Protection Agency, U.S. Department of Energy, Pacific Gas & Electric, Southern California Edison, BC Hydro, Hydro Quebec, Seattle City Light, and Hawaii Electric Company.

**MONTEREY INSTITUTE OF INTERNATIONAL STUDIES**  
**Associate Professor**

Monterey, CA  
2008-Present

In January 2008 appointed Associate Professor in the International Environmental Policy program of the School of International Policy Studies at MIIS. Teaching areas include Climate Policy, Energy Policy, Interdisciplinary Energy Analysis, and Environmental Science and Policy. Research focus on energy policy, markets, and regulation in Asian developing countries. Supervised the institute's first greenhouse gas audit in Spring 2008.

**UNIVERSITY OF CALIFORNIA, BERKELEY**  
**Lecturer and Researcher**

Berkeley, CA  
2002-Present

Frequent co-teacher of ER102, "Quantitative Aspects of Global Environmental Problems," a core course in the graduate Energy and Resources Group and the undergraduate Environmental Science program. The course emphasizes quantitative methods for analyzing climate change, biogeochemical cycles, toxic pollution and public health, stratospheric ozone depletion, nuclear weapons, and the nuclear fuel cycle. Other courses co-taught or guest-lectured in at UC Berkeley include: Climate Change Policy (ER290), Energy in Native America (ER-290), Electric Power Systems (ER254), Environmental Journalism in China (J243), and Journalism Special Topic: North Korea. Research Associate in the Renewable and Alternative Energy Laboratory since 1997. Supervised MS thesis on greenhouse gas reduction opportunities in transportation in 2008.

**UC/CSU PEAK LOAD REDUCTION PROJECT**  
**Project Manager**

San Francisco, CA  
2000-2001

Managed electrical peak demand reduction program for all 37 University of California and California State University campuses during the California electricity crisis, as contractor to Gruenich Resource Advocates. Performed and supervised technical analyses of UC/CSU system-wide electrical load and demand response potential, coordinated internet-based multi-campus load-shedding, managed staff, consultants, contractors, and agency interface.

**NAUTILUS INSTITUTE**  
**Project Manager and Senior Associate**

Berkeley, CA  
1997-2003

From 1997-2000, managed North Korea Energy Project, including design and construction of the Unhari village wind electrification project. Led four-person US engineering team, oversaw planning, logistics, coordination with North Korean counterparts, interface with US government agencies, and post-project publication of scholarly analysis and popular articles. Other Nautilus projects include Northeast Asia regional power grid interconnection and clean coal technology in China. An analysis of wind power in Inner Mongolia was included in an IPCC special study on technology transfer.

**NATIVE AMERICAN RENEWABLE ENERGY EDUCATION PROJECT**  
**Director**

Berkeley, CA  
1995-1997

Developed and oversaw sustainable energy projects and educational programs on American Indian reservations. Managed 15 staff members, consultants, and graduate students. Projects included stand-alone PV, home weatherization, tribal energy surveys, curriculum development, and tribal college instructor training. Regulatory policy analysis, including the potential impacts of electricity deregulation on tribes.

**COLORADO COLLEGE**  
**Visiting Professor**

Colorado Spring, CO  
1996

Co-taught undergraduate lecture course ENV320, "Biogeochemistry: the Global Carbon and Nitrogen Cycles." Course emphasized quantitative methods, ecosystem-ocean-atmosphere-soil interactions, field methods in biogeochemistry, and use of laboratory analytical equipment.

**UNIVERSITY OF CALIFORNIA, BERKELEY**  
**Graduate Researcher**

Berkeley, CA  
1985-1988

For MS thesis, designed monolithic solid oxide fuel cell power plant for electric vehicle, including detailed electrochemical and thermodynamic model. As research assistant in environmental science, conducted field research on acid rain impacts on alpine lakes at Rocky Mountain Biological Laboratory, and mathematically modeled climate impacts of cloud-particulate interactions in the Arctic atmosphere.

**NATIONAL SEMICONDUCTOR**  
**Product Engineer**

Santa Clara, CA  
1982-1984

Production management, testing, and design revisions of CMOS and NMOS analog integrated circuits, including analog-to-digital and digital-to-analog converters, linear filters, and speech synthesizers. Used advanced CAD IC design tools and SEM for failure analysis.

**SCHLUMBERGER WELL SERVICES**  
**Oil Exploration Field Engineer**

Shreveport, LA and Fairmont, WV  
1981

Oil and gas well datalogging. Use of electrical resistance, sonic, and radioactive probes in boreholes to analyze geologic strata for the presence and abundance of hydrocarbons.

## **Education**

**UNIVERSITY OF CALIFORNIA, BERKELEY**  
**MS and PhD in Energy and Resources**

Berkeley, CA

**WASHINGTON AND LEE UNIVERSITY**  
**BS in Physics**

Lexington, VA

## **Citizenship**

United States

## **Research**

### Refereed Articles and Book Chapters (since 2000)

1. Mahone, A., C.K. Woo, J. Williams, I. Horowitz (2008) "Renewable Portfolio Standards and Cost-Effective Energy Efficiency Investment," *Energy Policy*, forthcoming.
2. Williams, J.H. and F. Kahrl, "Electricity Reform and Sustainable Development in China," (Energy invited article, in submission)

3. Von Hippel, D., P. Hayes, J.H. Williams, C. Greacen, M. Sagrillo, and T. Savage, "International Energy Assistance Needs and Options for the Democratic People's Republic of Korea (DPRK)," *Energy Policy*, 36 (2008) 541-552
4. Dubash, N. and J.H. Williams, "The Political Economy of Electricity Liberalization." In John Byrne et al., eds., *Transforming Power: Energy as a Social Project, Energy and Environmental Policy Series, Vol. 9*, New Brunswick, NJ: Transaction Publishers (2006)
5. Williams, J.H. and R. Ghanadan, "Electricity Reform in Developing and Transition Countries: A Reappraisal," *Energy* 31:6-7 (2006) 815-844
6. Williams, J.H. and N. Dubash, "Asian Electricity Reform in Historical Perspective," *Pacific Affairs* 77:3 (2004) 411-436
7. Williams, J.H. and N. Dubash, "The Political Economy of Electricity Reform in Asia: Introduction to Pacific Affairs Special Issue," *Pacific Affairs*, 77:3 (2004) 403-410
8. Williams, J.H., and D. Von Hippel. "Fuel and Famine: Rural Energy Crisis in the Democratic People's Republic of Korea," *Asian Perspective*, 26 (2002) 111-140
9. Von Hippel, D. and J.H. Williams, "Case Study of a Rural Energy Survey in the Democratic People's Republic of Korea," *Asian Perspective*, 26 (2002) 77-109
10. Williams, J.H. "Wind Power in Inner Mongolia." In Bert Metz et al., eds., *Methodological and Technological Issues in Technology Transfer, A Special Report of IPCC Working Group 3, Intergovernmental Panel on Climate Change*, Cambridge: Cambridge University Press (2000)

#### Reports and Manuals (since 2000, selected)

1. B. Horii, A. Mahone, J. Moore, A. Olson, R. Orans, S. Price, M. Smart, J.H. Williams, C.K. Woo, *CPUC/CEC Greenhouse Gas Modeling Results and Documentation*, May 2008
2. Price, S., B. Horii, J. Moore, J.H. Williams, *National Action Plan for Energy Efficiency: Guidebook to Incorporating Energy Efficiency in Planning*, prepared for U.S. DOE and U.S. EPA, November 2007.
3. Williams, J.H., S. Price, J. Moore, W. Morrow, *Draft Methodology for the Evaluation of the Market Transformation Effects of the Self-Generation Incentive Program*, prepared for California Public Utilities Commission, May 2007
4. Price, S., Dugan, R., E. Kollman, M. McGranahan, J. Moore, J.H. Williams, *Value of Distribution Automation Applications*, report prepared for California Energy Commission, Contract 500-01-025, October 2006.
5. Price, S., E. Kollman, J. Moore, J.H. Williams, *Energy Storage Valuation Tool: Modeling Stakeholder Costs and Benefits*, software and report developed for Electric Power Research Institute, September 2006.
6. Williams, J.H., S. Price, C.K. Woo, *A Survey of Time of Use Pricing and Demand Response Programs*, report for U.S. EPA, July 2006.
7. Williams, J.H., R. Orans, S. Price, B. Horii, C.K. Woo, *Demand Response Rate and Program Design, Phase I*, report for California Energy Commission, Demand Response Research Center, DRRC-RON-02, January 2006.

8. Von Hippel, D., J.H. Williams, and S. Eaton, *Multi-Dimensional Issues in International Electric Power Grid Interconnections*, report prepared for U.N. Department of Economic and Social Affairs, New York: UN/DESA, June 2005.
9. Williams, J.H., "Our Energy Future: Between Iraq and a Hard Place - A Briefing Paper on Energy," *Nautilus Institute working paper*, November 2003.
10. Williams, J.H., "Our Burning Path: Action or Denial on Global Warming? – A Briefing Paper on Climate," *Nautilus Institute working paper*, October 2003.
11. Williams, J.H. "International Best Practices for Assessing and Reducing the Environmental Impacts of High-Voltage Transmission Lines," *Third Workshop on Power Grid Interconnection in Northeast Asia, Vladivostok, Russia (September 2003)*
12. Von Hippel, D. and J.H. Williams, "Environmental Issues for Regional Power Systems in Northeast Asia," *Third Workshop on Power Grid Interconnection in Northeast Asia, Vladivostok, Russia, (September 2003)*
13. Williams, J.H., D. Von Hippel, and P. Hayes, "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 (2000)*

#### Conference Presentations (since 2000, selected)

1. "Climate Mitigation and Adaptation Are Infrastructure and Investment Problems," *Conference on Surviving Climate Change: Adaptation and Innovation, U.C. Hastings, April 2008*
2. "A Consensus Statement on Climate Change," *China-US Climate Change Forum, U.C. Berkeley, May 2006*
3. "North Korean Energy and Regional Conflict" *School of Journalism, U.C. Berkeley, November 2005*
4. "Demand Response Pathways," *Workshop on Demand Response Valuation, Title 24 Building Energy Standards Update, California Energy Commission, July 2005.*
5. "Bad Energy in North Korea: Is Northeast Asian Grid Interconnection a Solution?" *School of Advanced International Studies, Johns Hopkins University, February 2005*
6. "Institutional Dimensions of Electricity Demand Response," *Demand Response Research Design Workshop, California Energy Commission, February 2004*
7. "Environmental Best Practices for Power Grid Interconnections," *Third Workshop on Power Grid Interconnection in Northeast Asia, Vladivostok, Russia, September 2003*
8. "Energy and Conflict on the Korean Peninsula," *Environmental Studies Seminar, Sonoma State University, May 2003*
9. "The Social Contract of Electricity," *Political Economy of Power Sector Reform Conference, Stanford University, February 2003*
10. "Fuel and Famine: North Korea's Rural Energy Crisis," *World Affairs Council, San Francisco, November 2000*

## Edited Books and Journals (selected)

1. Williams, J.H. and N. Dubash, eds., "The Political Economy of Electricity Reform in Asia," special issue of *Pacific Affairs*, 77:3 (2004).
2. Carson, C., Pollack, E., Westwick, P. and Williams, J.H., eds., "Physicists in the Post-War Political Arena," special issue of *Historical Studies in the Physical and Biological Sciences*, 30:1 (1999).
3. Williams, J.H., editor and translator, *Bringing Down the Great Wall: Writings on Science, Culture, and Democracy in China*, New York: A.A.Knopf (1991).
4. Williams, J.H., editor and translator, "The Expanding Universe of Fang Lizhi: Astrophysics and Ideology in People's China," special issue of *Chinese Studies in Philosophy*, 19:4 (1988).