



Amber Mahone

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ENERGY AND ENVIRONMENTAL ECONOMICS, INC.

Director, Clean Energy

San Francisco, CA

2007 - present

Amber Mahone leads E3's Clean Energy practice at E3. Ms. Mahone and her team specialize in analyzing and modeling long-term greenhouse gas reduction strategies in the energy economy. She has lead California's analysis of greenhouse gas reduction strategies, and has worked on similar projects in the Northwest, New York, New England, and the United States. The Clean Energy practice area brings an interdisciplinary approach to energy analysis, weaving together E3's strengths in electricity planning and markets with a broader, economy-wide perspective on how the transportation, buildings and industrial sectors may evolve over time.

Ms. Mahone's interests range from renewable integration, to transportation and building efficiency and electrification, to biofuels and emerging low-carbon technologies. With over 10 years of experience at E3, Ms. Mahone also has also worked in electricity resource planning, energy efficiency cost-effectiveness, and non-wires alternatives analysis. Ms. Mahone holds an M.P.A. from Princeton University and a B.A. in International Relations from Wellesley College.

Examples of recent projects include:

- **California Air Resources Board 2030 Target Scoping Plan Update, 2016- 2017.** Managing E3's greenhouse gas modeling work with the California Air Resources Board as part of a public stakeholder process to update the state's AB 32 Scoping Plan. This project requires interpreting and representing federal, state and local laws and regulations in the PATHWAYS model, and presenting the modeling results to state agency staff and the public.
- **California Independent System Operator SB 350 Regional Integration Study, 2016.** Managing E3's role in a complex modeling project with the California Independent System Operator to evaluate the costs and benefits to California ratepayers of regional integration of the Western Grid. This study also assesses the greenhouse gas, land use, environmental justice and jobs impacts of regional integration of the grid. The study was legislatively mandated under California SB 350 (2015) and is part of a broad stakeholder process.
- **California Energy Commission Long-term Energy Futures, 2016 – 2017.** Managing a large research grant with the California Energy Commission through the Electric Program Investment Charge (EPIC). The research grant was awarded to E3 to develop and evaluate long-term greenhouse gas reduction scenarios for California in the context of understanding climate change impacts to the state's energy infrastructure and economy. The research project is being performed in conjunction with Lawrence Berkeley National Laboratory, UC Berkeley and UC Irvine.
- **California Energy Agencies Analysis of Meeting California's 2030 Climate Goals, 2014 – 2015.** Worked with the energy principals of California's major energy agencies: the Air Resources Board, the California Public Utilities Commission, the Energy Commission and the Independent System

Operator, with input from Governor Brown's office. Managed the analysis of what would be required to reduce greenhouse gas emissions to meet the state's 2050 greenhouse gas goals. The results of this analysis were used to inform the Governor's 2030 greenhouse gas reduction target of 40% below 1990 levels, which was later enacted into law under SB 350.

- **Northwest Utility Cost of Carbon Abatement, 2016.** Managed a project with a Northwest utility to evaluate the cost per ton of CO₂ of different greenhouse gas abatement strategies in the region.
- **Southern California Gas Company Decarbonizing Pipeline Gas, 2014 – 2015.** Worked with Southern California Gas Company to evaluate the role of the natural gas distribution company in a low-carbon future. This project used E3's PATHWAYS model to evaluate options and trade-offs for the use of decarbonized gas in buildings and the transportation sectors.
- **Investigating a Higher Renewables Portfolio Standard in California, PG&E, SCE, SDG&E, 2013.** Managed a multi-client, high profile engagement with California's five largest electric utilities to model the renewable integration implications of increasing the state's renewable electricity generation to 50% by 2030. This project used a new production simulation dispatch algorithm developed by E3, called REFLEX.
- **Colorado Public Utilities Commission and Western Electricity Coordinating Council Scenario Planning, 2012.** Scenario Planning for the Electric Sector, Assisted the Colorado Public Utilities Commission and the Western Electricity Coordinating Council (WECC) in separate efforts to develop long-term electricity-sector scenarios for use in resource and transmission planning.
- **Bonneville Power Administration Non-wires Alternatives, 2012.** Analyzed cost-effectiveness of, and resource potential for, energy efficiency, distributed generation, generator re-dispatch and demand response alternatives to a proposed transmission line in Bonneville Power Administration's service territory.
- **Northwestern utility energy efficiency and demand response cost effectiveness.** Worked with a coalition of Northwestern electric utility cooperatives to evaluate the business case for energy efficiency and demand response programs in their service territory.
- **California Energy Commission Time Dependent Valuation for the Energy Efficiency Building Code, 2012.** Project manager for the economic analysis underlying the 2013 update to the California Title 24 energy efficiency building standards.
- **BCHydro Integrated Resource Planning, 2010.** Developed scenario forecasts of carbon dioxide emissions in the West by state and province and scenarios of energy efficiency and electric vehicle adoption.
- **California Public Utilities Commission Long-term Procurement Planning, 2010.** Supported the California Public Utilities Commission in their Long-term Procurement Plan proceeding, including development of recommendations regarding the breadth and scope of the California Investor-Owned Utility long-term plans.
- **Hydrogen Energy International, Greenhouse Gas Reduction Scenarios in California, 2009.** Part of team that developed an independent and publicly available report on "Meeting California's Long-Term Greenhouse Gas Reduction Goals." The report evaluated emission reduction options in all sectors of the California economy through the year 2050.
- **California Public Utilities Commission Electricity Sector Greenhouse Gas Abatement Analysis, 2007 - 2010.** Performed analysis of California's electricity sector compliance with the state's Global Warming Solutions Act (AB 32) for the California Public Utilities Commission, assessing the economic and emissions impacts of different greenhouse gas reduction strategies in the electricity sector under consideration by state policymakers.

NATURAL RESOURCES DEFENSE COUNCIL (NRDC)

Intern, Climate Center

Washington, DC

Summer 2006

- Assisted NRDC in furthering national energy policies that are sustainable and climate friendly. Researched coal-to-liquid fuel technology, carbon sequestration and enhanced oil recovery.
- Researched and presented findings to NRDC staff on the energy intensity, pollution emissions and market conditions of polyvinyl chloride (PVC) production in China.

INTERNATIONAL MONETARY FUND (IMF)

Research Assistant, Policy Development and Review Department

Washington, DC

2003 - 2005

- Researched and wrote case study on macroeconomic impacts of aid inflows to Ethiopia as one of five case studies for IMF Board Paper. Created briefing material and wrote speeches for the IMF Spring and Annual Meetings, the G-8 Summit in Gleneagles, as well as other high profile international summits.

Education

Princeton University

M.A., Public Affairs - Certificate in Science, Technology, and Environmental Policy

Princeton, NJ

June 2007

Wellesley College

*B. A., International Relations, minor in Economics
Summa Cum Laude*

Wellesley, MA

2003

Bard College, International Honors Program

Global Ecology Study Abroad Program in the United States, England, Tanzania, India, the Philippines and Mexico

Annandale-on-Hudson, NY

2001 - 2002

Citizenship

United States

Publications

1. Mahone, A., D. Mahone, E. Hart, (2016) "What if Efficiency Goals were Carbon Goals?" ACEEE Summer Study 2016 Conference Proceedings.
2. Yeh, S., C. Yang, M. Gibbs, D. Roland-Holst, J. Greenblatt, A. Mahone, D. Wei, G. Brinkman, J. Cunningham, A. Eggert, B. Haley, E. Hart, J. Williams, (2016), "A modeling comparison of deep greenhouse gas emissions reduction scenarios by 2030 in California", *Energy Strategy Reviews*, 13-14 (2016) 169-180.

3. Olson, A., A. Mahone, E. Hart, J. Hargreaves, R. Jones, N. Schlag, G. Kwok, N. Ryan, R. Orans, R. Frowd, (2015), "Halfway There: Can California Achieve a 50% Renewable Grid?", *IEEE Power and Energy Magazine* (July/August 2015) 41 – 52.
4. McKenzie, L., R. Orans, J. Williams, A. Mahone, (2014) "Strengthening the Clean Power Plan: Three Key Opportunities for the EPA," *The Electricity Journal*, Vol. 27(10), 80-92.
5. Williams, J., A. DeBenedictis, R. Ghanadan, A. Mahone, J. Moore, W. Morrow III, S. Price, M. Torn, (2012) "The Technology Path to Deep Greenhouse Gas Emissions Cuts by 2050: The Pivotal Role of Electricity," *Science*, Vol. 335, 53 – 59.
6. Mahone, A., B. Haley, R. Orans, J. Williams, (2011) "Electric Vehicles and Gas-Fired Power: A Strategic Approach to Mitigating Rate Increases and Greenhouse Price Risk," *Public Utilities Fortnightly* (Dec 2011) 42 - 50, available at: http://www.fortnightly.com/exclusive.cfm?o_id=918
7. Orans, R., F. Pearl, A. Mahone, (2010) "A Modest Proposal: After Cap and Trade," *The Brookings Institute papers*, available at: http://www.brookings.edu/papers/2010/0628_cap_trade_pearl.aspx
8. Mahone, A., C.K. Woo, J. Williams, I. Horowitz (2009) "Renewable Portfolio Standards and Cost-Effective Energy Efficiency Investment," *Energy Policy*, 37(3), 774 - 777.

Selected Presentations

1. (2016) "PATHWAYS to Decarbonization: Implications for Electricity Generation, Renewables and Natural Gas," IPIECA Low Emissions Pathways Workshop, March 15 – 16, 2016, Houston Texas.
2. (2016) "Cap and Trade and Other Carbon Reduction Policies: Complementary or Counterproductive?" EUCI Conference on Optimizing Carbon Market Mechanisms in the Western Interconnect, January 20 – 21, 2016, Los Angeles, CA.
3. (2015) "West Coast Climate Change Policies," Western States Petroleum Association Issues Conference, October 30, 2015, Half Moon Bay, CA.
4. (2015), "California Climate Goals for 2030 and 2050," California Council for Environmental and Economic Balance Summer Issues Seminar, July 15, 2015, Lake Tahoe, CA.
5. (2015) "Cap and Trade and Complementary Climate Policies in California: AB32 and Beyond," North American Carbon Program, January 28, 2015, Washington, DC.
6. (2014) "The Long Game: Energy Efficiency in a Low Carbon World" March 30 – April 1, 2014, ACEEE National Symposium on Market Transformation, Baltimore, MD.
7. (2014) "The Effect of High Renewable Penetration on California Markets and Carbon Balance," with Arne Olson, EUCI Conference on California Carbon Policy Impacts on Western Power Markets, January 27, 2014, San Francisco, CA.

8. (2011) *"Emerging Programs & Policies in Customer Information and Behavior," Behavior, Energy and Climate Change Conference, Nov. 30 – Dec. 2, 2011, Washington DC.*
9. (2011) *"Carbon Reductions and Impacts on Electric Utilities," Southeast Electricity Exchange IRP Task Force Meeting, September 20, 2011, Charlotte, NC.*
10. (2011) *"Energy Efficiency and CO2 Savings," International Energy Program Evaluation Workshop on Evaluating Carbon Emissions from Energy Efficiency Projects, August 15, 2011, Washington DC.*
11. (2011) *"Ratepayer risk, Greenhouse Gas Emissions and Electric Vehicles," Advanced Workshop in Regulation and Competition, 24th Annual Western Conference, June 16, 2011, Monterey, CA.*
12. (2010) *"Getting to 2050: Pathways to deep reductions in GHG emissions," WestCARB Annual Business Meeting, October 19, 2010, Sacramento, CA.*
13. (2009) *"Energy Efficiency in 2050: Long-Term Greenhouse Gas Reduction Targets," ACEEE'S Fifth National Conference on Energy Efficiency as a Resource, September 27 – 29, 2009, Chicago, Illinois.*
14. (2009) *"Long-term Greenhouse Gas Reductions in California: Vehicle Electrification and Electricity Generation in 2050," 32nd IAEE International Conference: Energy, Economy, Environment: The Global View, June 21 – 24, 2009, San Francisco, California.*
15. (2008) *"Energy Efficiency's Impact on California's Renewable Energy Development," ACEEE Summer Study on Energy Efficiency in Buildings, August 17 – 22nd, 2008, Pacific Grove, CA.*