



44 Montgomery Street, Suite 1500, San Francisco, CA 94104
snuller@ethree.com

ENERGY AND ENVIRONMENTAL ECONOMICS, INC.

San Francisco, CA

Senior Partner

Mr. Price joined E3 in 1993 and Distributed Energy Resource (DER) practice area. For over 25 years, he has helped state and federal government agencies, utilities, and technology companies recognize and support a clean energy transition. His work in regulatory analysis focuses on evaluation of DER cost-effectiveness and he has contributed to assessments of the largest and most sophisticated DER programs in the U.S., including those in California, New York, and other states. He has also built several tools to support utility planning and assessment of distributed resources as well as rooftop solar, energy storage, advanced demand response, building standards, and other resources. In 2012, Mr. Price co-authored a landmark E3 article in the journal *Science* exploring the pivotal role of electrification in achieving deep greenhouse gas reductions. His clients include state agencies such as California Public Utilities Commission, California Energy Commission, New York State Energy Research and Development Authority; utilities such as Pacific Gas and Electric, Consolidated Edison, Southern California Edison, National Grid; and technology companies and others. Some select projects at E3 by practice area include:

Distributed Energy Resources:

- Technical lead for New York City Local Law 97 Implementation Action Plan for the NYC Department of Energy Management. This project, currently underway, charts an implementation plan to achieve 40% reductions in greenhouse gas emissions in city operations by 2025, and 50% reduction by 2030.
- Lead investigator for the development of California's Avoided Costs (2004 to Present). Mr. Price oversees the E3 work on the cost-effectiveness framework for California's DER cost-effectiveness assessment used to evaluate the nearly \$2 billion per year portfolio.
- Lead investigator for the development of the Time-Dependent Valuation (TDV) methodology adopted by the California Energy Commission for the 2005, 2008, 2013, 2016, and 2019 Title 24 Building Standards.
- Led numerous analyses on the cost-effectiveness of Net Energy Metering for state commissions, energy offices, and legislatures. Work was completed in California, Nevada, New York, and other states and jurisdictions.

Energy Transition:

- Led analysis of the impact of California's Assembly Bill 32 (Global Warming Solutions Act) on the electricity sector for the California Public Utility Commission (CPUC) and California Air Resources Board (CARB). Continues to lead the E3 team in supporting the ARB in periodic Scoping Plan Updates.
- Principal Investigator for New York State Energy Research and Development Authority in the development of deep decarbonization scenarios for New York in support of the CLCPA.

- Updated the energy efficiency framework to allow California’s public purpose funds to be spent on fuel switching subject to emissions, source energy, and cost-effectiveness criteria.

Energy Efficiency and Demand Response:

- Supported the work to develop the U.S. EPA / DOE *National Action Plan for Energy Efficiency*. Led the development of materials for the Leadership Group on the following topics: the business case for energy efficiency; decoupling and incentives for utility shareholders; and integrating energy efficiency in resource planning. Provided material contributions to the 2015 DOE *Quadrennial Energy Review* on energy efficiency, solar rooftops, and energy storage.
- Led the team that developed the CPUC Demand Response cost-effectiveness tool, the “DR Screening Template.” Supported the California ISO in its response to FERC regarding Order 719 and the status of demand response in California. Supported the Lawrence Berkeley National Lab Demand Response Potential Study released in 2016.

Integrated Distribution Planning:

- Since 1993, Mr. Price has led dozens of studies and pilots on the economics of distributed resources across a range of technologies including renewables, energy storage, combined heat and power, demand response, and energy efficiency. He has evaluated numerous local integrated resource planning (LIRP) analyses for distribution utilities and developed several economic and reliability screening tools to evaluate distributed resource.

Education

Stanford University	Palo Alto, CA
<i>M.S., Engineering Economic Systems and Operations Research</i>	1998

Awarded a Research Assistantship to study the proposed structure of California’s electric utility industry after deregulation

Swarthmore College	Swarthmore, PA
<i>B.A., Economics and B.S., Engineering</i>	1993

Citizenship

United States

Selected Professional Reports and Publications

1. **A. Mahone, Dr. Z. Subin, J. Kahn-Lang, D. Allen, V. Li, G. De Moor, Dr. N. Ryan, S. Price “Deep Decarbonization in a High Renewables Future: Updated Results from the California PATHWAYS Model” (2018).**
2. **Aas, D., S. Bharadwaj, A. Mahone, Z. Subin, T. Clark, S. Price “Pacific Northwest Pathways to 2050” (2018).**

3. Price, S., Z. Ming, A. Ong "Nevada Net Energy Metering Impacts Evaluation 2016 Update" (2016)
4. **J. Williams, A. DeBenedictis, R. Ghanadan, A. Mahone, J. Moore, W. Morrow III, S. Price, M. Torn, "The Technology Path to Deep Greenhouse Gas Emissions Cuts by 2050: The Pivotal Role of Electricity" *Science* 06 Jan 2012: Vol. 335, Issue 6064, pp. 53-59.**
5. Sreedharan, P., D. Miller, S. Price and C.K. Woo (2012) "Avoided cost estimation and cost-effectiveness of permanent load shifting in California," *Applied Energy*, 96, 115-121.
6. Moore, J., C.K. Woo, B. Horii, S. Price and A. Olson (2010) "Estimating the Option Value of a Non-firm Electricity Tariff," *Energy*, 35, 1609-1614.
7. DeBenedictis, A., T. E. Hoff, S. Price and C.K. Woo (2010) "Statistically Adjusted Engineering (SAE) Modeling of Metered Roof-Top Photovoltaic (PV) Output: California Evidence," *Energy*, 35, 4178-4183.
8. *California Greenhouse Gas Modeling of the Electricity Sector, Commissioned by the California Public Utilities Commission, and the California Air Resources Board.*
9. **An Update to California Time-Dependent Valuation in Title 24. Analysis, Methodology, and Stakeholder Process in the 2005, 2008, 2013, 2016, and 2019 Title 24 Code Cycles.**
10. Woo, C.K., E. Kollman, R. Orans, S. Price and B. Horii (2008) "Now that California Has AMI, What Can the State Do with It?" *Energy Policy*, 36, 1366-74.
11. Orans, R., S. Price, J. Williams, C.K. Woo and J. Moore (2007) "A Northern California - British Columbia Partnership for Renewable Energy" *Energy Policy*, 35:8, 3979-3983 (Lead article).
12. *National Action Plan for Energy Efficiency, U.S. Environmental Protection Agency, Washington D.C., 2006, Authors not cited – S. Price was a contributing author.*
13. **Methodology and Forecast of Long Term Avoided Costs for the Evaluation of California Energy Efficiency Programs, California Public Utilities Commission, San Francisco, CA (2004). Authors: R. Orans, C.K. Woo, B. Horii, S. Price, A. Olson, C. Baskette, Joel Swisher.**
14. *Phase 1 Results: Establish the Value of Demand Response, Orans, Ren et al. Energy and Environmental Economics. DRRC Report. LBNL-60128 Collaborative Report. April 2006.*
15. *Assessment of California CHP market and Policy Options for Incremental Penetration, EPRI, Palo Alto, CA California Energy Commission, Sacramento, CA 2005. Senior Principal Investigators: K. Darrow, S. McNulty, S. Price.*
16. Hartway, R., S. Price and C.K. Woo (1999) "Smart Meters, Customer Choice and Profitable Time of Use Rate Option," *Energy*, 24, 895-903.