

Karl R. Rábago, Rábago Energy LLC

Solar Experience

General: Karl R. Rábago has 32 years of experience working with the regulatory, technology, and business issues associated with solar energy, energy efficiency, wind energy, and utility regulation. That experience includes service as a public utility commissioner in Texas; a Deputy Assistant Secretary for the U.S. Department of Energy in charge of solar research and development programs; an advocate with Rocky Mountain Institute, Environmental Defense Fund, the Houston Advanced Research Center, the Pace Energy and Climate Center; a utility executive and regulatory affairs manager with Austin Energy and AES; and consulting and expert witness work in more than 165 cases and proceedings. He is an attorney and has earned degrees in business management, law, military law, and environmental law. He is a veteran of more than twelve years service in the US Army, in the Armored Cavalry and Judge Advocate General's Corps. He has been married to Pam Rábago for more than 44 years, and they have three children and three grandchildren. Karl lives in Denver.

Key Solar Energy Experience:

Mr. Rábago has been a key member of the Local Solar for All Coalition (localsolarforall.org) team. LS4A has commissioned groundbreaking studies of the entire grid for the continental U.S., as well as for several individual states, using the powerful new WIS:dom®-P planning model developed by Vibrant Clean Energy. The model performs capacity expansion and production cost modeling at fine resolution—3 sq. km. / 5 minutes / 1 kiloWatt—and shows that aggressive deployment of distributed solar and distributed storage is the least cost path for decarbonization and can yield hundreds of billions of dollars in electricity cost savings over the coming decades.

Mr. Rábago works with the Coalition for Community Solar Access to as an expert advisor in Community / Shared Solar Program design and implementation, notably in Virginia, New York, and New Mexico. He serves on the boards of the Center for Resource Solutions, Solar United Neighbors, and the Texas Solar Energy Society.

Mr. Rábago has testified and/or submitted formal comments on solar valuation in Arkansas, California, Connecticut, Georgia, Guam, Iowa, Kentucky, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Missouri, New York, North Carolina, Rhode Island, Vermont, and Virginia. (Case and docket citations available on request.)

As a consultant advisor to the National Audubon Society, Mr. Rábago has worked and continues to work on several past and on-going dockets, including before the Arkansas Public Service Commission, the New Orleans City Council, the Mississippi Public Service Commission, and the Federal Energy Regulatory Commission on matters relating to net energy metering, regulatory and legislative solar policy, transmission planning and siting, and markets for distributed energy resources.

As Executive Director of the Pace Energy and Climate Project, Mr. Rábago was an active participant in the New York “Reforming the Energy Vision” proceeding, including proceedings relating to the Value of Distributed Energy Resources.

Since 2012, Mr. Rábago has frequently provided advice to solar developers working throughout the United States.

At Austin Energy, Mr. Rábago led the utility's \$5 million annual capital program for solar project development on public buildings, and managed commercial and residential rebate and net metering programs as well. While there, he developed a new performance-based incentive program for commercial customers, and created the award winning "Value of Solar Tariff" now used in Austin for residential customers and subsequently adopted in Minnesota law.

As a director for the federally-chartered Jicarilla Apache Nation Utility Authority, Mr. Rábago oversaw the installation and operation of a solar PV demonstration project on tribal land and led the creation of a "First Steps" plan for sustainable energy for the Nation.

While leading the Energy Solutions Group at the Houston Advanced Research Center, Mr. Rábago also served as President of the Board of Directors for the Texas Renewable Energy Industries Association.

At Rocky Mountain Institute, as a managing director, Mr. Rábago co-authored "Small Is Profitable," a definitive award-winning reference that characterizes the operational, engineering, financial, and economic benefits of right-sized energy resources, including solar PV.

While with CH2M HILL, an engineering firm, Mr. Rábago co-authored electricity industry restructuring studies for both Colorado and Alaska that addressed, among many other things, potential for solar energy development in those states.

While at the Environmental Defense Fund, Mr. Rábago worked with all the major utilities in Texas on deliberative polling exercises in the context of integrated resource planning to gauge and report strong public support in Texas for solar energy, and to reflect that support in the RPS enacted in utility restructuring.

As Deputy Assistant Secretary at the U.S. Department of Energy, he was responsible for the solar photovoltaic research, development, and demonstration, and supervised research programs conducted at the National Renewable Energy Laboratory, Sandia National Laboratory, universities, and other organizations. He testified before and worked with Congress to grow solar research programs funded through the Department of Energy.

As NARUC Energy Conservation Committee Vice Chair, he co-led, with stakeholders from around the country, in the creation and operation of the Photovoltaic Collaborative Market Project to Accelerate Commercial Technology ("PV-COMPACT"), a supporting organization to the Utility PhotoVoltaic Group ("UPVG"), funded by an innovative and successful new approach to public/private partnership in technology demonstration and deployment.

As a public utility commissioner in Texas in the early 1990s, he worked with utilities in Texas to craft line extension rules and supported utility solar and private pilot and demonstration projects in Texas.

While teaching environmental law at the U.S. Military Academy at West Point, Mr. Rábago earned a Master of Laws degree from the Pace Law School (now Elisabeth Haub School of Law) and conducted extensive research on environmental externalities. His research was included in the seminal treatise on externalities—"The Environmental Costs of Electricity"—published by the Pace Energy and Climate Center.

Relevant Publications:

The Future of Decentralized Electricity Distribution Networks: Ch. 14 – Performance-Based Regulation to Drive Transformation and Encourage DER Market Growth, contributing co-author with Jesse Hitchcock, Elsevier (2023).

Climate Change Law: An Introduction, contributing author (Introduction to Energy Law), Elgar (2021).

Distributed Generation Law, contributing author, American Bar Association Environment, Energy, and Resources Section (August 2020)

National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources, contributing author, National Energy Screening Project (August 2020)

Achieving 100% Renewables: Supply-Shaping through Curtailment, with Richard Perez, Marc Perez, and Morgan Putnam, PV Tech Power, Vol. 19 (May 2019).

A Radical Idea to Get a High-Renewable Electric Grid: Build Way More Solar and Wind than Needed, with Richard Perez, The Conversation, online at <http://bit.ly/2YjnM15> (May 29, 2019).

Reversing Energy System Inequity: Urgency and Opportunity During the Clean Energy Transition, with John Howat, John Colgan, Wendy Gerlitz, and Melanie Santiago-Mosier, National Consumer Law Center, online at www.nclc.org (Feb. 26, 2019).

Revisiting Bonbright's Principles of Public Utility Rates in a DER World, with Radina Valova, The Electricity Journal, Vol. 31, Issue 8, pp. 9-13 (Oct. 2018).

Achieving Very High PV Penetration – The Need for an Effective Electricity Remuneration Framework and a Central Role for Grid Operators, with Richard Perez (corresponding author), Energy Policy, Vol. 96, pp. 27-35 (2016).

The Net Metering Riddle, Electricity Policy.com, April 2016.

The Clean Power Plan, Power Engineering Magazine (invited editorial), Vol. 119, Issue 12 (Dec. 2, 2015)

The 'Sharing Utility:' Enabling & Rewarding Utility Performance, Service & Value in a Distributed Energy Age, co-author, 51st State Initiative, Solar Electric Power Association (Feb. 27, 2015)

Rethinking the Grid: Encouraging Distributed Generation, Building Energy Magazine, Vol. 33, No. 1 Northeast Sustainable Energy Association (Spring 2015)

The Value of Solar Tariff: Net Metering 2.0, The ICER Chronicle, Ed. 1, p. 46 [International Confederation of Energy Regulators] (December 2013)

A Regulator's Guidebook: Calculating the Benefits and Costs of Distributed Solar Generation, co-author with Jason Keyes, Interstate Renewable Energy Council (October 2013)

The 'Value of Solar' Rate: Designing an Improved Residential Solar Tariff, Solar Industry, Vol. 6, No. 1 (Feb. 2013)

Jicarilla Apache Nation Utility Authority Strategic Plan for Energy Efficiency and Renewable Energy Development, lead author & project manager, U.S. Department of Energy First Steps Toward Developing Renewable Energy and Energy Efficiency on Tribal Lands Program (2008)

A Review of Barriers to Biofuels Market Development in the United States, 2 Environmental & Energy Law & Policy Journal 179 (2008)

An Energy Resource Investment Strategy for the City of San Francisco: Scenario Analysis of Alternative Electric Resource Options, contributing author, Prepared for the San Francisco Public Utilities Commission, Rocky Mountain Institute (2002)

Small Is Profitable: The Hidden Economic Benefits of Making Electrical Resources the Right Size, co-author, Rocky Mountain Institute (2002)

Socio-Economic and Legal Issues Related to an Evaluation of the Regulatory Structure of the Retail Electric Industry in the State of Colorado, with Thomas E. Feiler, Colorado Public Utilities Commission and Colorado Electricity Advisory Panel (April 1, 1999)

Study of Electric Utility Restructuring in Alaska, with Thomas E. Feiler, Legislative Joint Committee on electric Restructuring and the Alaska Public Utilities Commission (April 1, 1999)

New Markets and New Opportunities: Competition in the Electric Industry Opens the Way for Renewables and Empowers Customers, EEBA Excellence (Journal of the Energy Efficient Building Association) (Summer 1998)

Building a Better Future: Why Public Support for Renewable Energy Makes Sense, Spectrum: The Journal of State Government (Spring 1998)

The Green-e Program: An Opportunity for Customers, with Ryan Wisser and Jan Hamrin, Electricity Journal, Vol. 11, No. 1 (January/February 1998)

Being Virtual: Beyond Restructuring and How We Get There, Proceedings of the First Symposium on the Virtual Utility, Klewer Press (1997)

Environmental Costs of Electricity, Pace University School of Law, Contributor–Impingement and Entrainment Impacts, Oceana Publications, Inc. (1990)