**BEFORE THE WASHINGTON**

**UTILITIES & TRANSPORTATION COMMISSION**

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION,

Complainant,

v.

PUGET SOUND ENERGY,

Respondent.

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DOCKETS UE-260005 & UG-260006

**DR. ROBERT L. EARLE**
**ON BEHALF OF THE**
**WASHINGTON STATE OFFICE OF THE ATTORNEY GENERAL**
**PUBLIC COUNSEL UNIT**

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# EXHIBIT RLE-2

Curriculum Vitae of Robert L. Earle

**July 28, 2026**

# ROBERT EARLE, PH.D.

Dr. Earle is an economist with extensive experience in the energy, telecomm, and finance sectors including valuation, environmental mitigation methods and costs, and regulatory economics. Having worked as a consultant as well as an industry manager, he currently supports clients in analyzing market opportunities, strategy, regulatory issues, and litigation. His areas of expertise include electric power sector modeling, economics of environmental mitigation, electric power and gas markets, regulatory policy and ratemaking, demand response, and system optimization.

Dr. Earle has also worked extensively on tariff and market design, including as an expert witness before a number of regulatory commissions. He was the architect of an economic model used to evaluate alternative methods for environmental mitigation including BPM/BACT technology, incentives, and markets. Results from this work were used in numerous studies for investment decisions, policy studies, and litigation. He also served as part of the study team and report writing groups for the National Petroleum Council study on the development of natural gas resources.

Dr. Earle was manager of economic analysis at the California Power Exchange where his responsibilities included developing an overall analytic infrastructure for market analysis, analysis of new products, and briefing regulatory and legislative bodies. Dr. Earle holds Ph.D. and M.S. degrees in Operations Research, both from Stanford University.

## EDUCATION

Ph.D. Operations Research, Stanford University

M.S. Operations Research, Stanford University

A.B. Mathematics, the College of William & Mary

## REPRESENTATIVE PAST EXPERIENCE

### Electricity Sector Structure and Regulation

- Advised in the development of transmission strategy for several renewables companies in the United States and Canada (wind and biomass) including analysis of transmission access, planning, cost allocation and siting conditions in regions in North America.
- Developed transmission pricing structure for Saudi Electric Company.
- Advised clients in Canada, the Middle East, and the United States on transmission pricing structures.
- Conducted numerous demand response potential and valuation studies for utilities across the United States.
- Analyzed energy efficiency potential in the Southeast for environmental and ratepayer advocates.
- Provided expert testimony on energy efficiency incentives for Oklahoma Gas & Electric.
- Led analysis for Midwest ISO of wholesale market interface with demand response.

**Bidding/Auction Design and Analysis, Market Modeling**

- Conducted detailed studies of participant bidding behavior for the purpose of product development, policy changes, and investigations. The results of these studies were used to establish standard methodologies for staff to use. In addition, Dr. Earle invented new techniques for characterizing bids to examine product ideas and various alternative market structures.
- Led the development of a new type of multivariate statistical model to track market changes and rigorously assess auction participant behavior. Reflecting the auction structure, this model uniquely codetermined all prices at the same time. To do this, a number of new statistical techniques were created.
- Advised two merging companies needing advice on divestiture of their generation assets with respect to both asset value and issues of strategic behavior. For this purpose, Dr. Earle designed and implemented an oligopoly simulation of the market. This game theoretic model explicitly represents company strategies and interactions in the marketplace. Dr. Earle's findings were used to shape the decisions of the investment bank in selling the merged companies' assets and win regulatory approval.

**Environment**

- Architect of economic model used to evaluate alternative methods for environmental mitigation including BPM/BACT technology, incentives, and markets. Results from this work were used in numerous studies for investment decisions, policy studies, and litigation.
- Advised clients on approaches to environmental mitigation in the oil, electric power, and water sectors.
- Managed a 2-year project to develop a carbon mitigation strategy for a major country in the Middle East.
- Managed a successful water privatization for a city of five million where environmental concerns formed a key part of the privatization effort.

**Valuation of Assets, Market Strategies**

- For the Electric Power Research Institute (EPRI), developed a methodology for the valuation of alternative market strategies for hydroelectric power plants using stochastic dynamic programming. The changing dynamics of the electricity market, in particular the structure of electricity prices, may have significant implications for the value of a technology that can store energy and release it according to market conditions, thereby leading to a premium value for such resources. The methodology Dr. Earle developed was published in an EPRI report.
- Assessed the impact of market structure changes on plant value that resulted in the restructuring of a bid for generation assets.
- As a result of reorganization, a utility company needed help in valuation of its load management technology and program. At the time, its program was one of the top five in the United States. Dr. Earle directed a team to conduct market research on this technology and teach a class on its current status. As a follow-on, Dr. Earle acted as a facilitator to the client in their development of a valuation methodology. This project resulted in the client deciding to phase-out its efforts in this area.

**Corporate Strategy**

- In preparation for deregulation of the generation sector in the power industry, Dr. Earle co-led a team to formulate valuation and corporate asset deployment strategies for a $5 billion southeastern utility. The various options considered included: asset spin-off, divestiture, mergers, and acquisitions.

Different scenarios implied different trade-offs among the business units of the company. This required extensive financial modeling of the various options and sensitivity to the client's cultural issues in order to reach a unified decision. These recommendations were adopted by the board as the basis for ongoing company strategy.

- Conducted market research for a company that was considering starting an energy brokerage in California. Key issues investigated were market size and structure, first mover advantage, and risk. As a result of this work, the company selected an effective start-up strategy for its new operation in California.

- Reporting to the CEO, co-negotiated a settlement calculation involving a billion dollars. Co-wrote the filing implementing the settlement and then coordinated its implementation through the IT and settlements process.

**EXPERT TESTIMONY**

- Before the Washington Utilities and Transportation Commission, on behalf of the Attorney General of the State of Washington, concerning the Avista 2026 General Rate Case.
- Before the California Public Utilities Commission, on behalf of the Coalition of California Utility Employees, concerning the Pacific Gas and Electric 2027 General Rate Case.
- Before the Washington Utilities and Transportation Commission, on behalf of the Attorney General of the State of Washington, concerning the PacifiCorp 2024 Power Cost Adjustment Mechanism.
- Before the Washington Utilities and Transportation Commission, on behalf of the Attorney General of the State of Washington, concerning the PacifiCorp Power Cost Only Rate Cases (PCORC 2025).
- Before the California Public Utilities Commission, on behalf of the Coalition of California Utility Employees, concerning the Power Charge Indifference Amount (PCIA 2025).
- Before the Washington Utilities and Transportation Commission, on behalf of the Attorney General of the State of Washington, concerning the PacifiCorp 2023 Power Cost Adjustment Mechanism.
- Before the Washington Utilities and Transportation Commission, on behalf of the Attorney General of the State of Washington, concerning the PacifiCorp Clean Energy Implementation Plan Biennial Update (2024).
- Before the Washington Utilities and Transportation Commission, on behalf of the Attorney General of the State of Washington, concerning the Puget Sound Energy Risk Sharing Mechanism for Climate Control Act Allowances.
- Before the Washington Utilities and Transportation Commission, on behalf of the Attorney General of the State of Washington, concerning the Puget Sound Energy 2025 General Rate Case.
- Before the Washington Utilities and Transportation Commission, on behalf of the Attorney General of the State of Washington, concerning the Avista 2024 General Rate Case.
- Before the Washington Utilities and Transportation Commission, on behalf of the Attorney General of the State of Washington, concerning the PacifiCorp 2022 Power Cost Adjustment Mechanism.
- Before the California Public Utilities Commission, on behalf of the Coalition of California Utility Employees, concerning the Southern California Edison 2025 General Rate Case.
- Before the Washington Utilities and Transportation Commission, on behalf of the Attorney General of the State of Washington, concerning the Puget Sound Energy 2022 Power Cost Adjustment Mechanism.

- Before the California Public Utilities Commission, on behalf of the Coalition of California Utility Employees, concerning the 2024 Avoided Cost Calculator Update.
- Before the Washington Utilities and Transportation Commission, on behalf of the Attorney General of the State of Washington, concerning the PacifiCorp 2023 General Rate Case.
- Before the Washington Utilities and Transportation Commission, on behalf of the Attorney General of the State of Washington, concerning Puget Sound Energy's Tacoma LNG Facility.
- Before the California Public Utilities Commission, on behalf of the Coalition of California Utility Employees, concerning the potential extension of Diablo Canyon Power Plant operations.
- Before the California Public Utilities Commission, on behalf of the Coalition of California Utility Employees, concerning the San Diego Gas & Electric Company 2024 General Rate Case.
- Before the California Public Utilities Commission, on behalf of the Coalition of California Utility Employees, concerning the Application of Pacific Gas & Electric Company for Approval of Zonal Electrification Project.
- Before the California Public Utilities Commission, on behalf of the Coalition of California Utility Employees, concerning the Pacific Gas & Electric 2023 General Rate Case.
- Before the Washington Utilities and Transportation Commission, on behalf of the Attorney General of the State of Washington, concerning the Avista 2023 General Rate Case.
- Before the Washington Utilities and Transportation Commission, on behalf of the Attorney General of the State of Washington, concerning the Puget Sound Energy 2023 General Rate Case.
- Before the California Public Utilities Commission, on behalf of the Coalition of California Utility Employees, concerning Major Updates to the 2022 Avoided Cost Calculator.
- Before the California Public Utilities Commission, on behalf of the Coalition of California Utility Employees, concerning the rulemaking to revisit net energy metering tariffs.
- Before the California Public Utilities Commission, on behalf of the Coalition of California Utility Employees, concerning the issuance of recovery bonds for Pacific Gas & Electric.
- Before the California Public Utilities Commission, on behalf of the Coalition of California Utility Employees, concerning Southern California Edison's Application for Wildfire Cost Securitization.
- Before the Washington Utilities and Transportation Commission, on behalf of the Attorney General of the State of Washington, concerning power costs and interjurisdictional allocation in the PacifiCorp 2021 General Rate Case.
- Before the California Public Utilities Commission, on behalf of the Coalition of California Utility Employees, concerning the Southern California Edison 2021 General Rate Case.
- Before the California Public Utilities Commission, on behalf of the Coalition of California Utility Employees, concerning Major Updates to the 2020 Avoided Cost Calculator.
- Before the California Public Utilities Commission, on behalf of the Coalition of California Utility Employees, concerning the Pacific Gas & Electric Gas 2020 General Rate Case.
- Before the California Public Utilities Commission, on behalf of the Coalition of California Utility Employees, concerning the Pacific Gas & Electric Gas Transmission and Storage Rate Case.
- Before the California Public Utilities Commission, on behalf of the Coalition of California Utility Employees, concerning the Power Charge Indifference Adjustment.
- Before the Ohio Public Utilities Commission, on behalf of FirstEnergy, concerning the market for renewable energy credits.

- Before the District Court in Dallas, Texas, on behalf of O Mart, submitted an expert affidavit concerning the appropriate method to value a breach of an electric power purchase contract.
- Before the Superior Court of California in Los Angeles County, on behalf of several municipal utilities, submitted two expert reports on the structure of California electricity markets and on certain transactions in the California electricity marketplace.
- Before the Oklahoma Corporation Commission, on behalf of Oklahoma Gas & Electric, concerning cost recovery and shareholder incentives for DSM programs.
- Before the Public Utilities Commission of Texas, on behalf of El Paso Electric, concerning the capacity value of certain electric power contracts in a fuel cost reconciliation proceeding.
- Before the Federal Energy Regulatory Commission, on behalf of El Paso Electric, concerning the effect of certain power market transactions on California and western markets and the effect of information sharing on California markets.
- Before the New Brunswick Public Utilities Board, on behalf of J.D. Irving, Ltd. and the Canadian Manufacturers and Exporters, concerning the transmission tariff application by New Brunswick Power.

**PUBLICATIONS AND PRESENTED PAPERS**

"Riding the duck curve – Evolving in the energy landscape," *Energy, IbyIMD*, Institute for Management Development, with Karl Schmedders, May 27, 2025.

"How a new generation of negative electricity prices creates opportunities for consumers," *Sustainability, IbyIMD,* Institute for Management Development, with Karl Schmedders, March 27, 2025.

"Tail of the Corona Virus?: High Stakes Decisions with Little Information – A Case Examining Data Leadership," with Jung Park and Karl Schmedders, February 2021.

"Attack of zombie companies: don't let them eat bailouts that are vital to restore the economy," with Jung Park and Karl Schmedders, *the Conversation*, June 2, 2020, republished in *The National Interest.*

"Coronavirus: the economic recovery won't only be U-shaped – it'll look like a wheelbarrow," with Jung Park and Karl Schmedders, *the Conversation*, April 14, 2020, republished in *World Economic Forum Agenda* and *The National Interest*.

"Spectrum Auctions Around the World: An Assessment of International Experiences with Auction Restrictions", with David W. Sosa, July 2013, prepared for Mobile Future.

"Hydraulic Fracturing: the regulatory year in review," *Oil and Gas Financial Journal*, January 2012, Vol. 9, No. 1.

"How not to improve surface water quality," with Virginia Perry-Failor, *Regulation*, Fall 2010, Cato Institute Press.

"The Costs of Compliance to EPA's Advance Notice of Proposed Rulemaking on the PCB Use Authorization for Interstate Natural Gas Pipelines," with Susan Tierney, prepared on behalf of the Interstate Natural Gas Association of America ("INGAA"), September 10, 2010.

"Demand Response on Steroids: Extra Value from using the Smart Grid?," *Natural Gas and Electricity*, February 2010.

"Measuring the Capacity Impacts of Demand Response," with Ed Kahn and Edo Macan, *Electricity Journal*, June 2009.

"Ethanol 2.0," with Ahmad Faruqui, *Regulation*, Winter 2008, Cato Institute Press.

"Fostering Economic Demand Response in the Midwest ISO," with Sam Newell, Ahmad Faruqui, Attila Hajos, and Ryan Hledik, prepared for the Midwest ISO, December 30, 2008.

"Transforming America's Power Industry: The Investment Challenge 2010-2030," with Mark Chupka, Peter Fox-Penner, and Ryan Hledik, prepared for the Edison Foundation, November 2008.

"The Role of Expectations in Modeling Costs of Climate Change Policies," with Paul Bernstein and David Montgomery, to appear in *Integrated Assessment of Human-induced Climate Change*, Cambridge University Press, 2007.

"On Price Caps under Uncertainty," with Karl Schmedders and Tymon Tatur, *Review of Economic Studies*, January 2007.

"Demand Response and Advance Metering," with Ahmad Faruqui, *Regulation*, The Cato Institute, Spring 2006.

"Toward a New Paradigm for Valuing Demand Response," with Ahmad Faruqui, *The Electricity Journal*, May 2006.

"Rate Case Mania," with Ahmad Faruqui, *Public Utilities Fortnightly*, February 2006.

"Controlling the Thirst for Demand," with Anees Azzouni and Ahmad Faruqui, *Middle East Economic Digest*, December 2, 2005.

"Reforming Electricity Pricing in the Middle East," with Anees Azzouni and Ahmad Faruqui, *Middle East Economic Survey*, December 5, 2005.

"Ontario Demand-Supply Balance Update: Where will the hot trading occur?," Interjurisdictional Power Transaction Conference, The Canadian Institute, Toronto, invited talk, April 8, 2002.

"Price Caps and Uncertain Demand," with Karl Schmedders and Tymon Tatur, Discussion Paper #1340, CMS-EMS: The Center for Mathematical Studies in Economics and Management Sciences, Kellogg School of Management, Northwestern University, March 6, 2002.

"Demand Uncertainty and Risk-Aversion: Why Price Caps May Lead to Higher Prices," with Karl Schmedders, Discussion Paper #1330, CMS-EMS: The Center for Mathematical Studies in Economics and Management Sciences, Kellogg School of Management, Northwestern University, October 2, 2001.

"Demand Elasticity in the California Day-Ahead Market," *Electricity Journal*, October 2000.

"Electric Power Deregulation and Market Monitoring," with Philip Q. Hanser and James D. Reitzes, *Electricity Journal*, October 2000.

"How Many Firms Are Enough?—Deregulating Electric Generation," with Philip Q. Hanser and James D. Reitzes, Western Economic Association Conference, Vancouver, B.C., July 2000.

"Review of Price Behavior in the California Power Exchange," Western Power Trading Forum, invited talk, May 2000.

"Electric Power Restructuring: Industrial Organization," Department of Management and Strategy, Kellogg School of Management, Northwestern University, invited talk, April 26, 2000.

"Reply to Borenstein and Bushnell," with Philip Q. Hanser and James D. Reitzes, *Electricity Journal*, March 2000.

"Market Power Basics," IEEE Los Angeles Chapter, invited talk, March 14, 2000.

"Lessons from the Early Days of Competition in California," with Philip Q. Hanser, Weldon C. Johnson, and James D. Reitzes, *Electricity Journal*, October 1999.

"Optionality in Energy and Ancillary Services Markets," with Jason A. Hicks, Deregulation Progress Report: Issues and Insights Conference, invited talk, August 4, 1999.

"Measuring Market Power: Back to the Basics," with Jason A. Hicks, invited talk, Deregulation Progress Report: Issues and Insights Conference, August 4, 1999.

*Mechanisms for Evaluating the Role of Hydroelectric Generation in Ancillary Services Markets*, with R.P. Broehm, F.C. Graves, T.J. Jenkin, and D.M. Murphy, EPRI, Palo Alto, CA: 1998. Report TR-111707.

"Power Market Price Forecasting: Pitfalls and Unresolved Issues," with Frank C. Graves and Philip Q. Hanser, *USAEE/IAEE Annual North American Conference Proceedings*, October 1998.

"Capacity Expansion/Investment Dynamics: Price Forecasting in Deregulated Electric Power Markets," presentation to Market Price Forecasting Conference, Baltimore, Maryland, August 25, 1998.

"Planning Reserve Requirements in a Deregulated Industry: One-Part vs. Two-Part Pricing -or- How I Learned to Stop Worrying and Love Regulation," with Frank C. Graves and Philip Q. Hanser, presentation to ISO Operations, Planning, and Design: An MIT Energy Laboratory, Massachusetts Institute of Technology, June 10, 1998.

"One-Part Markets for Electric Power: Ensuring the Benefits of Competition," with Frank C. Graves, Philip Q. Hanser, and E. Grant Read, in *Power Systems Restructuring: Engineering and Economics*, Marija Ilic, Francisco Galiana, and Lester Fink, eds., Kluwer Academic Publishers, Boston, 1998.

"Computation of Electric Power Production Cost with Transmission Constraints," Energy Modeling Forum, Stanford University, EMF-SR6, December 1996.

## TEACHING

Guest lecturer for Master's level seminars, Department of Quantitative Business Administration, University of Zurich

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|---|---|
| o Reinforcement Learning | Autumn 2017, 2018, 2019, 2020 |
| o Neural Networks and Deep Learning | Spring 2017, 2019, 2020, 2021 |
| o Machine Learning for Managers | Autumn 2016, Spring 2018 |
| o Methods in Economic Consulting | Autumn 2015 |

Master's Theses Supervised:

- "Use of a Reinforcement Learning Algorithm to Search Trading Strategies for the Management of a Multi-Asset Portfolio", Master of Arts in Banking and Finance, Colin Grab, 2018.
- "A Reinforcement Learning Approach for Airline Revenue Management," Master of Arts in Banking and Finance, Marco Kiener, 2021 (*forthcoming*).

## OTHER PROFESSIONAL ACTIVITIES

- Referee for *Journal of Regulatory Economics*, *Energy Journal.*
- Center for Research in Regulated Industries, Rutgers University, member of organizing committee for annual Western Conference, 2005 – 2015.

**POSITIONS HELD**

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|---|---|
| 2015-present | Alea IE, LLC, Owner |
| 2009-2015 | Analysis Group, Vice President |
| 2007-2009 | Brattle Group, Principal and San Francisco Office Director |
| 2001-2007 | Charles River Associates, Principal |
| 1999-2001 | California Power Exchange, Manager of Economic Analysis |
| 1997-1999 | Brattle Group, Associate |