
Jonathan Jacobs



Jonathan Jacobs has over thirty years' experience as a consultant, manager and tool builder, including over twenty-five years' experience in the electricity industry on both the regulated and unregulated sides. He served as an Independent Evaluator of contract solicitations by a California utility and as the procurement planning consultant to the Illinois Power Agency. He has extensive experience with electricity market design; he manages PA's US practice in the review and certification of ISOs' market models, processes and systems, and he has advised clients internationally. Dr. Jacobs is an expert in the use of mathematical models and quantitative tools in electricity operations and markets. He is a skilled communicator, having provided testimony to state and Federal regulators on the reasonableness of utility practices, appropriate risk metrics, and other topics. Prior to joining PA he served as Director, Market and Financial Modeling for a deregulated energy retailer. He has worked in diverse areas including hydro forecasting and scheduling, contract valuation, portfolio analysis and system reliability modelling. His doctorate is in mathematics.

Primary expertise

- Energy market design
- Wholesale energy procurement - analysis and oversight
- Energy market operations and systems
- Mathematical and statistical modelling

Related experience

- Full-requirements pricing
- California energy markets
- Capacity requirements and markets
- Resource planning and procurement

Qualifications

- PhD, Mathematics
- Member, Institute for Operations Research and Management Sciences (INFORMS) and International Association for Energy Economics (IAEE)

Client list

- ISO New England
- Ontario IESO
- San Diego Gas & Electric
- Portland Gas & Electric Co.

Primary expertise

Organized power markets – Consultation on market design and structure; review and certification of software used to clear and settle energy and capacity markets;

Resource planning and procurement – Independent evaluation of solicitations for renewable energy; procurement process design and implementation; resource portfolio modelling

Mathematical and statistical modelling – Use of optimization and simulation models to project asset operation and cash flows.

Key client achievements

Wholesale Energy Procurement

San Diego Gas & Electric Company – Since 2006, Jonathan has been the Independent Evaluator of resource procurements for a US utility with approximately 4500 MW peak load, including an all-source procurement (2006), a peaking capacity procurement (2006), procurements particularly directed at small-scale renewables, both by power purchase and turnkey construction, and renewable-specific procurements (2006, 2008, and 2009) through which the utility sought to increase its renewable procurement from approximately 5% of load (800,000 MWh) to 20%. He has also been advisor on procurement design and execution, and evaluator both of individual offers and of the utility's conduct of the solicitation.

Illinois Power Agency – Jonathan led PA's engagement as Procurement Planning Consulting for the Agency, which was created by the Illinois Legislature to development procurement plans and arrange power and

renewable contracts for the Illinois investor-owned utilities. Under his direction, in 2013 PA put together a report on costs incurred for renewable power contracts and the costs to integrate more renewable power in the future, and the Agency's 2014 Procurement Plan.

Portland General Electric Co. (PGE) -- Jonathan provided regulatory support in response to an OPUC investigation into using "cost adders" to fairly compare proposals for utility-built resources. He developed rebuttal testimony critiquing proposals offered by other parties.

Energy Market Design

Electricity and Co-generation Regulatory Authority (ECRA), Saudi Arabia – A small PA team was engaged to assist ECRA in the creating a design and roadmap for the implementation of a competitive wholesale electricity market for Saudi Arabia. Dr. Jacobs was a key member of the team and functioned as a market expert, specifically applying positive and negative lessons learned from the multiple regional ISO markets in the United States and Canada.

Eskom Holdings (South Africa) – Jonathan managed PA's engagement, as a subcontractor, to provide expertise in ISO structure and markets around the world. The larger assignment in which PA was involved was a due diligence study of the impacts on the incumbent utility of the potential implementation of an Independent System and Market Operator.

EDI Holdings (Pty) Ltd. and the National Energy Regulator of South Africa – In 2010, Jonathan led a project to assess European models for the restructuring of the South African electricity industry, with an emphasis on metropolitan and municipal distributors. In 2008, Jonathan developed a report on design considerations for a contract based market structure to support the development of independent power plants, possibly involving a "Single Buyer" of new capacity.

Cinergy / CG&E – Jonathan wrote a report explaining the bases for pricing default or provider of last resort (POLR) service in multiple US jurisdictions where the electricity for that service is bought from competitive markets, through auctions or Requests for Proposal, and compared the cost to the consumer in those jurisdictions. The work was used in a regulatory proceeding to set the utility's own default or POLR pricing

Energy market operations and systems

ISO New England – As Assignment Manager since 2005, Jonathan has certified the correctness of multiple components of the dispatch and pricing software, as well as auctions for forward obligations for operating reserves and capacity credits. In addition, as a technical expert Jonathan personally validated a particularly complex mathematical model used to impose security constraints upon the commitment and dispatch used to compute Locational Marginal Prices.

New York Independent System Operator – As Assignment Manager, Jonathan certified the correctness of several releases of NYISO's settlements engine and market software (including real-time security-constrained economic dispatch, day-ahead security-constrained unit commitment and locational pricing). These systems are used to manage day-ahead and real-time scheduling of over 165,000 GWh of energy annually, and to settle transactions with an annual value of almost \$10 billion. Certification ensures that these complex systems and the mathematical models they embody are faithful to their formulations and to the market structure defined in the tariff. Certification includes the design and conduct of appropriate system tests

Independent Electricity System Operator (Ontario) – Jonathan led a review of the detailed design of the Enhanced Day-Ahead Commitment (EDAC) which was a substantial revision to the way that IESO commits and dispatches generators. The review ensured that the designed revisions were consistent with the plan reflected in the modifications made to the IESO tariff. The design included rules for market clearing and 120 pages of settlement equations and procedures, suggesting many improvements and corrections. Following that, Jonathan led PA's engagement to test and certify the associated substantial changes to the software that implements the day-ahead commitment market.

Alberta Independent System Operator –Jonathan reviewed the data and processes used by this Canadian transmission operator to forecast load. He also surveyed similarly situated entities, in the US and internationally to ascertain best practices.

Additional industry experience

PG&E Energy Services Co. – Director, Market and Financial Modeling – 1997–2000 – Led a staff of 9 professionals, including engineers, computer modeling specialists, economists and forecasters, based in two separate locations, with the responsibility for analysis and mathematical modeling to support the company’s commodity power sales, and participate in the development of strategy and tactics for the retail power business

Pacific Gas & Electric Co. – Project Manager / Team Leader – 1990–7 – Led a group of regular and contract employees responsible for the specification, selection, design, implementation and integration of mathematical models and decision support systems for medium- and long-term planning for PG&E’s electricity supply business. Led the development of an Integrated Generation, Transmission and Distribution (IGTD) planning model aimed at distributed generation, and of an “energy reliability” model. Technical lead for hydroelectric scheduling and stream flow modelling.
