BATES • WHITE

Nicolás Puga, B.S.E.E., M.Sc.

Partner

Summary of experience

Nicolás Puga, M.Sc., has more than 20 years of experience as a senior energy advisor to electric utilities and generation and transmission companies. He has assisted energy infrastructure project developers in the technical and administrative aspects of access to transmission and interconnection; in particular, he has helped them navigate the application, study, and permit processes in various U.S. and overseas markets. Mr. Puga has helped utilities and their industrial customers in the evaluation, implementation, and monitoring of energy efficiency and demand management projects, including combined heat and power. He has an M.Sc. in Energy Engineering from the University of Arizona and a B.Sc. in Electrical Engineering from the Universidad de Guanajuato, Salamanca, Mexico. Over the course of his consulting career, Mr. Puga has advised numerous private and public sector clients in the United States, Canada, Mexico, Argentina, Chile, Venezuela, Colombia, Philippines, and Australia.

Areas of expertise

- Transmission
- Supply and demand assessment
- Demand-side management
- Market, regulatory, and tariff analysis
- Risk management strategy
- Feasibility studies
- Renewable energy

STATE OF NEW YORK
DEPT. OF PUBLIC SERVICE
DATE 4/3/09
CASE NO. 06-T-0650
3027

Selected industry, government, and business consulting experience

Regulatory Support

- Expert witness in the permitting of Texas/Northeast México's first high voltage direct current open access transmission interconnection (Sharyland Utilities/Hunt Power). The Public Utility Commission of Texas (PUCT) found no justification for investing ratepayer's funds in the construction of a 300MW DC tie between Texas and México's transmission systems. Proponents raised the project to the consideration of an

Administrative Law Judge to seek public funding approval. The Texas ALJ was persuaded by what he said was "particularly persuasive" testimony and recommended the PUCT approve the projects. The tie is under construction and is expected to become operational in summer 2007.

- Managed the independent reliability needs assessment of the proposed 265-mile 502 Junction-Mt. Storm-Meadow Brook-Loudoun 500 kV Transmission Line for the Virginia State Corporation Commission. The work involved load flow modeling of multiple transmission, generation, and demand response alternatives scenarios capable of reliably serving the forecast load. Prepared and presented testimony as to the ability of PJM's RPM demand response programs to provide the same level of long-term reliability as that of the proposed line.
- Supported a major wind project developer in the evaluation of transmission options to wheel several hundred megawatts from Northern Baja California, Mexico, to California utilities. Supported project developer in challenging the timeliness and results of the interconnection feasibility study performed by the transmission owner under the CAISO Large Generator Interconnection Process and represented the developer in the Generator Interconnection Process Reform (GIPR) stakeholder meetings. The GIPR led to the current FERC-endorsed project cluster analysis approach to managing the CAISO interconnection queue.

Engineering/Economic/Financial Advisory

- Developed a GIS-based project siting methodology for utility-scale solar photovoltaic generation facilities. The methodology considers the location of transmission and sub-transmission infrastructure along with known siting constraints, including county land-use plans, utility and conservation easements, environmentally sensitive areas and critical habitats, state and national parks, and military bases. Parcel ownership GIS-data enables the project developer to expedite the acquisition of project land and right of way for project access and interconnection infrastructure.
- Performed market assessment of energy efficiency technologies and combined heat and power for industries in the California/Baja California cross-border region for the California Energy Commission (CEC). Designed an innovative market research framework using field surveys (and other resources) and GIS techniques to collect and deliver market data that enabled U.S. technology and project development companies to better target potential customers. To improve survey response rates, arranged survey collaborations with key industrial chambers of the three major cities and the Baja California State Government.

- Carried a due diligence review of transmission-related risk for a wind electric generation project owned by multiple remote industrial off-takers. On behalf of the project's lenders, studied numerous issues related to grid risk, including: (1) the incidence of interruptions at the interconnection point due to system emergencies, (2) potential grid instability due to rapidly growing wind capacity interconnecting to the same area of the grid, (3) the incidence of service interruptions in the delivery points, (4) the condition and maintenance practices associated with local reception facilities, (5) uncertainty in utility interconnection requirements and cost, and (6) the future stability of the pricing provisions in the project's transmission contract.
- Coordinated collaboration between the California Energy Commission (CEC) and Mexican Government energy agencies to implement border policy options defined in the CEC's 2005 Integrated Energy Policy Report. Utilized long-established working relationships with senior management and staff at Mexican energy agencies to address the practical economic and political implications of coordinating cross-border energy policymaking.
- Performed energy supply and demand assessment for the California/Baja California Border region in response to the California Energy Commission's (CEC) need for new statewide energy policies. Reported on the energy demand and supply situation in the region of Baja California, Mexico. Compiled information on electric generation and transmission expansion plans, government demand-side management programs, and LNG regasification supply plans.
- Developed fuel purchasing risk management strategy, organizational structure, and IT systems design for the new risk management department of México's Comisión Federal de Electricidad (fifth largest electric utility in the world). Won the assignment based on a technically superior proposal and pricing. Managed the delivery of consulting services to the client and received high marks for quality and service.
- Delivered market, regulatory, and tariff analysis for financing due diligence of a 500 MW gas-fired combined-cycle plant independently owned and operated in México. As one of the few IPP plants in México to sell power to CFE without a fuel price warranty from the government, the plant was subject to dispatch risk during periods of high natural gas prices and relatively low residual oil prices. Developed analysis of the impact of high natural gas prices on plant dispatch. This analysis contributed to the Mexican government's renegotiation of the plant's natural gas supply contract.
- Reviewed market, regulatory, tariff, and financial models as independent market consultant to senior lenders in the economic assessment of the 125-MW La Ventosa -

Eléctrica del Valle de México wind farm in Oaxaca, México (SIIF/Credit Agricole Indosuez). One of the first large-scale wind farms in México, this project presented the lenders with various types of project risks never addressed before in México. Assessed the technical, market, and regulatory risks of the project and formulated potential mitigation measures. The effort resulted in the first-time recognition by the Mexican government of the need to reinforce the grid to accommodate the large wind power potential in the La Ventosa, Oaxaca region.

- In connection with a project sponsored by the World Bank, studied electric outage costs for the Secretaría de Energía y Minas. Formed a strategic alliance with a local firm and retained one of the world's foremost experts in outage costs. (Argentina's financial crisis precluded the completion of this work.)
- Designed an efficient-lighting market transformation program for the Philippines (PELMATP) to be funded by the Global Environmental Facility (GEF) through the United Nations Development Program. GEF granted $5.5 million to implement the program administered by the Philippine government.
- Designed a three-year $4.5 million USAID-funded commercial/industrial utility demand-side management program for the Philippines and personally managed the project from 1996 to 1998.
- For the U.S. Trade and Development Administration (USTDA), carried out a feasibility study of an industrial energy efficiency program for a private distribution utility in the Philippines.
- At ANCO Engineers, led one of the largest demand-side management practices in the United States and managed over 120 consultants delivering DSM programs outsourced by some of the largest U.S. electric utilities, including PG&E, Wisconsin Electric Power Co., and Consolidated Edison of New York.
- Extended ANCO's well-established reputation in seismic and other sensing technology RD&D to energy end-use technologies, including field performance measurement of gas and electric energy efficient end-use technologies and the application of expert systems to military portable electric generation systems.
- Carried out an assessment of the internal market-readiness of GRI's products and services for international markets. To gain an up-to-date understanding of the international natural gas industry's needs for technology research, development and commercialization (RD&C), carried out in-depth written and oral surveys of over 100 executives of leading natural gas companies and R&D organizations, as well as gas industry experts and influencers in GRI's geographical areas of interest. Developed

surveys to explore the specific views of executives of the RD&C, sales/marketing, and operations organizations of the participating companies and institutions, and to identify key business, marketing, and operations technology needs representing opportunities for GRI's Products/Service Lines. The information collected was assembled into a knowledge database of best practices in RD&C, sales/marketing, and operations of natural gas transportation, distribution, and commercialization companies in Europe, Latin America, and Australasia.

- For the Southern California Gas Company, served as technical advisor for natural gas end-use market studies targeting commercial, industrial, and agricultural customers. Conducted the development of multi-battery customer mail surveys to measure appliance saturation and customer attitudes, needs, behavior, and satisfaction. Provided technical guidance for phone surveys designed to identify barriers to the delivery of energy efficient equipment to the marketplace. The surveys considered gas-fired furnaces, boilers, and air conditioning systems, as well as gas-fired industrial processes and building energy management systems.

Professional experience

- Energy Advisor to Navigant Consulting, Inc., Washington, DC, December 2005–January 2007.
- Director General, Navigant Consulting de Mexico, Navigant Consulting, Inc., 2003–2005
- Director, International Management Consulting Services, Navigant Consulting, Inc., Washington, DC, 1999–2003
- Senior Vice President, Resource Management International, Inc., Washington, DC, 1999
- Vice President, Resource Planning Division, Resource Management International, Inc., Manila, Philippines, 1996–1998
- Vice President, Demand-Side Management, Resource Management International, Inc., Sacramento, CA, 1991–1995
- Vice President, Demand-Side Management, ANCO Engineers, Inc., Culver City, CA, September 1984–April 1991
- Research Associate, University of Arizona, Department of Nuclear and Energy Engineering, Tucson, AZ, 1981–1984

- Research Engineer, Alternative Sources of Energy Division, Instituto de Investigaciones Eléctricas, Cuernavaca, Mexico, 1976–1980
- Design Engineer, Special Projects, Comisión Federal de Electricidad, Celaya, Mexico, 1975–1976

Education

- M.Sc., Energy Engineering, University of Arizona
- B.S., Electrical Engineering, Universidad de Guanajuato, Salamanca, Mexico

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