

Exhibit 1-SSY

17-035-61 Phase 2 Vote Solar Exhibit 1-SSY 3-3-2020 Yang

SPENCER S. YANG, PHD

Principal

SUMMARY OF EXPERIENCE

Spencer (Songhoon) Yang provides expert testimony and consulting services for renewable energy development, due diligence, transmission system modeling, reliability need assessment, PURPA and QF issues, market-based rate application, market power analysis, electricity market analysis, optimal generation portfolio analysis, litigation, and energy-related regulatory proceedings. He has extensive experience applying quantitative analysis to a broad range of business issues and challenges.

Dr. Yang has served as an energy policy advisor and a co-chair of the Renewable Energy Committee for South Korean President Moon Jae-In in developing South Korea's Energy Transformation Plan (providing a transition to a sustainable energy system). He has also advised Korean IPPs and conglomerates in developing renewable energy projects; he has advised U.S. QF owners/developers on QF interconnection, TTC, ATC, simultaneous import limit (SIL), market access, market power and transmission system modeling issues; he has evaluated solar PPAs on behalf of state regulators; he has advised solar project developers in drafting and negotiating PPAs; he has advised private equity funds on utility mergers and U.S. renewable energy markets; he has provided consulting services to California Energy Commission in developing the 33% Renewable Portfolio Standard (RPS) goals, Market Price Referent (MPR), and Feed-in Tariff (FiT) mechanism; he has analyzed the benefits of adding renewable energy generation into business-as-usual European Union portfolio of fossil fuel generation on behalf of the European Investment Bank; he has advised European wind developers on the value of wind generation and optimal portfolio mix; and he has quantified the benefits of fuel mix diversification on behalf of state regulators. He is currently an advisor to a developer of solar and storage projects in Africa and to an acquirer of renewable energy projects in the Americas. He has been a member of the Electricity Policy Review Committee in South Korea, where he was responsible for reviewing and approving national electricity policies, energy mix objectives, and integrated resource plans.

Dr. Yang has served as both a testifying and consulting expert in a wide array of cases, including the Exelon–Constellation merger, QF interconnection disputes, FERC PURPA section 210(m) proceeding, various energy-related proceedings before federal and state regulatory commissions, applications for market-based rate authority, reliability need assessments of transmission lines, the potential reliability impact of the retirement of nuclear generation facilities, an assessment of global nuclear power plant construction and decommissioning services, and various civil damages cases.

Dr. Yang received a PhD in High Energy Physics from Columbia University and two additional graduate degrees from Columbia University, a Master of Philosophy in High Energy Physics and a Master of Arts in Physics. Prior to joining Bates White Economic Consulting, he served as a Postdoctoral Scholar, Senior Postdoctoral Scholar, and Staff Scientist at the California Institute of Technology and a Visiting Scholar at Stanford University.

EDUCATION

- PhD, High Energy Physics, Columbia University
- MPhil, High Energy Physics, Columbia University
- MA, Physics, Columbia University

PRIOR EXPERT WITNESS ENGAGEMENT

- Testified on behalf of Calpine and NRG regarding certificates of public convenience and necessity to construct the Houston Import Project (SOAH Docket No. 473-15-3595).
- Testified on behalf of Maryland PUC Staff regarding potential market power issues associated with the proposed Exelon–Constellation merger (Case No. 9271).
- Testified on behalf of Virginia State Corporation Commission Staff regarding certificates of public convenience and necessity to construct a 500-kV transmission line (Case Nos. PUE-2007-00031 and PUE-2007-00033).
- Testified on behalf of Shell Trading Gas and Power Company in FERC proceedings associated with Southern Company’s market-based rate application (Docket No. EL04-124, et al.).
- Submitted testimony on behalf of Ecoplexus in Oregon PUC proceeding related to the QF interconnection matter (OPUC Docket UM 2009).
- Submitted testimony in *The State of Mississippi v. Entergy Mississippi, et al.*, quantifying TTC and ATC from off-system suppliers into Entergy’s transmission system, in the Southern District Court of Mississippi (Civil Action No. 3:08cv780-CWR-LRA).
- Submitted affidavit on behalf of Occidental Chemical Corporation in FERC proceedings related to the PURPA section 210(m) case (Docket No. QM14-3-000).
- Submitted testimony on behalf of CPV Maryland and CPV Shore in FERC proceedings related to their market-based rate applications (Docket Nos. ER13-___).
- Submitted testimony in *David Jenkins v. Entergy Corp.*, quantifying imports from off-system suppliers into Entergy’s transmission system, in the District Court of Chambers County, Texas (Cause No. 20666).
- Submitted testimony on behalf of Cottonwood Energy, L.P. in state regulatory proceedings regarding certificates of public convenience and necessity to construct a 345-kV transmission line in Texas (Docket No. 34611).
- Submitted testimony on behalf of Occidental Chemical Corporation; Occidental Permian Ltd.; and Occidental Power Marketing, L.P. in FERC proceedings related to the reliability of the Tres Amigas project (Docket No. ER10-396-000).
- Submitted testimony on behalf of Occidental in FERC proceedings related to the physics of electricity flows and the “commingling” of electric energy (Docket No. EL10-22-000).
- Submitted testimony on behalf of Shell Trading Gas and Power Company in FERC proceedings related to Southern Company’s updated market-based rate application (Docket No. ER96-780).

- Submitted testimony on behalf of Shell Trading Gas and Power Company in FERC proceedings related to the proper quantification of Simultaneous Import Capability into the Southern Company Balancing Authority Area (Docket No. EL04-124, et al.).

SELECTED ENERGY CONSULTING EXPERIENCE

- Served as an energy policy advisor and co-chair of the Renewable Energy Committee for South Korean President Moon, which was responsible for developing South Korea's Energy Transformation Plan.
- Served as a member of the South Korean Electricity Policy Review Committee, reviewing and approving national electricity policies, energy mix objectives, and integrated resource plans.
- Serving as a lead advisor to Korea Midland Power (KOMIPO), major Korean utility and global IPP, in developing and acquiring renewable energy projects in the Americas.
- Serving as a lead advisor to a US-Zambia joint venture in developing solar plus storage projects in Zambia.
- Provided consulting services to Ministry of Trade, Industry and Energy (MOTIE) of South Korea on global and domestic nuclear power plant construction and decommissioning market assessment and outlook.
- Provided consulting services to major Korean IPPs on forming solar project joint ventures, asset purchases and sales, land leases, permits, interconnections, power marketing, and PPA negotiations.
- Provided consulting services to major Korean conglomerates regarding the US solar market outlook and business development opportunities.
- Provided consulting services to the Korea Development Institute (KDI) on issues related to Korea's electricity market reform, transmission investment, and generation investment.
- Provided consulting services to California Energy Commission in developing the 33% Renewable Portfolio Standard (RPS) goals, Market Price Referent (MPR), and Feed-in Tariff (FIT) mechanism.
- Provided consulting services to a major US private equity fund related to the Duke-Progress merger.
- Conducted generation portfolio analysis on behalf of Airtricity, EIB, and CEC, quantifying the benefits and costs of adding renewable generation into a conventional fossil fuel generation portfolio mix.
- Analyzed and evaluated solar PPAs on behalf of the Mississippi Public Utility Staff, providing independent economic and risk analyses of the facilities proposed in the petitions for Certificates of Public Convenience and Necessity (CPCN) to construct, operate, and maintain solar generating facilities.
- Conducted analysis on behalf of the Mississippi Public Service Commission, quantifying the benefits and costs of adding the Kemper IGCC plant into the Mississippi Power generation mix.
- Conducted PROMOD benchmarking analysis on behalf of MISO to improve the transmission planning and transmission congestion modelling process.
- Conducted a full production cost modeling study on behalf of the New York Regional Interconnect, Inc. (NYRI) related to NYRI's application to the New York PSC to construct a 1200-MW HVDC transmission line.
- Conducted reliability studies on behalf of Exelon Corporation related to the potential retirement of the Zion, Limerick, Three Mile Island, and Oyster Creek nuclear generation stations. Performed Optimal Power Flow and Security-Constrained Optimal Power Flow studies.

- Submitted an advisory report to the KDI related to the relationship between generation and transmission investment, how major US markets deal with investment and pricing of transmission assets, and modeling the complex interactions between generation and transmission investments.
- Submitted consultant reports to the CEC related to the proper calculation of California's renewable energy market price referent (MPR), development of a feed-in tariff, and generation portfolio planning for its 2007 Integrated Energy Policy Report.
- Submitted an invitation only paper to the European Investment Bank related to the development of efficient electricity portfolios for Europe that maximize energy security and climate change mitigation.
- Submitted a report to Airtricity related to the role of wind and other renewables in enhancing Ireland's energy security and diversity. Applied a mean-variance portfolio optimization technique to Ireland's generating mix.
- Submitted a report to Airtricity related to the estimation and valuation of portfolio instruments for Airtricity Scotland. Accommodated wind generation in portfolio optimization and hedging for Scotland and the UK's electric power sector.
- Submitted a report to the Center for Research in Regulated Industries regarding obstacles to and major determinants of efficient transmission investment in the United States.

PUBLICATIONS

- Yang, Spencer, and Shimon Awerbuch. "Efficient Electricity Generating Portfolios for Europe: Maximizing Energy Security and Climate Change Mitigation." In [Analytical Methods for Energy Diversity & Security: Portfolio Optimization in the Energy Sector: A Tribute to the Work of Dr. Shimon Awerbuch](#), edited by Morgan Bazilian and Fabien Roques, Chapter 5. London: Reed Elsevier, 2008.
- Dr. Yang has published numerous high energy physics papers in peer-reviewed journals, such as *Physical Review Letters* and *Zeitschrift für Physik*.

AWARDS AND HONORS

- Recipient, AKPA Outstanding Young Researcher Award (Honorable Mention) at the "Physics without Borders" symposium of the American Physical Society.
- Recipient, DESY International Outstanding PhD Award.
- Recipient, Columbia University Graduate Fellowship.