Sam Schreiber

44 Montgomery Street, Suite 1500, San Francisco, CA 94104
sam.schreiber@ethree.com

ENERGY AND ENVIRONMENTAL ECONOMICS, INC. San Francisco, CA
Managing Consultant

Mr. Schreiber supports utilities and state regulatory agencies with integrated system planning efforts, with a focus on long-term capacity expansion modeling and the characterization of expansion candidate resources. His expertise covers resource cost forecasting, geospatial modeling of resource potential and land use, renewable generation profiles, transmission representation in capacity expansion models, and busbar mapping. His recent work includes supporting the California Public Utilities Commission (CPUC) Integrated Resource Plan (IRP) on the co-optimization of resource and transmission investment, as well as assessments of cost impacts due to the Inflation Reduction Act, including hydrogen fuels and other emerging technologies.

Prior to joining E3, Mr. Schreiber was a Research Assistant with the McGehee Group at the University of Colorado Boulder, where he developed enhanced process controls to improve the efficiencies and reproducibility of perovskite-tandem solar cells. He previously worked for two years as an analyst at ForeFront Power, a mid-scale (100 kW – 10 MW) solar project developer, where he conducted market and policy research for Eastern markets, including NY VDER, MA SMART, and IL ABP.

Select E3 projects include:

California Public Utilities Commission, Integrated Resource Plan (2022 – ongoing). Leads geospatial analysis for the E3's support of the CPUC IRP, modeling the transmission system to the substation level, identifying where resources can interconnect to minimize impacts on the transmission system. Takes data inputs from CAISO and the CEC and cross-references the data to understand how potential resource additions will impact transmission constraints. His contributions have added locational outputs to E3's busbar mapping, the process of refining the geographically coarse profiles in the IRP proceeding, allowing transparency and specificity in CAISO's modeling of the transmission system.

Pasadena Water and Power (PWP), Optimized Strategic Plan (2024 – present). Leads the capacity expansion analysis in PLEXOS LT and production cost modeling in PLEXOS ST to understand the incremental generation and storage resources required to reliably serve the City of Pasadena under annual and hourly net-zero carbon scenarios, including sensitivities including long-duration energy storage. Performed geospatial analysis to estimate the technical potential of distributed solar within Pasadena city limits.

California Energy Commission (CEC), 2028 Building Energy Efficiency Standards (2024 – present). Leads the capacity expansion analysis using CPUC RESOLVE to understand the resource portfolios required to meet statewide decarbonization goals by 2050 under enhanced building electrification and future climate warming scenarios. The study will be used to produce hourly energy price forecasts that are used to evaluate the effectiveness of proposed building energy efficiency programs in California.

Silicon Valley Clean Energy (SVCE), 24/7 Hourly Matching (2023 – 2024). Led capacity expansion analysis in CPUC RESOLVE to understand the feasibility of achieving 24/7 hourly clean energy for SVCE and its

members. Added a new module to the CPUC RESOLVE model which computes an hourly matching metric representing the percentage of hours that are served by 100%+ clean energy. Tested increasingly stringent policy constraints using this metric to compare the required resource portfolios and total system cost.

Silicon Valley Power (SVP), Integrated Resource Plan (2023 – 2024). Performed capacity expansion analysis in PLEXOS LT for the City of Santa Clara to inform their 2023 Integrated Resource Plan (IRP). Leveraged data inputs from CPUC IRP on costs and potentials to streamline the analysis. Additional sensitivities analyzed included accelerated clean energy targets, zero-carbon scenarios, and emerging technology resource options.

Salt River Project (SRP), Integrated System Planning (2022 – 2024). Used PLEXOS LT to understand how SRP's strategic approach to long-term system planning would affect optimal portfolio selection, total system costs, and environmental impacts across a range of metrics. Four load and climate scenarios were examined across three utility planning strategies. Worked with SRP's customer programs team to understand the decarbonization impact of distributed solar, energy efficiency, heating electrification, and transportation electrification programs.

UNIVERSITY OF COLORADO BOULDER, MCGEHEE GROUP Boulder, CO
Graduate Research Assistant 2020 - 2022

- Fabrication and characterization of efficient, reproducible, and stable perovskite solar cells
- Implemented enhanced pneumatic and electronic process controls and standardized fabrication procedures to improve device reproducibility and baseline efficiencies
- Optoelectronic and thin-film characterization to understand limitations to device performance
- Collaboration with NREL staff scientists on experimental design and device characterization

FOREFRONT POWER San Francisco, CA
Senior Analyst, Sales 2018 – 2020

- Developed economic, financial, and energy system models to determine the viability of solar PV and energy storage systems for commercial behind-the-meter and community solar applications
- Subject-matter expert for state policy, legislation, rates, and incentive programs
- Led sales, marketing, development, and engineering teams to respond to RFP opportunities
- Streamlined analysis methodology to improve throughput of entire analyst team
- Analyzed and presented financial metrics internally and savings analyses to customers

TSINGHUA SOLAR SYSTEMS Beijing, CHINA
International Business Development Intern 2016

- Prepared prospectus for potential joint-venture partners on residential solar-thermal systems in the U.S. and India

Education

Stanford University Stanford, CA
M.S., Civil Engineering 2018

Stanford University — Stanford, CA
B.S., Engineering Physics — 2017

Publications

Kaczaral, S. C., et. al., "Improved Reproducibility of Metal Halide Perovskite Solar Cells via Automated Gas Quenching." *APL Energy* 1 December 2023; 1 (3): 036112. https://doi.org/10.1063/5.0174396

Strand, E. J., et. al., "Printed Organic Electrochemical Transistors for Detecting Nutrients in Whole Plant Sap." *Adv. Electron. Mater.* 2021, 2100853. https://doi.org/10.1002/aelm.202100853