Arnav Gautam, Ph.D.

Senior Consultant, (520) 844-3155, agautam@currentenergy.group

Education

Doctor of Philosophy: Engineering and Public Policy
Carnegie Mellon University

Master of Science: Engineering and Public Policy
Carnegie Mellon University

Bachelor of Science: Electrical Engineering and Computer Science
University of California, Berkeley

Bachelor of Arts: Cognitive Science
University of California, Berkeley

Work Experience

Senior Consultant, Current Energy Group (October 2025 – Present)

- Conduct technical modeling and analysis of electric distribution grid plans to support expert testimony in regulatory proceedings.
- Assess integration strategies for distributed energy resources (DERs), including solar, storage, and demand response, across diverse utility territories.
- Evaluate external utility and stakeholder proposals for technical feasibility, rigor, and alignment with best practices in grid planning.
- Translate complex engineering assessments into accessible insights for legal, regulatory, and policy audiences.
- Collaborate with multidisciplinary teams to develop evidence-based recommendations for grid modernization.

Graduate Research Assistant, Carnegie Mellon University (August 2021 – August 2025)

- Modeled techno-economic impacts of new technologies on grid assets to inform operational and planning decisions for distributed energy resources.
- Integrated a multi-criteria decision analysis framework into the planning process to evaluate innovative grid modernization solutions, considering economic, environmental, and social objectives.
- Created a methodology to address three-phase unbalanced AC power flow issues, minimizing economic costs and guiding the adoption of new grid technologies.

Technical Research Aide, Argonne National Laboratory (May 2023 – December 2023)

- Designed and validated policy-relevant optimization algorithms to support resilient energy system expansion, considering market design and incorporating metrics for outage risk assessment.
- Developed and implemented a feedback loop for data-driven decision-making, integrating socioeconomic data to inform capacity expansion planning.
- Synthesized and presented complex technical results from a custom power flow model to stakeholders, assessing system vulnerabilities under stochastic outage scenarios.

Software Engineer, Clean Power Research (March 2020 – July 2021)

- Designed and implemented a report generation pipeline in Python to automate analysis of weather data forecast accuracy, providing critical data for external stakeholders and informing real-time grid operations.
- Conducted a deep-dive analysis on a legacy PV simulation codebase, translating complex technical details to non-technical stakeholders to secure buy-in for a new system architecture.

Publications

A. Gautam, J. Grymes, A. Newman, D. Nock, A. Pandey (2025). Minimum-Cost Grid Distribution of Backup Power During Long-Duration Outages. *Optimization and Engineering*. http://doi.org/10.1007/s11081-025-10029-6

A. Gautam, D. Nock, A. Pandey (2024). Grid-Aware Tradeoff Analysis for outage mitigation microgrids at emerging Resilience Hubs. *IEEE Transactions on Energy Markets, Policy and Regulation*, vol. 2, no. 2, pp. 186-199. https://doi.org/10.1109/TEMPR.2024.3383369

K. Abiodun, A. Gautam, A. Newman, D. Nock, A. Pandey (2022). The Role of Microgrids in Advancing Energy Equity Through Access and Resilience. *INFORMS TutORials in Operations Research*, pp. 175-190. https://doi.org/10.1287/educ.2022.0244

Relevant Experience

GMP – Resiliency Investment BCA

- Structured a forward-looking incremental benefit-cost analysis for GMP's proposed FY27 distribution resilience investments, applying National Standard Practice Manual principles, EPRI ClimateREADi guidance, and proprietary CEG methodology combining ICE v2.0 outage valuation with feeder-level outage data and lifecycle financial modeling.
- Led outage-risk characterization, probability modeling, and resilience-metric methodology now reusable across future circuits, tranches, and annual resilience reviews.
- Directed feeder- and battery-storage data analysis (OpenDSS/CYME) and drove testimony strategy responding to Staff critiques.

LA OPA – LADWP Customer Programs

- Led customer-program and affordability-strategy research for LADWP, including workplans, affordability slide decks, and discovery questions on consumption and program participation by income level.
- Reviewed LA100 Equity Strategies and comparable utility programs to shape recommendations on low-income assistance, income-based fixed charges, shared solar, and direct-install solar/storage options, all balanced against LADWP's legal and regulatory constraints.
- Analyzed LADWP's ratemaking history (CPUC Code, Propositions 13/218/26, Lifeline/EZ-SAVE) to inform how equity metrics could move from reporting into active planning.

EDF – CA High DER / DER Orchestration

- Researched DER orchestration architectures (FAST-DERMS, distribution-level scheduling, situational awareness, and fault location/isolation/restoration) and compiled an annotated bibliography to brief EDF on emerging orchestration models and implementation pathways.

LBNL Large Load Paper

- Contributed to a whitepaper on large-load interconnection, drafting the introduction and section 2 and researching flexible interconnection tariffs (e.g., PG&E Flex Connect), co-located load, and self-supply/data-center integration models.

MA AGO NEM Reform (Affordability Docket)

- Drafted and revised NEM comments for the Massachusetts AGO's affordability docket.

ME DOER / DNV FTM DER Program

- Designed a technology-agnostic front-of-meter DER program framework for Maine, benchmarking peer-state programs and Maine statutory requirements against flexible-interconnection models from PG&E and SCE.
- Evaluated storage compensation and market-participation options under FERC Order 2222 and ISO-NE pathways, shaping program recommendations on cost allocation and resource compensation.

IL CUB – IL Grid Plans (ComEd and Ameren)

- Evaluated ComEd's and Ameren's DER integration and hosting-capacity strategies (FAST-DERMS, flexible interconnection, grid-operations automation) to inform CUB's stakeholder positions on future grid-planning requirements.

WRA – APS Rate Case

- Contributed to testimony development for the APS rate case: outlining, drafting, and revising filed testimony on cost recovery mechanisms, system reliability benefit mechanisms, and large-load tariffs.
- Benchmarked formula-rate precedent and prior testimony, and resolved footnotes and reviewer comments ahead of filing.

MD OPC – MD ESP Workgroup

- Serve as an expert consultant to the Maryland Office of People's Counsel in the state's Electric System Planning workgroup, advocating for DER integration as an alternative to traditional infrastructure investment.
- Critiqued Exelon's reliability and resilience proposal against Commission orders and working-group reports, producing recommendations on proactive planning, project-level transparency, and scenario analysis.
- Developed OPC positions on reliability metrics, weather-normalization methods, and cost-effectiveness screening for incorporating DERs and storage into system planning.

CHARGED and VPP (GridLab)

- Researched DER value streams, aggregation structures, and utility coordination mechanisms to identify frameworks supporting future virtual power plant (VPP) development.

COSS Model (GMP)

- Advised on line-loss and marginal-cost modeling for GMP's cost-of-service model, connecting the analysis to related distribution-investment and DER-integration work.

DEC & DEP Rate Cases (NC AGO)

- Reviewed testimony on customer experience and developed discovery questions on T&D line extensions for the NC AGO.

DPU 25-31 National Grid (Mass AGO)

- Contributed to CIP testimony for the Massachusetts AGO in National Grid's rate proceeding.

IL Electric Support (NRDC)

- Analyzed ComEd's proposed VPP incentive structure (battery-dispatch assumptions, avoided-cost concepts, and AMI data) to support VDER/BYOD litigation and thermostat/BYOD testimony.
- Benchmarked comparable BYOD program costs and developed technical questions on dispatch assumptions and compensation levels to challenge underlying utility calculations.

PPL Testimony (PennFuture)

- Researched large-load tariffs and formula rates and edited filed testimony supporting PennFuture's position in the PPL proceeding.

RTEP (Maryland OPC)

- Assessed cost-allocation fairness of RTEP transmission projects across state and utility boundaries, reviewing PJM planning materials and DFAX-based allocation methods to evaluate impact on Maryland ratepayers.

WI Data Center Case (Walnut Way)

- Reviewed discovery and large-load tariff precedent to develop testimony concepts on cost shifting, tariff design, and ratepayer protections tied to large data-center development.

- Benchmarked utility proposals and cross-jurisdiction examples to identify options for improving transparency and accountability in community-benefit agreements.