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Since joining E3 in 2018, Dr. Gold-Parker has supported E3's Climate Pathways and Distributed Energy Resources (DER) practice areas, where he works with policymakers, regulators, utilities, and businesses to understand how our electricity and natural gas systems will transform under deep decarbonization. His work focuses on building and vehicle electrification, utility cost recovery, and energy affordability. He has also enhanced E3's modeling capabilities by developing new tools for understanding the impacts of building electrification on peak electric loads and on natural gas revenue requirements and rates.

Dr. Gold-Parker enjoys managing and contributing to complex projects and appreciates the challenges of communicating technical concepts in an accessible manner. In addition to his project management and technical modeling work, he has helped prepare expert witness testimony for regulatory commissions in California, Georgia, Minnesota, and Alberta. Dr. Gold-Parker's doctoral research, which was published in *Nature Communications* and the *Proceedings of the National Academy of Sciences*, explored next-generation materials for solar cells. He holds a PhD in chemistry from Stanford University and a BA in chemistry and physics from Harvard University.

Notable E3 projects include:

- **California Energy Commission, Strategic Pathways and Analytics for Tactical Gas System Decommissioning, 2021-2022.** Leading a team with E3, Gridworks, East Bay Community Energy (EBCE), and project partner PG&E to evaluate opportunities for strategic decommissioning of gas system assets in EBCE and PG&E's service territory. Prior work has hypothesized that the combination of geographically targeted building electrification and gas system decommissioning could be an important tool to reduce gas system costs as building decarbonization progresses. This work will design a site selection framework for strategic gas decommissioning projects, will engage with communities to better understand customer priorities regarding building electrification and gas system decommissioning, and will develop implementation plans for three gas decommissioning pilot projects.
- **Massachusetts Local Gas Distribution Companies (Gas LDCs), The Role of Gas Distribution Companies in Achieving the Commonwealth's Climate Goals, 2021-2022.** E3 is supporting the Massachusetts Gas LDCs in the Massachusetts Department of Public Utilities' Docket 20-80, which seeks to "examine the role of Massachusetts gas [LDCs] in helping the Commonwealth to achieve its 2050 climate goals." With extensive stakeholder feedback, E3 developed eight Pathways that achieve building decarbonization through building electrification, decarbonized gas, and/or networked geothermal systems. Dr. Gold-Parker led the development of a gas revenue requirement model that a) estimates the impacts of these pathways on gas LDC revenue requirements and customer bills, and b) enables exploration of novel regulatory approaches to address the customer cost impacts that may arise.

- **California Public Utilities Commission, Residential Energy Cost Calculator, 2020-2021.** To complement existing tools used in California's integrated resource planning (IRP) process, developed a Residential Energy Cost Calculator (RECC) to provide 10-year forecasts of energy bills and affordability metrics for representative households in California. The RECC includes forecasts of residential electricity and natural gas rates and gasoline prices under multiple scenarios. It enables comparison among different customers, illustrating how variations in climate zone, building type, electrification status, and other factors would impact residential energy costs.
- **Philadelphia Gas Works, Business Diversification Model, 2020-2021.** In a project for the City of Philadelphia, E3 considered technology pathways and business diversification options for the municipal gas utility Philadelphia Gas Works (PGW) that are consistent with the city's decarbonization goals. Dr. Gold-Parker developed a revenue requirement model to evaluate impacts on PGW's business model and its customers, also considering revenues from hypothetical future lines of business including heat pump installation and selling heat as a service.
- **Net-Zero New England: Ensuring Electric Reliability in a Low-Carbon Future, 2020.** Modeled the impacts of building electrification on peak electric loads under deep decarbonization scenarios in New England. Updated E3's RESHAPE model to consider a mix of technology options including different kinds of heat pump systems with fuel vs. electric resistance backup.
- **FortisAlberta, Distribution System Inquiry, 2020.** Prepared expert witness testimony describing how today's policies and rate structures in Alberta will lead to inefficient DER procurement and dispatch as well as cost shifts. Developed a roadmap for the evolution of Alberta's distribution system, recognizing that the timing of DER adoption will depend on numerous factors including the cost of DERs, power prices, consumer preferences, and government policy.
- **South Carolina Dept. of Administration, Bid Evaluation for Potential Sale of Santee Cooper, 2019-2020.** E3 was selected by the South Carolina Dept. of Administration to advise the state on the potential sale of Santee Cooper, one of the largest municipal electric utilities in the US. As part of due diligence of Santee Cooper's rate setting methodology and proposed resource plan, Dr. Gold-Parker developed a dynamic dispatch model for Santee Cooper's electric system, which fed into an economic revenue requirement and rate forecasting model for Santee Cooper's utility business.
- **California Energy Commission, The Challenge of Retail Gas in California's Low-Carbon Future, 2018-2019.** Modeled natural gas utility revenue requirements in scenarios consistent with California's greenhouse gas reduction targets. Developed a model that illustrates how, as building electrification becomes more widespread, declines in gas throughput will impact rates and bills for a shrinking gas customer base. Identified gas system transition strategies that can help to mitigate customer bill impacts.
- **Development of E3's RESHAPE model, 2018-19.** Supported the initial development of E3's RESHAPE model, which simulates system-level load shapes for building electrification. RESAHPE combines data on buildings, historical weather, and a model of heat pump operation to forecast heating demands and simulate hourly electric loads from space and water heating. RESHAPE has been used by a variety of private- and public-sector clients across the United States and Canada to better understand the electric load impacts of widespread building electrification.

Education

Stanford University	Palo Alto, CA
<i>Ph.D., Chemistry</i>	2018
<i>National Science Foundation Graduate Research Fellowship</i>	2014
<i>National Defense Science and Engineering Graduate Fellowship</i>	2014
Harvard University	Cambridge, MA
<i>B.A., Chemistry and Physics</i>	2012

Selected Publications

1. Energy and Environmental Economics and Energy Futures Initiative, “Net-Zero New England: Ensuring Electric Reliability in a Low-Carbon Future” (2020). https://www.ethree.com/wp-content/uploads/2020/11/E3-EFI_Report-New-England-Reliability-Under-Deep-Decarbonization_Full-Report_November_2020.pdf
2. Energy and Environmental Economics, “Literature Review of Economy-Wide Deep Decarbonization and Highly Renewable Energy Systems.” For the New York State Energy Research and Development Authority (2020). <https://climate.ny.gov/-/media/CLCPA/Files/2020-06-24-NYS-Decarbonization-Pathways-App-B.pdf>

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