Bill K. Wheatle, Ph.D.

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ENERGY AND ENVIRONMENTAL ECONOMICS, INC. Boston, MA
Senior Consultant

Dr. Wheatle is based in E3's Boston office in the Climate Pathways practice area. He develops scenarios for economywide pathways to deep decarbonization and assesses the impact of building electrification on the natural gas system. He also evaluates the technoeconomics of novel generation and energy storage technologies. Dr. Wheatle studied battery materials as an undergraduate at Cornell University and as a doctoral student at the University of Texas at Austin.

Recent E3 projects include:

- **Illinois Decarbonization Study: Climate and Equitable Jobs Act and Net Zero by 2050 (2022).** Developed hydrogen cost projections for Illinois in conjunction with recent subsidies from the Inflation Reduction Act and estimated hourly and peak load projections for scenarios in which Illinois reaches net-zero emissions by 2050.
- **Support of the 20-80 Docket, Massachusetts Local Distribution Companies (2021–2022)**. Developed PATHWAYS scenarios to examine the role of Massachusetts's Local Gas Distribution Companies (LDCs) in achieving the Commonwealth's goal of economywide Net-Zero emissions by 2050. Assessed the role of low-carbon fuels, such as hydrogen; electrification; energy efficiency; and novel technologies, such as networked geothermal.
- **Zero-Carbon Generating Technology Review, California Public Utilities Commission (2021)**. Surveyed literature on emerging zero-carbon generators, including hydrogen-fired combustion turbines, natural gas plants with carbon capture and sequestration, the Allam cycle, and long-duration iron-air batteries. Evaluated technoeconomics and other considerations for integration into the bulk grid.
- **Pathways to Decarbonization Multi-Sectoral Modeling, Omaha Public Power District (2021)**. Developed scenarios to meet an economywide net-zero emissions by 2050 target within OPPD's service using E3's PATHWAYS model. Using this model, outlined the benefits of various decarbonization strategies, including aggressive electrification or a high dependence on renewable fuels.
- **Maine Renewable Energy Goals Market Assessment, Maine Governor's Energy Office (2020–2021)**. Developed scenarios for the State of Maine to achieve its 2030 renewable portfolio standard using an Excel-based model. Using this model, determined the cost and transmission implications of potential renewable policies and the possible value of coordination with out-of-state entities to achieve deep decarbonization within the electric sector.

UNIVERSITY OF TEXAS AT AUSTIN Austin, TX
Graduate Research Assistant August 2015 – April 2020

- Managed multiple simultaneous projects in a variety of technical areas, including molecular dynamic simulation studies of polymeric battery materials

- Implemented analyses in Fortran and Python to relate material properties to their performance in batteries
- Collaborated with research group members and outside subject matter experts
- Disseminated results in peer-reviewed journals, posters, and oral presentations
- Designed projects for and work with undergraduate student research mentees

Education

University of Texas at Austin — Austin, Texas
Ph.D., Chemical Engineering. — 2020
Dissertation: *Polymer Polarity as a Design Parameter for Polymer Electrolytes*

Cornell University — Ithaca, New York
B.S. Chemical Engineering. — 2015

Selected Publications

1. B. K. Wheatle,* G. G. Rodriguez-Calero,* J. Hampton,* J. G. Werner, Y. Gu, U. Wiesner, H. D. Abruña. "Electrochemical Generation of Hexacyanoferrate and Hexacyanoruthenate Electroactive Films at Nickel Electrode Surfaces: A Promising Synthetic Approach for New Electrode Materials in Metal Ion Batteries and Supercapacitors." 871, 114284 (2020).

2. B. K. Wheatle, N. A. Lynd, V. Ganesan. "The Effect of Host Incompatibility and Polarity Contrast on Ion Transport in Ternary Polymer-Polymer-Salt Blend Electrolytes." *Macromolecules*. 53 (3) 875–884 (2020).

3. B. K. Wheatle, E. F. Fuentes, N. A. Lynd, V. Ganesan. "Influence of Host Polarity on Correlating Salt Concentration, Molecular Weight, and Molar Conductivity in Polymer Electrolytes." *ACS Macro Lett*. 8, 888−892 (2019).

4. B. K. Wheatle, N. A. Lynd, V. Ganesan. "Effect of Polymer Polarity on Ion Transport: A Competition between Ion Aggregation and Polymer Segmental Dynamics." *ACS Macro Lett.*, 7 (10), 1149−1154 (2018).

5. B. K. Wheatle, J. R. Keith, S. Mogurampelly, N. A. Lynd, V. Ganesan. "Influence of Dielectric Constant on Ionic Transport in Polyether-Based Electrolytes." *ACS Macro Lett.* 6 (12), 1362−1367 (2018).