UTC Project Information	
Project Title	MPC-697 – A Microscopic Approach for Electric Vehicle Demand Estimation
University	University of Utah
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Agency ID or Contract Number	69A3551747108
Start and End Dates	October 13, 2022 to July 31, 2024
Brief Description of Research Project	This study aims to produce a realistic and high-resolution public charging simulation environment and provide practical guidance for future charging station deployment. There are three specific objectives to achieve this goal: 1. We will build an agent-based model to model the daily activities of all drivers within a study region; 2. We will estimate EV user distributions and charging demand based on socioeconomic attributes and public charging decision rules; and 3. We will develop an optimization framework based on the estimated public charging demand to efficient solve the EVSE allocation problem, in an effort to maximize the coverage of total charging demands under investment costs and load capacity constraints.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	The simulation experimental results offer meaningful political implications for governmental agencies. First, the existing coverage of fast charging stations in SLC metropolitan area is highly insufficient. Although the financial constraint is a major concern for building Level 3 chargers, agencies should still incentivize the fast-charging station deployment, since it is a critical step moving toward accelerated EV adoption and reaching net-zero emission goal by 2050. Second, low utility efficiency is identified at a lot of existing charging stations with

	extremely large number of ports and/or clustered densely in close vicinity. Instead, a decentralized design can effectively augment EV drivers' accessibility to the nearest charging stations. Lastly, some atypical activities could also impact public charging demand. Places such as airport and stadium are examples of locations where large charging demand could exist due to atypical activities.
Impacts/Benefits of Implementation (actual, not anticipated)	The entire framework is capable of modeling the spatiotemporal distribution of public charging demand in a bottom-up fashion, and provide practical support for future public EVSE installation.
Web Links • Reports • Project Website	• MPC Final Report – A Microscopic Approach for Electric Vehicle Demand Estimation