

Exhibit D

Research Project Requirement Template

Recipient/Grant (Contract) Number: University of Texas at Austin/Grant # 69A3552344815 and 69A3552348320

Exploring the Changing Dynamics of Household Vehicle Ownership and Use in the U.S.

Center Name: Understanding the Future of Travel Behavior and Demand (TBD)

Research Priority: Improving Mobility of People and Goods

Principal Investigator(s): Irfan Batur and Ram M. Pendyala

Project Partners: N/A

Research Project Funding: \$200,000 (Federal + non-Federal funding)

Project Start and End Date: 9/1/2023 - 5/30/2025

Project Description: This project is driven by a pressing need to understand the rapidly evolving landscape of household vehicle dynamics amidst technological advancements and significant societal changes. It focuses on the growing urgency of climate change mitigation and adaptation, a push for equitable mobility for all, the transition towards vehicle electrification, the rise of ride-hailing and micromobility, and the development of autonomous vehicles. It also considers societal shifts, including increased reliance on information and communication technologies (ICT), as well as demographic shifts like an aging population and changing urbanization patterns. Aiming to fill the knowledge gap in how households are adapting to these transformative forces, the project will design and deploy a comprehensive nationwide survey, called Evolving Vehicle Ownership Preferences and Use Survey (EVOPUS). This survey seeks to collect data on vehicle ownership, use, and preferences in the context of societal and environmental changes as well as related changes in household energy use.

The survey will yield detailed insights into several key areas. It will evaluate changing preferences for vehicle technologies, particularly electric vehicles, and analyze how these preferences are shaping purchasing decisions. It will delve into household considerations of vehicle size, body type, fuel efficiency, and functionality amidst new mobility options. The survey will examine how households are adapting to emerging technologies and mobility solutions, focusing on the relationship between vehicle choices and broader decisions related to housing, energy use, and societal and technological trends. It will also explore the impact of shifts in ICT usage, societal trends, and mobility options on the utilization of different vehicles within households, and assess how factors such as electrification, shared mobility, and demographic changes are transforming vehicle ownership and usage patterns. This comprehensive approach is expected to uncover the broader demographic, societal, technological, and environmental forces influencing household preferences and decisions on vehicle ownership. The insights derived from this project will be crucial in understanding and forecasting the future of household mobility and its impact on climate change, thereby informing strategies to address both current challenges and future needs as well as guiding policy decisions and industry innovations towards sustainable and equitable transportation solutions.

A key result of the survey will be data on preferences, vehicle use, and ownership of electric vehicle owners and non-owners. While other surveys have been used to collect data on electric vehicle adoption, such surveys have been limited in geographic scope (e.g. the California Vehicle Survey or the Puget Sound Regional Household Travel Study) or have been conducted by private entities who do not share the raw survey data (e.g. the Consumer Reports Battery Electric Vehicles and Consumer Reports Survey). Our survey will build on the insights provided in previous surveys, and will provide a nation-wide snapshot of household characteristics, travel behavior, and attitudes and perceptions of both electric vehicle owners and

non-owners. We will utilize Qualtrics, an online survey platform to distribute the survey, and will provide appropriate incentives to encourage participation. We will target 3,000 responses.

The major contributions of the project are the following: 1) a nationwide dataset including data on travel behavior, household characteristics, vehicle ownership/transactions and use, mobility patterns as well as attitudes, perceptions, preferences, and lifestyles, made available to other researchers; 2) enhanced understanding of key barriers and drivers of electric vehicle adoption in distinct population segments; 3) a basis for new policies and programs and improvements to existing policies and programs to enable an equitable transition to sustainable mobility across heterogeneous population segments throughout the country.

US DOT Priorities: This project directly supports the Data-driven Insight research priority to “develop and make accessible data sources, data analysis, and visualization tools to support transportation stakeholders and researchers” (page 59) through the creation of a publicly available, unique dataset. This project also supports the climate and sustainability priority through addressing the electrification research objective to “conduct research to support expanded access and use of electric-powered transportation...” (page 41). We anticipate that the survey and dataset produced by this project will enhance understanding of household vehicle dynamics and key drivers and barriers to electric vehicle adoption and inform programs and policies to enable adoption in population segments currently lacking access. This component of the project will also address the equity and accessibility assessment objective to “develop data, tools, and research to evaluate and advance the equity and accessibility of transportation systems, projects, jobs, and policies” (page 33).

Outputs: There will be two main outputs of this project: a unique dataset, and academic papers. The cleaned dataset will be made available in an appropriate public repository along with relevant data dictionaries and read-me files. This will be accessible by other researchers who wish to use the data for additional inquiries. Our research team will perform our own analysis on the dataset and will produce an academic paper related to barriers and drivers of electric vehicle adoption. We will share this output at academic conferences and in the form of a peer-reviewed journal article.

Outcomes/Impacts: The results of the survey will provide an enhanced understanding of how households are adapting to societal changes and new mobility options including electric and autonomous vehicles. Additionally, the survey data will help identify factors that are important for understanding household preferences and decisions. The survey will also provide insight on the barriers and drivers of electric vehicle adoption in distinct population segments. This information will inform the development of policies and programs to encourage and support sustainable mobility options for the U.S. population.

The dataset generated by this study will enable policies and programs to be developed that will lead to more equitable access to sustainable mobility options and more widespread adoption. Widespread adoption of sustainable mobility will help to alleviate local air quality concerns and reduce greenhouse gas emissions in the transportation sector. Additionally, this work will contribute to the body of knowledge around important factors in vehicle ownership and use in distinct population segments.

Final Research Report: A URL link to the final report will be provided upon completion of the project.