

## Exhibit D

### Research Project Requirement Template

#### Promoting Sustainable Travel within Communities through Behavioral Interventions and Emerging Mobility Solutions

**Recipient/Grant (Contract) Number:** The University of Texas at Austin; Georgia Institute of Technology / Grant # 69A3552344815 and 69A3552348320

**Center Name:** Center for Understanding Future Travel Behavior and Demand (TBD)

**Research Priority:** Improving Mobility of People and Goods

**Principal Investigator(s):** Srinivas Peeta

**Project Partners:** N/A

**Research Project Funding:** \$112,399 (Federal + non-Federal funding)

**Project Start and End Date:** 10/1/2023 - 5/31/2024

**Project Description:** Traditionally, interventions to change travel behavior have relied on penalty-based approaches (such as tolls). Recent discussions have shifted towards monetary incentive-based approaches to promote sustainable modes. However, due to limited funding, relying on monetary incentives alone is not sustainable. Hence, it is important to explore the potential of sustainable non-monetary incentives such as gamification, nudges, and targeted informational messages related to health, environment, and active transportation. To address challenge (1), the project will comprehensively explore a portfolio of behavioral interventions involving monetary and non-monetary incentives, and combinations thereof. Incorporating incentives instead of tolls/penalties provides equal access to these interventions for all travelers regardless of their sociodemographic characteristics.

This project will draw on methods from behavioral economics, data analytics, machine learning, multiobjective optimization, and simulation to generate solutions to achieve various societal travel goals. It will explore a range of behavioral interventions that accounts for traveler heterogeneity. It will propose a framework to achieve societal goals while ensuring accessibility equity for disadvantaged groups. It will engage PTC as a living lab to test the real-world applicability of the framework. The proposed framework has high potential to aid community management in achieving its societal goals.

**US DOT Priorities: Equity:** “Data and data analysis methodologies are available to assist transportation planners in assessing equity, job quality, and accessibility issues when making decisions.”

**Outputs:** The anticipated project outputs are:

- A portfolio of behavioral interventions that are equitable (due to equal access to all user groups) and sustainable (due to incorporation of non-monetary incentives). This is rooted in empirical research and data analysis, offering insights into effective behavioral interventions that account for user heterogeneity.
- The behavioral models that estimate travel behavior of users under various travel options and personalized behavioral interventions. These models will provide insights into the factors (including types of behavioral interventions) influencing travel choices.
- The models for emerging partnerships to facilitate coordination among traditional and emerging modes to provide an integrated seamless service.

- The multiobjective optimization model and simulation-based multi-class dynamic traffic assignment model will serve as tools for decision-makers to simultaneously achieve societal goals of mobility, sustainability, accessibility, and equity, and scale the solutions (i.e., behavioral interventions and emerging mobility solutions) at a community level.
- A prototype smartphone app that serves as a practical tool to deliver personalized behavioral interventions to travelers.

The proposed models and research findings have strong potential to significantly contribute to the academic community, and will be disseminated through journal articles and conference proceedings.

### **Outcomes/Impacts:**

The anticipated outcomes are:

- The ability to identify the specific behavioral intervention types and specific interventions that work best for different (heterogeneous) user groups in promoting sustainable travel behavior.
- Insights for traditional and emerging mobility service providers to form partnerships across modes through the integration of services, and for policymakers to foster such partnerships, resulting in better utilization of resources and enhanced accessibility equity for disadvantaged groups.
- Optimal mode split and route patterns corresponding to the proposed behavioral interventions and emerging mobility solutions that advance the societal travel goals of mobility, sustainability, accessibility, and equity.

The research findings are expected to have direct implications for policy interventions in the transportation sector.

The anticipated impacts of the project are:

- It contributes to literature that seeks to simultaneously achieve the societal travel goals of mobility, sustainability, accessibility, and equity using the proposed methods and models.
- It promotes community-level sustainable travel behavior through the proposed interventions that are personalized to users. Consideration of incentives, as opposed to penalty-based approaches, reflects the equitable nature of the interventions. Further, these interventions are sustainable as they incorporate non-monetary incentives. The use of smartphone app to deliver the interventions to users implies that the proposed solutions are conveniently deployable.
- It addresses accessibility inequity experienced by disadvantaged groups by leveraging emerging mobility solutions.

Overall, the framework is likely to be a useful practical tool that can aid community decisionmakers to achieve societal goals.

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