

## Exhibit D – Research Project Requirement Template

### Opportunities and Limits of Individual Behavioral Changes: Phase I

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

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

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

**Principal Investigator(s):** Cynthia Chen

**Project Partners:** N/A

**Research Project Funding:** \$90,000

**Project Start and End Date:** 06/01/2025-05/31/2026

**Project Description:** Individual travel behavior changes such as changing from driving to non-car-based modes of transportation can have overarching implications at the system level in reducing congestion and improving the mobility for all. And yet, individual behavioral changes are hard due to a variety of personal and system-level factors. Efforts to change individual travel behaviors have been tried in this country for decades in the name of Transportation Demand Management (TDM). The success of TDM is limited given that cars remain to be a predominant mode of transportation for all trips. Existing strategies have two deficiencies: 1) one size fits all approach: personal preferences and constraints are rarely considered, nor are they context-aware; and 2) significant deviation from one's existing routines: for some people and under certain situations, a mode change can be a significant deviation from one's usual routine, thus creating a significant cost for the change.

We propose *personalized, context-aware* interventions for triggering individual behavioral changes. More specifically, we will take a gradual process, starting with interventions that only deviate from one's routine slightly. Over time, we will gradually design interventions that deviate more, depending on one's preferences and constraints. We will test a range of targeted behavioral changes and their associated constraints. Targeted behavioral changes include changes in departure time, destination choice, route change and mode choice in the order of increasing difficulty for the change. In the end, we will develop models that systematically characterize the opportunities and limits of individual behavioral changes with respect to different behavioral changes and scenarios.

**US DOT Priorities:** This research aligns with three national priorities for US DOT. The first one is reducing congestion. The aggregate effect of individual behavioral change in reducing congestion is irreputable. Individual behavioral changes such as destination changes and changing to non-motorized modes such as walking have the potential to increase foot traffic for businesses; this aligns with the strategic emphasis on "supporting American workers and businesses to create good jobs and strengthen regional and local economies." This research also aligns with the improving safety priority; it is well known that behavioral factors play a significant role in safety and thus changing behaviors can increase safety for all.

**Outputs:** This research will generate new knowledge that will inform the effectiveness of a personalized, context-aware approach for triggering individual behavioral changes. It will also generate new algorithms that can sense whether an individual is in an opportunistic moment for behavioral change and formulate personalized recommendations that suit personal preferences and constraints. Through this research, a pilot

mobile app will be created for testing behavioral changes via a personalized, context-aware approach. When appropriate, we will also file patents and inventions.

**Outcomes/Impacts:** Individual behavioral changes can have significant impacts at the system level including reducing congestion and mitigation emissions from traffic. If successful, the research points to the next-generation Transportation Demand Management (TDM) strategies – personalized, context-aware TDM. Today, mobile device ownership in the U.S. has reached 98%; they are the perfect medium for delivering personalized TDM strategies, monitoring its effectiveness and revised strategies for triggering individual behavioral changes. If successful, the technologies developed in this research can easily scale up.

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