

Exhibit D – Research Project Requirement Template

An Examination of the Adoption and Frequency of Part-Day and Full-Day Telework and the Impacts on Weekly Commute VMT

Recipient/Grant (Contract) Number: The University of Texas at Austin/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): Chandra R. Bhat

Project Partners: N/A

Research Project Funding: \$75,000

Project Start and End Date: 06/01/2026 – 05/31/2027

Project Description: The COVID-19 pandemic has fundamentally reshaped work arrangements, creating long-term implications for transportation system performance, infrastructure planning, and demand management policy. While telework has received considerable attention, most existing research treats telework as a binary outcome, assuming that workers either commute to a workplace or remain at home for an entire day. This assumption does not reflect current behavior. A growing share of workers now engage in hybrid arrangements that include part-day telework, in which work is split between in-person and remote locations within a single day. This form of telework introduces additional flexibility in work scheduling and travel timing that is not represented in current transportation data systems or forecasting tools.

The distinction between part-day and full-day telework is important for transportation system performance. Full-day telework eliminates commute trips for a given day and directly reduces travel demand. In contrast, part-day telework typically retains commute travel but has the potential to shift its timing, redistribute trips across the day, and alter the temporal structure of travel demand. These effects are directly relevant to peak-period congestion, network reliability, and system efficiency. Despite these implications, major national data systems, including the American Community Survey and the National Household Travel Survey, do not adequately capture part-day telework behavior. As a result, current travel demand models may misrepresent both the level and timing of travel demand under hybrid work conditions, limiting their usefulness for evaluating transportation policies.

Motivated by the need to improve the behavioral realism and policy relevance of travel demand modeling in a post-pandemic environment, this study will examine the adoption and frequency of part-day and full-day telework using multi-day travel diary data from the 2023 Puget Sound Regional Household Travel Survey. These data provide detailed information on daily work location choices and activity participation over multiple days, enabling analysis of weekly travel patterns. The project will also establish defensible criteria for identifying part-day telework, addressing a key measurement issue that affects both survey design and model specification. The project will develop a joint econometric modeling framework that represents telework adoption, the number of part-day telework days, the number of full-day telework days, and commute distance. This joint structure is necessary to capture unobserved behavioral factors that simultaneously influence work arrangement choices and travel behavior, including preferences for flexibility, occupational constraints, and built environment characteristics. By explicitly modeling these interdependencies, the project will provide a more accurate representation of how work arrangements influence both the magnitude and timing of travel demand. In this regard, a central contribution of the project will be the translation of daily work location decisions into weekly commute VMT. By focusing on weekly activity-travel patterns, the project produces outputs that are directly relevant for evaluating congestion, system utilization, and the effectiveness of demand management strategies. The project will

also examine variation in telework behavior across population groups and geographic contexts. This analysis will provide insight into how differences in occupation, income, and built environment influence the ability to adopt flexible work arrangements and the resulting travel patterns.

The expected contributions are both methodological and practical. The modeling framework will enable metropolitan planning organizations, state DOTs, and federal agencies to incorporate part-day telework into activity-based travel demand models. This capability is essential for improving the accuracy of forecasts used in infrastructure investment decisions and for evaluating policies aimed at improving system efficiency. In addition, the project will provide evidence on how hybrid work arrangements influence travel demand, supporting more effective design of congestion mitigation strategies, including pricing policies and flexible work programs. In summary, by addressing a critical gap in the representation of hybrid work behavior, the project will improve the reliability and policy relevance of transportation analysis and support better decision-making for system operations and long-term planning.

US DOT Priorities: This project directly supports the TBD Center’s focus on understanding user needs and advancing data modeling and analytic tools. It improves understanding of how workers make daily and weekly work location decisions within hybrid arrangements, with particular attention to part-day telework, an underrepresented but increasingly important behavior. In doing so, the project develops a joint modeling framework that enhances the behavioral realism of activity-based travel demand models. The research will generate actionable insights that can be translated into improved model structures and policy evaluation tools, supporting more effective transportation planning and travel demand management strategies in a post-pandemic context.

Outputs: The project will produce a set of concrete and policy-relevant outputs that directly support improvements in transportation analysis and decision-making. These outputs will include a peer-reviewed journal article, conference presentations, and a documented modeling framework for representing part-day and full-day telework in activity-based models. In addition, the project will generate specific recommendations for improving household travel surveys to capture hybrid work behavior, along with guidance for integrating these behaviors into travel demand forecasting tools. A key output will be a set of quantified relationships linking telework arrangements to weekly commute VMT and peak-period travel patterns, designed for direct use by metropolitan planning organizations and state DOTs in evaluating demand management and congestion mitigation strategies. An additional output will be a spreadsheet tool allowing for the forecasting of the effects of exogenous variables (including combinations of variables) on work arrangement choices and on weekly commute VMT. This tool will allow planners and policy makers to assess the impacts of specific variables of interest on work arrangement choices and weekly commute VMT, allowing for customized decision making that is sensitive to these overall combinations of impacts.

Outcomes/Impacts: The project will enable transportation agencies to incorporate more behaviorally accurate representations of telework into travel demand models, leading to improved forecasts of VMT and congestion. It will support the evaluation of demand management strategies that leverage hybrid work arrangements, including peak-period demand shifting and congestion pricing. The research will inform discussions on access to telework and its implications for transportation policy. By providing a behavioral framework that distinguishes part-day from full-day telework, the research will equip metropolitan planning organizations and travel demand modelers with more accurate representations of work-travel linkages.

By providing a rigorous framework for representing part-day telework, the research will enable more accurate assessment of congestion mitigation strategies, including pricing policies and flexible work programs. The findings will support more effective allocation of infrastructure investments by aligning planning assumptions with evolving travel behavior. Importantly, the project will also inform policies aimed at addressing variations in telework access, ensuring that the benefits of reduced travel burden and increased flexibility are more broadly distributed. Overall, the research will strengthen the foundation for integrating workplace trends into transportation system planning and policy design.

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