MINNESOTA
URBAN PARTNERSHIP AGREEMENT

NATIONAL EVALUATION:
SURVEYS, INTERVIEWS, AND FOCUS GROUPS TEST PLAN

U.S. Department of Transportation
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16. Abstract

This report presents the test plan for developing, conducting, and analyzing surveys, interviews, and focus groups for evaluating the Minnesota Urban Partnership Agreement (UPA) under the United States Department of Transportation (U.S. DOT) UPA Program. The Minnesota UPA projects focus on reducing congestion by employing strategies consisting of combinations of tolling, transit, telecommuting/TDM, and technology, also known as the 4 Ts. Surveys, interviews, and focus groups will be used to identify the potential impacts of the UPA projects, especially on mode change in the I-35W corridor. This report outlines the anticipated surveys, interviews, and focus groups to be conducted to assist in evaluating the Minnesota UPA projects. Information on the stakeholder interviews, MnPASS user surveys, carpooler surveys, telecommuter surveys, on-board ridership surveys, focus groups on the real-time transit and traffic information dynamic message signs, interviews of special groups, and other activities is presented. The purpose and approach, participant recruitment protocol, preliminary questions, analysis methods, and schedule and responsibilities are discussed for the various surveys, interviews, and focus groups.

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LIST OF ABBREVIATIONS

4Ts	Tolling, Transit, Telecommuting, and Technology
APC	Automatic passenger counter
ATM	Active traffic management
AVL	Automatic vehicle location
BRT	Bus rapid transit
CBD	Central Business District
CBA	Cost and benefit analysis
CRD	Congestion Reduction Demonstration
CVO	Commercial vehicle operator
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HC	Hydrocarbon(s)
HOT	High-occupancy tolling
HOV	High-occupancy vehicle
ITS	Intelligent transportation systems
ITS-OTMC	Intelligent Transportation Systems-Operational Testing to Mitigate Congestion
MARQ2	Marquette and Second Avenue (downtown Minneapolis)
Mn/DOT	Minnesota Department of Transportation
MOE	Measure of effectiveness
MVTA	Minnesota Valley Transit Authority
NEF	National Evaluation Framework
NEP	National Evaluation Plan
NEPA	National Environmental Policy Act
NTOC	National Transportation Operations Coalition
O&M	Operation and maintenance
OTMC	Operational Testing to Mitigate Congestion
PDSL	Priced dynamic shoulder lane
RITA	Research and Innovative Technology Administration
ROG	Reactive organic gas(es)
ROWE	Results Only Work Environment
SOV	Single-occupant vehicle
TDM	Travel demand management
TMO	Traffic management operations
UPA	Urban Partnership Agreement
U.S. DOT	U.S. Department of Transportation
VII	Vehicle Infrastructure Integration
VMT	Vehicle miles traveled
VOC	Vehicle operating cost or Volatile organic compound
VT	Vehicle trips

1.0 INTRODUCTION

This report presents the test plan for developing, conducting, and analyzing surveys, interviews, and focus groups for the National Evaluation of the Minnesota Urban Partnership Agreement (UPA) under the United States Department of Transportation (U.S. DOT) UPA program. The information from these activities will be used in examining analysis areas contained in the Minnesota UPA National Evaluation Plan. This test plan is one of 11 test plans identified in the Minnesota UPA National Evaluation Plan.

The test plan begins with a brief overview of the Minnesota UPA projects and the relationship between the analysis areas and the test plans outlined in the Minnesota UPA National Evaluation Plan. The test plan presents information on the purpose and approach, participant recruitment protocol, preliminary questions, analysis methods, and schedule and responsibilities for the different surveys, interviews, and focus groups.

1.1 The Minnesota UPA

Minnesota was selected by the U.S. DOT as an Urban Partner to implement projects aimed at reducing congestion based on four complementary strategies known as the 4Ts: Tolling, Transit, Telecommuting/Travel Demand Management (TDM), and Technology. Under contract to the U.S. DOT, a national evaluation team led by Battelle is assessing the impacts of the projects in a comprehensive and systematic manner in Minnesota and other sites. The national evaluation will generate information and produce technology transfer materials to support deployment of the strategies in other metropolitan areas. The national evaluation will also generate findings for use in future federal policy and program development related to mobility, congestion, and facility pricing.

The Minnesota UPA partners include the Minnesota Department of Transportation (Mn/DOT), the Twin Cities Metropolitan Council, Metro Transit, the City of Minneapolis, Minnesota Valley Transit Authority (MVTA), and Anoka, Dakota, Ramsey, and Hennepin counties. The Center for Transportation Studies and the Hubert H. Humphrey Institute of Public affairs at the University of Minnesota are also partners in the UPA.

The Minnesota projects are focused on reducing traffic congestion in the I-35W corridor and in downtown Minneapolis. ITS technologies underlie many of the Minnesota UPA projects, including those focused on tolling, real-time traffic and transit information, transit signal priority, and guidance technologies for shoulder-running buses. Figure 1-1 highlights the general location of the various Minnesota UPA projects, which are described below.

- **High Occupancy Toll (HOT) Lanes**. The HOT lanes on I-35W represent a major component of the Minnesota UPA. This element includes expanding the existing HOV lanes to HOT lanes and constructing new HOT lanes. The HOT lanes will be dynamically priced. The existing HOV lanes on I-35W from Burnsville Parkway to I-494 will be expanded into dynamically priced HOT lanes. A new dynamically priced HOT lane will be added on I-35W from I-494 to 46th Street as part of the reconstruction of the Crosstown Commons Section.

- **Priced Dynamic Shoulder Lane (PDSL)**. The second tolling element of the Minnesota UPA is the implementation of a PDSL on I-35W in the northbound direction from 46nd Street to downtown Minneapolis. The PDSL incorporates active lane management techniques and technologies, including speed harmonization.
- **Auxiliary Lanes**. An auxiliary lane and collector ramp is being constructed on I-35W in the northbound direction from 90th Street and I-494. An auxiliary lane is being constructed on I-35W in the southbound direction from 106th Street to Highway 13.
- **Park-and-Ride Facilities**. A total of six new or expanded park-and-ride facilities will be constructed as part of the Minnesota UPA. Two of the park-and-ride facilities are on I-35W north of downtown Minneapolis, one is on I-35W south of downtown Minneapolis, and three are on Cedar Avenue. The following describes the general facility locations and the anticipated number of parking spaces. A new 500-space parking ramp will be constructed adjacent to the existing 1,000-space parking lot at 95th Ave along I-35W North in Blaine. A new 460-space parking ramp will be constructed along I-35W North in Roseville. A new 750-space parking ramp will be constructed along I-35W south in Lakeville. A new 120-space parking lot with an enclosed passenger waiting facility will be constructed along Cedar Ave at Highway 13 in Eagan. A new 200-space parking lot will be constructed along Cedar Avenue at 180th Street in Lakeville. A new 500-space parking ramp, a 250-space surface lot, and a side platform station will be constructed along Cedar Ave at 155th Street in Apple Valley.
- **New Buses**. A total of 27 new buses will be purchased as part of the Minnesota UPA. These vehicles include a mix of standard, hybrid, and coach buses. The buses will be used to operate new and expanded express bus service.
- **Downtown Minneapolis Dual Bus Lanes on Marquette and 2nd Avenues**. Double contraflow bus lanes are being constructed on Marquette and 2nd Avenues in downtown Minneapolis. Called the MARQ2 project, the lanes replace existing single contraflow lanes on each avenue. The project also includes construction of wider sidewalks, and improved lighting, landscaping, and passenger waiting areas.
- **Transit Advantage Bus Bypass Lane**. A "Transit Advantage" bus bypass lane/ramp has been constructed to facilitate the movement of northbound buses at the Highway 77/Highway 62 intersection. A new bus-only left-turn lane has been constructed and new traffic signals have been installed to allow buses to make a left turn from Highway 77 to Highway 62.
- **Cedar Avenue Lane Guidance System**. A lane guidance system for shoulder-running buses will be developed, implemented, and operated on Cedar Avenue. The system includes lateral guidance assistance, collision avoidance, and AVL technology. Lane assistance feedback will be provided to the bus operator through a "heads up" windshield display, a vibrating seat, and an active steering wheel.

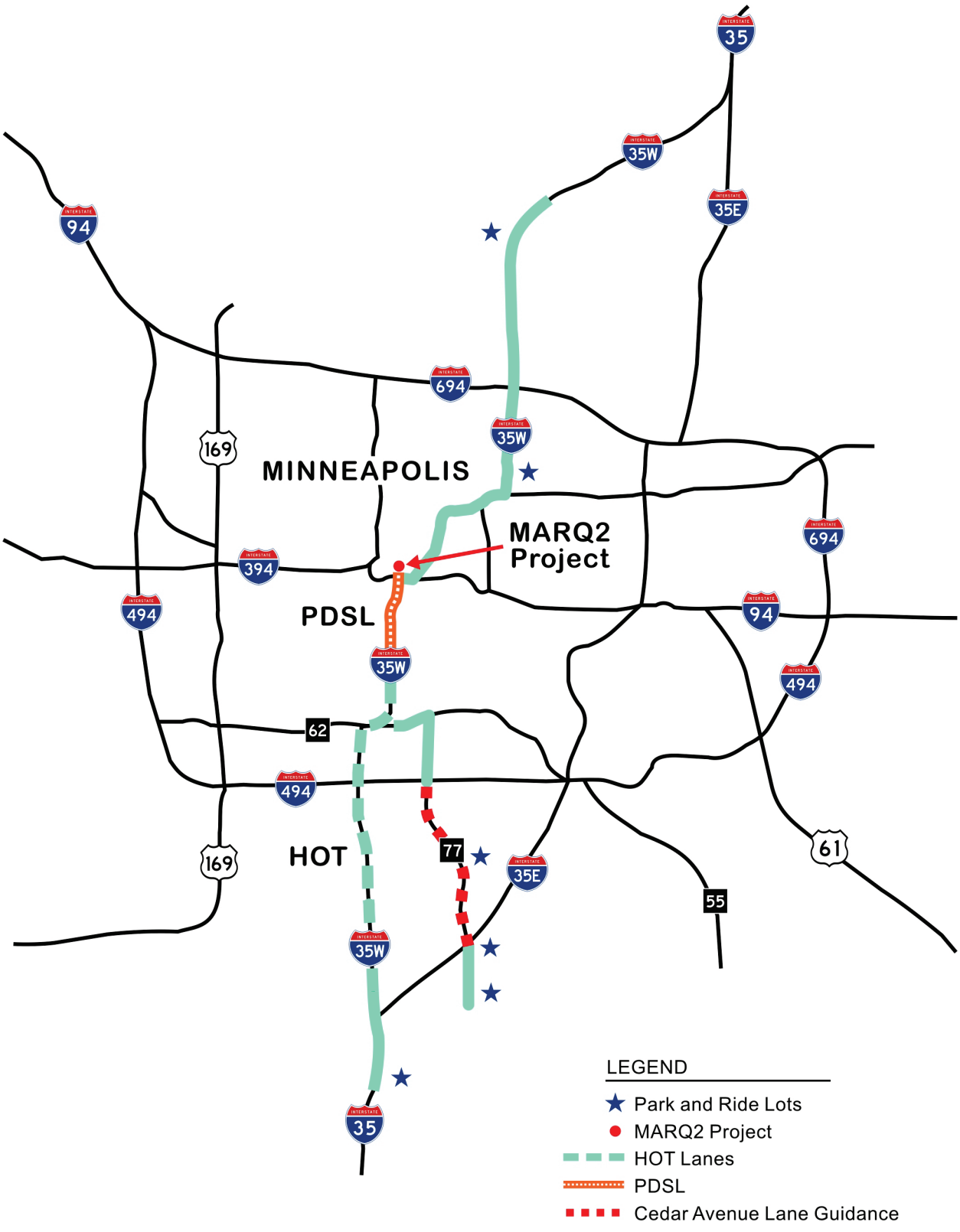

Figure 1-1. General Location of Minnesota UPA Projects

- **Real-Time Transit Information and Real-Time Traffic and Transit Information**. Real-time transit information, including next bus arrival information, will be provided along the MARQ2 lanes in downtown Minneapolis and park-and-ride facilities. Dynamic message signs along I-35W will display real-time traffic and transit travel times to downtown Minneapolis.
- **Transit Signal Priority**. Transit signal priority will be implemented along a contiguous stretch of Central Avenue north of downtown Minneapolis, and at selected locations around two park-and-ride facilities.
- **Telecommuting**. The telecommuting element of the Minnesota UPA focuses on increasing the use of Results Only Work Environment (ROWE), telecommuting, and flexible work arrangements throughout the region, including increasing the number of teleworkers and/or workers on flexible schedules in the I-35W corridor by 500 individuals. ROWE provides employees flexibility in the work location and hours by focusing on performance and results rather than presence at the office during standard work hours. ROWE is used extensively at Best Buy Corporation, headquartered in Minnesota. The UPA telecommuting component seeks to increase its use by other businesses in the region. The telecommuting element is funded entirely with state funds.

The Transit Advantage project became operational in December 2008. The majority of projects will be in operation by December 2009. The I-35W HOT lanes in the Crosstown Commons Section, the Cedar Avenue Lane Guidance System, and the Cedar Avenue Transit Station are scheduled for completion by October 2010.

1.2 Minnesota UPA National Evaluation Plan and the Use of Survey, Interview, and Focus Group Data

The Minnesota UPA National Evaluation Plan focuses on the 12 analysis areas outlined in the NEF[1] and 11 test plans. Table 1-1 presents the relationships among the analysis areas and the test plans.

The approach taken in this test plan is to build on the interviews and surveys already conducted by the Minnesota UPA partnership agencies. Historical information from these surveys and interviews helps establish the baseline conditions. To the extent possible, these surveys and interviews will be used in the post-deployment phase. Questions on the UPA projects will be added to some surveys and questions on topics related to the UPA projects will be monitored. To fully assess the impact of the UPA projects, additional surveys, interviews, and focus groups are needed, however. These additional surveys, interviews, and focus groups are presented in this test plan.

Table 1-2 presents all the major data elements to be obtained in each survey, interview, and focus group described in this test plan. The measures of effectiveness for each data element will be used are shown along with the evaluation of hypotheses/questions with which the MOEs are associated. The surveys, interviews, and focus group test plan supports all of the analyses areas,

[1]The document is available online at following website:
http://www.itsdocs.fhwa.dot.gov//JPODOCS/REPTS_TE//14446

except the cost benefit analysis. Table 1-2 is organized by the population groups to be studied and then by the study instrument to be used. A total of 17 study instruments – surveys, interviews, and focus groups – are specified. These include both existing and new instruments needed for the national UPA evaluation. The proposed surveys, interviews and focus groups are based on current information from the local partners. Figure 1-2 presents the general timeline for conducting the various interviews, surveys, and focus groups. The ongoing surveys conducted by the local partner agencies are listed above the timeline, while the special surveys, interviews, and focus groups to be conducted for the UPA evaluation are listed below the timeline. As the test plan was being finalized, the Metropolitan Council indicated that a survey on MnPASS users/non-users will be added to the 2010 Travel Behavior Inventory. This information has been included in the test plan, but will be updated as more details are available from the Metropolitan Council. Also, Metro Transit has added new routes to the University of Minnesota. These routes will be added into the transit on-board ridership survey discussed in Section 5.0.

Preliminary questions are included in the test plan for the various surveys, interviews, and focus groups. These questionnaires build on previous surveys in the Twin Cities metropolitan area and use the common socio-economic questions included in the Metro Transit Customer Satisfaction surveys. It is realized the exact questions and approaches will be finalized based on further discussions with local partners, the market research firms, and the national evaluation team.

The remainder of this report is divided into 12 sections according to the study instruments.

- Section 2.0 presents the telecommuter surveys.
- Section 3.0 describes the stakeholder interviews and workshops.
- Section 4.0 discusses the focus groups on the real-time transit and highway travel time dynamic message signs.
- Section 5.0 presents the surveys for transit riders.
- Section 6.0 presents the surveys for MnPASS users.
- 7.0 present the surveys for carpoolers.
- Section 8.0 describes the telephone interviews of I-35W users.
- Section 9.0 outlines the interviews with Minnesota State Patrol officers, FIRST operators, and bus operators.
- Section 10.0 describes the interviews with commercial fleet services/operators, transportation-sensitive business representatives, and the downtown Minneapolis business community.
- Section 11.0 discusses Mn/DOT's Omnibus Survey.
- Section 12.0 describes the Metropolitan Council's Travel Behavior Inventory.
- Section 13 outlines the Mn/DOT Perception Tracking Study.

Table 1-1. Relationship Among Test Plans and Evaluation Analysis

Minnesota UPA Test Plans	Evaluation Analysis: Congestion Analysis	Tolling Analysis	Transit Analysis	Telecommuting/ TDM Analysis	Technology Analysis	Safety Analysis	Environmental Analysis	Equity Analysis	Goods Movement Analysis	Business Impact Analysis	Non-Technical Success Factors Analysis	Cost Benefit Analysis
Traffic System Data Test Plan	●	○	○	○	●	○	○	○	●	○		●
Tolling Test Plan		●					○	○	○			●
Transit System Data Test Plan	○	○	●	○	●	○	○	○				●
Telecommuting Data Test Plan				●								
Safety Test Plan						●						●
Surveys Test Plan	●	●	●	●	●	●	●	●	●	●	●	
Transportation Modeling Test Plan												●
Environmental Data Test Plan							●	○				●
Content Analysis Test Plan											●	
Cost Benefit Analysis Test Plan												●
Exogenous Factors Test Plan	○	○	○	○	○	○	○	○	○	○	○	○

● — Major Input ○ — Supporting Input

Table 1-2. Surveys, Interviews, and Focus Groups Test Plan Data Elements and Use in Testing Hypotheses/Questions

Survey/ Interview/ Focus Group	Data Element	Measures of Effectiveness	Hypotheses/ Questions*	Baseline	Post-Deploy-ment
Population – Telecommuters					
1. Humphrey Telecommuter Survey	1.1 Mode for typical work trip	• Percent by mode	MNTele/TDM-1	X	X
1. Humphrey Telecommuter Survey	1.2 Vehicle used for work trip: make/year/ model	• Used in emissions calculation • Cost to employee per trip saved by telecommuting	MNEnv-1 MNEnv-3	X	X
1. Humphrey Telecommuter Survey	1.3 Departure times for trips to and from work	• Commuters who shift their travel times to off-peak hours	MNTele/TDM-1	X	X
1. Humphrey Telecommuter Survey	1.4 Length of work trip in miles and minutes	• VT and VMT reduction in the I-35W corridor in the peak hours • Cost to employee per trip saved by telecommuting	MNTele/TDM-1 MNEnv-1 MNEnv-3	X	X
1. Humphrey Telecommuter Survey	1.5 Days per week in alternative work option	• VT and VMT reduction in the I-35W corridor in the peak hours • Cost to employee per trip saved by telecommuting	MNTele/TDM-1 MNEnv-1 MNEnv-3	X	X
1. Humphrey Telecommuter Survey	1.6 Perceptions of changes in congestion due to telecommuting	• Perception of change in congestion due to telecommuting	MNTele/TDM-2	X	X
1. Humphrey Telecommuter Survey	1.7 Socio-demographic descriptors	• Used for analysis of other data elements	MNEquity-1 MNEquity-2	X	X
Population – Agency Stakeholders					
2. Stakeholder Interviews	2.1 Agency Roles and Responsibilities	• Observations from UPA participants	MNNonTech-1 MNNonTech-2 MNNonTech-3 MNNonTech-5	X	X
2. Stakeholder Interviews	2.2 Institutional Arrangements – Keys to Success	• Observations from UPA participants	MNNonTech-1 MNNonTech-2 MNNonTech-3	X	X

Table 1-2. Surveys, Interviews, and Focus Groups Test Plan Data Elements and Use in Testing Hypotheses/Questions (Continued)

Survey/ Interview/ Focus Group	Data Element	Measures of Effectiveness	Hypotheses/ Questions*	Baseline	Post-Deploy-ment
2. Stakeholder Interviews	2.3 Outreach Activities – Keys to Success	• Observations from UPA participants	MNNonTech-1 MNNonTech-2 MNNonTech-3 MNNonTech-4 MNNonTech-6	X	X
2. Stakeholder Interviews	2.4 Lessons Learned	• Observations from UPA participants	MNNonTech-1 MNNonTech-2 MNNonTech-3 MNNonTech-4 MNNonTech-5 MNNonTech-6	X	X
I-35W Travelers					
3. DMS Focus Groups	3.1 Commute behavior	• General commute characteristics (mode, roads, time of day, etc.)	Context for analysis of all hypotheses in this section		
3. DMS Focus Groups	3.2 Perceptions of congestion	• Perceived changes in travel times, trip time reliability, and duration and extent of congestion	MNCong-6 MNCong-7 MNCong-8 MNTransit-2 MNTransit-3		X
3. DMS Focus Groups	3.3 Awareness and perception of DMS	• Relative contribution of the DMS to congestion reduction	MNTech-3		X
3. DMS Focus Groups	3.4 Change in travel behavior in response to DMS	• Change in drivers switching to transit	MNTransit-1		X
Transit					
4. Metro Transit Customer Satisfaction Survey (CSS)	4.1 How make trip if did not ride bus?	• Reduction in VMT • Actual and percent change in drivers and carpoolers willing to try transit.	MNENV-1 MNENV-3 MNTransit-2	X	X
4. Metro Transit CSS	4.2 Frequency of bus use/days per week	• Reduction in VMT • Actual and percent change in drivers and carpoolers willing to try transit.	MNENV-1 MNENV-3 MNTransit-2	X	X
4. Metro Transit CSS	4.3 Perceptions of service quantity (number of express trips, etc) and quality	• Contribution of UPA strategies in contributing to mode shift to transit.	MNTransit-4	X	X

Table 1-2. Surveys, Interviews, and Focus Groups Test Plan Data Elements and Use in Testing Hypotheses/Questions (Continued)

Survey/ Interview/ Focus Group	Data Element	Measures of Effectiveness	Hypotheses/ Questions*	Baseline	Post-Deploy-ment
4. Metro Transit CSS	4.4 Number of years riding the bus	• Actual and percent change in drivers and carpoolers switching to transit.	MNTransit-2 MNTransit-3	X	X
4. Metro Transit CSS	4.5 Change in cost	• Change in travel costs for those switching from driving to transit	MNCBA-1		X
4. Metro Transit CSS	4.5 Socio-economic demographic descriptors	• Used for analysis of other data elements	MNEquity-1 MNEquity-2	X	X
5. On-board Transit Rider Survey	5.1 Prior mode of transit riders	• Actual and percent change in drivers and carpooler switching to transit	MNTransit-2 MNTransit-3		X
5. On-board Transit Rider Survey	5.2 Reasons for using transit	• Contribution of UPA strategies contributing to mode shift to transit	MNTransit-4		X
5. On-board Transit Rider Survey	5.3 Length of commute in time and distance	• Calculation of change in VMT	MNENV-1 MNENV-2		X
5. On-board Transit Rider Survey	5.4 Perception of UPA transit improvements (need list, e.g. park and ride, travel time DMS, more frequent bus service)	• Percentage of respondents citing a reduction in travel time • Percentage of respondents citing an improvement in travel reliability	MNCong-9 MNCong-10		X
5. On-board Transit Rider Survey	5.5 Perception of Safety using HOT lanes, MARQ2 lanes, and guided bus	• Changes in the perception of safety by travelers	MNSafety-2 MNSafety-3 MNSafety-4		X
5. On-board Transit Rider Survey	5.5 Change in cost	• Change in travel costs for those switching from driving to transit	MNCBA-1		X
5. On-board Transit Rider Survey	5.6 Socio-demographic descriptors	• Used for analysis of other data elements	MNEquity-1 MNEquity-2		X

Table 1-2. Surveys, Interviews, and Focus Groups Test Plan Data Elements and Use in Testing Hypotheses/Questions (Continued)

Survey/ Interview/ Focus Group	Data Element	Measures of Effectiveness	Hypotheses/ Questions*	Baseline	Post-Deploy-ment
Population – I-35W MnPASS Users					
6. MnPASS Surveys	6.1 Prior Mode	• Use of HOT and PDSL options	MNTolling-2		X
6. MnPASS Surveys	6.2 Frequency of use	• Use of HOT and PDSL options	MNTolling-2		X
6. MnPASS Surveys	6.3 Reasons for use	• Percentage of respondents citing a reduction in travel time • Percentage of respondents citing an improvement in travel reliability	MNCong-6 MNCong-7		X
6. MnPASS Surveys	6.4 Perceptions of Safety using HOT lanes and PDSL	• Changes in the perception of safety by travelers	MNSafety-2		X
6. MnPASS Surveys	6.5 Travel costs	• Travel costs for travelers switching from another mode to HOT lanes	MNCBA-1		X
6. MnPASS Surveys	6.5 Socio-demographic descriptors	• Used for analysis of other data elements	MNEquity-1 MNEquity-2		X
7. Travel Behavior Inventory – MnPASS Surveys	7.1 Prior Mode	• Use of HOT and PDSL options	MNTolling-2		X
7. Travel Behavior Inventory – MnPASS Surveys	7.2 Frequency of use	• Use of HOT and PDSL options	MNTolling-2		X
7. Travel Behavior Inventory – MnPASS Surveys	7.3 Reasons for use	• Percentage of respondents citing a reduction in travel time • Percentage of respondents citing an improvement in travel reliability	MNCong-6 MNCong-7		X
7. Travel Behavior Inventory – MnPASS Surveys	7.4 Perceptions of Safety using HOT lanes and PDSL	• Changes in the perception of safety by travelers	MNSafety-2		X
7. Travel Behavior Inventory – MnPASS Surveys	7.5 Travel costs	• Travel costs for travelers switching from another mode to HOT lanes	MNCBA-1		X

Table 1-2. Surveys, Interviews, and Focus Groups Test Plan Data Elements and Use in Testing Hypotheses/Questions (Continued)

Survey/ Interview/ Focus Group	Data Element	Measures of Effectiveness	Hypotheses/ Questions*	Baseline	Post-Deploy-ment
7. Travel Behavior Inventory – MnPASS Surveys	7.5 Socio-demographic descriptors	• Used for analysis of other data elements	MNEquity-1 MNEquity-2		X
Population – I-35W HOT Lane Carpoolers					
8. Carpooler Survey	8.1 Prior Mode	• Increase in average vehicle occupancy levels	MNTransit-3		X
8. Carpooler Survey	8.2 Frequency of use	• Increase in average vehicle occupancy levels • Reduction in VMT	MNTransit-4 MNCong-9 MNCong-10		X
8. Carpooler Survey	8.3 Reasons for Use	• Contribution of strategies • Perception of improvements	MNTransit-4 MNCong-9 MNCong-10		X
8. Carpooler Survey	8.4 Perceptions of safety using HOT lanes and PDSL	• Changes in the perception of safety by travelers	MNSafety-2		X
8. Carpooler Survey	8.5 Socio-demographic descriptors	• Used for analysis of other data elements	MNEquity-1 MNEquity-2		X
9. I-35W User Telephone Survey	9.1 Prior Mode	• Increase in average vehicle occupancy levels	MNTransit-3		X
9. I-35W User Telephone Survey	9.2 Frequency of use	• Increase in average vehicle occupancy levels • Reduction in VMT	MNTransit-4 MNCong-9 MNCong-10		X
9. I-35W User Telephone Survey	9.3 Reasons for Use	• Combination of strategies • Perception of improvements	MNTransit-4 MNCong-9 MNCong-10		X
9. I-35W User Telephone Survey	9.4 Perceptions of safety using HOT lanes and PDSL	• Changes in the perception of safety by travelers	MNSafety-2		X
9. I-35W User Telephone Survey	9.5 Socio-demographic descriptors	• Used for analysis of other data elements	MNEquity-1 MNEquity-2		X

Table 1-2. Surveys, Interviews, and Focus Groups Test Plan Data Elements and Use in Testing Hypotheses/Questions (Continued)

Survey/ Interview/ Focus Group	Data Element	Measures of Effectiveness	Hypotheses/ Questions*	Baseline	Post-Deploy-ment
Population – I-35W General-Purpose Freeway Lane Users					
10. I-35W South User Telephone Survey	10.1 Commute behavior	• General commute characteristics (mode, roads, time of day, etc.)	Context for analysis of all hypotheses in this section		X
10. I-35W South User Telephone Survey	10.2 Perception of reduction in travel time	• Perception of reduction in travel time	MNCong-6		X
10. I-35W South User Telephone Survey	10.2 Perception of improvement in trip-time reliability	• Perception of improvement in trip-time reliability	MNCong-7		X
10. I-35W South User Telephone Survey	10.3 Awareness and perception of DMS	• Relative contribution of the DMS to congestion reduction	MNTech-3		X
10. I-35W South User Telephone Survey	10.4 Perception of reduction in congestion	• Perception of reduction in congestion	MNCong-8 MNCong-9		X
10. I-35W South User Telephone Survey	10.5 Perception of safety	• Perception of safety by travelers	MNSafety-2		X
10. I-35W South User Telephone Survey	10.6 Socio-demographic descriptors	• Used for analysis of other data elements	MNEquity-1 MNEquity-2		X
Population – Minnesota State Patrol Officers					
11. MN State Patrol Officer Interviews	11.1 Most common citation or violation issues	• Change in violation rates	MNTolling-3		X
11. MN State Patrol Officer Interviews	11.2 Perception of changes in crashes and incidents since HOT, ATM, DMS, and PDSL operational	• Change in perception of safety	MNSafety-1 MNSafety-2		X
11. MN State Patrol Officer Interviews	11.3 Perception of change in congestion levels since HOT, PDSL, ATM, and DMS	• Change in perception of traffic congestion	MNCong-3		X

Table 1-2. Surveys, Interviews, and Focus Groups Test Plan Data Elements and Use in Testing Hypotheses/Questions (Continued)

Survey/ Interview/ Focus Group	Data Element	Measures of Effectiveness	Hypotheses/ Questions*	Baseline	Post-Deploy-ment
Population – FIRST Operators					
12. FIRST Operator Interviews	12.1 Perception of changes in safety with active traffic management	• Change in perception of safety	MnSafety-1 MnSafety-2		X
12. FIRST Operator Interviews	12.2 Perception of changes in crashes and incidents since HOT and PDSL operational	• Change in perception of safety	MNSafety-1 MNSafety-2		X
12. FIRST Operator Interviews	12.3 Perception of change in congestion levels since HOT, PDSL, ATM, and DMS	• Change in perception of traffic congestion	MNCong-3		X
Population – Bus Operators					
13. Bus Operator Interviews	13.1 Perception of changes in safety with active traffic management	• Change in perception of safety	MNSafety-3		X
13. Bus Operator Interviews	13.2 Perception of changes in crashes and incidents since HOT and PDSL operational	• Change in perception of safety	MNSafety-1 MNSafety-2 MNSafety-3 MNSafety-4		X
13. Bus Operator Interviews	13.3 Perception of change in congestion levels since HOT, PDSL, ATM, and DMS	• Change in perception of traffic congestion	MnCong-3		X
13. Bus Operator Interviews	13.4 Perception of changes in safety with MARQ2 lanes	• Change in perception of safety	MNSafety-3		X
13. Bus Operator Interviews	13.5 Perception of safety with bus lane guidance system	• Perception of safety/safe operations	MNSafety-4		X
13. Bus Operator Interviews	13.6 Perception of safety with real-time transit and traffic DMS	• Perceived changes in safety post-deployment	MNSafety-1		

Table 1-2. Surveys, Interviews, and Focus Groups Test Plan Data Elements and Use in Testing Hypotheses/Questions (Continued)

Survey/ Interview/ Focus Group	Data Element	Measures of Effectiveness	Hypotheses/ Questions*	Baseline	Post-Deploy-ment
Population – Commercial Fleet Operators					
14. Commercial Fleet Services/ Operators Interviews	14.1 Use of I-35W	• Percent of vehicles using I-35W	MNGoods-1		X
14. Commercial Fleet Services/ Operators Interviews	14.2 Use of HOT lanes and PDSL	• Percent of vehicles using tolled facilities	MNGoods-1		X
14. Commercial Fleet Services/ Operators Interviews	14.3 Perceptions in changes in travel times and congestion due to UPA projects	• Perceived advantages and disadvantages of UPA projects • Percent change in travel times in general-purpose freeway lanes	MNGoods-2		X
14. Commercial Fleet Services/ Operators Interviews	14.4 Perceptions of changes in safety	• Changes in the perception of safety by travelers	MNSafety-4		X
14. Commercial Fleet Services/ Operators Interviews	14.5 Perception of change in congestion levels since HOT, PDSL, ATM, and DMS	• Change in perception of traffic congestion	MNCong-3 MNGoods-3		X
Population – Transportation-Sensitive Business Representatives					
15. Transportation-Sensitive Business Representatives Interviews	15.1 Use of I-35W	• Percent of vehicles using I-35W	MNGoods-1		X
15. Transportation-Sensitive Business Representatives Interviews	15.2 Frequency of Use of HOT lanes and PDSL	• Percent of vehicles using tolled facilities	MNGoods-1		X
15. Transportation-Sensitive Business Representatives Interviews	15.3 Perceived changes in traffic congestion due to UPA projects	• Perceived advantages and disadvantages of UPA projects • Percent change in travel times in general-purpose freeway lanes	MNGoods-2 MNGoods-3		X

Table 1-2. Surveys, Interviews, and Focus Groups Test Plan Data Elements and Use in Testing Hypotheses/Questions (Continued)

Survey/ Interview/ Focus Group	Data Element	Measures of Effectiveness	Hypotheses/ Questions*	Baseline	Post-Deploy-ment
15. Transportation-Sensitive Business Representatives Interviews	15.4 Perceived time savings by using HOT lanes and PDSL	• Percent change in travel times	MNGoods-2		X
15. Transportation-Sensitive Business Representatives Interviews	15.5 Impact by MARQ2 lanes	• Change in the employers' perceptions about impacts on business operations • Change in perceptions of transportation costs and benefits for businesses	MNBusiness-1 MNBusiness-2		X
15. Transportation-Sensitive Business Representatives Interviews	15.6 Perceptions of changes in safety	• Changes in the perception of safety by travelers	MNSafety-4		X
Population – Downtown Minneapolis Business Community					
16. Downtown Minneapolis Business Community Interviews	16.1 Previous use of MARQ2 lanes	• Change in the employers' perceptions about impacts on business operations • Change in perceptions of transportation costs and benefits for businesses	MNBusiness-1 MNBusiness-2		X
16. Downtown Minneapolis Business Community Interviews	16.2 Perception of employees use of transit	• Contribution of different elements to transit use	MnTransist-4		X
16. Downtown Minneapolis Business Community Interviews	16.3 Perceptions of impact of MARQ2 lanes	• Change in employers' perception about impacts on business operation • Change in perception of transportation costs and benefits	MNBusiness-1 MNBusiness-2		X
16. Downtown Minneapolis Business Community Interviews	16.4 Perception of safety of MARQ2 lanes	• Change in perception of safety	MnSafety-3		X

Table 1-2. Surveys, Interviews, and Focus Groups Test Plan Data Elements and Use in Testing Hypotheses/Questions (Continued)

Survey/ Interview/ Focus Group	Data Element	Measures of Effectiveness	Hypotheses/ Questions*	Baseline	Post-Deploy-ment
Population – Households in Region					
17. MN/DOT Omnibus Survey (2008) and anticipated 2010 and 2011	17.1 Telecommute status	• Baseline conditions and change over time	MnTele-1	X	X
17. MN/DOT Omnibus Survey (2008) and anticipated 2010 and 2011	17.2 Number days a week telecommute	• Calculation of change in VMT	MnENV-1 MnENV-3	X	X
17. MN/DOT Omnibus Survey (2008) and anticipated 2010 and 2011	17.3 Socio-demographic descriptors	• Used for analysis of other data elements		X	X
18. Mn/DOT Perception Tracking Survey	18.1 Perception of DMS	• Awareness and use of pre-UPA DMS	MnTech-3	X	X
18. Mn/DOT Perception Tracking Survey	18.2 Perception of real-time transit and traffic DMS/change mode because of improvements	• Contributions of strategies to mode change	MnTech-3		X

*Listed are acronyms corresponding to hypotheses/questions to be addressed with data from this test plan.
An explanation of these acronyms can be found in Appendix A, which contains a compilation of the hypotheses/questions for all the analysis areas from the Minnesota UPA National Evaluation Plan.

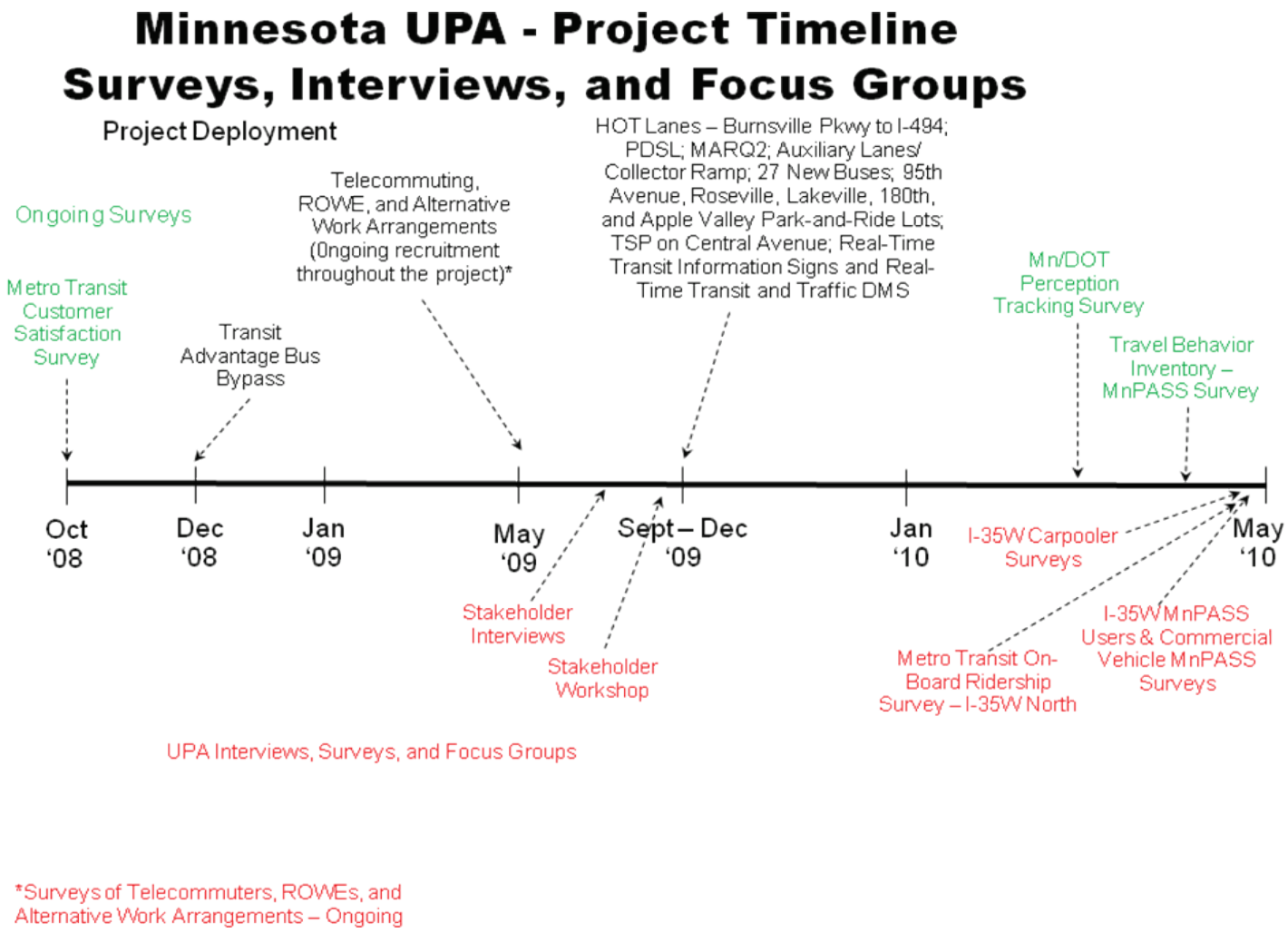

Figure 1-2. General Timeline for Conducting Interviews, Surveys, and Focus Groups

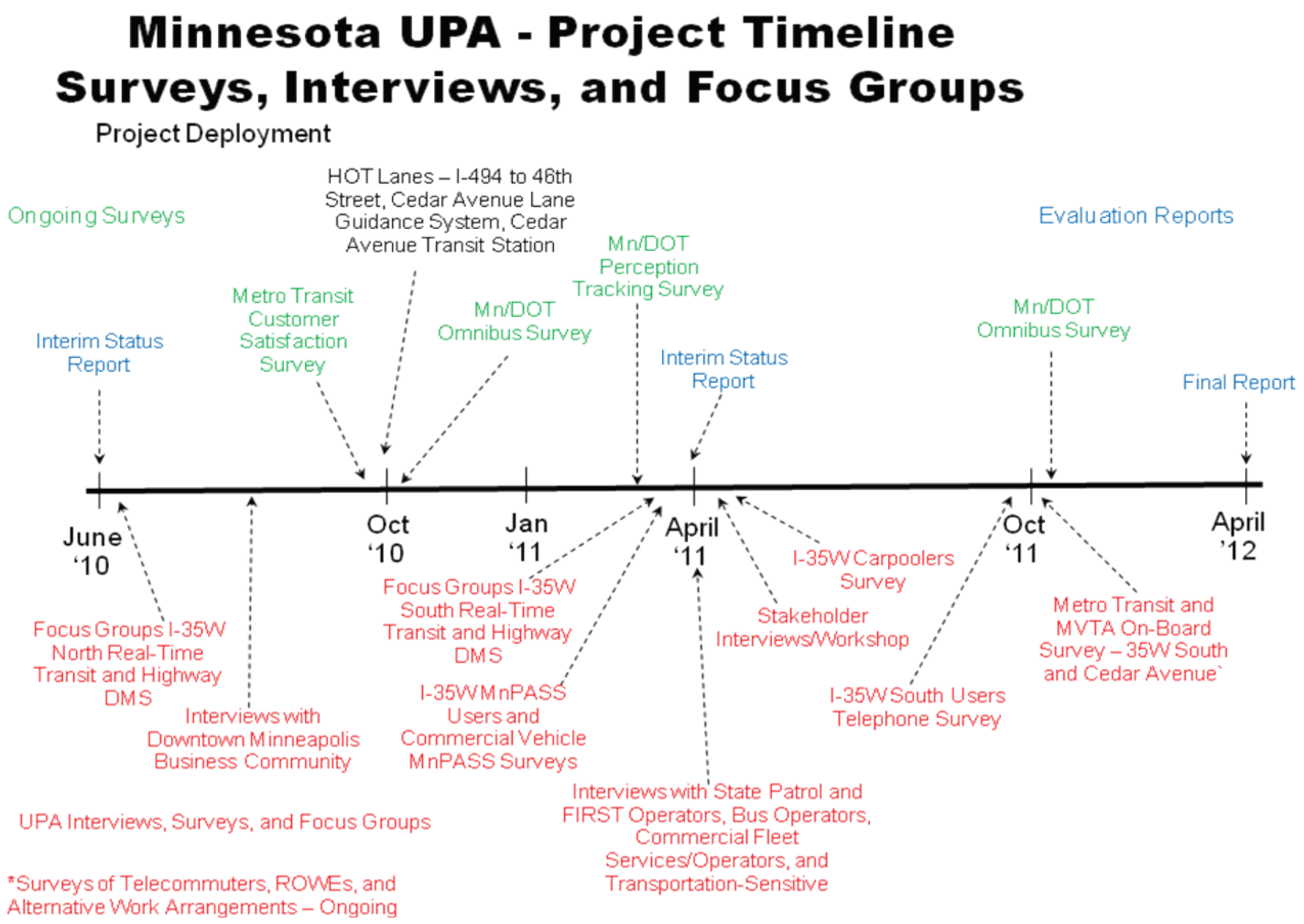

Figure 1-2. General Timeline for Conducting Interviews, Surveys, and Focus Groups (Continued)

2.0 TELECOMMUTER SURVEYS

2.1 Purpose and Approach

The Minnesota UPA telecommuting project is being conducted by the Hubert H. Humphrey Institute of Public Affairs at the University of Minnesota, with funding from the state of Minnesota. As noted in the telecommuting test plan, the Minnesota UPA telecommuting program encompasses the Minneapolis-St. Paul metropolitan area, whereas the national evaluation is interested only in the impact of the telecommuting program on traffic congestion on I-35W.

The Institute has contracted with a consulting team that includes expertise in market research, branding and promotion, outreach, and survey research to assist with developing and implementing the project. The project includes an evaluation component. Surveys of telecommuters and employers participating in the telecommuting program represent important elements of the evaluation.

The Minnesota UPA national evaluation team will utilize the survey results in the telecommuting analysis and other analyses. Members of the Battelle team are working with researchers from the Humphrey Institute to coordinate the use of the survey results in the national UPA evaluation.

The UPA Telecommuting Program for the Twin Cities and the Telework Initiative Implementation Plan reports prepared by the Humphrey Institute, present the telecommuting program elements, including a discussion of the surveys of participating employers and employees. The outlines of the surveys include a variety of questions addressing employer and employee satisfaction and comfort with the different telecommuting options. The surveys also contain questions on commute travel behavior of benefit to the national evaluation in assessing the impact of the telecommuting program on traffic congestion on I-35W. An on-line evaluation webpage, known as the eWorkPlace Commute Tool, is being implemented to track data on the program participants. Another on-line tool, SurveyMonkey, is being used on an interim basis with participating employers and employees until the eWorkPlace Commute Tool is available.

As outlined in the Telework Initiative Implementation Plan, participating employees will complete on-line surveys at three intervals over a nine-month period. The following schedule is outlined in the implementation plan for these surveys.

- Participants will complete the first survey when they enroll. The initial survey focuses on current commute patterns and perceptions of telecommuting.
- Participants will complete the second survey after three months of telecommuting. Travel patterns during the telecommuting period will be documented, along with the experience to-date and any potential issues.
- Participants will complete the third survey after nine months of telecommuting. This survey will focus on longer-term travel behavior changes and satisfaction with telecommuting.

It is also anticipated that surveys and interviews will be conducted with employers participating in the program. These surveys and interviews will obtain information on the employer's perspective of the telecommuting program, including potential transportation impacts.

2.2 Survey Questionnaires

Researchers from the Humphrey Institute have provided the national evaluation team with a copy of the initial SurveyMonkey questionnaire being used with the Human Services and Public Health Department (HSPHD) ROWE participants. The survey, which takes approximately 30 minutes to complete, is being used to help identify possible ROWE participants. The survey includes questions on current commuting patterns, attitudes about ROWE, demographic information, and a one-day travel diary. The commute-related questions are presented Figure 2-1.

2.3 Analysis Methods

The Humphrey Institute will be evaluating the entire telecommuting program for the metropolitan area, including assessing employer productivity, employer costs, and other factors. The national evaluation team will focus on the transportation impacts on I-35W from employees participating in the telecommuting, ROWE, and flexible work arrangements program. The national evaluation is interested in trips removed from I-35W. Questions 8 and 11 in the survey in Table 4-1 addresses the routes, including the names of roads and highways, the individual usually takes to and from work. This information will be used to identify telecommuters normally traveling on I-35W to include in the Minnesota UPA national evaluation. Examples of the analysis that will be conducted by the national evaluation team using the survey results are highlighted below.

- Reduction in VMT due to eliminating trips. The reduction in VMT from eliminating trips by workers telecommuting, including participating in ROWE, will be analyzed. Data needed for this analysis includes the number of participants, the frequency of telecommuting/ROWE, and the normal commute trip lengths of participants. The portion of the trip on I-35W will be estimated to identify VMT reduction on the freeway.
- Change in commute travel times due to flexible work arrangements. The survey results will be used to identify participants changing their commute time of travel to outside the peak periods and to less congestion periods due to flexible work arrangements. The potential impact of these changes on I-35W will be estimated.
- Mode shift due to participating in the telecommuting program. The potential exists that some participants may change their travel mode on days they are not telecommuting or as part of changing to a flexible work arrangement. The national evaluation team will analyze the survey results to identify any changes in commute mode and will assess the potential impacts of these changes on congestion on I-35W.

HSPHD Results-Only Work Environment Commuting Survey

2. Commuting

*** 1. Please provide your HSPHD employee ID number. This is for assisting in the survey analysis only. Your individual responses will not be seen by other HSPHD employees.**

*** 2. For a typical trip to work, what is your primary mode of transportation? By primary, we mean the means of transportation you use for the longest portion of the trip.**

- ◯ Car or truck (solo commute)
- ◯ Car pool or van pool
- ◯ Public transportation (bus, rail)
- ◯ Park and ride
- ◯ Taxi
- ◯ Motorcycle
- ◯ Bicycle
- ◯ Walking
- ◯ Other

3. If you are a solo commuter or are part of a carpool, please provide the following information regarding your vehicle in order to help calculate tailpipe emissions:

Make of car (for example, Ford)

Model of car (for example, Explorer)

Year of car (for example, 2000)

4. Please provide the cross streets closest to your work location

Cross street #1

Cross street #2

Zip Code

city name

5. What time do you usually leave for work?

6. How many miles is your commute from home to work?

7. In minutes, how long is your average commute to work?

8. Briefly describe the route you usually take to work, including the names of roads and highways.

9. What time do you usually leave work?

Figure 2-1. HSPHD ROWE Commuting Survey

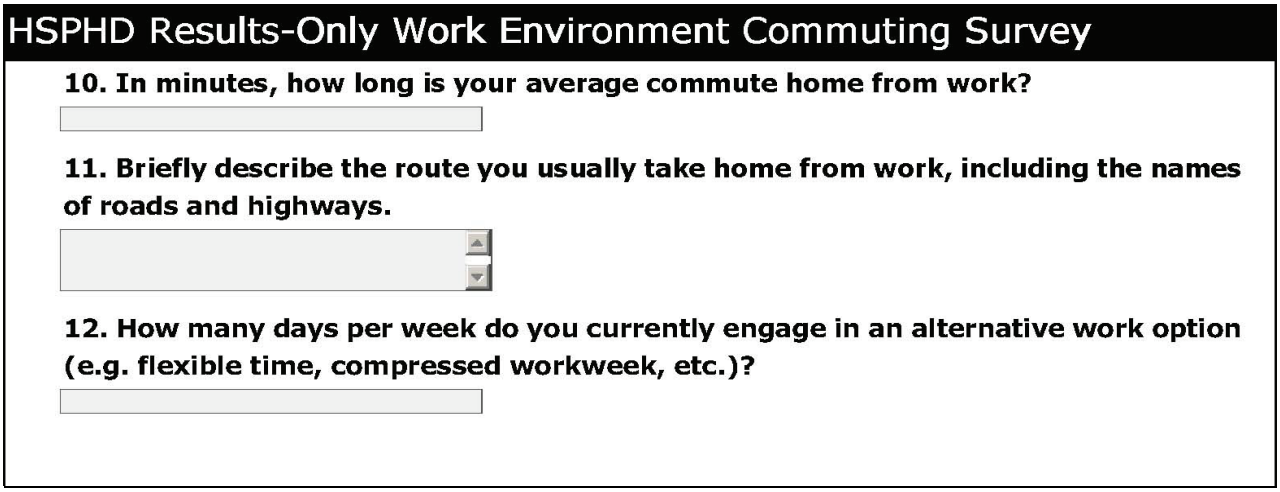

Figure 2-1. HSPHD ROWE Commuting Survey (Continued)

As previously discussed, the Humphrey Institute is conducting this survey as a panel survey, with the same respondents providing responses to survey questions at enrollment, three months post enrollment, and nine months post-enrollment. As with any panel survey, it is important that the statistical analysis account for the nature of the survey, particularly recognizing that each respondent ("subject"), serves as their own control. The national evaluation team will utilize longitudinal models that explicitly account for the "within person" variability through the use of mixed models. These general linear models (GLMs) will follow the general form indicated in Equation 1.

Equation 1. $$Response_{ij} = \mu + \beta_1 * Time_i + \cdots + Respondent_j + \in_{ij}$$

where:

β_1 is the estimated linear trend in the response across the three survey time periods;

$Respondent_j$ is a random effect estimating the "within person" variability and accounts for the fact that multiple responses are measured from the same survey participant; and,

$\in_{ij}$ is the explained variation in the model (or in the case where the response is being modeled as a mixed-model logistic regression model, this term does not exist).

Within the context of this modeling framework, we will use model-based estimates to conduct hypothesis testing and to estimate average values for different combinations of explanatory factors. In particular, statistical tests performed on the β_1 will provide a convenient method for testing to determine if there is a statistically significant linear trend over time in the response. Interaction terms with this effect will be used to examine if this linear trend differs for different response groups.

Table 2-1 summarizes the anticipated statistical power and/or precision of sample estimates for each of the data elements and measures of effectiveness presented in Table 2-1. In developing these estimates, we have assumed that 500 of the anticipated 1,700 survey participants will complete the survey for all three waves and that the modeling framework described above will be used as the statistical methodology. Other necessary assumptions are presented in the table.

Based upon historical levels of key performance measures[2], there should be sufficient statistical power to detect meaningful levels of differences (provided they exist) in the key national evaluation measures. In particular, we anticipate the following:

- The ability to achieve a statistical power of 77 percent for detecting an increasing trend larger than 7.5 percent in the percentage of carpoolers over the three survey waves who have switched to carpooling as a result of the UPA.
- The ability to identify a 10 percent decrease (or greater) over time in the percentage of commuters departing during peak am rush hour times (6:30-9:00 am) from pre-UPA percentages of 58 percent.
- The ability to detect a relative change of 6 percent in both the distance (miles) and time (minutes) over time as a result of the UPA from baseline levels with over 90 percent statistical power.
- The ability to conduct statistical tests among different groups of users with 90 percent power, provided that each group is comprised of approximately 250 respondents.

[2] State Demographics Profiles, U.S. Census, April 2003 OSD-03-104
"Reasons for Recent Large Increases in Commute Durations," University of Minnesota, Hubert H. Humphrey Institute of Public Affairs 301 19th Ave. S. Minneapolis, MN 55455 http://www.lrrb.org/PDF/200702.pdf

Table 2-1. Anticipated Statistical Power for Data Elements, and National Evaluation Measures of Effectiveness from the Humphrey Institute's Surveys

Data Element	Measures of Effectiveness	Analysis Method/Assumptions	Expected Effective Sample Size	Anticipated Statistical Power		
1.1 Mode for typical work trip	• Percent by mode	• Repeated Measures Logistic Regression Model • Percentage of telecommuters carpooling prior to UPA is 20% based upon 2000 census • Same respondents in all three survey waves	• 500 respondents across 3 survey waves	Statistical Power for Detecting an Increase in the percentage of carpoolers over the three survey waves		
				Increase of 5%	**Increase of 7.5%**	Increase of 10%
				45% Power	**77% Power**	91% Power
1.2 Vehicle used for work trip: make/year/ model	• Used in emissions calculation • Cost to employee per trip saved by telecommuting	Cost savings are direct functions of travel distance, travel time, and vehicle type See VMT Reduction				
1.3 Departure times for trips to and from work	• Commuters who shift their travel times to off-peak hours	• Repeated Measures logistic regression model • Percentage of commuters departing in core morning rush hours (6:30 – 9:00) is 58%	• 500 respondents across 3 survey waves	Statistical Power for detecting a significant decreasing trend in the percentage of commuters departing between 6:30 and 9:00		
				Decrease of 5%	Decrease of 7.5%	**Decrease of >10%**
				20% Power	54% Power	**83% Power**

Table 2-1. Anticipated Statistical Power for Data Elements, and National Evaluation Measures of Effectiveness from the Humphrey Institute's Surveys (Continued)

Data Element	Measures of Effectiveness	Analysis Method/Assumptions	Expected Effective Sample Size	Anticipated Statistical Power		
1.4 Length of work trip in miles and minutes	• VT and VMT reduction in the I-35W corridor in the peak hours • Cost to employee per trip saved by telecommuting	• Repeated Measures Mixed Model (GLM) • Average commute distance prior to UPA assumed to be 9.9 miles with relative standard error of 25% • Average trip commute time is 20 minutes with a relative standard error of 25%	• 500 respondents across 3 survey waves	Statistical Power for detecting a significant declining trend in average length of work trip in miles across the three survey waves		
				Relative Decrease of 4%	**Relative Decrease of 6%**	Relative Decrease of >10%
				60% Power	**91% Power**	~100% Power
				Statistical Power for detecting a significant decline in average trip time in minutes across the three survey waves		
				Relative Decrease of 4% (50 seconds)	**Relative Decrease of 6% (1.2 minutes)**	Relative Decrease of >10% (>2 minutes)
				68% Power	97% Power	~100% Power
1.5 Days per week in alternative work option	• VT and VMT reduction in the I-35W corridor in the peak hours • Cost to employee per trip saved by telecommuting	• Repeated Measures logistic regression model • Percentage of commuters that have telecommuted prior to UPA expected to be 10%	• 500 respondents across 3 survey waves	Statistical Power for detecting a significant increasing trend in the percentage of commuters telecommuting		
				Increase of 5%	Increase of 7.5%	Increase of >10%
				36% Power	73% Power	98% Power

Table 2-1. Anticipated Statistical Power for Data Elements, and National Evaluation Measures of Effectiveness from the Humphrey Institute's Surveys (Continued)

Data Element	Measures of Effectiveness	Analysis Method/Assumptions	Expected Effective Sample Size	Anticipated Statistical Power		
1.6 Socio-demographic descriptors	• Change in travel time and distance by user groups • Change in total transportation cost by user group	• Repeated Measures Mixed Model (GLM) • Average commute distance prior to UPA assumed to be 9.9 miles with relative standard error of 25% • Average trip commute time is 20 minutes with a relative standard error of 25% • Assume comparison performed at 12 months (maximum difference) • Assume equal sample sizes and variances between groups	• 250 respondents in each group	Statistical Power for detecting a difference between average travel distance (miles) of two groups at 12 months		
				Diff. of 0.5 Miles	**Diff. of 1 Mile**	Diff. of 2 Miles
				61% Power	**99% Power**	~100% Power
				Statistical Power for detecting a difference between average travel duration (minutes) of two groups at 12 months		
				Diff. of 1 Minutes	**Diff of 1.5 minutes**	Diff of >2 minutes
				59% Power	**91% Power**	~100% Power

2.4 Schedule and Responsibilities

The schedule for the telecommuting surveys is dependent on employers and employees agreeing to participate in the telecommuting program. The recruitment of employers has been initiated and surveys of employees at one company have been undertaken. The recruitment of participating employers and employees will continue until March, 2010. The national evaluation team will monitor the status of participation in the telecommuting program and will work with researchers from the Humphrey Institute on various aspects of the evaluation.

The responsibilities for the surveys of employers and employees participating in the Minnesota UPA telecommuting program include:

- The Humphrey Institute and its contractors will develop, conduct, and summarize the surveys of telecommuting employees and employers participating in the program. The Humphrey Institute will provide the Battelle team with the draft survey instruments for review and will provide the survey results in electronic format for participating employees using I-35W, as well as the survey results from employers in the I-35W corridor.
- Members of the Battelle team will review the various survey instruments and provide comments back to Humphrey Institute personnel. Battelle team members will review and analyze the survey results, and incorporate the results into the various analyses in the interim and final evaluation reports.

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3.0 STAKEHOLDER INTERVIEWS AND WORKSHOPS

3.1 Purpose and Approach

The purpose of the stakeholder interview is to gain additional insights into the institutional arrangements, partnerships, outreach methods, and other activities contributing to successfully planning, deploying, and operating the Minnesota UPA projects. The results of the interviews and workshops will be used in the non-technical success factor analysis. The results will be of benefit to other areas seeking to enhance existing, or develop new multi-agency/multi-jurisdictional partnerships to promote innovative transportation solutions to address traffic congestion.

Two sets of interviews and workshops will be conducted. The first set of interviews will be conducted in June and July, with the workshop to follow in early September 2009, prior to the deployment of the Minnesota UPA projects. The opportunity exists to coordinate the first set of interviews with interviews being conducted by faculty at the Hubert H. Humphrey Institute of Public Affairs with funding from the University of Minnesota's ITS Institute. This approach will allow for more interviews to be conducted by leveraging additional resources. The second set of interviews and workshop will be conducted in the spring and summer of 2011, after deployment of all Minnesota UPA projects.

3.2 Stakeholders to Interview

As noted, faculty from the Hubert H. Humphrey Institute of Public Affairs are currently conducting similar, although not identical, interviews with funding from the University of Minnesota's ITS Institute. Faculty from the Humphrey Institute provided an initial list of individuals to be interviewed. This list was developed with input from the Minnesota UPA Partners Outreach Subcommittee. The list was split between individuals to be interviewed with funding from the University of Minnesota and those to be interviewed with funding from the Minnesota UPA National Evaluation. Names on the top half of the list were identified to be interviewed using funding from the University of Minnesota and names on the bottom half of the list were targeted to be interviewed with funding from the UPA National Evaluation.

Based on review by members of the Battelle team, input from representatives from the Minnesota UPA partnership agencies, comments from U.S. DOT representatives, and additional input from faculty at the Humphrey Institute, the list of possible interviewees was expanded and revised. Table 3-1 presents the list of stakeholders targeted to be interviewed with funding from both the University of Minnesota and the UPA National Evaluation. The table highlights the anticipated sources of funding and the status of interviews conducted with funding from the University of Minnesota.

As presented in Table 3-1, in some cases multiple individuals from the same agencies have been identified to be interviewed. The intent is to interview both the top officials – such as the Chair or the Commissioner – as well as the key senior staff involved in the Minnesota UPA. It is realized that due to busy schedules it may not be possible to schedule interviews with all the top officials identified. It is anticipated that between 12 and 14 interviews will be completed for the

Minnesota UPA National Evaluation based on the availability of individuals and the ability to schedule interviews. The Battelle team will be able to utilize the results from the interviews conducted with funding from the University of Minnesota to enrich the interview results. The individuals from these interviews will also be invited to participate in the workshop.

Based on previous experience, it is anticipated that each interview will take between one hour and one and one-half hour. The questions will be sent to the individuals in advance of the interviews to help facilitate discussion. Two members of the Battelle team will participate in each interview. One individual will lead the interview, ask the questions, and take notes. The second individual will take notes using a laptop computer and record the session if the interview agrees.

Table 3-1. List of Stakeholders to Interview

Name	Organization	Funding/Status
Tim Anderson	FHWA, St. Paul	University of Minnesota*
Ken Buckeye	Mn/DOT	University of Minnesota*
John Doll	State Senator	University of Minnesota*
Scott Dibble	State Senator	University of Minnesota*
Max Donath	Center for Transportation Studies	University of Minnesota*
Steve Elkins	City Council Member, City of Bloomington	University of Minnesota*
Frank Hornstein	State Representative	University of Minnesota*
Brian Kary	Mn/DOT	University of Minnesota
Steve Kotke	City of Minneapolis	University of Minnesota*
Mark Krebsbach	Transportation Director, Dakota County	University of Minnesota
Craig Lamothe	Metro Transit	University of Minnesota*
Brian Lamb	Metro Transit	University of Minnesota*
Beverly Miller	Minnesota Valley Transit Authority	UPA
Mike Abegg	Minnesota Valley Transit Authority	UPA
Nick Thompson	Mn/DOT	University of Minnesota*
Tom Thorstenson	Metro Transit	University of Minnesota*
Max Donath	Center for Transportation Studies, University of Minnesota	University of Minnesota*
Tom Sorel	Commissioner, Mn/DOT	UPA
Bernie Arseneau	Mn/DOT	UPA
Bob Deboer	Citizen's League	University of Minnesota*
Carol Flynn	Value Pricing Task Force	UPA
Elizabeth Glidden	City Council Member, City of Minneapolis	University of Minnesota*
Mary Liz Holberg	State Representative	University of Minnesota*
Bob Johns	Director, Center for Transportation Studies	UPA
Peter Bell	Chair, Metropolitan Council	UPA
Robert McFarlin	Metropolitan Council, District 3	UPA
Polly Bowles	Metropolitan Council, District 8	UPA

Table 3-1. List of Stakeholders to Interview (Continued)

Name	Organization	Funding/Status
Wendy Wulff	Metropolitan Council, District 16	UPA
Tom Weaver	Regional Administrator, Metropolitan Council	UPA
Arlene McCarthy	Director, Metropolitan Transportation Services, Metropolitan Council	UPA
Steve Murphy	State Senator	University of Minnesota*
Bob Tennessen	35W Solutions Alliance	UPA
Peter Wagenius	Council Liaison, City of Minneapolis	UPA
John Doan	SFR Consulting	University of Minnesota*
Lee Munnich	Hubert H. Humphrey Institute of Public Affairs, University of Minnesota	University of Minnesota
Dan Krom	Dakota County	UPA
Larry Lee	City of Bloomington	UPA
Dan McElroy	City of Burnsville	UPA
Susan Moe	FHWA, St. Paul	UPA
Marthand Nookala	Hennepin County	UPA

*Interview has been completed or is scheduled using funding from the University of Minnesota

3.3 Interview Questionnaires

Questionnaires will be used for both the pre-deployment and the post-deployment stakeholder interviews. Table 3-2 provides the questionnaire for the pre-deployment interviews. Table 3-3 provides the draft questionnaire for the post-deployment interviews. The post-deployment questionnaire may be revised based on the results of the pre-deployment interviews and workshop, as well as to address any issues or concerns that emerge during the implementation and operation of the Minnesota UPA projects. Interviewers will also have a series of probes to use in drawing responses from interviewees if needed.

Table 3-2. Pre-Deployment Interview Questionnaire

Interviewee: _____ **Date:** _____ **Interviewer(s)**: _____	
Introduction	• Explain the National UPA Evaluation purpose, scope, and sponsors. • Describe the purpose and process for the stakeholder interviews. • Note that the interviews are confidential. Responses will not be attributed to specific individuals. • Explain the Institutional Review Board (IRB)/Human Subject Protection requirements, consent form, and need for signature.
Role in UPA and Expectations	1. Please describe your agency's role and your personal role in planning, designing, and implementing the Minnesota UPA projects. 2. What is your agency's objective(s) in participating in the UPA? What benefits did you expect to be realized when you decided to participate in the UPA? Have these expectations changed at all during the planning and pre-deployment process? If so, what has changed and why? 3. What would constitute success from the UPA projects for you and your agency? What about the UPA overall? Has your view of what constitutes success changed during the planning and pre-deployment process? If so, in what way and why?
Institutional Arrangements	4. Have you and your agency worked with the other partnership agencies, organizations, and individuals before? If so, what has been the focus of this work? How would you classify past working relationships – successful, unsuccessful, mixed? (Check for all partners – Mn/DOT, Metropolitan Council, Metro Transit, MVTA, City of Minneapolis, and Anoka, Dakota, Hennepin, and Ramsey counties. Also check for CTS and the HHH Institute at the University of Minnesota, legislators, and other local communities). 5. What do you think were the keys to bringing all the agencies and jurisdictions together to develop the UPA partnership and to implement the UPA projects? What do you think will be the keys to maintaining the partnership throughout the deployment and operation process? 6. Have there been any changes in the partnership agencies and jurisdictions, including yours, that have influenced implementation of the UPA projects? If so, how have these changes been addressed? 7. Do you feel there have been any changes in the commitment to the UPA projects on the part of your agency/jurisdiction or other agencies/jurisdictions? If yes, please explain the nature and the potential causes of these changes. 8. What have been the biggest challenges during the implementation process? How have these challenges been addressed by the partners, including your agency/jurisdiction? Have they been effectively overcome? 9. Were there any specific institutional issues that had to be addressed? If so, how were they addressed by the partners, including your agency/jurisdiction? Have they been effectively overcome? 10. Were there any specific policy or political issues that had to be addressed? If so, how were they addressed by the partners, including your agency/jurisdiction? Have they been effectively overcome? 11. How will the decision on how revenues will be allocated or reinvested be made? What do you think the plan should be for use of the revenues? 12. Were there any technical or technology-related issues that had to be addressed? If so, how were they addressed by the partners, including your agency/jurisdiction? Have they been effectively overcome?

Table 3-2. Pre-Deployment Interview Questionnaire (Continued)

Outreach Activities	13. A variety of outreach activities have been used to engage policy makers, the public, and other groups in the implementation of the Minnesota UPA projects. What do you feel have been the most successful activities? Have you been involved in any of these activities? If so, what has been your experience? Are there other outreach activities you feel would be of benefit? Do you anticipate any issues or concerns with public acceptance of the HOT lanes or the PDSL, the telecommuting programs, or other project elements?
Lessons Learned	14. Based on your experience to date, would you do anything differently if you were beginning to plan and implement the same projects in a different corridor with the same funding? What if the project as a whole had twice the funding? What if the project as a whole had half the funding? 15. What do you feel are the key experiences or lessons learned so far to share with individuals in other areas? 16. Are there any other topics you would like to bring up related to the UPA?

Table 3-3. Post-Deployment Interview Questionnaire

Interviewee: _____ **Date:** _____ **Interviewer(s)**: _____	
Introduction	• Explain the National UPA Evaluation purpose, scope, and sponsors. • Describe the purpose and process for the stakeholder interviews. • Note that the interviews are confidential. Responses will not be attributed to specific individuals. • Explain the Institutional Review Board (IRB)/Human Subject Protection requirements, consent form, and need for signature.
Role in UPA and Expectations	1. Please describe your agency's role, and your personal role in deploying and operating the Minnesota UPA projects. 2. What is your agency's objective(s) in participating in the UPA? What benefits did you expect to be realized when you decided to participate in the UPA? Have these expectations changed at all during the deployment and operation of the various projects? If so, what has changed and why? Have your expectations been realized? 3. What would constitute success from the UPA projects for you and your agency? What about the UPA overall? Has your view of what constitutes success changed during the deployment and operation of the various projects? If so, in what way and why? (Since it is anticipated that most individuals will be re-interviewed, these questions may be modified to focus on any changes that occurred during the deployment).
Institutional Arrangements	4. How would you describe your working relationships with other UPA partners during the deployment and operation phases? Did your working relationship change during the deployment and operation of the UPA projects? If so, how did it change? (Check for all partners – Mn/DOT, Metropolitan Council, Metro Transit, MVTA, City of Minneapolis, and Anoka, Dakota, Hennepin, and Ramsey counties. Also check for CTS and the HHH Institute at the University of Minnesota, legislators, and other local communities). 5. What do you think have been the keys to maintaining the partnerships throughout the deployment and operation process? 6. Have there been any changes in the partnership agencies and jurisdictions, including yours, that have influenced the deployment and operation of the UPA projects? If so, how have these changes been addressed? 7. Do you feel there have been any changes in the commitment to the UPA projects on the part of your agency/jurisdiction or other agencies/jurisdictions? If yes, please explain the nature and the potential causes of these changes. 8. What have been the biggest challenges during the deployment and operation phases? How have these challenges been addressed by the partners, including your agency/jurisdiction? Have they been effectively overcome? 9. Were there any specific institutional issues that had to be addressed? If so, how were they addressed by the partners, including your agency/jurisdiction? Have they been effectively overcome? 10. Were there any specific policy or political issues that had to be addressed? If so, how were they addressed by the partners, including your agency/jurisdiction? Have they been effectively overcome? 11. How was the decision on how to allocate or reinvest revenues made? Does the use match your ideas on how the revenues should be used? 12. Were there any technical or technology-related issues that had to be addressed? If so, how were they addressed by the partners, including your agency/jurisdiction? Have they been effectively overcome?

Table 3-3. Post-Deployment Interview Questionnaire (Continued)

Outreach Activities	13. A variety of outreach activities have been used to engage policy makers, the public, and other groups during the deployment and operation of the Minnesota UPA projects. What do you feel have been the most successful activities? Are there other outreach activities you feel would be of benefit? What has been the public reaction to the HOT lanes and the PDSL? Has there been any reaction to the telecommuting program or other UPA elements? Have any other issues or concerns emerged?
Lessons Learned	14. Based on your experience to date, would you do anything differently if you were beginning to deploy and operate the same projects in a different corridor with the same funding? What if the project as a whole had twice the funding? What if the project as a whole had half the funding? 15. What do you feel are the key experiences or lessons learned so far to share with individuals in other areas? 16. Are there any other topics you would like to bring up related to the UPA?

3.4 Workshop

A workshop will be conducted at the conclusions of each round of interviews. All of the individuals interviewed will be invited to participate in the workshop, which is anticipated to be approximately three hours in length. The individuals interviewed through funding from the University of Minnesota will also be invited to participate in the workshop. These individuals will have the opportunity to comment on the more detailed questions included in the national evaluation interviews.

The purpose of the workshop is to foster additional dialog among the key stakeholders. The common themes identified during the interviews will be used to frame the group discussion, which will explore these and other topics in more detail. Table 3-4 presents the format for the pre-deployment workshop. It is anticipated that the post-deployment workshop will follow a similar format, although changes may be made based on the first workshop and interview results.

Table 3-4. Workshop Format

1. Welcome and Self Introductions – 10 minutes
2. Purpose of Workshop – 5 minutes
3. Summary of Key Point from Interviews and Additional Discussion – (20 minutes each) 80 minutes
   - Expectations
   - Institutional Arrangements
   - Outreach Activities
   - Lessons Learned
4. Expectations for Operations – 20 minutes
5. Concluding Remarks – 20 minutes

3.5 Analysis Methods

Immediately following each round of interviews, the interview notes and tape recordings will be reviewed and the major comments will be documented. The responses of each stakeholder to every question will be summarized. Faculty at the Humphrey Institute use the NVivo software to help organize, analyze, and summarize interviews. The categories for summarizing the results will be identified using both questionnaires. Subcategories will be used to provide more detail on the various topics covered in both sets of interviews.

A summary report will be prepared highlighting the common themes emerging from the interviews, as well as unique perspectives. The summary report will be organized by the interview questions, with a final section presenting overarching themes and tips for other areas.

The workshop discussion will be summarized immediately following each workshop. The workshop summary will highlight the discussion of the interview questions. Additional perspectives will be documented, as will reinforcement of the common themes from the interviews. The workshop summary will be of benefit to the Minnesota UPA partnership agencies, other agencies in the Twin Cities area, and agencies throughout the country.

3.6 Schedule and Responsibilities

The first set of stakeholder interviews will be conducted in late June and July, 2009. The first workshop will be conducted in early September, 2009. The interviews and workshop will be completed prior to deployment of the major UPA projects, which begins in September 2009. The second set of stakeholder interviews will be conducted in June and July, 2011. The workshop will be held in August 2011.

Members of the Battelle team will conduct both the pre- and post-deployment interviews and facilitate the workshops. The results from the interviews and the workshops will be summarized after each round.

4.0 FOCUS GROUPS ON REAL-TIME TRANSIT AND HIGHWAY TRAVEL-TIME DYNAMIC MESSAGE SIGNS

4.1 Purpose and Approach

One of the Minnesota UPA projects is deploying dynamic message signs (DMS) displaying real-time traffic and transit information at key locations along I-35W north and south of downtown Minneapolis. The DMS will display comparative travel times to downtown Minneapolis for buses and automobiles. The availability of spaces at nearby park-and-ride lots will also be displayed on DMS. The project will test if drivers are more likely to use park-and-ride facilities and public transportation when provided information on the travel time advantage of using the bus. A total of seven DMSs, providing real-time bus and automobile travel times, will be located along I-35W as part of the UPA. Three will be located along I-35W north of downtown Minneapolis and four will be located south of downtown Minneapolis.

The system architecture for the DMS uses data from Mn/DOT's Regional Transportation Management Center (RTMC) and Metro Transit's Control Center. The DMS design has been completed. Following guidelines in the Manual on Uniform Traffic Control Devices (MUTCD), Metro Transit has submitted a request to FHWA for experimental transit travel time comparison signs at seven locations along I-35W. As part of the request to experiment, Metro Transit has developed an evaluation plan, which includes the use of on-board surveys of transit riders and focus groups of drivers in the I-35W corridor.

On-board surveys of transit riders will be conducted on routes operating on I-35W north and south of downtown Minneapolis to obtain information on bus use and the influence of the UPA projects, including the DMS, on mode choice. The on-board surveys are discussed in Section 6.0. Focus groups will be used to obtain feedback on the real-time transit and traffic DMS from drivers in the corridor. Metro Transit will hire a market research consultant to develop, conduct, and analyze the focus groups. The information presented in this section provides input to the consultant on the topics of interest for the national evaluation.

4.2 Focus Group Selection

It is anticipated that four-to-six focus groups will be conducted, with half targeting commuters on I-35W north of downtown Minneapolis and half targeting commuters south of the downtown area. The market research consultant will use standard industry practice to recruit participants. It is further anticipated that most participants will be commuters making trips to work or school on I-35W, but other travelers during the peak periods may also be included. Based on standard practice, each focus group will include approximately 8-to-12 participants.

4.3 Focus Group Questions

The script for the focus groups will be developed by the market research consultant retained by Metro Transit. Table 4-1 presents a preliminary script for use as a starting point by the consultant. It includes topics of interest for the national evaluation and those identified in the

Metro Transit request to FHWA. As appropriate, it is suggested that graphics of the DMS be used to highlight different questions.

Table 4-1. Preliminary Questions for Focus Groups on Real-Time Transit and Traffic DMS

Introduction	• Explain the need for feedback on the dynamic message signs and Mn/DOT and Metro Transit sponsorship of the focus groups. • Describe the purpose and process for the focus groups. • Note that the focus groups are confidential. Responses will not be attributed to any individual.
Background of each Participant's Commute	1. Please describe your general commute, including mode (drive alone, carpool, vanpool, ride the bus), time you are normally travelling, and your travel time. 2. Please describe the section of I-35W you normally travel. 3. How long have you been making this commute (months, years)? 4. Do you ever use other modes for your commute trip? 5. Have you ever taken the bus or used a park-and-ride lot on I-35W or elsewhere? If so, please describe your experience. (note – it is anticipated that the facilitator will use these questions as ice-breakers and to obtain general information about each participant's commute)
Real-Time Transit and Traffic Dynamic Message Signs (DMS)	6. Have you noticed the signs along I-35W displaying real-time transit and traffic information? 7. How would you describe the information presented? Is the information easy to understand? 8. Do you think the layout of the sign and the size is easy to read? Is the sign bright enough? 9. What do you think about the placement of the sign? It is located where you can easily read it? Is it located where you can change your travel plans (mode or route) based on the information? 10. Do you think the travel times presented are accurate? 11. Do you have any concerns related to safety from reading the signs? (Note – it may be appropriate to use visuals of the DMS)
Response to DMS	12. Have you ever changed your travel mode or route in response to the signs, such as taking the bus? Do you think you would change your travel mode or route in the future? 13. Have the signs changed your perception of transit services and park-and-ride facilities in the I-35W corridor? 14. Were you aware of the park-and-ride lots and bus services in the corridor prior to installation of the signs? 15. Do you have any suggestions on how the signs could be improved?
HOT lanes and PDSL (for I-35W South Focus Groups)	16. Are you a MnPASS customer and do you ever use the HOT lanes and PDSL? If you use the HOT lanes or PDSL, how frequently do you use them? 17. What is your experience using the HOT lanes or PDSL? Do you feel the tolls are reasonable for the time savings received? 18. Do you have any suggestions on how the HOT lanes and PDSL could be enhanced?
Closing	19. Are there any other comments you would like to make concerning real-time transit and traffic signs, bus services and park-and-ride lots, and the HOT lanes and PDSL on I-35W?

4.4 Analysis Methods

Metro Transit's market research consultant will analyze the focus group results, which provide qualitative, rather than quantitative, information. The results will be summarized by the topic areas outlined in Table 4-1 and the final script. The national evaluation team will use the results in analyzing the human factors aspects and the travel behavior influences of the real-time transit and traffic DMS. Information on reported changes in travel behavior, including mode change, based on the information provided in the DMS will also be examined.

4.5 Schedule and Responsibilities

Metro Transit's market research consultant will be responsible for finalizing the focus group script, recruiting participants, conducting the focus groups, and analyzing and summarizing the results. Members of the Battelle team will review the focus group script and participant recruitment protocol and provide comments and feedback. As feasible, members of the Battelle team will observe the focus groups. Battelle team members will review the focus group report and incorporate the results into the interim and final national evaluation reports.

It is anticipated that the focus groups with commuters traveling on I-35W north of downtown Minneapolis will be conducted in June 2010, approximately six months after the DMS, new and expanded park-and-ride facilities, new transit services, and the MARQ2 project have been implemented. There are no HOT lanes or PDSL elements on I-35W north of downtown Minneapolis. The focus groups with commuters using I-35W south of downtown are recommended to be conducted in April, 2011, approximately six months after the completion of the HOT lanes in the Crosstown Commons section and 18 months after the implementation of the DMS, HOT lanes, PDSL, and new and expanded park-and-ride facilities on I-35W south of downtown Minneapolis.

The responsibilities for the focus group on the real-time transit and traffic information DMS include:

- The Metro Transit market research consultant will develop the focus group script and participant recruitment protocol, recruit participants, conduct the focus groups, analyze the results, and prepare a summary report.
- Battelle team members will review the focus group script and participant recruitment protocol, observe the focus groups if possible, review the summary report, and incorporate the results into the interim and final national evaluation reports.

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5.0 I-35W TRANSIT ON-BOARD SURVEYS

5.1 Purpose and Approach

Metro Transit conducts on-board customer satisfaction surveys every two years. The two most recent on-board customer satisfaction surveys were conducted in 2006 and 2008. The next on-board customer satisfaction survey will be conducted in the fall of 2010. The national UPA evaluation will use the results from these on-board surveys for the routes in the I-35W corridor as part of the national evaluation. This information will allow for comparisons pre- and post-deployment. In addition, on-board ridership surveys targeted specifically to the Minnesota UPA projects will be conducted on MVTA routes in the I-35W corridor. These surveys will provide more detailed information on the prior mode of travel, frequency of use, reasons for use, influence of the Minnesota UPA project on use, and related information. As discussed in Section 4.0, the surveys will also obtain information on perceptions related to the real-time transit and traffic information DMS and use of transit based on this information as part of Metro Transit's request to experiment submitted to FHWA.

Additional Metro Transit and MVTA On-Board Surveys. The transit on-board ridership surveys will be conducted by Metro Transit and MVTA. On-board ridership surveys will be administered on Metro Transit routes serving the new and expanded park-and-ride lots along I-35W north of downtown Minneapolis in May-June 2010, approximately six months after opening of the new and expanded park-and-ride lots and implementation of the new transit services and the MARQ2 bus lanes in downtown Minneapolis. On-board ridership surveys will be conducted on Metro Transit and MVTA routes serving the new and expanded park-and-ride lots along I-35W and Cedar Avenue south of downtown Minneapolis in September 2011, approximately one year after the opening of the final park-and-ride facilities and the HOT lanes in the Crosstown Commons section. This schedule allows for conducting the surveys at times other than September 2010, which is when the ongoing Metro Transit customer satisfaction surveys are conducted.

Metro Transit On-Board Customer Satisfaction Surveys. The Metro Transit Bus Ridership Survey is intended to meet a number of objectives. The objectives include determining why customers ride the bus, identifying the primary sources of bus information, assessing how Metro Transit communicates with customers, and evaluating riders' overall level of satisfaction with Metro Transit. Other objectives are to determine riders' level of satisfaction with specific service components, to identify which components influence overall satisfaction the most, and to identify which service elements are of greatest importance to customers. Two final objectives are to evaluate the importance of possible service improvements to riders and to assess the demographic characteristics of current riders. The results will also be compared with those of previous years to monitor attitudinal shifts over time.

The following questions from the 2008 Bus Ridership Survey will be examined for routes in the I-35W corridor to help establish pre-deployment rider characteristics.

- How many days per week do you ride the bus?
- How long have you used Metro Transit service?
- What influenced your decision to first try transit?

- From which zip code did you begin your commute today?
- To which zip code are you commuting today?
- Which days of the week do you usually ride the bus?
- When do you usually ride the bus (rush hour, non-rush hour, special events)?
- How did you pay your fare today?
- Does your employer offer transit passes?
- What is the primary purpose of your trip today?
- If transit were not available, how would you have made this trip today?
- Which best describes your racial or ethnic background?
- What is your age?
- Are you female/male?
- Approximately what was your family's total income last year?
- What is the one main reason you use transit?
- How many working automobiles do you have available for your use?
- Please indicate your level of agreement with the following statements (strongly agree, agree, disagree, strongly disagree, don't know)
  - Park-and-ride lots are conveniently located.
  - You feel your car if safe in the park-and-ride lots.
  - Hours of operation for express service are sufficient.
  - Morning rush hour service runs on schedule.
  - Afternoon rush hour service runs on schedule.
  - There are enough express routes.

As available, data from the 2006 survey will also be examined to develop trend lines for rider attributes. Finally, the results from the 2010 Customer Satisfaction survey will be analyzed.

5.2 On-Board Ridership Surveys Protocol

These surveys are targeted at obtaining information from passengers on Metro Transit and MVTA buses operating in the I-35W corridor. Metro Transit and MVTA have extensive experience conducting on-board ridership surveys, including the on-board customer satisfaction survey, which is completed every other year. The same process used on other surveys will be followed on the UPA on-board ridership surveys. The actual process includes individuals handing out surveys and pencils to riders as they board buses and collecting the surveys as the passengers exit the buses. The routes and runs to be included in the surveys will be determined by Metro Transit and MVTA, with input from the Battelle team.

Table 5-1 presents the Metro Transit and MVTA routes influenced by the Minnesota UPA projects that will be included in the transit analysis. The route number, route description, and service type (express or local) are included in the table. The number of a.m. inbound bus trips are also presented to provide an indication of the current service level. A total of 30 routes have been identified in the I-35W corridor, including Cedar Avenue, to be included in the analysis. As shown in Table 2-1, the majority of Metro Transit and MVTA routes in the corridor provide express service to downtown Minneapolis. The MVTA also provides local service oriented to the Mall of America in Bloomington.

Table 5-1. Transit Routes in the I-35W Corridor

Route	Route Description	Service Type	Number of a.m. Trips[1]
Metro Transit			
I-35W North			
250	Lino Lakes to Downtown Minneapolis Via I-35W	Express	29
260/261	Roseville to Downtown Minneapolis	Express	18
288	Forest Lake to Downtown Minneapolis	Express	6
252	Blaine – University of Minnesota (New)	Express	3
I-35W South			
133	South Minneapolis to Downtown Minneapolis	Express	5
135	South Minneapolis to Downtown Minneapolis	Express	6
146	Edina or South Minneapolis to Downtown Mpls.	Express	9
152	Southdale to the University of Minnesota	Express	3
156	South Minneapolis to Downtown Minneapolis	Express	9
535	Bloomington and Richfield to Downtown Minneapolis	Express/Reverse Commute	13
576	Bloomington and Richfield to Downtown Minneapolis	Express	8
597	Bloomington to Downtown Minneapolis	Express	7
552	Bloomington to Downtown Minneapolis	Express	3
553	Bloomington to Downtown Minneapolis	Express	5
554	Bloomington to Downtown Minneapolis	Express	6
558	Bloomington to Downtown Minneapolis	Express	7
578	Bloomington/Edina to Downtown Mpls. Via I-35W	Express	7
467	Lakeville to Downtown Minneapolis (New)	Express	6
Minnesota Valley Transit Authority			
440	Apple Valley/Eagan to MOA[2]	Local	10[3]
441	Apple Valley/Eagan to MOA[2]	Local	12[3]
442	Burnsville/AV to MOA[2]	Local	22[3]
444	Savage P&R/Burnsville to MOA[2]	Local	27[3]
445	Eagan to MOA[2]	Local	20[3]
460	Burnsville to Downtown Minneapolis	Express	36
464	Burnsville/Savage P&R to Downtown Minneapolis	Express	8
465	Apple Valley/Burnsville to Downtown Minneapolis and University of Minnesota	Express	10
470	Eagan to Downtown Minneapolis	Express	10
472	Eagan to Downtown Minneapolis	Express	8
476	Apple Valley to Downtown Minneapolis	Express	10
477	Apple Valley to Downtown Minneapolis	Express	19
479	Rosemount to Downtown Minneapolis	Express	2

[1] a.m. Inbound Trips
[2] Mall of America (MOA)
[3] Weekday Northbound Trips Presented for Local Service
Source: Metro Transit and MVTA Bus Schedules

Additional runs may be added to some of these routes to accommodate the anticipated ridership growth from the new park-and-ride lot spaces and the travel-time savings provided by the HOT lanes, PDSL, and MARQ2 lanes. Other routes may have available capacity for new riders. Also, new routes may be added to serve new park-and-ride lots. The service plan for the new park-and-ride lot on I-35W in Roseville is still being finalized, some changes are known at this time. A new route, Route 252, will be implemented in September 2009 from the 95th Avenue/ I-35W Park-and-Ride Lot to the University of Minnesota. Three a.m. and three p.m. trips are planned initially. A new route from the new park-and-ride lot in Roseville with six a.m. and six p.m. peak period trips is planned for implementation in December 2009. As discussed in Sections 3.0 and 4.0, implementing new routes, adding trips to existing routes, and other service changes will be documented in the national evaluation, along with ridership and travel-time data.

The sample for the on-board ridership survey will be drawn for the routes presented in Table 5-1. The sample plan methodology outlined next focuses on providing a statistically valid sample of boarding on these routes. The sample plan is based on the ridership on these routes and the overall response rates from the recent Metro Council Customer Satisfaction Survey. It also assumes geocoding is not needed for the origin and destination information. If address geocoding is needed, the assumption for the response rate drops and the sample size needs to be increased. The sampling plan will be finalized based on additional discussions with personnel from Metro Transit, MVTA, the U.S. DOT, and the survey contractor.

The sampling plan also considers a number of other factors. As highlighted below, these factors include type of route, primary destination, direction of travel, and service area for origins.

- Type of route – express and local.
- Primary destination – downtown Minneapolis, University of Minnesota, and Mall of America/I-494 corridor.
- Direction of travel – peak direction and reverse commute (off-peak direction).
- Service area for origins – by corridor for Metro Transit routes (I-35W North and I-35W South) and by route group for MVTA (460 routes and 470 routes).

Based on these factors, the sampling plan should provide a statistically valid sample for each of the following groups.

- Express routes in the I-35W North corridor to downtown Minneapolis in the peak direction.
- Express routes in the I-35W South corridor from to downtown Minneapolis in the peak direction.
- MVTA express routes in the 460 series to downtown Minneapolis in the peak direction.
- MVTA express routes in the 470 series to downtown Minneapolis in the peak direction.
- Local MVTA routes to the Mall of America.

Because analyses are expected to be conducted for each of these groups, we recommend that a stratified cluster sampling approach be utilized to ensure the representativeness of the sample. Each of the five route groups listed above will form a sampling stratum while individual

buses/bus trips will form the sampling stratum. The sample size will be finalized based on updated ridership information. Following the Metro Transit procedures, every rider on the selected bus trips will be requested to complete a survey. Based on the preliminary analysis of ridership and response rate to previous surveys, a reasonable goal is 400 valid surveys of riders in each of the route groups noted above. Assuming a minimum design effect of 1.2 (i.e., responses by riders on the same bus are assumed not to be very correlated) this sample size would enable the ability to estimate percentages of riders with a particular attribute or opinion within plus-or-minus 5.4 percent with 95 percent confidence. The exact number of buses that will need to be sampled will depend upon ridership levels per route category and response rate. For example, if one assumes that roughly 10 surveys can be completed on each bus, a sample size of 400 completed surveys would require 40 bus trips to obtain the required sample size. A one-day survey will be conducted for each of the identified bus trips. It is anticipated that the one-day survey will be conducted on either a Tuesday, Wednesday, or Thursday. A 100 percent sample is recommended for the following two route groups stratum.

- Express bus trips to the University of Minnesota in both the I-35W North and South corridors.
- Reverse commute bus trips.

Table 5-2 provides additional information on the sample size. It presents the four major route categories, the number of bus trips for the express routes to downtown Minneapolis and the sample size for routes within the categories.

Table 5-2. Recommended Sampling Plan by Route Category

Route Category	Number of AM Bus Trips per Route	Sample Size for Each Route
Express Routes to Downtown Minneapolis	20 or More Trips	50% of AM Bus Trips
	10-19 Trips	60% of AM Bus Trips
	1-9 Trips	100% of AM Bus Trips
Express Routes to the University of Minnesota		100% of AM Bus Trips to the University
Express Routes – Reverse Commute		100% of all Bus Trips in Reverse Direction
Local Routes to Mall of America		100% of AM Bus Trips in Peak Direction to Mall of America

5.3 On-Board Ridership Survey Questions

The following questions are recommended for inclusion in the on-board ridership surveys. The questions are modeled after those used in previous Metro Transit and MVTA surveys, those used on the MnPASS and carpool surveys, and those used in conjunction with the Miami UPA transit projects. The questions presented focus on the I-35W south on-board surveys. The questions will be modified for the I-35W north on-board surveys to remove references and questions relating to the I-35W HOT lanes and use of the MnPASS toll lanes. The final wording,

sequencing of questions, and format for the surveys will be determined by Metro Transit, MVTA, and their contractors.

1. How long have you been riding the bus on this route?

   _____ Less than 6 months
   _____ 6 months to 1 year
   _____ 1 to 5 years
   _____ More than 5 years

2. Approximately how many days a week do you ride the bus?

   _____ One day per week
   _____ Two days per week
   _____ Three days per week
   _____ Four days per week
   _____ Five days per week
   _____ More than five days per week

3. How did you get to the park-and-ride lot or bus stop for this bus trip? (check ONE only)

   _____ Walked
   _____ Drove alone and parked
   _____ Drove with others and parked
   _____ Dropped off by car
   _____ Other (specify:_____)

4. What is your trip purpose?

   _____ Work
   _____ School
   _____ Personal business
   _____ Social/entertainment
   _____ Medical
   _____ Other (please specify _____)

5. How did you make this trip before you began riding the bus on this route?

   _____ Drove alone in I-35W general-purpose freeway lanes
   _____ Drove alone on another freeway or roadway
   _____ Carpooled in the I-35W HOV lanes
   _____ Rode another bus on I-35W or other roadway
   _____ Did not make the trip
   _____ Other (please specify _____)

6. Do you every carpool for free on the I-35W MnPASS toll lanes?

_____ Extremely often
_____ Very often
_____ Somewhat often
_____ Not very often
_____ Not at all
_____ Unsure/Don't know

7. If you do carpool, who do you carpool with?

_____ Family members
_____ Neighbors
_____ Co-workers
_____ Co-students
_____ Others (Please specify _____)

8. Are you a MnPASS toll customer with an active toll transponder?

_____ Yes
_____ No

9. If yes, how frequently do you use the I-35W MnPASS toll lanes as a solo driver?

_____ One day per week
_____ Two or three days per week
_____ More than three days per week
_____ One or two days per month

10. How would you rate each of the following aspects of the I-35W bus service?

Please circle the number that best reflects your opinion		Very Good	Good	Fair	Poor	Very Poor	Don't Know
a.	Service Reliability	5	4	3	2	1	0
b.	Travel time	5	4	3	2	1	0
c.	Hours of service (how long buses run)	5	4	3	2	1	0
d.	Frequency of service (how often buses run)	5	4	3	2	1	0
e.	Wait time at park-and-ride lots/stop	5	4	3	2	1	0
f.	Availability of seats	5	4	3	2	1	0
g.	Parking availability at park-and-ride lots	5	4	3	2	1	0
h.	Your overall satisfaction with Metro Transit/MVTA	5	4	3	2	1	0

11. How does the I-35W bus service today compare to the same service before December 2009?

Please circle the number that best reflects your opinion		Better Now	Same Now	Worse Now	Don't Know
a.	Service Reliability	4	3	2	0
b.	Travel time	4	3	2	0
c.	Hours of service	4	3	2	0
d.	Frequency of service	4	3	2	0
e.	I-35W bus service overall	4	3	2	0

Please indicate if you strongly agree, agree, neither agree or disagree, disagree, or strongly disagree with the following statements.

12. Riding the bus on I-35W gives me value for the money.

_____ Strongly Disagree
_____ Disagree
_____ Neither agree nor disagree
_____ Agree
_____ Strongly Agree

13. Overall, I am satisfied with my experience riding the bus on I-35W.

_____ Strongly Disagree
_____ Disagree
_____ Neither agree nor disagree
_____ Agree
_____ Strongly Agree

14. Buses on I-35W provide a fast, safe, reliable commute every time.

_____ Strongly Disagree
_____ Disagree
_____ Neither agree nor disagree
_____ Agree
_____ Strongly Agree

15. Do you have any concerns or complaints about bus service on I-35W?

16. What is the zip code that you are leaving from?

17. What is the zip code that you are traveling to?

18. How did you pay for your fare?

_____ Cash
_____ 31-Day Pass
_____ Go-To Card
_____ Metropass
_____ U-Pass
_____ Stored Value Card

19. Does your employer pay all/some of your bus fare?

_____ Yes
_____ No

20. Have you noticed the signs along I-35W displaying real-time transit and traffic information?

_____ Yes
_____ No

21. Is the information easy to understand?

_____ Yes
_____ No
_____ Don't look at the signs

22. Do you think the travel times presented are accurate?

_____ Yes
_____ No
_____ Don't look at the signs

23. Did the information on the signs influence you to start riding the bus?

_____ Yes
_____ No

24. Were you aware of the park-and-ride lots and bus services in the corridor prior to installation of the signs?

_____ Yes
_____ No

25. Do you have any suggestions on how the signs could be improved?

26. Have you noticed the signs in downtown Minneapolis displaying real-time information on bus arrival times?

_____ Yes
_____ No

27. Is the information easy to understand?

_____ Yes
_____ No
_____ Don't look at the signs

28. Do you find the information beneficial?

_____ Yes
_____ No
_____ Don't look at the signs

29. Have the new bus lanes in downtown Minneapolis improved bus service?

_____ Yes
_____ No

30. Have the new bus lanes in downtown Minneapolis increased the speed and improved the on-time performance of your bus?

_____ Yes
_____ No

31. Do you have any comments or suggestions related to the new downtown bus lanes?

32. Are you:

_____ Male
_____ Female

33. Approximately what was your family's total income last year?

_____ Less than 10,000
_____ $10,000 to $19,999
_____ $20,000 to $29,999
_____ $30,000 to $39,999
_____ $40,000 to $49,999
_____ $50,000 to $59,999
_____ $60,000 to $69,999
_____ $70,000 to $79,999
_____ $80,000 to $89,999
_____ $90,000 to $99,999
_____ $100,000 or more

34. What is your age?

_____ Under 18
_____ 18-24
_____ 25-34
_____ 35-44
_____ 44-54
_____ 55-64
_____ 65 or over

35. Which best describes your racial or ethnic background?

_____ African American/Black
_____American Indian
_____ Asian
_____ Caucasian/White
_____ Hispanic/Latino
_____ Other

36. How many working automobiles do you have available for your use?

5.4 Analysis Methods

The results from the Metro Transit and MVTA on-board ridership surveys will be used primarily in the transit analysis. The survey results will be used to identify individuals changing from driving alone or carpooling to riding transit, as well as individuals making new transit trips. The survey results will be analyzed by members of the Battelle team in a number of ways. In addition to examining the responses to each question, cross tabulations will be run to explore the interaction of different variables, such as income and bus use. Examples of the analyses to be conducted using the survey data are highlighted below.

- Prior mode of travel and mode change to transit. The survey results will be used to assess the prior mode of travel for bus riders. This analysis will examine possible mode change to transit resulting from the Minnesota UPA projects. The analysis will identify if current bus riders changed from driving alone in the general-purpose freeway lanes or carpooling as a result of the UPA projects. The surveys will also identify new transit trips in the corridor which may be made by new residents in the area, individuals entering or re-entering the work force, and incoming students at area universities and colleges. The on-board surveys provide the key source for information on mode change to transit and the factors influencing this mode change.
- Frequency of use and use of other modes. The survey results will identify frequency of bus use by bus riders in the corridor, as well as use of other modes, including carpooling or paying a toll to use the HOT lanes and the PDSL.
- Perceptions of the bus services on I-35W. The questions relating to the reasons for riding the bus, value of the lanes, overall satisfaction with the bus service, safety, and other attributes provide insights into the perceptions of transit riders. Responses to these questions will be used in the congestion, tolling, and other analyses.
- Ridership by income levels, gender, zip code. The responses related to frequency of bus use, factors influencing use, and benefits of use will be examined by income levels, gender, and zip code zones as part of the equity analysis.

Although the on-board surveys will be conducted at multiple time-points and does include the possibility that a particular survey respondent may participate in multiple surveys, the national evaluation team assumes that this will not be tracked as part of the survey. As such, the resulting statistical analysis will be conducted under the assumption that each survey is conducted on an "independent," though representative sample of riders. The national evaluation team anticipates largely relying upon descriptive statistics, such as estimating means, percentages, ranges, etc. as well as associated tests such as t-tests, likelihood ratio F-tests, and Chi-Square tests to determine if there are significant differences among rider groups, time points, etc. Table 5-3 summarizes the statistical precision (the width of 95 percent confidence intervals for statistical estimates) that is anticipated, based upon various sample sizes of riders.

Table 5-3. Anticipated Width of 95 Percent Confidence Intervals for Statistical Estimates

Data Element	Measures of Effectiveness	Statistical Methods and Assumptions	Anticipated Precision for 95% Confidence Intervals			
4.1 Prior mode of transit riders	• Actual and percent change in drivers and carpooler switching to transit	• One-sample estimation of percentage • Percentage of current bus riders that changed from driving alone or carpooling as a result of UPA	Width of 95% Confidence Interval for the estimated percentage of current bus riders that switched due to UPA			
			n=200	n=300	n=400	n=500
			± 6.9%	± 5.7%	± 4.9%	± 4.4%
4.2 Reasons for using transit		• One-sample estimation of percentage • Percentage of riders citing a particular reason	Width of 95% Confidence Interval for the estimated percentage			
			n=200	n=300	n=400	n=500
			± 6.9%	± 5.7%	± 4.9%	± 4.4%
4.3 Length of commute in time and distance	• Calculation of change in VMT	• Average commute distance prior to UPA assumed to be 10 miles with relative standard error of 25% • Average trip commute time is 35 minutes with a relative standard error of 25%	Width of 95% Confidence Interval for the estimated trip length (miles)			
			n=200	n=300	n=400	n=500
			± 0.35 miles	± 0.28 miles	± 0.25 miles	± 0.22 miles
			Width of 95% Confidence Interval for the estimated trip duration (minutes)			
			n=200	n=300	n=400	n=500
			± 1.0 min.	± 51 sec.	± 44 sec	± 40 sec.
4.4 Perception of UPA transit improvements (need list, e.g. park and ride, travel time DMS, more frequent bus service)	• Percentage of respondents citing a reduction in travel time • Percentage of respondents citing an improvement in travel reliability	• One-sample estimation of percentage • Percentage of riders citing a particular reason	Width of 95% Confidence Interval for the estimated percentage			
4.5 Perception of tolling equity and level of congestion on I-35W			n=200	n=300	n=400	n=500
4.6 Perception of Safety using HOT lanes, MARQ2 lanes, and guided bus	• Changes in the perception of safety by travelers		± 6.9%	± 5.7%	± 4.9%	± 4.4%

Table 5-3. Anticipated Width of 95 Percent Confidence Intervals for Statistical Estimates (Continued)

Data Element	Measures of Effectiveness	Statistical Methods and Assumptions	Anticipated Precision for 95% Confidence Intervals			
4.7 Socio-demographic descriptors	• Change in travel time and distance by user groups • Change in total transportation cost by user group	• Average commute distance prior to UPA assumed to be 10 miles with relative standard error of 25% • Average trip commute time is 35 minutes with a relative standard error of 25%	Width of 95% Confidence Interval for the estimated trip length (miles)			
			n=200	n=300	n=400	n=500
			± 0.35 miles	± 0.28 miles	± 0.25 miles	± 0.22 miles
			Width of 95% Confidence Interval for the estimated trip duration (minutes)			
			n=200	n=300	n=400	n=500
			± 1.0 min.	± 51 sec.	± 44 sec	± 40 sec.

Differences between rider groups or between survey waves will be identified through two-sample t-tests and/or Chi-square tests. Table 5-4 summarizes the anticipated statistical power that can be achieved for these tests based upon different levels of respondents participating in the on-board surveys. Overall, there should be sufficient numbers of samples for the national evaluation to estimate measures of effectiveness with reasonable precision and to conduct statistical hypothesis testing for differences between groups and/or time points, provided that these on-board surveys include at least 400 riders in each group.

Table 5-4. Anticipated Statistical Power for Testing the Difference in Between Groups in the On-board Rider Surveys

Measure of Effectiveness	Minimum Sample Size in Each Group				
	n=100	n=150	n=200	n=300	n=400
Difference of 10% or more of respondents indicating a particular factor as important for ridership between two rider groups[1]	29% Power	41% Power	52% Power	69% Power	81% Power
Difference of 10% of respondents indicating a benefit of transit between two groups of riders[2]	38% Power	52% Power	64% Power	81% Power	90% Power

[1] These estimates of statistical power will be the same for all hypotheses testing at 10 percent difference between the percentages reported by two different groups of riders.

[2] Assuming that the estimated percentage of riders in both groups indicating this benefit are approximately 20 percent.

5.5 Schedule and Responsibilities

Table 5-5 presents the recommended schedule for conducting the on-board surveys of Metro Transit and MVTA passengers. It is recommended that the on-board surveys of Metro Transit buses operating on I-35W north of downtown Minneapolis be conducted in April-May 2010, approximately six months after implementation of the new and expanded park-and-ride lots, new transit services, and the MARQ2 bus lanes in downtown Minneapolis. Conducting the on-board ridership surveys for Metro Transit and MVTA buses operating on I-35W and Cedar Avenue south of downtown Minneapolis in September 2011 is recommended. This schedule will allow for completion of all the park-and-ride lots in the corridor and the HOT lanes in the Crosstown Commons section. With the completion of these UPA projects, bus riders will have convenient and fast service into downtown Minneapolis using the HOT lanes, PDSL, and MARQ2 lanes. As noted previously, some questions on the surveys will be different to reflect the different UPA projects on I-35W north and south of downtown Minneapolis. The regular Metro Transit customer satisfaction survey is scheduled for September 2010.

Table 5-5. Recommended Schedule for I-35W Corridor On-Board Ridership Surveys

Surveys	Date
I-35W North – New and Expanded Park-and-Ride Lots Open, New Service Implemented, and MARQ2 Lanes Completed	December 2009
On-Board Surveys of Metro Transit Routes on I-35W North	April-May 2010
I-35W South – All HOT Lanes, PDSL, and MARQ2 Lanes Completed, including HOT Lanes in the Crosstown Commons Section	October 2010
On-Board Surveys of Metro Transit and MVTA Routes on I-35W South and Cedar Avenue	September 2011
Regular Metro Transit Customer Satisfaction On-Board Survey	September 2010

Metro Transit and MVTA will conduct the on-board surveys of riders on buses on I-35W and Cedar Avenue following established protocols. Metro Transit and MVTA will finalize the questions to be included in the on-board surveys, in cooperation with the Battelle team. Metro Transit and MVTA will administer the on-board surveys and will compile the results in electronic format. Metro Transit and MVTA will provide the survey results to the Battelle team electronically. Members of the Battelle team will analyze the on-board survey results and will incorporate the results into the interim and final reports.

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6.0 I-35W MNPASS USERS SURVEYS

6.1 Purpose and Approach

These surveys will provide information on MnPASS customers using the I-35W HOT lanes and the PDSL. The purpose of the surveys is to obtain information on the prior mode of travel, frequency of use, reasons for use, travel-time savings, and trip-time reliability experienced by using the HOT lanes and the PDSL, and related information. The survey protocol will follow the methodology Mn/DOT has used recently on surveys of I-394 MnPASS users, which includes notifying MnPASS account holders by e-mail and requesting completion of on-line surveys.

Two surveys, conducted at two different time periods, are recommended; one of regular I-35W MnPASS customers and one of customers registering an allowed commercial vehicle (two-axle trucks weighing less than 26,000 pounds). On-line surveys of both groups are recommended in April-May, 2010, after at least six months of operation of the HOT lanes and the PDSL. Conducting a second survey of both groups in April-May, 2011, approximately six months after opening of the HOT lanes and the Crosstown Commons section is also recommended to obtain input from users benefiting from the completed facility.

6.2 Survey Protocol

The surveys are targeted at obtaining information from MnPASS customers using the I-35W HOT lanes and the PDSL. Currently, individuals registering for a MnPASS account are asked to identify what road – I-394 or I-35W – they expect to take most often. Following the protocol used by Mn/DOT on the recent MnPASS customer satisfaction survey, Mn/DOT will e-mail customers checking the I-35W box on their account registration and request their participation in completing the on-line survey. An incentive, such as the $10 in free tolls used on the customer satisfaction survey, may be offered to encourage participation. One survey will be used with regular MnPASS customers and one survey will be used with individuals registering an allowed commercial vehicle.

6.3 Survey Questions

The following questions are recommended for inclusion in the surveys, which will be administered by Mn/DOT. Many of the questions are the same as those asked on the I-394 MnPASS customer satisfaction survey. The final wording, sequencing of questions, and format for the surveys will be determined by Mn/DOT or their consultants.

1. How long have you been a MnPASS customer?

   _____ Less than 1 month
   _____ 1 to 3 months
   _____ 3 to 6 months
   _____ 6 months to 1 year
   _____ 1 to 2 years
   _____ 2 to 3 years
   _____ Over 3 years

2. Approximately how many total one-way trips per week do you take on I-35W, including trips taken on the I-35W MnPASS toll lanes?

_____ None
_____ Less than one trip per week
_____ One or two trips per week
_____ Three trips per week
_____ Four trips per week
_____ Five trips per week
_____ Six trips per week
_____ More than six trips per week

3. Approximately how many one-way trips per week do you take on just the I-35W MnPASS toll lanes, not the I-35W general purpose freeway lanes?

_____ None
_____ Less than one trip per week
_____ One or two trips per week
_____ Three trips per week
_____ Four trips per week
_____ Five trips per week
_____ Six trips per week
_____ More than Six trips per week

4. Do you use the I-35W MnPASS toll lanes primarily for (check all that apply):

_____ Work trips
_____ School trips
_____ Personal business
_____ Work appointments
_____ Recreational
_____ Medical
_____ Other (please specify _____)

5. What segments of the I-35W MnPASS lanes do you normally use (check all that apply).

_____ Northbound from Highway 13 to Highway 62
_____ Northbound from 42nd Street to downtown Minneapolis
_____ Southbound from I-494 to Highway 13

6. How did you make this trip before you became a MnPASS customer?

_____ Drove alone in I-35W general-purpose freeway lanes
_____ Drove alone on another freeway or roadway
_____ Carpooled in the I-35W HOV lanes
_____ Rode the bus on I-35W or other roadway
_____ Drove alone in the I-35W HOV lanes
_____ Did not make the trip
_____ Other (please specify _____)

7. What motivated you to sign up and use the I-35W MnPASS toll lanes?

_____

8. Which factors influence your use of the I-35W MnPASS toll lanes (check all that apply):

_____ Congestion levels in freeway lanes
_____ Important work meetings – cannot afford to be late
_____ Family responsibilities (pick-up children at school or daycare, etc.) – cannot afford to be late
_____ Personal business meetings – cannot afford to be late
_____ Class – cannot afford to be late
_____ Other (Please specific_____)

9. In your opinion, what are the best things about traveling in the I-35w MnPASS toll lanes (check all that apply)?

_____ Less/no traffic
_____ Time savings
_____ Ability to travel faster
_____ Ease and convenience
_____ Less stress/relaxing
_____ Less wear and tear on my car
_____ More safe/safety
_____ Unsure

10. About how much time do you think you save per one-way trip during morning rush hour when you travel on the I-35W MnPASS toll lane?

_____ Minutes

11. About how much time do you think you save per one-way trip during the afternoon rush hour when you travel on the I-35W MnPASS toll lane?

_____ Minutes

12. In general, do you think travel on I-35W is:

_____ Easier and less congested than one-year ago
_____ About the same as one-year ago
_____ More congested than one-year ago

13. How often do you carpool for free on the I-35W MnPASS toll lane?

_____ Extremely often
_____ Very often
_____ Somewhat often
_____ Not very often
_____ Not at all
_____ Unsure/Don't know

14. If you do carpool, who do you carpool with?

_____ Family members
_____ Neighbors
_____ Co-workers
_____ Co-students
_____ Others (Please specify _____)

Please indicate if you strongly agree, agree, neither agree or disagree, disagree, or strongly disagree with the following statements.

15. Using the I-35W MnPASS toll lane gives me value for the money.

_____ Strongly Disagree
_____ Disagree
_____ Neither agree nor disagree
_____ Agree
_____ Strongly Agree

16. I always check for the current toll on the MnPASS price signs before I decide to use the I-35W MnPASS toll lanes.

_____ Strongly Disagree
_____ Disagree
_____ Neither agree nor disagree
_____ Agree
_____ Strongly Agree

17. I expect the I-35W MnPASS toll lanes to be free-flowing at all times, even if I have to pay higher tolls.

_____ Strongly Disagree
_____ Disagree
_____ Neither agree nor disagree
_____ Agree
_____ Strongly Agree

18. Overall, I am satisfied with my experience in using the I-35W MnPASS toll lanes.

_____ Strongly Disagree
_____ Disagree
_____ Neither agree nor disagree
_____ Agree
_____ Strongly Agree

19. The I-35W MnPASS toll lanes provide a fast, safe, reliable commute every time.

_____ Strongly Disagree
_____ Disagree
_____ Neither agree nor disagree
_____ Agree
_____ Strongly Agree

20. How would you rate the overall safety of the I-35W MnPASS toll lanes?

_____ Very safe
_____ Safe
_____ Somewhat safe
_____ Somewhat unsafe
_____ Unsafe
_____ Very unsafe
_____ Extremely unsafe

21. In your opinion, what has been your greatest concern or complaint about the I-35W MnPASS toll lanes or the service you receive from MnPASS?

22. What is the zip code that you are leaving from?

23. What is the zip code that you are traveling to?

24. Who pays for your MnPASS tolls?

_____ I do
_____ My employer
_____ Another family member
_____ Other

25. Are you:

_____ Male
_____ Female

26. Approximately what was your family's total income last year?

_____ Less than 10,000
_____ $10,000 to $19,999
_____ $20,000 to $29,999
_____ $30,000 to $39,999
_____ $40,000 to $49,999
_____ $50,000 to $59,999
_____ $60,000 to $69,999
_____ $70,000 to $79,999
_____ $80,000 to $89,999
_____ $90,000 to $99,999
_____ $100,000 or more

27. What is your age?

_____ Under 18
_____ 18-24
_____ 25-34
_____ 35-44
_____ 44-54
_____ 55-64
_____ 65 or over

28. Which best describes your racial or ethnic background?

_____ African American/Black
_____American Indian
_____ Asian
_____ Caucasian/White
_____ Hispanic/Latino
_____ Other

29. How many working automobiles do you have available for your use?

The followings question will be modified or added to the surveys of individuals registering an allowed commercial vehicle.

4a. What is the nature of your use of the I-35W MnPASS toll lanes?

_____ Service delivery or courier service (UPS, etc.)
_____ Construction, plumbing, electrical, etc.
_____ Lawn service/snow removal service
_____ Other (please specify_____)

4b. What business benefits do you realize from use of the I-35W MnPASS toll lanes (check all that apply)?

_____ Able to serve more customers
_____ Able to respond faster to customer requests
_____ Able to deliver packages, etc. faster
_____ Other (please specify_____)

6.4 Analysis Methods

The results from the MnPASS customer surveys will be used in most of the analysis areas. The results will be analyzed by members of the Battelle team in a number of ways. In addition to examining the responses to each question, cross tabulations will be run to explore the interaction of different variables, such as income and frequency of use. Examples of the analyses to be conducted using the survey data are highlighted below.

- Prior mode of travel. The survey results will be used to assess the prior mode of travel for I-35W MnPASS customers. This analysis will identify if current MnPASS users changed from carpooling, riding the bus, or driving alone in the general-purpose freeway lanes.
- Frequency of use. The survey results will help identify different types of I-35W MnPASS customers, including travelers who use the HOT lanes and PDSL on a regular basis and infrequent users. The size of the various customer categories will be identified. The reported use levels will be compared to the MnPASS toll transaction data to identify similarities and differences. Frequency of use will also be analyzed by trip purpose, zip code zones, segment of the HOT lanes used, gender, and income levels.
- Travel-time savings. The travel-time savings reported by MnPASS customer will be examined and compared to the travel-time savings estimated in the traffic and tolling analyses. The reported travel-time savings will also be examined for the different HOT lane sections and the direction of travel.
- Perceptions of the I-35W MnPASS HOT lanes. The questions relating to the value of the lanes, checking the toll rate before use, overall satisfaction with the lanes, safety, and other attributes provide insights into the perceptions of I-35W MnPASS users. Responses to these questions will be used in the congestion, tolling, and other analyses.

- MnPASS use by income levels, gender, zip code. The responses related to frequency of use, factors influencing use, and benefits of use will be examined by income levels, gender, and zip code zones as part of the equity analysis.

The MnPass surveys will be analyzed by the national evaluation team in much the same fashion as the on-board surveys. That is, descriptive statistics will be created for each relevant survey question with cross-frequency and t-tests being used to compare responses between groups, survey time periods, etc. Therefore, the anticipated precision with these survey results is the same as those for the on-board surveys. As sample size of 400 respondents in each group will enable the identification of a difference in perception (or other percentage response) between groups of at least 10 percent with statistical power of between 80 percent and 90 percent, provided such a difference exists.

6.5 Schedule and Responsibilities

Table 6-1 presents the recommended schedule for conducting the surveys of MnPASS users. The first set of surveys will be conducted in April-May 2010, approximately six months after the HOT lanes from Highway 13 to I-494 and the PDSL become operational. One survey would target I-35W MnPASS customers. A second survey would target I-35W MnPASS customers registering an allowed commercial vehicle. Surveys of both groups would be repeated in April-May 2011, approximately six months after the HOT lanes on the Crosstown Commons section becomes operational. The questions to be included in the second set of surveys will be updated and revised as needed.

Table 6-1. Recommended Schedule for I-35W MnPASS Users Surveys

Surveys	Date
HOT Lane and PDSL Operational	September 2009
I-35W MnPASS Users Survey	April-May 2010
I-35W MnPASS Commercial Vehicle Registration Survey	April-May 2010
HOT Lanes Crosstown Commons Section Operational	October 2010
I-35W MnPASS Users Survey	April-May 2011
I-35W MnPASS Commercial Vehicle Registration Survey	April-May 2011

Mn/DOT will conduct the surveys of I-35W MnPASS customers following the same protocol used on the I-394 MnPASS customer service survey and other surveys. Mn/DOT will finalize the questions to be included, in cooperation with the Battelle team. Mn/DOT will administer the web-based surveys, and will provide incentives as deemed appropriate. Mn/DOT will provide the survey results to the Battelle team electronically. Members of the Battelle team will analyze the results and will incorporate the results into the interim and final reports.

7.0 I-35W HOT LANES CARPOOLERS SURVEYS

7.1 Purpose and Approach

These surveys will provide information on carpoolers using the I-35W HOT lanes and the PDSL. The purpose of the surveys is to obtain information from carpoolers on the length of time they have carpooled on the I-35W HOV/HOT lanes, frequency of carpooling, reasons for carpooling, travel-time savings and trip-time reliability realized by using the HOT lanes and PDSL, prior mode, and related information. It is recommended that two surveys of carpoolers be conducted. The first survey would be administered in April-May 2010, approximately six months after the opening of the initial HOT lanes and PDSL. Conducting a second survey in April-May 2011, approximately six months after the opening of the HOT lanes in the Crosstown Commons section, is also recommended.

7.2 Survey Protocol

A number of approaches were considered for conducting the surveys of carpoolers using the I-35W HOT lanes and PDSL. These approaches included recording the license plates of vehicles traveling in the HOT lanes, obtaining the address of record from the Motor Vehicles Division, and sending a mail-out/mail-back survey; using web-based surveys; and distributing surveys through the TMOs and major employers.

The recommended protocol for conducting the surveys of carpoolers on I-35W uses a web-based approach targeting I-35W carpoolers through the TMOs and major employers. Mn/DOT and the Metropolitan Council will work with the downtown Minneapolis TMO, I-494 Smart-trip TMO, and major employers to send an e-mail to individuals identified as potential carpoolers in the I-35W corridor. The e-mail will include a link to the web-based survey and will request participation. Some type of incentive, such as a free Mn/DOT state map, may be offered to encourage participation. Mn/DOT has used this incentive on previous surveys.

7.3 Survey Questions

The questions recommended for the carpool survey are presented in this section. Some of the questions mirror those included in the I-35W MnPASS users surveys and the on-board ridership surveys. This approach allows for comparisons of responses by MnPASS users, bus riders, and carpoolers on questions related to travel-time savings, trip-time reliability, perceptions of benefits for the HOT lanes, and other topics. The final wording, sequencing of questions, and format will be determined by Mn/DOT, the Metropolitan Council, or their consultants.

1. How long have you been carpooling on I-35W?

_____ Less than 1 month
_____ 1 to 3 months
_____ 3 to 6 months
_____ 6 months to 1 year
_____ 1 to 2 years
_____ 2 to 3 years
_____ Over 3 years

2. How often do you carpool for free on the I-35W MnPASS toll lane?

_____ Once a week
_____ 2 times a week
_____ 5 times a week
_____ Once or twice a month

3. Who do you carpool with?

_____ Family members
_____ Neighbors
_____ Co-workers
_____ Co-students
_____ Others (Please specify _____)

4. What is the purpose of your trip?

_____ Work
_____ School
_____ Personal business
_____ Social/entertainment
_____ Medical
_____ Other (please specify _____)

5. What segments of the I-35W MnPASS lanes do you normally use when carpooling? (check all that apply)

_____ Northbound from Highway 13 to Highway 62
_____ Northbound from 42nd Street to downtown Minneapolis
_____ Southbound from I-494 to Highway 13

6. How did you make this trip before you started carpooling on I-35W?

_____ Drove alone in I-35W general-purpose freeway lanes
_____ Drove alone on another freeway or roadway
_____ Carpooled in the I-35W HOV lanes
_____ Rode the bus on I-35W or other roadway
_____ Drove alone in the I-35W HOV lanes
_____ Did not make the trip
_____ Other (please specify _____)

7. What motivated you to begin carpooling?

_____

8. Which factors influence you to carpool in the I-35W MnPASS toll lanes? (check all that apply)

_____ Congestion levels in freeway lanes
_____ Faster travel time
_____ Improved trip-time reliability
_____ Other (Please specific_____)

9. In your opinion, what are the best things about carpooling in the I-35W MnPASS toll lanes?

_____

10. About how much time do you think you save per one-way trip during morning rush hour when you carpool in the I-35W MnPASS toll lane?

_____ Minutes

11. About how much time do you think you save per one-way trip during the afternoon rush hour when you carpool in the I-35W MnPASS toll lane?

_____ Minutes

12. Are you a MnPASS toll customer with an active toll transponder?

_____ Yes
_____ No

13. If yes, how frequently do you use the I-35W MnPASS toll lanes as a solo driver?

_____ One day per week
_____ Two or three days per week
_____ More than three days per week
_____ One or two days per month

14. Do you ever ride the bus on I-35W?

_____ Yes
_____ No

15. If yes, how frequently do you ride the bus on I-35W?

_____ One day per week
_____ Two or three days per week
_____ More than three days per week
_____ One or two days per month

16. In general, do you think travel on I-35W is:

_____ Easier and less congested than one-year ago
_____ About the same as one-year ago
_____ More congested than one-year ago

17. Have you noticed the signs along I-35W displaying real-time transit and traffic information?

_____ Yes
_____ No

18. Is the information easy to understand?

_____ Yes
_____ No
_____ Don't look at the signs

19. Do you think the travel times presented are accurate?

_____ Yes
_____ No
_____ Don't look at the signs

20. Did the information on the signs influence you to start riding the bus?

_____ Yes
_____ No

21. Were you aware of the park-and-ride lots and bus services in the corridor prior to installation of the signs?

_____ Yes
_____ No

22. Do you have any suggestions on how the signs could be improved?

Please indicate if you strongly agree, agree, neither agree or disagree, disagree, or strongly disagree with the following statements.

23. Overall, I am satisfied with my experience carpooling in the I-35W MnPASS toll lanes.

_____ Strongly Disagree
_____ Disagree
_____ Neither agree nor disagree
_____ Agree
_____ Strongly Agree

24. Carpooling in the I-35W MnPASS toll lanes provide a fast, safe, reliable commute every time.

_____ Strongly Disagree
_____ Disagree
_____ Neither agree nor disagree
_____ Agree
_____ Strongly Agree

25. How would you rate the overall safety of carpooling in the I-35W MnPASS toll lanes?

_____ Very safe
_____ Safe
_____ Somewhat safe
_____ Somewhat unsafe
_____ Unsafe
_____ Very unsafe
_____ Extremely unsafe

26. In your opinion, what has been your greatest concern or complaint about carpooling in the I-35W MnPASS toll lanes?

27. What is the zip code that you are leaving from?

28. What is the zip code that you are traveling to?

29. Are you:

_____ Male
_____ Female

30. Approximately what was your family's total income last year?

_____ Less than 10,000
_____ $10,000 to $19,999
_____ $20,000 to $29,999
_____ $30,000 to $39,999
_____ $40,000 to $49,999
_____ $50,000 to $59,999
_____ $60,000 to $69,999
_____ $70,000 to $79,999
_____ $80,000 to $89,999
_____ $90,000 to $99,999
_____ $100,000 or more

31. What is your age?

_____ Under 18
_____ 18-24
_____ 25-34
_____ 35-44
_____ 44-54
_____ 55-64
_____ 65 or over

32. Which best describes your racial or ethnic background?

_____ African American/Black
_____American Indian
_____ Asian
_____ Caucasian/White
_____ Hispanic/Latino
_____ Other

33. How many working automobiles do you have available for your use?

7.4 Analysis Methods

The results from surveys of carpoolers on I-35W will be used in the congestion, equity, and other analyses. The results will be analyzed by members of the Battelle team in a number of ways. In addition to examining the responses to each question, cross tabulations will be run to explore the interaction of different variables. Examples of the analyses to be conducted using the survey data are highlighted below.

- Prior mode of travel. The survey results will be used to assess the prior mode of travel for carpoolers on I-35W. This analysis will identify if current carpool users previously carpooled in the HOV lanes or if they changed from driving alone in the general-purpose freeway lanes or riding the bus.
- Frequency of use. The survey results will help identify the frequency of carpooling, as well as if carpoolers have MnPASS transponders and ever use the HOT lanes as toll paying customers. The results will also identify if carpoolers ever ride the bus.
- Travel-time savings. The travel-time savings reported by carpoolers will be examined and compared to the travel-time savings estimated in the traffic and tolling analyses. The

reported travel-time savings will also be examined for the different HOT lane sections and the direction of travel.

- Perceptions of I-35W carpoolers. The questions relating to the value of the HOT lanes, overall satisfaction with the lanes, safety, and other attributes provide insights into the perceptions of I-35W carpoolers. Responses to these questions will be used in the congestion, tolling, and other analyses.
- Carpool use by income levels, gender, zip code. The responses related to frequency of use, factors influencing use, and benefits of use will be examined by income levels, gender, and zip code zones as part of the equity analysis.

The surveys of carpoolers will be analyzed by the national evaluation team in much the same fashion as the on-board surveys and the MnPass surveys. Descriptive statistics will be created for each relevant survey question with cross-frequency and t-tests being used to compare responses between groups, survey time periods, etc. Therefore, the anticipated precision with these survey results is the same as those for the on-board surveys. As sample size of 400 respondents in each group will enable the identification of a difference in perception (or other percentage response) between groups of at least 10 percent with statistical power of between 80 percent and 90 percent, provided such a difference exists.

7.5 Schedule and Responsibilities

Table 7-1 presents the recommended schedule for conducting the surveys of carpoolers on I-35W. Two surveys are recommended. The first survey is recommended to be conducted in April-May 2010, approximately six months after the HOT lanes from Highway 13 to I-494 and the PDSL become operational. A second survey is recommended to be conducted in April-May 2011, approximately six months after the HOT lanes on the Crosstown Commons section becomes operational. The questions to be included in the second set of surveys will be updated and revised as needed.

Table 7-1. Recommended Schedule for I-35W Carpoolers Surveys

Surveys	Date
HOT Lane and PDSL Operational	September 2009
I-35W Carpoolers Survey	April-May 2010
HOT Lanes Crosstown Commons Section Operational	October 2010
I-35W Carpoolers Survey	April-May 2011

Mn/DOT, the Metropolitan Council, or their contractors will conduct the surveys of I-35W carpoolers following the general protocol outlined previously. This protocol includes using a web-based survey, with potential carpoolers contacted through the downtown Minneapolis TMO, the I-494 Smart-trip TMO, and major employers. Mn/DOT, the Metropolitan Council, or their contractor will finalize the questions to be included in the survey, in cooperation with the Battelle team, administer the web-based surveys, including providing incentives as deemed

appropriate, and provide the survey results to the Battelle team electronically. Members of the Battelle team will analyze the results and will incorporate the results into the interim and final reports.

8.0 I-35W SOUTH USER TELEPHONE SURVEYS

8.1 Purpose and Approach

This telephone survey would be conducted of users of I-35W South. MnPASS users and transit riders and carpoolers are targeted in the surveys discussed previously. This survey will focus on travelers in the I-35W general-purpose freeway lanes, carpoolers using the MnPASS HOT lanes, and obtaining additional information. The survey would use the same approach Mn/DOT uses in the Perception Tracking and Omnibus surveys, but would focus specifically on the I-35W South corridor. This section outlines a modified sampling protocol and the preliminary questionnaire. The sampling plan and questionnaire will be finalized based on additional discussions among Mn/DOT, the Metropolitan Council, and the Battelle team.

8.2 I-35W South Corridor Interview Protocol

The methodology for this survey would be similar to the methodology employed by Mn/DOT for the Perception Tracking Study, with suggested modifications to address the needs of the national evaluation related to targeting specific user groups in the I-35W South corridor. The following methods are recommended for selecting the sample for the I-35W South telephone interview.

- **Utilize a two-stage interview approach**, with an initial short interview (2-3 questions) to screen potential respondents for travel in the I-35W South corridor. These questions will be used to target travelers who carpool in the HOT lanes and those using the general-purpose freeway lanes. Individuals will need to have traveled in the corridor before the UPA improvements and currently use the corridor. The focus of this initial screening interview would be to ascertain eligibility for the extended interview (i.e., traveled on the corridor), as well as to capture 1-2 demographic characteristics that can be used to assess and mitigate any sampling bias (i.e., race/ethnicity, number of household vehicles, etc.). The extended interview would only be conducted with candidates that have been determined to be eligible based upon the screener interview.
- **Utilize an address-based sample** to increase the chances of reaching persons that are most likely to utilize the I-35W South corridor. With this sampling methodology, the survey methodologist can stratify the sample based upon geographic information and historical travel pattern information to target households that are likely to use the corridors of interest. Conversely, Random Digit Dial (RDD) surveys, even those that are "list-assisted," are increasingly suffering from the portability of telephone numbers and the increasing number of households that are cell-only households. In short, the ability to target specific geographic areas using the area code or exchange information in the telephone number is becoming more and more challenging as a greater percentage of the population has "ported" or moved outside their original telephone coverage area, but have retained their telephone number. The use of an address-based sampling methodology does not preclude the use of telephone interviews to collect information from respondents as 85 percent of address samples can be reverse-matched to a name and 60 percent can be reversed-matched to a landline telephone number.

- **Employ a multi-mode survey**. Recent research has found that multi-modal surveys are effective in reaching populations that cannot be otherwise reached through traditional landline telephone surveys. In particular, technology-savvy young adults are increasingly moving towards a cell-only household. Incorporating these respondents in the survey is important as they typically are technology users, and may be more prone to changing travel behavior as a result of technology deployments. A mail-out/mail-back questionnaire is recommended together with the telephone interviews to capture this group of people as well as households where a landline telephone number cannot be reversed matched.

8.3 Interview Questions

The following questions are recommended for inclusion in the telephone interviews. Many of the questions are the same as those included in the MnPASS user surveys, the on-board ridership survey, and the carpool survey. The final wording, sequencing of questions, and format for the interviews will be determined by the market research firm, in consultation with Mn/DOT, the Metropolitan Council, and Battelle team representatives.

Screening Questions

1. Do you currently:

   _____ Travel in the I-35W South general-purpose freeway lanes
   _____ Carpool in the I-35W MnPASS lanes
   _____ Ride the bus in the I-35W corridor
   _____ Use the I-35W MnPASS lanes as a toll paying MnPASS customer

2. How long have you traveled as noted above?

   _____ less than 6 months
   _____ 6 months to a year
   _____ one to two years
   _____ over two years (_____ years)

Questions for users of the I-35W South general-purpose freeway lanes.

3. Approximately how many total one-way trips per week do you take on I-35W, including trips taken on the I-35W MnPASS toll lanes?

   _____ None
   _____ Less than one trip per week
   _____ One or two trips per week
   _____ Three trips per week
   _____ Four trips per week
   _____ Five trips per week
   _____ Six trips per week
   _____ More than six trips per week

4. Approximately how many one-way trips per week do you take on just the I-35W general purpose freeway lanes?

_____ None
_____ Less than one trip per week
_____ One or two trips per week
_____ Three trips per week
_____ Four trips per week
_____ Five trips per week
_____ Six trips per week
_____ More than Six trips per week

5. Do you use the I-35W general-purpose freeway lanes primarily for (check all that apply):

_____ Work trips
_____ School trips
_____ Personal business
_____ Work appointments
_____ Recreational
_____ Medical
_____ Other (please specify _____)

6. What segments of the I-35W general-purpose freeway lanes do you normally use (check all that apply).

_____ Highway 13 to I-494
_____ Highway 13 to downtown Minneapolis
_____ I-494 to Highway 13
_____ Other

7. Which factors influence your use of the I-35W general-purpose freeway lanes rather than the MnPASS lanes, riding the bus, or carpooling? (check all that apply):

_____ Need car for work trips
_____ Need to drop off/pick up other family member
_____ MnPASS too expensive
_____ Traffic congestion is not bad enough to use other modes
_____ No current bus service
_____ Other (Please specific_____)

8. Do you ever ride the bus in the I-35W corridor?

_____ Yes _____ No

If yes, how frequently do you ride the bus?
_____ Once a week
_____ Once or twice a month
_____ Once or twice a year
_____ Others (Please specify _____)

9. Do you ever carpool in the I-35W MnPASS HOT lane from ____?

_____ Yes _____ No

If yes, how frequently do you carpool?
_____ Once a week
_____ Once or twice a month
_____ Once or twice a year
_____ Others (Please specify _____)

10. Do you ever use the I-35W MnPASS HOT lanes as a toll paying customer?

_____ Yes _____ No

If yes, how frequently do you use the MnPASS HOT lanes as a toll paying customer?
_____ Once a week
_____ Once or twice a month
_____ Once or twice a year
_____ Others (Please specify _____)

Questions for carpoolers.

11. How long have you been carpooling on I-35W?

_____ Less than 1 month
_____ 1 to 3 months
_____ 3 to 6 months
_____ 6 months to 1 year
_____ 1 to 2 years
_____ 2 to 3 years
_____ Over 3 years

12. How often do you carpool for free on the I-35W MnPASS toll lane?

_____ Once a week
_____ 2 times a week
_____ 5 times a week
_____ Once or twice a month

13. Who do you carpool with?

_____ Family members
_____ Neighbors
_____ Co-workers
_____ Co-students
_____ Others (Please specify _____)

14. What is the purpose of your trip?

_____ Work
_____ School
_____ Personal business
_____ Social/entertainment
_____ Medical
_____ Other (please specify _____)

15. What segments of the I-35W MnPASS lanes do you normally use when carpooling? (check all that apply)

_____ Northbound/Southbound from Highway 13 to Highway 62
_____ Northbound from Highway 62 to downtown Minneapolis
_____ Northbound from 42nd Street to downtown Minneapolis
_____ Northbound from I-494 to Highway 13

16. How did you make this trip before you started carpooling on I-35W?

_____ Drove alone in I-35W general-purpose freeway lanes
_____ Drove alone on another freeway or roadway
_____ Carpooled in the I-35W HOV lanes
_____ Rode the bus on I-35W or other roadway
_____ Drove alone in the I-35W HOV lanes
_____ Did not make the trip
_____ Other (please specify _____)

17. What motivated you to begin carpooling?

_____

18. Which factors influence you to carpool in the I-35W MnPASS toll lanes? (check all that apply)

_____ Congestion levels in freeway lanes
_____ Faster travel time
_____ Improved trip-time reliability
_____ Other (Please specific_____)

19. In your opinion, what are the best things about carpooling in the I-35W MnPASS toll lanes?

_____

20. About how much time do you think you save per one-way trip during morning rush hour when you carpool in the I-35W MnPASS toll lane?

_____ Minutes

21. About how much time do you think you save per one-way trip during the afternoon rush hour when you carpool in the I-35W MnPASS toll lane?

_____ Minutes

22. Are you a MnPASS toll customer with an active toll transponder?

_____ Yes
_____ No

If yes, how frequently do you use the I-35W MnPASS toll lanes as a solo driver?

_____ One day per week
_____ Two or three days per week
_____ More than three days per week
_____ One or two days per month

23. Do you ever ride the bus on I-35W?

_____ Yes
_____ No

If yes, how frequently do you ride the bus on I-35W?

_____ One day per week
_____ Two or three days per week
_____ More than three days per week
_____ One or two days per month

24. Do you ever drive alone in the general-purpose freeway lanes?

_____ Yes
_____ No

If yes, how frequently do you ride the bus on I-35W?

_____ One day per week
_____ Two or three days per week
_____ More than three days per week
_____ One or two days per month

Questions for both general-purpose freeway lanes travelers and carpoolers.

25. In general, do you think travel on I-35W is:

_____ Easier and less congested than one-year ago
_____ About the same as one-year ago
_____ More congested than one-year ago

26. Have you noticed the signs along I-35W displaying real-time transit and traffic information?

_____ Yes
_____ No

27. Is the information easy to understand?

_____ Yes
_____ No
_____ Don't look at the signs

28. Do you think the travel times presented are accurate?

_____ Yes
_____ No
_____ Don't look at the signs

29. Did the information on the signs influence you to start riding the bus?

_____ Yes
_____ No

30. Were you aware of the park-and-ride lots and bus services in the corridor prior to installation of the signs?

_____ Yes
_____ No

31. Do you have any suggestions on how the signs could be improved?

32. What is the zip code that you are leaving from?

33. What is the zip code that you are traveling to?

34. Are you:

_____ Male
_____ Female

35. Approximately what was your family's total income last year?

_____ Less than 10,000
_____ $10,000 to $19,999
_____ $20,000 to $29,999
_____ $30,000 to $39,999
_____ $40,000 to $49,999
_____ $50,000 to $59,999
_____ $60,000 to $69,999
_____ $70,000 to $79,999
_____ $80,000 to $89,999
_____ $90,000 to $99,999
_____ $100,000 or more

36. What is your age?

_____ Under 18
_____ 18-24
_____ 25-34
_____ 35-44
_____ 44-54
_____ 55-64
_____ 65 or over

37. Which best describes your racial or ethnic background?

_____ African American/Black
_____American Indian
_____ Asian
_____ Caucasian/White
_____ Hispanic/Latino
_____ Other

38. How many working automobiles do you have available for your use?

8.4 Analysis Methods

The Battelle Evaluation Team would utilize this survey to determine if there has been a shift among the traveling public regarding the use of carpooling and to determine why people travel in the general-purpose freeway lanes rather than using the HOT lanes, carpooling, or riding the bus. In particular, the analysis will be conducted to characterize the extent of any shift and to statistically test whether the UPA deployment has resulted in a 5 percent increase in new car poolers (from general purpose lanes) among the population of travelers utilizing these corridors. Additional analyses will be conducted to characterize the extent and reasons for (or not) changes in carpooling in the MPASS lanes. Finally, statistical analysis will be conducted to estimate whether a significant percentage of the traveling population in the I-35W corridor perceives that there has been positive change (benefit) in traffic conditions from pre-deployment experiences.

Statistical estimation and hypothesis testing will be conducted using weighted survey responses to reduce sampling bias associated with the survey process or non-response. However, because the actual size of the population of travelers in the corridor is not known exactly, the survey weights will be constructed so that they help to mitigate these biases, but sum to the sample totals. This will be performed by creating expansion factors by population characteristics in the

geographic areas targeted for the survey including age, race/ethnicity, number of household vehicles, etc. using population totals from the American Community Survey (ACS)[3], and then pro-rated back to the original sample by dividing by the average weight. Statistical analysis will be performed in SAS, SUDAAN, WesVar, or another comparable statistical analysis software package that can account for the survey design. Statistical tests will be conducted using normal theory tests (t-test, F-tests, etc.) at 95 percent confidence levels.

A sample size of 1,000 completed surveys is recommended to be targeted for this survey effort, which is consistent with the industry standard for most public opinion surveys[4]. Table 8-1 summarizes the anticipated statistic power[5] or precision associated with estimating a characteristic of interest in the sample group (e.g., percentage of respondents reporting a particular reason for not carpooling) for three different sample sizes.

Table 8-1. Anticipated Power for Hypothesis Tests and Width of 95 Percent Confidence Intervals

Hypothesis/Characteristic	Effective Sample Size		
	n=500	n=1,000	n=1,500
There has been a 5% increase in new carpoolers[a]	53% power	80% power	91% power
A majority (> 50%) of the population will report a perceived benefit in traffic conditions following the UPA deployment[b]	72% power	94% power	99% power
Percentage of the population with the characteristic of interest	± 4% width of 95% confidence interval	± 3% width of 95% confidence interval	± 2.5% width of 95% confidence interval

a. Assuming a change in carpoolers from 30 percent to 35 percent.

b. Assuming the true percentage of the population perceiving a benefit is 50 percent.

8.5 Schedule and Responsibilities

It is recommended that the I-35W South user telephone interviews be conducted in September 2011, one year after all of the Minnesota UPA projects, including the HOT lanes in the Crosstown Commons section, are completed and in operation. This schedule will allow for one full year of operation with the full segment of the HOT lanes on I-35W South. Mn/DOT or the Metropolitan Council would be responsible for conducting the interviews. It is anticipated that a market research firm would be used to conduct the interviews. This firm would finalize the sample methodology and survey instrument, in consultation with Mn/DOT, the Metropolitan Council, and the Battelle team. The firm would also conduct the interviews and provide a report

[3] Information can be found at the American Community Survey Website: http://www.census.gov/acs/www/.

[4] American Association for Public Opinion Research, http://www.aapor.org/Margin_of_Sampling_Error.htm

[5] Statistical power refers to the ability of the hypothesis test to correctly identify a significant difference when one exists. Typically, statistical power of 80% or more is considered to be "reasonable."

on the results and an electronic file with the complete results. Members of the Battelle team will analyze the results and will incorporate the results into the final report.

9.0 INTERVIEWS WITH MINNESOTA STATE PATROL OFFICERS, FIRST OPERATORS, AND BUS OPERATORS

9.1 Purpose and Approach

These interviews will target Minnesota state patrol officers responsible for enforcing the HOT lanes and the PDSL and patrolling I-35, FIRST operators responsible for responding to incidents on I-35W, and Metro Transit and MVTA bus operators using the HOT lanes, PDSL, MARQ2 lanes, and the Cedar Avenue lane guidance system. The interview questions will focus on obtaining additional insight into the overall operation of the projects, possible safety concerns, changes in traffic patterns, and reactions from bus riders and other travelers. Mn/DOT and the Metropolitan Council will determine the appropriate party to conduct the interviews.

9.2 Personnel to Interview

The Minnesota State Patrol officers, FIRST operators, and Metro Transit and MVTA bus operators to include in the interviews will be identified by Battelle team members in consultation with representatives from the State Patrol, Mn/DOT, Metro Transit, and MVTA. It is anticipated that approximately four-to-six State Patrol officers, four-to-six FIRST operators, and 10-to-20 bus operators will be interviewed. The personnel selected to be interviewed should be those assigned to the I-35W corridor from the various agencies. One-on-one interviews are recommended so that interviewees can be candid in their responses. However, it may be possible to conduct the interviews with bus operators in conjunction with a regular scheduled meeting or time when multiple operators are available.

9.3 Interview Questions

The preliminary interview questions are presented in Tables 9-1 through 9-4. Table 9-1 contains the questions for Minnesota State Patrol officers. Table 9-2 presents the interview questions for FIRST operators. Table 9-3 outlines the questions for Metro Transit and MVTA operators. Table 9-4 presents the interview question for the MVTA operators driving the shoulder-running guided buses.

Table 9-1. Interview Questions for Minnesota State Patrol Officers

Introduction	• Explain the National UPA Evaluation purpose, scope, local partners, and sponsors. • Describe the purpose and process for the interviews of Minnesota State Patrol officers. • Note that the interviews are confidential. Responses will not be attributed to any individual.
I-35W HOT Lanes and PDSL Enforcement	1. Please describe your responsibilities related to enforcing vehicle-occupancy levels and operating requirements on the I-35W HOT lanes and the PDSL. 2. How long have you patrolled the I-35W corridor? 3. Were you responsible for enforcing the vehicle-occupancy requirements on the I-35W HOV lanes? 4. Please describe how you enforce the vehicle-occupancy levels and the operating requirements on the I-35W HOT lanes and the PDSL and your experience to date. 5. What are the most common violations and citations issued? 6. Please describe your experience with the MnPASS toll enforcement technology, including the mobile enforcement reader. It is easy to use? It is reliable? 7. Compared to the I-35W HOV lanes, is enforcement of the HOT lanes and PDSL easier or more difficult? Please explain why.
I-35W HOT Lanes and PDSL Operations	8. Based on your experience and observations, have you noticed any differences in the operation, including congestion levels, of I-35W since the change to HOT lanes and implementation of the PDSL? 9. Based on your experience and observations, have you noticed any changes in crashes or other incidents since the change to HOT lanes and implementation of the PDSL? If so, what changes have you noticed?
Active Traffic Management – Speed Harmonization	10. Based on your experience and observation, have you noticed any problems or concerns with the use of active traffic management elements, including speed harmonization? Have you noticed any differences in the operation of I-35W, including congestion levels, when the speed harmonization signs are in operation? 11. Based on your experience and observations, have you noticed any changes in incidents and crashes when the speed harmonization is in operation, including increases or decreases in the number of incidents and crashes, changes in type and severity, and changes in location?
Real-Time Transit and Traffic DMS	12. Based on your experience and observation, have you noticed any problems or concerns with the use of the real-time transit and traffic DMS? Have you noticed any differences in operation of I-35W, including congestion levels, with the DMS? 13. Based on your experience and observations, have you noticed any changes in incidents and crashes when real-time transit and traffic DMS is in operation, including increases or decreases in the number of incidents and crashes, changed in type and severity, and changes in location?
Closing	14. Do you have any other comments about enforcement of the HOT lanes and PDSL, or the speed harmonization and real-time transit and transit DMS on the operation of I-35W?

Table 9-2. Interview Questions for FIRST Operators

Introduction	• Explain the National UPA Evaluation purpose, scope, local partners, and sponsors. • Describe the purpose and process for the interviews with FIRST operators. • Note that the interviews are confidential. Responses will not be attributed to any individual.
I-35W FIRST Response – General Responsibilities	1. Please describe your responsibilities as a FIRST operator. Is I-35W (north and south of downtown Minneapolis) a normal part of your assigned service area? 2. How long have you been a FIRST operator? How long have you covered I-35W? 3. Did you cover I-35W when the HOV lanes were in operation?
Experience with the HOT Lanes and the PDSL	4. Please describe your experience as a FIRST operator since the change to HOT lanes and implementation of the PDSL. Have you noticed any changes, including increases or decreases in the number of incidents and crashes, changes in the type or severity of incidents and crashes, and changes in the location of incidents and crashes? 5. Based on your experience and observations, have you noticed any differences in the operation, including congestion levels, of I-35W since the change to HOT lanes and implementation of the PDSL? If so, please describe the changes you have noticed?
Active Traffic Management – Speed Harmonization	6. Based on your experience and observations, have you noticed any differences in the operation of I-35W, including congestion levels, when the speed harmonization is in operation? 7. Based on your experience and observations, have you noticed any changes in incidents and crashes when the speed harmonization is in operation, including increases or decreases in the number of incidents and crashes, changed in type and severity, and changes in location?
Real-Time Transit and Traffic DMS	8. Based on your experience and observations, have you noticed any differences in the operation of I-35W, including congestion levels, when real-time transit and traffic DMS in operation? 9. Based on your experience and observations, have you noticed any changes in incidents and crashes when real-time transit and traffic DMS is in operation, including increases or decreases in the number of incidents and crashes, changed in type and severity, and changes in location?
Closing	10. Do you have any other comments concerning the impact of the HOT lanes and PDSL, speed harmonization, or real-time transit and traffic DMS on the operation of I-35W?

Table 9-3. Interview Questions for Metro Transit and MVTA Operators

Introduction	• Explain the National UPA Evaluation purpose, scope, local partners, and sponsors. • Describe the purpose and process for the interviews of Metro Transit and MVTA operators. • Note that the interviews are confidential. Responses will not be attributed to any individual.
I-35W HOT Lanes and PDSL Bus Operations	1. Please describe your responsibilities related to operating buses in the I-35W corridor, including using the I-35W HOT lanes and the PDSL. 2. How long have you been a bus operator? 3. How long have you driven routes in the I-35W corridor? 4. Have you previously operated a bus in the I-394 HOT lanes? 5. Please describe your experience operating a bus in the I-35W HOT lanes and the PDSL. 6. Compared to the I-35W HOV lanes, is driving a bus in the HOT lanes and PDSL easier or more difficult? Please explain why. 7. Have you received any comments from bus riders concerning the HOT lanes and PDSL? If so, what type of comments have you received?
I-35W HOT Lanes and PDSL Operations	8. Based on your experience and observations, have you noticed any differences in the operation, including congestion levels, of I-35W since the change to HOT lanes and implementation of the PDSL? 9. Based on your experience and observations, have you noticed any changes in crashes or other incidents since the change to HOT lanes and implementation of the PDSL? If so, what changes have you noticed?
Active Traffic Management – Speed Harmonization	10. Based on your experience and observation, have you noticed any problems or concerns with the use of active traffic management elements, including speed harmonization? Have you noticed any differences in operation of I-35W, including congestion levels, when the speed harmonization is in operation? 11. Based on your experience and observations, have you noticed any changes in incidents and crashes when the speed harmonization is in operation?
Real-Time Transit and Traffic DMS	12. Based on your experience and observation, have you noticed any problems or concerns with the use of real-time transit and traffic DMS, including speed harmonization? Have you noticed any differences in operation of I-35W, including congestion levels, when the speed harmonization is in operation? 13. Based on your experience and observations, have you noticed any changes in incidents and crashes when real-time transit and traffic DMS is in operation?
MARQ2	14. Based on your experience and observation have you noticed any problems or concerns with use of the MARQ2 lanes in downtown Minneapolis? Have you noticed any differences in operation of buses in the downtown area? 15. Based on your experience and observation have you noticed any changes in incidents and crashes while operating in the downtown area? 16. Based on your experience and observation what kind of feedback have you received from passengers on the MARQ2 lanes?
Closing	17. Do you have any other comments about operating in the HOT lanes and PDSL or the impact of speed harmonization on the real-time transit and traffic information on the operation of I-35W?

Table 9-4. Interview Questions for MVTA Shoulder-Running Guided Bus Operators

Introduction	• Explain the National UPA Evaluation purpose, scope, local partners, and sponsors. • Describe the purpose and process for the interviews with MVTA operators driving the shoulder-running guided buses. • Note that the interviews are confidential. Responses will not be attributed to any individual. • Explain the Institutional Review Board (IRB)/Human Subject Protection requirements, consent form, and need for signature.
I-35W HOT Lanes and PDSL	1. How long have you been a MVTA bus operator? How long have you driven routes on Cedar Avenue and I-35W? 2. Please describe your responsibilities related to operating the shoulder-running guided buses. 3. Please describe your experience operating the shoulder-running guided bus. Is the system easy or difficult to use? What feature do you like or dislike? Do you feel more comfortable operating a bus on the shoulder using the system? 4. Please describe any reactions or comments you have had from bus riders concerning the shoulder-running guided bus.
Closing	5. Do you have any other comments about use of the shoulder-running guided buses?

9.4 Analysis Methods

The party identified to conduct the interviews will review the interview notes and tape recordings and will document the major comments. A summary report will be prepared highlighting the common themes emerging from the interviews, as well as the unique perspectives. The summary report will be organized by the interview questions, with a final section presenting overlying themes and tips for other projects in Minnesota and other areas.

The interview results provide additional insight into the overall operation and benefit of some of the Minnesota UPA projects. The results provide qualitative input on the various UPA projects. The results will be used to expand upon and enhance the analysis based on quantitative data collected in the other test plans.

9.5 Schedule and Responsibilities

It is recommended that the interviews with Minnesota State Patrol officers, FIRST operators, and Metro Transit and MVTA operators be conducted twice. The recommended schedule is to conduct the first set of interviews in June 2010, approximately six months after most of the Minnesota UPA projects are operational. A second set of interviews with the same individuals, as well as any new officers or operators, focusing on the complete HOT lane system and the Cedar Avenue Lane Guidance System, is recommended for April 2011.

The responsibilities for conducting and analyzing the interviews with Minnesota State Patrol officers, FIRST operators, and bus operations are outlined below.

- The party identified by Mn/DOT and the Metropolitan Council to conduct the interviews will finalize the interview questions; identify the individuals to be interviewed with the State Patrol, FIRST, Metro Transit, and MVTA; schedule and conduct the interviews; and document the results in a summary report.
- Members of the Battelle team will review the final interview questions and the list of individuals to be interviewed, review the summary report, and incorporate the interview results into the interim and final national evaluation reports.

10.0 INTERVIEWS WITH COMMERCIAL FLEET SERVICES/OPERATORS, TRANSPORTATION-SENSITIVE BUSINESS REPRESENTATIVES, AND THE DOWNTOWN MINNEAPOLIS BUSINESS COMMUNITY

10.1 Purpose and Approach

Conducting interviews with commercial fleet services/operators, representatives of transportation-sensitive businesses, and the downtown Minneapolis business community is recommended to gain insight into the influence of the HOT lanes, PDSL, MARQ2 bus lanes, and other UPA projects on the movement of goods, the provision of services, and businesses in the I-35W corridor and downtown Minneapolis. Currently, no funding has been identified to conduct these interviews. They are included in the final test plan in case funding is found to conduct the interviews, as the information obtained will be of value in assessing the influence of the UPA projects on commercial fleet service, transportation-sensitive businesses, and downtown Minneapolis businesses.

As noted previously, small two-axle trucks weighing less than 26,000 pounds will be allowed to use the I-35W MnPASS toll lanes with a valid transponder. These interviews will focus on commercial fleet services/operators not meeting these guidelines to obtain information on the impact of the UPA projects on travel times and trip-time reliability for trucks operating on the I-35W. Transportation-sensitive businesses are defined to include companies relying on the delivery or pick of goods for manufacturing purposes or other related activities. The interviews with downtown Minneapolis business leaders will focus on those influenced by the MARQ2 project.

10.2 Selection of Individuals to Interview

It is recommended that 8-to-12 individuals in each of the three targeted groups – commercial fleet services/operators, transportation-sensitive businesses, and downtown Minneapolis businesses – be interviewed. Suggestions on individuals to include in the interviews should be requested from Mn/DOT's Office of Freight and Commercial Vehicle Operation, the Downtown Minneapolis Council, local chambers of commerce, the Downtown Minneapolis TMO, I-494 Commuter Services, and other groups. The final selection of individuals to interview will be made by the group conducting the interviews, with review and input from the national evaluation team.

10.3 Interview Questions

Tables 10-1, 10-2, and 10-3 provide a preliminary list of questions for inclusion in the interviews with individuals in for each of the three target groups. The questions focus on the key areas of interest to each of the groups and the potential benefits and impacts from the UPA projects. The interview questions will be finalized by the group conducting the interviews.

10.4 Analysis Methods

The group identified to conduct the interviews will review the interview notes and tape recordings and will document the major comments. A summary report will be prepared highlighting the common themes emerging from the interview, as well as the unique perspectives of different individuals. The summary report will be organized by the interview questions, with a final section presenting the overlying themes.

The interview results will provide additional insight into the impact of the UPA projects on the movement of goods and services on the I-35W and in downtown Minneapolis. The qualitative information obtained from these interviews will be used to expand and enhance the quantitative data from other test plans that serve as input to the goods movement analysis, the business impacts analysis, and other analyses.

10.5 Schedule and Responsibilities

It is recommended that the interviews with members of the downtown business community be conducted in June and July 2010, approximately six months after the opening of the MARQ2 bus lanes. Given the potential for ongoing traffic disruptions on I-35W caused by construction activities in the Crosstown Commons section, it is recommended that the interviews with CVOs and representatives of transportation-sensitive businesses be conducted in April and May, 2011, approximately six months after completion of the Crosstown Commons section. This schedule will provide the opportunity for all travelers, including commercial vehicles, to experience the completed facility with all of the UPA projects in operation.

The responsibilities for conducting the interviews of commercial fleet services/operators, representatives from transportation-sensitive businesses, and members of the downtown Minneapolis business community will be finalized if funding is found to support the interviews. The general responsibilities are outlined below.

- The selected party will finalize the individuals to be interviewed with input from Mn/DOT's Office of Freight and Commercial Vehicle Operation, the Downtown Minneapolis Council, local chambers of commerce, the Downtown Minneapolis TMO, I-494 Commuter Services, and other organizations. The selected party will finalize the interview questions, conduct the interviews, and document the results.
- Members of the Battelle team will review the final interview questions and the list of individuals to be interviewed, review the summary report, and incorporate the interview results into the interim and final national evaluation reports.

Table 10-1. Interview Questions for Commercial Fleet Services/Operators

Introduction	• Explain the National UPA Evaluation purpose, scope, local partners, and sponsors. • Describe the purpose and process for the interviews of commercial fleet services/operators. • Note that the interviews are confidential. Responses will not be attributed to any individual.
General Information on Use of I-35W	1. Please describe your business and the use of I-35W. 2. Is I-35W a major travel corridor for your vehicles? 3. What has been your experience over the past few years with traffic congestion on I-35W?
I-35W HOT Lanes and PDSL Operations	4. Do you operate any vehicles that are allowed to use the I-35W HOT lanes? (small, two-axle trucks weighing less than 26,000 pounds are allowed to use the lanes). 5. If yes, how frequently do your vehicles use the lanes? 6. How much time do your operators save by using the lanes? 7. Have you experienced improved trip-time reliability? 8. What is your overall impression of the HOT lanes in terms of improving traffic flow on I-35W? Have the HOT lanes helped or hurt your operation? Please explain.
Active Traffic Management – Speed Harmonization	9. Have you or your operators noticed any changes due to the use of the active traffic management strategies, including speed harmonization, on a portion of I-35W? If so, please describe your experience.
Overall Operation of I-35W	10. Have you or your operators experienced any changes in travel time, trip-time reliability, and congestion in the general-purpose freeway lanes of I-35W since the implementation of the various UPA projects? 11. If so, please describe your experiences. Do you think I-35W is less congested and operates better now than before the improvements? 12. Have you noticed any difference in safety and crashes with the implementation of the elements discussed above?
Closing	13. Overall, do you think traffic congestion on I-35W is better, worse, or no different since the implementation of all the Minnesota UPA projects? 14. Do you have any other comments related to traffic on I-35W?

Table 10-2. Interview Questions for Transportation-Sensitive Business Partners

Introduction	• Explain the National UPA Evaluation purpose, scope, local partners, and sponsors. • Describe the purpose and process for the interviews of transportation-sensitive business representatives. • Note that the interviews are confidential. Responses will not be attributed to any individual.
General Information	1. Please describe your business and the use of I-35W. 2. Is I-35W a major travel corridor for your vehicles or vehicles that provide services to you? 3. What has been your experience over the past few years with traffic congestion on I-35W?
I-35W HOT Lanes and PDSL Operations	4. Do you operate any vehicles that are allowed to use the I-35W HOT lanes and PDSL or are you served by vehicles using the HOT lanes and PDSL? (small, two-axle trucks weighing less than 26,000 pounds are allowed to use the lanes). 5. If yes, how frequently do your vehicles or vehicles serving you use the lanes? 6. How much time do operators save by using the lanes? 7. Have operators experienced improved trip-time reliability?
Active Traffic Management – Speed Harmonization	8. Have you or vehicle operators serving you noticed any changes due to the use of the active traffic management strategies, including speed harmonization, on a portion of I-35W? If so, please describe your experience.
MARQ2 Bus Lanes Downtown Minneapolis	9. Has your business been impacted by the implementation of the MARQ2 bus lanes in downtown Minneapolis? If so, please explain what the impacts have been.
Closing	10. Overall, do you think traffic congestion on I-35W is better, worse, or no different since the implementation of all the Minnesota UPA projects? 11. Do you have any other comments related to traffic on I-35W?

Table 10-3. Interview Questions for Downtown Minneapolis Business Community Representatives

Introduction	• Explain the National UPA Evaluation purpose, scope, local partners, and sponsors. • Describe the purpose and process for the interviews of downtown Minneapolis business community representatives. • Note that the interviews are confidential. Responses will not be attributed to any individual.
General Information	1. Please describe your business and your involvement in the downtown Minneapolis business community.
MARQ2 Dual Bus Lanes	2. Has your business been impacted by the implementation of the MARQ2 bus lanes in downtown Minneapolis? If so, please explain what the impacts have been. 3. Did you previously use Marquette and 2nd Avenues for deliveries or other services (taxis, etc.)? If so, how have you changed your operations? 4. What has been the impact of this change? 5. Do your employees or customers ride the bus? If so, what has been their reaction to the MARQ2 bus lanes and streetscape improvements? 6. Overall, do you think the MARQ2 improvements have had a positive effect, no effect, or negative effect on downtown Minneapolis? Please explain your response. 7. Have you noticed any changes in safety due to the MARQ2 lanes?
I-35W HOT Lanes, PDSL, and Other Projects	8. Overall, what is your impression of the HOT lanes, PDSL, and other projects on the operation of I-35W and travel in and out of downtown Minneapolis?
Closing	9. Do you have any other comments related to the MARQ2 bus lanes or traffic on I-35W?

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11.0 MN/DOT OMNIBUS SURVEY

11.1 Purpose and Approach

Mn/DOT conducts an annual survey of drivers in the Twin Cities and greater Minnesota to assess attitudes about the transportation system, Mn/DOT products and services, and other related issues. The sample size for the survey is 800 drivers – 400 from the Twin Cities metropolitan area and 400 from Greater Minnesota. The sample is randomly selected. Due to the large number of questions on the 2008 survey, a second survey with a sample size of 800 individuals, equally divided between the Twin Cities metropolitan area and Greater Minnesota, was conducted.

Questions on telecommuting have been included in some previous Omnibus surveys. In 2008, questions on existing telecommuting behavior and attitudes toward alternative work arrangements were added to help establish a regional baseline for the Minnesota UPA telecommuting project. Although not currently confirmed for the 2010 survey, it is anticipated these questions will be included in the 2010 Omnibus survey and potentially in the 2011 survey.

11.2 2008 Omnibus Survey Telecommuting Questions

The following questions on telecommuting were included in the 2008 Omnibus survey.

- Did you have a paying job last week?
- Were you self-employed?
- Do you work at home some days instead of commuting to your normal workplace?
- Is your NORMAL work location at home?
- On average, how many days do you work at home each week?
- Do you work at a satellite location, other than home or a coffee shop, some days instead of commuting to your normal workplace?
- On average, how many days do you work at a satellite location each week?
- Why don't you work at home some days instead of commuting to your normal workplace?
- What are the main reasons that you do telecommute?
- Would you like to telecommute from home? (Note: Question was framed differently in 1996.)
- Have you stopped telecommuting in the last year? (Note: Question was framed differently in 1996

The results from these questions were compiled for the Twin Cities Metropolitan area and greater Minnesota. The results were also compared to similar related questions on previous Omnibus surveys. For the national UPA evaluation, the results help provide a baseline on telecommuting in the metropolitan area for the Minnesota UPA telecommuting projects. The

results do not provide the level of detail needed to establish a baseline for the I-35W corridor or to measure the input of the telecommuting program congestion on I-35W.

11.3 Future Omnibus Surveys

It is anticipated that these questions will be included in the 2010 and 2011 Omnibus surveys to assist with the ongoing tracking of the Minnesota UPA telecommuting effort. The results from these surveys will be of benefit to the national evaluation in analyzing the trend line for the metropolitan area, although the information is not at the level of detail needed to assess the impacts on the I-35W corridor. Members of the Battelle team will work with Mn/DOT personnel to obtain the results from the 2010 and 2011 Omnibus surveys.

11.4 Analysis Methods

Mn/DOT and their market research contractor conduct the Omnibus survey on an annual basis. The results are documented in an annual report, which provides the total responses and breaks out the responses for the metropolitan area and Greater Minnesota. Members of the Battelle team will use the Omnibus survey results in the telecommuting analysis. As noted previously, given the metropolitan scope of the Omnibus survey, the results do not provide the levels of detail needed to analyze the impacts on congestion on I-35W from the various UPA projects. The survey results do provide useful general information for examining perceptions related to the UPA projects.

11.5 Schedule and Responsibilities

Mn/DOT conducts the Omnibus survey on an annual basis. Potential questions and topics of interest are identified by staff and submitted to the Market Research Office. The questions are finalized and the surveys are conducted in the fall. Based on the current schedule for the UPA projects, the 2010 and 2011 Omnibus surveys would be the likely time to include the telecommuting questions. Members of the Battelle team will work with Mn/DOT staff to obtain copies of the final reports and detailed survey results, and will use the results in the final evaluation report.

12.0 TRAVEL BEHAVIOR INVENTORY

12.1 Purpose and Approach

The Metropolitan Council will conduct the Travel Behavior Inventory (TBI) in 2010 to correspond to the 2010 U.S. Census. The anticipated elements of the TBI include a home interview survey, external station traffic counts, an external station origin/destination survey, a highway speed survey, and a survey of MnPASS users/non-users. These surveys were conducted in 1990 and 2000. Data from the TBI surveys are used by the Metropolitan Council and other agencies to update travel forecasting models and planning tools.

The home interview survey is a computer aided telephone interview expected to cover a one percent sample of the households in the metropolitan area. It also includes the completion of a 24-hour travel diary for all household members over 5 years of age. Another survey recently identified to be conducted under the TBI in 2010 is a MnPASS survey. The purpose of that study is to contrast the demographic characteristics, attitudes, and preferences that separate MnPASS users from non-users in the I-394 corridor and to measure differences in preferences for road pricing and MnPASS usage in the I-35W corridor. This survey may be a more appropriate venue than the home interview survey to obtain information needed for the Minnesota UPA national evaluation.

The Metropolitan Council is currently conducting the consultant selection process for the TBI, and anticipates having the consultant selected and under contract by October 2009. The development of the actual survey instrument will be initiated at that time. It is anticipated that the home interview survey and the MnPASS survey will be conducted beginning in April 2010.

Based on discussions with Metropolitan Council staff, it appears the opportunity exists to add four-to-five questions relating to UPA projects, such as the HOT lanes on I-35W and I-394 and telecommuting to one of the TBI surveys. In addition, the MnPASS survey recently identified to be included as part of the 2010 TBI appears to be of benefit to the national UPA evaluation. Adding a few questions would not have a significant impact on the cost of conducting the survey. The addition of numerous questions or conducting an over sample in the I-35W corridor would have significant cost implications, however, and staff indicated these options are probably not feasible.

12.2 2010 TBI

The Metropolitan Council will begin developing the TBI survey question after the consultant selection is finalized, which is anticipated to occur by October 2009. Members of the Battelle team will work with Metropolitan Council staff to determine the feasibility of adding questions related to UPA project elements to the appropriate survey. Questions related to use of telecommuting and the I-35W and I-394 MnPASS toll lanes may be appropriate for inclusion on the surveys for the full metropolitan area, and would be of benefit in the Minnesota UPA national evaluation.

Examples of possible questions are presented below.

- Are you a MnPASS toll customer with an active transponder?

  _____Yes _____ No

  If yes, how frequently do you use the I-35W or I-394 MnPASS Express Lanes as a solo driver?

I-35W	I-394
_____ One day a week	_____ One day a week
_____ Two or three days per week	_____ Two or three days per week
_____ More than three days per week	_____ More than three days per week
_____ One or two days per month	_____ One or two days per month

- Do you ever work from home (telecommute) instead of commuting to your normal place of work?

  _____Yes _____ No

  If yes, how many days a week do normally work from home?

  _____ One
  _____ Two
  _____ Three or more

12.3 Analysis Methods

The Metropolitan Council and their contractor document the results of the home interview survey in a report. Metropolitan Council staff have indicated that a tabulation of the results specific to UPA-related questions can be provided in advance of the final report. Members of the Battelle team will examine the responses to questions related to the UPA projects for use in assessing the impacts of the I-35W HOT lanes, telecommuting, and other related projects. This sort of descriptive tabulation is amenable to conducting t-tests and chi-square tests to determine significant differences. However, if possible the Battelle team would like to have access to the weighted survey data so that additional, and more sophisticated statistical analyses can be performed. For example, the results of the home interview may provide illumination on the validity of the other survey results in terms of reported travel versus actual travel.

12.4 Schedule and Responsibilities

Once the consultant selection and contracting process has been completed, which is anticipated to be in October 2009, members of the Battelle team will work with Metropolitan Council staff to determine if questions related to the Minnesota UPA projects can be added to one of the TBI surveys. Based on the results of these discussions, members of the Battelle team will work with Metropolitan Council staff and their contractors to finalize the questions to be included in the appropriate survey, which is anticipated to be conducted beginning no later than April 2010. The Metropolitan Council will provide the results of the survey questions relating to the UPA projects to the Battelle team in electronic format. Members of the Battelle team will analyze the results and incorporate the results into the final evaluation report.

13.0 MN/DOT PERCEPTION TRACKING STUDY

13.1 Purpose and Approach

Mn/DOT's Perception Tracking Study measures the public's awareness, usage, and opinion of the various traffic management tools implemented by the Mn/DOT Regional Transportation Management Center and the Metropolitan District. The Perception Tracking Study was conducted in the Minneapolis-St. Paul metropolitan area on an annual basis from 1996 to 2006, except for 2002 and 2003. The information from the studies, which are based on telephone interviews of metropolitan area residents, is used by Mn/DOT for planning, implementing, and operating different transportation management tools. Information on driving characteristics, driving behavior, and daily commute patterns is also collected during the interviews.

The objectives of the Perception Tracking Study are to measure over time the traveling public's awareness of the various traffic management tools, usage of these tools, and perceived effectiveness and value of the tools. The exact traffic management tools included in each annual study vary. For the 2006 study, two en-route tools – freeway entrance ramp meters and the FIRST program – and four communication tools – overhead DMS, traffic radio broadcasts on KBEM, traffic information on the internet, and the 511 information system – were included in the interviews.

A total of 600 telephone interviews were completed in March through April 2006, using a random digital dialing sample. This sampling technique includes unlisted telephone numbers to ensure that the results are representative of the metropolitan calling area. For the 600 interviews, the sampling error is +/- 4.0 percent at the 95 percent confidence level. Analyzing the results in smaller subgroup results in a higher error, however. The statistical tests of significance were conducted at the 95 percent +/- 5.0 percent level.

Many of the traffic management tools and related questions included in the annual interviews conducted for the Perception Tracking Study are relevant to the Minnesota UPA National Evaluation. As discussed in the next sections, perceptions related to the use of overhead DMS is of benefit for establishing a baseline for evaluating the UPA real-time traffic and transit DMS. Including questions on the DMS in future surveys will assist in the post-deployment analysis. Information is obtained on the freeway the interviewee normally travels, allowing the responses to be examined for I-35W and other facilities.

13.2 Traffic Management Tools and Interview Questions

As note previously, the traffic management tools included in the interviews for the Perception Tracking Study vary each year. These changes reflect the introduction of new technologies and management tools, as well as phasing out technologies and approaches. The changes also reflect a need to focus on Mn/DOT priorities each year. Table 13.1 presents the different traffic management tools and the number of years they have been included in the interviews.

Information from previous Perception Tracking Studies on the FIRST service, overhead DMS, express lanes, and park-and-ride lots is of interest in the National Evaluation of the Minnesota

UPA projects. Information on driving characteristics, driving behavior, and daily commute patterns is also of interest.

Table 13-1. Traffic Management Tools Included in Perception Tracking Studies

Traffic Management Tool	Number of Years in Interviews
Highway Helper	3
FIRST	3
Metered Ramps	9
Overhead DMS	8
Express Lanes	8
By-Pass Lanes	6
Park-and-Ride Lots	3
KBEM Radio	9
Paragon Cable TV	1
Cable TV Broadcasts	2
KVBM TV	3
Internet Traffic Information	8
Traffic Telephone	3
511 Service	3

Examples of the questions related to the overhead DMS included in the 2007 interviews are presented below. The prompts from the interviewers are not included in the questions.

The first one I'd like to ask you about is overhead electronic message signs. These are electronic signs located over the freeway, alerting drivers of accidents or problems ahead.

P13a. Have you ever seen or heard of any of these signs?

Yes ( )
No ( )

P13b. Have you ever seen a message displayed on any of them?

Yes ( )
No ( )

P13c. How would you rate overhead electronic message signs as a tool to manage traffic?

Poor tool to manage traffic 1 2 3 4 5 6 7 8 9 10 **Excellent tool to manage traffic**

Q71a. How often, if at all, do you see travel time information posted on overhead electronic message signs? Would you say you see travel time information posted…?

Every weekday
Two or more times a week
Once a week
Two or more times a month
Once a month
Less than once a month
Never
Don't know

Q71a1. How often do you believe you use the travel time messages to make a decision to either stay on your usual route or change your route?

Almost always
Sometimes
Rarely, or
Never
Don't know

Q71b. How often, if at all, do you take an alternate route because a travel time message on an overhead electronic message sign showed a longer time than your usual time for a trip?

Almost always
Sometimes
Rarely, or
Never
Don't know

Q71c. Would you say the posted travel times on the overhead electronic message signs are…?

Never accurate									**Always accurate**
1	2	3	4	5	6	7	8	9	10

Q71d. How would you rate the idea of posting travel time information on overhead electronic signs as a tool to manage traffic?

Poor idea									**Excellent idea**
1	2	3	4	5	6	7	8	9	10

13.3 Future Perception Tracking Studies

Mn/DOT personnel have indicated that the perception tracking studies should be continued in the future, although funding has not been totally secured. As a result, the interviews may be conducted every two years, rather than every year. Mn/DOT personnel have further indicated that including questions related to the real-time traffic and transit travel time DMS in the I-35W corridor should be possible. Additional questions related to the HOT lanes on I-35W and I-394 may also be possible, although it is less certain than the DMS questions. Possible questions related to the DMS are presented below. These questions, which are the same as those included in the focus groups discussed in Section 4.0 and the transit on-board surveys described in Section 5.0., are provided as examples.

1. Have you noticed the signs along I-35W displaying real-time transit and traffic information?

   _____ Yes
   _____ No

2. Is the information easy to understand?

   _____ Yes
   _____ No
   _____ Don't look at the signs

3. Do you think the travel times presented are accurate?

   _____ Yes
   _____ No
   _____ Don't look at the signs

4. Did the information on the signs influence you to start riding the bus?

   _____ Yes
   _____ No

5. Were you aware of the park-and-ride lots and bus services in the corridor prior to installation of the signs?

   _____ Yes
   _____ No

6. Do you have any suggestions on how the signs could be improved?

13.4 Analysis Method

Mn/DOT and their market research contractor conduct the perception tracking studies, including the interviews. The results are documented in a report, which presents both the current responses and comparisons with previous responses. Members of the Battelle team will examine the results from interview questions related to the real-time traffic and transit information DMS, any other UPA projects, and general trends related to perceptions of traffic conditions and travel behavior. The results for individuals identifying I-35W as their major travel corridor will be examined.

13.5 Schedule and Responsibilities

Mn/DOT typically conducts the perception tracking study in the spring of the year. Members of the Battelle team will work with Mn/DOT to include questions on the real-time traffic and transit information DMS in the 2010 and 2011 surveys. Conducting the interviews in either 2010 or 2011 would benefit the UPA national evaluation. Including questions on the HOT lanes will also be explored. Members of the Battelle team with work with Mn/DOT personnel to obtain copies of the final reports and detailed surveys results, and will use the results in the final evaluation report.

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APPENDIX A – COMPILATION OF HYPOTHESIS/QUESTIONS FROM THE MINNESOTA UPA NATIONAL EVALUATION PLAN

Evaluation Analysis	Hypothesis/ Question Number	Hypothesis/Question
Congestion	MNCong-1	Deployment of the UPA improvements will reduce the travel time of users in the I-35W corridor.
	MNCong-2	Deployment of the UPA improvements will improve the reliability of user trips in the I-35W corridor.
	MNCong-3	Traffic congestion on I-35W will be reduced to the extent that travelers in the corridor will experience a noticeable improvement in travel time.
	MNCong-4	Deployment of the UPA projects will not cause an increase in the extent of traffic congestion on surrounding facilities adjacent to I-35W.
	MNCong-5	Deploying the UPA improvements will result in more vehicles and persons served in the I-35W corridor during peak periods.
	MNCong-6	A majority of survey respondents will indicate a noticeable reduction in travel times after the deployment of the UPA improvements.
	MNCong-7	A majority of survey respondents will indicate a noticeable improvement in trip-time reliability after the deployment of the UPA projects.
	MNCong-8	The majority of survey respondents will indicate a noticeable reduction in the duration of congestion after deployment of the UPA projects.
	MNCong-9	A majority of survey respondents will indicate a noticeable reduction in the extent of congestion after the deployment of the UPA projects.
Tolling	MNTolling-1	Vehicle access on the HOT lanes and PDSL on I-35W will be regulated to improve operation of I-35W
	MNTolling-2	Some general-purpose lane travelers will shift to the I-35W HOT lanes and PDSL, while HOV lane travelers will remain in the HOT lane
	MNTolling-3	HOV violations will be reduced
	MNTolling-4	After ramp-up, the HOT lanes and PDSL on I-35W maintains improved operations

Evaluation Analysis	Hypothesis/ Question Number	Hypothesis/Question
Transit	MNTransit-1	The HOT lanes, PDSL, MARQ2 bus lanes, and Transit Advantage project, and shoulder running lane guidance system will increase bus travel speeds, reduce bus travel times, and improve bus trip-time reliability in the I-35W and Cedar Avenue corridors, and downtown Minneapolis
	MNTransit-2	The new park-and-ride lots and new and expanded transit services will result in ridership increases including a mode shift to transit.
	MNTransit-3	The mode shift to transit from the UPA transit strategies will reduce congestion on I-35W, downtown Minneapolis, and other roadways.
	MNTransit-4	What was the relative contribution of each of the Minnesota UPA transit strategies to mode shift to transit?
Telecommuting/TDM	Tele/TDM-1	Use of telecommuting, ROWE, and other flexible work schedules removes trips and VMT from the I-35W corridor.
	Tele/TDM-2	Integration of telecommuting into the UPA project enhances congestion mitigation.
	Tele/TDM-3	What was the relative contribution of the telecommuting strategies to overall travel behavior changes, including secondary impacts of telecommuting
Technology	MNTech-1	Active traffic management strategies, including speed harmonization and DMS with transit and highway travel times, promoting better utilization and distribution of traffic to available capacity in the I-35W corridor.
	MNTech-2	Active traffic management strategies will reduce the number and duration of incidents that result in congestion in the I-35W corridor.
	MNTech-3	What was the relative contribution of each technology enhancement on congestion reduction in the I-35W corridors?
Safety	MNSafety-1	Active traffic management will reduce the number of primary and/or secondary crashes.
	MNSafety-2	The HOT lanes and the PDSL on I-35W South will not adversely affect highway safety.
	MNSafety-3	The MARQ2 dual bus lanes in Downtown Minneapolis will not adversely affect safety.
	MNSafety-4	The lane guidance system for shoulder running buses will not adversely affect safety.

Evaluation Analysis	Hypothesis/ Question Number	Hypothesis/Question
Equity	MNEquity-1	What are the direct social effects (tolls paid, travel times, adaptation costs) for various transportation system user groups from the I-35W HOT lanes, PDSL, transit, and other UPA strategies?
	MNEquity-2	What is the spatial distribution of aggregate out-of-pocket and inconvenience costs, and travel-time and mobility benefits?
	MNEquity-3	Are there any differential impacts on certain socio-economic groups?
	MNEquity-4	How does reinvestment of revenues from the I-35W HOT lanes and PDSL impact various transportation system users?
Environmental	MNEnv-1	What are the impacts of the Minnesota UPA strategies on air quality?
	MNEnv-2	What are the impacts on perceptions of overall environmental quality?
	MNEnv-3	What are the impacts on energy consumption?
Goods Movement	MNGoods-1	CVOs will experience reduced travel time by using the HOV lanes and PDSL on I-35W if CVO use is permitted.
	MNGoods-2	CVOs will experience reduced travel time by the overall reduction in congestion on I-35W from the UPA projects.
	MNGoods-3	CVOs hauling or delivering goods will perceive net benefit of HOT and PDSL (e.g., benefits such as faster service and greater customer satisfaction outweigh higher operating costs due to tolls). The exception may be in downtown Minneapolis, where delivery and service vehicles will not be allowed to use the dual bus lanes during the peak hours.
Business	MNBusiness-1	What is the impact of the UPA strategies on employers? e.g., employee satisfaction with commute perceived productivity impacts employee retention/hiring impacts negative impacts (increased cost of doing business)
	MNBusiness-2	How are businesses that are particularly impacted by transportation costs affected (e.g., taxis, couriers, distributors, tradesmen)?

Evaluation Analysis	Hypothesis/ Question Number	Hypothesis/Question
Non-Technical	MNNonTech-1	What role did factors related to "people" play in the success of the deployment? People (sponsors, champions, policy entrepreneurs, neutral conveners)
	MNNonTech-2	What role did factors related to "process" play in the success of the deployment? Process (forums including stakeholder outreach, meetings, alignment of policy ideas with favorable politics, and agreement on nature of the problem)
	MNNonTech-3	What role did factors related to "structures" play in the success of the deployment? Structures (networks, connections and partnerships, concentration of power and decision-making authority, conflict-management mechanisms, communications strategies, supportive rules and procedures)
	MNNonTech-4	What role did factors related to "media" play in the success of the deployment? Media (media coverage, public education)
	MNNonTech-5	What role did factors related to "competencies" play in the success of the deployment? Competencies (cutting across the preceding areas: persuasion, getting grants, doing research, technical/technological competencies; ability to be policy entrepreneurs; knowing how to use markets)
	MNNonTech-6	Does the public support the UPA/CRD strategies as effective and appropriate ways to reduce congestion?
Cost Benefit	MNCBA-1	What is the net benefit (benefits minus costs) of the UPA/CRD strategies?

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