

# **MINNESOTA URBAN PARTNERSHIP AGREEMENT**

## **NATIONAL EVALUATION: CONTENT ANALYSIS TEST PLAN**



**U.S. Department of Transportation  
Research and Innovative Technology Administration  
Federal Highway Administration  
Federal Transit Administration**

**FINAL  
November 17, 2009  
Publication No. FHWA-JPO-10-006**



# **MINNESOTA URBAN PARTNERSHIP AGREEMENT**

## **NATIONAL EVALUATION: CONTENT ANALYSIS TEST PLAN**

By

Battelle Memorial Institute  
505 King Ave.  
Columbus OH 43201

Prepared for

United States Department of Transportation  
Federal Highway Administration (FHWA)  
Office of Operations  
1200 New Jersey Avenue, S.E.  
Washington, DC 20590

Contract No. DTFH61-06-D-00007/ORDER 07-T-08002/WO BA07-041

**FINAL**

November 17, 2009

## **QUALITY ASSURANCE STATEMENT**

The U.S. Department of Transportation provides high-quality information to serve Government, industry, and the public in a manner that promotes public understanding. Standards and policies are used to ensure and maximize the quality, objectivity, utility, and integrity of its information. U.S. DOT periodically reviews quality issues and adjusts its programs and processes to ensure continuous quality improvement.

**Technical Report Documentation Page**

1. Report No. FHWA-JPO-10-006		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle Minnesota Urban Partnership Agreement National Evaluation: Content Analysis Test Plan				5. Report Date November 17, 2009	
				6. Performing Organization Code	
7. Author(s) Katie Turnbull, Texas Transportation Institute				8. Performing Organization Report No.	
9. Performing Organization Name and Address Battelle 505 King Avenue Columbus, OH 43201				10. Work Unit No. (TRAIS)	
				11. Contract or Grant No. DTFH61-06-D-00007/ORDER 07-T-08002/WO BA07-041	
12. Sponsoring Agency Name and Address U.S. Department of Transportation Research and Innovative Technology Administration Federal Highway Administration Federal Transit Administration 1200 New Jersey Avenue, S.E. Washington, DC 20590				13. Type of Report and Period Covered	
				14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract This report presents the content analysis test plan for 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. As outlined in the Minnesota UPA National Evaluation Plan, the content analysis test plan focuses on collecting and analyzing information on outreach activities, media coverage, and reactions of the public, policy makers, and other groups to the UPA projects. The information from the content analysis test plan is used primarily in the non-technical success factors analysis of the Minnesota UPA National Evaluation Plan. This report presents the data sources for obtaining information on the reactions of the various groups to the UPA projects, as well as the outreach activities conducted by the partnership agencies and media coverage of the projects. The availability of needed data, possible risks associated with data collection, data analysis techniques, and the schedule and resources are described.					
17. Key Word Urban Partnership Agreement, congestion pricing, tolling, HOT, congestion reduction, transit, bus rapid transit, telecommuting, evaluation				18. Distribution Statement	
19. Security Classif. (of this report)		20. Security Classif. (of this page)		21. No. of Pages 28	22. Price

**This page intentionally left blank**

## **ACKNOWLEDGEMENTS**

A number of representatives from the Minnesota partnership agencies provided information critical to the development of the Minnesota UPA national evaluation test plans. The assistance of Gina Bass, Center for Transportation Studies, in developing the Content Analysis Test Plan is both recognized and appreciated.

# TABLE OF CONTENTS

	<u>Page</u>
ACKNOWLEDGEMENTS .....	i
LIST OF ABBREVIATIONS .....	iii
1.0 INTRODUCTION.....	1-1
1.1 The Minnesota UPA .....	1-1
1.2 Minnesota UPA National Evaluation Plan and Use of Data from the Content Analysis.....	1-4
2.0 DATA SOURCES, AVAILABILITY, AND RISKS .....	2-1
2.1 Data Sources .....	2-1
2.2 Data Availability.....	2-2
2.3 Potential Risks .....	2-2
3.0 DATA ANALYSIS .....	3-1
4.0 SCHEDULE AND RESOURCES .....	4-1

## List of Appendices

APPENDIX A – COMPILATION OF HYPOTHESIS/QUESTIONS FROM THE MINNESOTA UPA NATIONAL EVALUATION PLAN .....	A-1
---	-----

## List of Tables

Table 1-1. Relationship Among Test Plans and Evaluation Analyses .....	1-5
Table 1-2. Content Analysis Test Plan Data Elements Use in Testing Evaluation Hypotheses/Questions .....	1-6
Table 2-1. Available Pre- and Post-Deployment Information .....	2-2
Table 3-1. Content Analysis Tracking Log .....	3-1
Table 4-1. Content Analysis Pre- and Post-Deployment Schedule .....	4-1

## List of Figures

Figure 1-1. General Location of Minnesota UPA Projects.....	1-3
---	-----



## 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

**This page intentionally left blank**

## 1.0 INTRODUCTION

This report presents the test plan for collecting and analyzing information on outreach activities, media coverage, and the reactions from the public and policy makers for the National Evaluation of the Minnesota Urban Partnership Agreement (UPA) under the United States Department of Transportation (U.S. DOT) UPA program. This information will be used in the analysis of the non-technical success factors contained in the Minnesota UPA National Evaluation Plan. This 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, the non-technical success analysis, and the relationship between the analysis areas and the test plans outlined in the Minnesota UPA National Evaluation Plan. The test plan presents the techniques for collecting information on outreach activities, media coverage, and reactions from the public, policy makers, and other groups. Potential risks associated with the data and data collection activities are discussed, and the data analysis techniques are described. The schedule and resources for collecting, analyzing, and reporting the non-technical success factors analysis is also presented.

### 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.

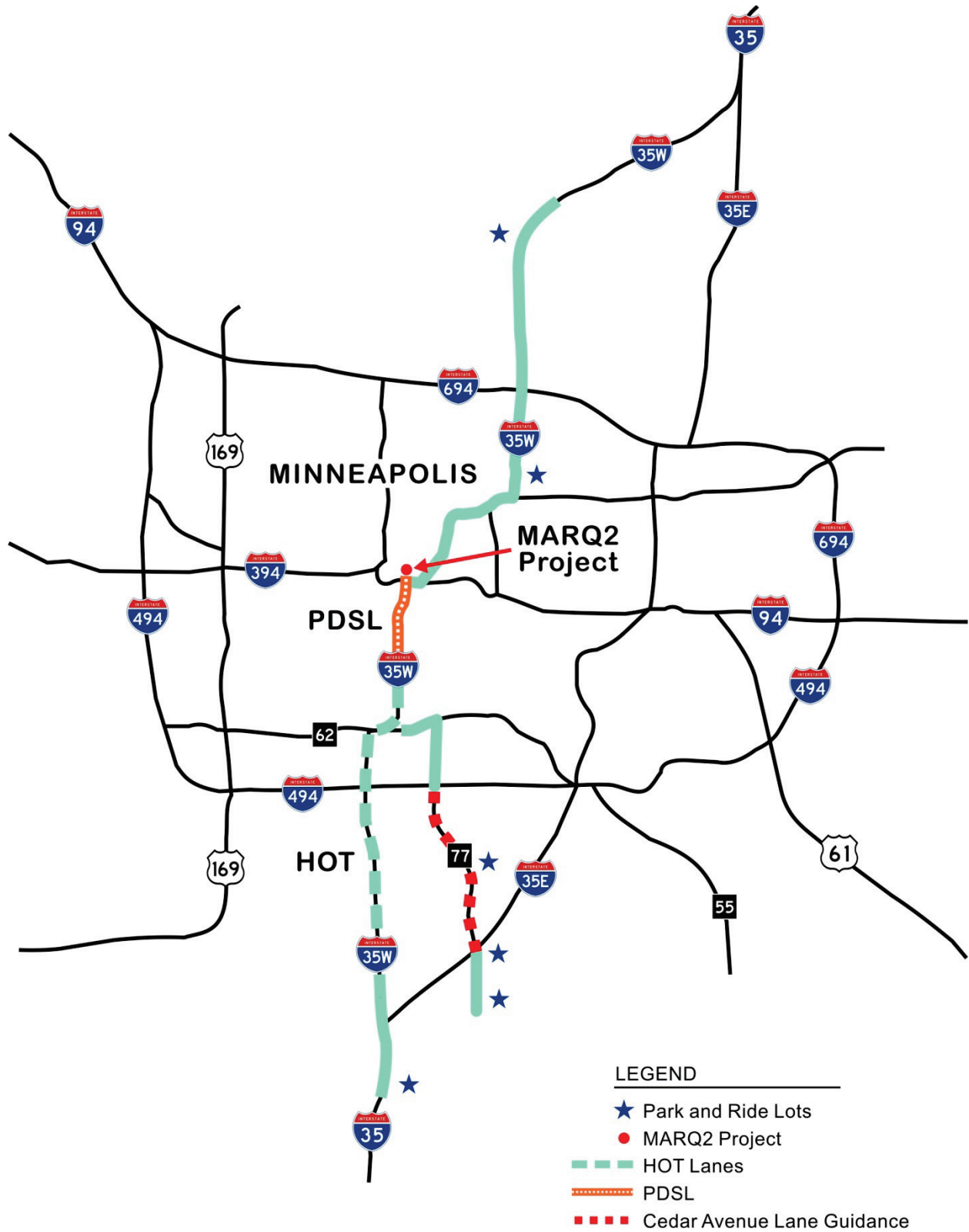
The Minnesota UPA partners include the Minnesota Department of Transportation (Mn/DOT), the Twin Cities Metropolitan Council, Metro Transit, the City of Minneapolis, Minnesota Valley Transit Authority (MVTA), and Anoka, Dakota, Ramsey, and Hennepin counties. The Center for Transportation Studies and 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 46<sup>th</sup> 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 46<sup>nd</sup> Street to downtown Minneapolis. The PDSL also 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 90<sup>th</sup> Street and I-494. An auxiliary lane is being constructed on I-35W in the southbound direction from 106<sup>th</sup> Street to Trunk 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 95<sup>th</sup> 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 180<sup>th</sup> 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 2<sup>nd</sup> Avenues.** Double contraflow bus lanes are being constructed on Marquette and 2<sup>nd</sup> 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.



**LEGEND**

- ★ Park and Ride Lots
- MARQ2 Project
- HOT Lanes
- PDSL
- Cedar Avenue Lane Guidance

**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 Use of Data from the Content Analysis**

The Minnesota UPA National Evaluation Plan focuses on the 12 analysis areas outlined in the National Evaluation Framework (NEF)<sup>1</sup> and 11 test plans.

Table 1-1 presents the relationships among the analysis areas and the test plans. The content analysis test plan provides major input to the non-technical success factors analysis. Table 1-2 presents the content analysis data elements and the related measures of effectiveness and hypotheses/questions.

---

<sup>1</sup>The document is available online at following website:  
[http://www.itsdocs.fhwa.dot.gov//JPODOCS/REPTS\\_TE//14446](http://www.itsdocs.fhwa.dot.gov//JPODOCS/REPTS_TE//14446)

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

Evaluation Analyses												
Minnesota UPA Test Plans	Congestion Analysis	Tolling Analysis	Transit Analysis	Telecommuting/ TDM Analysis	Technology Analysis	Safety Analysis	Environmental Analysis	Equity Analysis	Goods Movement Analysis	Business Impact Analysis	Lessons Learned 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. Content Analysis Test Plan Data Elements Use in Testing Evaluation Hypotheses/Questions**

Minnesota Content Analysis Data Element	Minnesota UPA Measure of Effectiveness	Minnesota UPA Hypotheses/ Questions*
1. Partnership documents	<ul style="list-style-type: none"> <li>• Partnership documents (e.g., Memoranda of Understanding)</li> </ul>	MNNonTech-2, MNNonTech-3
2. Outreach materials	<ul style="list-style-type: none"> <li>• Outreach materials (press releases, brochures, websites, etc.)</li> </ul>	NonTech-3, NonTech-4
3. Media coverage	<ul style="list-style-type: none"> <li>• Radio, TV and newspaper coverage</li> </ul>	MNNonTech-4

\*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.

The remainder of this report is divided into three sections. Chapter 2.0 presents the data sources, data collection methods, and data availability for assessing the lessons learned from the Minnesota UPA. Chapter 3.0 describes the analysis techniques that will be used to examine the questions and assess the measures of effectiveness. Chapter 4.0 presents the data collection schedule and resources for completing the content analysis.



## 2.0 DATA SOURCES, AVAILABILITY, AND RISKS

### 2.1 Data Sources

Two primary data sources will be used in this test plan. The first data source is on-line search engines. Two on-line search tools, Google Alerts and Vocus, will be used to monitor news articles, radio and television coverage, and other media sources. Information from the Minnesota UPA agency partners represents the second data source. Press releases, outreach activities, public education, and marketing information provided by the partnership agencies will be documented and analyzed. As available, letters, e-mails, and telephone calls received by the agencies will also be examined.

**Google Alerts and Vocus.** Google Alerts is a free on-line search engine that tracks news articles, web-based information, blogs, video, and other media information based on search terms. Members of the Battelle team, including the Texas Transportation Institute (TTI), have signed up with Google Alerts and have entered key terms based on each of the UPA sites. Examples of key terms for the Minnesota UPA projects include I-35W HOT lanes, Priced Dynamic Shoulder Lanes, lane guidance for shoulder-running buses, park-and-ride lots, Second and Marquette downtown bus lanes, and Minnesota UPA. Vocus is a private company providing a range of web-based products and services. TTI's Media Relations group contracts with Vocus for a variety of services, including tracking media and on-line coverage based on search terms. Key words for the Minneapolis UPA projects have been added to TTI's search terms at no cost to the national UPA evaluation.

**Minnesota UPA Partnership Agency Information.** Information from the Minnesota UPA agencies will also be used in the content analysis test plan. Reports, documents, press releases, outreach and public education activities, and marketing materials from the partnership agencies will be reviewed and analyzed on an ongoing basis. Mn/DOT, the Metropolitan Council, Metro Transit, MVTA, and other partners use these methods to communicate with the public, travelers in the targeted corridors, policy makers, and other groups. In addition, memoranda of understanding (MOUs), resolutions approved by agency and jurisdiction boards and committees, executive actions, legislation, and other related documents will be obtained from partnership agencies and reviewed on an ongoing basis. Examples of this information might include agency resolutions authorizing initial participation in the Minnesota UPA application, committing project funding, and designating staff support.

The partnering agencies, with the assistance of the Hubert H. Humphrey Institute of Public Affairs at the University of Minnesota, have undertaken an outreach and education program as part of the UPA process. Staff from the Institute and the Center for Transportation Studies have included Battelle team members on the distribution list for these efforts. In addition, the Mn/DOT and the MARQ2 websites send out regular updates on the status of construction and other project elements. Members of the Battelle team signed up for these notifications and have been receiving the regular updates. Members of the Battelle team will monitor these activities and will document press releases and other outreach activities. Members of the Battelle team will also obtain and analyze any MOUs, agency and jurisdiction resolutions, legislation, executive actions, and other related documents. To the extent the information is available,

members of the Battelle team will also obtain information from the agencies on letters, e-mails, and telephone calls received about the UPA projects.

## 2.2 Data Availability

As Table 2-1 highlights, partial pre-deployment information is available from the two sources used in this test plan. In addition, Battelle team members were able to attend one of the initial stakeholder outreach forums in August, 2008. It is anticipated that post-deployment information will be available, with the possible exception of extensive tracking of letters, e-mails, and telephone calls received by the partnership agencies.

**Table 2-1. Available Pre- and Post-Deployment Information**

Data Source	Pre-Deployment	Post-Deployment
Google Alerts and Vocus	Partial	Yes
Partnership Agencies	Partial	Yes

## 2.3 Potential Risks

There do not appear to be any significant risks associated with obtaining information from the sources outlined previously, except with some agency records as noted below. Members of the Battelle team have been receiving information from Google Alerts, Vocus, Mn/DOT, and the MARQ2 project, and no interruption in these data sources is expected. Team members have also reviewed the legislation providing Mn/DOT with the authority to implement and operate the PDSL and providing funding for the telecommuting program and other project elements.

While Metro Transit maintains tracking logs of letters, e-mails, and telephone calls, other partnership agencies no longer maintain extensive tracking logs. This limiting factor represents a potential risk that some feedback from the public and other groups may not be recorded. Available information will be provided to members of the Battelle team, but not all comments may be captured. Since the Battelle team will continue to have access to letters to the editor, opinion pieces, blogs, and other publicly available information through Google Alerts, Vocus, Mn/DOT, and the MARQ2 project, the risk that significant information for the content analysis will be lost is judged to be low. Thus, no special efforts to address the low risk are recommended.

### 3.0 DATA ANALYSIS

The information obtained in this test plan will be used in the non-technical success factors analysis and will support other analyses. The following hypotheses and questions provide examples of how the qualitative information obtained in the test plan will be applied in the evaluation.

- What types of outreach materials and activities were used by the Minnesota UPA partners?
- What was the extent and nature of media coverage of the UPA projects?
- What was the reaction of travelers in the corridors and areas affected by Minnesota UPA projects as reported in the media and in communications to the agencies?
- What was the reaction of policy makers to the Minnesota UPA projects as reported in the media?

Members of the Battelle team will document reports and the use of various outreach and public information materials, press releases, stakeholder workshops, and other related activities by the Minnesota partnership agencies. Table 3-1 illustrates how the information will be tracked, categorized, and analyzed. The content of the information provided will be summarized, along with the target audiences. Team members will also document the reactions of policy makers, the public, and other groups. To the extent possible, reactions by different user groups, socio-economic groups, and geographic areas will be examined to assist with the equity, environmental, and other analyses.

**Table 3-1. Content Analysis Tracking Log**

Date of Item	Source	Audience (if available)	UPA Projects Referenced	Nature of Comments/Coverage	Evaluation Team Discussion
				Examples might include: <ul style="list-style-type: none"> <li>• Was coverage neutral, positive, negative,</li> <li>• Type of information (status, use guidelines, technical, policy-oriented, etc.)</li> </ul>	

**This page intentionally left blank**

## 4.0 SCHEDULE AND RESOURCES

Members of the Battelle team have already begun data collection activities related to this test plan. Team members have registered with Google Alert and added key Minnesota UPA terms to TTI's existing Vocus contract. Team members have signed up for the MARQ2 updates and are receiving notices. Team members also attended one of the initial stakeholder outreach forums in August 2008. Team members are on the distribution list for the UPA outreach activities being conducted by CTS.

Members of the Battelle team will continue to monitor these on-line resources over the course of the pre- and post-deployment periods. Team members will also review reports and documents from partnering agencies and information distributed by CTS and other information available from partnership agencies. Table 4-1 presents the schedule for the pre- and post-deployment data collection, analysis, and reports.

**Table 4-1. Content Analysis Pre- and Post-Deployment Schedule**

Activities	Schedule
Pre-Deployment Data Collection	Present to October 2009
Interim Status Report	June 2010
Post-Deployment Data Collection	October 2009 to October 2011
Interim Status Report	April 2011
Final Report	April 2012

The resource requirements for this test plan include:

- Battelle team member who will receive and analyze the data;
- automated reporting services (Google Alert, Vocus, Mn/DOT, and MARQ2) available to the Battelle team; and
- Mn/DOT, the Metropolitan Council, CTS, Metro Transit, MVTA, and other local partners who will provide MOUs, resolutions, executive actions, reports, news releases, outreach and public information materials, and other related information and tracking logs of comments received.

**This page intentionally left blank**

## 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?



**U.S. DEPARTMENT OF TRANSPORTATION**  
ITS JOINT PROGRAM OFFICE, HOIT  
1200 NEW JERSEY AVENUE, SE  
WASHINGTON, DC 20590  
TOLL-FREE "HELP LINE" 1-866-367-7487  
[WWW.ITS.DOT.GOV](http://WWW.ITS.DOT.GOV)



**U.S. DEPARTMENT OF TRANSPORTATION**  
RESEARCH AND INNOVATIVE TECHNOLOGY ADMINISTRATION  
PUB. NO. FHWA-JPO-10-006

EDL # 14509