



Managed Lane Bus Rapid Transit Alternative Technical Memo

November 2015



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List of Acronyms

AA	Alternatives Analysis
BRT	bus rapid transit
CEI	cost-effectiveness index
CTIB	Counties Transit Improvement Board
EIS	Environmental Impact Statement
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GCC	Gateway Corridor Commission
LRT	light rail transit
MAP-21	Moving Ahead for Progress in the 21 st Century Act
MHIS	<i>Metropolitan Highway System Investment Study</i>
MnDOT	Minnesota Department of Transportation
PAC	Policy Advisory Committee
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Act: A Legacy for Users
SCC	standard cost category
TAC	Technical Advisory Committee
TPP	Transportation Policy Plan
TSM	Transportation System Management

1.0 Purpose of Memo

The purpose of this memo is to summarize the history of decision making specific to a proposed Managed Lane alternative for the Gateway Corridor, including the Alternative Analysis (AA) and Scoping activities; define the Managed Lane Bus Rapid Transit (BRT) alternative developed in response to the Federal Highway Administration's (FHWA) request to include it in the Gateway Corridor Draft Environmental Impact Statement (EIS); summarize the findings of the Managed Lane BRT alternative evaluation; and outline the approach to addressing the alternative in the Draft EIS based on its ability to meet the Gateway Corridor's purpose and need, and associated project goals and objectives

2.0 Summary of Gateway Corridor Purpose and Need

2.1 Project Purpose

The purpose statement below specifically defines the fundamental reasons why the Gateway Corridor project is being proposed.

The purpose of the Gateway Corridor project is to provide transit service to meet the existing and long-term regional mobility and local accessibility needs for businesses and the traveling public within the project area.

2.2 Project Need

Project needs are those issues and problems that the Gateway Corridor project is intended to address.

The following primary factors contribute to the need for the Gateway Corridor project:

- Limited existing transit service throughout the day and demand for more frequent service over a larger portion of the day
- Policy shift toward travel choices and multimodal investments
- Population and employment growth, increasing access needs and travel demand
- Needs of people who depend on transit
- Local and regional objectives for growth and prosperity

2.3 Goals and Objectives

The following goals have been developed to serve as a framework to evaluate the alternatives under consideration for the Gateway Corridor. Goals 1 and 2 (Tier 1 goals) identify the minimum requirements that an alternative would be expected to meet to advance.

- Goal 1: Improve Mobility
- Goal 2: Provide a Cost-Effective, Economically Viable Transit Option

Goals 3-5 (Tier 2) reflect broader community goals and may be helpful in comparing alternatives that meet the Tier 1 goals.

- Goal 3: Support Economic Development
- Goal 4: Protect the Natural Environmental Features of the Corridor
- Goal 5: Preserve and Protect Individual and Community Quality of Life

3.0 History of Managed Lane Evaluation and Decision-Making

A timeline of activities that contributed to the decision-making process regarding the inclusion of a managed lane alternative in the Gateway Corridor project is shown in **Figure 1** and described in this section.

3.1 Regional Transportation Planning

While the managed lane system is critical to regional transportation policy, implementation of a managed lane in the segment of I-94 east of downtown Saint Paul has historically been identified as a low priority as compared with other segments in the regional system.

3.1.1. MNPASS SYSTEM STUDY PHASE 2, AUGUST 2010

Following implementation of the I-394 and I-35W managed lane projects, MnDOT undertook the *MnPASS System Study Phase 2* (August 2010)¹ to analyze and make recommendations for the next phase of MnPASS managed lane projects in the Twin Cities Metropolitan Area. The study reassessed short-term (two to 10 years) priorities for MnPASS implementation in light of evolving federal policies, experience with two existing MnPASS lanes, and in close coordination with the *Metropolitan Highway System Investment Study* (MHSIS) (Metropolitan Council, September 2010).² The MnPASS study states, “An important change in this MnPASS Phase 2 study is the desire to avoid the need for costly road widening and right-of-way takings – factors which contribute to the high price tag of potential projects in MnPASS Phase 1.”

The study evaluated 13 corridors. The I-94 corridor between downtown Saint Paul and I-694 was among the first group to be screened from further study as there were few existing traffic congestion issues along the corridor at that time. The study concluded by identifying one Tier 1 corridor, three Tier 2 corridors, and five Tier 3 corridors. Tier 1 and Tier 2 corridors were identified as potential short-term improvements, while Tier 3 corridors were more likely to be implemented mid- to long-range. The I-94 segment between downtown Saint Paul and I-694/I-494 was not included in the Tier 1, 2, or 3 corridors.

3.1.2. THE METROPOLITAN HIGHWAY SYSTEM INVESTMENT STUDY, SEPTEMBER 2010

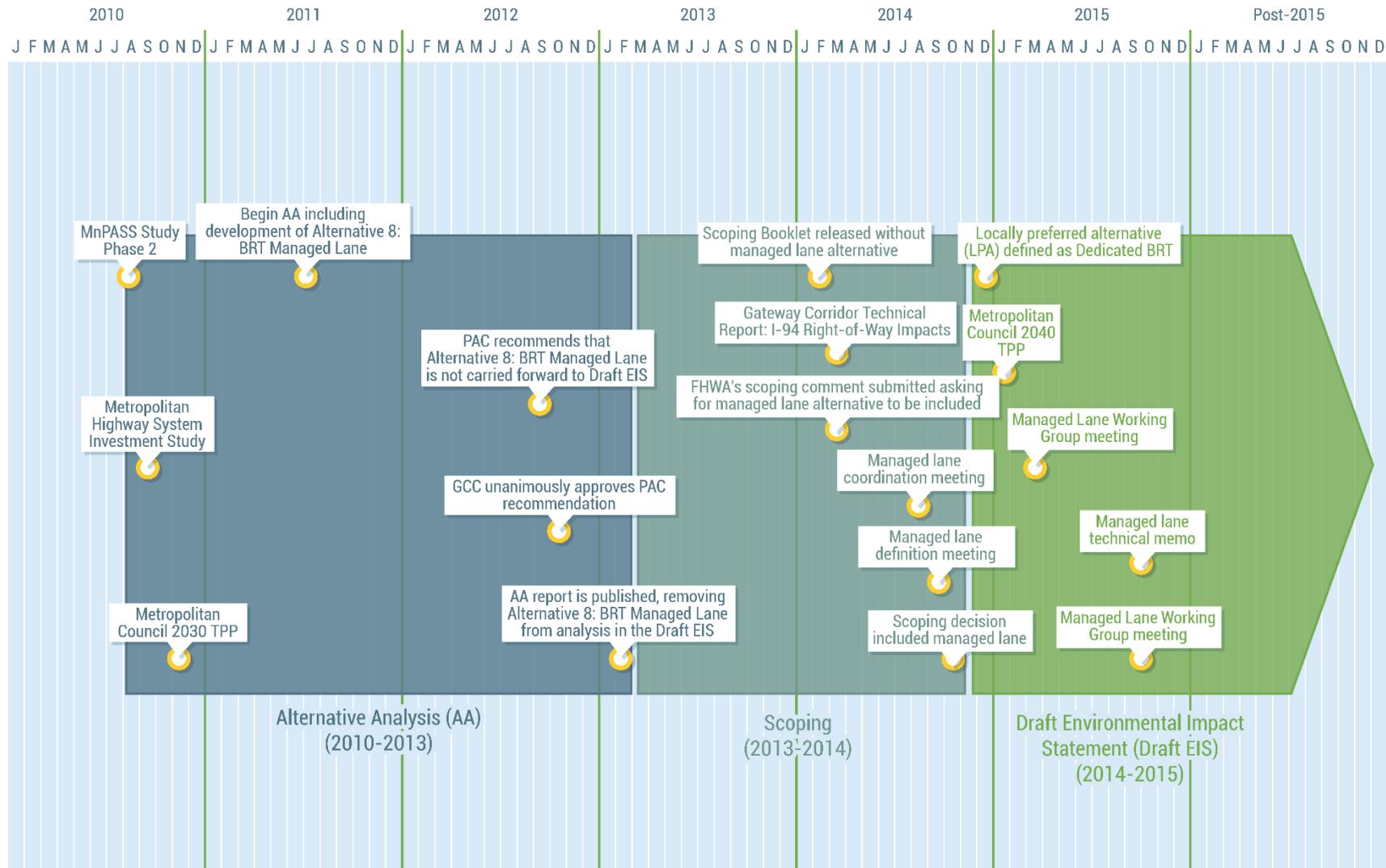
The MHSIS was a joint effort between the Metropolitan Council and MnDOT to create a vision for the highway system in the Twin Cities Metropolitan Area aimed at achieving the greatest efficiency out of the region’s highway system and manage congestion from a system-wide perspective. Completed concurrently with the *MnPASS System Study Phase 2*, the MHSIS focused on a 20 to 50 year timeframe as opposed to the MnPASS system study’s short-term focus.

The segment of I-94 from downtown Saint Paul to I-694 was one of 24 projects analyzed in the MHSIS and was given a composite score of “low” given consideration of seven evaluation factors. The study identified five corridors for action in the 2010-2030 timeframe, and an additional seven corridors were identified in the 2030-2060 timeframe. This segment of I-94 was not included for managed lane construction in either timeframe.

¹ Available at <http://www.mnpass.org/pdfs/MnPassSystemStudy2.pdf>

² Available at [http://www.metrocouncil.org/Transportation/Planning/Transportation-Resources/Metropolitan-Highway-System-Investment-Study-\(MHSI.aspx](http://www.metrocouncil.org/Transportation/Planning/Transportation-Resources/Metropolitan-Highway-System-Investment-Study-(MHSI.aspx)

Figure 1. Gateway Corridor Managed Lane Alternative Timeline



3.1.3. 2030 TRANSPORTATION POLICY PLAN, NOVEMBER 2010

The Metropolitan Council's *2030 Transportation Policy Plan (TPP)* was adopted in November 2010.³ The 2030 TPP included a Highway Investment Strategy that identified expansion of the region's managed lanes system as a system-wide strategy toward meeting key objectives to mitigate congestion, improve the performance of the Metropolitan Highway System, and preserve high levels of regional mobility.

The 2030 TPP adopted the managed lane system long-term vision of the *MnPASS System Study Phase 2* that was based, in part, on the analysis performed in the MHSIS (adopted September 2010). Both of these studies (discussed previously) eliminated the I-94 east corridor from their recommendations for managed lane projects. The *MnPASS System Study Phase 2* eliminated the I-94 corridor between downtown Saint Paul and I-694 because of few existing traffic congestion issues along the corridor, and the MHSIS found that this corridor had low scores on the following performance measures: increasing the person-moving capability of the metropolitan highway system, managing and optimizing the existing system, reducing future demand on the highway system, and cost-effectiveness. However, this segment was included in the TPP managed lane vision due to its inclusion in the Gateway Corridor AA study in process at the time.

3.1.4. 2040 TRANSPORTATION POLICY PLAN, JANUARY 2015

The Metropolitan Council's *2040 Transportation Policy Plan* was adopted in January 2015.⁴ This regional planning document outlines further development of the region's local and express bus networks, with additional investment in park-and-ride facilities, as well as continued development of a regional system of transitways to meet mobility needs and increase transit system ridership.

The 2040 TPP identifies the Gateway Corridor as the METRO Gold Line. The Gold Line is included on all "Existing and Potential High-Frequency Transit Routes" images. The 2040 TPP notes that the locally preferred alternative of the Gold Line was adopted as dedicated BRT generally on the Hudson Road – Hudson Boulevard (A-B-C-D2-E2) alignment that crosses to the south side of I-94 somewhere between approximately Lake Elmo Avenue and Manning Avenue. The 2040 TPP notes that the Gold Line has been identified as a funding priority for the Counties Transit Improvement Board (CTIB) in its Phase I Program of Projects.

Specific to managed lanes in the I-94 east corridor, the 2040 TPP states the following:

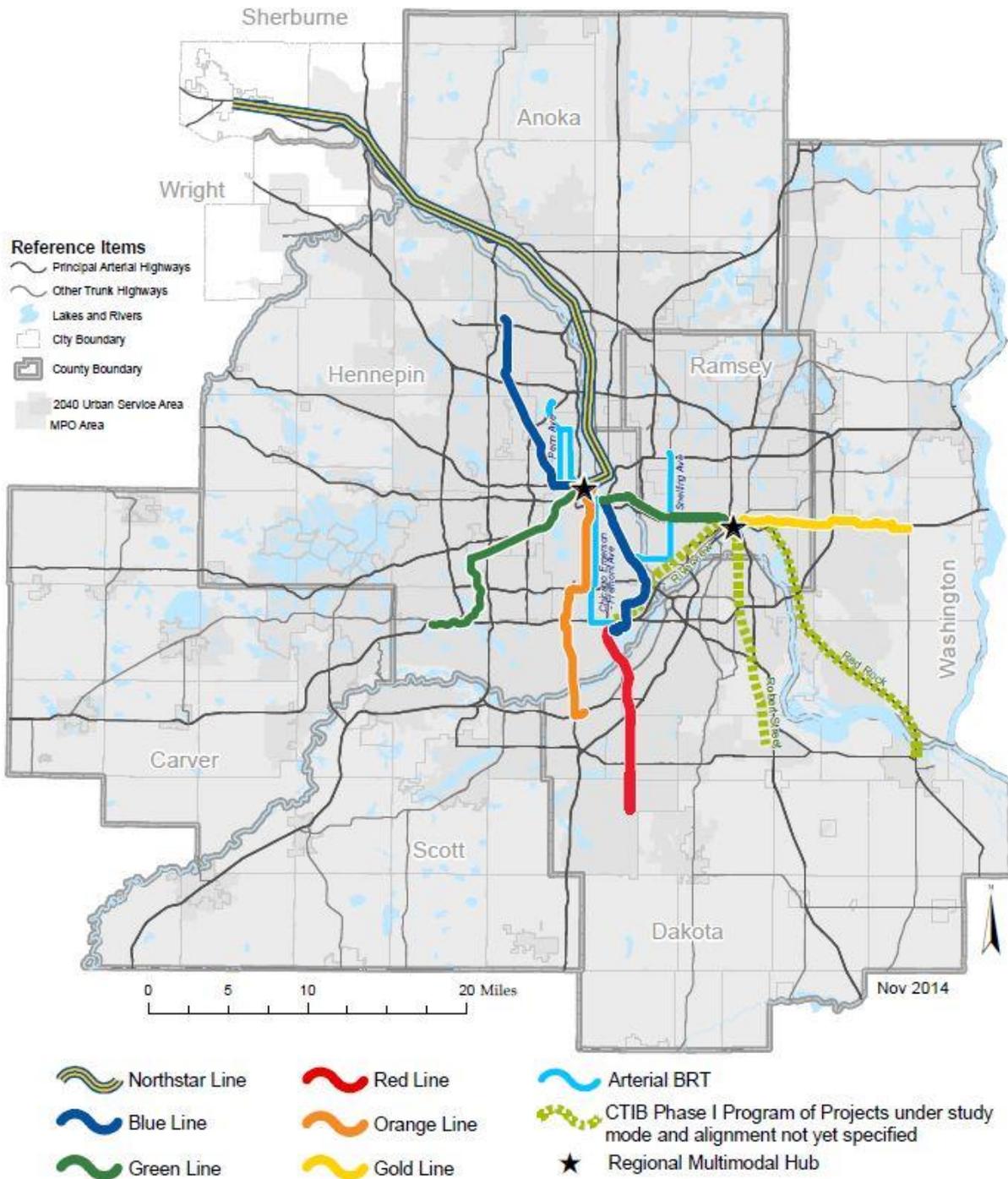
"Although Tier 2 and 3 MnPASS lanes are not funded under the Current Revenue Scenario, there are many ongoing studies of MnPASS in the Tier 2 and 3 corridors... MnDOT is also participating in the Gateway Corridor Transitway study for I-94 east of downtown Saint Paul. The I-94 east corridor is in the MnPASS system vision but implementation of both the I-94 MnPASS lane and the METRO Gold Line (Gateway BRT) will require resolving right-of-way issues through further study, including the Gateway Transitway Draft Environmental Impact Statement."

The I-94 east corridor is classified as a Tier 3 MnPASS Expansion. Tier 3 projects are not included in the constrained funding scenario. The Increased Revenue Scenario would include funding for Tier 2 and Tier 3 MnPASS projects, including on I-94 from downtown Saint Paul to I-694/I-494.

³ Available at [http://www.metrocouncil.org/Transportation/Planning/Transportation-Policy-Plan/2030-Transportation-Policy-Plan-\(1\).aspx](http://www.metrocouncil.org/Transportation/Planning/Transportation-Policy-Plan/2030-Transportation-Policy-Plan-(1).aspx)

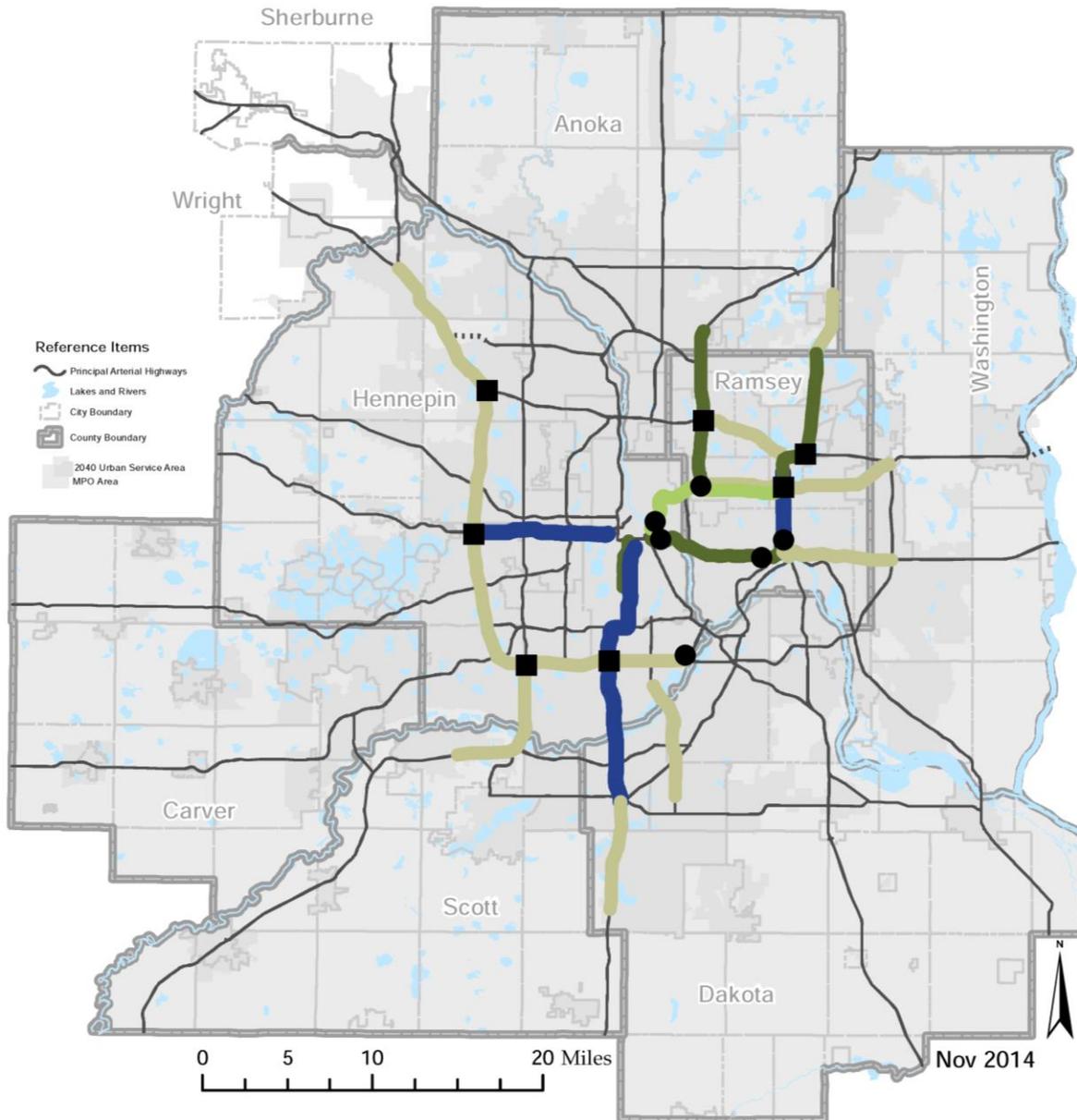
⁴ Available at [http://www.metrocouncil.org/Transportation/Planning-2/Key-Transportation-Planning-Documents/Transportation-Policy-Plan-\(1\)/The-Adopted-2040-TPP-\(1\).aspx](http://www.metrocouncil.org/Transportation/Planning-2/Key-Transportation-Planning-Documents/Transportation-Policy-Plan-(1)/The-Adopted-2040-TPP-(1).aspx)

Figure 2. Regional Transitway System from the 2040 TPP



Source: 2040 Transportation Policy Plan (Metropolitan Council, January 2015)

Figure 3. MnPASS System Vision from the 2040 TPP



MnPASS

-  Existing / Under Construction
-  Tier 1 MnPASS Expansion
-  Tier 2 MnPASS Expansion
-  Tier 3 MnPASS Expansion*

-  Direct Connection
-  Through Movement

* The I-94 east corridor is in the MnPASS system vision contingent on resolving highway right-of-way issues through further study, including the Gateway transitway Draft Environmental Impact Statement.

Source: 2040 Transportation Policy Plan (Metropolitan Council, January 2015)

3.2 Alternatives Analysis

3.2.1. IDENTIFIED ALTERNATIVES IN THE AA

The Gateway Corridor AA began with consideration of multiple transit technologies and multiple potential transit routes. Over 20 route options were considered and screened. Evaluations and refinements led to the identification of eight alternative approaches for the Gateway Corridor:

- **Alternative 1:** No Build – the 2030 transportation network with only those improvements already planned and programmed
- **Alternative 2:** Transportation System Management (TSM) – enhancements to facilities and bus service short of major infrastructure additions
- **Alternative 3:** BRT adjacent to Hudson Road east of I-694 and in the median of I-94 west of I-694
- **Alternative 4:** BRT on East 7th Street and White Bear Avenue in Saint Paul, then adjacent to Hudson Road
- **Alternative 5:** Light rail transit (LRT) adjacent to Hudson Road east of I-694 and in the median of I-94 west of I-694
- **Alternative 6:** LRT on East 7th Street and White Bear Avenue in Saint Paul, then adjacent to Hudson Road
- **Alternative 7:** Commuter rail on Union Pacific, Canadian Pacific, and Burlington Northern Santa Fe tracks
- **Alternative 8:** BRT managed lane within I-94

3.2.2. DEFINITION OF THE MANAGED LANE ALTERNATIVE IN THE AA

Alternative 8 was consistent with the Twin Cities Metropolitan Area's recent implementation of managed lanes in freeways and would not take an existing traffic lane from I-94. Assumptions made in the AA for the managed lane in Alternative 8 were that:

- Gateway Corridor buses would travel in the center-aligned managed lanes between Minneapolis and the Highway 95 interchange, west of the St. Croix River Bridge
- Between the river bridge and the Hudson area station, buses would use general purpose lanes and transition to bus shoulders during congested periods
- Peak period buses using the BRT managed lane would be routed to Union Depot first, then on to 6th Street and Cedar Avenue, for consistency with other Build alternative operating plans

Alternative 8 would provide station-to-station service between the Hudson-Carmichael park-and-ride and Saint Paul (6th Street and Cedar Avenue).

3.2.3. EVALUATION OF THE MANAGED LANE ALTERNATIVE IN THE AA

During the AA, the Gateway Corridor advisory committees and the Gateway Corridor Commission (GCC) identified and approved goals, objectives, and evaluation criteria to use in comparing the performance of alternatives. All eight alternatives were put through a detailed evaluation process.

A two-tiered evaluation process was used. Under this two-phase approach, the project goals, which are listed below, are divided into two tiers.

Tier 1 Goals

- Goal 1: Improve Mobility
- Goal 2: Provide a Cost-Effective, Economically Viable Transit Option

Tier 2 Goals

- Goal 3: Support Economic Development
- Goal 4: Protect the Natural Environmental Features of the Corridor
- Goal 5: Preserve and Protect Individual Community Quality of Life
- Goal 6: Improve Safety

Performance under select Tier 1 performance indicators focused on what were expected to be the major differences between alternatives, including anticipated ridership and cost. This two-tiered approach provided the advisory committees and the GCC information on the performance of all alternatives under all goals and highlighted differentiating factors.

The evaluation process yielded similar results among the alternatives for the majority of evaluation criteria. Therefore, the results of the evaluation process were distilled down to the most meaningful differentiators. Those differentiators included the following:

- Daily transit ridership
- Capital costs and cost-effectiveness index (CEI)
- Economic development potential
- Property acquisition
- Traffic impacts
- Transit travel times

All of the alternatives were again compared against these key differentiators to assess their ability to fulfill the goals of the AA. Once the key differentiators among alternatives were identified, the advisory committees ranked the alternatives into “low,” “medium,” and “high” categories. The alternatives were ranked as follows:

- High: Alternatives 3 (BRT along Hudson Road/I-94) and 8 (BRT managed lane on I-94)
- Medium: Alternatives 5 (LRT along Hudson Road/I-94) and 2 (TSM)
- Low: Alternatives 4 and 6 (BRT and LRT on East 7th Street/White Bear Avenue/Hudson Road) and Alternative 7 (commuter rail)

Alternative 7 was dismissed by the GCC as not meeting sufficient project goals to remain a feasible transit alternative.

3.2.4. ALTERNATIVE OPTIMIZATION FOLLOWING AND FINAL COMPARISON IN THE AA

Following the detailed evaluation, the remaining alternatives were put through an additional process to optimize their performance. Multiple refinements were identified, evaluated, and applied in further technical analyses to increase the benefits and reduce the impacts of alternatives. The optimization process resulted in increased ridership, decreased cost, and improved support for economic development among the alternatives considered.

The six remaining alternatives were reevaluated. The outcome of the reevaluation of the optimized alternatives resulted in Optimized Alternative 8 receiving a “medium” ranking. It compared favorably in terms of average daily ridership (8,100), capital costs (\$520 million), and competitive travel times; however, it ranked low in meeting the economic development goal. This is because it had fewer stations than the other alternatives, providing less access to

surrounding populations, and those stations would be located primarily in the freeway median, limiting the potential for development around stations for communities in the corridor.⁵

3.2.5. TAC RECOMMENDATION DURING ALTERNATIVES ANALYSIS

The results of the optimized alternative evaluation were presented to the TAC along with information regarding the passage of the new federal transportation law, Moving Ahead for Progress in the 21st Century (MAP-21). While it was understood that only the transit elements of Optimized Alternative 8 would qualify for FTA funding under the Safe, Accountable, Flexible, Efficient Transportation Act: A Legacy for Users (SAFETEA-LU), qualifications for FTA funding under MAP-21 became more restrictive. The managed lane infrastructure of the alternative would not qualify for FTA New Starts funding under MAP-21. Construction of the managed lane infrastructure would need to be funded locally and/or through highway funds. Given the AA estimated cost of approximately \$500,000,000 and the low priority assigned to construction of a managed lane in this segment of I-94 through both Metropolitan Council and MnDOT processes, funding of Alternative 8 was considered unlikely or extremely difficult by the TAC.

The TAC recommended that the decision regarding inclusion of New Starts funding eligibility be forwarded to the PAC for discussion since it was a policy discussion, not a technical one. The TAC further recommended (without consideration of funding eligibility) that Alternatives 3, 5, and 8 advance to the EIS stage. The TAC also noted that if Optimized Alternative 8 were to move forward, further discussion would be needed to determine how best to compare it to other alternatives as it would be a highway project versus a transit project.

3.2.6. PAC RECOMMENDATION DURING ALTERNATIVES ANALYSIS

Results of the optimized alternatives analysis were presented to the PAC along with the TAC recommendation.

The PAC recommended that New Starts eligibility should be used as an additional factor in determining the feasibility of the alternatives.

The PAC made the following recommendations regarding moving alternatives forward to the Draft EIS:

- Advance Optimized Alternative 3 – BRT along Hudson Road/I-94 into the Draft EIS as the preferred option
- Advance Optimized Alternative 5 – LRT along Hudson Road/I-94 into the Draft EIS for comparative purposes to BRT
- Do not advance Optimized Alternative 8 – BRT managed lane for the following reasons:
 - Fewer stations and location in middle of freeway offers less economic development opportunity compared to other alternatives
 - Does not qualify for FTA New Starts funding under MAP-21

3.2.7. GATEWAY CORRIDOR COMMISSION RECOMMENDATION DURING ALTERNATIVES ANALYSIS

The GCC unanimously approved the PAC recommendation noting that inclusion of Optimized Alternative 5 in the Draft EIS would be used as a comparison for BRT analysis.

⁵ See Table 7-5 (page 7-10), in the AA for a more detailed discussion of alternative comparison.

3.3 Draft EIS Scoping

Based on the findings from the AA, a No-Build alternative, a BRT alternative, and an LRT alternative were presented in the Scoping Booklet. A BRT managed lane alternative was not included in the Scoping Booklet distributed for public comment in February 2014, but a 2009 I-94 managed lane study by MnDOT was included in the discussion of previous studies in the corridor.

3.3.1. I-94 RIGHT-OF-WAY IMPACT ANALYSIS AT THE REQUEST OF THE METROPOLITAN COUNCIL AND MNDOT

In response to a request in the fall of 2013 by the Metropolitan Council and MnDOT, a technical memorandum titled I-94 Right-of-Way Impact Analysis was prepared summarizing a concept level assessment of potential impact to I-94 right-of-way and future expansion opportunities potentially resulting from the Gateway Corridor transitway.

Existing right-of-way constraints in the I-94 corridor were examined in this study. “Pinch points,” or areas where additional right-of-way would be necessary to implement either managed lanes, a transit guideway, or both, were identified. This analysis is documented in the Gateway Corridor Technical Report: I-94 Right-of-Way Impacts (March 2014),⁶ which concludes the following:⁷

- Analysis of existing conditions reveals that the existing corridor is already constrained in several locations. Use of outside shoulders for express bus service in addition to constrained conditions could require hauling of snow to long-term snow storage areas outside the I-94 corridor.
- The [Metropolitan Council’s *2030 Transportation Policy Plan*] identifies the segment of I-94 between downtown Saint Paul and I-694 as part of the managed lane system. However, it is not identified as either a short- or mid-term priority for construction of MnPASS lanes. MnDOT has not conducted a detailed operational analysis of this segment of I-94 to determine when a managed lane may be needed.
- Absent construction of a transit guideway, construction of managed lanes would require similar right-of-way and result in similar impacts to I-94 as a full dedicated guideway.
- Construction of both a dedicated guideway and managed lanes, should the need for both be confirmed, would require significant additional right-of-way and would likely require reconstruction of the I-94 corridor between downtown Saint Paul and I-694.
- In constrained areas, options have been identified for minimizing right-of-way impacts including potentially combining the guideway with frontage roads, one-way guideway lanes, reduced lane widths, one-way local street operations, and innovative snow

⁶ The I-94 Right-of-Way Technical Report also includes meeting summaries from the November 1, 2013 interagency coordination meeting and the November 1, 2013 right-of-way coordination meeting.

⁷ The 2030 TPP has been replaced by the 2040 Transportation Policy Plan, adopted in January 2015. The conclusions from this technical report are based on the information available at the time of preparation (March 2014). As presented in Section 5.6.3, in an effort to assess the ability to accommodate a dedicated BRT lane and a managed lane in the I-94 corridor, MnDOT engineers developed concept designs from Kellogg Boulevard to Maple Street, considered one the most right-of-way constrained areas of the corridor. Their effort resulted in a design that illustrates both transportation improvements could be accommodated within the corridor.

treatment methods. These options should be further explored during concept-level design.

The findings from the preliminary right-of-way analysis were presented and discussed with the TAC in November and December 2013, followed by the PAC at their December 2013 meeting.

3.3.2. FHWA REQUEST TO STUDY THE MANAGED LANE ALTERNATIVE FURTHER

After the analysis of I-94 right-of-way impacts was completed, FHWA requested in a Scoping comment letter dated March 10, 2014 further study of a managed lane alternative in the Draft EIS for the following reasons:

- Concerns regarding the elimination of feasible alternatives that may better achieve the project purpose and need with fewer adverse impacts
- The need to fully inform decisions on the allocation of limited right-of-way in the corridor, particularly the accommodation of future capacity expansion and the preclusion of achieve full interstate design standards
- The potential degradation of interstate ramp terminal operations due to the interaction with facilities under consideration

FTA, serving as the lead federal agency for the EIS, concurred with FHWA's request for additional analysis of a managed lane alternative in the Draft EIS.

The FHWA letter requesting further study of a BRT managed lane alternative is included in [Appendix A](#). Each of the items identified in the FHWA Scoping comment letter have been addressed and findings summarized in this Technical Memo.

The PAC recommended and WCRRA approved the request to further evaluate a managed lane alternative.

3.3.3. RESPONSE TO FHWA REQUEST TO STUDY MANAGED LANE BRT IN THE DRAFT EIS

Further coordination with FHWA, FTA, MnDOT, Metropolitan Council/Metro Transit, and Ramsey and Washington Counties was conducted to discuss the definition of the Managed Lane BRT alternative that would be evaluated in the Draft EIS. Based on meetings held on August 5, 2014 and September 5, 2014 (see meeting summaries in [Appendix B](#)), a managed lane alternative was defined (Managed Lane BRT alternative) that specifically addresses the project elements defined by FHWA, while minimizing impacts to I-94 and making the managed lane more comparable to the Dedicated BRT alternatives through the addition of stations. In this Managed Lane BRT alternative, BRT would travel within a center managed lane where feasible with inline and offline stations.⁸ Details of this are discussed in Section 4.

⁸ Inline stations are located on the outside of the roadway. For the Managed Lane BRT alternative, that means they would be located on the outside of I-94/at freeway ramps, with BRT vehicles required to exit the managed lane to access stations. Offline stations are located outside of I-94, with BRT vehicles required to exit the managed lane and conduct several turning movements to access stations.

4.0 Managed Lane BRT Alternative

4.1 Managed Lane BRT Alternative Definition

The following provides a description of the Managed Lane BRT alternative to be evaluated as part of the Gateway Corridor Draft EIS process.

The Managed Lane BRT alternative would begin at or around the left exit off westbound I-94, providing access to 6th Street (exit 242D on I-94) in Ramsey County, and end at Manning Avenue in Washington County, for a total length of 10.4 miles. It would include a typical section with four-foot inside shoulders, a two-foot buffer, 12-foot travel lanes, and a 10-foot outside shoulder. The additional travel lanes required would be constructed on the outside edge of the existing pavement, limiting the amount of overall roadway reconstruction required.

The BRT platforms would be placed on the outside of the roadway (inline stations) to minimize the amount of roadway reconstruction required. By contrast, the managed lane concept in the AA (Optimized Alternative 8) included online stations, which are generally located in the center of the roadway. The BRT Managed Lane alternative as defined through the Draft EIS process would allow BRT to travel within the managed lane in between stations, but it would traverse the general purpose lanes near stations to access the station – essentially weaving into and out of the managed lane throughout the corridor. During peak periods, or as determined necessary by Metro Transit, the bus may maintain shoulder operations between stations to avoid interaction with congestion within the general purpose lanes.

In order to more easily compare across alternatives, one goal in developing the Managed Lane BRT alternative was to have a similar number of stations in similar locations as the Dedicated BRT alternatives. As such, the Managed Lane BRT alternative would have stations at the following locations (west to east):

- Union Depot
- Mounds Boulevard
- Earl Street
- Etna Street
- White Bear Avenue/Ruth Street
- McKnight Road
- Sun Ray
- Greenway Avenue
- The Oaks
- Inwood Avenue
- Keats Avenue
- Manning Avenue

The Managed Lane BRT alternative is illustrated in [Figure 4](#). More detailed concepts were prepared and are available upon request.

4.1.1. KEY PROJECTS INCLUDED IN THE NO-BUILD ALTERNATIVE

Other projects currently programmed by MnDOT in the I-94 corridor have been assumed to be in place (i.e., are included in the No-Build alternative) in developing cost estimates for the Managed Lane BRT Alternative. Two of these projects are described below.

Auxiliary Lane Project

MnDOT has proposed to reconstruct I-94 eastbound between East 7th Street and Mounds Boulevard in Saint Paul. This project includes extending an existing auxiliary lane, constructing a new auxiliary lane, constructing two emergency pull-out areas, proposing two noise barriers, reconstructing the outside shoulder, removing bus shoulder lanes, and repairing/replacement pavement. Construction is anticipated to begin in the spring of 2016.

Unbonded Overlay Project

MnDOT also plans to resurface 2.6 miles of I-94, extending from Mounds Boulevard to Century Avenue. In addition to concrete repair and mill and overlay, this project includes bridge repair, drainage work, guardrail replacement, and upgrading of signals, traffic system loops, and ADA-compliant features. This project is anticipated to be constructed in 2016 at the same time as the auxiliary lane project described above.

4.2 Comparison of Managed Lane BRT Alternative (Developed as part of Draft EIS Process) and Optimized Alternative 8 (from the AA)

The Managed Lane BRT alternative developed for evaluation in the Draft EIS has evolved from Optimized Alternative 8 in the AA. A key difference between the AA and the Draft EIS alternatives is in operations and station types. In Optimized Alternative 8, BRT would run entirely in center managed lanes and stop at online stations;⁹ with the Managed Lane BRT alternative, BRT would need to exit the center managed lane and traverse regular travel lanes in order to reach inline or offline stations on the outside edge of existing pavement.

Another key difference is the number of stations. The AA assumed that Optimized Alternative 8 would end at Manning Avenue in Woodbury, stopping at seven stations along the way. The Managed Lane BRT alternative would also end at Manning Avenue in Woodbury and stop at 12 stations.

A comparison of Optimized Alternative 8 and the Managed Lane BRT alternative is shown in **Table 1**. Optimized Alternative 8 has a slightly higher cost and slightly lower ridership compared to the Managed Lane BRT alternative.

Table 1. Comparison of Optimized Alternative 8 (from the AA) and the Managed Lane BRT Alternative (developed as part of the Draft EIS process)

Assumption Area	Optimized Alternative 8	Managed Lane BRT Alternative
Type of Station	Online	Inline/Offline
BRT Location	Center Managed Lane	Center Managed Lane and Shoulder Running
Eastern Terminus of Managed Lane	Manning Avenue	Manning Avenue
Number of Stations	8	12
Ridership	8,100	8,250
Capital Cost	\$523M	\$504M
Year	2019	2021
SB I-694 to EB I-94 Flyover Included	Yes (\$40M)	No

⁹ Online stations are located in the center of the roadway.

Figure 4. Managed Lane BRT Alternative¹



¹ BRT vehicles would travel within the center managed lane in between stations, but would cross through the general purpose lanes, mixing with traffic to access the stations. During peak periods, the BRT vehicle may not travel in the managed lane; instead it would operate on the right shoulder between stations to avoid congested I-94 travel lanes.

5.0 Analysis of the Managed Lane BRT Alternative

5.1 Capital Cost

The capital costs have been prepared using the format and procedures currently required for project evaluation by FTA. The FTA methodology includes the use of standard cost categories (SCC) that group costs by various components. Also included will be “soft costs” or professional/technical services for items such as engineering, construction services, insurance, and owner’s costs, as well as contingencies for uncertainty in both the estimating process and the scope of the project. Allocated and unallocated contingencies have been applied to compensate for unforeseen items of work, quantity fluctuations, and variances in unit costs that develop as the project progresses through the various stages of design development.

Using this methodology, the Managed Lane BRT alternative is estimated to cost \$503,971,000. Sitework and special conditions (SCC 40) make up approximately ¼ of the total cost. Other significant expenditures include station construction (SCC 20) and professional services (SCC 80). Contingency is included in this cost estimate. A summarized version of the cost estimate is shown in **Table 2**.

Table 2. Managed Lane BRT Alternative Cost Estimate

SCC Code	Description	Total Costs
10	Guideway and Track Elements	\$9,510,000
20	Stations, Stops, Terminals, Intermodal	\$80,090,000
30	Support Facilities: Yards, Shops, Administrative Buildings	\$11,960,000
40	Sitework and Special Conditions	\$138,480,000
50	Systems	\$52,400,000
60	Right-of-Way, Land, Existing Improvements	\$22,530,000
70	Vehicles	\$18,000,000
80	Professional Services	\$87,740,000
90	Unallocated Contingency	\$83,260,000
TOTAL		\$503,970,000

5.2 2040 Ridership Forecast

2040 ridership forecasts for the Managed Lane BRT alternative are summarized in **Table 3**.

Table 3. 2040 Ridership Forecast for the Managed Lane BRT Alternative

	Daily Ridership
Saint Paul Express Routes (Off-Guideway)	1,270
Minneapolis Express Routes	3,090
Station to Station (BRT)	8,250
Guideway Express/Limited Stop	780
Corridor Total	13,390

5.3 Travel Time

Travel time for the Managed Lane BRT alternative was calculated for both the eastbound and westbound directions using the following assumptions:

- Traffic signal delay, station dwell times, and BRT vehicle acceleration/deceleration rates would be the same as for the Dedicated BRT alternatives
- In some segments of I-94 the BRT vehicles could attain 55 mph; however, travel time was calculated using 45 mph due to possible future congestion and weaving issues
- Where the speed limit is 65 mph on I-94, BRT vehicles were assumed to travel at 55 mph for consistency and safety
- Distances between stations were measured using the farthest right general purpose lane or shoulder lane when stations would be too close together for the vehicle to use the managed lane

In the eastbound direction, travel time for the Managed Lane BRT alternative would be approximately 34 minutes. In the westbound direction, travel time would be approximately 32 minutes.

5.4 Congested Related Findings

A travel time reliability analysis was conducted on I-94 from I-35E on the west to Manning Avenue on the east to identify where congestion is occurring in the corridor and the frequency and severity of congestion where it is present.

The highest congestion segment is found in the westbound direction of I-94 between McKnight Road and I-35E. In this area, commuters experience travel times over twice of what they would if they were traveling at free-flow speed. Speeds are expected to be reduced to less than 30 mph every other day, on average, when the posted speed limit sign is 55 mph. Additionally, vehicle speeds are expected to drop below 20 mph once a week. This is an indication that this stretch of I-94 is unreliable for westbound travelers during the a.m. peak period under current conditions.¹⁰

Since most of the observed congestion is recurring and has similar duration and extent from day to day, buses can achieve time savings compared to general purpose traffic by using bus-only shoulders. This savings is modest, however, as typical congested speeds are just under 30 mph and the maximum bus shoulder speed is 35 mph.¹¹

5.5 Operational Considerations

In the Managed Lane BRT alternative, BRT would travel within the managed lane in between stations, but it would traverse the general purpose lanes near stations to access the station – essentially weaving into and out of the managed lane throughout the corridor. During peak periods, or as determined necessary by Metro Transit, the bus may maintain shoulder operations between stations to avoid interaction with congestion within the general purpose lanes.

Metro Transit reviewed this alternative from an operating perspective and concluded that in this case, it does not maximize transit operations, travel, or development potential. Metro

¹⁰ Gateway Corridor Managed Lane/Freeway Performance Analysis (SRF Consulting Group, 2014)

¹¹ Minnesota Statutes, section 169.306

Transit noted that the Managed Lane BRT alternative has some similarities to Highway BRT as defined in the Regional Transitway Guidelines,¹² but it deviates from Highway BRT design and operations guidance in several significant ways. While it is recognized that managed lanes and BRT operating in freeway lanes can be an efficient and cost-effective transitway investment in the Twin Cities Metropolitan Area, the Managed Lane BRT alternative does not effectively meet the Gateway Corridor's (METRO Gold Line) purpose and need (see Section 8.1.2 for additional discussion).

Key elements of the Managed Lane BRT alternative as designed are problematic for customers, the transit operator (Metro Transit), and future development, with these difference from a Highway BRT type of service:

- Station placement and design – stations are split by direction and separated by I-94 in many cases
 - This limits customer access by increasing walk/bike distance and infrastructure
 - This does not provide anchor locations for intensification of local land development and for future transit markets
 - Three stations are not conveniently located for existing or future transit markets
 - A fourth station is proposed off the runningway where it would yield significantly higher operating costs and passenger delays due to travel distance and presence of several traffic signals
- Station spacing and runningway
 - Close station spacing combined with inline station locations adjacent to shoulders does not allow use of the center managed lane. Using the center managed lane would require buses to weave across several lanes of traffic between stations, negating the benefit of using them. This would then be operated on a Bus Only shoulder with lower speeds, minimizing the benefit and attractiveness of transit.
 - As a result, a consistent and reliable runningway for buses that minimizes conflict with general traffic does not functionally exist

5.6 Right-of-Way

5.6.1. EXISTING CONDITIONS

Existing I-94 right-of-way from Kellogg Boulevard to I-694 is described below. From I-694 to Manning Avenue, right-of-way impacts are limited to private property associated with proposed inline stations. Hence, the eastern point for the existing condition description is I-694.

Kellogg Boulevard to Maria Avenue/Wilson Avenue Intersection (Segment Adjacent to I-94 Kellogg Boulevard Exit Ramp)

The distance from MnDOT right-of-way to ramp pavement edge varies from approximately 70 feet to less than 10 feet. The right-of-way line through the segment is irregular and follows parcel boundary lines of adjacent properties.

¹² <http://www.metrocouncil.org/Transportation/Projects/Furture-Projects/Regional-Transitway-Guidelines.aspx>

Maria Avenue/Wilson Avenue Intersection to Maple Street (Segment Adjacent to I-94 Mainline)

Throughout this segment the MnDOT right-of-way line sits either exactly at or up to 5 feet north of the north edge of I-94 pavement. Approximately 200 feet west of Maple Street, the right-of-way line begins to shift slightly northward to a distance of 15 to 20 feet at Maple Street.

Maple Street to Johnson Parkway (Segment Adjacent to I-94 Mainline)

The distance of the MnDOT right-of-way line from edge of pavement lies 20 feet north of edge of pavement at Maple Street to 60 feet at the mid-point (Earl Street) to 20 feet again just west of Johnson Parkway. Vertical separation between I-94 and Hudson Road also varies through this segment from nearly level at Maple Street to a 20 to 25 foot vertical separation (overpass over I-94) at Earl Street to nearly level approximately 400 feet east of Earl Street, to a 7 foot vertical separation in the opposite direction as Hudson Road diverges away from I-94 near Johnson Parkway (I-94 over Johnson Parkway).

Johnson Parkway to Hazelwood Street (TH 61 Interchange Area)

The distance between pavement edge to the MnDOT right-of-way continues at approximately 20 to 30 feet east of Johnson Parkway to the property at 1276 Wilson Avenue. The proximity of the southeast corner of this building with the existing MnDOT noise wall/edge of pavement represents one of the most constrained points in the Gateway Corridor with 18 feet between the property line and edge of roadway. Continuing east, the MnDOT right-of-way boundary expands northward in a stepped fashion consistent with adjacent parcel boundaries to accommodate the TH 61 interchange ramps. Beginning at Clarence Street and extending east past Etna Street to beyond Birmingham Street, the MnDOT right-of-way line lies approximately 1,000 feet north of the I-94 edge of pavement. Continuing east beyond the interchange area, the right-of-way line steps south until it sits immediately proximate to the edge of I-94 pavement at the pedestrian bridge.

Hazelwood Street to Ruth Street (White Bear Avenue Interchange Area)

From the pedestrian bridge at Hazelwood Street east to the merge point of the westbound White Bear Avenue on-ramp, the MnDOT right-of-way line lies approximately 10 feet away from the edge of shoulder. At the merge point, the right-of-way steps 50 feet northward and parallels the ramp pavement edge at a distance of approximately 60 feet to White Bear Avenue. The right-of-way boundary parallels the mainline at a distance of approximately 130 feet to Hazel Street, where it steps northward and runs along the south edge of Hudson Road to Ruth Street.

Ruth Street to McKnight Road (Sun Ray Shopping Center Area)

With the exception of the interchange ramp locations at either end of this segment, the MnDOT right-of-way boundary lies about 20 feet north of edge of mainline pavement. At Ruth Street, the right-of-way parallels the south edge of Hudson Road; at McKnight Road, it lies approximately 20 to 30 feet north of Hudson Road.

McKnight Road to Century Avenue (3M Corporate Campus Area)

The MnDOT right-of-way line sits approximately 100-150 feet north of the I-94 mainline for the majority of this segment, with the right-of-way line moving northward as it approaches Century Avenue to accommodate the Century Avenue interchange ramps. Hudson Road lies within MnDOT right-of-way in this segment.

Century Avenue to I-694 Crossing

The MnDOT right-of-way line lies approximately 120 feet north of I-94 to a point east of Hadley Avenue, then continues to parallel the southbound I-694 to westbound I-94 ramp at a similar distance. In the west portions of this segment, the right-of-way line extends through Tanners Lake and the parking areas of several businesses located on Hudson Road. Hudson Road is constructed within MnDOT right-of-way in this portion of the segment until it turns north just west of the I-694 interchange and becomes Hadley Avenue.

5.6.2. SUMMARY OF IMPACTS

Given the constrained right-of-way of the I-94 corridor, public and private right-of-way would need to be acquired to accommodate the Managed Lane BRT alternative, most notably in the section from Kellogg Boulevard to White Bear Avenue, in Oakdale/Landfall near Tanners Lake, and at the interchange of I-94 and I-694. The proposed inline stations at Sun Ray, 3M, Greenway Avenue, and Helmo Avenue would also have impacts to private property.

5.6.3. RIGHT-OF-WAY ANALYSIS CONDUCTED TO DETERMINE FEASIBILITY OF FUTURE EXPANSION OPPORTUNITY IN THE I-94 CORRIDOR FROM MOUNDS BOULEVARD TO TH 61

In an effort to assess the ability to accommodate Dedicated BRT and managed lanes from Mounds Boulevard to Trunk Highway (TH) 61 in the I-94 corridor, MnDOT engineers developed concept designs from Kellogg Boulevard to Maple Street, considered one the most right-of-way constrained areas of the corridor. Their effort resulted in a design that illustrates both transportation improvements could be accommodated in this right of way constrained area of I-94. This particular effort, while independent of the Gateway Corridor Draft EIS evaluation, addresses the comment provided by FHWA in their Scoping comment letter (March, 2014): “The need to fully inform decisions on the allocation of limited right of way in the corridor; particularly the accommodation of future capacity expansion and the preclusion of achieving full Interstate design standards.” The memorandum prepared by the Metropolitan Council, MnDOT, and the Gateway Corridor Commission outlines the process, the findings, and the conclusions specific to the Gateway Gold Line Dedicated BRT and Managed Lane Shared Concept (see [Appendix A](#)).

5.7 Preliminary Social, Economic, Environmental Evaluation

5.7.1. ALTERNATIVES ANALYSIS

As part of the Alternatives Analysis process and documentation, environmental and community impact assessment was conducted on the AA Managed Lane alternative with consideration of National Environmental Policy Act (NEPA) requirements. Topics considered during the AA level impact assessment included:

- Air quality (change in regional classification)
- Noise and vibration
- Water features, including: floodplains, wetlands, lakes, streams, and rivers
- Parks and other public lands
- Potential community effects, such as:
 - Service to population and employment centers
 - Service to low-income households
 - Environmental justice

The environmental review for this AA relied on existing information to provide a screening level assessment of environmental issues using a GIS analysis. This information was supplemented with discussions with agency, city, and county staff; public input; as well as through high level field investigations as needed to identify potential issues. The *Environmental and Community Impact Assessment Methodology and Results Report* (August 2012)¹³ summarizes the findings from the AA.

5.7.2. DRAFT EIS

The findings from the AA analysis were referenced during the evaluation of the Managed Lane BRT alternative, as applicable.

A detailed social, economic, and environmental (SEE) evaluation has not been conducted for the Managed Lane BRT alternative, as resources have been focused on the definition of the alternative to effectively address the request by FHWA, the characteristics of the alternative (cost, ridership, travel time), operational and safety considerations of the alternative, and the ability of the alternative to effectively meet the project goals and objectives.

During the preliminary evaluation of the Managed Lane BRT alternative, several areas of the SEE analysis, in addition to right-of-way, have been qualitatively considered and discussed: environmental justice, accessibility, economic development, noise, and stormwater.

The environmental justice and accessibility assessment has focused around the accessibility of the stations, primarily in St. Paul and Landfall areas. Under the Managed Lane Alternative, the in-line stations on the shoulders and on I-94 ramps limit customer access by increasing walk/bike distance and infrastructure, as the stations are split by direction and separated by I-94 in most locations.

The economic development assessment has focused on the ability of the proposed station locations to accommodate future transit oriented development potential (TOD). The initial analysis indicates that in-line stations do not provide an environment or space for TOD.

The noise assessment has focused on the type of noise analysis that would be required under the Managed Lane BRT alternative. Specifically, the Managed Lane BRT alternative would fall under the definition of a Type I project, which would require noise analysis in compliance with FHWA regulations. Currently, the noise analysis for the Gateway Corridor is being conducted under the FTA Noise Guidance and state requirements.

The stormwater assessment has focused on additional stormwater requirements associated with increasing the impervious area of the I-94 corridor, and the limited right-of-way available to effectively mitigate potential impacts.

While not specific to the proposed Managed Lane BRT alternative, one of the issue areas raised in the FHWA Scoping comment letter (March 2014) was “the concern regarding potential degradation of Interstate ramp terminal operations due to the interaction with the facilities under construction.” As part of the traffic analysis completed for the proposed Dedicated BRT alternatives, interstate ramp terminal operational analysis was completed. A summary of those findings is presented below.

- **Off-Ramp to Kellogg Boulevard:** The queuing along Mounds Boulevard was reviewed to confirm that it does not impact the interstate ramp terminal operations. Based on the analysis, the maximum distance that vehicles are anticipated to back up to is 630 feet (during the AM peak hour). The existing distance from Kellogg Boulevard to the off-ramp

¹³ Available at <http://thegatewaycorridor.com/documents/2013/Environmental%20Tech%20Memo.pdf>

from I-94 WB is +/- 360 feet and an additional +/- 1,740 feet to the gore (where the ramp meets the interstate). Therefore, the anticipated queue along Mounds Boulevard for 2040 Build conditions is not anticipated to impact the interstate ramp terminal operations.

- **Off-Ramp to McKnight Road:** The queuing along Hudson Road was reviewed to confirm that it does not impact the interstate ramp terminal operations. Based on the analysis, the maximum distance that vehicles are anticipated to back up to is 676 feet (during the PM peak hour). The existing distance from McKnight Road to the off-ramp from I-94 westbound is +/- 3,370 feet and an additional +/- 1,030 feet to the gore (where the ramp meets the interstate). Therefore, the anticipated queue along Hudson Road for 2040 Build conditions is not anticipated to impact the interstate ramp terminal operations.
- **Off-Ramp to Keats Avenue:** The queuing along the I-94 WB off-ramp to Keats Avenue was reviewed to ensure that it does not impact the interstate ramp terminal operations. Based on the analysis, the maximum distance that vehicles are anticipated to back up to is 215 feet (during the AM peak hour, assuming dual WB right-turn lanes). The existing distance from Keats Avenue to the gore area (where the ramp meets the interstate) is +/- 1,820 feet. Therefore, the anticipated queue along the I-94 WB off-ramp to Keats Avenue for 2040 Build conditions is not anticipated to impact the interstate ramp terminal operations.

6.0 Coordination Activities During and After Scoping Period

Since FHWA submitted their Scoping comment letter in March 2014, three coordination meetings have occurred. Meeting summaries are provided in [Appendix B](#).

6.1 August 5, 2014 Meeting

The purpose of this meeting was to discuss the managed lane alternative proposed by FHWA, define the overall concept of the alternative, and discuss the approach to evaluating the alternative.

The group, consisting of representatives from Washington County, Ramsey County, the Metropolitan Council, MnDOT, FHWA, and the Gateway Corridor consultant team, determined that the managed lane would start at the left exit off of westbound I-94, providing access to 6th Street (exit 242D), and end at Manning Avenue.

Based on previous direction from FHWA, the managed lane would include a typical section of four-foot inside shoulders, a two-foot buffer, 12-foot travel lanes, and a 10-foot right shoulder. Additional travel lanes would be added to the outside of the existing pavement to minimize reconstruction of the entire roadway. Bridge reconstruction to accommodate the wider cross-section would need to be evaluated as part of the concept design work.

The intent of the design concept is to have inline stations to minimize the amount of roadway reconstruction required. FHWA did indicate that online stations are not precluded from the concept if the design team feels they are appropriate at specific locations.

This concept would allow BRT to potentially travel within the managed lane between stations, but it would traverse the general purpose lanes near stations to access the station – essentially weaving into and out of the managed lane throughout the corridor.

The Gateway project team was directed to further develop the managed lane concept as part of the Draft EIS process.

The following items were identified as information needs:

- Additional information on right-of-way impacts
- Impacts to existing shoulder widths
- Updated capital cost estimates
- Ridership modeling
- Traffic modeling

6.2 September 5, 2014 Meeting

Representatives from the Gateway Corridor consultant team, Washington County, Ramsey County, FHWA, MnDOT, the Metropolitan Council, and FTA participated in this meeting. The proposed managed lane definition that was developed at the August 5, 2014 meeting was reviewed, and aerial maps were used to review the alternative. Areas where the existing roadway would be expanded to accommodate a managed lane were marked on the aerial maps. Some general review points included:

- Bridge reconstruction would potentially be needed at Mounds Boulevard, Earl Street, and Ruth Street
- Bridge widening would be needed at Century Avenue
- A station was added at Etna Street to be more consistent with the other alternatives under consideration, but pedestrian access would be very challenging
- Buses would access the White Bear Avenue station via the on/off diamond ramps
- A park-and-ride was assumed at Sun Ray
- Existing ramps would be utilized to access the 3M Campus area, and a pedestrian overpass would be provided to connect to the eastbound and westbound stations
- There would be offline stations at Radio Drive, Keats Avenue, and Manning Avenue

An evaluation approach memo was provided to participants. Specific comments on the evaluation approach can be found in the meeting summary in [Appendix B](#).

6.3 June 9, 2015 Meeting

Representatives from FHWA, MnDOT, Washington County, Ramsey County, Metro Transit, the Metropolitan Council, and the Gateway Corridor consultant team participated in this meeting. A review was provided of the managed lane discussions in the AA and Scoping processes, and the August 5, 2014 and September 5, 2014 meetings were summarized.

The definition of the managed lane alternative for evaluation in the Draft EIS was referred to in this meeting as the “Optimized Managed Lane.”¹⁴ This Optimized Managed Lane alternative was reviewed, and the following key points were provided:

- The optimized concept includes inline stations
- Stations were added at Mounds Boulevard, Etna Street, Sun Ray, Greenway Avenue, and The Oaks
- Offline stations were proposed at Radio Drive, Keats Avenue, and Manning Avenue

¹⁴ In the Draft EIS document, this alternative will be referred to as the Managed Lane BRT alternative, as defined in Section 4.1.

- The Optimized BRT alternative would terminate on the east at Manning Avenue

Findings on cost, ridership/travel time, and congestion-related considerations from the preliminary Optimized Managed Lane analysis were reviewed along with comments from Metro Transit on operations.

The participants discussed how the Optimized Managed Lane concept should be treated in the Draft EIS. Consensus was reached by the group to package the findings of the analysis in a memo and reconvene the working group to confirm next steps relative to the Draft EIS. At a minimum, the Optimized Managed Lane alternative will be included in the Draft EIS chapter on alternatives (Chapter 2). Following preparation of the referenced memo, additional conversation will be required with FTA and FHWA regarding the level of detail in the Draft EIS.

7.0 Summary of Other Project Activities in the Gateway Corridor

In addition to the programmed projects in the Gateway Corridor, there is a planned Downtown Minneapolis to Downtown Saint Paul Engineering Effort that will be initiated by MnDOT. MnDOT will develop a set of improvements that may include implementation of a MnPASS lane to reduce congestion, preserve existing assets, and enhance safety in the corridor.

8.0 Alternative Evaluation

8.1 Does the Alternative Meet the Purpose and Need for Gateway?

8.1.1. BACKGROUND

The purpose of the Gateway Corridor project is to provide transit service to meet the existing and long-term regional mobility and local accessibility needs for businesses and the traveling public within the project area.

The following primary factors contribute to the need for the Gateway Corridor project:

- Limited existing transit service throughout the day and demand for more frequent service over a larger portion of the day
- Policy shift toward travel choices and multimodal investments
- Population and employment growth, increasing access needs and travel demand
- Needs of people who depend on transit
- Local and regional objectives for growth and prosperity

The following goals have been developed to serve as a framework to evaluate the alternatives under consideration for the Gateway Corridor. Goals 1 and 2 (Tier 1 goals) identify the minimum requirements that an alternative would be expected to meet to advance.

- Goal 1: Improve Mobility
- Goal 2: Provide a Cost-Effective, Economically Viable Transit Option

Goals 3-5 (Tier 2) reflect broader community goals and may be helpful in comparing alternatives that meet the Tier 1 goals.

- Goal 3: Support Economic Development
- Goal 4: Protect the Natural Environmental Features of the Corridor
- Goal 5: Preserve and Protect Individual and Community Quality of Life

8.1.2. EVALUATION

While it is recognized that managed lanes and BRT operating in freeway lanes can be an efficient and cost-effective transitway investment in the Twin Cities Metropolitan Area, the Managed Lane BRT alternative does not effectively meet the Gateway Corridor's (METRO Gold Line) purpose and need based on the following:

- **Station Accessibility (Goal 1):** Proposed stations for the Managed Lane BRT alternative have been located at similar locations as the Dedicated BRT alternatives, while reflecting either inline (stations adjacent to shoulders or ramps) or offline design to minimize cost and impact (compared to online stations proposed during the AA phase of analysis). Given that the stations are split by direction and separated by I-94 in many cases, this results in reduced levels of accessibility as transit patrons are required to increase their walk/bike distance, along with the requirement to provide additional infrastructure such as pedestrian crossings at the Etna Street, Sun Ray, 3M Headquarters, Greenway Avenue, and Helmo Avenue Stations. Additionally, the inline stations do not provide for effective local bus connections.
- **Transit Mobility and Operations (Goals 1 and 2):** The proposed station spacing, combined with inline station locations adjacent to shoulders, does not allow for use of the center managed lane. Using the center managed lane would require buses to weave across several lanes of traffic between stations, negating the benefit of using the managed lane. The alternative would then be operated as a Bus Only Shoulder with lower speeds, which minimizes the benefit to and attractiveness of transit. As a result, a consistent and reliable runningway for buses that minimizes conflict with general traffic does not functionally exist. Additionally, assuming the buses would operate in Bus Only Shoulders throughout the corridor to avoid the weaving from station to station, travel time benefits for transit would be limited given assumed travel speeds.
- **Cost-Effectiveness (Goal 2):** The offline stations (Guardian Angels, Keats Avenue, and Manning Avenue) are proposed off the runningway, resulting in higher operating costs and passenger delays due to travel distance and presence of several traffic signals. Additionally, the Managed Lane BRT alternative would not meet the FTA's definition of a New Starts project, and hence would not be eligible for New Starts funding. An alternative funding source, which is not available at this time in the region, would be required for the Managed Lane BRT alternative to advance.
- **Support Economic Development (Goal 3 (Tier 2 Goal)):** The proposed inline and offline stations do not provide anchor locations for the intensification of local land development.

The assessment provided above addresses FHWA's Scoping comment: "The elimination of feasible alternatives that may better achieve the project's purpose and need with fewer adverse impacts."

8.2 Approach to Addressing in the Draft EIS

Based on the information presented in this technical memorandum relative to the Managed Lane BRT alternative's ability to effectively meet the purpose, goals, and objectives of the

Gateway Corridor, it is recommended that this alternative be presented in the Draft EIS in Chapter 2 Alternatives and then screened from detailed analysis in the remaining chapters of the document. This technical memorandum will serve as additional documentation as part of the project record, complying with FHWA's request to fully inform decisions on the allocation of limited right-of-way in the corridor. The project will continue to work with all partners to coordinate the operational and expansion needs of I-94.

Appendix A

Correspondence



U.S. Department
of Transportation
**Federal Highway
Administration**

Minnesota Division

March 10, 2014

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Andy Gitzlaff
Senior Planner
11660 Myeron Road North
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Re: I-94 and Gateway Corridor Alternatives Analysis / DEIS

Dear Mr. Gitzlaff:

The Federal Highway Administration (FHWA) has been made aware of the Federal Transit Administration (FTA), Washington County Regional Rail Authority (WCRRA), and the Metropolitan Council's **Notice of Intent to Prepare an Environmental Impact Statement for the Gateway Corridor Project from Saint Paul to Woodbury in Ramsey to Washington Counties, MN.**

After reviewing the Notice of Intent, the Scoping Booklet, and the Alternatives Analysis (AA) completed by the Gateway Corridor Commission **the FHWA believes it to be in the public's interest to carry a revised Bus Rapid Transit-Managed Lane (BRT-ML) alternative into the Draft Environmental Impact Statement (DEIS).** This determination stems from the following concerns regarding:

1. The elimination of feasible alternatives that may better achieve the project's purpose and need with fewer adverse impacts,
2. The need to fully inform decisions on the allocation of limited right of way in the corridor; particularly the accommodation of future capacity expansion and the preclusion of achieving full Interstate design standards, and
3. The potential degradation of Interstate ramp terminal operations due to the interaction with the facilities under consideration.

The FHWA understands a BRT-managed lane concept was studied to a degree in the AA alongside the LRT and BRT (Hudson Road) alternatives under consideration:

Alternative 8: BRT Managed Lane within I-94. Alternative 8 would add managed lanes to I-94 between downtown St. Paul and the Highway 95 interchange just west of the St. Croix River. Management would include tolling with dynamic pricing through the most congested segments of the corridor to ensure that transit flows at posted speeds. (2013 Gateway Corridor Alternatives Analysis)

However, the FHWA does not concur with the rationale cited in the preceding study as a sound

basis for elimination of this alternative:

Although Alternative 8, BRT Managed Lane, maintained its "Medium" ranking and compared very favorably in terms of average daily ridership (8,100), capital cost (approximately \$520M), and competitive travel time, it did not compare as favorably to Alternatives 3 and 5 for the following reasons:

- 1. Fewer stations (7) and their location within the freeway median, offer less opportunity for economic development around stations for communities in the corridor compared to other alternatives.*
- 2. A managed lane does not qualify for FTA New Starts funding under MAP-21, and there is no equivalent highway funding program for a project of this scale. (2013 Gateway Corridor Alternatives Analysis)*

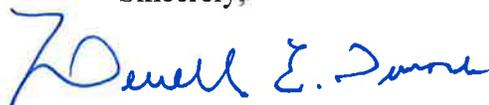
In reviewing the AA it appears the BRT-Managed Lane alternative (\$520M) received the same relative "medium" score as the LRT alternative (\$920M). The FHWA believes Alternative 8 should have received a "high" ranking similar to that of the BRT Hudson alignment (\$400M) to account for the significantly different orders of magnitudes. It also seems that the Metro region is shifting away from higher cost on-line stations, and doing so without compromising serviceability and opportunities for economic development. As cited in a recently completed I-35W study:

"Ridership forecasts were more sensitive to service frequency than to differences in corridor travel times associated with providing online stations. Minor differences in forecasted ridership totals would not be expected to justify the high capital costs associated with a BRT system using online stations." (2013 I-35W North Managed Lanes Feasibility Study)

For these reasons the FHWA believes a reconsideration that includes strategically located transit access points may provide a more attractive alternative. And while this alternative may not qualify for FTA New Starts funding, it may in fact be competitive for FTA's Small Starts Program. Regardless, the region has shown it is fully adept at leveraging a variety of funding sources and planned investments to deliver projects of similar scope and scale.

The FHWA believes that by revisiting these alternatives the project will emerge with a more thoroughly vetted final product that provides the east-Metro and the traveling public with a flexible, robust, and efficient system now and well into the future.

Sincerely,



Derrell Turner
Division Administrator

EE/alk

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DMS – 40910 – I-94 and Gateway Corridor Alternatives Analysis - DEIS



MEMORANDUM

Date: September 24, 2015

To: Congresswoman Betty McCollum
Metropolitan Council Member Harry Melander
Metropolitan Council Member Jon Commers
Ramsey County Commissioner Jim McDonough
Mayor Mary Giuliani Stephens

From: Metropolitan Council Chair Adam Duininck
Gateway Corridor Commission Chair Lisa Weik
Gateway Corridor Commission Co-Chair Rafael Ortega
MnDOT Commissioner Charlie Zelle

Re: Gateway Gold Line Dedicated Guideway BRT and Managed Lane Shared Concept

This memo is a follow-up to the Gateway Corridor meeting on Friday, August 10, 2015 held at the Metropolitan Council. We are pleased to report a positive outcome to the challenge of accommodating both BRT and managed lanes just east of downtown St. Paul. This memo provides information about a Gateway Corridor Dedicated Guideway BRT and Managed Lane shared concept developed by MnDOT with guidance, input, and participation from the Metropolitan Council, FHWA and the Gateway Corridor project team.

Background:

The Gateway Gold Line BRT is a proposed bus rapid transit line that would run next to Interstate 94 for 12 miles in an exclusive lane on Hudson Road between the Union Depot in downtown Saint Paul and Woodbury/Lake Elmo. All-day transit service would stop at 13 stations and include connections to the growing regional transit system. The system could open for service by 2023. The project is currently preparing a Draft Environmental Impact Statement (DEIS).

One of the key issue areas identified during the evaluation of alternatives pertains to available public right-of-way (ROW) in the I-94 Corridor. While the Gateway Corridor Draft EIS evaluates

the potential ROW impacts, both public and private, associated with Dedicated BRT; policy makers were keenly interested in understanding how a future transportation improvement, such as a Managed Lane planned for in the 2040 Transportation Policy Plan could be accommodated from Mounds Park Boulevard to Trunk Highway 61. MnDOT, FHWA, Metropolitan Council, Metro Transit, Washington and Ramsey County staff collaborated over the past few months to address this important issue. The most constrained area of the corridor was identified to be from Mounds Boulevard to Maple Street, and hence was the focus of the design effort.

Solution:

Through the expertise of MnDOT staff, while consulting with the other project partners, a shared concept was designed. This shared concept demonstrates that the Gateway Gold Line BRT and a managed lane can fit within the assumed right-of-way constraints. A technical narrative with concept drawing is attached.

The shared concept design includes the follow general features:

- Gateway Gold Line BRT lanes designed at 13-feet wide provide for safe transit operations;
- It is assumed that the preservation of the existing sound wall (and any new pieces to be constructed before Gateway) can likely be preserved in its approximate location, with minimal changes or alterations, and would be placed in a position that would aid in safety, snow removal, and noise reduction; and
- Approximately 75% of the pavement on Interstate 94 would be saved because the managed lane design mostly shifts striping and does not necessitate a full re-build of the freeway.

In summary, the Metropolitan Council, MnDOT, and Ramsey and Washington Counties staff are confident that the Gateway Gold Line BRT can be built along with a managed lane from downtown Saint Paul to Highway 61 with few competing impacts to either project.

Framework for Future Collaboration:

This product is a result of multi-agency collaboration that will serve as a model for future policy and technical challenges as the Gateway Gold Line BRT advances in the design process. Critical to this collaboration was a multi-agency work group that was formed to address this specific right-of-way issue, the open brainstorming of technical and policy solutions, and documented support for the shared solution.

Attachment: Technical Narrative and Concept Drawing dated September 22, 2015

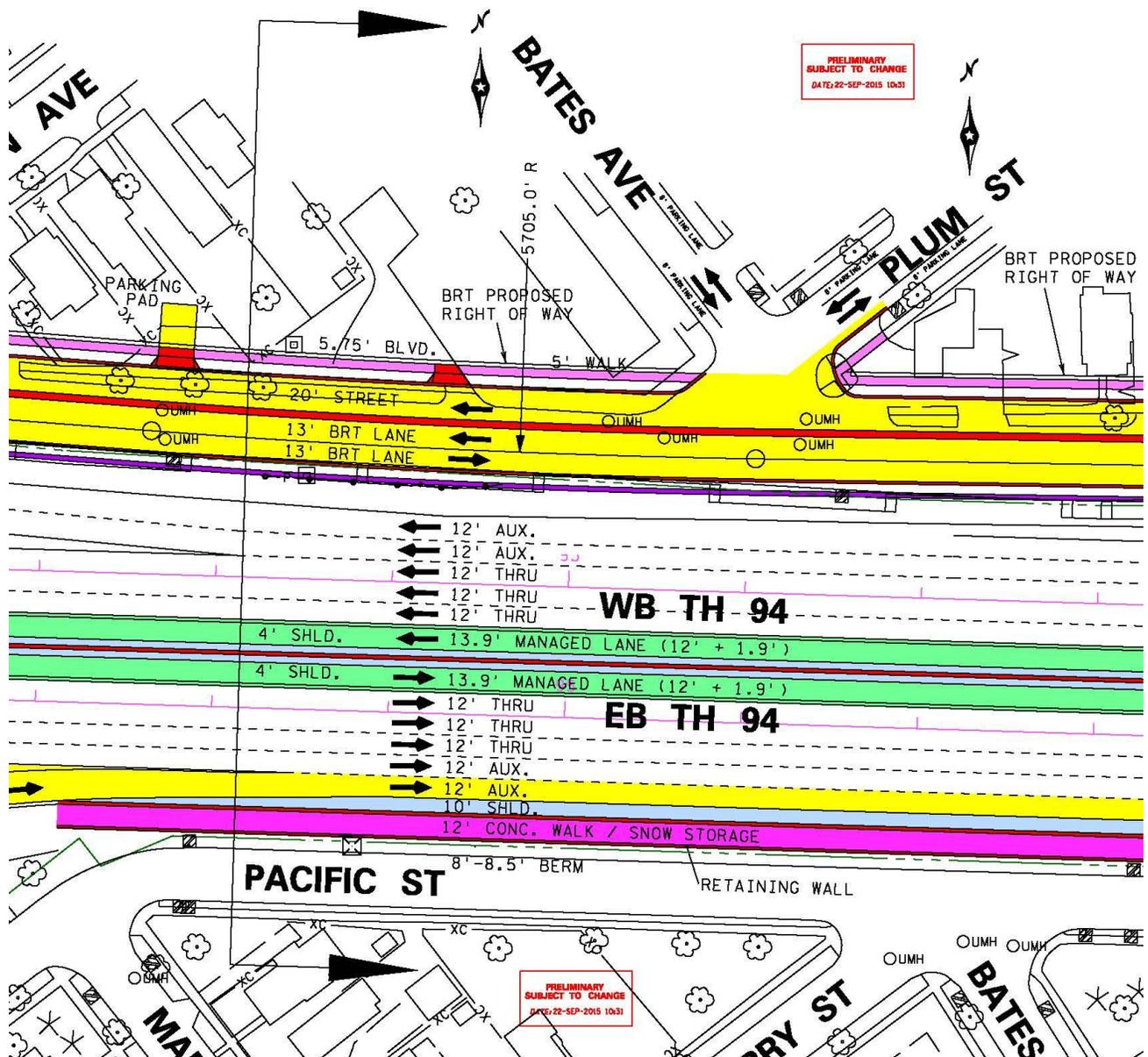
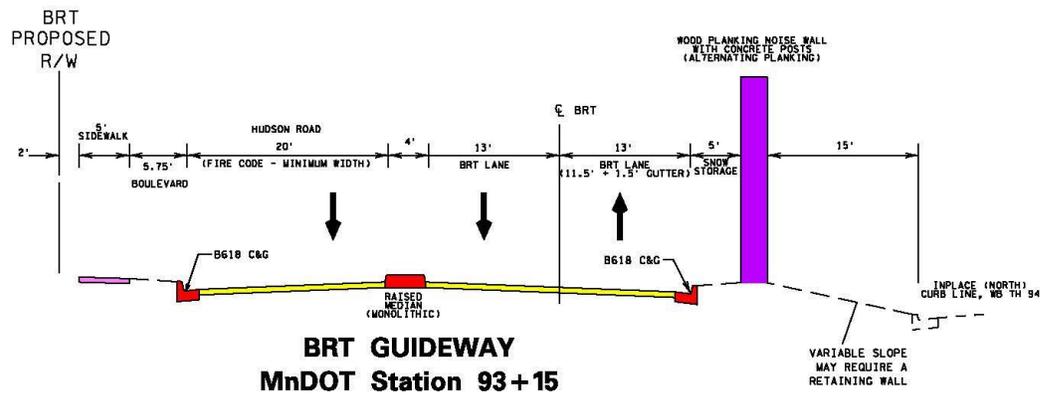
Gateway Bus Rapid Transit and MnPASS Technical Narrative

September 22, 2015

- The proposed MnPASS facility could be developed within the constraints of the proposed Gateway BRT Guideway and the I-94 right-of-way without the acquisition of any more additional right-of-way than what is proposed with Gateway.
- The proposed plan provides for the preservation of the sound wall along Old Hudson Road, in roughly its current location. This not only provides the opportunity to preserve most of the existing sound wall, but, also provides positive and safer separation between the Gateway BRT facility and I-94.
- The plan highlights the design efficiency of the guideway to preserve travel lane widths vs. additional curb and gutter, while providing for adequate storm water drainage.
- The plan preserves the walkability of the residential and commercial districts in this area through improved sidewalk and pedestrian facilities.
- The reconfigured BRT guideway provides enough room to preserve adequate lane widths along I-94, while providing for a center-oriented MnPASS facility at some time in the future.
- Lastly, the revised MnPASS plan holds to the north curb lines of I-94, thus, preserving approximately 75% of the unbonded concrete overlay work currently under development.

Gateway Bus Rapid Transit and MnPASS Concept Drawing

September 22, 2015



Appendix B

Meeting Summaries

Managed Lane Alternative

Meeting Summary

Tuesday, August 5, 2014

2:00 – 4:00 pm

Kimley-Horn and Associates

Attendees:

Andy Gitzlaff, Washington County

Kevin Roggenbuck, Ramsey County

Steve Elmer, Metropolitan Council

Amy Vennewitz, Metropolitan Council

Bill Goff, MnDOT

Brian Isaacson, MnDOT

Nnaemeka Ezekwemba, FHWA

Andrew Emanuele, FHWA

Lisa Rasmussen, Kimley-Horn

Jim Gersema, SRF

1. The purpose of the meeting was to discuss the managed lane alternative proposed by FHWA, define the overall concept of the alternative, and discuss the approach to evaluating the alternative, including identification of the level of information that FHWA would like to see.
2. FHWA (Nnaemeka Ezekwemba) provided previous direction for the managed lane alternative via an email sent to Andy Gitzlaff on July 16th (attached), which was restated as part of this meeting:
 - a. Include refinements on the west end of the project that incorporate service connections to the Union Depot Station and the planned I-94 managed lane system. Also, consider local transit improvements for the residents in the vicinity of Mounds Boulevard. In addition to improvements tied to this project, a similar approach to the dismissal of alignment B2 and the planned arterial BRT for East 7th Street seems acceptable to capture additional riders.
 - b. Consider the incorporation of more park and rides, inline transit stations, narrower transit-ramps, or a combination to further improve ridership while reducing costs and impacts
 - c. Minimize reconstruction by removing the assumed center transit station, minimize median reconstruction, and apply a typical section of 4ft inside shoulders, 2ft buffer, 12ft travel lanes, and a 10ft right shoulder to accommodate bus on shoulder use throughout the corridor
 - d. Break out daily ridership into *with express and without express riders* criteria as applied to the BRT transitway

Discussion as part of this meeting focused on items b and c above.

3. Lisa Rasmussen and Jim Gersema provided an overview of the previous work that has been completed – the “I-94 Right-of-Way Impacts” analysis completed in March 2014 and the “Managed Lane Alternative” memo submitted to FTA in May 2014. This overview included a review of the existing right-of-way pinchpoints in the corridor – identifying that there are three general pinchpoint locations in the corridor today, between Mounds Blvd and TH 61, west of

White Bear and adjacent to Tanners Lake. This evaluation considered existing conditions, a managed lane alternative only (BRT/BRT stations were not included as part of the evaluation), dedicated guideway (located on the north side of the freeway) and a managed lane + dedicated guideway alternative.

4. BRT operations in the corridor was clarified to be an all-day service with either 15-minute or 30-minute service, depending on the time of day. Express service would remain during peak-periods.
5. The discussion then proceeded into defining the managed lane alternative.
 - a. Where does managed lane start?

The group discussed the how the managed lane would provide access into DT St. Paul and where the managed lane would end as part of the Gateway project. It was determined that the managed lane, as defined for the Gateway project, would end at the left exit off of I-94 WB, providing access to 6th Street (exit 242D).

The group also discussed the managed/MnPASS study that is currently underway for the portion of I-94 between Minneapolis and St. Paul. That study is identifying that the MnPASS lanes would end at Marion Street, creating a gap between the two managed lane/MnPASS projects. It was recognized that this is something to be considered in the future, but not something that should be included as part of the Gateway project. This analysis needs to be completed, but is not currently planned to be included as part of the Gateway project. The outcome of this study will help determine the position FHWA and MnDOT take on R/W protection in the Gateway Corridor and will need to be done in a timely manner.

Nnaemeka requested that the Gateway project team review the ability to perform a sensitivity test on whether or not filling the MnPASS “gap” would result in any additional riders for the Gateway project. It was discussed that this would likely only have an increase on Minneapolis-bound express riders. The Gateway team to review the feasibility of this sensitivity test.

- b. What does the managed lane alternative look like?

As described in item 1c above, the managed lane would include a typical section of 4-ft inside shoulders, 2-ft buffer, 12-ft travel lanes, and a 10-ft right shoulder. Additional travel lanes would be added to the outside of the existing pavement, minimizing reconstruction of the entire roadway. Bridge reconstruction to accommodate the wider cross-section will need to be evaluated as part of the concept design work.

The intent of the design concept is to place the BRT platforms on the outside of the roadway (inline stations), to minimize the amount of roadway reconstruction required. Online stations (within the center of the roadway), as included within the AA concept, would require significant amount of roadway reconstruction, shifting the lanes on both sides of the roadway to accommodate the platform. FHWA did indicate that Online

Stations are not precluded from the concept if the design team feels that they are appropriate at specific locations.

This concept would allow BRT to potentially travel within the managed lane in between stations, but would traverse the general purposes lanes near stations to access the station – essentially weaving into and out-off the managed lane throughout the corridor. It was agreed that “weaving” would be easier to do at different times of the day; during the peak period, the bus may spend more time within the roadway shoulder to maintain headways/travel time.

Existing general purpose lanes, as currently configured today cannot be removed from the overall I-94 cross-section as part of this alternative. i.e., the two WB auxiliary lanes between TH 61 and Mounds Blvd cannot be reduced down to one lane. Other auxiliary lanes may be able to be converted to general purpose lanes, as evaluated on a case by case basis. Existing jointing of the concrete pavement does not need to be factored into the managed lane concept.

Specific to the I-94/I-694 interchange, it was discussed that the interchange may need some improvements to accommodate the managed lane (bridge abutment modifications), but the flyover concept that was included as part of the AA may not be required.

The Gateway project team to further develop the managed lane concept as part of the Draft EIS process.

c. Where does the managed lane end?

The managed lane alternative was identified to end at Manning Avenue. The meeting included some group discussion on whether or not it should end prior to I-694, but it was ultimately determined to end at Manning Avenue in order to maintain consistency between the alternatives. The Gateway project team to evaluate the best BRT routing for the portion of the corridor east of I-494/I-694.

d. What information is FHWA looking for? Items identified below are for the managed lane and LPA alternatives.

- Additional information on R/W impacts
- Impacts to existing shoulder widths
- Updated capital cost estimates (level of detail TBD)
- Ridership modeling (level of detail TBD)
- Traffic modeling
 - Specific to the LPA, FHWA requested that a microanalysis of the interchanges that are affected by the guideway, be completed to confirm if there is any impact to the queuing on the interchange ramps. The Gateway project team to identify a proposed approach for this request.

- Specific to the managed lane alternative, Met Council to provide any needed traffic modeling.
6. Next steps identified as part of the meeting included:
- a. Coordinate a follow-up meeting around August 21st. Meeting would review the managed lane alternative as well as the LPA design development.
 - b. The Gateway project team to develop an approach/methodology document for managed lane alternative to be circulated among the meeting attendees; confirming that the approach is acceptable.
 - c. Follow-up on the action items (**bold**) identified above.

FHWA Meeting Summary

SEPTEMBER 5, 2014

Attendees

- | | |
|-------------------------------|-------------------------------------|
| ▪ Jim Gersema, SRF | ▪ Jim McCarthy, FHWA |
| ▪ Lisa Rasmussen, Kimley-Horn | ▪ Jim Henricksen, MnDOT |
| ▪ Jeanne Witzig, Kimley-Horn | ▪ Bill Goff, MnDOT |
| ▪ Steve Wilson, SRF | ▪ Steve Elmer, Metropolitan Council |
| ▪ Andy Gitzlaff, WCRRA | ▪ Chris Bertch, FTA (via phone) |
| ▪ Kevin Roggenbuck, RCRRRA | ▪ Adam Stephenson, FTA (via Phone) |
| ▪ Emeka Ezekwemba, FHWA | ▪ Ben Owen, FTA (via phone) |

Summary

Overall review of proposed managed lane definition that was discussed in previous meeting, key used in developing the concepts. Primary premise was to provide inline stations (adjacent to the shoulder or on the on/off ramps) and buses would traverse from the managed lane to the shoulder to access the stations. Proposed station spacing may not allow buses to travel in the managed lane as much as originally discussed. During the meeting it was clarified that the managed lane is not on a "super shoulder", which was reviewed roughly a year ago, in response to a previous Met Council/MnDOT request.

Aerial maps were used to review the alternative – yellow lines on the map identify where the existing roadway would be expanded to accommodate a managed lane.

General Review Points (West to East)

1. Mounds Boulevard bridge likely reconstructed to accommodate managed lane
2. Reconstruct bridge at Earl Street
3. Etna station was not part of original AA definition, added to be more consistent with BRT stations. It was discussed that pedestrian access to this station is very challenging – design team to review feasibility and need for this station.
4. White Bear – buses would utilize on/off diamond ramps to access station located at White Bear Avenue.
5. Ruth – potential bridge reconstruction to accommodate the managed lane
6. Sun Ray – It is assumed that, similar to the LPA, a park-and-ride would be provided at this station
7. 3M Campus Area (McKnight to Century Ave) – BRT would utilize existing access ramps (WB) to access station at 3M, utilizing the frontage road to also access the Sunray Station. Pedestrian overpass would be provided to connect WB and EB stations.
8. Century Avenue – existing bridge widening to accommodate the managed lane
9. 694 interchange – design team to verify the bridge reconstruction/modifications required to accommodate a managed lane East of 694 – Existing space available to construction the managed lane within the existing median

10. Radio Drive – off line station access
11. Keats area – off line station
12. Manning – off line station
13. Managed Lane in outside - NO, per original meeting direction.

Evaluation Approach Memo

Walked through evaluation approach memo that was provided to participants.

Specific Comments from Participants

Jim McCarthy – Proposed managed lane design works well with diamond interchanges, not so well with others.

Jim McCarthy – TH 61 area. Opportunity to redesign interchange. Response: Not really part of managed lane alternative to reconfigure interchange. Will discuss under BRT definition. Question if Etna station makes sense.

Jim McCarthy – no flexibility in changing speed for buses running in shoulder (35 mph maximum). Bus Shoulders unique to Minnesota.

Jim McCarthy – stations on off ramps challenging, on-ramps not so challenging (study he did with Team Transit)

Jim McCarthy – Important to consider pull off emergency areas.

Emeka – Proposed managed lane design is in line with what was discussed at previous meeting.

Emeka – Question regarding timing of ridership and design work. Indicated potential for some stations to fall out of the mix. Response: Ridership and design will advance together.

Bill Goff – From MnDOT’s perspective, important to know what is left over or not (right-of-way). MnDOT wants to make sure that is clear.

Bill Goff – MnDOT is going to look Capital Interchange area (managed lane through pinchpoints in downtown St. Paul). Bill is writing scope of work now. Hope to start work on this by end of year (2014)

Steve Elmer – Weaving into/out of the managed lane to access stations may not be feasible from Metro Transit perspective. Important to bring in Metro Transit to the discussion.

Question from Jim Gersema on design concerns – response from Bill Goff – reasonable and fair approach

Weaving approach discussion – Jim Henrickson (MnDOT) – need to better understand number of buses in shoulder and frequency of use. Loop detector data is available. If shoulder is impassable what would that mean? Shoulders would only be used during congestion. Important to address adequate snow removal on the existing shoulders, maintain the ability to plow.

Jim Henrickson – important to look at existing condition data; suggested using new SHRP-2 research project’s reliability tool developed for MnDOT to answer the questions related to congestion and identification of how many buses utilize the shoulder today.

Steve Wilson: Question to be answered: how many shoulder incidents/events would be considered unacceptable?

Action: Committed to checking in with this group as design and evaluation advances.

Traffic Analysis Memo

General agreement on approach to traffic analysis (per September 3 memo)

LPA Design Review

Kevin Roggenbuck – St. Paul is looking at changes to Kellogg/Mound

Steve Elmer. – looking at transit priority at intersections? Yes.

Emeka/Jim McCarthy – McKnight/3M/Century Avenue – Further review/coordination required to determine if the proposed design meets FHWA/MnDOT access policies and interchange spacing requirements.

Action item: Work thru MnDOT on design through 3M area.

Meeting to Review BRT-Managed Lane Alternative Analysis Preliminary Results

Tuesday, June 9, 2015 at 1:00 pm

Kimley-Horn, Como Conference Room

2550 University Avenue W., Suite 238N, St. Paul MN

DRAFT FOR REVIEW

Attendees: Nnaemeka Ezekwemba, FHWA
Jim McCarthy, FHWA
Bill Goff, MnDOT
Brian Isaacson, MnDOT
Sheila Kauppi, MnDOT
Andy Gitzlaff, Washington County
Kevin Roggenbuck, Ramsey County
Mary Karlsson, Metro Transit
Kathryn O'Brien, Metropolitan Council
Steve Elmer, Metropolitan Council
Jeanne Witzig, Kimley Horn
Beth Bartz, SRF Consulting Group
Jim Gersema, SRF Consulting Group
Steve Wilson, SRF Consulting Group

This meeting focused on the BRT Managed Lane Alternative requested by FHWA. The feasibility of the I-94 corridor to accommodate a future MnPass expansion following dedicated guideway construction will be a part of a separate discussion.

1. Review of Various "Managed Lane Alternative" iterations

A recap of the Managed Lane discussions through the Gateway Corridor Alternatives Analysis and the Scoping phase of the project was provided. Reference to the August 5, 2014 and September 5, 2014 meetings were provided. Both of these meetings focused on the definition of the Managed Lane Alternative for evaluation in the Draft EIS, as well as the approach to the evaluation.

The definition of the Managed Lane Alternative for evaluation in the Draft EIS was referred to as the "Optimized Managed Lane". Review was provided on the difference from the AA Managed Lane, most notably in the areas of end points, number and location of stations, ridership and capital cost (refer to powerpoint for details).

A summary of May 6, 2014 Managed Lane Alternative Memo was provided to the group. The May 6 document was prepared to summarize and clarify the engineering and

analysis conducted to date (May 2014) on the managed lane alternative for the Gateway Corridor Project. It also included a section “The Managed Lane System Vision in Regional Transportation Planning”. Emeka inquired about the MnPass System Study Phase I findings specific to the I-94 corridor east of downtown St. Paul. (*note: following meeting Emeka provided link to the MnPASS study and excerpts*).

2. Draft EIS Optimized Managed Lane (BRT) Alternative Concept Definition
Jim Gersema provided a walk through (via aerial on screen) of the Optimized Managed Lane BRT Alternative, from west to east. The general review points closely followed the alternative definition confirmed at the September 5, 2014 meeting (refer to September 5 meeting summary). Key points provided at meeting: optimized concept includes inline stations adjacent to shoulder/ramps; added stations at Mounds, Etna, Sunray, Greenway and Oaks; off line stations proposed at Radio Drive, Keats and Manning Avenues. The Optimized BRT would terminate on the east end at Manning Avenue.
3. Draft EIS Optimized Managed Lane (BRT) Alternative Concept Analysis Results
Findings from the preliminary Optimized Managed Lane analysis were reviewed; including the following areas: cost, ridership/travel time, congestion-related considerations and Metro Transit Operational comments. The note was provided that the analysis findings have taken some time to develop given the shift in the forecast year from 2030 to 2040.

Cost: The Optimized Managed Lane BRT is estimated to cost \$481 million. In comparison, the AA Managed Lane was estimated at \$523 million, and the Gateway LPA at \$460-465 million (*note: the Optimized Managed Lane BRT alternative assumes the pavement overlay and eastbound I-94 Auxiliary Lane project are in place; a cost reduction from the AA Managed Lane Alternative*). Jim Gersema reviewed the breakdown of the capital costs, noting the cost elements used FTA SCC Codes (see powerpoint for details).

Ridership: Steve Wilson reviewed the 2040 ridership forecasts for the Optimized Managed Lane Alternative. Station to station ridership is projected at 8,250; guideway express/limited stop service at 780. In comparison, the LPA station to station ridership is forecast at 8,300 and 900 for the guideway express/limited stop service.

Steve reviewed that under the Optimized Managed Lane alternative, there would be limited travel time benefit and minimal benefit to express bus ridership. Overall travel time was referenced at roughly 32 minutes westbound and 34 minutes eastbound. In comparison, the LPA's estimated travel time is approximately 30 minutes. Eastbound travel time is longer as a result of off line station routing/time requirements east of I-494/694.

Reliability Analysis: Steve Wilson reviewed the Reliability Analysis findings. Most notably, the highest congestion is westbound I-94 between McKnight Road and I-35E. It was also pointed out that while buses can opt to use shoulders where available, the savings are modest, given the maximum bus shoulder speed is 35 mph.

Metro Transit Operational Comments: Mary Karlsson provided an overview of Metro Transit's comments on the Optimized Managed Lane alternative. Specifically, while highway BRT can be efficient and cost-effective, Metro Transit has concerns about the station placement and design of this alternative (limits access and development potential), along with station spacing and the runningway (prevents use of the manage lane, and minimizes benefit of the proposed improvements).

4. DISCUSSION: How should the Optimized Managed Lane (BRT) Alternative Concept be treated in the Draft EIS?

Comments provided by participants:

- A main concern for MnDOT is maintaining the shoulders on I-94. The project team is currently working on preparing typical sections that illustrate that the shoulders will not be impacted on I-94.
- Mary Karlsson indicated that travel on shoulders is a safety concern in some areas of the corridor. Reference was made to eastbound shoulder to access the proposed Oaks Station in Oakdale.
- General comment: AA Managed Lane Alternative maximized operational efficiency through on-line stations. Optimized Managed Lane Alternative took a cost-effective approach to station type (in line and off line), along with increasing number of stations for consistency with the proposed Dedicated BRT Alternatives.
- Kathryn O'Brien raised the question that if the BRT buses would not use the Managed Lane, due to weaving and operational concerns raised by Metro Transit, it would have a limited transit benefit. Important to go back to the purpose and need for the project in making decisions.
- Emeka emphasized the importance of further understanding the right-of-way impacts to I-94 under the Dedicated BRT Alternative. Andy indicated a separate meeting was to be held on right-of-way, to answer the question "what would be left for future transportation improvements on I-94 if Dedicated BRT were constructed".
- Consensus reached by the group to package up the findings from the analysis in a memo and to reconvene this working group to confirm the next steps relative to the Draft EIS. Kathryn emphasized and Andy concurred that the Optimized Managed Lane (BRT) Alternative would at a minimum be included in the Alternatives Chapter of the Draft EIS. Additional conversation would be required with FTA and FHWA as to the specific level of detail in the Draft EIS following preparation of the referenced Memo.

- The Optimized Managed Lane Memo will work to further explain what type of riders would use/benefit from this alternative. Additionally, the memo will “package up” the previous documents completed on the Managed Lane Alternative for quick reference (either as attachment or link).
- The working group will reconvene is approximately one month to review the memo, appropriately integrate the right-of-way findings, and confirm next steps.

