

TH 55

Future Traffic Demand Study
Executive Summary

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Minnesota Department of Transportation

By

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INTRODUCTION

Trunk Highway 55 (TH 55) is a High Priority Regional Corridor that serves growing urban centers and urbanizing areas north and west of I-494. This diagonal minor arterial route, which parallels I-94 between I-494 and Annandale, is located in fast-growing Wright County and western Hennepin County. Population growth over the past decade has fueled significant traffic volume increases on the corridor¹. Volume increases, together with mounting safety and capacity concerns, have spurred state, regional and local agencies as well as communities in the corridor, to increase corridor preservation and improvement efforts.

The objective of the TH 55 Future Traffic Demand Study is to assist Mn/DOT and the TH 55 Corridor Coalition in fully understanding traffic impacts associated with future improvements and expansion of TH 55. The results of the study will be used to assist Mn/DOT and the TH 55 Corridor Coalition in future studies. It will also be used to evaluate the level and approach to environmental documentation for future improvements in the corridor.

STUDY APPROACH

Public and agency participation for the TH 55 Future Traffic Demand Study was obtained by involving the Project Management Team² as well as the TH 55 Corridor Coalition's Technical Committee. In addition, input was sought at key stages of the study from the TH 55 Corridor Coalition and others.

The corridor was divided into four major segment analyses areas (see Figure ES 1).

Far West This 13-mile segment between Annandale and Buffalo is currently a two-lane section and is analyzed as a two-lane section.

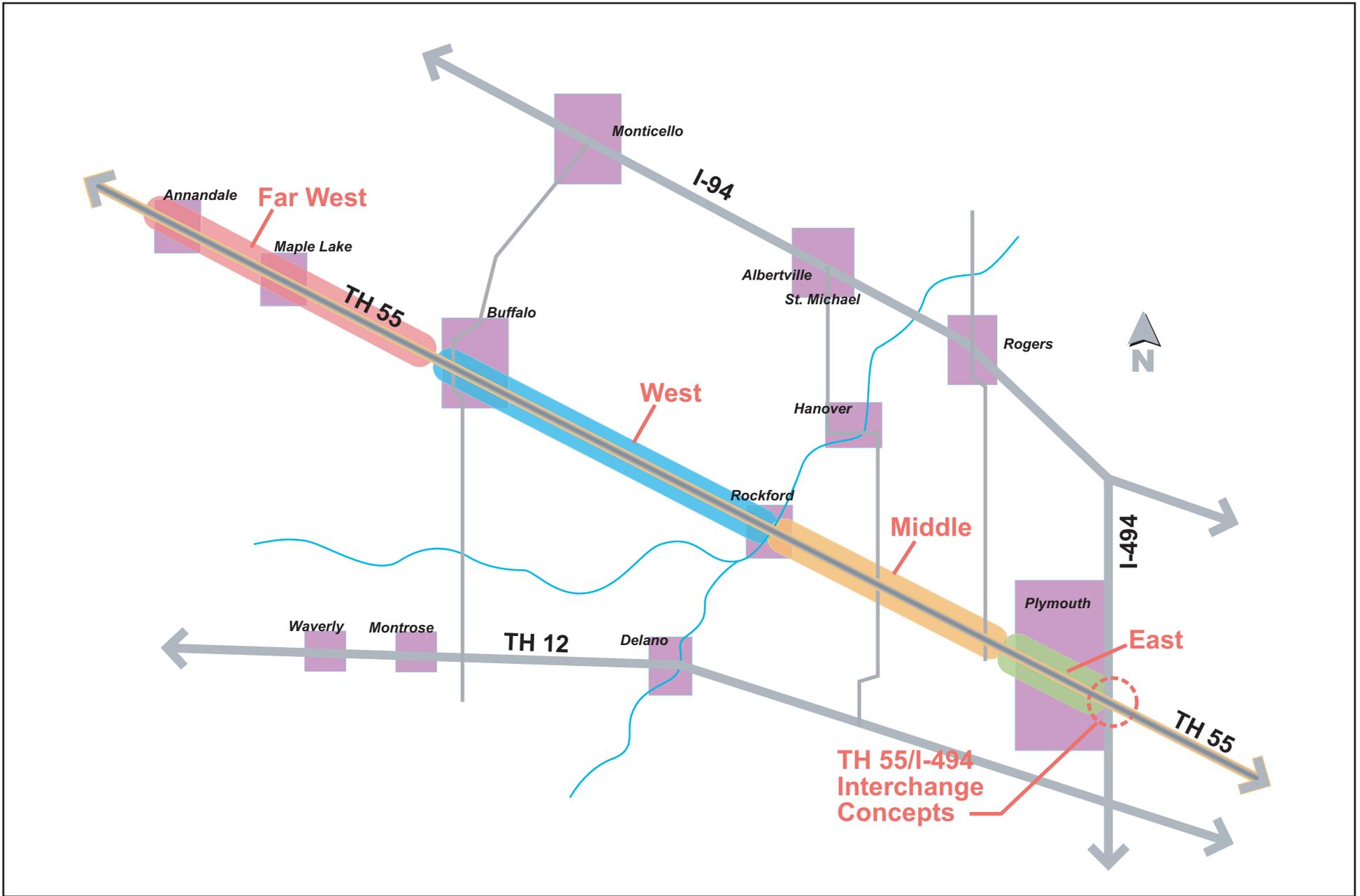
West This 10.9-mile segment between Buffalo and Rockford that is currently a two-lane section and is analyzed as a two or four-lane section.

Middle This 10.3-mile segment between Rockford and CR 116 is currently two lanes and is analyzed as a future two-, three- or four-lane section.

East This 5.2-mile segment in Plymouth from CR 116 (Pinto Drive) to I-494 is currently a four-lane section and is analyzed both as a future four- and a six-lane section.

¹ Based on 2002 daily traffic volumes, volumes on TH 55 are comparable or higher than many similar facilities in the Twin Cities area (e.g., TH 5/212 Eden Prairie: 58,000; TH 7 Minnetonka: 47,000; TH 65/242 Blaine: 41,000; and TH 61 Newport: 55,000)

² The Project Management Team included representatives of Mn/DOT District 3, Mn/DOT Metropolitan District, Wright County and Hennepin County and SRF Consulting Group, Inc.



Corridor Analysis Area

TH 55 TRAFFIC DEMAND STUDY - PLYMOUTH TO ANNANDALE
Minnesota Department of Transportation

Figure ES1

Ten scenarios were modeled for the TH 55 Traffic Study for the year 2030 (Table ES 1).

- Scenario 1 represents a “baseline” for 2030 against which all other scenarios are compared.
- Scenarios 2 through 9 represent capacity increases to one or more segments of TH 55.
- Scenarios 8 and 9 also address potential improvements to parallel facilities (Schmidt Lake Road interchange), as does Scenario 10 (Hennepin County extension of CSAH 30 across the Crow River into Wright County)³.

Table ES 1
Scenarios Modeled ⁽¹⁾

Improvement Scenario Description	TH 55 Segment		
	Buffalo to Rockford (West)	Rockford to CR 116 (Middle)	CR 116 to I-494 (East)
1. No Build (Baseline)	2 Lanes	2 Lanes	4 Lanes
2. 6-lane East Segment	2 Lanes	2 Lanes	6 Lanes
3. 4-lane Middle Segment	2 Lanes	4 Lanes	4 Lanes
4. 4-lane Middle Segment and 6-lane East Segment	2 Lanes	4 Lanes	6 Lanes
5. 4-lane West and Middle Segments	4 Lanes	4 Lanes	4 Lanes
6. 4-lane West and Middle Segments and 6-lane East Segment	4 Lanes	4 Lanes	6 Lanes
7. 4-lane West Segment	4 Lanes	2 Lanes	4 Lanes
8. 4-lane West and Middle Segments and Schmidt Lake Road interchange	4 Lanes	4 Lanes	4 Lanes +
			Schmidt Lake Road Interchange
9. 4-lane West and Middle Segments, 6-lane East Segment plus Schmidt Lake Road interchange	4 Lanes	4 Lanes	6 Lanes + Schmidt Lake Road Interchange
10. CSAH 30 Extension and Bridge in Middle Segment	2 Lanes	2 Lanes +	4 Lanes
		CSAH 30 Extension and Bridge	

⁽¹⁾ Shaded areas represent segment expansion or improvements relative to Scenario 1 (baseline) alternative.

³ This extension was part of the N.E. Wright County Transportation Plan and is also included as a potential corridor Hennepin County’s Transportation Systems Plan

Several statistics and measures of performance are used to evaluate the results of the potential improvement scenarios. As changes are made between alternatives and traffic patterns shift, impacts on these performance measures are captured. These performance measures include:

The detailed methodology and analysis results are described in the main report.

HIGHWAY 55 FUTURE TRAFFIC DEMAND STUDY FINDINGS

1. Based on current volumes, volume-to-capacity thresholds, and intersection level of service, the only portion of the TH 55 corridor that operates at an acceptable level of service (LOS D or better) is the two-lane portion west of Buffalo⁴, and a short section of four-lane between Arrowhead Drive (Medina) and Hennepin County Road 116.
2. Significant population and employment growth is expected to occur in Plymouth, Western Hennepin County, and Wright County over the next 25 years. As a result of population and employment growth, volumes on TH 55 are expected to grow significantly from 2005 to 2030 (e.g., volumes on the segment from CSAH 19 to CR 116 are expected to increase from 25,000 to 37,000 vpd⁵).
3. Due to TH 55's northwest to southeast diagonal orientation and its geographic location within the larger Twin Cities metropolitan area, it is an attractive route for users (i.e., provides a shorter trip in terms of time and distance) as compared to other adjacent east-west minor arterial routes. This reinforces other analyses, which found only limited shifts in local traffic to TH 55 when improvements are made to TH 55, but conversely sheds traffic from TH 55 to the local system if improvements to TH 55 are not made.
4. A safety review was performed for the corridor using three years of crash data (2001 to 2003). The evaluation found that current crash rates and severities were near the average for similar facilities. However, because of the high traffic volumes on TH 55, the frequency of crashes is greater than other lower volume routes. As volumes increase, it is expected that safety problems will worsen due to lack of passing ability and fewer mainline gaps at side-street intersections (increasing potential for head-on crashes and for red-light running). Safety programs have been instituted in the corridor by Safe Communities of Wright County in cooperation with Mn/DOT's Toward Zero Death effort and local law enforcement.

⁴ The newly constructed portion of four-lane in Buffalo is anticipated to operate at an acceptable level of service with current volumes when completed.

⁵ The 37,000 number assumes that some of the demand is accommodated on the local system due to capacity constraints on TH 55. If TH 55 was improved, the anticipated volume for this segment is 51,000 vpd.

5. 2030 forecast volumes for the corridor indicate that congestion will worsen, and diversion to local streets will continue to grow. Forecast volumes indicate that additional lanes are warranted on TH 55 from I-494 to Buffalo, with potential (long-term) expansion needed as far west as Annandale.
6. Adding lanes to TH 55 (Arrowhead Drive to Rockford and/or Arrowhead Drive to Buffalo) without expanding capacity in Plymouth generally raises volumes on local arterials and collectors in the Plymouth area (e.g., +2,000 vpd on Old Rockford Road near Peony Lane, +1,000 vpd on Vicksburg Lane north of TH 55). The level of impact to local routes is related to the route's proximity to TH 55, its reserve capacity (i.e., ability to accommodate additional volumes), and other system capacity constraints, which may affect trip patterns.
7. From an overall system efficiency viewpoint, the results indicate that Scenarios 4 (six-lanes to CR 116 and four-lanes to Rockford) and Scenario 6 (six-lanes to CR 116 and four-lanes to Buffalo) were the best alternatives in reducing vehicle hours of travel. Conversely, Scenario 7 (four-lanes from Rockford to Buffalo) was the least efficient (resulted in the most hours of travel).
8. A future intersection operations analysis was done for selected scenarios, in the Plymouth segment of the corridor, to assess operational differences between alternatives. Because the corridor operates at-or-near capacity for all scenarios, including the 2030 No-Build Scenario, individual intersection measures are unable to quantify differences. However, on an overall network basis⁶ a comparison between Scenario 5 (four-lanes to Buffalo) and Scenario 6 (six-lanes to CR 116 and four-lanes to Buffalo) was completed. Shown below are the results, which indicate Scenario 6 provides significant operational advantages over Scenario 5.
 - A 33 percent reduction in stops per vehicle
 - A 17 percent decrease in delay per vehicle
 - A 28 percent increase in speed
 - A 10 percent reduction in WB TH 55 evening peak hour travel time
9. A request was made to look at the potential benefits of constructing a Schmidt Lake Road Interchange as a way to reduce the potential magnitude of future improvements that are likely to be needed at I-494 and TH 55⁷. The analysis

⁶ Network basis refers to the operational network used in the Synchro/SimTraffic analysis, which includes TH 55 and side street approaches from CSAH 61 to Willow Drive.

⁷ A Schmidt Lake Road interchange has been in Plymouth's Comprehensive Plan for many years, but is currently an underpass with no access to I-494.

found that a Schmidt Lake Road interchange will have little effect on TH 55 volumes or on volumes at the I-494/TH 55 interchange. The most significant traffic impacts of a Schmidt Lake Road interchange are to the Rockford Road interchange (a reduction of 10,000+ trips) and to the Bass Lake Road Interchange (a reduction of approximately 3,000 trips). This scenario also caused significant increases in volume on Schmidt Lake Road.

10. The connection of I-494 and TH 55 is critical to the function of the regional transportation system. Today's volumes as well as future volume increases will likely require the need for changes to the I-494/TH 55 interchange and adjacent access points (CSAH 61 and Fernbrook Lane). These changes may require additional right-of-way. To evaluate operational and safety issues as well as the potential magnitude of right-of-way impacts, five design concepts were developed to provide a sense for the range of options that may be considered in future studies.

RECOMMENDATIONS

The study recommendations are intended to continue the process started in the TH 55 Future Demand Traffic Study and to advance the analysis to the next stages. These recommendations are as follows:

1. Agencies should continue to pursue capacity improvements. The study confirms the need for capacity expansion of TH 55 from I-494 to Buffalo, at a minimum, and ultimately to Annandale.
2. The TH 55 Corridor Coalition and partnering agencies should advance the environmental assessment process to establish right of way needs and address potential environmental issues. Based on the study, it is recommended that two environmental assessments be done initially; one from I-494 to the City of Rockford (Crow River), the second from Rockford (Crow River) to Buffalo. Upon completion of these, it is recommended that a third environmental assessment be completed to allow agencies to preserve right of way from Buffalo to Annandale. Mn/DOT should develop a plan for ongoing environmental and planning work in the corridor and confirm improvement staging with FHWA.
3. The coalition should encourage agencies in the corridor to continue to do proactive planning work to minimize future right-of-way costs, access, and safety issues. It should also continue to encourage appropriate agencies to adopt official maps so that future right-of-way is protected. When environmental documents have been completed, agencies should amend comprehensive plans in accordance with the preferred alternative as identified in the environmental documents.
4. Agencies should give priority to improvements that result in greater safety and should also conduct interim or spot improvements where needed.
5. Agencies should ensure that interim improvements are consistent with, and work towards, the final desired corridor vision.
6. Agencies should take advantage of all potential funding sources and opportunities and leverage funds to the maximum extent possible.
7. All partners in the region should continue to plan for future improvements on TH 55 as well as develop supporting north-south and east-west local arterial systems to better distribute future traffic demands and provide safe transportation services.