4.0 TRANSPORTATION IMPACTS

The project's transportation purpose and need statement (Chapter 2 of this FEIS) identified current and future transportation issues related to the No-Build Alternative, including future congestion of existing river bridges as well as safety issues related to increased risk of crashes, increased conflicts with rail traffic, and increased pedestrian/bicyclist conflicts in the local communities of Clearwater and Clear Lake. This chapter summarizes the transportation effects of the Preferred Alternative on the transportation system. A more detailed review and comparison of the Build Alternatives can be found in Chapter 4 of the DEIS; however, some of the information from the DEIS has been repeated in this chapter to provide an overall transportation context for this document.

As addressed in Chapter 3 of the FEIS, some refinements were made to the design of Alternative C between the DEIS and FEIS to respond to issues and concerns as well as to account for more detailed design information that became available during the normal course of the design process. These design refinements will not result in any substantive changes to the prior transportation analyses completed as part of the DEIS. In fact, many of the design modifications would have been made on any of the Build Alternatives had they been identified as the preferred build alternative.

4.1 TRANSPORTATION SYSTEM IMPACT

Each of the Build Alternatives (A, B, C, and D) was analyzed as a freeway connection between I-94 and TH 10 with the main differences being the general location and orientation of the river crossing. The freeway-type design for all of the alternatives is consistent with statewide policies and interregional corridor objectives. All of the alternatives met the overall transportation purpose and need; however, Alternative C (the Preferred Alternative) was determined to perform better than the other alternatives with respect to overall transportation system measures (VMT and VHT) as well as benefit-cost. Alternative C also had substantial safety benefits. These elements are outlined in Chapter 4 of the DEIS and summarized in the following paragraphs.

Table 4.1 shows the comparisons of Vehicle Miles Traveled (VMT) and Vehicle Hours Traveled (VHT) among the Build Alternatives, with Alternative C performing better than other alternatives (the only alternative to show a reduction in VMT, and the alternative that demonstrated the greatest reduction in VHT). VMT and VHT measure system efficiency with respect to both travel distance and travel time.

TABLE 4.1
TOTAL VMT/VHT PER DAY (YEAR 2040)

	No-Build	Alternative A	Alternative B	Alternative C	Alternative D
Total VMT	110,185,130	110,326,870	110,386,290	110,028,690	110,240,510
Difference from No-Build	N/A	141,740	201,160	-156,440	55,380
Total VHT	3,507,000	3,506,760	3,506,750	3,486,340	3,493,640
Difference from No-Build	N/A	-240	-250	-20,660	-13,360

Note: The total VMT and VHT values in this table include the entire forecast modeling area, including the St. Cloud and Twin Cities metropolitan areas and the TH 10 and I-94 travelshed areas included in the 2040 forecast model for this study.

Table 4.2 shows the daily traffic volumes crossing the Mississippi River for the year 2000 as well as the future year 2040. All of the Build Alternatives (Interregional Connections) would have similar volume magnitudes (traffic usage). However, only Alternatives B and C would eliminate capacity problems on the current TH 24 river crossing (Table 4.3). All other congested crossings would continue to be congested (V/C greater than or equal to one).

TABLE 4.2
DAILY RIVER CROSSING TRAFFIC VOLUMES

Crossing	2000	2040	2040	2040	2040	2040
		No-Build[1]	Alternative A	Alternative B	Alternative C (Preferred Alternative)	Alternative D
33rd Street	–	54,600	22,700	44,000	43,700	44,800
TH 24	13,200	34,500	23,300	–	15,100	20,300
TH 25	23,800	46,300	45,100	44,600	44,200	40,700
CSAH 42	6,600	7,400	6,500	6,100	6,400	5,700
TH 101	40,300	114,000	105,900	97,800	105,100	97,400
Interregional Connection	–	–	71,400	71,200	66,000	77,100

[1] No-Build 2040 assumes additional river crossing capacity due to construction of the planned 33rd Street and Dayton-Ramsey river crossings, as well as capacity improvements to TH 101, TH 10 and I-94.

TABLE 4.3
MAXIMUM/VOLUME — CAPACITY RATIOS

Crossing	2000	2040	2040	2040	2040	2040
		No-Build[1]	Alternative A	Alternative B	Alternative C (Preferred Alternative)	Alternative D
33rd Street	–	1.8	1.0	1.5	1.5	1.5
TH 24	0.7	1.6	1.4	–	0.9	1.2
TH 25	1.2	1.8	1.7	1.7	1.7	1.6
CSAH 42	0.8	0.8	0.6	0.5	0.6	0.3
TH 101	1.8	1.4	1.3	1.3	1.3	1.3
Interregional Connection	–	–	1.0	1.1	0.9	1.0

[1] No-Build 2040 assume additional river crossing capacity due to construction of the planned 33rd Street and Dayton-Ramsey river crossings, as well as capacity improvements to TH 101, TH 10 and I-94.

A benefit-cost analysis was completed for the proposed I-94/TH 10 Interregional Connection project. A detailed description of the benefit-cost analysis and methodology is included in the *Benefit-Cost Analysis Memorandum* prepared for this project, available upon request from the Mn/DOT Project Manager.

The objective of a benefit-cost analysis is to bring all of the direct effects of a transportation investment into a common measure (dollars), and to allow for the fact that benefits accrue over a long period of time while costs are incurred primarily in the initial years. The analysis assessed the potential benefits and costs of each Build Alternative when compared to the No-Build condition. The primary elements that can be monetized are travel time (based on vehicle hours traveled or VHT), changes in vehicle operating costs (based on vehicle miles traveled or VMT), vehicle crashes and remaining capital value. The benefit-cost analysis can provide an indication of the economic desirability of an alternative, but decision-makers must weigh the results against other considerations, effects, and impacts of the project. A benefit-cost ratio of 1.0 is generally considered the minimum for justifying an improvement. The larger the ratio number, the greater the benefits per unit cost.

The Preferred Alternative (Alternative C) was determined to have the highest benefit per unit cost with a ratio of 26.5. The DEIS also summarized the results of the benefit-cost analysis for Alternative A (7.8), Alternative B (6.3) and Alternative D (13.4). The single major reason behind the high benefit-cost ratio for Alternative C is the fact that the orientation of the crossing at this location fits the long-term traffic patterns the best, saving both time and distance for the greatest number of trips.

4.2 ADDITIONAL TRAFFIC OPERATIONS ANALYSIS

A future traffic operations analysis (year 2040) was completed for all alternatives for the DEIS (Table 4.4 in DEIS). This analysis used both a planning-level analysis and a detailed CORSIM operations model to analyze operational elements for all alternatives. All 2040 Build Alternative analyses assumed a future six-lane freeway on I-94 (currently a four lane freeway), from south of the study area to the location of the proposed river crossing connection. The 2040 analysis also assumed that TH 10 will be transitioned from a four-lane expressway to a four-lane freeway from the river crossing system interchange at TH 10 to north of St. Cloud[1]; local access interchanges on TH 10, north of the system interchange connection, would be developed in subsequent studies. These assumptions were used for the 2040 analysis in both the forecast-based model and operations-based model for all alternatives. Four locations (two locations in Alternative A, one in Alternative B and one in Alternative D) were identified with some operational issues. All other locations functioned adequately with respect to the overall level of service (LOS D or better) in the merge/diverge junctions, weave areas and mainline sections.

Upon identification of the Preferred Alternative (Alternative C) and subsequent design refinements during the development of the FEIS, an updated operations analysis was performed

[1] All alternatives had various regional improvements assumed beyond the study limits. The assumptions for these additional system improvements and their related costs were identified in the DEIS for each alternative (Section 4.2 of the DEIS). Alternative C had the second lowest overall cost with respect to these regional improvements.

on the Preferred Alternative. This analysis included both a.m. and p.m. peak hours for both 2040 and for 2015. The detailed results of this operational analysis can be found in the draft *I-94/TH 10 River Crossing Interstate Access Request,* which is available upon request from the Mn/DOT Project Manager. The results can be summarized as follows:

- The **2015** average weekday a.m. and p.m. peak hour analysis resulted in acceptable levels of operation (LOS D or better with speeds ranging from a low of 62 mph to a high of 68 mph). This analysis assumed four freeway lanes on I-94 (consistent with the current number of lanes on I-94 in this area); the analysis assumed a four-lane expressway on TH 10 (consistent with the existing lane configuration on TH 10).
- The **2040** average weekday a.m. and p.m. peak hour analysis resulted in acceptable levels of operation (LOS D or better with speeds ranging from a low of 57 mph to a high of 68 mph). This analysis assumed six lanes on I-94 from the system interchange with the river crossing to the south of the study area. Given present traffic growth trends, if there are not six lanes on I-94 by approximately 2030, unacceptable levels of operation will occur (LOS E or worse) at the merge point of the southbound river crossing on-ramp to eastbound I-94. The operations analysis showed acceptable levels of service at TH 10 (assuming a four-lane expressway).

4.3 OTHER TRANSPORTATION ELEMENTS

Other transportation elements that are not included in this chapter were evaluated as part of the DEIS. These elements include Safety (DEIS Section 4.3), Local and Regional Transportation System Access Changes (DEIS Section 4.6), Vehicular Energy Use (DEIS Section 4.7), and Other Modes (DEIS Section 4.8). There are not any substantial changes in the project that would affect these sections. Please refer to the DEIS for information on these areas.