
5.0 Travel Demand Analysis

This section summarizes the methodology and results of the Anoka County 2030 travel demand analysis. The analysis provides information on overall county roadway system performance and specific corridor performance. The county's travel demand model incorporates the entire metropolitan region, with significantly increased detail within the county. In addition to Anoka County conditions, the model also reflects regional trends in travel and regional transit impacts.

Along with other analyses completed for this Plan, the travel demand analysis led to the identification of the prioritized improvements reflected in the Sections 6 and 7. Additional technical documentation of the travel demand analysis is provided in Appendix D.

5.1 Travel Demand Scenarios and Assumptions

Two transportation network scenarios were modeled and their results evaluated. Scenario 1 represents the existing road network, plus committed projects in the county, based on current plans through 2030. Scenario 2 differs from Scenario 1 only in that it includes the corridor capacity enhancements of the Interregional Corridor (IRC) recommendations (on US 10 and I-35W) (see Section 1.0 and 3.7.2 for additional information regarding IRCs). The proposed Northstar commuter rail line was included, along with the other elements of the 2030 regional transit plan current in 2007.

The analysis used the 2030 traffic volumes developed for Scenario 1 (without IRC improvements) to develop recommendations for the county's transportation system through 2030. As discussed in Section 1.0, both Mn/DOT and the Metropolitan Council currently operate within fiscal constraints, and are projected to continue to do so. The travel demand analysis completed for the Plan (using Scenario 2) found that recommended improvements to US 10 and I-35W within Anoka County would significantly reduce the amount of additional lane miles needed on the county system—by 33 percent.¹ However, these improvements are not included in the region's or the state's long-range transportation plans. As a result, this Plan reflects the assessment that the county will need to make more improvements to the county's transportation network to accommodate anticipated future transportation system demand (see Section 5.3).

5.2 Travel Demand Analysis Methodology

The Anoka County model is an adaptation of the Twin Cities regional model, which is maintained and developed by the Metropolitan Council, and used for regional planning purposes. The Anoka County model covers the same geographic area (the seven county core plus the 13 county "collar" area). However, the Anoka County model includes enhanced transportation network and socioeconomic detail within county boundaries.

¹ Source: Travel Demand Model Technical Memorandum, October 30, 2007, and January 29, 2008; included in Appendix D of this document.

5.2.1 Land Use and Traffic Analysis Zones (TAZs)

Information regarding existing and future land uses in Anoka County is key in determining how many trips people are making now, and estimating how many trips people will make in the future. Estimates of how many trips are expected to and from various land uses (e.g., shopping areas, residential neighborhoods, schools, churches, offices, etc.) are documented in traffic engineering resources, including the Trip Generation Manual. For traffic modeling purposes, the county was split up into areas of similar land uses, called traffic analysis zones (TAZs). The county model contains 487 TAZs, compared with 126 in the regional model. The higher number of TAZs in the county model allows for greater capability in reflecting regional travel trends and regional transit impacts than the regional model. Figure 5-1 shows the TAZs used for this traffic analysis.

5.2.2 Socioeconomic Data

Socioeconomic estimates, consisting of future population, households, retail, and non-retail employment by zone were collected from each community in the county for the year 2030. The county provided assistance to the communities to ensure consistent allocation of municipal totals to TAZs, where local allocation differed from Metropolitan Council forecasts. All municipal forecasts were constrained to the current Metropolitan Council forecasts. Metropolitan Council 2030 socioeconomic forecasts were used for zones outside the county.

5.2.3 Traffic Modeling Process

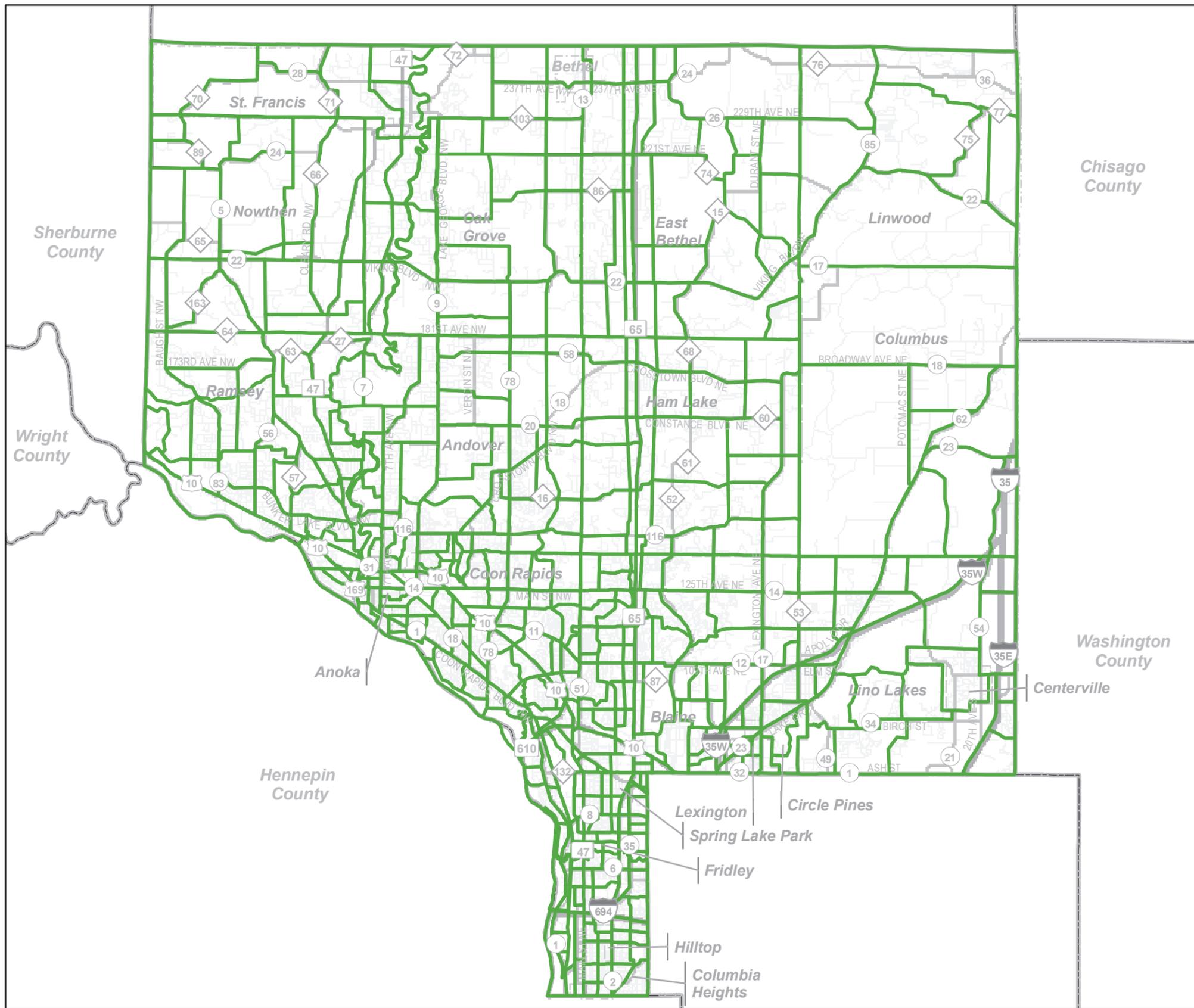
Anoka County's model uses the same structure as the regional model, including modes, parameters, and the four-step modeling process, which includes:

1. Trip Generation—Used to estimate the number of trips
2. Trip Distribution—Used to allocate trips to origins and destinations
3. Mode Choice—Used to estimate the number of trips by auto, transit, and non-motorized modes for each origin/destination zone pair
4. Assignment—Used to allocate mode-specific trips to paths between origin and destination zones.

This process was used to compute year 2030 level of service (LOS), delay, and needed capacity. The links were next sorted and ranked according to delay. Eighteen county corridors were initially defined in this way. Based on county staff experience with local conditions, CSAH 83/ Armstrong Boulevard, was later included. Additionally, the county identified three sub-areas where the conditions of individual corridors affect adjacent roadways. Rather than studying individual corridors in these locations, sub-area studies that will consider the impact of roadways upon other roadways will be completed for the following locations, which are shown on Figure 5-2:

- St. Francis, located in northern Anoka County,
- West Central Anoka County, including the communities of Ramsey and Anoka, and
- East Central Anoka County, including the communities of Blaine, Circle Pines, Lexington, Ham Lake, and Columbus.





Legend

- Anoka County TAZ Boundaries
- Interstates
- US Highways
- State Highways
- County State Aid Highways (CSAH)
- County Roads
- Local Roads

N

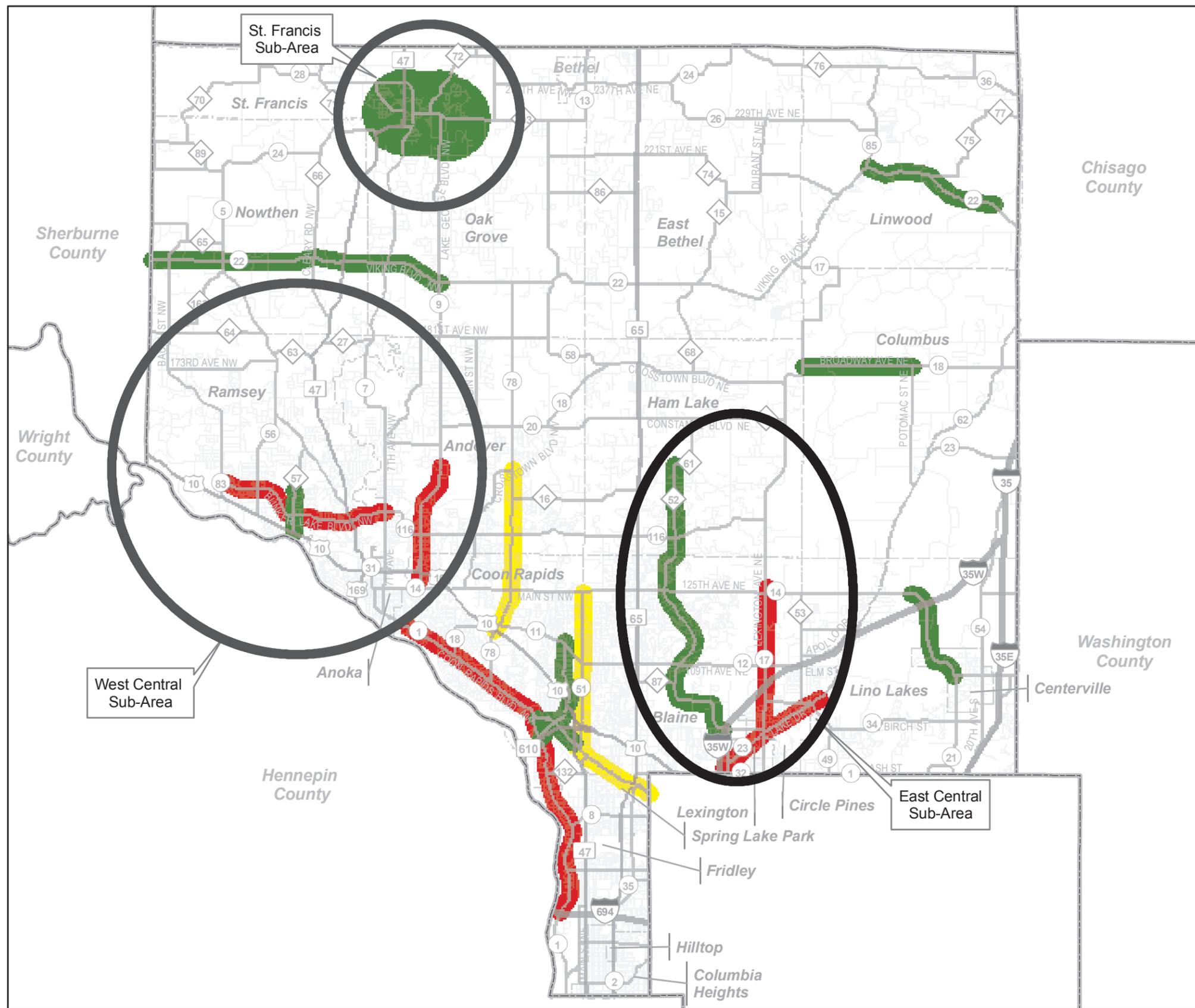
0 1.5 3 6 Miles

1 inch = 3 miles

Source: Anoka County's Travel Demand Model



Figure 5-1
Traffic Analysis Zones (TAZ)



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Relative PM Peak Hour Traffic Capacity Need

- High
- Medium
- Low

- Interstates
- US Highways
- State Highways
- County State Aid Highways (CSAH)
- County Roads
- Local Roads

N

0 1.5 3 6 Miles

1 inch = 3 miles

Source: Anoka County's Travel Demand Model (Parsons Brinkerhoff, January 2008)



5.2.4 Updates to the County's Transportation Model

The travel demand analysis for the Plan was completed in the fall of 2007. Shortly after completion of this effort, Anoka County began a complete update of the county's model. This work took place during the first half of 2008. Year 2000 traffic volumes and 2030 traffic forecasts shown in this Plan reflect the most up-to-date traffic modeling efforts, using traffic volumes from the 2008 update (see Appendix D, Travel Demand Analysis Update, for more details).

5.3 Results of Travel Demand Analysis

5.3.1 System-Wide Trends

The evaluation of system wide measures related to VMT, VHT, delay, and average speed by facility type in Anoka County highlighted several major trends:

- Travel demand will increase substantially by 2030, resulting in an approximately 60 percent rise in vehicle-miles travelled and more than a doubling of the vehicle-hours travelled and vehicle delay—this is true for both scenarios.
- About one-half of the total delay, and more than one-half of the increase in delay, occurs on the arterial system.
- In 2000, the overall average speed on Anoka County roads was 23.3 miles per hour. Assuming implementation of currently programmed improvements, the average speed is projected to drop to 14.2 miles per hour by 2030. Even with the IRC improvements in Scenario 2, the average speed is projected to drop to 16.0 miles per hour. Freeways showed the largest decrease in system speed.
- Delay, capacity needs, and low levels of service are projected to remain concentrated in the southern portions of the county, primarily along north-south routes. This reflects that population concentrations and jobs are expected to remain focused on the southern portions of the county, and regionally speaking, to the south of Anoka County.
- East-west corridors in the northern half of the county are projected to experience increased congestion and delay due to lack of alternative east-west routes. Overall, this reflects the slower growth trends in the north, compared to the southern part of the county. Projected congestion on CSAH 18, 22, and 24 in the north is primarily a result of a lack of east-west alternatives, which results in these facilities becoming bottlenecks in the transportation system.
- IRC capacity improvements on I-35 and US 10 (Scenario 2) have the effect of drawing more traffic to those facilities, and relieving parallel arterial highways. Therefore, arterials show the greatest reduction in delay from the IRC improvements, though collectors and arterials show an equal percent change benefit from IRC improvements.
- IRC improvements on US 10 and I-35W (modeled under Scenario 2) would relieve overall delay by about 22 percent, compared to Scenario 1, which did not include IRC improvements. This improvement would only be experienced on some corridors; most county corridors would experience only marginal improvements.

5.3.2 Transit Demand

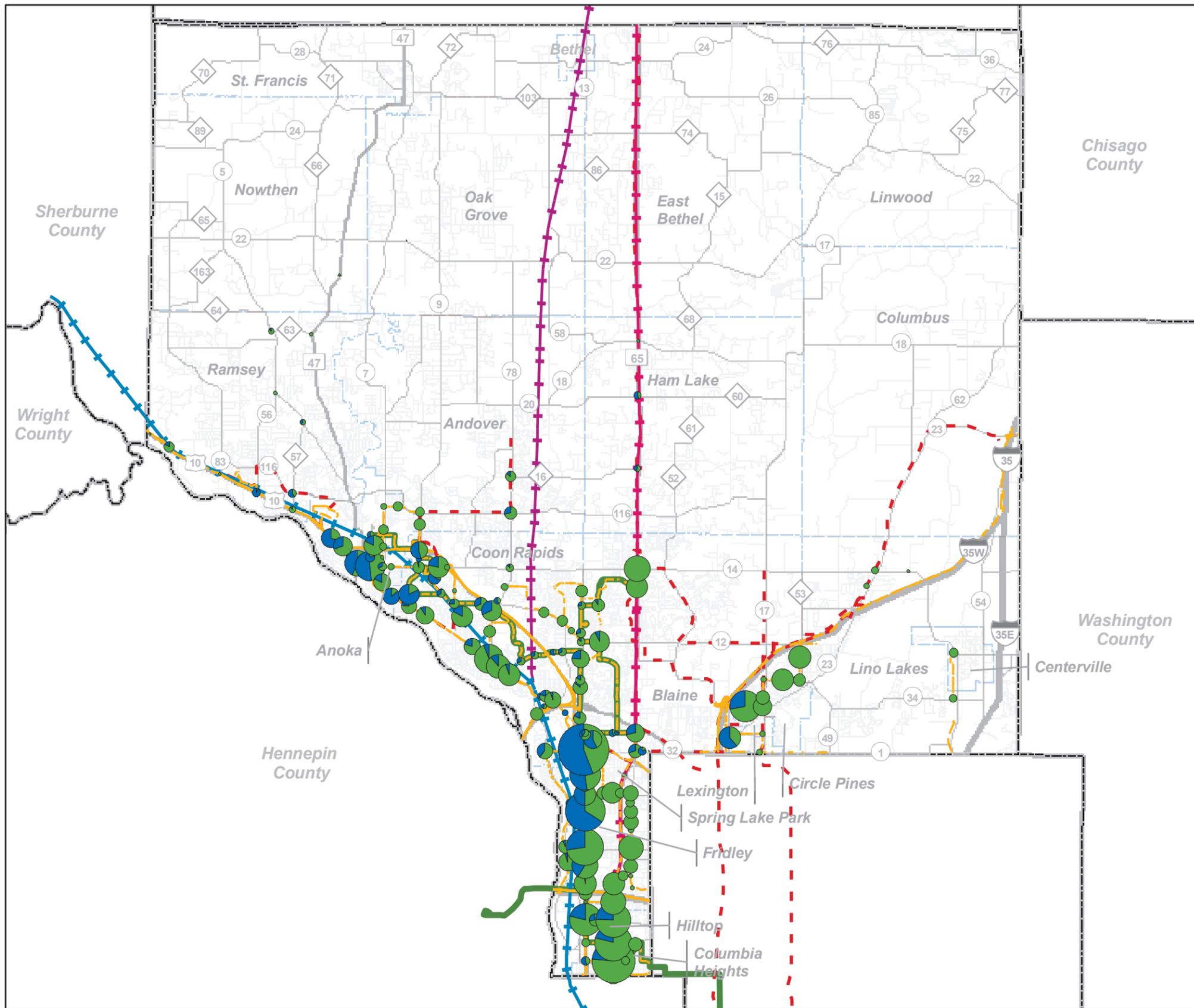
The model also assessed year 2030 transit demand by assigning the transit trip table to the 2030 transit route system. This process identified high-demand routes and areas of potential growth. These areas are illustrated on Figure 5-3. Projections based on year 2030 planned transit service show additional usage north of current service routes, most notably along TH 65 and farther north into the county along CSAH 78/Hanson Boulevard, and as far north as St. Francis. However, as Figure 5-3 illustrates, the model output shows a continuation of current predominant north-south travel pattern. Significantly more boardings within the county than alightings also reinforce current patterns of travel to out-of-county employment, with notable exceptions in Coon Rapids, Fridley, and Anoka.

The county continues its partnership with Chisago and Washington Counties, along with Mn/DOT on pre-rail express bus service to Rush Line communities at the east edge of the county. The county will also be participating in the Joint Powers Board formed to evaluate reinstating inter-city passenger rail service on the Northern Lights Express (NLX) north-south BNSF rail corridor. The NLX rail line extends from Coon Rapids to Duluth, passing through Andover, Oak Grove, and straddling Bethel and East Bethel before entering Isanti County to the north. This corridor could partner with the Northstar commuter rail service to enhance overall passenger rail transit service in the northern and central areas of the county. The county will continue its partnership with Mn/DOT on the agency's state rail plan as well, working to improve and enhance opportunities to implement passenger transit on the state's freight rail network. Appendix D has a section titled 2030 Transit Demand Documentation, which includes detailed 2030 transit boardings and alightings by link within the county.

5.3.3 Impacts on County Roadway System

There are 18 county road corridors, and eight state road corridors that are projected to require some level of capacity enhancement by 2030 to accommodate the anticipated demand levels. The 18 county corridors are listed on Table 5-1 and illustrated on Figure 5-2. The eight state corridors include sections of the following roadways: TH 47, TH 65, TH 610, US 10, US 169, I-35E, I-35, and I-694.²

² As stated, Mn/DOT, the agency with jurisdiction over these roadways, does not include substantial upgrades to these facilities within long-range plans. Additional information regarding demand on state and US highways is included in the Anoka County Transportation Plan: Travel Demand Analysis, Appendix D (October 30, 2007, and January 29, 2008).



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2030 Transit Stops
Sum of Fields

-  1,000
-  BOARD
-  ALIGHT
-  MetroTransit Bus Routes
-  Proposed TH 65 LRT Corridor
-  Future Northstar Commuter Rail
-  Proposed Northern Lights Express Commuter Rail
-  Existing Anoka County Traveler Routes
-  Future Anoka County Traveler Routes
-  Interstates
-  US Highways
-  State Highways
-  County State Aid Highways (CSAH)
-  County Roads
-  Local Roads

 N

0 1.5 3 6 Miles

1 inch = 3 miles

Source: Anoka County's Travel Demand Model (Parsons Brinckerhoff, March 2008)



Figure 5-3
2030 Transit Demand

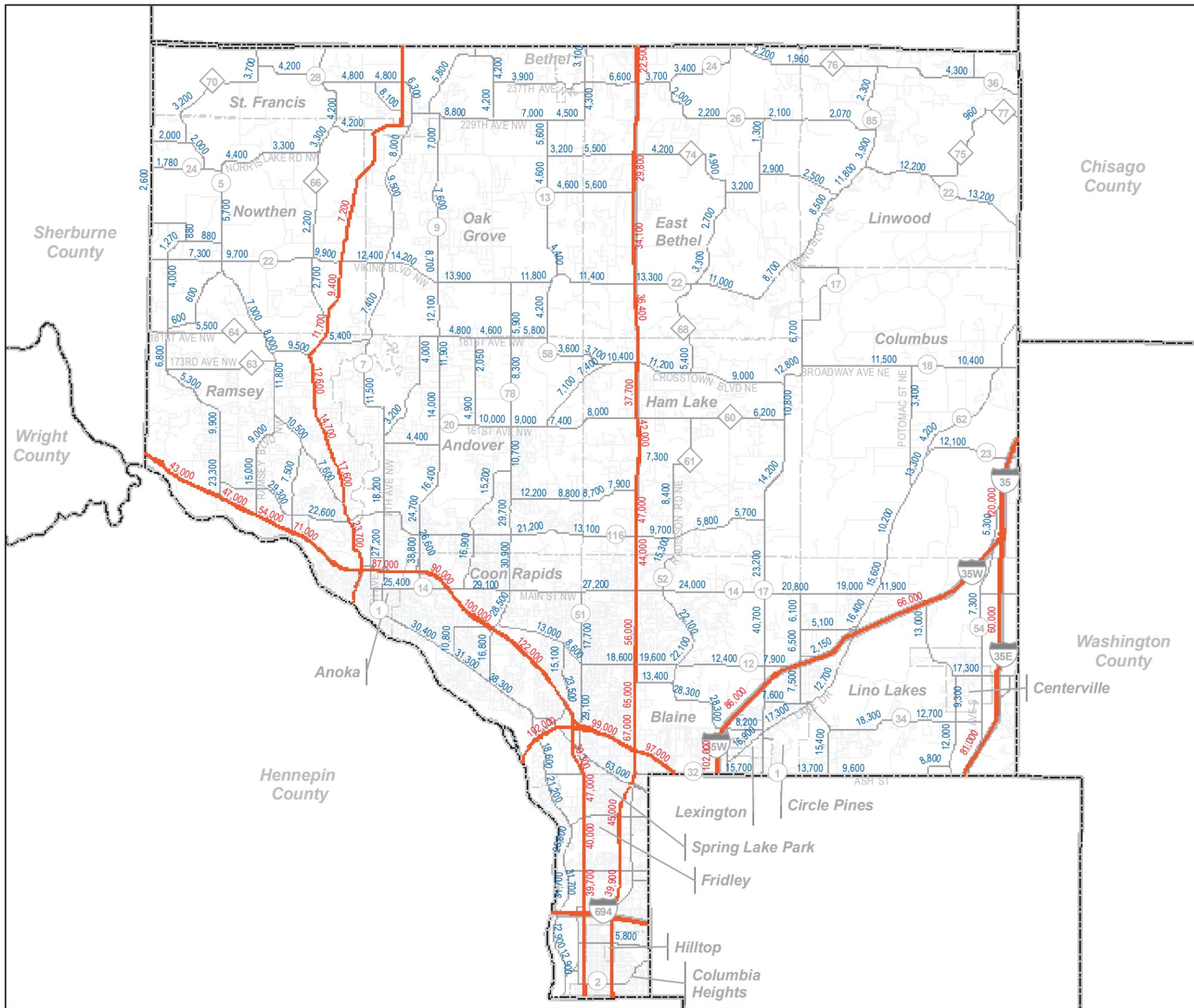
TABLE 5-1
Roadways with Projected 2030 Capacity Needs—with and without IRC Improvements

Relative Capacity Needs	2030 Problem Mobility Corridor
High	<u>CSAH 1/East River Rd.:</u> CR 3 to I-694
	<u>CSAH 1/Coon Rapids Blvd.:</u> CSAH 9/Round Lake Blvd. to CR 3
	<u>CSAH 9/Round Lake Blvd.:</u> CSAH 14/Main St. to CSAH 20/ 157 th Ave.
	<u>CSAH 17/Lexington Ave.:</u> CSAH 23/Lake Drive to CSAH 14/Main St.
	<u>CSAH 23/Lake Dr.:</u> I-35W to CSAH 49/Hodgson Rd./North Rd.
	<u>CSAH 116/Bunker Lake Blvd.:</u> CSAH 7/7 th Ave. to CSAH 83/Armstrong Blvd.
Medium	<u>CSAH 78/Hanson Blvd.:</u> US 10 to CSAH 20/161 st Ave. NW
	<u>CSAH 10:</u> TH 47 to Ramsey County Line
	<u>CSAH 51/University Ave.:</u> CSAH 10 to CSAH 14/Main St.
Low	<u>CSAH 57/Sunfish Lake Blvd.:</u> US 10 to CSAH 116/Bunker Lake Blvd.
	<u>CSAH 14/Main St.:</u> I-35E to CSAH 21/20 th Ave.
	<u>CSAH 52/Radisson Rd.:</u> I-35W to CR 61/153 rd Ave.
	<u>CSAH 11/Foley Blvd.:</u> CSAH 1/East River Rd. to CSAH 12/Northdale Blvd.
	<u>CSAH 18/Broadway Ave.:</u> CSAH 17/Lexington Ave. (northern intersection) to CR 19/Potomac St.
	<u>CSAH 22/Viking Blvd.:</u> CSAH 85/Typo Creek Dr. to Chisago County Line
	<u>CSAH 22/Viking Blvd.:</u> CSAH 9/Lake George Blvd. to Sherburne County Line
	<u>St. Francis Sub-Area (CSAH 24/Bridge St.):</u> TH 47 to CR 9)
<u>CSAH 83/Armstrong Blvd.:</u> US 10 to 161 st Ave.	

Figure 5-4 identifies projected year 2030 traffic volumes under Scenario 1, without IRC improvements on US 10 or I-35W. Based on forecast 2030 volumes, corridors listed in Table 5-1 and illustrated on Figure 5-2 are projected to be congested in 2030. Figure 5-2 also indicates the relative degree of congestion—high, medium, or low—projected to occur. For comparison, Figure 3-5 in Section 3.0 identifies year 2000 average daily traffic. Figure 3-8, also in Section 3.0, shows the Anoka County roadways that experienced congestion in 2000 during the PM peak hour. It is notable that many of the corridors listed in Table 5-1 and shown on Figure 5-2 were either over capacity or approaching capacity in 2000.

Overall impact on several of the corridors listed in Table 5-1 would be reduced with the IRC improvements (although most would still operate at over capacity in the year 2030). The travel demand analysis found that without the US 10 and I-35W IRC improvements, 33 percent more lane miles of county system roadway would be needed to maintain year 2000 levels of congestion.³

³ Source: Travel Demand Model Technical Memorandum, October 30, 3007, and January 29, 2008; included in Appendix D of this document.



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Year 2030 Average Daily Traffic Volumes

12,345 State System

12,345 County System

- Interstates
- US Highways
- State Highways
- County State Aid Highways (CSAH)
- County Roads
- Local Roads

N

0 1.5 3 6 Miles

1 inch = 3 miles

Source: Anoka County Travel Demand Model (WSB, June 2008)



Figure 5-4
Forecasted Year 2030 Traffic Volumes

If IRC recommendations were implemented on US 10 and I-35W, the number of additional lane miles needed to maintain year 2000 congestion levels during the PM peak hour would drop to 157. Not implementing the improvements recommended in the US 10 and I-35W IRC studies results in the need for 89 more county roadway lane miles ($246-157=89$) to accommodate the traffic that would otherwise be absorbed on those two regional facilities. Implementing IRC improvements would mean that under the currently adopted land use patterns of each community, the three corridors listed below would not experience capacity issues in 2030:

- CSAH 52/Radisson Road,
- CSAH 11/Foley Boulevard, and
- CSAH 3/Coon Rapids Boulevard.

Available funding allows Anoka County to construct 2.5 to 3.0 new lane miles of roadway annually. These projects are funded with federal, state, and local dollars. Meeting the transportation demand documented above would require the county to construct eight to twelve new lane miles per year, which cannot be achieved with current funding sources. Funding is addressed in Section 8.0.

It is important to note that the congestion on the interstates and state highways will result in additional traffic on the county highway system. These increased traffic levels will require that the county accelerate the maintenance schedule on these roadways, which will also result in a financial impact.

The identification of capacity deficiencies formed a major component in prioritizing county roadway corridors for short-, medium-, and long-range improvements. Other considerations included intersection capacity, traffic control, access management, right-of-way availability, the ability to improve parallel routes, transit, and cost. Because land use control rests with local authorities and not with the county, 2030 traffic estimates demonstrate the impact of projected local population, households, and employment on the Anoka County transportation network.