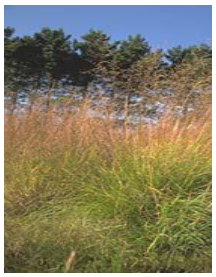


Washington County

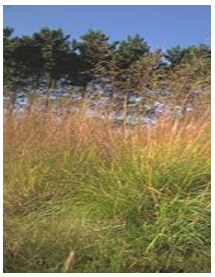
2030 Comprehensive Plan

A Policy Guide to 2030

Transportation

Approved by Board of Commissioners
May 26, 2009

Adopted by Board of Commissioners
September 7, 2010



Washington County Mission

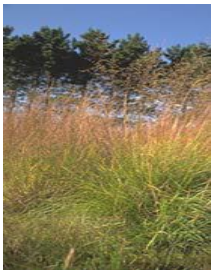
To provide quality public services in a cost-effective manner through innovation, leadership, and the cooperation of dedicated people.

Washington County Values

Fiscal Responsibility - to provide good stewardship of public funds
Ethics and Integrity - to maintain the public trust
Openness of the Process - to promote citizen participation
Our Heritage and Natural Resources - to conserve and preserve them
The Individual - to promote dignity and respect

Washington County Goals

- To promote the health, safety, and quality of life of citizens
- To provide accessible, high-quality services in a timely and respectful manner
- To address today's needs while proactively planning for the future
- To maintain public trust through responsible use of public resources, accountability, and openness of government



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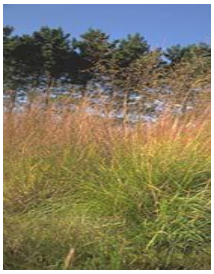

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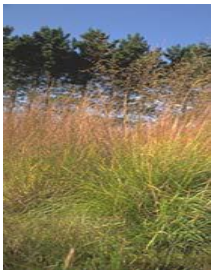

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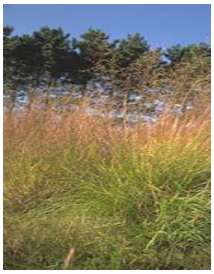

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Key Acronyms

Americans with Disabilities Act ..... ADA
Average Daily Traffic ..... ADT
County State Aid Highways ..... CSAH
Federal Highway Administration ..... FHWA
Federal Intermodal Surface Transportation Equity Act of 1991 ..... ISTEA
Light Rail Transit ..... LRT
MN/DOT 2008-2030 Transportation System Plan ..... TSP
Metropolitan Transportation Services ..... MTS
Minnesota Department of Transportation ..... MN/DOT
Traffic Analysis Zones ..... TAZs
Trunk Highways ..... TH
Transportation Policy Plan ..... TPP
Volume to Roadway Capacity ..... v/c ratio

Executive Summary

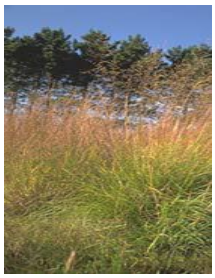
Washington County's transportation system encompasses highways, identified transitway facilities, and a network of trails that are used to move people and goods to their destinations. Integrating and coordinating these transportation modes is critical to maintaining a high level of mobility and safety for the system users.

Washington County's system of highways was largely developed between the 1920s and 1980s. It was during this period that many township roads were accepted as county routes, state highways were transferred to the county, and new roads were built to serve the developing areas of the county. The highway system grew as the population grew, providing mobility throughout the county and the region.

Transitway corridors serving the county were established in the late 1990s. These transitways are located along or adjacent to major roadway arterials in the more densely-populated areas of the county. They lay the framework for developing mass transit in the future.

Providing a network of trail corridors for non-motorized transportation modes is another option for providing high levels of mobility and safety throughout the county. When connecting housing to employment locations, these corridors can be used for commuting. These corridors can serve both transportation and recreation purposes when connecting neighborhoods to parks and other trails.

Continued growth in Washington County, and in the region as a whole, poses important challenges in maintaining and expanding an adequate transportation system that accommodates multi-modal needs. Decisions about the transportation system are closely tied to the land use policies of the county and its communities. The policies can have a



significant impact on the ability of the transportation system to safely and efficiently serve the public.

Washington County has set the following goals for transportation.

Goal 4-1	Develop and maintain a roadway system that accommodates the safe and efficient movement of people and goods.
Goal 4-2	Promote the development and utilization of a transit system that meets existing and future travel needs of the public.
Goal 4-3	Use effective transportation planning to accommodate existing and planned land uses, while preserving natural, cultural, and historic resources.
Goal 4-4	Develop a non-motorized transportation system to provide mobility and recreational options to the public.

This chapter sets policies and implementation strategies that support these goals. It describes a plan of action to address the identified needs and deficiencies for the various parts of the transportation system.

Existing Conditions

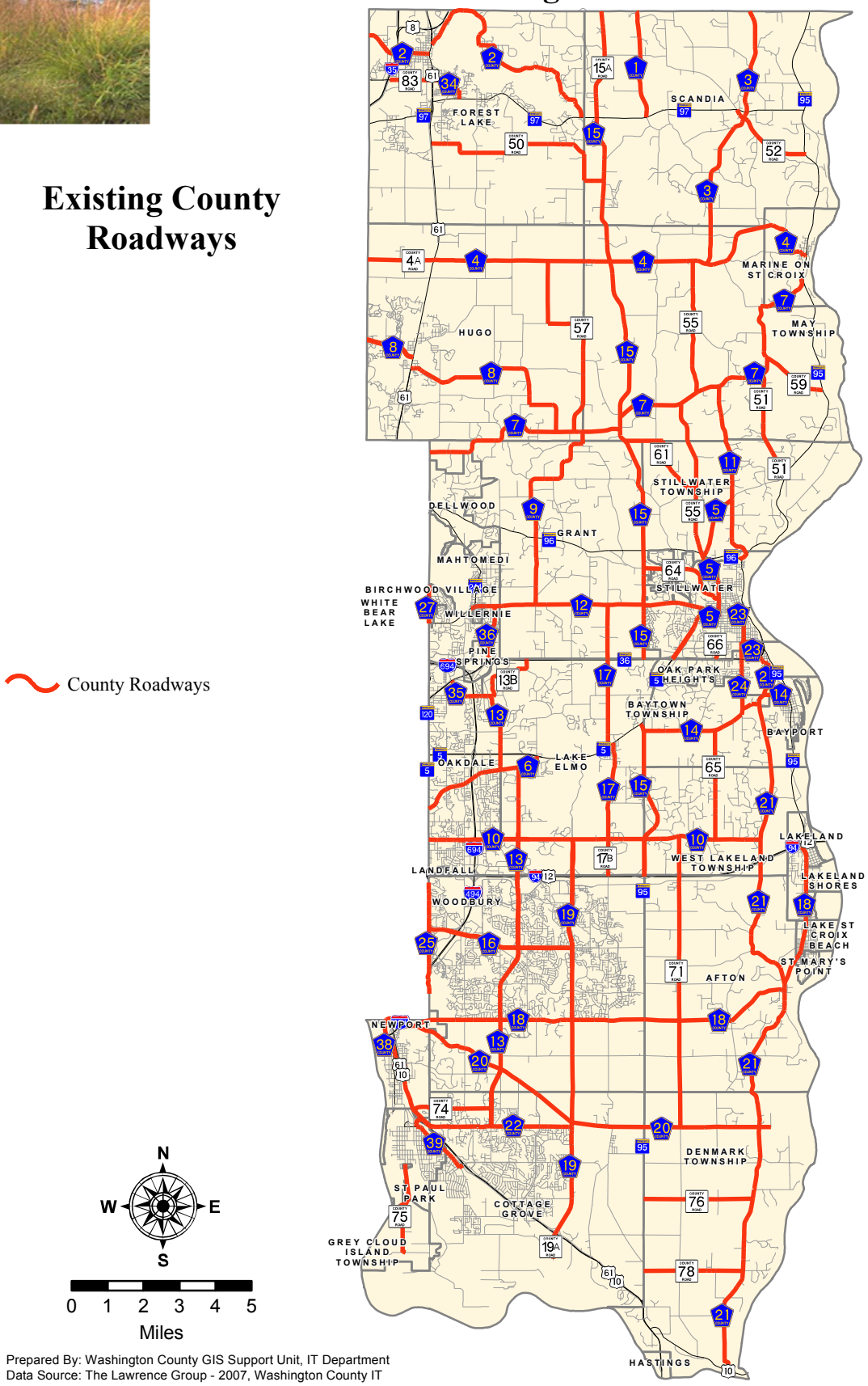
To accurately identify future transportation needs and prepare a plan to meet those needs, the county studied the existing condition of the transportation facilities and the travel behavior of current users. This analysis included examining functional and jurisdictional classifications, traffic volumes and capacity deficiencies, system continuity, safety, river crossings, transit systems and corridors, scenic roads, freight, railroads, airports, and non-motorized facilities.

Highways and Roads

Maintaining a safe and reliable highway system is a core responsibility of the county. The county's roadway infrastructure, along with state and local roads, forms a seamless and integrated network that supports intra-county movements as well as cross-county trips. The highway system supports alternative transportation modes, such as buses, bicycles, and pedestrians. Washington County contains 2,046 centerline miles of roadways, including all state, county, and local roads. Washington County maintains 303 centerline miles of roadway (See Figure 4-1). Centerline mileage is the distance measured along the center line of the roadway. It does not consider the number of lanes for each roadway.

Figure 4-1

Existing County Roadways

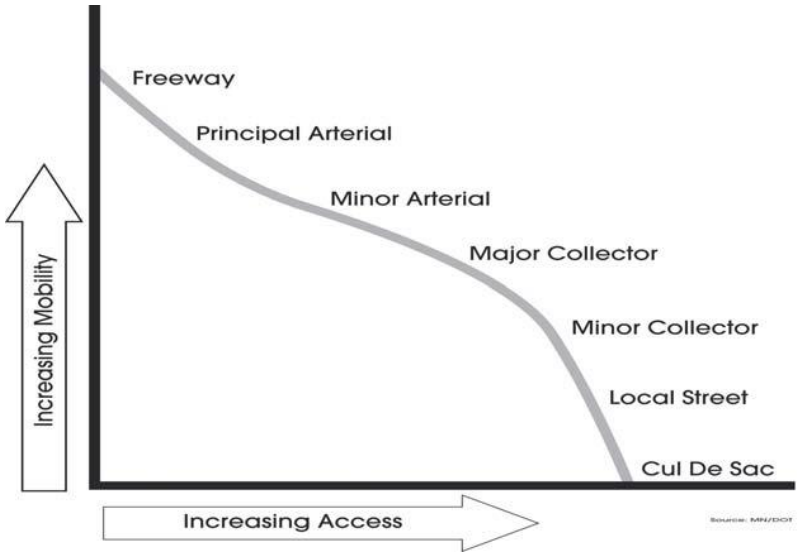


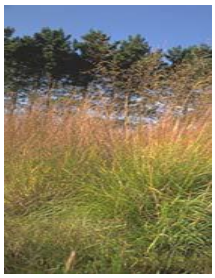
Prepared By: Washington County GIS Support Unit, IT Department
Data Source: The Lawrence Group - 2007, Washington County IT

Existing Functional Classification

The functional classification defines a roadway's purpose, use, and the attributes necessary for it to provide safe and efficient movement of vehicles. The Metropolitan Council's Transportation Policy Plan establishes a functional classification system for roadways based on the transportation service provided (i.e., degree of mobility) and the relationship to adjacent land uses (i.e., degree of access). This system creates a hierarchy of roadways that: provide direct access to local streets; collect traffic from local streets; and distribute traffic to the state highway system. Each roadway type is critical to providing a roadway network that meets the needs of all users. If an area lacks a robust collector roadway system, then the minor and/or principal arterial roadway system will not only need to provide mobility for those moving through the area, but also direct access to adjacent land uses. This may result in roadways that serve too many functions and have safety and capacity problems. Figure 4-2 shows the relationship of mobility to access for each functional classification.

Figure 4-2
Relationship of Mobility to Access





Below is a general description of each of the four classifications in the Functional Classification System. Appendix F of the Metropolitan Council 2030 Transportation Policy Plan provides more information on the functional classification criteria. The functional classification and corresponding mileage of each roadway is shown in Figure 4-3.

Principal Arterial Roadways

Principal arterial roadways typically have the highest traffic volumes and are considered part of the metropolitan highway system. These roadways are intended to connect metropolitan centers of regional importance with one another, including major business concentrations, important transportation terminals, and large institutional facilities. They are typically spaced 3-6 miles apart in developed and developing areas and 6-12 miles apart in rural areas. The principal arterial roadways in Washington County are all owned and operated by the Minnesota Department of Transportation (MN/DOT). They include Interstates 94, 494/694, and 35, and Trunk Highways 61, 8, and 36.

Minor Arterial Roadways

Minor arterial roadways place a priority on mobility and higher speeds while providing managed access to the local system. These roadways connect important locations within the county to the metropolitan highway system. In addition, they connect locations within the metropolitan urban service area to cities and towns outside of the metropolitan region and they connect freestanding cities to each other. Minor arterial roadways are typically spaced one-half to one mile apart in developed areas and one to two miles apart in developing areas. Within Washington County, the minor arterial roadways are mostly owned and operated by the state as trunk highways (TH) or by the county as county state aid highways (CSAH). Examples of these roadways in Washington County are Trunk Highway 96, Valley Creek Road (CSAH 16), 70th Street South (CSAH 22), Manning Avenue (CSAH 15), and Broadway Avenue (CSAH 2). The Metropolitan Council has established subcategories for

minor arterials including expander, reliever, connector, and augmenter.

Collector Roadways

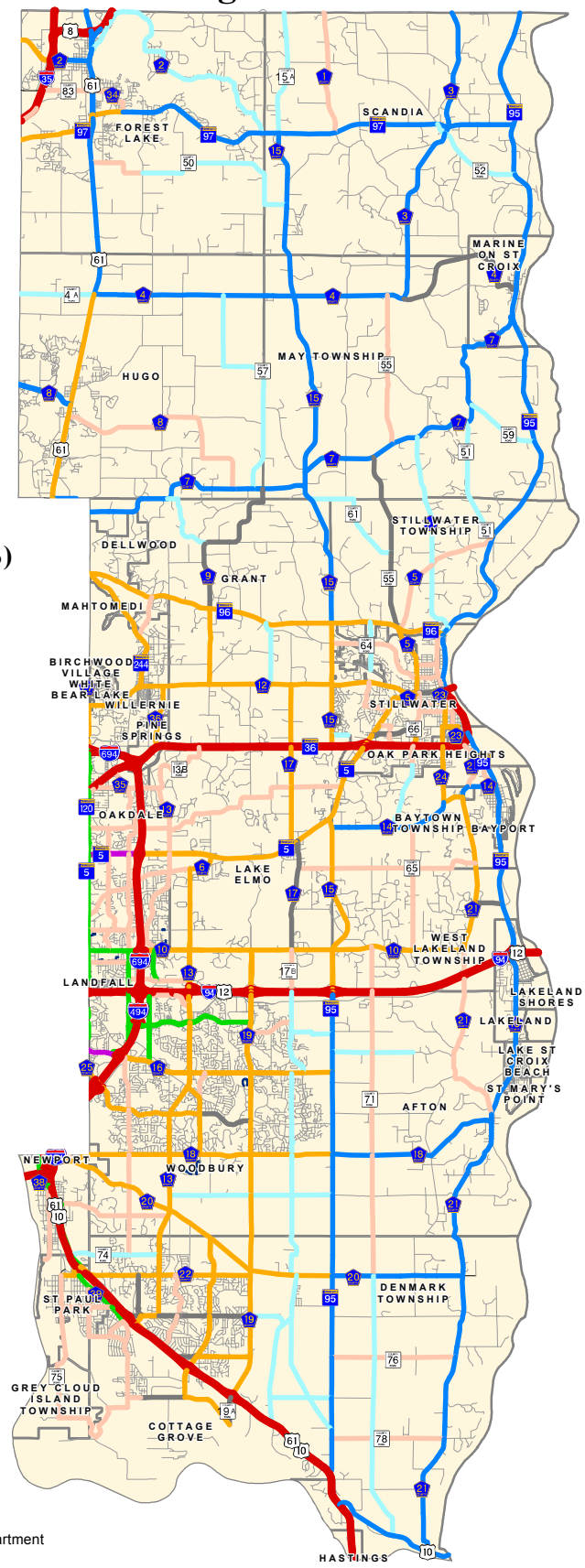
Collector roadways serve shorter trips and allow more direct access from local streets and driveways. These roadways collect and distribute traffic to the arterial system from neighborhoods as well as commercial and industrial areas. Collector roadways are typically spaced one-fourth to three-fourths mile apart in developed areas and one-half to one mile apart in rural areas. The collector roadways in Washington County are owned and operated by the county, cities, and townships. Examples of these roadways are North Shore Trail (CSAH 2), County Road (CR) 57, Hadley Avenue, and 30th Street North. The Metropolitan Council further defines collector roadways as major and minor collectors.

Local Streets

Local streets connect blocks within residential neighborhoods and land parcels within commercial and industrial developments. They serve short trips typically at low speeds favoring land access over mobility. Local streets occur every block in urban areas but may be spaced up to one mile apart in rural areas. Local streets are owned and operated by cities and townships.

Figure 4-3

Existing Road Functional Classification



Principal Arterial (131 miles, 19%)

- Principal Arterial

A Minor (326 miles, 48%)

- A Minor Augmentor
- A Minor Reliever
- A Minor Expander
- A Minor Connector

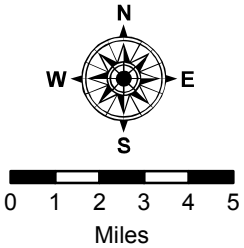
B Minor (29 miles, 4%)

- B Minor

Collector (200 miles, 29%)

- Major Collector
- Minor Collector

Mileages are approximate.



Prepared By: Washington County GIS Support Unit, IT Department
Data Source: The Lawrence Group - 2007

Existing Jurisdictional Classification

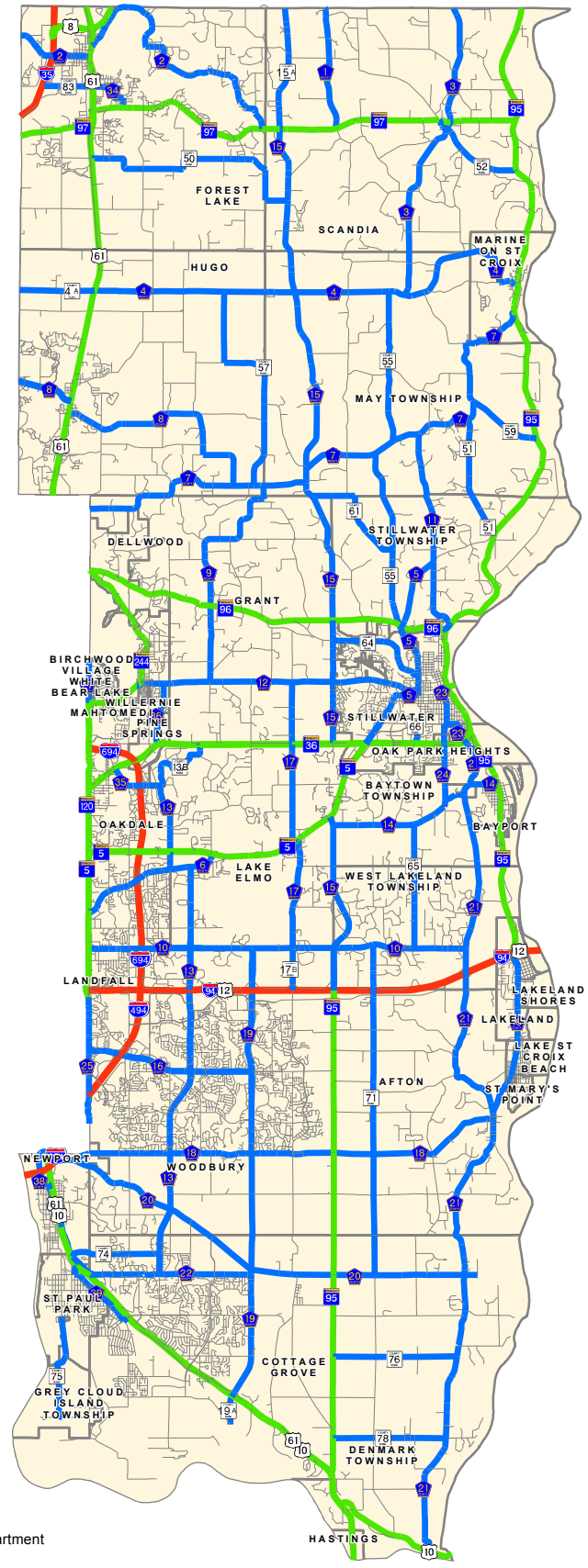
Roadways are classified by the level of government that is responsible for operating and maintaining the roadway. The jurisdictional classification is directly related to the roadway functional classification and the roadway design type. In general, roadways that serve local transportation needs are owned and maintained by the local government. Roadways that serve regional, inter-county and statewide transportation needs are owned and maintained by the State of Minnesota. Roadways that provide connections to major activity locations within the county and to the metropolitan highway system are typically owned and maintained by the county.

The federal government, which has jurisdiction over the interstate highway system, has delegated its authority for operating and maintaining that system to the state with oversight provided by the Federal Highway Administration (FHWA). The MN/DOT has jurisdiction over the trunk highway system. Washington County has jurisdiction over the county state aid highway (CSAH) and county road systems. The cities and townships have jurisdiction over the remaining streets and roadways.

Figure 4-4 shows the jurisdictional classifications and current mileages. Over the past 12 years, 18 roadway jurisdictional changes have occurred to better align the responsible level of government with the functional classification of the roadway. These are shown on Figure 4-5.

Figure 4-4

Existing Jurisdictional Classification



- Federal (50mi., 2%)
- State (162mi., 8%)
- County (303mi., 15%)
- Municipal (1,531mi., 75%)

Mileages are approximate.

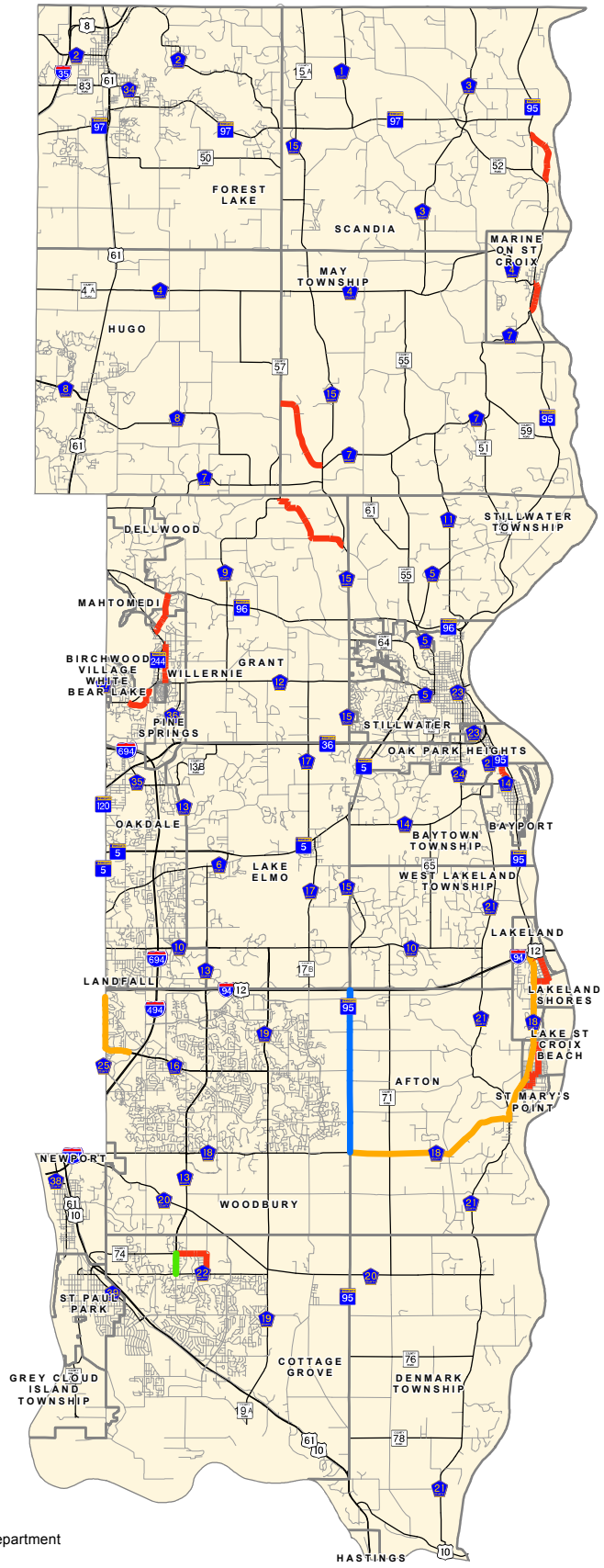
N
W E
S

0 1 2 3 4 5
Miles

Prepared By: Washington County GIS Support Unit, IT Department
Data Source: The Lawrence Group - 2007

Figure 4-5

Jurisdictional Classification Changes Since 1996



- County to Local (14.6 miles)
- County to State (5.1 miles)
- Local to County (0.5 miles)
- State to County (10.2 miles)

Mileages are approximate.

N
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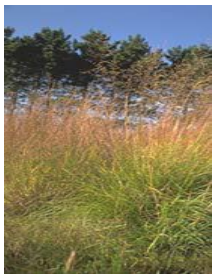
S

0 1 2 3 4 5
Miles

Prepared By: Washington County GIS Support Unit, IT Department
Data Source: The Lawrence Group - 2007



Traffic Volumes and Capacity Deficiencies

Volume to Capacity Ratio

The ratio of traffic volume to roadway capacity (v/c ratio) provides a measure of congestion along a roadway segment. It can help determine where roadway improvements, access management, transit services, or demand management strategies could be implemented. It does not, however, provide a basis for determining the need for specific intersection improvements. Congestion on the roadway system is determined to exist when the v/c ratio approaches or exceeds 1.0.

Table 4-1 shows the roadway capacity for roadway types. It lists the typical planning-level average daily traffic (ADT) capacity volume thresholds for each facility type. These volume thresholds are based on guidelines from the *Highway Capacity Manual*, discussions with the Metropolitan Council, and professional engineering judgment. The maximum capacity of any roadway design (v/c = 1) is a theoretical measure that can be affected by its functional classification, traffic peaking characteristics, access spacing, speed, intersection node geometry, and other roadway characteristics. A segment of roadway is said to be "approaching capacity" when the observed ADT equals or exceeds 85 percent of ADT (v/c > 0.85).

The existing 2005 traffic volumes and existing number of lanes are presented in Figures 4-6 and 4-7 respectively.

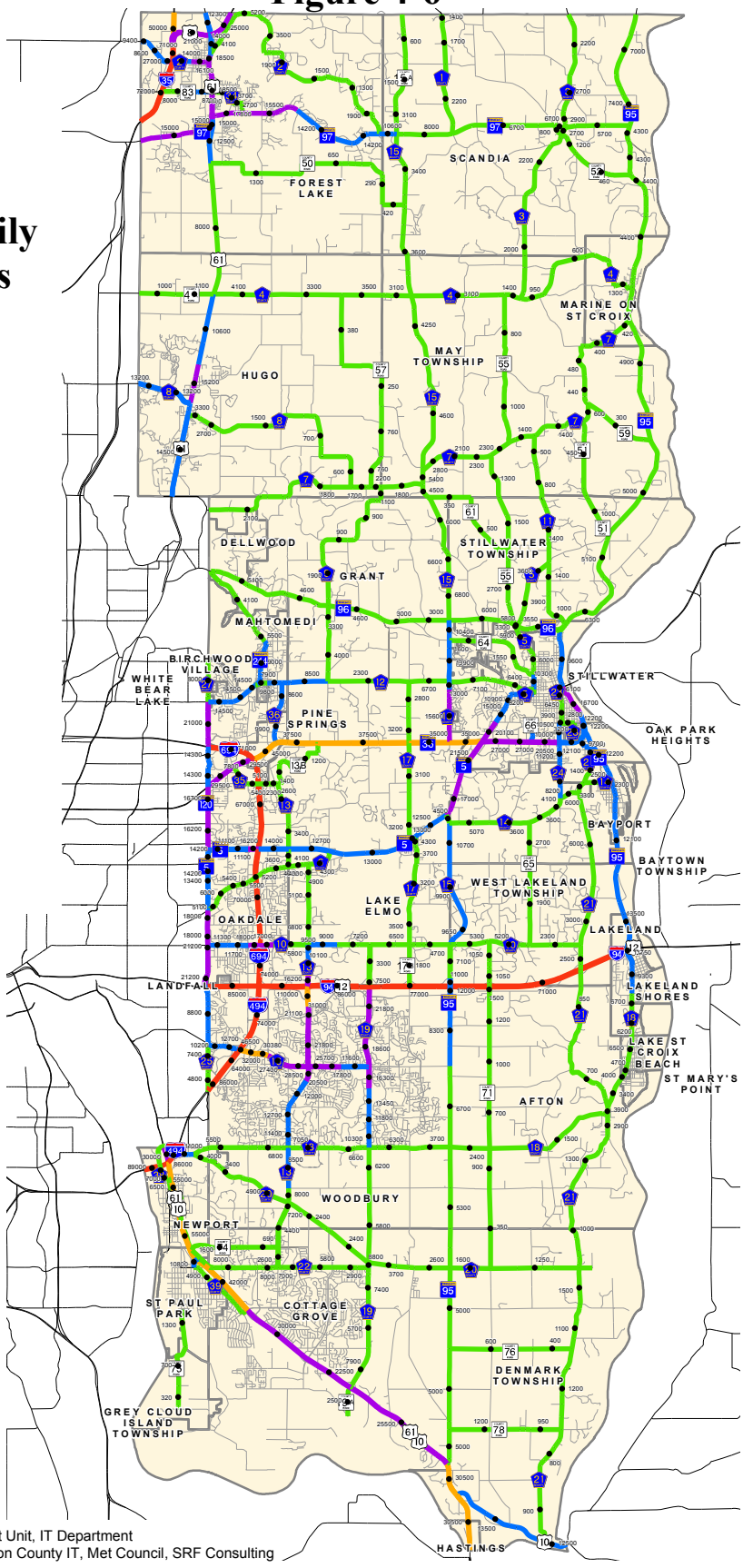
Table 4-1 Planning Level Roadway Capacities by Facility Type Washington County		
Roadway Type[1]	**Planning Level Daily Capacity (ADT)[2]**	**Approaching Capacity (85% of ADT)**
Two-lane undivided urban	10,000	8,500
Two-lane undivided rural	15,000	12,750
Three-lane urban(two-lane divided with turn lanes)	17,000	14,450
Four-lane undivided urban	22,000	18,700
Five-lane urban (four-lane divided with turn lanes)	32,000	27,200
Four-lane divided rural	38,000	32,300
Four-lane expressway	60,000	51,000
Four-lane freeway	80,000	68,000
Six-lane freeway	120,000	102,000

[1] *The terms urban and rural describe typical section design (e.g., curb and gutter for urban, and ditch drainage for rural) not geographic areas.*

[2] *ADT is the average daily traffic count.*

Figure 4-6

2005 Average Daily Traffic Volumes



Existing Volumes

- 0 - 8000
- 8001 - 15000
- 15001 - 30000
- 30001 - 60000
- 60001 - 110000

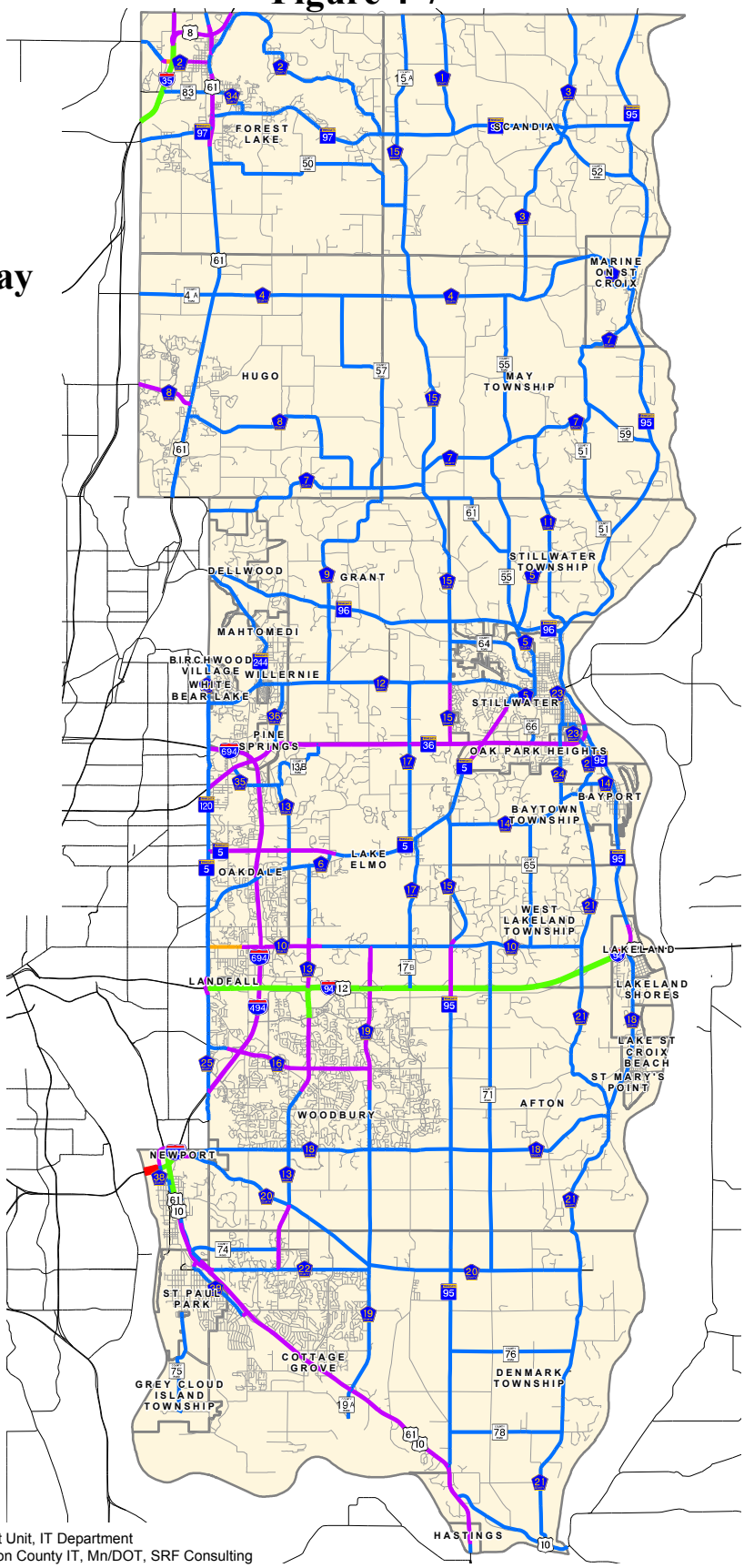
N
W E
S

0 1 2 3 4 5
Miles

Prepared By: Washington County GIS Support Unit, IT Department
Data Source: The Lawrence Group, Washington County IT, Met Council, SRF Consulting

Figure 4-7

2005
Lanes by Roadway



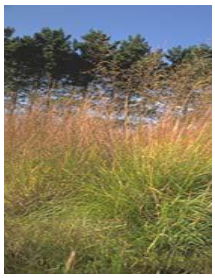
Existing # of Lanes

- 2
- 3
- 4
- 6
- 8

N
W E
S

0 1 2 3 4 5
Miles

Prepared By: Washington County GIS Support Unit, IT Department
Data Source: The Lawrence Group, Washington County IT, Mn/DOT, SRF Consulting



Roadway Congestion

Existing capacity deficiencies were identified by comparing existing ADT volumes to the thresholds in Table 4-1. This methodology does not account for traffic conditions that do not fit the average daily traffic criteria (e.g., weekend travel, holiday travel, special events) because they tend to produce atypical congestion. These conditions are likely to produce different congestion levels. Also, the methodology does not take into account factors such as geometric conditions at the intersection nodes, potential peaking characteristics, or directional flow disparities. These features can greatly impact the order of magnitude of the deficiency (i.e., there is no deficiency or the deficiency is greater than what the ADT indicates). Despite its limitations, this methodology is widely accepted and applicable for transportation planning purposes.

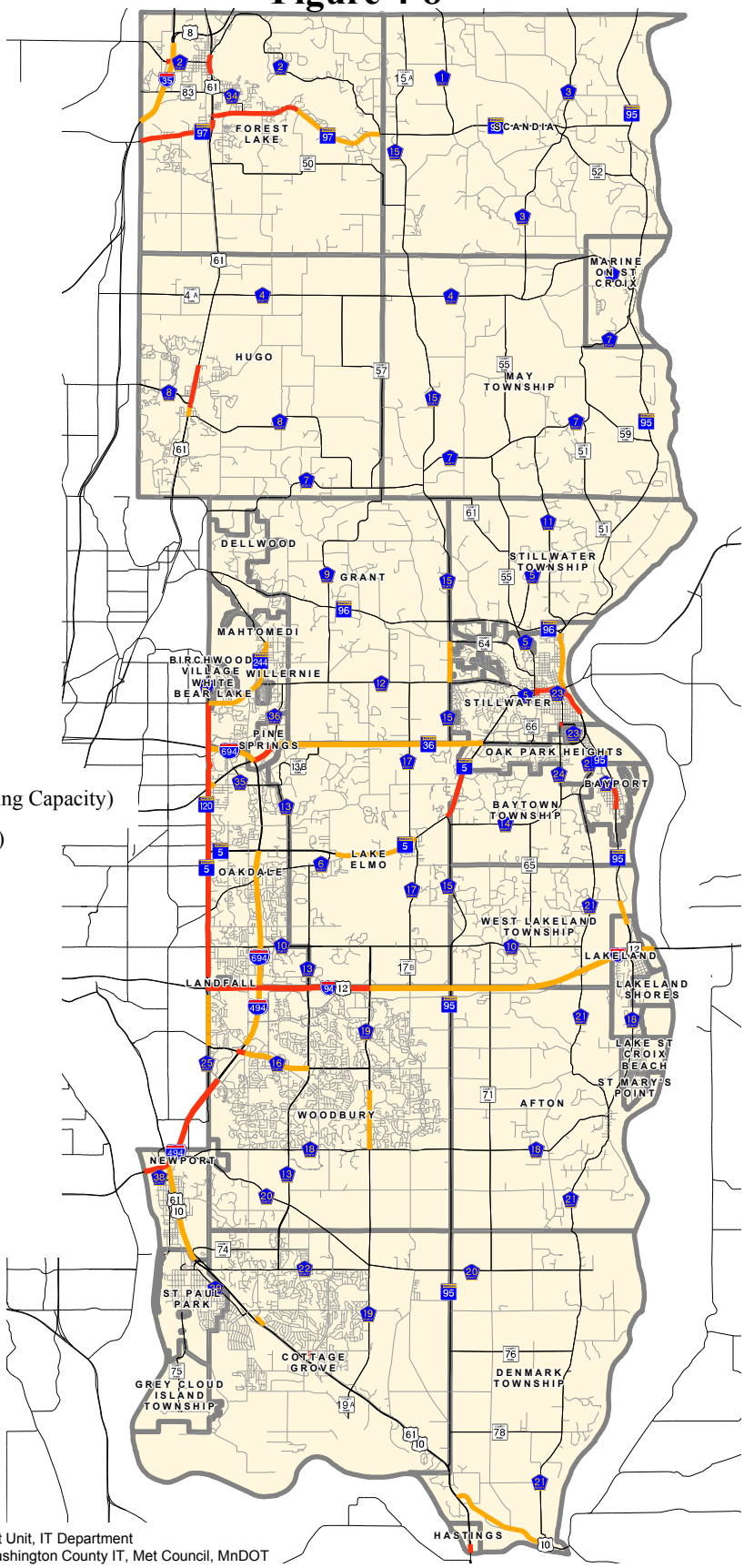
Figure 4-8 presents the current capacity issues on highways in Washington County. Roadway segments, having observed volumes exceeding their design capacity, are shown as red lines. Roadway segments "approaching capacity" (v/c ratio between 0.85 and 1.0) are shown as yellow lines.

Mobility Deficiency Rankings on the Regional Highway System

The MN/DOT 2008-2030Transportation System Plan (TSP) identifies Trunk Highway 36 and Interstate 494 in Washington County as having a high mobility deficiency rating and portions of Interstate 94, Interstate 694 and U.S. Highway 61 as having medium deficiency ratings. Corridors with a high deficiency rating are targeted for mobility improvements between 2008 and 2014 and corridors with a medium deficiency rating are targeted for mobility improvements between 2015 and 2023. MN/DOT's goal is to lower congestion to 33 percent on the metro freeway and arterial trunk highway system by year 2030.

Figure 4-8

2005 Congestion



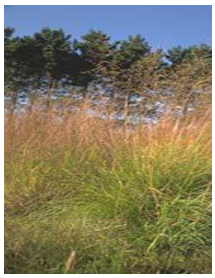
Volume/Capacity Ratio

- 0.85 - 1.00 (Approaching Capacity)
- 1.01 + (Over Capacity)

N
W E
S

0 1 2 3 4 5
Miles

Prepared By: Washington County GIS Support Unit, IT Department
Data Source: The Lawrence Group - 2007, Washington County IT, Met Council, MnDOT



The TSP also identifies roadway expansion investments to meet congestion/mobility targets. Capacity improvements to Interstate 694 between Interstate 35E and Trunk Highway 36 and Trunk Highway 36 between Trunk Highways 5 and 95 are identified as needed projects in the 2024-2030 timeframe. Trunk Highway 95 between Interstate 94 and U.S. Highway 61 and between Interstate 94 and Trunk Highway 36 is identified as a needed safety improvement with a recommendation to increase from a two-lane to a four-lane roadway by 2030.

System Continuity

Some roadways have discontinuous alignments with opportunities for more logical connections. The county's 2020 Comprehensive Plan identified seven opportunities for improving travel continuity through realignment or connection of roads. These include:

- East-west corridor between Interstate 494 and Manning Avenue (TH 95), south of Interstate 94 and north of Bailey Road (CSAH 18) in Woodbury and Afton.
- North-south corridor from the Manning Avenue (CSAH 15) and Trunk Highway 5 intersection to Trunk Highway 36 in Lake Elmo.
- Access to Interstate 35 from Washington County Road 4A and Anoka County Road 140 in Hugo and Lino Lakes.
- Access to Interstate 35 between Trunk Highway 97 and Broadway Avenue (CSAH 2) in Forest Lake.
- North-south connection between the south end of Century Avenue (CSAH 25) and Bailey Road (CSAH 18) in Woodbury.
- North-south connection from the Inwood Avenue (CSAH 13) and Stillwater Boulevard (CSAH 6) intersection to Trunk Highway 5 in Lake Elmo.
- North-south connection on County Road 13A from Military Road (CSAH 20) to 65th Street South (CR 74) in Woodbury and Cottage Grove.

During the past 12 years, the city of Woodbury and Washington County have developed a collector and arterial road system that provides east-west connections through most of the city of

Woodbury. It includes Tamarack, Valley Creek (CSAH 16), and Lake roads. A new north-south connection was constructed connecting Military Road (CSAH 20) and 65th Street South (CR 74) along the Radio Drive/Hinton Avenue (CSAH 13) alignment.

Safety

A comprehensive, system wide and data-driven analysis was conducted for crashes occurring within Washington County. It followed the guidance in the Minnesota Strategic Highway Safety Plan and the Toward Zero Deaths program to reduce fatal and life-changing (incapacitating) injury crashes. This analysis acknowledged that, while the total number of severe crashes may be significant, the actual number of severe crashes occurring at any given location is very low.

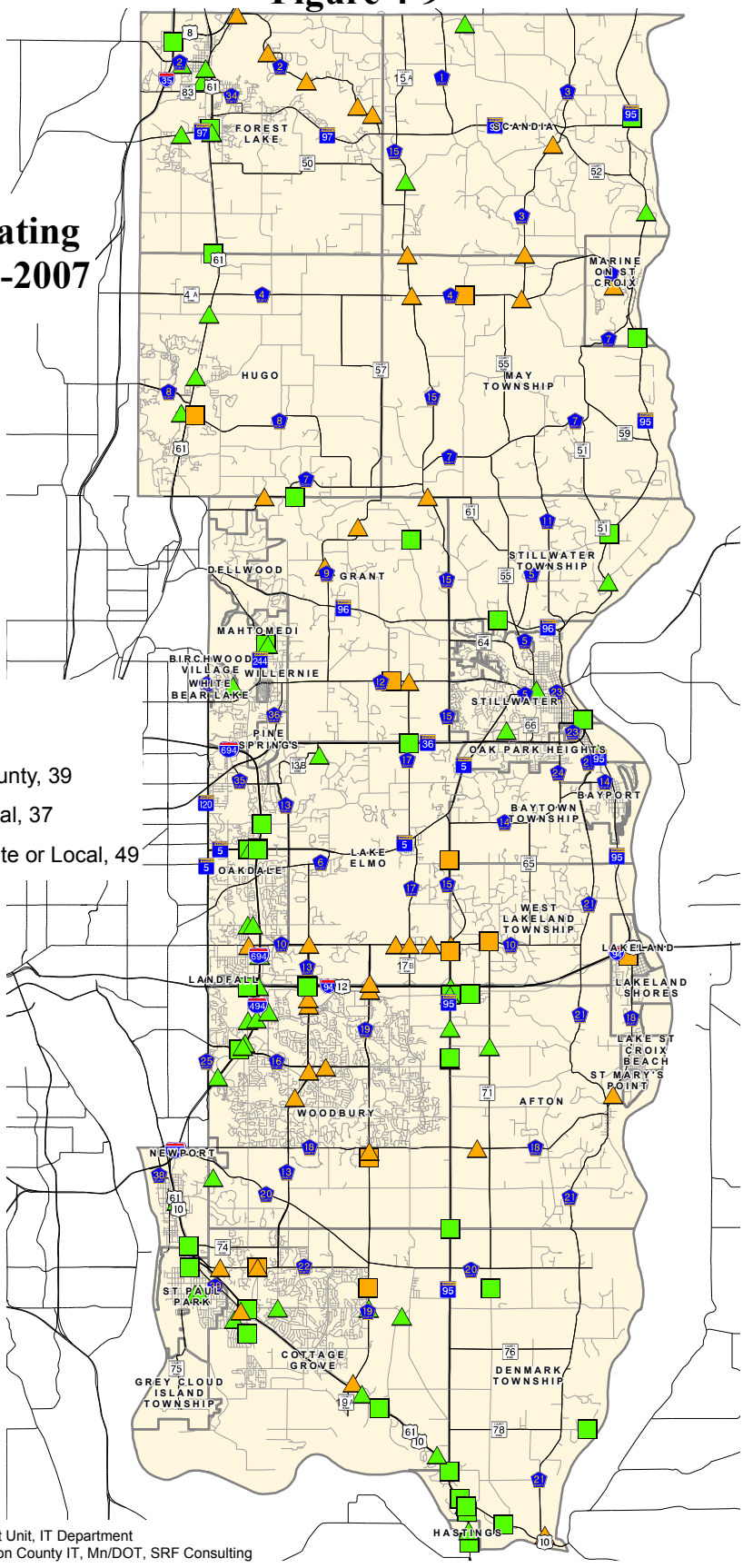
Figure 4-9 shows the severe crashes based on the county's fatal and life-changing injury crash data for the three-year period between 2005 and 2007, as analyzed by the Minnesota Crash Mapping Analysis Tool (MnCMAT). Table 4-2 provides additional information on the characteristics of these crashes.

The findings and conclusions of the crash analysis are summarized below.

- A total of 135 fatal and life-changing/incapacitating injury crashes occurred on all roadways within the county (47 fatal and 88 incapacitating injury crashes).
- A total of 51 fatal and life-changing/incapacitating injury crashes occurred on the Washington County roadway system (11 fatal and 40 incapacitating injury crashes).
- The following types of fatal and life-changing/incapacitating injury crashes occurred most frequently on the county roadway system: lane departure crashes including run off road crashes particularly on the right side of the roadway; crashes with trees and shrubbery; intersection-related crashes including right angle and rear-end crashes; motorcycle crashes; and crashes occurring under dark and low-light conditions at locations without roadway lighting.

Figure 4-9

Fatal and Incapacitating Injury Crashes 2005-2007



Severity, System, Count

- Fatal, County, 10
- Incapacitating, County, 39
- Fatal, State or Local, 37
- Incapacitating, State or Local, 49

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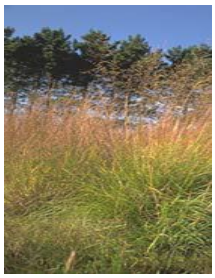
Miles

Prepared By: Washington County GIS Support Unit, IT Department
Data Source: The Lawrence Group, Washington County IT, Mn/DOT, SRF Consulting

Table 4-2
Systemwide Fatal and Incapacitating Injury Crash Data 2005 to 2007
Washington County

Crash Type		Washington County System Only		State and Local System in Washington County		Combined System Totals	
		Number	Percent	Number	Percent	Number	Percent
Fatal Crashes		11	22%	36	43%	47	35%
Incapacitating Injury Crashes		40	78%	48	57%	88	65%
Total Crashes		51	100%	84	100%	135	100%
DETAIL							
Lane Departure Crashes	Ran off road - right side	13	62%	18	47%	31	53%
	Ran off road - left side	5	24%	7	18%	12	20%
	Sideswipe - opposing direction	2	10%	3	8%	5	8%
	Head-on	1	5%	10	26%	11	19%
	Sideswipe - same direction	0	0%	0	0%	0	0%
	Total Lane Departure Crashes	21	100%	38	100%	59	100%
Intersection Related Crashes	Right angle	12	48%	19	70%	31	60%
	Rear end	10	40%	7	26%	17	33%
	Left turn	3	12%	1	4%	4	8%
	Right turn	0	0%	0	0%	0	0%
	Total Intersection Related Crashes	25	100%	27	100%	52	100%
Other Crashes	Not reported, not applicable and other	5		19		24	
Other Crash Types and Characteristics of Interest	Trees/shrubbery	13	25%	6	7%	19	14%
	Motorcycle	10	20%	21	25%	31	23%
	Dark - no roadway lighting	10	20%	18	21%	28	21%
	Slippery pavement conditions	9	18%	16	19%	25	19%
	Overturn/rollover	2	4%	12	14%	14	10%
	Pedestrian	2	4%	8	10%	10	7%
	Embankment/ditch/curb	2	4%	3	4%	5	4%
	Pedicycle (bicycles/wheeled devices)	0	0%	4	5%	4	3%

Source: Minnesota Department of Transportation



River Crossings

Because it is bounded on the east by the St. Croix River and on the southwest by the Mississippi River, river bridge crossings are critical components of Washington County's transportation system. Their ability to adequately serve the needs of the transportation system is crucial. All of the active river bridge crossings are on the state highway system and not directly under county control. The Trunk Highway 36 lift bridge at Stillwater and the Interstate 94 bridge at Lakeland and the Trunk Highway 10 bridge at Point Douglas in Denmark Township cross the St. Croix River. The Interstate 494 Wakota Bridge at Newport and the Trunk Highway 61 bridge at Hastings cross the Mississippi River.

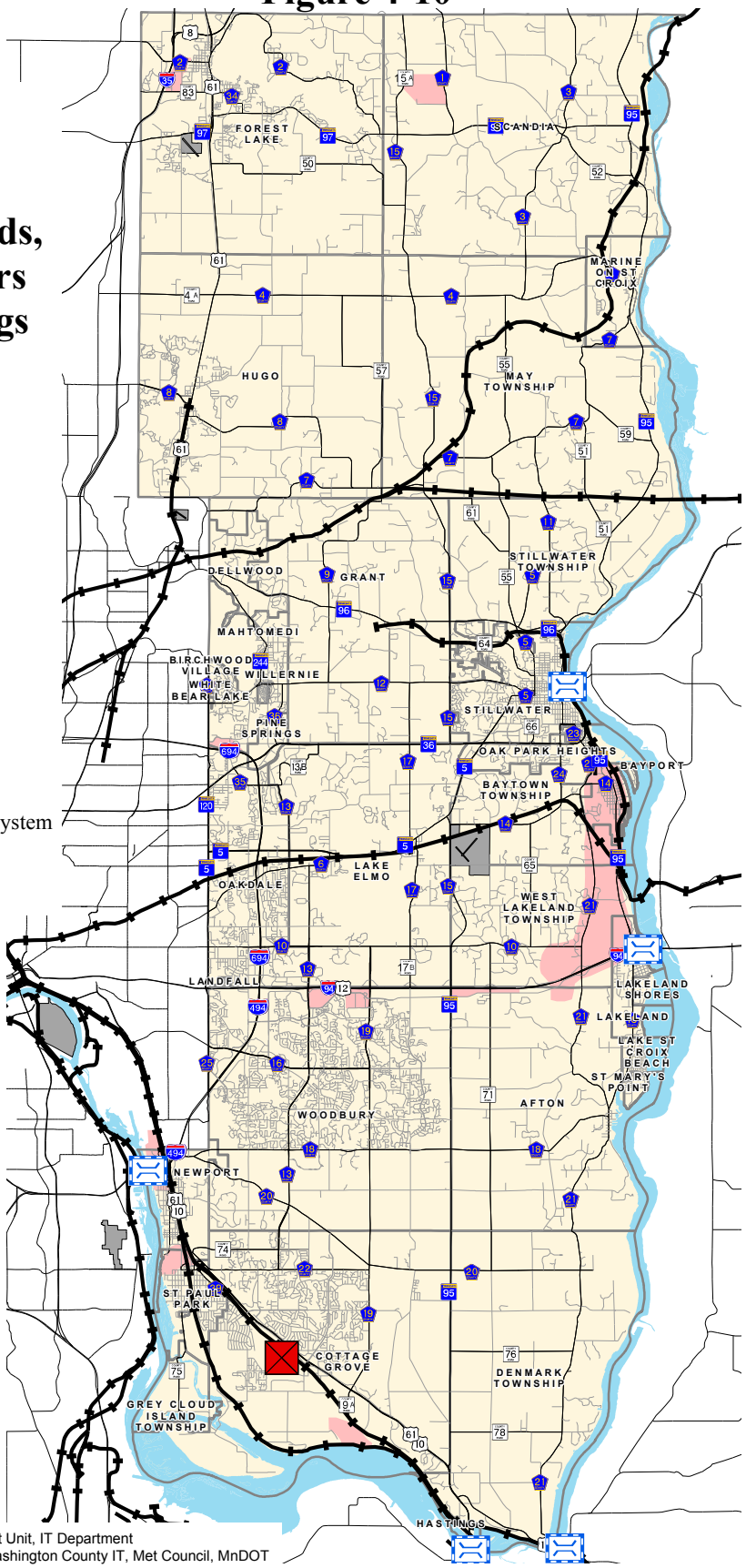
The following river bridge improvements are currently underway or scheduled.

- Construction of a new Trunk Highway 36 crossing of the St. Croix River is currently scheduled to begin in 2013. MN/DOT is the lead agency.
- Construction of the Trunk Highway 61 bridge is scheduled to begin in 2010. The reconstruction schedule of this bridge has been accelerated due to its fracture-critical structure and low sufficiency rating. MN/DOT is the lead agency.
- Construction of the Interstate 494 Wakota Bridge is currently underway and is scheduled for completion in 2010. MN/DOT is the lead agency.
- Bridge 5600 was closed to traffic in 1999 due to safety concerns and was removed in winter of 2009.

Figure 4-10 shows the river bridge crossing locations in the county.

Figure 4-10

Airports, Railroads, Truck Generators & River Crossings



- River Crossings
- Inter-Modal Facilities
- Railroads
- Airports in the Regional System
- Truck Generators

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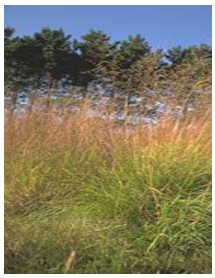
Prepared By: Washington County GIS Support Unit, IT Department
Data Source: The Lawrence Group - 2007, Washington County IT, Met Council, MnDOT



Scenic Byways and Natural Preservation Routes

The Scenic Byways and Natural Preservation Route designations could be regarded as overlay designations that distinguish roads that have special scenic, historic, cultural, or natural characteristics.

Scenic Byways

The Federal Intermodal Surface Transportation Equity Act of 1991 (ISTEA) created a National Scenic Byways Program to designate and protect roads that provide an enjoyable travel experience. The St. Croix Scenic Byway parallels the St. Croix River along CSAHs 18 and 21 south of Interstate 94 and along Trunk Highway 95 north of Interstate 94 in Washington County and then continues north through Chisago and Pine counties north to Pine City. The Great River Road runs along TH 61 and TH 10 in the southwestern portion of the county

Natural Preservation Routes

The east-west section of CSAHs 18 and 21 within the city of Afton are designated as a Type III Natural Preservation Route as part of the Minnesota County State Aid Highway system. This designation allows road designs to be more compatible with their natural surroundings than would typically be allowed under state-aid standards. The purpose of the program is to protect the unique scenic or environmental characteristics along CSAH roads.

Freight

Trucking

Commercial trucking is a primary mode of transportation for the movement of goods within and through the county. Washington County highways are designated trucking routes, designed and constructed to accommodate and support the transport of

freight by truck. The sites that generate significant truck volumes are listed below and are shown on Figure 4-10.

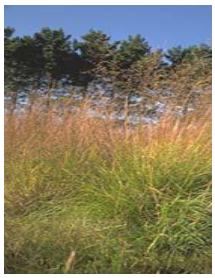
- Andersen Windows in Bayport.
- Truck terminal in Afton near Interstate 94 and Neal Avenue (CR 71).
- Gravel quarries along Stagecoach Trail (CSAH 21) from 30th Street North to Division Street.
- Federal Express truck terminal in Mahtomedi near Interstate 694 and Century Avenue (TH 120).
- Aggregate Industries in Grey Cloud Island Township.
- Marathon Refinery in Newport near Trunk Highway 61 and 70th Street South.
- Jamaica Avenue truck terminal in Cottage Grove.
- Distribution centers in Woodbury.
- Commercial areas in Forest Lake.

With the exception of the gravel quarries and aggregate industries, these major truck generators have close proximity and access to the state trunk highway system, thereby reducing their impact on county and local roads.

Railroads

Railroads are a significant element in the country's transportation system, moving freight to and between ports and major urban areas. Railroads have an impact on land use, the physical and social environment, and other components of the transportation system.

Figure 4-10 shows the location of the five railroads that operate in Washington County. These railroads are Burlington Northern Santa Fe (BNSF), Canadian National (CN, former Wisconsin Central), Canadian Pacific (CP, former Soo Line), Minnesota Commercial (MNNR), and Union Pacific (UP).



Railroad companies are divided into three classes based on operating revenues and status as defined by the federal Surface Transportation Board. Class I railroads are the largest, long-haul carriers and have annual gross operating revenue of at least $346.8 million. These railroads provide important connections to national and international freight markets. Class I railroads operating in Washington County are BNSF, CN, CP, and UP.

Class II railroads, also referred to as regional short line railroads, have annual gross operating revenue between $27.8 million and $346.8 million. No Class II railroads operate in Washington County.

Class III railroads, also referred to as short line or local railroads, have annual gross operating revenue of less than $27.8 million. These are primarily local railroads with traffic that originates or terminates on the line; they provide local businesses with connections to the national railroad network. MNNR is the only Class III railroad operating in Washington County. It operates on right-of-way owned by BNSF and the Washington County Regional Railroad Authority. This railroad line, known as the Rush Line, formerly ran north to Duluth. The line is abandoned between Hugo and North Branch; its right-of-way is being preserved by the Regional Railroad Authority as the Hardwood Creek Trail and Sunrise Prairie Trail. This corridor offers the potential for future use by freight, commuter rail, or high speed rail service.

The Minnesota Zephyr is a privately owned local railroad in Stillwater that ceased operations in January, 2009.

Intermodal facilities are locations where bulk commodities are transferred from rail to other modes of transportation. MN/DOT's intermodal facilities database lists one major freight rail transloading terminal in Washington County. This facility is an auto reloading terminal in Cottage Grove where automobiles are transferred from rail cars and onto trucks for regional distribution. Washington County is in close proximity to major intermodal facilities in St. Paul and Minneapolis on the BNSF, CP,

and UP railroad systems. These facilities connect the greater Twin Cities region with national and international markets.

The Red Rock Corridor Commuter Rail line would share tracks with the existing freight lines along the Trunk Highway 61 corridor currently owned by BNSF and CP. (See the Transit Section for more details on this rail line.)

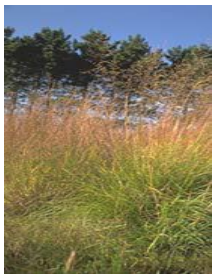
Amtrak's Empire Builder long distance passenger train service between Chicago and Seattle and Portland utilizes CP and BNSF tracks in Washington County, though there is no station stop within the county. The closest station stops are in St. Paul-Minneapolis and Red Wing, MN. There is potential to upgrade this service to high-speed rail between the Twin Cities Metropolitan Area and Chicago, Illinois, as part of the Midwest Regional Rail Initiative (MWRRI).

Aviation

Commercial aviation service to national and international destinations is available through the Minneapolis-St. Paul (MSP) International Airport. Business and private aviation service is available at the St. Paul downtown airport. Washington County also is served by two publicly-owned airports located within the county. The Lake Elmo Airport is located in Baytown Township and is owned and operated by the Metropolitan Airports Commission (MAC). The Daniel Deponti Municipal Airport is located in and owned and operated by the city of Forest Lake. Figure 4-10 shows the location of the airports within the county.

Lake Elmo Airport

The Lake Elmo Airport, located on 640 acres in Baytown and West Lakeland townships, is a general aviation airport. The Metropolitan Council classifies it as a minor airport. The airport serves as a secondary reliever to the MSP airport and is used for air taxi, business aviation, flight training, personal use, recreation, and military purposes. The airport facility consists of: two main building areas and operational and maintenance buildings; two paved runways, one of which is equipped with



medium intensity runway lights, neither has instrument approaches; and over 50 hangar structures plus a private hangar.

Daniel Deponti Airport, Forest Lake

The Daniel Deponti Airport, located on 180 acres in Forest Lake, is a general aviation airport. The airport consists of a single 2,725-foot turf runway on approximately 180 acres. Take-offs and landings at the airport are accomplished by visual approach; no instrument approach procedures are currently available. In 2000, the city of Forest Lake completed a facility plan. It also completed an Alternative Urban Area wide Review (AUAR) to study the environmental effects of the proposed improvements.

The Daniel Deponti Airport will play an expanding role in the regional aviation system by providing both local and non-local general aviation facilities and services. The FAA has identified this airport as a potential reliever airport in the future.

The city of Forest Lake has identified improvements to the airport, including a 3,300 foot-long paved runway, runway lights, and a non-precision instrumentation approach.

Seaplane Operations

Special state rules regulate seaplane operations on all public waters in the Twin Cities Metropolitan Area. In Washington County, seaplane operations are only permitted on Big Carnelian Lake, Big Marine Lake, Clear Lake, Forest Lake, Lake Elmo, Oneka Lake, the Mississippi River, and the St. Croix River. On White Bear Lake, seaplane operations are permitted, but with additional restrictions on weekend and holiday operations.

Transit

Meeting the transportation needs of Washington County residents requires a complete transportation system incorporating a variety of transportation modes. Affordable and convenient transit is an essential characteristic of urban and

suburban communities. The growing demand and opportunity for convenient and reliable transit service is fueled not only by the aging of the county's population but also by its increasing growth and densification. Providing convenient, reliable, and robust transit service can play a vital role in supporting mobility, access, and economic development.

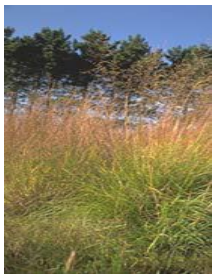
Transit Market Areas

The Metropolitan Council's 2030 Transportation Policy Plan (TPP) identifies five transit market service areas within the Twin Cities Metropolitan Area. Market areas represent expected demand for transit and are defined by population, employment, aggregate vehicle availability, and land uses. Table 4-3 displays the Metropolitan Council's recommended service options for each market area. Existing Washington County transit service delivery is generally consistent with these guidelines. Highly developed areas of Washington County, including portions of Woodbury, Oakdale, Cottage Grove, and Stillwater are primarily in Market Area III. Developing areas are primarily in Market Area IV. Rural areas are primarily in Market Area V.

Table 4-3
Transit Market Area Service Options
Washington County

Transit Market Area	Suggested Service Type
Area I	Primary emphasis on regular route service. Downtown area circulators possible.
Area II	Primary emphasis on regular route service. Cross-town routes and limited stop services link major destinations.
Area III	A mix of regular route and community circulator service complemented by dial-a-ride service in specific cases. Community circulators tie into regular route regional service at a transfer point.
Area IV	Peak period express service, if potential demand for service is sufficient to support at least three peak-period trips. General public dial-a-ride services.
Area V	Primary emphasis on general public dial-a-ride services.

Source: Metropolitan Council 2030 Transportation Policy Plan, Appendix G



Fixed-Route Transit

The Metropolitan Council's Metro Transit and Metropolitan Transportation Services (MTS) provide the fixed-route transit service in Washington County, including express, local, and reverse commute. Existing fixed-route service transit service is shown in Figure 4-11.

Express Service

Express service operates during peak periods and serves commuters living in the suburbs and working in the downtowns of Minneapolis and St. Paul. Table 4-4 lists the express routes operating in Washington County. Each of the commuter corridors is a candidate for fixed-guideway transit, discussed later in this chapter.

Table 4-4
Express Bus Service
Washington County

Commuter Corridor	Route	Description
Interstate 35W	288	Forest Lake–Minneapolis
Trunk Highway 36	270	Mahtomedi–Maplewood–Minneapolis
	294	Stillwater–Oakdale–St. Paul
Interstate 94	350	Maplewood (Century Avenue)–St. Paul
	351	Woodbury–St. Paul
	353	Woodbury–St. Paul–Minneapolis
	355	Woodbury–Minneapolis
	375	Oakdale–Minneapolis
Trunk Highway 61/Red Rock	361	Cottage Grove–St. Paul
	364	St. Paul Park–Newport–St. Paul
	365	Cottage Grove–Minneapolis

Source: Metropolitan Council Transit

Local Service

Local service provides short trips within a community or to adjacent communities throughout the day. Metro Transit routes 70 and 74 terminate at or just inside the county border. Metro Transit route 219 connecting Maplewood Mall to the Sun Ray

Transit Center via Century Avenue serves the city of Landfall. The remainder of the county is not served by local bus service.

Reverse Commute Service

Reverse commute service serves residents of the central cities who use transit to travel to suburban employment centers. These routes typically operate during peak hours and travel in the opposite direction of the peak hour express routes. Metro Transit provides reverse commute service on routes 294, 351, and 361.

Demand Responsive Transit

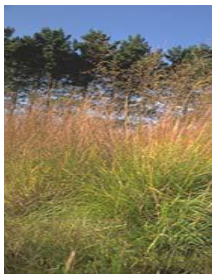
Demand responsive transit service in Washington County consists of complementary services that are compliant with the Americans with Disabilities Act (ADA) and two kinds of public dial-a-ride services.

Complementary ADA Services

In compliance with the ADA, Metro Mobility provides demand responsive service for persons with disabilities that prevent them from using the regular route system. Within the Metropolitan Transit Taxing District (a portion of the metropolitan area in which all taxable property is assessed a tax to be used for payment of transit and para-transit services), the Metropolitan Council contracts with Human Services Inc., (HSI) to provide additional ADA services. The HSI ADA service area covers the following communities: Bayport, Baytown Township, Birchwood Village, Cottage Grove, Dellwood, Grey Cloud Island Township, Lake Elmo, Mahtomedi, Newport, Oak Park Heights, Pine Springs, St. Paul Park, Stillwater, Willernie, and Woodbury.

General Dial-a-Ride Programs

The HSI Transporter provides general public shared ride dial-a-ride service throughout the entire county. Service by HSI to the non-disabled, senior, and general population is provided weekdays from 8 a.m. to 5 p.m. In some areas, HSI provides regular dial-a-ride service on an as-needed basis as early as 5:30



a.m. and as late as 8 p.m. HSI estimates its Washington County customer base to be 1,200 persons.

Two community-based systems operate dial-a-ride transit service in portions of Washington County. These services originally formed to meet a specific mobility need for elderly or disabled but are now available to the general public. Northeast Suburban Transit (NEST) provides general dial-a-ride service in Oakdale and a few key destinations outside of Oakdale weekdays between 6 a.m. and 6 p.m. Lake Area Bus provides general dial-a-ride service in White Bear Lake, Willernie, Mahtomedi and Birchwood weekdays between 6 a.m. and 6 p.m.

Contracted Dial-a-Ride Programs

The MTS funds three additional dial-a-ride services in Washington County. Woodbury Dial-a-Ride provides service in and around the city of Woodbury and to Sun Ray Shopping Center, weekdays between 7 a.m. and 6 p.m. St Croix Valley Dial-a-Ride (Route 246) provides service in Stillwater, Bayport and Oak Park Heights weekdays between 8 a.m. and 5 p.m. South County Circulator Dial-a-Ride (Route 320) provides service in Cottage Grove, Newport, and St. Paul Park, weekdays between 5:30 a.m. and 6:30 p.m.

Transit Facilities

Park-and-Ride Facilities

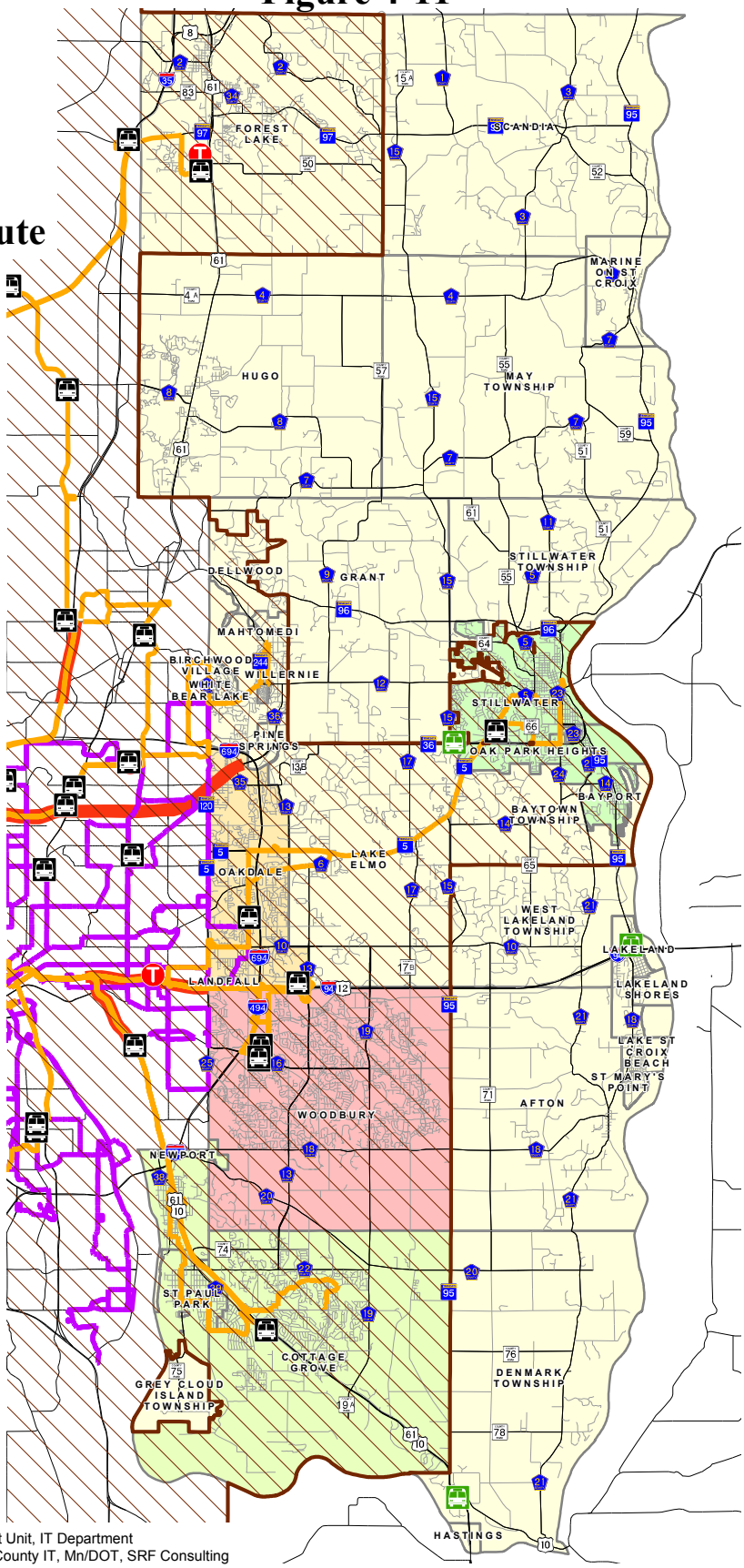
Eight park-and-ride facilities anchor the county's express bus service. The majority of these facilities are joint-use lots. The Forest Lake Transit Center and the Cottage Grove Park-and-Ride serve only transit purposes. Table 4-5 shows the capacity and usage at each facility in October 2008. The joint-use facility at Guardian Angels Catholic Church is expanding to 435 vehicles to accommodate high park-and-ride demand in Oakdale and Woodbury.

Table 4 - 5 Park and Ride Capacity and Usage, October 2008 Washington County				
Facility	**City**	**Capacity**	**Usage**	**Utilization**
Cottage Grove	Cottage Grove	525	284	54%
Forest Lake Transit Center	Forest Lake	308	81	26%
Walton Park	Oakdale	58	37	64%
Guardian Angels Catholic Church	Oakdale	200	229	115%
St. Croix Valley Recreation Center	Stillwater	100	40	40%
Christ Episcopal Church	Woodbury	50	70	140%
Woodbury Theatre	Woodbury	550	573	104%
Woodbury Lutheran Church	Woodbury	90	85	94%
Total		**1,881**	**1,399**	**74%**

Source: 2008 Annual Regional Park-and-Ride System

Figure 4-11

Existing Fixed Route Transit Service



Transit Center
Active Park & Ride
Active Park & Pool
Transit Capital Levy Area
Express Bus Service
Local Bus Service
Bus Only Shoulder Lane

Local Transit Services

HSI Transporter
Northeast Suburban Transit
South County Circulator
St. Croix Circulator
Woodbury Dial-a-Ride

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Miles

Prepared By: Washington County GIS Support Unit, IT Department
Data Source: TLG, Met Council, Washington County IT, Mn/DOT, SRF Consulting

Park-and-Pool Facilities

Park-and-pool facilities serve people who participate in an organized carpool activity; they are not served by regular-route transit. Two park-and-pool lots are located within Washington County, both in the northern half of the county. Table 4-6 shows the capacity and usage for these facilities in October 2008.

Table 4-6
Park-and-Pool Capacity and Usage, October 2008
Washington County

Facility	City	Capacity	Usage	Utilization
State Highway 36 & Manning Avenue	Stillwater	15	3	20%
Interstate 94 & State Highway 95	Lakeland	48	42	88%
Total		**63**	**45**	**71%**

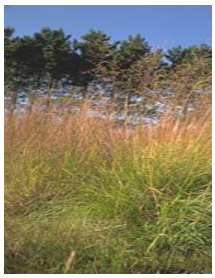
Source: 2008 Annual Regional Park-and-Ride System Survey, Metro Transit

Transit Advantages

Transit advantages are physical features that provide a travel time advantage over automobiles using the same facility, thereby increasing the attractiveness of transit. These include bus-only shoulders, high occupancy vehicle lanes and ramp meter bypasses. Bus-only shoulders are the only form of transit advantage within Washington County. They are located on Trunk Highway 36 west of Interstate 694. Bus-only shoulders allow buses to use the roadway shoulder to bypass automobiles in the general flow of traffic during heavily congested times.

Transitways

Described below and shown on Figure 4-12 are the five transitways included in the Metropolitan Council's TPP for Washington County. Implementation of transit in these transitway corridors will be achieved by providing travel-time advantages for transit vehicles, improving transit service reliability and increasing the convenience and attractiveness of transit service. Each has been identified as a corridor in need of additional studies to determine the most appropriate transit mode and alignment.



Red Rock Corridor

The 30-mile Red Rock Corridor originates in Hastings and follows Trunk Highway 61 and Interstate 94 through St. Paul (Union Depot) and on to Minneapolis with connections to Central Corridor Light Rail Transit (LRT), Northstar Commuter Rail, and Hiawatha LRT.

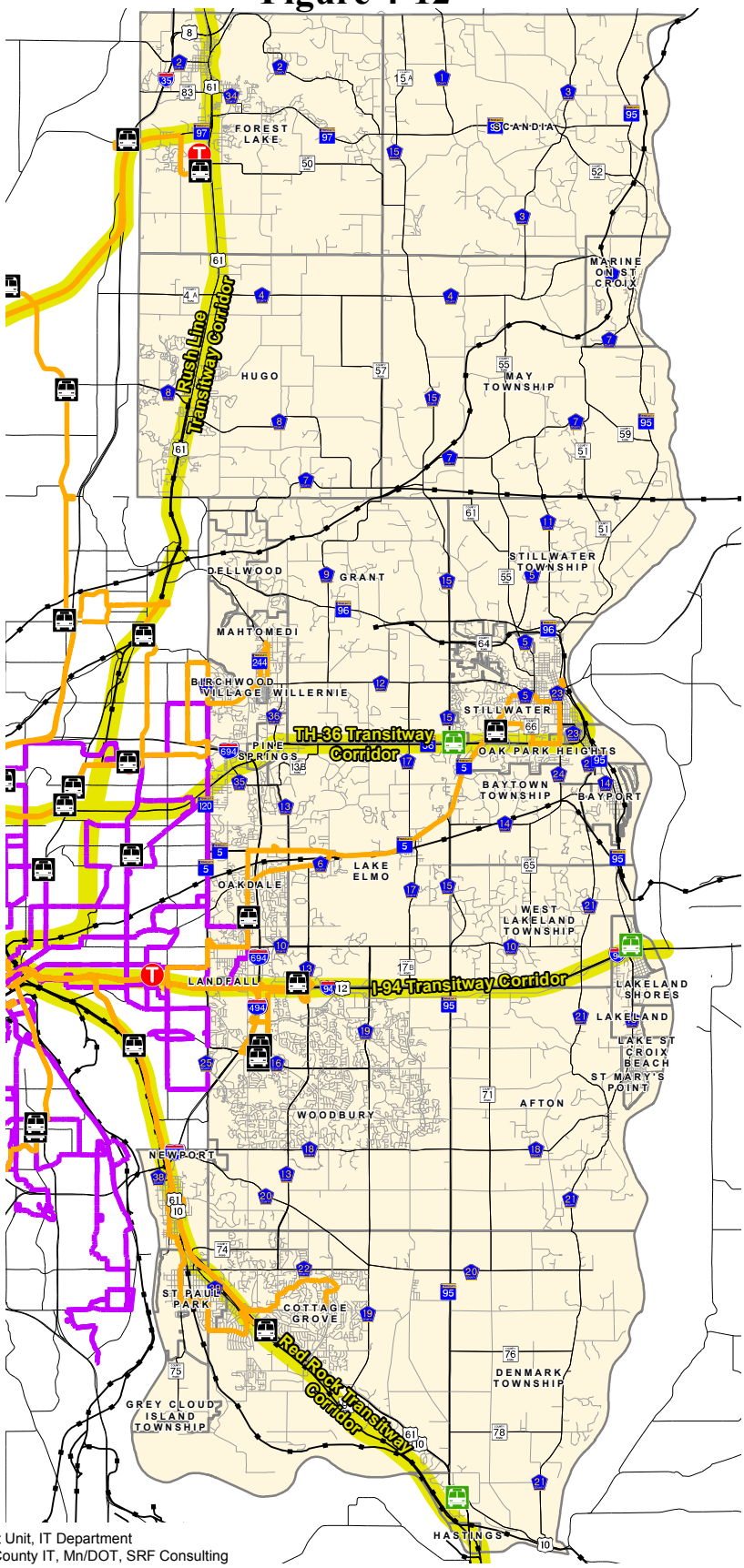
The Red Rock Corridor Commission was established in the late 1990s to begin advocating, promoting, and planning for this transitway. This commission is made up of Dakota, Hennepin, Ramsey, and Washington counties and all of the communities along the corridor. The Red Rock Corridor Commission has completed several studies for this corridor. The November 2007 alternatives analysis identified a phased approach to implementing commuter rail as the recommended approach for the corridor. The TPP supports the recommendation from the alternatives analysis if high-speed rail is also developed in the corridor. Options for a phased improvement with enhanced bus service are currently under review.

Rush Line Corridor

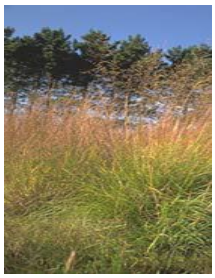
The 80-mile Rush Line Corridor begins in downtown St. Paul (Union Depot) and follows Trunk Highway 61 and Interstates 35E/35 through Ramsey, Anoka, Washington, Chisago, and Pine counties to Hinckley. The Rush Line Corridor Task Force was established in the late 1990s to begin advocating, promoting, and planning for this transitway. This task force is made up of Ramsey, Anoka, Washington, Chisago, and Pine counties and the communities along the corridor. Several studies have been completed for the corridor. The 2001 Rush Line Corridor Transit Study concluded that commuter rail and/or bus rapid transit were viable in the corridor and recommended that both advance into the project development phase. An alternatives analysis is scheduled for completion in mid-2009. An intermediate commuter bus service in the corridor is also under review.

Figure 4-12

Transitway Corridors



Prepared By: Washington County GIS Support Unit, IT Department
Data Source: TLG, Met Council, Washington County IT, Mn/DOT, SRF Consulting



Interstate 94 Corridor

The 20-mile Interstate 94 Corridor extends from St Paul and to the St Croix River with connections to Minneapolis to the west and Wisconsin to the east. An I-94 East Corridor Commission was recently established to begin advocating, promoting, and planning for this transitway. An alternatives analysis to identify ridership, mode, alignment, and costs for this transitway will begin in mid-2010.

Trunk Highway 36/NE and Interstate35W North Corridors

The Trunk Highway 36/NE transitway runs from Stillwater to Minneapolis along Trunk Highway 36 and the northeast diagonal alignment. The Interstate 35W North transitway begins in Minneapolis and follows Interstate 35W to Forest Lake. Planning for improved transit in these corridors has not yet begun.

High Speed Rail Corridor

The Federal Railroad Administration has designated ten high speed rail corridors throughout the country (see Figure 4-13). This designation allows a corridor to receive specially targeted funding for highway-rail grade crossing safety improvements, and recognizes the corridor as a potential center of high speed rail activity. Included in these corridors is the Chicago Hub Network, which includes a 400-mile corridor from Chicago, Illinois, to Milwaukee, Wisconsin, and the Twin Cities Metropolitan Area. Within Minnesota, the designated route runs along the Mississippi River from La Crescent, to the Twin Cities utilizing tracks owned and operated by BNSF and CP Rail. The section of this high speed rail corridor from Hastings to St Paul would utilize the same tracks as the Red Rock Corridor Commuter Rail.

Figure 4-13:
Federally-Designated High Speed Rail Corridors

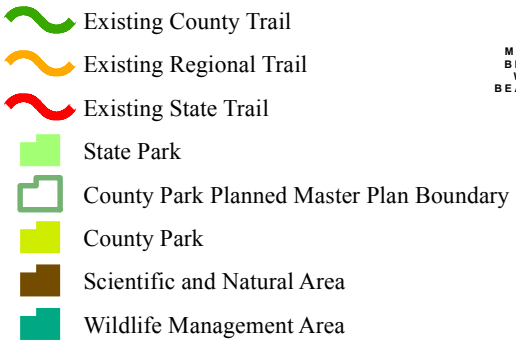
Non-Motorized Facilities

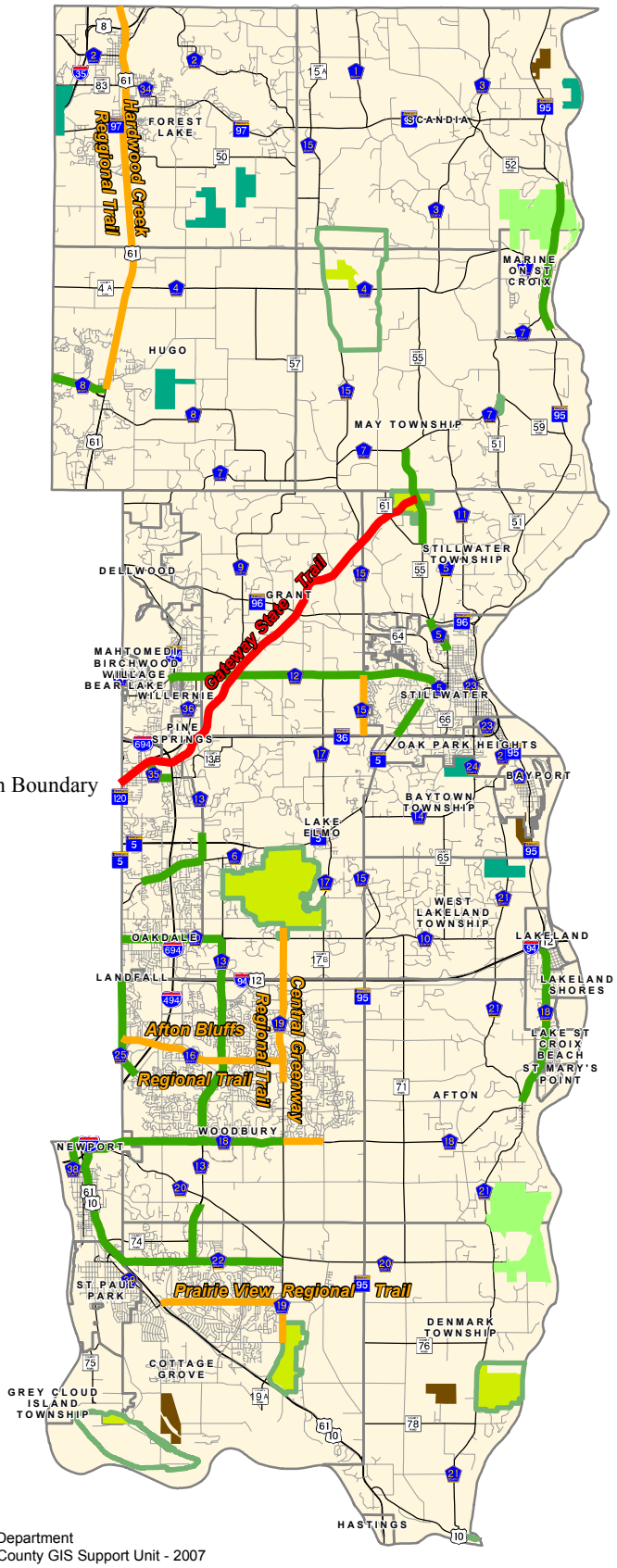
Washington County operates trail corridors that serve both recreational and transportation purposes. In addition to bicycle commuters, these trails are commonly used by walkers/runners, recreational bicyclists, inline skaters, and, on some trails, cross-country skiers and snowmobilers. Where separated trails do not exist, road shoulders provide an interim facility for non-motorized travel. Washington County does not designate shoulders as trails or bicycle routes.

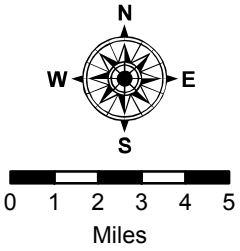
The Park and Open Space Chapter describes the three categories of regional trails including regional destination trails, regional linking trails, and county linear parks, trail corridors, and parkways. In addition to the regional trails, many county road rights-of-way contain trails that provide mobility within the community, access to the regional trails, or access to communities in neighboring counties. Figure 4-14 shows the trail system for Washington County.

Figure 4-14

Existing Trail System







Prepared By: Washington County GIS Support Unit, IT Department
Data Source: Metropolitan Council - 2007, Washington County GIS Support Unit - 2007

Management Tools

Access Management

Access management guidelines are used to enhance safety and maintain the capacity and mobility of important transportation corridors. They balance these needs with the need to access private property. Standardized guidelines communicate the expectations of the permitting agencies to the developer, landowner, or organization that is requesting access to the roadway. The guidelines promote good access practices such as:

- Aligning access with other existing access points.
- Providing adequate spacing to separate and reduce conflicts.
- Supporting indirect access rather than direct access on high-speed, high-volume arterial routes.
- Aligning operations with the functional classification.

Washington County has adopted, as part of its zoning ordinance, the access spacing guidelines shown in Table 4-7. These guidelines are similar to the Minnesota Department of Transportation standards, but differ in details to address the unique needs of county roadways. These guidelines guide decisions about the proper location and type of access to the county road system as development or redevelopment occurs adjacent to county roadways or when county roadways are widened or reconstructed.

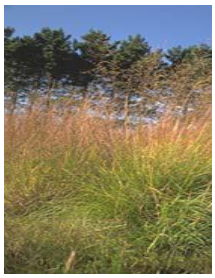


Table 4-7
Access Spacing Guidelines [1]
Washington County

Type of Access	Functional Classification of County Highway				
		Minor Arterial[2]			
	Principal Arterial	> 7,500 ADT	< 7,500 ADT	Collector	Local
Private residential driveways	No direct access	No direct access	variable[3]	variable[3]	variable[3]
Commercial driveways or non-continuous commercial streets	No direct access	No direct access	1/8 mile	1/8 mile	variable[3]
Non-continuous residential streets [4]	No direct access	1/8 mile with no median opening	1/8 mile	1/8 mile	variable[3]
Continuous local streets and collector streets	½ mile	¼ mile	¼ mile	1/8 mile	1/8 mile
Minor arterials	½ mile	½ mile	½ mile	½ mile	½ mile

(1) Distances shown are minimums. The county reserves the right to increase the minimum distances based on other criteria. The type of traffic control, turn lanes and bypass lanes required are determined based upon the projected traffic volumes on the type of access requested.
(2) ADT is the 20-year forecast for average daily traffic.
(3) Spacing is based on criteria such as sight distance, speed, traffic volumes, etc.
(4) Cul de sac or short-length streets (less than ½ mile) that do not cross a county highway.

Right-of-Way Preservation Methods

When future expansion or realignment of a roadway is proposed, but not immediately programmed, agencies should consider right-of-way preservation strategies to reduce costs and maintain the feasibility of the proposed improvement. The most common strategies used to preserve right-of-way for future construction include advance purchase, zoning and subdivision, and official mapping. Before implementing any right-of-way preservation programs, local agencies should weigh the risks of proceeding without environmental documentation

prior to purchase. If environmental documentation has not been completed, agencies risk preserving a corridor or parcel that has associated environmental issues.

Advanced Purchase

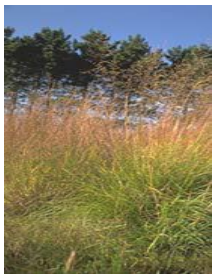
One of the best ways to preserve right-of-way is to purchase it. Unfortunately, agencies rarely have the necessary funds to purchase right-of-way in advance, and the public benefit of purchasing right-of-way is not realized until a roadway or transportation facility is built. Typically, local jurisdictions use other corridor preservation methods prior to roadway construction and then purchase the right-of-way at the time of design and construction.

Planning and Zoning Authority

Under local planning and zoning authority, jurisdictions have a number of tools for preserving right-of-way for transportation projects. These tools include:

Zoning: If the property is in a very low-density area (e.g., agricultural district), local agencies should try to maintain the existing zoning classification. A lower zoning classification limits the risk for significant development to occur before funding becomes available for roadway construction.

Platting and Subdivision Regulations: Local platting and subdivision regulations give jurisdictions the authority to consider future roadway alignments during the platting process. Communities can regulate land development to influence plat configuration and the location of proposed roadways. In most instances, planning and engineering staff work with developers to develop a plat that accommodates the landowners' and developers' desires and conforms to a long-term community vision and/or plans. Communities can require right-of-way dedication as part of the platting and subdivision process.
Transfer of Development Rights: Some jurisdictions allow increased development densities on portions of the parcel if the developer transfers right-of-way to the jurisdiction for the future roadways needed by the development. This enables the



developer to get the same number of lots or units and also enables the jurisdiction to obtain the needed right-of-way.

Official Mapping

A jurisdiction can adopt an official map that identifies the centerline and right-of-way needed for a future roadway. After a public hearing, the jurisdiction can incorporate the official map into its thoroughfare or community facilities plan. The official mapping process allows agencies to control proposed development within an identified area and to influence development on adjacent parcels. If an affected property owner requests to develop his/her property, jurisdictions have six months to initiate acquisition of the property to prevent its development. If not purchased, the owner is allowed to develop in conformance with current zoning and subdivision regulations. The official mapping process should only be used for preserving key corridors in areas with significant growth pressures. In some cases, official mapping of key parcels/corridors may increase the agency's ability to find sources of funds to purchase at-risk parcels.

Cost Participation Policy

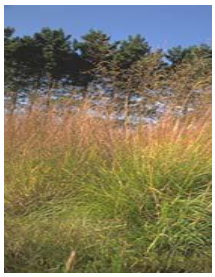
Washington County adopted policies for determining the appropriate division of cost participation in funding cooperative roadway projects, traffic signals, and bridge construction projects with the Minnesota Department of Transportation, municipalities, and other agencies. For roadway and bridge projects, the costs splits differ for cities with populations greater than 5,000 and for those with populations less than 5,000. The primary purpose for this difference is the absence of direct State Aid funding to municipalities with less than 5,000 residents. The policy also guides the county's cost participation when communities use Tax Increment Financing (TIF) and for jurisdictional changes or turnbacks. The county is working collaboratively with local communities to revise and update the cost-participation policy to address current needs.

Pavement Condition Index

Through the Pavement Management System the county monitors the condition of the roadway surface of every segment of the county highway system. The Pavement Condition Index (PCI) is used to determine the surface quality of the pavement; it is a 100-point scale with 100 being the smoothest pavement. Pavement smoothness is widely recognized as important for user satisfaction and long-term performance of the roadway. A smoother pavement provides a more comfortable ride for the motorist or bicyclist. A roadway free of cracks and potholes requires less maintenance and is expected to have a longer life expectancy. The county has established the minimum PCI threshold to be 72. Roadway segments that have a PCI below this rating are targeted for pavement rehabilitation in the county's capital improvement program.

Intersection Control Ranking System

The Intersection Control Ranking System (ICRS) policy guides the prioritization of traffic control changes at intersections on county highways. Increased traffic control typically includes installation of an all-way stop or a traffic signal, construction of a roundabout or some other intersection geometric improvement. The policy provides a clear and documented process for prioritizing and making decisions on intersection improvements based on need. The evaluation criteria in the policy include traffic-signal warrants contained in the Minnesota Manual on Uniform Traffic Control Devices (MnMUTCD), crash history, and intersection level of service (LOS) or delays. Intersections are included in the ICRS by either a recommendation by county staff based on experience or through a request by a local community.



TRANSPORTATION PLAN

A well planned, designed, constructed, and maintained transportation system is one of the factors in making Washington County a healthy, economically vibrant, and safe community. To accurately forecast its transportation needs to 2030, Washington County studied the existing transportation system, socioeconomic profiles of the community, and travel behaviors. The examination of the transportation system included a review of the functional classification system, jurisdictional classifications, current and historic traffic volumes, existing and projected capacity deficiencies, programmed roadway improvements, and crash locations. The county also performed a systematic analysis of the transit system, including the various transit providers, their routes and service priorities, transit centers, and trail corridors. This section describes the identified needs of the future transportation system and establishes goals and policies to address those needs.

Goals and Policies

Goal 4-1

Develop and maintain a roadway system that accommodates the safe and efficient movement of people and goods.

Policies

4-1: Plan for, design, and construct roadways to accommodate existing and future traffic growth.

4-2: Collaborate with municipalities and the Minnesota Department of Transportation to assign roads to their proper jurisdiction.

4-3: Define the hierarchy of the road system by appropriately assigning functional classifications to all roads in the county system.

4-4: Manage access from local roads and state highways to the county system appropriately for each functional class.

4-5: Develop and implement a pavement preservation program to maintain the structural integrity of the roadway system.

4-6: Develop and implement an ongoing safety review process that promotes proactive and reactive treatments to reduce crashes on the roadway system.

4-7: Utilize traffic management techniques to improve the operations and safety and extend the life of the county roadways.

Goal 4-2

Promote the development and utilization of a transit system that meets the existing and future travel needs of the public.

Policies

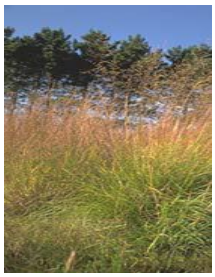
4-8: Support the delivery of appropriate levels and types of transit service to match the specific needs of the county, based on its unique values, geography, economy, and socio-economic profile.

4-9: Coordinate investment in transit infrastructure with land use and transportation planning.

4-10: Provide information on the availability and use of transit to encourage greater use of the system.

4-11: Advocate and promote long-term investments in transit infrastructure that increase operating efficiency, lower operating costs, and increase ridership.

4-12: Support land use policies and densities that promote the development of transit supportive districts to focus transit service and capital investment.



Goal 4-3

Use effective transportation planning to accommodate existing and planned land uses, while preserving natural, cultural, and historic resources.

Policies

4-13: Develop and implement a cost participation policy that equitably distributes the cost of transportation projects.

4-14: Develop a collaborative process with local municipalities to identify fiscally responsible system improvements that are consistent with county priorities and meet the needs of municipalities.

4-15: Coordinate with other agencies to promote a well balanced transportation system.

4-16: Coordinate with communities and provide feedback on development and redevelopment proposals.

4-17: Avoid or minimize impacts to natural, cultural and historic features. Where impacts are unavoidable, mitigate impacts through replacement and restoration of features disturbed by construction.

4-18: Promote techniques to improve the water quality of runoff from the roadway system.

4-19: Develop and implement techniques for road maintenance to minimize chemical and particulate runoff.

Goal 4-4

Develop a non-motorized transportation system to provide mobility and recreational options to the public.

Policies

4-20: Integrate trails and pedestrian and bicycle uses into the design of roadway and transit facilities as appropriate.

4-21: Identify and support trail connections that provide links to parks, cultural and historic resources, and community destinations.

4-22: Provide safe and appropriate trail crossings and access to the county roadway system.

4-23: Comply with the American with Disabilities Act (ADA) and guidelines for new and reconstructed trail and roadway projects.

Future Transportation Needs

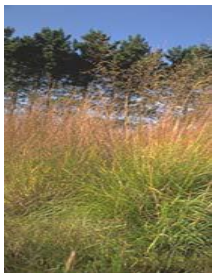
Highways and Roads

Proposed Functional Classification

The roadway functional classification system provides guidelines for designing a roadway network for safe and efficient movement of people. The functional classification defines a roadway's purpose and use and assists in evaluating operations. It is crucial, when soliciting federal funds, that the roadway is correctly classified so that it competes with roadways having similar characteristics.

The county reviewed the functional classification of all county roadways in March 2007. Changes proposed at that time were approved by the Metropolitan Council and are included in Figure 4-3 Road Functional Classification in the Existing Conditions section. These proposed changes include:

- CSAH 35 from Trunk Highway 36 to CSAH 13 and CSAH 13 from CSAH 35 to Trunk Highway 5: Change from a major collector to a minor arterial.
- CSAH 2 from Trunk Highway 61 to Trunk Highway 97: Change from a minor collector to a major collector.



Proposed Jurisdictional Classification

Figure 4-15 shows the candidate for changes in jurisdiction for roadways within the county. The changes represent a closer alignment between the level of government owning and maintaining the roadway and the manner in which the roadway functions to meet local, county, regional, or statewide needs. Factors that are considered when determining potential jurisdictional transfers include historical practices, legal requirements, type of trips served (purpose and length), funding, traffic volumes, access controls, maintenance issues, and functional classification. Additional information regarding jurisdictional classifications transfer decisions is available in Appendix 4-A.

Table 4-8 lists the recommended changes and shows the approximate roadway mileage for each roadway segment. Washington County is recommending a transfer of 40.9 miles from MN/DOT to Washington County, 4.6 miles from local to Washington County, and 24.3 miles from county to local, for a total net gain of 27.9 miles in county jurisdiction.

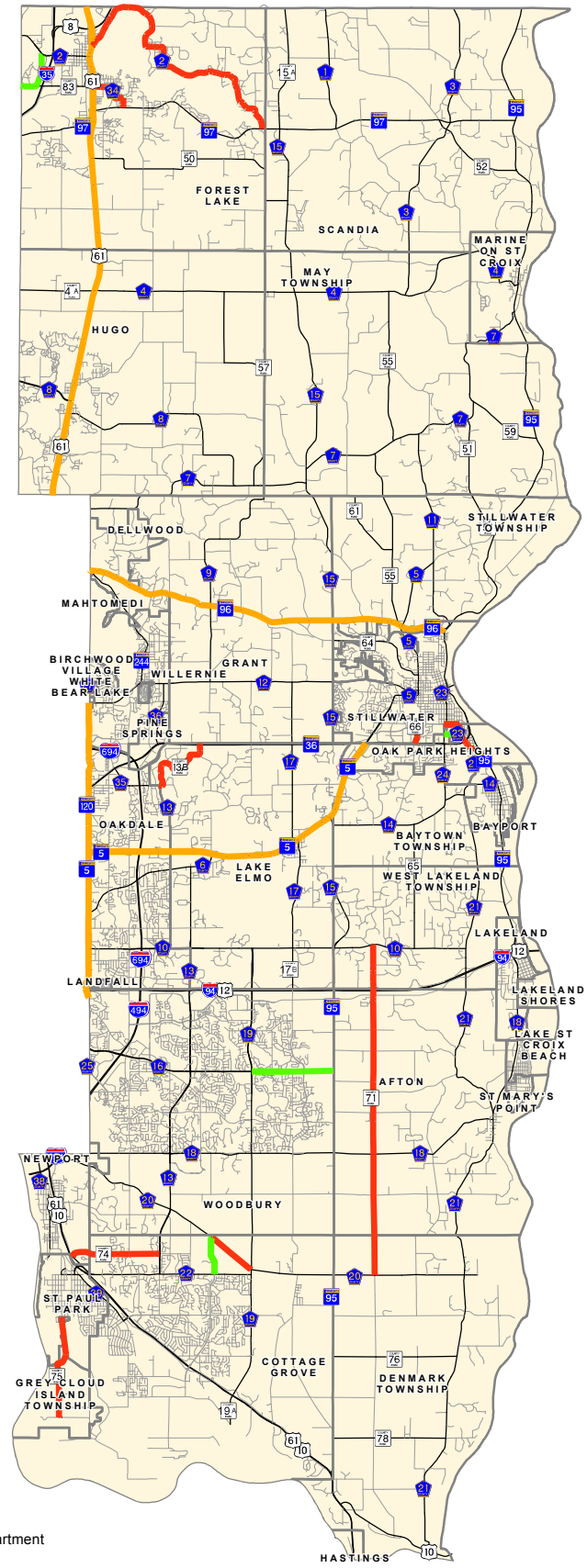
2030 Forecasts and Capacity

Year 2030 Base Traffic Model

The 2030 traffic model projects the traffic forecasts for the county's roadways. The traffic forecasts are an essential analytical tool to approximate the adequacy of the road system to handle planned future development. The model uses community land use plans and development objectives to project 2030 household, population, and employment data for sub-areas of the county called traffic-analysis zones (TAZs). Appendix 4-B contains a summary of the methodology used to develop the traffic forecasts and Appendix 4-C contains a map of and the data for the TAZs.

Figure 4-15

Candidate Jurisdictional Classification Changes



- County to Local (24.3 miles)
- Local to County (4.6 miles)
- State to County (40.9 miles)

Mileages are approximate.

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Prepared By: Washington County GIS Support Unit, IT Department
Data Source: The Lawrence Group - 2007

Table 4-8
Candidate Jurisdictional Changes
Washington County

Roadway	From	To	Local Community	Length (miles)
MN/DOT to Washington County				
Trunk Highway 5	West county line	Trunk Highway 36	Oakdale, Lake Elmo	8.8
Trunk Highway 61	South county line in Hugo	North county line in Forest Lake	Hugo, Forest Lake	13.0
Trunk Highway 96	West county line	Trunk Highway 95	Dellwood, Grant, Stillwater Township, Stillwater	9.5
Trunk Highway 120 (1)	Woodbine Avenue	Trunk Highway 244	Maplewood, Oakdale, North St Paul, Mahtomedi, White Bear Lake	9.6
Total Miles				40.9
Local to Washington County				
Jamaica Avenue South	CSAH 20	CSAH 22	Cottage Grove	0.9
Valley Creek Road	CSAH 19	Trunk Highway 95	Woodbury	2.0
Everton Avenue North	220th Street N	CSAH 2	Forest Lake	0.8
220th Street North	West county line	Everton Avenue North	Forest Lake	0.4
62nd Street North	CSAH 24	Panama Avenue	Oak Park Heights	0.3
Oxboro Avenue	TH 36 N Frontage Road	62nd Street N	Oak Park Heights	0.2
Total Miles				4.6
Washington County to Local				
CSAH 2	Trunk Highway 61	Trunk Highway 97	Forest Lake	7.0
CSAH 34	Trunk Highway 61	Trunk Highway 97	Forest Lake	1.2
CSAH 20	Jamaica Avenue S	CSAH 19	Cottage Grove	1.2
CR 66	TH 36	Orleans Street W	Stillwater	0.5
County Road 71	CSAH 20	CSAH 10	Afton, West Lakeland Township	6.0
County Road 74	Hastings Avenue	CSAH 13	Newport, Cottage Grove	2.2
CR 75	105th Street S	14th Avenue	St Paul Park and Grey Cloud Island Township	2.5
CSAH 23	CSAH 24	CSAH 21	Stillwater, Oak Park Heights	1.4
CSAH 28	Stagecoach Trail N	TH 95	Oak Park Heights, Bayport	0.2
County Road 13B	CSAH 13/CSAH 35	Trunk Highway 36	Lake Elmo	2.1
Total Miles				24.3

(1) Jurisdiction will be jointly held with Ramsey County
(2) Jurisdiction will be with Anoka County and/or Washington County.

The traffic forecast model takes into account future planned and programmed improvements identified in MN/DOT's 2008-2030 Transportation System Plan, Washington County's 2009-2013 Capital Improvement Program and the Metropolitan Council's Transportation Policy Plan. Various roadway projects are currently under construction or programmed for completion in the next few years. These were considered part of the future roadway system because they will likely be in place during the 2030 planning horizon. Other projects in the planning stage have been identified as needing improvements but funding has not yet been allocated. These projects were not included in the future roadway system because the time table for implementation of the improvements is uncertain. Appendix 4-D contains a list of roadway improvements that were included in the 2030 base traffic model.

The 2030 base traffic volume forecasts were prepared using the socio-economic data, existing roadway lanes, and programmed roadway improvements. They are shown on Figure 4-16.

Future (Year 2030) Capacity Deficiencies

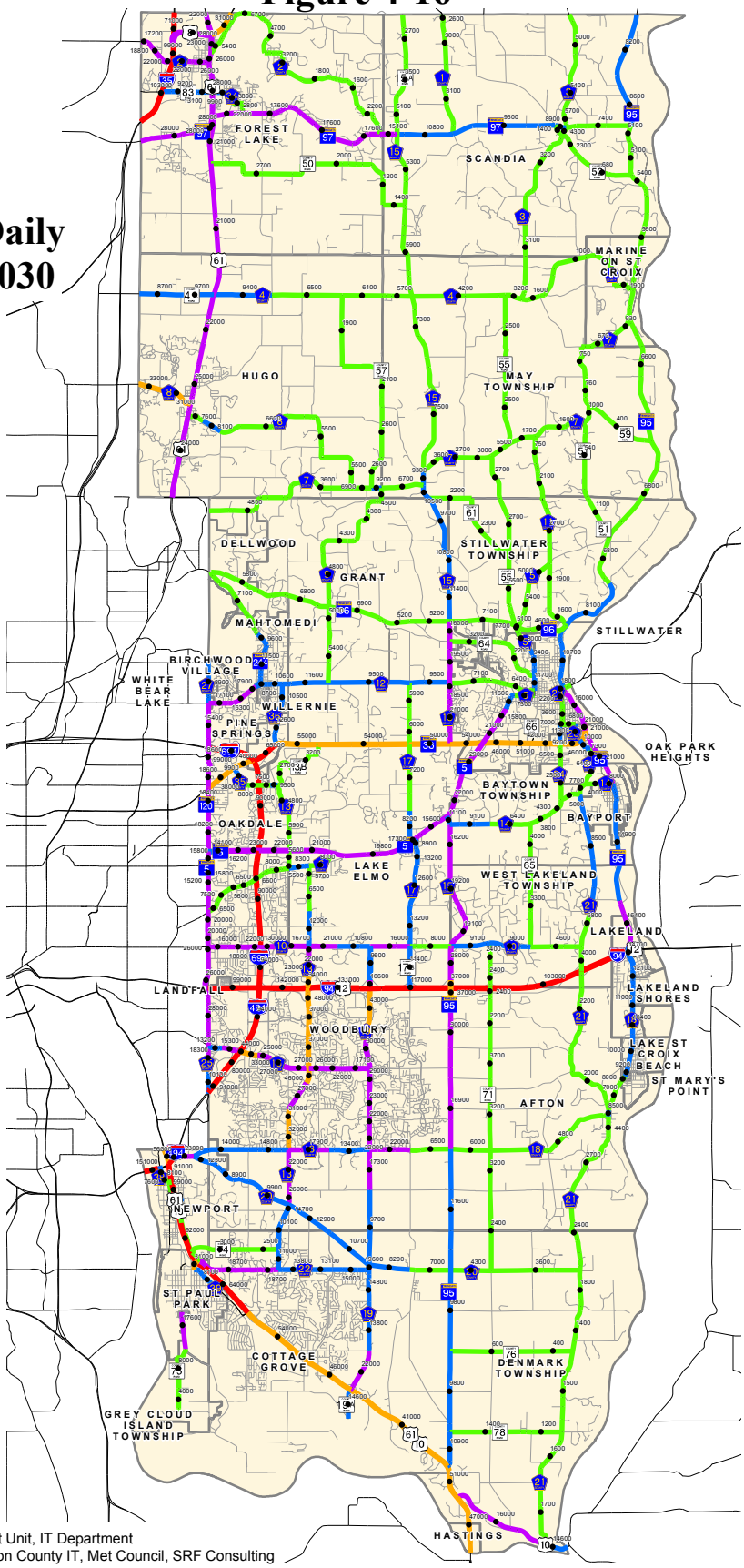
A planning-level analysis, performed to identify locations where capacity problems are expected to occur in the planning horizon, identified 16 county roadway segments that are expected to exceed the capacity of the roadway with the 2030 projected traffic volumes. It identified an additional 16 separate county roadway segments that would approach the capacity of the roadway with the 2030 projected traffic volumes. Figure 4-17 shows the projected capacity deficiencies.

Proposed System Continuity

Some roadways have discontinuous alignments or are not able to connect to logical destinations because of environmental features, development patterns, and jurisdictional boundaries. The following areas have been identified as opportunities for improving travel continuity through realigning roadways, connecting across county boundaries, and accessing a freeway.

Figure 4-16

Forecast Average Daily Traffic Volumes 2030



2030 Forecast Volumes

- 0 - 8000
- 8001 - 15000
- 15001 - 30000
- 30001 - 60000
- 60001 - 151000

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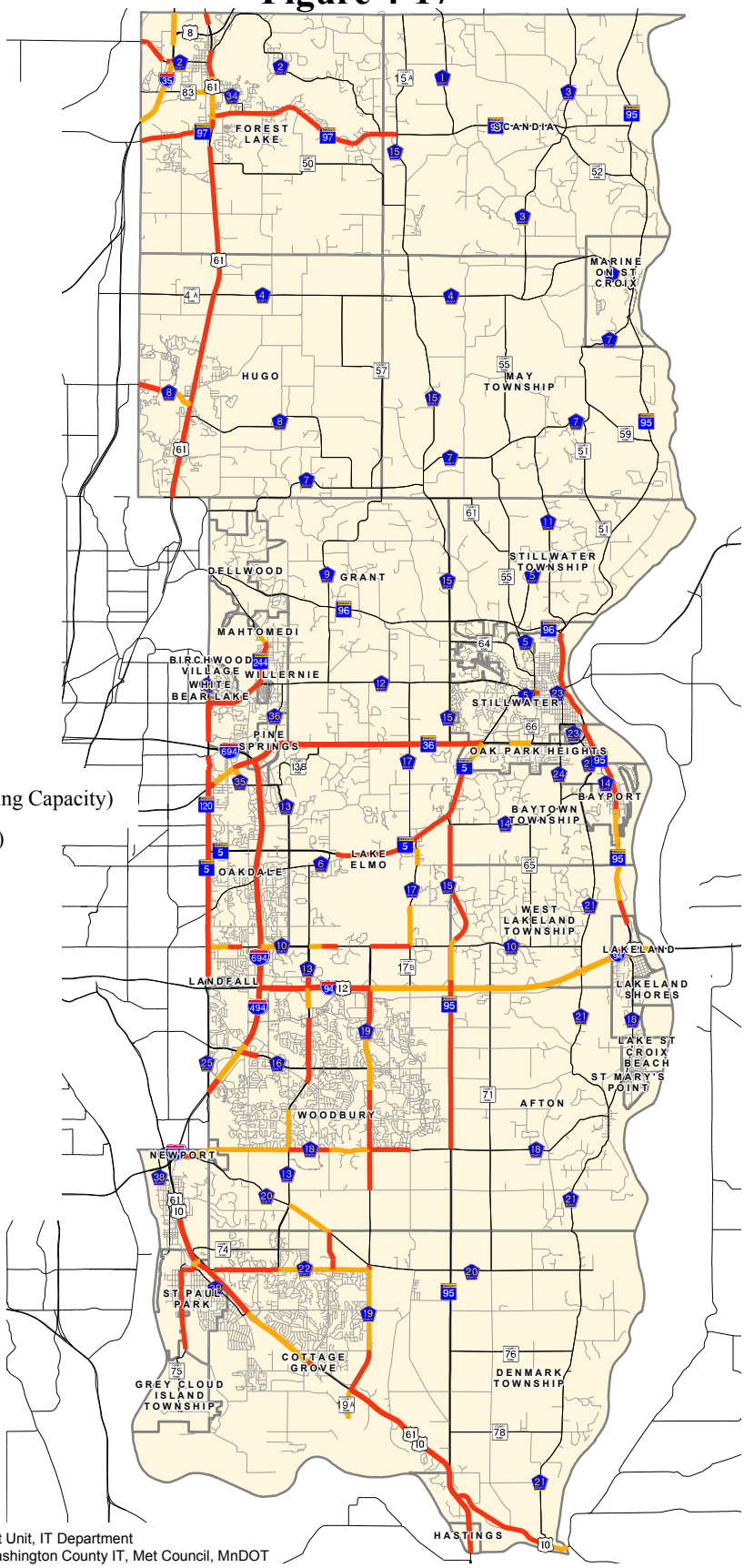
Miles

Prepared By: Washington County GIS Support Unit, IT Department
Data Source: The Lawrence Group, Washington County IT, Met Council, SRF Consulting

Figure 4-17

Future 2030 Congestion



Volume/Capacity Ratio

- 0.85 - 1.00 (Approaching Capacity)
- 1.01 + (Over Capacity)

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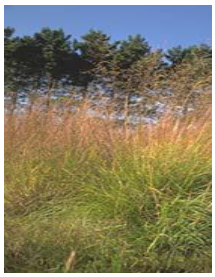
Prepared By: Washington County GIS Support Unit, IT Department
Data Source: The Lawrence Group - 2007, Washington County IT, Met Council, MnDOT

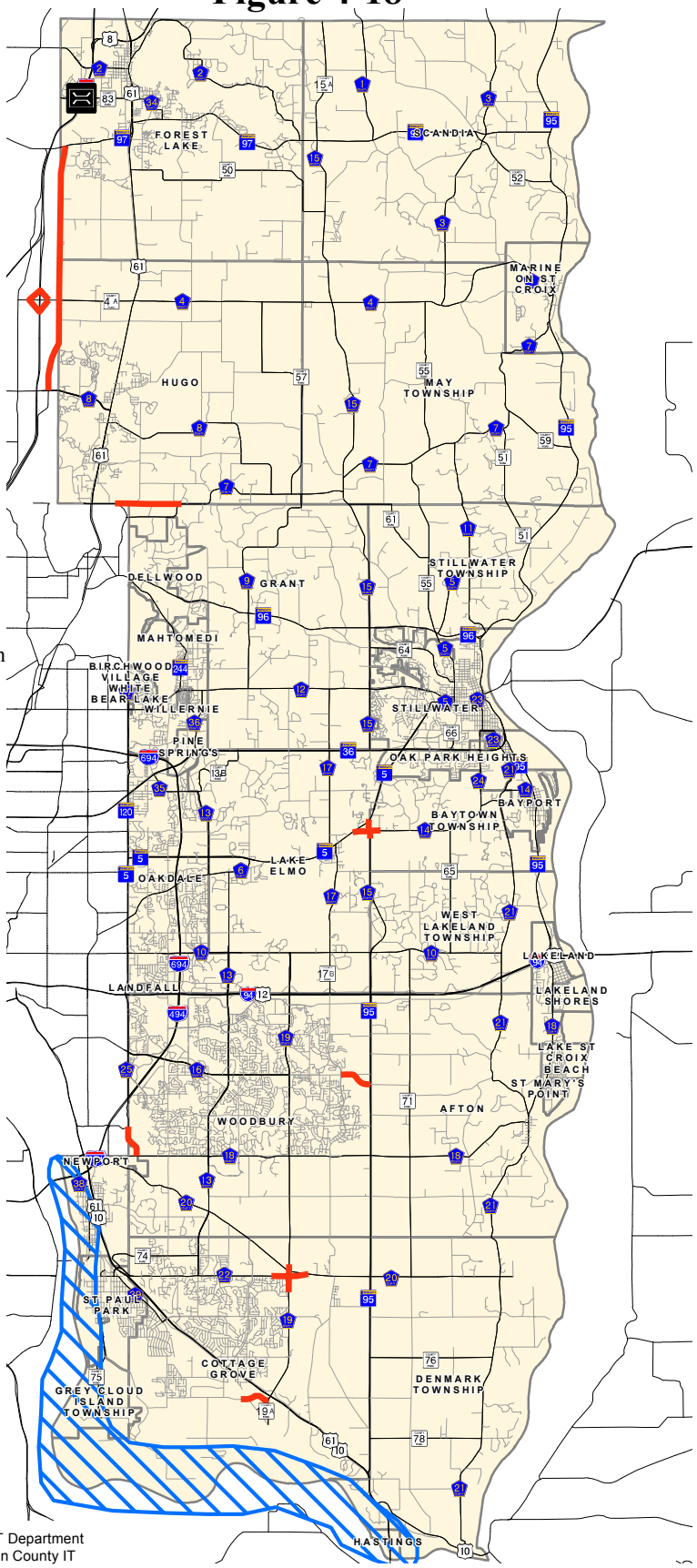


System continuity improvement opportunities are shown on Figure 4-18.

- CSAH 20 realignment with Jamaica Avenue South in Cottage Grove.
- County Road 83/220th Street North/Howard Lake Drive overpass of Interstate 35 and new connection in Forest Lake and Columbus. A 2008 study recommended new overpass and connection of roadways.
- Trunk Highway 5/CSAH 15/CSAH 14 intersection realignment in Lake Elmo and Baytown Township.
- County Road 19A southwesterly extension to 100th Street South in Cottage Grove. A 2008 study recommended a new county road connection.
- Access to Interstate 35E from Washington County Road 4A/Anoka County Road 140 in Hugo and Lino Lakes.
- North-south connection between southern terminus of Century Avenue (CSAH 25) and Bailey Road (CSAH 18) in Woodbury.
- Realignment of CSAH 7 to north of Fish Lake.
- East/west realignment of the CSAH 22/CSAH 20 intersection.
- North-south connection generally along the Elmcrest Avenue North alignment from CSAH 8 to Trunk Higway 97 in Hugo, Forest Lake, Columbus, and Lino Lakes.
- Alignment of east and west junctions of CSAH 17 at Trunk Highway 5 in Lake Elmo.
- Mississippi River crossing between the Wakota and Hastings Bridges.

Figure 4-18

Proposed System Continuity Opportunities



Overpass

Proposed System Continuity Location

River Crossing Study

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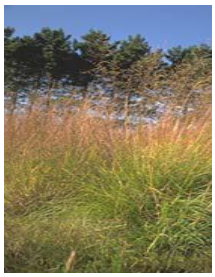
Prepared By: Washington County GIS Support Unit, IT Department
Data Source: The Lawrence Group - 2007, Washington County IT



Right-of-Way Preservation

Right-of-way is a valuable public asset that needs to be managed in a way that respects its intended function while serving the greatest public good. Washington County, with its anticipated growth, will need to reconstruct, widen, and construct new roadway alignments to meet future capacity and connectivity demands. Such improvements will require that adequate right-of-way be maintained or secured. To assure consistency and wise use of taxpayer dollars, the county has established proposed right-of-way guidelines by functional classification and the future facility type of the roadway (see Table 4-9). Right-of-way widths may be greater based on the community's desire for trails on both sides of the road, landscaping, and placement and number of private and public utilities.

Figure 4-19 shows the right-of-way requirements for the county roadway system. Use of these guidelines during the right-of-way acquisition or preservation process will, over time, reduce costs and streamline project development.

The ability to preserve right-of-way will be a criterion for ranking a project's readiness to be built. Where right-of-way must be acquired, it will be acquired under the provisions of the county's Cost Participation Policy. The Management Tools section of Existing Conditions contains information regarding right-of-way preservation methods.

Safety

Roadway safety is a central concern of transportation professionals. In response to the number of traffic-related fatalities and severe injuries and concerns about the effectiveness of safety efforts, the Minnesota Departments of Public Safety and Transportation established the Strategic Highway Safety Plan (SHSP) and Towards Zero Deaths (TZD) programs to guide safety planning efforts.

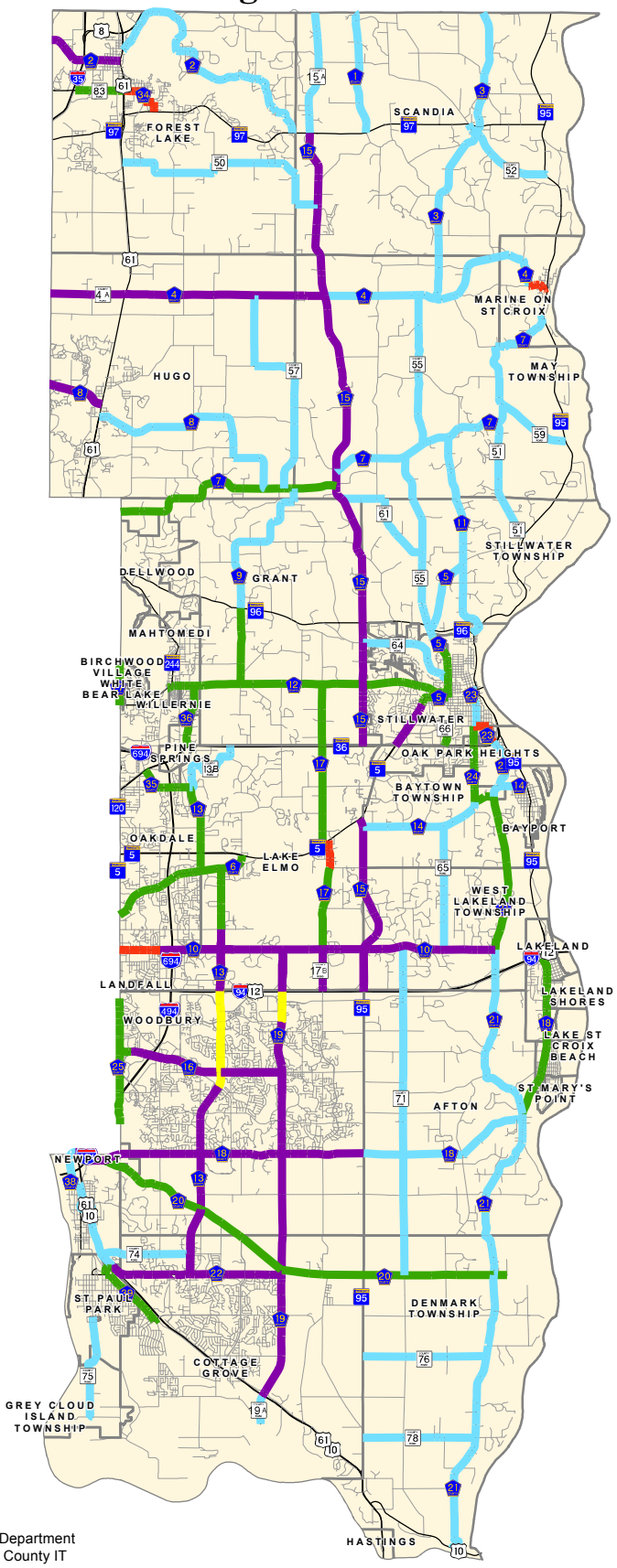
Table 4-9 Minimum Right-of-Way Widths for County Roads* Washington County		
Functional Classification	**Right-of-Way Width ****	**Facility Type**
Minor Arterial	220 feet	6-lane divided
	184 feet	4-lane divided
	150 feet	3-lane undivided
	120 feet	2-lane urban
Collector	150 feet	3-lane undivided
	120 feet	2-lane undivided
	100 feet	2-lane undivided, urban

* Widths are total width of corridor and assume the road is centered in the corridor.

** Due to particular development conditions, physical features of the site or highway corridor, special traffic control needs, or other conditions, Washington County may require more right-of-way width than shown in these guidelines.

Figure 4-19

Minimum Right-of-Way Widths For County Roads



Right-of-Way Required

- 100 feet
- 120 feet
- 150 feet
- 184 feet
- 220 feet

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0 1 2 3 4 5
Miles

Prepared By: Washington County GIS Support Unit, IT Department
Data Source: The Lawrence Group - 2007, Washington County IT

The TZD program works to eliminate fatal and life-changing injury crashes by establishing severe crashes as the key statewide safety performance measure, by taking advantage of synergies available when agencies work together, and by including local road authorities, law enforcement, community leaders, and public health officials as integral partners in statewide safety planning efforts.

In accordance with this guidance, the county's safety improvement program identifies Critical Emphasis Areas (CEAs) and critical strategies to improve safety. These strategies address the infrastructure-based safety emphasis areas, including single vehicle road departure, head-on and sideswipe, intersection, and access density related crashes.

The CEAs were selected based on the crash analysis and the predominant crash types and characteristics occurring on the Washington County roadway system. The CEAs, and critical strategies appropriate to address each area, are listed below.

CEA 1 – Keeping Vehicles on the Roadway

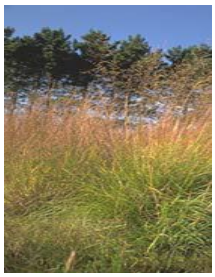
- Review roadway delineation, i.e., wider/paved shoulders, enhanced lane and edge lines, horizontal curve signing/delineation, and shoulder rumble strips/stripes.
- Review horizontal and vertical sight distance.

CEA 2 – Minimizing the Consequences of Leaving the Roadway

- Review reaction/recovery and clear zone areas, i.e., wider shoulder, safety edge, remove, protect, or delineate roadside fixed objects (trees, poles, etc.) in clear zone.
- Minimize roadside slopes and driveway approaches.

CEA 3 – Improving the Design and Operation of Intersections

- Review intersection traffic control type, i.e., stop sign, traffic signal, or roundabout.
- Review intersection traffic signal phasing and timing, particularly clearance intervals.



- Review the need for turn lanes, bypass lanes, acceleration/deceleration lanes, channelization, intersection lighting, enhanced signs and markings.
- Review horizontal and vertical-sight distance.

CEA 4 – Implementing as Access Management Program

- Review and reduce access density, i.e., divided roadways, restricted turns, indirect turns, frontage/service roads, combined access driveways.

Transit

This section discusses options that Washington County can pursue to continue development of the transit system serving the county. The objective of the system is to provide a high level of accessibility and mobility to residents and businesses in the most cost-effective manner while achieving positive economic impacts. The five types of transit services discussed below include express, local bus, transit advantages, demand responsive, and transitways.

Express Bus Service Expansion

Approximately 1,300 Washington County residents currently commute to the St. Paul and Minneapolis downtowns using transit. Table 4-10 summarizes the number of county residents that commute to downtown and the percentage of those commuters that used the express bus services in 2006. These estimates showed that transit captured 13 percent of the commuter market, 21 percent of commuters to downtown Minneapolis and 5 percent of commuters to downtown St. Paul.

Table 4-10
Commuter and Transit Usage, 2006

Washington County	Minneapolis	St. Paul	Total
Downtown Commuters	4,730	5,562	10,291
Park-and-Ride Users	995	301	1,296
Downtown Transit Commute Mode Share	21%	5%	13%

Source: Metropolitan Council, June 2008

Future Demand

Express bus services will continue to be a focus of the transit system in Washington County. The market for downtown-oriented express bus services are county residents who work in either downtown Minneapolis or downtown St. Paul (currently, over 10,000). Despite rapidly-changing conditions in recent years, the current use figures provide a baseline from which future demand can be estimated. Future express bus ridership by county residents is expected to increase due to growth in the county population, future employment growth in downtown Minneapolis and St Paul, and a likely increase in mode split.

Between 2006 and 2030, the Metropolitan Council forecasts that transit's share of the downtown commuter markets from Washington County will double, from 5 to 10 percent for St. Paul and from 21 to 42 percent for Minneapolis. During this period, total Washington County resident employment in both downtowns is expected to increase by over 8,400 employees. Park-and-ride usage by Washington County residents is expected to increase by over 3,000 users, bringing the express bus ridership to nearly 5,000.

Express Service

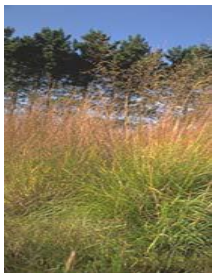
An increase of over 3,000 park-and-ride users would require 60 to 75 additional peak-period express trips serving Washington County, depending upon the mix of vehicles used and assuming the average peak-period express bus carries 40 to 50 riders. The addition of these bus trips would double the number of trips available in the county today.

Express Facility Expansion

Future expansion of express bus services will depend on the continued development of transit infrastructure, including park-and-ride facilities and transit advantages.

Park-and-Ride Facilities

Park-and-ride facilities are an integral part of providing express bus service and are a critical component of fixed-guideway transit. Future park-and-ride facilities should be accessible to



residents driving to the lots, accessible to major freeways for quick access by bus, and accessible by trails and other pedestrian accommodations. Along identified transitway corridors, park-and-ride lots will be used first to support express bus operations. However, as transitways are developed with a more robust transit system, these lots will most likely become transit stations that support fixed guideway transit and are an integral part of the land use development surrounding the lot.

The future park-and-ride system will include expanding some facilities, creating new facilities, and eliminating smaller, older facilities. The goal of the system is to accommodate the 3,000 additional park-and-ride users projected for 2030. The Metropolitan Council's current plans for expanding the park-and-ride system in Washington County are described below and shown in Figure 4-20. Corridor studies for Interstate 94 and Trunk Highway 36 will help determine potential locations for other park-and-ride facilities.

Cottage Grove: Expansion of this facility is not expected until after 2020. The Red Rock Corridor Commission will conduct station area and site planning in 2009, which could result in the relocation of the lot should a different station site be chosen.

Forest Lake: The recently-opened Forest Lake Transit Center was constructed and is operated by Washington County.

Newport: Construction of a new park-and-ride in Newport would be coordinated with the implementation of service on the Red Rock Corridor. The Red Rock Corridor Commission will conduct station area master and site planning in 2009 which will determine the station site location in Newport.

Oakdale: The lot at Guardian Angels Catholic Church recently was expanded by 200 spaces. Metro Transit is looking for potential new sites near the intersections of Trunk Highway 120 and Interstate-94 and Trunk Highway 36 and Interstate 694; no obvious opportunities currently exist.

Stillwater: Metro Transit and the Stillwater Community Center have discussed constructing a deck concurrent with a community center expansion; no firm plans are in place. Metro Transit would consider relocating the Stillwater Community Center facility to a site near the Trunk Highway 36 and CSAH 15 interchange if a new river crossing is constructed and transit advantages are extended along Trunk Highway 36 to Stillwater.

Woodbury: Metro Transit plans to build a deck at the Woodbury Theatre lot by 2020, resulting in a potential doubling of the capacity. With this expansion the small park-and-ride lots at Woodbury Lutheran and Christ Episcopal churches would be closed. Metro Transit is also working with a developer to construct a 600-space ramp at the intersection of Interstate 94 and Manning Avenue. This facility is expected to be operational by 2013.

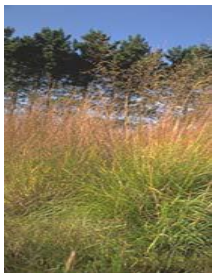
Anoka County: The Metropolitan Council has plans to construct a 200-space lot to open in 2010 with the construction of a new interchange at Interstate 35E and CSAH 14. This facility would serve residents of northwestern Washington County.

Transit Advantages

Planning, development, and implementation of bus-only shoulders, ramp-meter bypasses, and high occupancy vehicle (HOV) lanes are primarily the responsibility of MN/DOT and the Metropolitan Council. The Metropolitan Council's Transportation Policy Plan has planned bus-only shoulders for Interstate 35E north of County Road 96, Interstate 35W north of Radisson Road, Interstate 94 east to Wisconsin, and southbound on Trunk Highway 61 in Cottage Grove. No ramp meter bypasses or HOV facilities are planned within Washington County.

Local Bus Service

Although local transit service is desirable, the density and character of the land use in the county makes the economical provision of local service challenging. The grid-like pattern of local routes that is effective in central cities does not match well with suburban land use and roadway network. The current



strategy for meeting local transit service demand in Washington County is through demand responsive service. This service is not typically considered an economical way to attract choice transit riders because of the high per-ride costs and limited service hours. A more practical option for providing local service is through local circulator networks with coverage in the developed areas of the county. A local network would focus on a community transit center which would serve as the timed transfer point for two to four local circulator routes.

Demand Responsive Transit Service

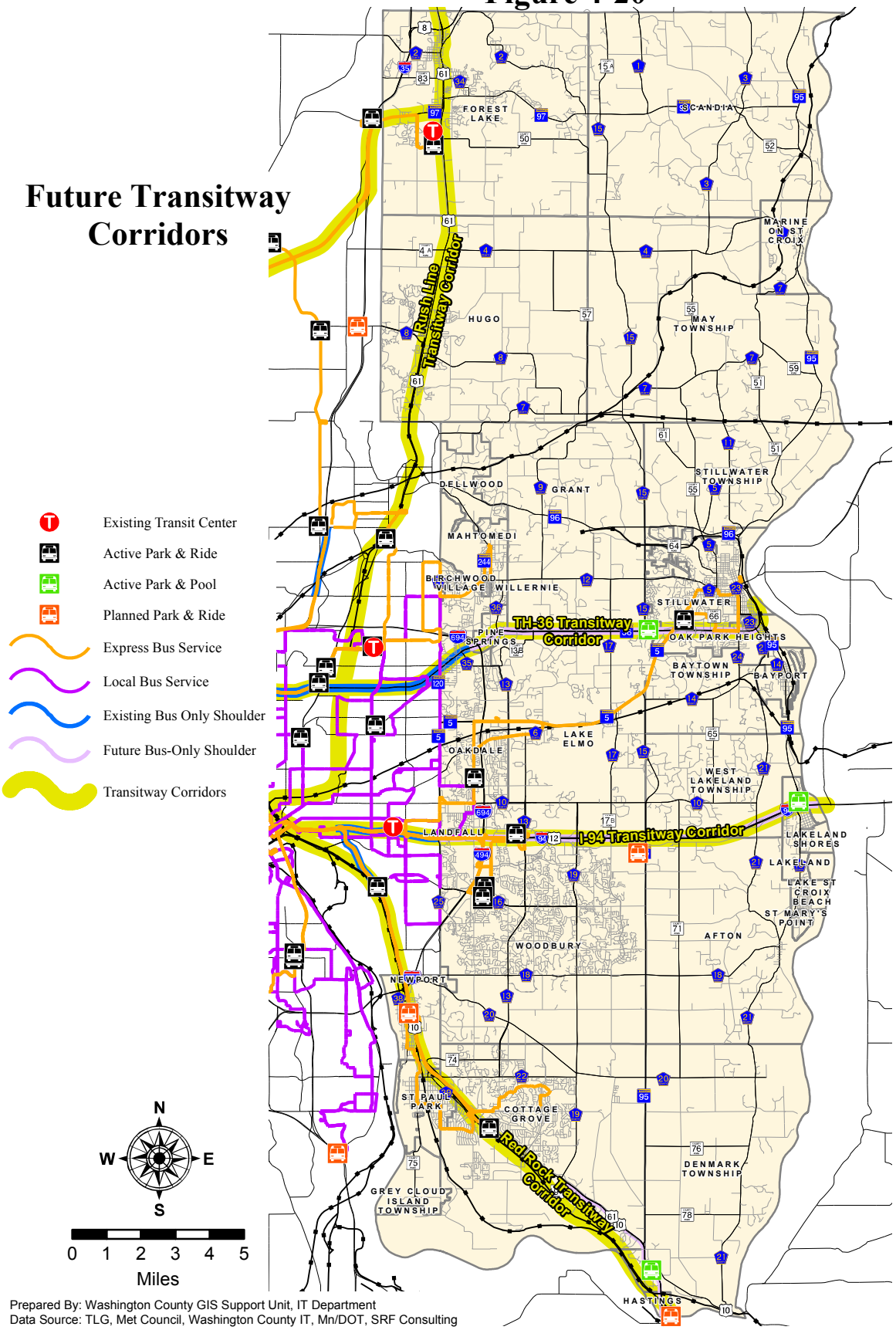
ADA complementary dial-a-ride services are federally mandated and provided by the Metropolitan Council. Future demand for demand responsive transit service will be tied to the number of residents that are dependent upon transit for their transportation. Although hard to predict, the number of transit-dependent residents can be estimated by the number of residents over 65 years of age. Even though people over 65 continue to drive for many years, the need for local and demand responsive transit services rises with age. Washington County's population over 65 years of age is expected to triple by 2030 while the number of young people is not expected to increase. This suggests increasing demand for transit services, particularly demand responsive transit. General public dial-a-ride services are usually only provided in areas not served by local bus service. Expanding the local bus service area would allow a reduction in the general public dial-a-ride services.

Transitway Development

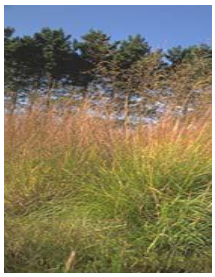
Each of the five major transit corridors in Washington County is a candidate for transitway development. These include Red Rock, Rush Line, Interstate 94, Interstate 35W, and Trunk Highway 36 corridors; each is shown on Figure 4-20. Of these corridors, only the Red Rock Corridor has completed an alternatives analysis to determine the transit mode, potential ridership, alignment, and capital, operating, and maintenance costs.

Figure 4-20

Future Transitway Corridors



Prepared By: Washington County GIS Support Unit, IT Department
Data Source: TLG, Met Council, Washington County IT, Mn/DOT, SRF Consulting



Red Rock Corridor

An alternatives analysis identified station locations at downtown Minneapolis, northeast Minneapolis, University of Minnesota, Snelling Avenue, Rice Street, St. Paul Union Depot, Lower Afton Road, Newport, Cottage Grove, and Hastings. The analysis suggests that expanding bus service in the corridor is one of the first steps towards building a stronger transit base for eventual commuter and high-speed rail in the corridor. A summary of the recommended strategies is described below.

Short-Term Strategies

Conduct a bus-feasibility study to evaluate the costs and benefits of additional bus service in the corridor. This study is currently underway. Continued exploration of options to provide efficient and reliable bus service in this corridor, especially during peak periods, is needed. The express bus ridership forecasts indicate that as peak period frequency increases ridership increases by over two-fold. To better serve the proposed express bus routes from Hastings to the two downtowns, local feeder bus networks should be studied and developed. Increasing transit service and commuting options will serve to build the transit base towards future commuter rail service.

Work with municipalities in the corridor so that land use planning accommodates future transit improvements. Continue working with communities to provide the planning foundation for transit-oriented development in the corridor.

Pursue additional park-and-ride facilities. Expanding, siting, and acquiring additional right-of-way for new or expanding park-and-ride facilities would benefit both express bus and future commuter rail service. Constructing park-and-ride facilities to first service express/commuter buses, followed by commuter rail service, is a successful model used in the Northstar Corridor.

Evaluate extending the corridor to Red Wing and the Prairie Island Indian Community. Goodhue County, the city of Red

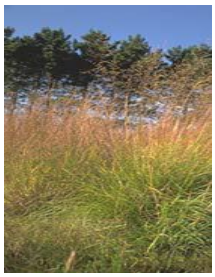
Wing, and the Prairie Island Indian community continue to express a strong interest in extending commuter rail service to their communities to serve activity centers. The bus feasibility study includes an analysis of extending bus service to these areas. The feasibility of the commuter rail extension should be studied in greater detail in the next phase of analysis.

Advocate for high speed rail service from Chicago to the Twin Cities. It is acknowledged that the purpose of high-speed rail is to efficiently move patrons between metropolitan areas like the Twin Cities and Chicago with few stops. Commuter rail is intended to move commuters to and from the southeast suburbs to downtown St. Paul and Minneapolis. While the two transportation modes do not serve the same transit purpose they can and most likely would utilize the same track. Implementing high-speed rail through the Red Rock Corridor could reduce the capital costs of commuter rail. The continued partnership with the respective railroads (BNSF and CP) and Amtrak is critical to making both high-speed rail and commuter-rail service a reality.

Intermediate Strategies

Re-evaluate commuter rail ridership and costs data after the Northstar Commuter Rail is in operation. Once the Northstar Commuter Rail is operational, the region will have actual ridership data to incorporate into the regional model. The existence of the Hiawatha LRT increased ridership on the Central Corridor LRT by 5,000. The Northstar will likely increase ridership on the Red Rock Commuter Rail in a similar manner.

Conduct the appropriate environmental and engineering work for commuter rail service. Planning and engineering for a major transit project such as commuter rail service typically takes several years. The Red Rock Corridor Commission recognizes that the Federal Transit Administration (FTA) New Starts process is a competitive process and one that is ever changing in terms of requirements. To enter into the federal environmental and engineering process the proposed action must receive a favorable rating by the FTA. This rating is currently based on the



cost effectiveness index (CEI) rating, which takes into account ridership and costs. By continuing to build transit service, planning for transit supported land uses, and working with the stakeholders to manage costs, the corridor will be well positioned to continue to move forward with the environmental and engineering work for commuter rail service.

Implement the recommendations of the bus feasibility study. Implementing these recommendations will continue to build the transit base to better position its competitiveness for ultimate commuter rail service.

Long-Term Strategies
Open service for high-speed rail.

Construct Red Rock Commuter Rail. Implementing Red Rock Commuter Rail service is part of the overall regional transit system network outlined by MNDOT and the Metropolitan Council studies.

Rush Line Corridor
The Rush Line Corridor Commission is conducting an alternatives analysis that includes review of ridership forecasts, transit modes, alignments, and costs. The analysis will be completed in fall 2009. The mode and alignment recommended by the alternatives analysis will determine the future transit station locations. Three alignments are being reviewed, including Interstate 35E and 35, along the Regional Railroad Authority right-of-way and U.S. Highway 61, and along the existing CP and Minnesota commercial tracks. Three transit modes are being analyzed, including light-rail transit (LRT), commuter rail, and bus-rapid transit (BRT). Future transit station locations will be identified when the mode and alignment have been determined.

It is anticipated that this analysis will suggest many of the same strategies as the Red Rock Corridor study. An early strategy will be to build a stronger transit base in the corridor to help the corridor move towards the more robust LRT, commuter rail, or

BRT transit system. Expanding, siting, and constructing new or existing park-and-ride facilities to support expanded bus service will also be a key short-term strategy.

I-94 Corridor

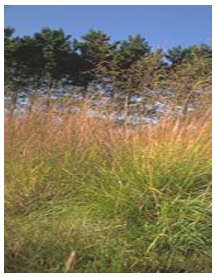
The Metropolitan Council conducted a metrowide analysis of potential transitway corridors as part of the development of the 2030 TPP. That analysis determined that the Interstate 94 East corridor has potential for expanded transit service and recommended that further analysis be conducted to determine the characteristics of that service. Washington and Ramsey County Regional Railroad Authorities have allocated funding to conduct an alternatives analysis for this corridor. It is expected to begin in fall 2009. The alternatives analysis will help to determine the recommended mode, alignment, ridership, and costs. Short-term strategies for this corridor are expected to include advocacy, public outreach, and coordination with Metropolitan Council for park-n-ride locations, coordination with MN/DOT on highway improvements or studies, and coordination with local communities on land-use planning in the corridor.

TH 36 and I-35W North Corridors

The TPP includes the Trunk Highway 36 and Interstate 35W North corridors as corridors in need of further analysis for transit improvements. Bus service currently operates in the Interstate 35W North corridor. Only limited bus service operates in the Trunk Highway 36 corridor. There are no immediate plans to examine expanded transit service in these corridors.

Transit-Oriented Development

One of the key factors in providing for an efficient and robust transit system is to create an environment that brings potential riders, shoppers, and businesses closer to the proposed transitway. Transit-oriented development (TOD) is a term that is used to represent several design principles that emphasize the interrelationship of transit facilities and the surrounding land-use pattern. The characteristics that typify TOD include transit



service, compact development, mixed use developments, pedestrian oriented, attractive and friendly design, and intermodal facilities. Each TOD differs depending on the priority placed on each characteristic.

Planning for TOD is primarily the responsibility of the cities where land use and zoning authority resides. Cities can apply TOD in areas that can support a robust transit service while providing attractive areas for people to live, work, and shop. Through its involvement in transitway coalitions, Washington County supports and encourages local communities to plan for TOD along the five planned transitway corridors in the county.

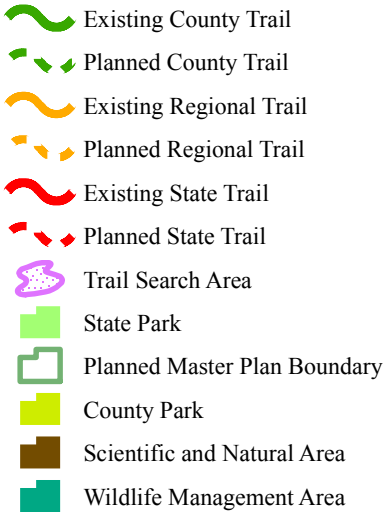
Appendix 4-E provides more information on TOD and the characteristics that are typically part of this style of development.

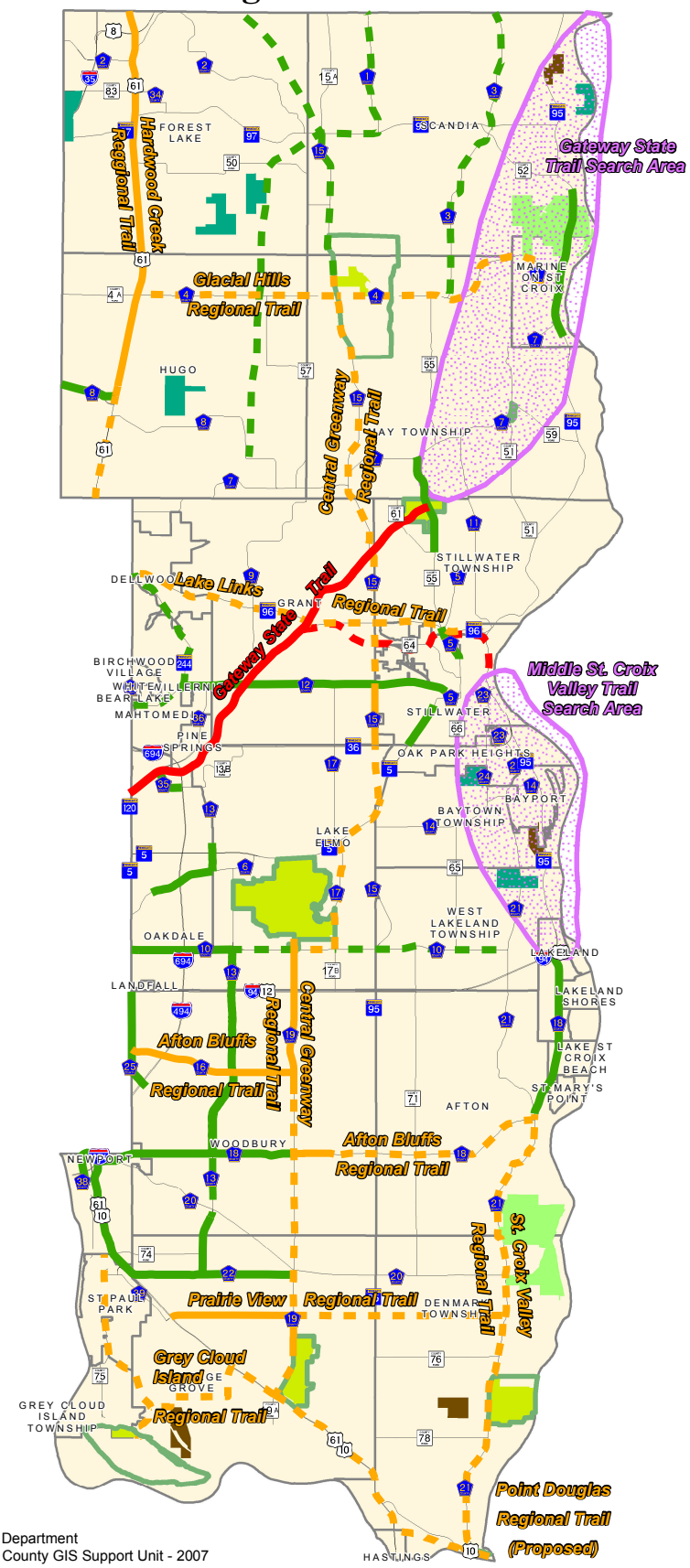
Non-Motorized Facilities

Non-motorized facilities consist mainly of off-road trails along county roads which provide opportunities for both recreational use and commuting to and from work. Enhancing these non-motorized facilities, as part of the overall transportation system, is a key element to providing a transportation system that is sustainable, links destinations and attractions, and encourages healthy and active lifestyles. Connectivity of the facilities includes connections within neighborhoods, between neighborhoods, to activity centers, to other regional trail facilities, and to transit facilities. This connectivity forms a seamless integration for users to be able to utilize this transportation mode to meet their needs. Much of the neighborhood connectivity occurs at the local level in land use planning of neighborhoods and commercial areas. This planning lays the foundation for how the community provides these local connections to these areas and supports walking and bicycling. At the county level, the focus is more on connecting to the local trail/sidewalk network and providing connections to destinations and attractions. Figure 4-21 shows the county's proposed trail system.

Figure 4-21

Planned Trail System





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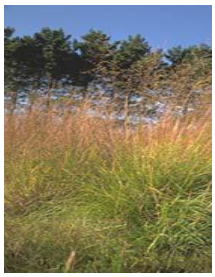
Data Source: Metropolitan Council - 2007, Washington County GIS Support Unit - 2007



2030 Highway System Needs Summary

The future long-term needs of the county's highway system are shown on Figure 4-22 and summarized below.

Jurisdictional classification changes: Includes roadways that are candidates for transfer of ownership, maintenance, and operations. The transfer agreements will be negotiated for each roadway.

Preservation: Includes crackseal, sealcoat, overlay, cold in-place recycling, and minor drainage improvements. These improvements focus mainly on improving the roadway surface and drivability of the roadway

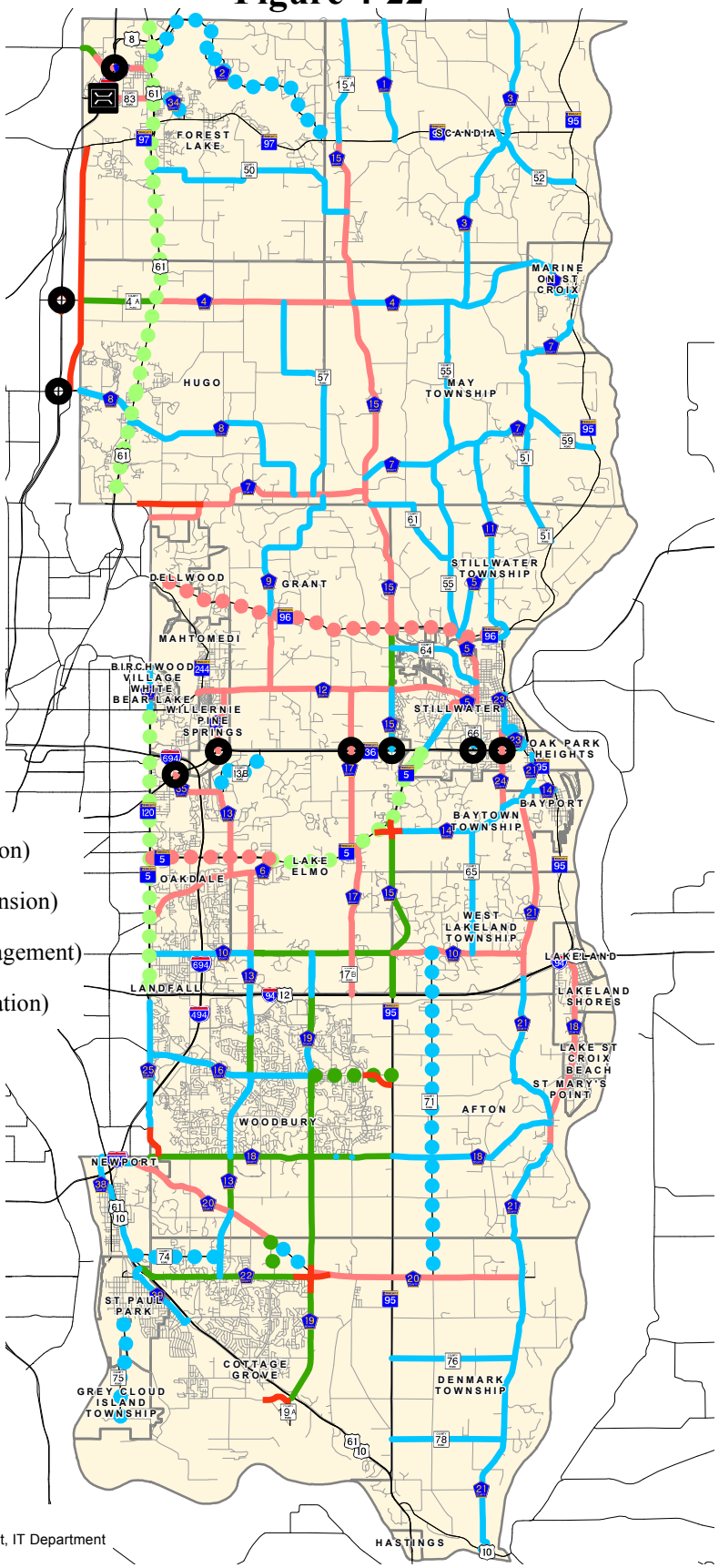
Management: Includes reconstruction of the roadway with no added through lanes. These improvements could include access management improvements, construction of turn lanes, horizontal and vertical curve corrections, and the installation of traffic signals, roundabouts or other intersection treatments.

Expansion: Includes reconstruction with added through lanes, turn lanes at intersections, access management, and installation of traffic signals, roundabouts, or other intersection treatments.

Interchange: Includes new or reconstructed interchange or overpass.

Figure 4-22

2030 Future Highway System Summary



- Interchange
- Overpass
- System Continuity
- Expansion
- Management
- Preservation

Jurisdictional Change

- Local to County (Expansion)
- MnDOT to County (Expansion)
- MnDOT to County (Management)
- County to Local (Preservation)

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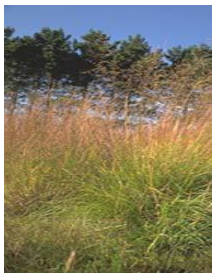
Data Source: The Lawrence Group - 2007



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Implementation

Goal 4-1

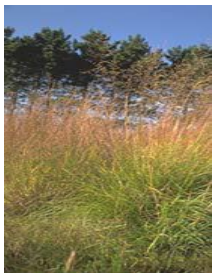
Develop and maintain a roadway system that accommodates the safe and efficient movement of people and goods.

Strategies

Policy 4-1: Plan for, design, and construct roadways to accommodate existing and future traffic growth.

Implementation Strategies

- Collect average daily traffic volume counts on County State Aid Highways.
  - Develop process for data collection to meet requirements of MN/DOT State Aid for local transportation office.
- Update 2030 forecast average daily traffic volumes for county roadways.
  - Periodically review and update the forecast traffic model, as necessary, to incorporate changes in socio-economic data.
  - Periodically review existing and future volume-to-capacity deficiencies.
  - Develop capital improvement program that includes a review of volume to capacity deficiencies.
- Coordinate roadway planning and design activities with local communities, adjacent counties, and MN/DOT.
- Develop a ten-ton highway reconstruction plan to accommodate truck traffic using the county road system.
  - Design new or reconstructed roads to a 10-ton standard.
- Pursue federal, state, regional, and local funding.
- Identify railroad crossing protection needed on roadways that cross rail lines.
  - Coordinate any new road construction/alignment or reconstruction projects with the applicable railroad and



Mn/DOT to determine the appropriate crossing protection.

Policy 4-2: *Collaborate with municipalities and the Minnesota Department of Transportation to assign roads to their proper jurisdiction.*

Implementation Strategies

- Develop a process to identify and implement jurisdictional transfers.
  - Review roadway system in Washington County.
  - Coordinate with local communities and MN/DOT to implement potential jurisdictional transfer candidates.
- Include jurisdictional transfers in county five-year capital improvement program.

Policy 4-3: *Define the hierarchy of the road system by appropriately assigning functional classifications to all roads in the county system.*

Implementation Strategies

- Periodically review county road system for potential functional classification changes.
- Coordinate with the Metropolitan Council to assign roads to their proper functional class.

Policy 4-4: *Manage access from local roads and state highways to the county system appropriately for each functional class.*

Implementation Strategies

- Utilize the county's Access Management Guidelines.
  - Review development proposals for consistency with these guidelines.
  - Review construction/reconstruction plans for consistency with these guidelines.
  - Require consistency with access management guidelines prior to issuance of access permit.

- Proactively coordinate with the communities to develop an access management plan for specific county roadways.
  - Identify existing and future access locations along each corridor.
  - Develop memoranda of understanding with cities on these corridors to streamline project development process.

Policy 4-5: *Develop and implement a pavement preservation program to maintain the integrity of the roadway system.*

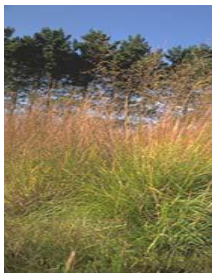
Implementation Strategies

- Utilize the Pavement Condition Index rating to identify potential roadways for preservation needs.
- Coordinate with State Aid to determine needs and identification.
- Conduct yearly field reviews to visually inspect roadway conditions.
- Coordinate with communities to identify issues/concerns.

Policy 4-6: *Develop and implement an ongoing safety review process that promotes proactive and reactive treatments to reduce crashes on the roadway system.*

Implementation Strategies

- Conduct ongoing analysis and review of crashes on county road systems.
- Review MN/DOT's Strategic Highway Safety Plan for strategies that could apply to Washington County.
- Develop a strategic highway safety plan specifically for Washington County.
- Utilize the county's Access Management Guidelines to promote safety along the county road system.
- Utilize the Intersection Control Ranking System to identify intersections where improved traffic control is justified.
  - Collect intersection approach counts.



  - Review intersection delays.
  - Examine historic intersection crash data.
  - Utilize the traffic signal warrant analysis found in the Minnesota Manual on Uniform Traffic Control Devices.
- Coordinate with the railroad companies and MN/DOT to identify the need for improved crossing control at railroad-highway crossing locations.
- Participate in the Washington County Safe Community Coalition.

Policy 4-7: *Utilize traffic management techniques to improve the operations and safety and extend the life of the county roadways*

Implementation

- Develop and implement coordinated signal timing plans on select corridors to reduce delays and travel times on the roadway system.
- Review the need for geometric improvements at intersections.
- Review the need for improved or revised traffic control at intersections.
- Identify the need for improved railroad crossing protection at highway-railroad crossings.

Goal 4-2

Promote the development and utilization of a transit system that meets the existing and future travel needs of the public.

Strategies

Policy 4-8: *Support the delivery of appropriate levels and types of transit service to match the specific needs of the county, based on its unique values, geography, economy, and socio-economic profile.*

Implementation Strategies

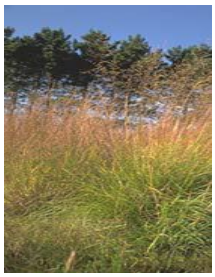
- Partner with the communities, transit providers and coalitions to expand transit services in the county.

- Monitor the level of ridership and usage of park-and-rides, with the cooperation of Metro Transit, to ensure that sufficient resources are provided to support the demand.
- Partner with communities and transit providers to remove barriers to transit use.
- Support and advocate for the county's transit needs through local, regional, and state coalitions.
- Conduct transit-related studies to identify the needs, opportunities, and benefits for transit.
- Incorporate a multi-modal approach to all transportation studies conducted by the county.
- Update the county's transit plan.
- Work with the Metropolitan Council to ensure a base level of service for rural areas not served by regular route service is provided through the regional dial-a-ride program.
- Partner with the Metropolitan Council and adjoining communities to ensure coverage between jurisdictions.
- Support development of life-cycle housing near transit corridors and within transit-oriented development areas, specially targeting youths, seniors, and special needs individuals.

Policy 4-9: *Coordinate investment in transit infrastructure with land use and transportation planning.*

Implementation Strategies

- Partner with communities and transit providers to promote land use and economic development that supports transit services and facilities.
- Connect land use, transit, and transportation decisions to further identify and develop transit-corridor needs and opportunities.
- Collaborate with communities and transit providers to develop and provide pedestrian and bicycle access to transit services and facilities.
- Encourage the Metropolitan Council to expand the capacity of buses to carry bikes.
- Support the implementation of transit advantages infrastructure to provide a reliable, efficient transit system.



- Prioritize projects that include a multi-modal approach to moving people and goods.

Policy 4-10: *Provide information on the availability and use of transit to encourage greater use of the system.*

Implementation Strategies

- Publicize planned transitways, transit provider's information, and supportive materials and services through the county's website.
- Develop materials to promote transit ridership in the county.
- Update the county web site on a regular basis to ensure that the information is up to date.
- Establish collaborative relationships with the communities and transit providers to develop communication and outreach plans for transit use.

Policy 4-11: *Advocate and promote long-term investments in transit infrastructure that increase operating efficiency, lower operating costs, and increase ridership.*

Implementation Strategies

- Advocate for appropriate transit funding at the local, regional, state, and federal level.
- Maximize county transit investments by focusing resources on priority corridors.
- Identify county funding resources and needs to support transit capital and operations costs through short and long term commitments.
- Identify and research alternative funding options for development of transitways.

Policy 4-12: *Support land use policies and densities that promote the development of transit supportive districts to focus transit service and capital investment.*

Implementation Strategies

- Encourage communities to develop land-use policies that incorporate transit-oriented development opportunities near identified transit stations and transitway corridors.
- Partner with communities and coalitions to develop a transit-oriented development plan for the identified transitways corridors in the county.
- Partner with communities and state agencies to promote and advance transit-oriented development that is compatible with transit and community planning goals.
- Plan and design future transit facilities to be an integral part of larger transit-oriented development areas.

Goal 4-3

Use effective transportation planning to accommodate existing and planned land uses, while preserving natural, cultural, and historic resources.

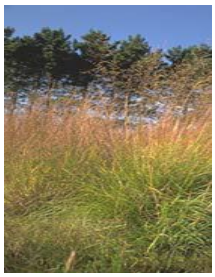
Strategies

Policy 4-13: *Update and implement a cost-participation policy that equitably distributes the cost of transportation projects.*

Implementation Strategies

- Review the county's cost-participation policy for roadway construction and reconstruction projects.
- Utilize the cost-participation policy in identifying projects for inclusion in the capital improvement program.
- Leverage available funding.
  - Seek funding from federal and state agencies to reduce costs for the county and the local community.
- Maintain a capital improvement program for implementing the prioritized projects.

Policy 4-14: *Develop a collaborative process with local municipalities to identify fiscally responsible system improvements that are consistent with county priorities and meet the needs of municipalities.*



Implementation Strategies

- Coordinate with communities to identify transportation needs within their community.
  - Coordinate transportation needs with existing and future land uses.
- Develop a process for review of the county roadways system to identify projects for inclusion in the capital improvement program.
- Determine right-of-way needs for county highways.
  - Amend the county's right-of-way ordinance to include right-of-way preservation policies.
  - Work with communities to acquire right-of-way for future expansion of county roadways.
  - Identify future roadway expansion needs.
  - Acquire the necessary right-of-way through the platting/replatting process for developments that occur adjacent to the county roadway.
  - Coordinate with communities to identify future county roads and acquire the necessary right-of-way based on the functions of the future road.
  - Maintain the integrity of the county's rights-of-way by enforcing applicable state laws and county ordinances.

Policy 4-15: *Coordinate with other agencies to promote a well balanced transportation system.*

Implementation Strategies

- Coordinate roadway and transit planning and design activities with local communities, adjacent counties, MN/DOT, and other state agencies.
- Coordinate with the Metropolitan Airports Commission (MAC) and the private airport operator regarding any expansion of the airport facilities or activities.
  - Monitor airport activities to ensure that improvements proceed as planned and in concert with county development projects.

Policy 4-16 *Coordinate with communities and provide feedback on development and redevelopment proposals.*

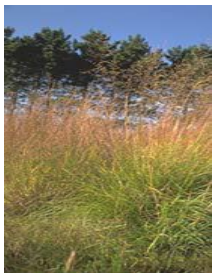
Implementation Strategies

- Review development/redevelopment plans that are adjacent to county roads.
  - Provide comments to local communities on development plans and potential impacts to the county road system.
  - Develop guidelines for the use of traffic impact studies, as part of development reviews to determine appropriate accommodations for development-generated traffic.
- Support transit-oriented development adjacent to transit stations and along transitways.
- Collaborate with the Metropolitan Airports Commissioner on policies and plans related to the Lake Elmo and Daniel Deponti airports for county roadways within the airport influence area.

Policy 4-17: *Avoid or minimize impacts to natural features; where impacts are unavoidable, mitigate impacts through replacement and restoration of natural features disturbed by construction.*

Implementation Strategies

- Identify natural areas in the planning stage of project development and implementation.
  - Consult with the Washington County Conservation District and water management organizations.
- Follow federal and state guidelines for replacement and restoration of natural features.
- Utilize best-management practices to avoid or minimize impacts to natural resources when feasible.
  - Review research and studies to identify latest best management practices and techniques.



- Utilize context sensitive design principles to minimize impact to natural, cultural, or historic features.
- Utilize the design guidelines for roadways that are identified as a Natural Preservation Route as part of the Minnesota County State Aid Highway system.
  - Upon request, review guidelines for inclusion of roads into the Natural Preservation Route designation.

Policy 4-18: *Promote techniques to improve the water quality of runoff from the roadway system.*

Implementation Strategies

- Review research and studies to identify latest best-management practices and techniques.
  - Design and implement best-management practices for water and runoff where cost beneficial.
- Consult with the Washington County Conservation District, watershed management organizations, the Minnesota Department of Natural Resources, U.S. Army Corps of Engineers, and other agencies, as appropriate, in the review of project designs.
- Follow Storm Water Pollution Prevention Plan (SWPPP) requirements during roadway construction or reconstruction.
  - Develop a SWPPP during project design.
  - Incorporate stormwater runoff mitigations in construction plans and specifications.
  - Perform inspections of installed materials/equipment used to minimize or reduce the impacts of stormwater runoff during construction.

Policy 4-19: *Develop and implement techniques for road maintenance to minimize chemical and particulate runoff.*

Implementation Strategies

- Review research and studies to identify latest best-management practices and techniques.

- Review and consider new products that perform as well as salt and are cost beneficial.
- Review application techniques used by county staff.
- Identify new equipment or practices to more efficiently remove snow and ice from the county roadways.

- Annually review salt and other deicing material usage on the county roadways.
  - Compare county practices with those of other metro counties.
- Provide training for maintenance staff on application and use of deicing materials.

Goal 4-4

Develop a non-motorized transportation system to provide mobility and recreational options to the public.

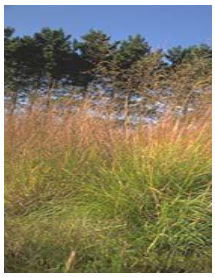
Strategies

Policy 4-20: *Integrate trails and pedestrian and bicycle uses into the design of roadway and transit facilities, as appropriate.*

Implementation Strategies

- As part of roadway-widening projects, construct a separated paved trail on, at minimum, one side of the roadway. Where feasible, construct a separated paved trail on both sides of the roadway.
- Include shoulders along roadways for the usage of bicyclists.
- Identify gaps in the trail system.
- Identify and include trail construction on major bridge reconstruction plans.
- Pursue federal, state, and regional funding for trail projects.
- Update and implement the county's trail-system plans.

Policy 4-21: *Identify and support trail connections that provide links to parks, cultural and historic resources, and community destinations.*



Implementation Strategies

- Work with communities to identify destinations within their community.
- Provide connections between regional, county, and state parks.
- Coordinate with adjacent counties and cities to provide trail connections across county boundaries.
- Support construction of trails to transit corridors and facilities.
- Monitor possible future abandonment of railroad trackage for potential use as bicycle and pedestrian trails.

Policy 4-22: *Provide safe and appropriate trail crossings and access to the county roadway system.*

Implementation Strategies

- Discourage uncontrolled pedestrian and bicycle trail crossings.
- Provide pedestrian/bicyclists features at signalized intersections.
- When justified by an engineering study, provide consistent signing and pavement markings for pedestrian/bicyclist crossings.
- When feasible, provide grade separation for pedestrian and bicycle crossings.

Policy 4-23: *Comply with the American with Disabilities Act (ADA) and guidelines for new and reconstructed trail and roadway projects.*

Funding

Many different funding sources are used to acquire, construct, maintain, and operate the transportation system. Some of these funding sources can be used for any mode (highways and roads, transitways, and non-motorized trails) of the transportation

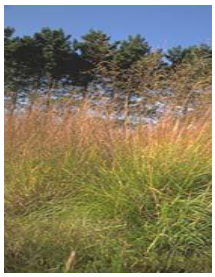
system, while other sources can be used only for specific modes and sometimes only for a subcategory within a specific mode (e.g., safety improvement). Table 4-11 lists potential funding sources and the mode for which the funding could be used.

Table 4-11
Transportation Funding Sources
Washington County

Funding Source	Transportation Mode		
	Highways and Roads	Transitways	Pedestrian / Bicycle Trails
County Levy	X	X	X
Regional Railroad Authority Levy		X	
Federal Regional Solicitation			
Surface Transportation Program (STP)	X		X
Transportation Enhancements (TE)			X
Congestion Mitigation and Air Quality (CMAQ)	X	X	X
Highway Safety Improvement Program (HSIP)	X		X
Safe Routes to School (SRST)			X
Local Road Improvement Program (LRIP)	X		
High Risk Rural Road (HRRR) Program	X		
Municipal Agreement Program – MN/DOT	X		X
Counties Transit Improvement Board (CTIB)		X	
County State Aid Highway (CSAH) Funding	X		X
High Priority Projects (HPP)	X	X	X
Federal Appropriations	X	X	X
State Bonding	X	X	X
Right-of-Way Acquisition Loan Fund	X		

Five-Year Capital Improvement Program

Figure 4-23 shows the transportation projects contained in the county's 2009-2013 Capital Improvement Program.



Priority Actions

1. Design and construct projects included in the capital improvement program (CIP).
2. Develop a formalized process for jurisdictional transfers.
3. Coordinate with communities on development proposals adjacent to county roadways.
4. Coordinate with communities to develop an access management plan for specific county roadways.
5. Revise the Intersection Control Ranking System (ICRS) to better prioritize intersections in need of increased traffic control.
6. Participate in the Washington County Safe Community Coalition.
7. Complete the bus feasibility study for the Red Rock Corridor.
8. Conduct station area planning and design for the Red Rock Corridor.
9. Coordinate with the Metropolitan Council, MN/DOT and local communities on the development of the Alternatives Analysis for the I-94 Corridor.
10. Participate in the transitway corridor coalitions.
11. Update the county cost-participation policy for highway improvement projects.

Figure 4-23

2009-2013 Transportation Capital Improvement Program

**Approved December 2008*

2009 Project # Description

- 2215 CSAH 15 - Gateway Trail Bridge over Manning Ave.
- 2314 CSAH 18 - Reconstruction from TH 95 to CSAH 21
- 2504 CSAH 18 - N/S Landscaping
- 2523 CSAH 17 - Railroad Crossing safety project north of 33rd St. N.
- 2533 CSAH 15 - Railroad Crossing safety project @ CR 64

2010 Project # Description

- 2201 CSAH 4 @ TH 61 - Traffic Signal
- 2318 CR 83 - Overpass
- 2502 NEW CSAH - Jamaica Ave. S. from CSAH 22 to CSAH 20, transfer to County
- 2545 CR 99 - Reconstruction of Government Center Streets
- 2546 CSAH 6 @ TH 5/Jamaca - Roundabout
- 2547 CR13B - Reconstruction of Demontreville Tr.
- 2548 CSAH 24 - Trail/Sidewalk from 50th St. N. to 62nd St. N.
- 2550 CSAH 4 @ TH 61 - Intersection Improvements

2011 Project # Description

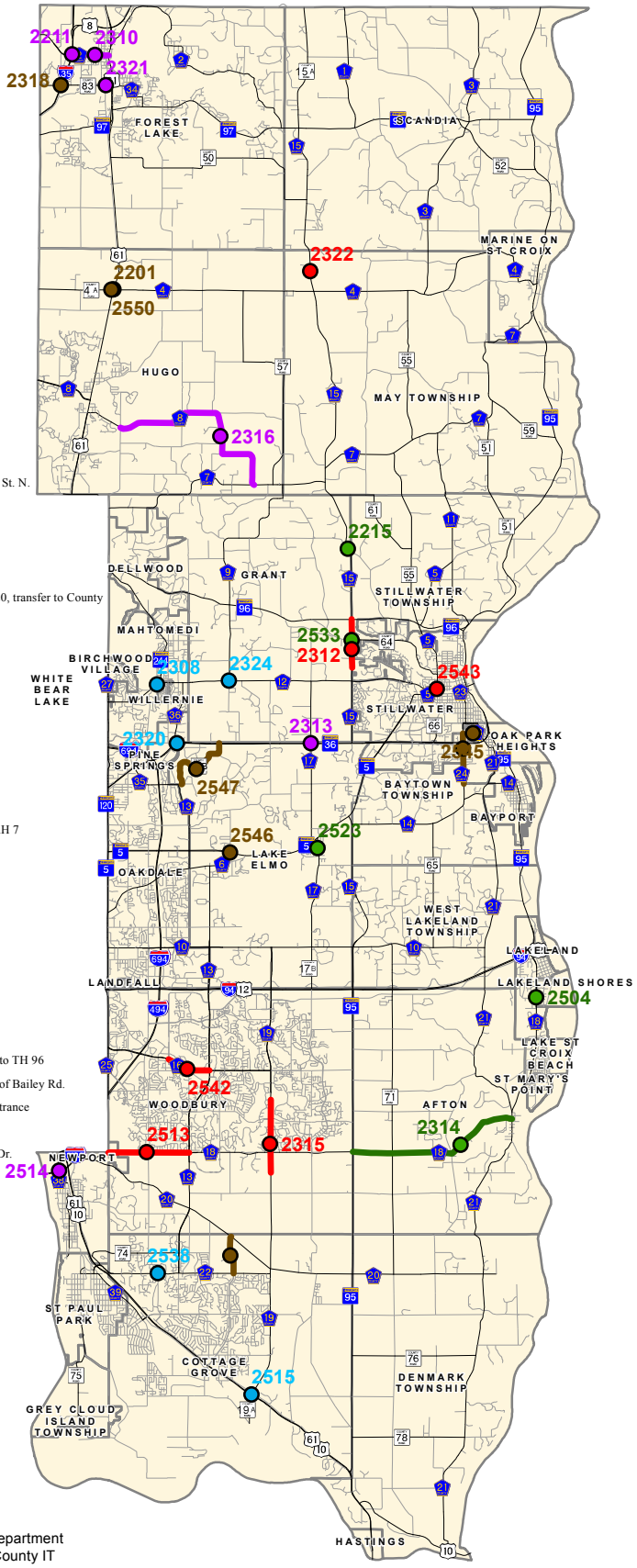
- 2211 CSAH 2 - Intetrchange reconstruction at I-35
- 2310 CSAH 2 - Reconstruction from 12th st. to TH 61
- 2313 CSAH 17 - Bridge over TH 36
- 2316 CSAH 8 - Reconstruction from Goodview Ave. N. to CSAH 7
- 2321 CR 83 - Hardwood Creek Trail Bridge over CR 83
- 2514 CSAH 38 - Ramp Signals @ I-494

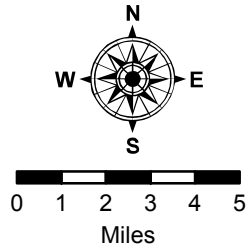
2012 Project # Description

- 2308 CSAH 12 - Reconstruction from TH 244 to East Ave.
- 2320 CSAH 36 - Interchange @ TH 36
- 2324 CSAH 12 @ CSAH 9 - Intersection Improvements
- 2515 CSAH 19 - Interchange @ TH 61
- 2538 CSAH 22 - Traffic Signal @ Hardwood Ave.

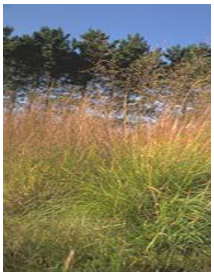
2013 Project # Description

- 2312 CSAH 15 - Reconstruction from 1/2 mile N. of CSAH 12 to TH 96
- 2315 CSAH 19 - Reconstruction from Park Xing to 1/2 mile S. of Bailey Rd.
- 2322 CSAH 15 - Improvements at Big Marine Park Reserve Entrance
- 2513 CSAH 18 - Reconstruction from Bailey Hill to CSAH 13
- 2542 CSAH 16 - Reconstruction from Radio Dr. to Bielenberg Dr.
- 2543 CSAH 5 & 12 - Intersection Improvements





Prepared By: Washington County GIS Support Unit, IT Department
Data Source: The Lawrence Group - 2007, Washington County IT



Appendix 4-A

Jurisdictional Transfer Guidelines

Issues and factors, which must be considered when determining potential jurisdictional change include historical practices, type of trips served (purpose and length), connectivity, traffic volumes, access controls, functional classification, legal requirements, and funding and maintenance issues. The following guidelines were developed to provide a basis to review the routes in Washington County for potential jurisdictional transfers. These guidelines will not determine if the jurisdictional transfer is politically acceptable, nor do they establish a timeframe under which transfers may occur. However, they define an approach for arriving at logical jurisdictional designations.

Once there is agreement on how the jurisdictional designations should be established, an ongoing jurisdictional transfer process will need to be developed to address issues such as the financial implications for construction and maintenance of the facility, operational implications (perceived level of service, ability to maintain), perceived fairness in the distribution of route responsibilities, and timing of transfer.

It is not anticipated that all guideline criteria must be met in order for a jurisdictional change to be recommended. However, the more criteria a route addresses, the stronger the case for recommending it as a transfer.

State Jurisdiction

Normally state jurisdiction routes are characterized as follows:

- Classified as either a principal or minor arterial.
- Typically longer routes serving statewide and interstate trips that connect larger population and business centers.
- Spaced at intervals that are consistent with population density, such that all developed areas of the state are within reasonable distance of an arterial. (As a guide, rural arterial routes are considered to “serve” a community if it is within 10 miles or 20 minutes travel time on a minor arterial).

- Typically have design features (such as properly spaced access points) that are intended to promote higher travel speeds. They also accommodate more truck movements.
- Typically carry the major portion of trips entering and leaving urban areas as well as the majority of trips bypassing central cities.

County Jurisdiction

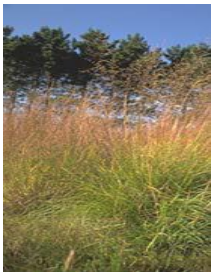
Typically, county jurisdiction routes are characterized as follows:

Rural Areas

- Functionally classified as a minor arterial, major collector, or minor collector.
- Provide essential connections and links not served by the principal and other minor arterial routes. They serve adjacent larger towns that are not directly served by principal and minor arterial routes and they provide service to major traffic generators that have intra-county importance.
- Spaced at intervals that are consistent with population density so as to provide reasonable access to arterial or collector routes in developed areas.
- Provide links between local traffic generators and outlying rural areas.

Within Urban Boundaries

- Classified as either principal or minor arterial routes.
- Carry higher-traffic volumes or provide access to major regional traffic generators (shopping centers, education centers, major industrial complexes).
- Provide connections and continuity to major rural collector routes accessing the urban area and provide continuity within the urban area, but do not divide homogeneous neighborhoods.
- Emphasize higher mobility features than other local minor arterial routes (i.e., some form of access management or access control).



Appendix 4-A

City Jurisdiction

Arterial routes within the urban area should be considered for city jurisdiction if they are characterized as follows:

- Short segments (less than three miles) with a moderate volume of traffic (3,000 to 8,000 ADT).
- Higher local land access needs and close intersection spacing (promotion of local land access over mobility).
- Close spacing with other arterial routes and shorter trip lengths such as found in central business district (CBD) areas
- Provide no, or very limited, continuity to outlying rural areas. Urban arterials tend to have shorter trip lengths than rural arterials or collectors.
- Serve small geographic travelsheds.
- Provide on-street parking or other amenities that discourage the use of the route as a regional route (promotion of local access and adjacent land use activities at the street edge).

Collectors and local streets that provide property access and local traffic circulation are normally under city jurisdiction. These streets typically constitute 65 to 80 percent of the entire urban system mileage and are characterized as follows:

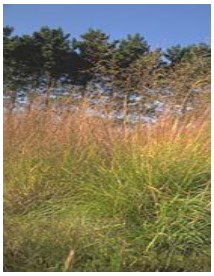
- Shorter in length (less than 1.5 miles) and carry low to medium volumes of traffic (500 to 3,000 ADT).
- Provide land access and traffic circulation to residential neighborhoods and to commercial and industrial areas (high access low mobility functions).
- Divide homogeneous residential neighborhoods to distribute trips to arterial street system or their final trip destination.

Township Jurisdiction

Customarily, township jurisdiction rural routes are characterized as follows:

- Low traffic volumes (less than 500 ADT).

- Classified as local roadways on the functional classification system.
- Provide access to adjacent property.
- Link outlying rural areas to county roads (CR) or County State Aid Highways (CSAH); the route length is usually less than five miles between CR or CSAHs.
- Primarily serve farmsteads, small rural subdivisions, rural churches/cemeteries, and agricultural facilities.
- Irregular access spacing, but most often provide access to farms, field entrances, and they sometimes “T” with other roadways or dead-end.



Appendix 4-B

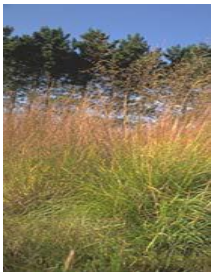
Transportation Analysis Zone (TAZ) Information

Table A-1
Socio-economic Data by Transit Analysis Zone by Community
Washington County

			2005				2030			
CITY	Washington County TAZ	Met Council TAZ	Population	Households	Retail Employment	Non-retail Employment	Population	Households	Retail Employment	Non-retail Employment
AFTON	1111	1111	73	28	1	81	77	28	30	81
AFTON	1193	1193	272	103	0	0	404	140	20	11
AFTON	1194	1194	54	21	38	134	74	26	39	153
AFTON	1224	1111	692	263	2	105	1420	622	31	108
AFTON	1267	1193	297	113	0	0	432	150	0	0
AFTON	1268	1194	252	97	0	0	334	117	0	0
AFTON	1269	1194	491	189	0	39	582	208	5	92
AFTON	1270	1194	411	158	0	0	471	169	0	0
AFTON	1271	1194	184	71	5	55	232	82	5	55
AFTON	1272	1194	7	3	0	0	24	8	0	0
BAYPORT	1131	1131	3097	763	98	4887	5726	1392	193	5834
BAYPORT	1196	1196	71	29	7	266	274	108	7	266
BAYTOWN TOWNSHIP	1195	1195	284	100	0	0	327	113	0	0
BAYTOWN TOWNSHIP	1196	1196	284	100	0	0	415	147	0	0
BAYTOWN TOWNSHIP	1231	1130	1032	363	0	178	1418	500	0	120
BIRCHWOOD	1146	1146	900	358	0	18	930	370	0	0
COTTAGE GROVE	1080	1080	85	29	0	62	1610	718	0	62
COTTAGE GROVE	1081	1081	193	67	0	31	5154	2216	244	354
COTTAGE GROVE	1082	1082	5735	1675	0	0	5950	1913	0	0
COTTAGE GROVE	1083	1083	3987	1163	29	299	3840	1220	29	398
COTTAGE GROVE	1084	1084	65	20	10	16	800	307	17	49
COTTAGE GROVE	1085	1085	2897	927	7	153	3520	1250	7	153
COTTAGE GROVE	1086	1086	2534	901	208	273	2585	1000	292	324
COTTAGE GROVE	1087	1087	0	0	196	139	0	0	196	139
COTTAGE GROVE	1088	1088	802	269	-	528	4831	1,967	189	1,535
COTTAGE GROVE	1089	1089	550	224	2	36	518	228	9	112

Table A-1
Socio-economic Data by Transit Analysis Zone by Community
Washington County

			2005				2030			
CITY	Washington County TAZ	Met Council TAZ	Population	Households	Retail Employment	Non-retail Employment	Population	Households	Retail Employment	Non-retail Employment
COTTAGE GROVE	1090	1090	38	13	30	374	35	13	30	631
COTTAGE GROVE	1184	1184	4716	1453	-	-	4708	1580	-	478
COTTAGE GROVE	1185	1185	1306	471	30	377	1209	471	30	377
COTTAGE GROVE	1204	1080	50	17	1	1	429	189	1	1
COTTAGE GROVE	1205	1080	147	50	-	-	1668	739	-	-
COTTAGE GROVE	1206	1081	196	68	12	30	1839	784	116	169
COTTAGE GROVE	1207	1082	195	57	431	67	181	57	441	560
COTTAGE GROVE	1208	1084	798	243	-	-	3703	1393	-	-
COTTAGE GROVE	1209	1087	5395	1858	330	641	5025	1870	330	644
COTTAGE GROVE	1210	1088	83	28	57	768	77	28	119	1184
COTTAGE GROVE	1212	1090	763	259	98	35	776	288	239	35
COTTAGE GROVE	1213	1090	1515	514	29	905	1610	600	29	1105
COTTAGE GROVE	1262	1185	2193	791	49	141	2262	891	161	690
COTTAGE GROVE	1278	1080	310	106	21	-	670	278	21	-
DELLWOOD	1144	1144	502	185	-	65	502	185	-	65
DELLWOOD	1149	1149	456	200	10	240	468	205	10	105
DENMARK TOWNSHIP	1079	1079	447	158	407	156	599	230	391	17
DENMARK TOWNSHIP	1088	1088	158	56	38	438	154	57	38	531
DENMARK TOWNSHIP	1279	1079	428	151	13	-	587	226	13	-
DENMARK TOWNSHIP	1280	1079	642	227	108	-	1210	477	100	-
FOREST LAKE	1159	1159	3928	1487	56	204	4076	1487	56	205
FOREST LAKE	1160	1160	1378	484	20	469	4775	1708	43	469
FOREST LAKE	1161	1161	103	37	11	96	107	37	214	96
FOREST LAKE	1162	1162	874	343	417	38	1284	488	681	38
FOREST LAKE	1163	1163	2222	1041	1447	1316	3767	1591	1447	1316
FOREST LAKE	1164	1164	688	274	472	1167	1181	444	472	1189
FOREST LAKE	1165	1165	256	112	-	-	266	112	-	-
FOREST LAKE	1199	1199	843	359	91	16	875	359	508	16
FOREST LAKE	1257	1160	1586	557	1	88	1646	557	21	88



Appendix 4-B

Table A-1
Socio-economic Data by Transit Analysis Zone by Community
Washington County

			2005				2030			
CITY	Washington County TAZ	Met Council TAZ	Population	Households	Retail Employment	Non-retail Employment	Population	Households	Retail Employment	Non-retail Employment
FOREST LAKE	1258	1161	1616	585	58	140	9590	4,218	655	1,569
FOREST LAKE	1259	1162	3	1	113	10	3	1	113	10
FOREST LAKE	1260	1164	55	22	-	-	57	22	-	-
FOREST LAKE	1261	1165	2255	988	120	226	5509	2223	120	226
FOREST LAKE	1276	1200	222	98	-	225	230	98	-	225
FOREST LAKE	1277	1200	804	355	385	238	834	355	385	238
GRANT	1142	1142	1097	376	50	92	1279	442	50	92
GRANT	1143	1143	357	136	140	96	358	136	140	96
GRANT	1149	1149	452	156	-	-	453	156	-	-
GRANT	1150	1150	1612	566	-	115	1615	566	-	115
GRANT	1237	1143	656	250	40	96	795	300	40	97
GREY CLOUD ISLAND TWP	1089	1089	316	116	1	24	6800	2500	20	220
HASTINGS	1079	1079	0	1	52	206	0	-	-	-
HUGO	1153	1153	1981	834	110	392	4398	1774	343	755
HUGO	1154	1154	1023	367	26	5	1512	544	109	5
HUGO	1155	1155	964	363	30	617	3055	1119	547	607
HUGO	1156	1156	2506	990	174	258	15014	5997	394	1184
HUGO	1244	1153	644	271	8	39	4256	1680	8	39
HUGO	1245	1153	261	110	8	35	1466	580	8	35
HUGO	1246	1154	1550	556	14	45	3010	1086	14	45
HUGO	1247	1155	704	265	20	386	2794	1021	20	386
HUGO	1248	1156	109	43	-	-	2478	992	-	-
HUGO	1249	1156	94	37	-	1	2017	807	-	1
LAKE ELMO	1115	1115	567	219	66	267	2454	944	398	817
LAKE ELMO	1116	1116	979	332	-	133	5577	557	-	160
LAKE ELMO	1117	1117	1325	531	26	260	2756	2630	400	8228
LAKE ELMO	1118	1118	171	55	-	-	913	335	-	-
LAKE ELMO	1128	1128	2016	712	-	-	2930	950	-	-

Table A-1
Socio-economic Data by Transit Analysis Zone by Community
Washington County

			2005				2030			
CITY	Washington County TAZ	Met Council TAZ	Population	Households	Retail Employment	Non-retail Employment	Population	Households	Retail Employment	Non-retail Employment
LAKE ELMO	1129	1129	58	20	95	603	833	173	363	803
LAKE ELMO	1228	1115	633	246	-	89	3461	310	-	92
LAKE ELMO	1229	1118	16	5	117	202	2215	1,650	839	1,800
LAKE ELMO	1230	1129	1148	392	-	80	1922	661	-	80
LAKE ELMO	1274	1197	531	195	-	14	939	517	-	20
LAKE ST CROIX BEACH	1113	1113	5	2	1	3	5	2	-	1
LAKE ST CROIX BEACH	1225	1112	844	375	-	12	848	377	-	21
LAKE ST CROIX BEACH	1226	1112	227	101	13	46	227	101	30	78
LAKELAND	1113	1113	573	286	25	20	600	297	34	68
LAKELAND	1227	1113	1137	404	47	286	1160	413	66	432
LAKELAND SHORES	1113	1113	320	120	5	13	320	120	15	35
LANDFALL	1121	1121	716	307	14	12	700	300	50	40
MAHTOMEDI	1145	1145	3065	1323	120	687	3338	1448	130	1528
MAHTOMEDI	1146	1146	1302	387	0	0	1718	527	0	0
MAHTOMEDI	1147	1147	1447	530	101	329	1545	569	111	595
MAHTOMEDI	1148	1148	1275	507	5	10	1399	556	9	127
MARINE ON ST CROIX	1157	1157	270	116	-	-	435	186	-	-
MARINE ON ST CROIX	1203	1157	239	103	24	82	404	173	54	184
MARINE ON ST CROIX	1250	1157	165	71	6	53	161	71	6	136
MAY TOWNSHIP	1152	1152	670	267	-	13	917	366	-	9
MAY TOWNSHIP	1239	1152	387	154	-	13	462	184	-	8
MAY TOWNSHIP	1240	1152	440	175	-	12	690	275	-	8
MAY TOWNSHIP	1241	1152	1178	469	-	12	1678	669	-	8
MAY TOWNSHIP	1242	1152	30	12	-	12	105	42	-	8
MAY TOWNSHIP	1243	1152	78	36	-	10	148	64	-	9
NEW SCANDIA TOWNSHIP	1158	1158	905	352	-	4	1288	501	-	45
NEW SCANDIA TOWNSHIP	1251	1158	316	123	5	-	332	128	1	-
NEW SCANDIA TOWNSHIP	1252	1158	548	213	7	-	1056	413	3	-
NEW SCANDIA TOWNSHIP	1253	1158	1383	538	19	5	1776	689	20	47

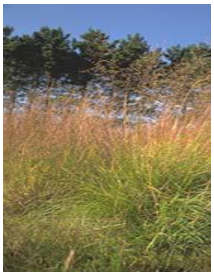


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Table A-1
Socio-economic Data by Transit Analysis Zone by Community
Washington County

			2005				2030			
CITY	Washington County TAZ	Met Council TAZ	Population	Households	Retail Employment	Non-retail Employment	Population	Households	Retail Employment	Non-retail Employment
NEW SCANDIA TOWNSHIP	1254	1158	260	101	19	-	272	105	14	-
NEW SCANDIA TOWNSHIP	1255	1158	157	61	-	-	183	71	-	-
NEW SCANDIA TOWNSHIP	1256	1158	239	93	37	298	493	193	42	438
NEWPORT	1093	1093	675	265	-	221	864	340	-	764
NEWPORT	1094	1094	778	317	41	264	916	370	108	394
NEWPORT	1095	1095	0	-	-	280	0	-	-	280
NEWPORT	1096	1096	607	291	147	516	1139	528	335	1980
NEWPORT	1214	1096	1078	494	154	481	1971	892	307	2332
OAK PARK HEIGHTS	1130	1130	1404	521	952	200	1484	550	1126	610
OAK PARK HEIGHTS	1132	1132	1086	569	210	1300	1991	982	394	2569
OAK PARK HEIGHTS	1134	1134	738	360	40	104	740	360	40	104
OAK PARK HEIGHTS	1197	1197	0	-	113	100	0	-	157	100
OAK PARK HEIGHTS	1231	1130	1350	558	0	0	1485	608	0	0
OAKDALE	1119	1119	749	372	-	3	826	412	49	3
OAKDALE	1120	1120	5262	1911	232	544	5914	2170	232	857
OAKDALE	1121	1121	2067	1142	316	931	3636	1801	408	931
OAKDALE	1122	1122	5307	2542	219	1239	5722	2760	219	1936
OAKDALE	1123	1123	1766	632	193	521	2288	840	216	521
OAKDALE	1124	1124	2871	1277	10	415	3024	1,350	18	714
OAKDALE	1125	1125	3399	1505	30	431	4519	2,010	74	460
OAKDALE	1126	1126	1127	503	256	331	1231	550	459	530
OAKDALE	1127	1127	1444	518	-	1781	1826	668	207	2867
OAKDALE	1128	1128	421	144	-	65	437	151	-	65
OAKDALE	1201	1119	517	257	264	665	577	288	418	716
PINE SPRINGS	1128	1128	51	20	-	-	51	20	-	-
PINE SPRINGS	1148	1148	306	119	-	19	309	120	-	-
ST MARY'S POINT	1112	1112	85	34	2	2	77	31	4	2
ST MARY'S POINT	1225	1112	262	119	3	3	263	119	1	3

Table A-1
Socio-economic Data by Transit Analysis Zone by Community
Washington County

			2005				2030			
CITY	Washington County TAZ	Met Council TAZ	Population	Households	Retail Employment	Non-retail Employment	Population	Households	Retail Employment	Non-retail Employment
ST PAUL PARK	1091	1091	1981	708	91	114	2147	782	91	136
ST PAUL PARK	1092	1092	1254	575	56	1018	3509	1489	56	986
ST PAUL PARK	1185	1185	1766	672	20	81	1751	672	20	81
ST PAUL PARK	1211	1089	99	39	2	25	2993	1207	13	317
STILLWATER CITY	1133	1133	20	17	178	111	20	17	178	111
STILLWATER CITY	1134	1134	1292	558	-	585	1552	671	-	745
STILLWATER CITY	1135	1135	2703	1,67	194	1972	2762	1,207	194	2379
STILLWATER CITY	1136	1136	3	1	1086	1991	3	1	1,276	2,341
STILLWATER CITY	1137	1137	0	-	30	129	0	-	30	132
STILLWATER CITY	1138	1138	3825	1651	32	260	4018	1761	37	264
STILLWATER CITY	1139	1139	2310	997	32	311	3139	1347	32	411
STILLWATER CITY	1140	1140	322	139	374	1216	317	139	545	1609
STILLWATER CITY	1141	1141	102	44	219	285	101	44	290	294
STILLWATER CITY	1232	1134	40	17	109	840	74	31	109	862
STILLWATER CITY	1233	1136	105	45	75	259	103	45	99	361
STILLWATER CITY	1234	1137	2261	976	1	130	2312	1010	1	217
STILLWATER CITY	1235	1139	241	104	-	-	2511	1018	-	7
STILLWATER CITY	1236	1140	3032	1,309	189	841	2988	1309	209	867
STILLWATER TOWNSHIP	1151	1151	907	341	3	45	366	122	5	38
STILLWATER TOWNSHIP	1198	1198	813	306	-	47	1205	454	-	39
STILLWATER TOWNSHIP	1235	1139	407	153	-	-	1533	592	-	-
STILLWATER TOWNSHIP	1275	1198	191	72	-	45	246	92	-	38
WEST LAKELAND TWP	1114	1114	762	273	78	124	1229	440	14	65
WEST LAKELAND TWP	1195	1195	1101	412	0	0	1155	432	0	0
WEST LAKELAND TWP	1196	1196	1450	510	0	0	1501	529	0	0
WEST LAKELAND TWP	1273	1196	111	39	14	90	305	109	11	10
WHITE BEAR LAKE	1146	1146	368	245	44	118	450	300	55	115
WILLERNIE	1148	1148	572	252	7	65	590	260	80	70
WOODBURY	1097	1097	1033	398	-	153	3679	1,490	50	110

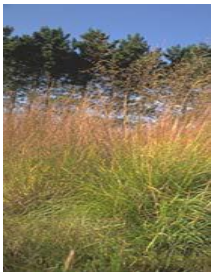

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Table A-1
Socio-economic Data by Transit Analysis Zone by Community
Washington County

			2005				2030			
CITY	Washington County TAZ	Met Council TAZ	Population	Households	Retail Employment	Non-retail Employment	Population	Households	Retail Employment	Non-retail Employment
WOODBURY	1098	1098	342	124	-	24	13725	5,740	-	50
WOODBURY	1099	1099	117	35	-	43	10051	4,145	5	120
WOODBURY	1100	1100	1163	437	-	101	4044	1,630	-	86
WOODBURY	1101	1101	2069	795	-	-	2083	795	-	-
WOODBURY	1102	1102	3980	1,408	-	26	4101	1,445	20	400
WOODBURY	1103	1103	3112	1699	-	33	3136	1,700	20	710
WOODBURY	1104	1104	627	320	197	1425	644	325	180	1320
WOODBURY	1105	1105	837	519	124	1495	847	520	1140	895
WOODBURY	1106	1106	776	358	139	403	774	355	139	1042
WOODBURY	1107	1107	99	65	1,375	1484	100	65	1290	1490
WOODBURY	1108	1108	0	-	1,259	81	0	-	2019	98
WOODBURY	1109	1109	1267	633	8	865	1281	635	16	737
WOODBURY	1110	1110	1295	610	623	50	1403	655	1462	2061
WOODBURY	1186	1186	1610	586	-	201	1619	585	90	530
WOODBURY	1187	1187	3880	1444	4	185	3910	1445	-	127
WOODBURY	1188	1188	4015	1714	24	1172	4045	1715	-	1100
WOODBURY	1189	1189	619	225	-	704	623	225	25	1175
WOODBURY	1190	1190	1605	650	191	148	1616	650	32	182
WOODBURY	1191	1191	2877	1131	414	450	2894	1130	425	475
WOODBURY	1192	1192	3387	1204	-	73	3413	1205	-	75
WOODBURY	1202	1109	0	-	786	1450	0	-	1844	2204
WOODBURY	1215	1100	1663	625	3	12	2397	925	8	-
WOODBURY	1216	1100	3858	1450	142	20	4390	1660	7	48
WOODBURY	1217	1101	1067	410	-	16	1074	410	150	2950
WOODBURY	1218	1106	2627	1213	37	611	2638	1210	41	1238
WOODBURY	1219	1108	1042	542	253	370	1044	540	62	3
WOODBURY	1220	1108	490	255	326	1240	493	255	919	119
WOODBURY	1221	1110	132	62	-	-	2456	1120	-	-

Table A-1
Socio-economic Data by Transit Analysis Zone by Community
Washington County

			2005				2030			
CITY	Washington County TAZ	Met Council TAZ	Population	Households	Retail Employment	Non-retail Employment	Population	Households	Retail Employment	Non-retail Employment
WOODBURY	1222	1110	17	8	-	103	1097	500	300	4126
WOODBURY	1223	1110	2459	1158	-	19	2853	1330	207	2618
WOODBURY	1263	1187	1075	400	12	283	1309	490	-	73
WOODBURY	1264	1190	158	64	434	268	162	65	464	299
WOODBURY	1265	1190	101	41	-	-	99	40	-	-
WOODBURY	1266	1190	0	-	175	308	0	-	304	339
TOTAL			**213153**	**83727**	**19489**	**56692**	**36559**	**145527**	**31711**	**99658**

* Overall employment increased by 650 based on a Metropolitan Council's technical correction in Denmark Township.
** Woodbury total was adjusted by city of Woodbury. Note: this does not reflect the current Metropolitan Council estimates.

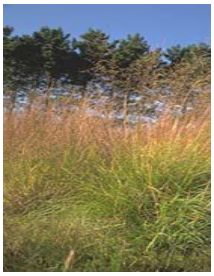

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Table A-2
Socio-economic Data by Transit Analysis Zone (TAZ)
Washington County

	2005				2030*			
Met Council TAZ	Population	Households	Retail Employment	Non-retail Employment	Population	Households	Retail Employment	Non-retail Employment
1079	1517	537	580	362	2396	933	504	17
1080	592	202	22	63	4377	1924	22	63
1081	389	135	12	61	6993	3000	360	523
1082	5930	1732	431	67	6131	1970	441	560
1083	3987	1163	29	299	3840	1220	29	398
1084	863	263	10	16	4503	1700	17	49
1085	2897	927	7	153	3520	1250	7	153
1086	2534	901	208	273	2585	1000	292	324
1087	5395	1858	526	780	5025	1870	526	783
1088	1043	353	95	1734	5062	2052	346	3250
1089	965	379	5	85	10311	3935	42	649
1090	2316	786	157	1314	2421	901	298	1771
1091	1981	708	91	114	2147	782	91	136
1092	1254	575	56	1018	3509	1489	56	986
1093	675	265	0	221	864	340	0	764
1094	778	317	41	264	916	370	108	394
1095	0	0	0	280	0	0	0	280
1096	1685	785	301	997	3110	1420	642	4312
1097	1033	398	0	153	3679	1490	50	110
1098	342	124	0	24	13725	5740	0	50
1099	117	35	0	43	10051	4145	5	120
1100	6684	2512	145	133	10831	4215	15	134
1101	3136	1205	0	16	3157	1205	150	2950
1102	3980	1408	0	26	4101	1445	20	400
1103	3112	1699	-	33	3136	1700	20	710
1104	627	320	197	1425	644	325	180	1320
1105	837	519	124	1495	847	520	1140	895
1106	3403	1571	176	1014	3412	1565	180	2280
1107	99	65	1375	1484	100	65	1290	1490

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Table A-2
Socio-economic Data by Transit Analysis Zone (TAZ)
Washington County

	2005				2030*			
Met Council TAZ	Population	Households	Retail Employment	Non-retail Employment	Population	Households	Retail Employment	Non-retail Employment
1108	1532	797	1838	1691	1537	795	3000	220
1109	1267	633	794	2315	1281	635	1860	2941
1111	765	291	3	186	1497	650	61	189
1112	1418	629	18	63	1415	628	35	104
1113	2035	812	78	322	2085	832	115	536
1114	762	273	78	124	1229	440	14	65
1115	1200	465	66	356	5915	1254	398	909
1116	979	332	-	133	5577	557	-	160
1117	1325	531	26	260	2756	2630	400	8228
1118	187	60	117	202	3128	1985	839	1800
1119	1266	629	264	668	1403	700	467	719
1120	5262	1911	232	544	5914	2170	232	857
1121	2783	1449	330	943	4336	2101	458	971
1122	5307	2542	219	1239	5722	2760	219	1936
1123	1766	632	193	521	2288	840	216	521
1124	2871	1277	10	415	3024	1350	18	714
1125	3399	1505	30	431	4519	2010	74	460
1126	1127	503	256	331	1231	550	459	530
1127	1444	518	-	1781	1826	668	207	2867
1128	2488	876	-	65	3418	1121	-	65
1129	1206	412	95	683	2755	834	363	883
1130	3786	1442	952	378	4387	1658	1126	730
1131	3097	763	98	4887	5726	1392	193	5834
1132	1086	569	210	1300	1991	982	394	2569
1133	20	17	178	111	20	17	178	111
1134	2070	935	149	1529	2366	1062	149	1711
1135	2703	1167	194	1972	2762	1207	194	2379
1136	108	46	1161	2250	106	46	1375	2702
1137	2261	976	31	259	2312	1010	31	349
1138	3825	1651	32	260	4018	1761	37	264

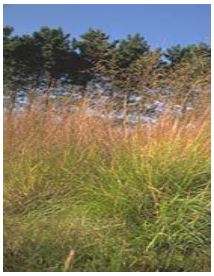

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Table A-2
Socio-economic Data by Transit Analysis Zone (TAZ)
Washington County

	2005				2030*			
Met Council TAZ	Population	Households	Retail Employment	Non-retail Employment	Population	Households	Retail Employment	Non-retail Employment
1139	2958	1254	32	311	7183	2957	32	418
1140	3354	1448	563	2057	3305	1448	754	2476
1141	102	44	219	285	101	44	290	294
1142	1097	376	50	92	1279	442	50	92
1143	1013	386	180	192	1153	436	180	193
1144	502	185	-	65	502	185	-	65
1145	3065	1323	120	687	3338	1448	130	1528
1146	2570	990	44	136	3098	1197	55	115
1147	1447	530	101	329	1545	569	111	595
1148	2153	878	76	94	2298	936	89	197
1149	908	356	10	240	921	361	10	105
1150	1612	566	-	115	1615	566	-	115
1151	907	341	3	45	366	122	5	38
1152	2783	1113	-	72	4000	1600	-	50
1153	2886	1215	126	466	10120	4034	359	829
1154	2573	923	40	50	4522	1630	123	50
1155	1668	628	50	1003	5849	2140	567	993
1156	2709	1070	174	259	19509	7796	394	1185
1157	674	290	30	135	1000	430	60	320
1158	3808	1481	87	307	5400	2100	80	530
1159	3928	1487	56	204	4076	1487	56	205
1160	2964	1041	21	557	6421	2265	64	557
1161	1719	622	69	236	9697	4255	869	1665
1162	877	344	530	48	1287	489	794	48
1163	2222	1041	1447	1316	3767	1591	1447	1316
1164	743	296	472	1167	1238	466	472	1189
1165	2511	1100	120	226	5775	2335	120	226
1184	4716	1453	-	-	4708	1580	-	478
1185	5265	1934	99	599	5222	2034	211	1148

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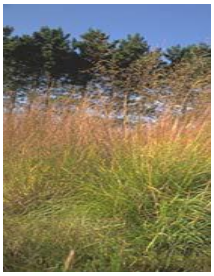
Table A-2
Socio-economic Data by Transit Analysis Zone (TAZ)
Washington County

	2005				2030*			
Met Council TAZ	Population	Households	Retail Employment	Non-retail Employment	Population	Households	Retail Employment	Non-retail Employment
1186	1610	586	-	201	1619	585	90	530
1187	4955	1844	16	468	5219	1935	-	200
1188	4015	1714	24	1172	4045	1715	-	1100
1189	619	225	-	704	623	225	25	1175
1190	1864	755	800	724	1877	755	800	820
1191	2877	1131	414	450	2894	1130	425	475
1192	3387	1204	-	73	3413	1205	0	75
1193	569	216	0	0	836	290	20	11
1194	1399	539	43	228	1717	610	49	300
1195	1385	512	-	-	1482	545	0	-
1196	1916	678	21	356	2495	893	18	276
1197	531	195	113	114	939	517	157	120
1198	1004	378	-	92	1451	546	-	77
1199	843	359	91	16	875	359	508	16
1200	1026	453	385	463	1064	453	385	463
TOTAL	**213153**	**83727**	**19489**	**56692**	**365590**	**145527**	**31711**	**99658**



Appendix 4-B

Table A-3
Summary of Socio-economic Data by Community
Washington County

	Population		Households		Retail Employment		Non-retail Employment		Total Employment	
City	**2005**	**2030**	**2005**	**2030**	**2005**	**2030**	**2005**	**2030**	**2005**	**2030**
Afton	2,733	4,050	1,046	1,550	46	130	414	500	460	630
Bayport	3,168	6,000	792	1,500	105	200	5,153	6,100	5,258	6,300
Baytown Twp	1,600	2,160	563	760	0	0	178	120	178	120
Birchwood	900	930	358	370	0	0	18	0	18	0
Cottage Grove	34,553	53,000	11,203	20,000	1,540	2,500	4,876	9,000	6,416	11,500
Dellwood	958	970	385	390	10	10	305	170	315	180
Denmark Twp	1,675	2,550	592	990	566	542	594	548	1,160	1,090
Forest Lake	16,833	34,200	6,743	13,700	3,191	4,715	4,233	5,685	7,424	10,400
Grant	4,174	4,500	1,484	1,600	230	230	399	400	629	630
Grey Cloud Island Twp	316	6,800	116	2,500	1	20	24	220	25	240
Hastings	0	0	1	0	52	0	206	0	258	0
Hugo	9,836	40,000	3,836	15,600	390	1,443	1,778	3,057	2,168	4,500
Lake Elmo	7,444	24,000	2,707	8,727	304	2,000	1,648	12,000	1,952	14,000
Lake St. Croix Beach	1,076	1,080	478	480	14	30	61	100	75	130
Lakeland	1,710	1,760	690	710	72	100	306	500	378	600
Lakeland Shores	320	320	120	120	5	15	13	35	18	50
Landfall	716	700	307	300	14	50	12	40	26	90
Mahtomedi	7,089	8,000	2,747	3,100	226	250	1,026	2,250	1,252	2,500
Marine on St Croix	674	1,000	290	430	30	60	135	320	165	380
May Township	2,783	4,000	1,113	1,600	0	0	72	50	72	50
New Scandia Twp	3,808	5,400	1,481	2,100	87	80	307	530	394	610
Newport	3,138	4,890	1,367	2,130	342	750	1,762	5,750	2,104	6,500
Oak Park Heights	4,578	5,700	2,008	2,500	1,315	1,717	1,704	3,383	3,019	5,100
Oakdale	24,930	30,000	10,803	13,000	1,520	2,300	6,926	9,600	8,446	11,900
Pine Springs	357	360	139	140	0	0	19	0	19	0
St Mary's Point	347	340	153	150	5	5	5	5	10	10
St Paul Park	5,100	10,400	1,994	4,150	169	180	1,238	1,520	1,407	1,700
Stillwater City	16,256	19,900	7,025	8,600	2,519	3,000	8,930	10,600	11,449	13,600
Stillwater Twp	2,318	3,350	872	1,260	3	5	137	115	140	120
West Lakeland Twp	3,424	4,190	1,234	1,510	92	25	214	75	306	100
White Bear lake	368	450	245	300	44	55	118	115	162	170
Willernie	572	590	252	260	71	80	65	70	136	150
Woodbury	49,399	84,000	20,583	35,000	6,526	11,219	13,816	26,800	20,342	38,019
Washington County Total	**213,153**	**365,590**	**83,727**	**145,527**	**19,489**	**31,711**	**56,692**	**99,658**	**76,181**	**131,369**

2030 Base Traffic Forecast Model Methodology

Travel demand models forecast the amount of travel on transportation facilities given assumptions of future development and transportation system improvements. Travel demand forecasts developed for this planning process were based on the modified Twin Cities regional travel demand model released by the Metropolitan Council in 2004. The base year used in the model is 2000 because U.S. Census data and travel behavior data was available for that year.

Zonal Data Representation

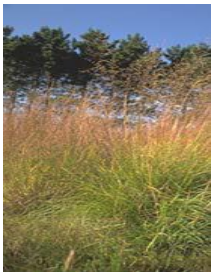
The travel demand model uses development activity as expressed by population, household, retail employment, and non-retail employment to estimate travel activity. The model is represented by transportation analysis zones (TAZs). The Metropolitan Council regional model is divided into geographical zones that cover the seven-county Twin Cities Metropolitan Area. In order to capture the appropriate level of detail for a local travel demand model, the TAZs were divided into smaller areas to better reflect the location of development within the county. Local communities provided guidance and feedback on the allocation of development data into the TAZs.

Roadway Network Representation

The base year roadway system is a representation of attributes such as area type, facility type, length, speed, number of lanes, and capacity. The level of detail in the highway network was expanded to include all principal arterials, minor arterials, and key collector roadways.

Travel Demand Modeling Process

The main components of the travel forecasting process are illustrated in Figure B-1 and are described below. As noted above, the travel demand forecasts are based on the Twin Cities regional travel demand model. The Metropolitan Council and MN/DOT have established guidelines for the appropriate use of the Twin Cities regional model. More detailed documentation of



the model parameters is available from the Metropolitan Council.

The model was calibrated through multiple iterations until the travel patterns and choices of modes and routes reflected the current traffic patterns. Then, future socioeconomic and future roadway-system data was incorporated into the model to generate the various forecast scenarios.

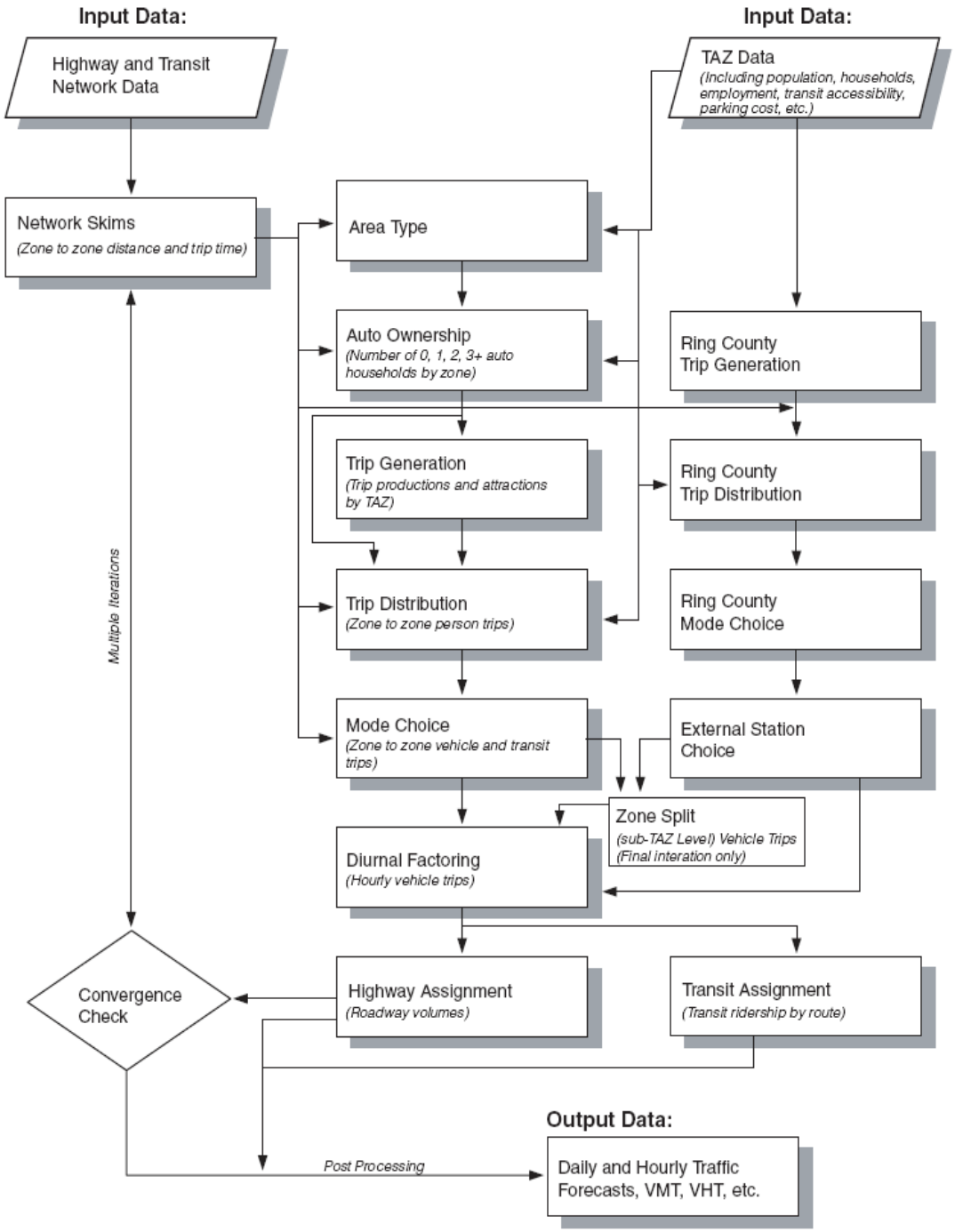
Highway Network: Roadways are described in terms of attributes, such as area type, facility type, length, free-flow speed, number of lanes, and capacity. The level of detail in the highway network was expanded to include all appropriate local roadways as specified by the project scope.

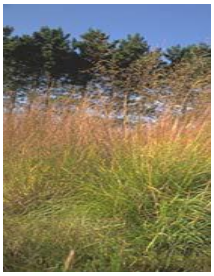
Zonal Data: The TAZ structure of the regional model was expanded to better reflect the location of local development. The extra zones were subdivisions of regional model zones. Specific allocation of future development and socioeconomic assumptions are further described in the report.

Trip Generation: Trip generation is the process by which the number of trips attributed to a zone is estimated based on the amount and type of socioeconomic activity in that zone (i.e., population, households, and employment). The end result of trip generation estimation is the total number of trips produced by and attracted to each zone.

Destination Choice: The destination-choice trip distribution process converts the person-trips estimated in the trip generation process to movements between pairs of zones based on the amount of travel activity in a zone and a generalized travel time between the producing zone and other zones.

Figure C-1:
Travel Demand Forecasting Model





Appendix 4-C

Mode Choice: The mode choice process takes the number of person-trips between each pair of zones and determines whether the trips are made by single-occupant vehicles, carpools, or transit.

Highway Assignment: Highway trips for each of the 24 periods were routed from zone-to-zone along the roadway system using an equilibrium-assignment process. This process reflected congested conditions at appropriate times of the day for any given portion of the highway system. The hourly assignments were summed to produce a daily traffic volume.

Validation: For the purpose of this study, model validation is defined as the degree to which the travel demand model replicates known ground counts. A model was run for the 2005 highway network and socioeconomic data in order to compare the modeled daily volumes with actual ground counts. In general, most model parameters should not be altered in the course of preparing a travel-demand forecast because they are based on collected travel behavior data. Furthermore, adjustments to a model solely for the purpose of matching ground counts leads to a condition where a model matches well against existing ground counts, but is not appropriately (or reliably) sensitive to future-year changes in roadway or development characteristics. Consequently, a forced validation negates the very purpose of a travel demand model – to determine the effects of roadway scenarios and long-range development. This model used a minimum of model adjustments designed to correct systematic errors in the model (as opposed to spot-specific adjustments) and a systematic process for reconciling any residual errors in the model.

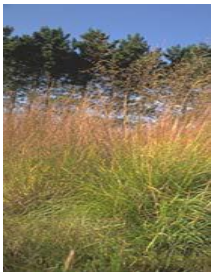
Model Adjustment Process: The final step in model development is to establish a process for adjusting the future modeled volumes to account for the error in the base model. The National Cooperative Highway Research Program Special Report 255 suggests methods of adjusting models based on the difference between model and count, the ratio of the model to

count, and the magnitude of growth between existing and future.

Table C-1 shows the conditions under which each of these methods is appropriate. A fourth method, manual adjustment using engineering judgment, may also be appropriate under certain conditions. The modeling datasets identify which adjustment methods were used.

Table C-1
Model Adjustments Process

Condition	Implications of Condition	Method Used
$\frac{FutureVolu\ me}{BaseVolume} > 3$	High model growth may cause the ratio method to result in unreasonably high adjusted volumes.	Difference Method
$\frac{BaseCount}{BaseVolume} > 1.5$	A large underestimation by the model in the base year may cause the ratio method to result in unreasonably high adjusted volumes.	Difference Method
$\frac{BaseVolume}{BaseCount} > 1.5$	A large overestimation by the model in the base year may cause the ratio method to result in unreasonably low adjusted volumes.	Difference Method
All Other Cases		Average Method



Appendix 4-D

Roadway Improvements Included in 2030 Base Traffic Model

MN/DOT's 2008 to 2030 Transportation System Plan (TSP) identifies the following programmed regional roadway improvements within Washington County for the 2030 planning time period. These improvements were assumed in the base 2030 roadway system model for Washington County.

- St. Croix River Bridge – Reconstruct and expand river bridge crossing (2024-2030).
- TH 36 (TH 5 to Stillwater Bridge) – Convert to freeway (2024-2030).
- I-694 (I-35E to TH 36) – Add lanes (2024-2030).

MN/DOT

- TH 64 in Wisconsin (TH 95 in Stillwater to New Richmond) upgraded to freeway.
- Overpass at CSAH 23 in Stillwater and TH 35 in Wisconsin.
- Interchange at TH 95 in Stillwater and CR E in Wisconsin.
- 10-lane Wakota Bridge and interchange reconstruction.
- U.S. 61 bridge reconstruction in Hastings – expand to four-lanes.
- TH 36 and McKnight Road Interchange.

County/City (Local)

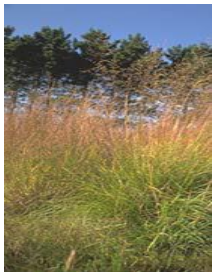
- CSAH 25 (Century Avenue) upgraded to a four-lane divided roadway from I-94 to Lake Road (Woodbury).
- Tamarack Road upgraded to a continuous four-lane from I-494 to Woodbury Drive (Woodbury).
- Valley Creek Road upgraded to a four-lane divided from Woodcrest to Settler's Ridge Parkway (Woodbury).
- Extension of Mile Drive South to Jamaica Avenue and realignment with Pioneer Road to north (Woodbury).
- CSAH 13 reconstruct to four-lane divided roadway from Glen Road to Pioneer Road (Woodbury).

- CSAH 13 add lane to bridge at I-94 NB (Woodbury/Lake Elmo).
- Lake Road continuous four-lane from CSAH 19 to TH 95 (Woodbury).
- CSAH 15 reconstruction to four-lane roadway from TH 36 to TH 96 (Grant/Stillwater).
- CSAH 17 half diamond interchange to the west at TH 36 (Lake Elmo).
- CSAH 18 from CSAH 20 to I-494 upgrade to undivided four-lane facility (Newport).
- Anoka County CSAH 14 to four-lane from Anoka CSAH 21 to I-35W.

Several regional roadway system needs were also identified in MN/DOT's 2008-2030 TSP but remain unfunded. Since these regional improvements are not currently funded (programmed), they were not incorporated into the base model as part of the future roadway system. However, upon review of the county's anticipated future land use, the 2030 traffic forecasts will document whether there is a need for these improvements during the 2030 planning horizon.

- I-94 (I-494 to TH 95) – Expand to eight-lanes.
- TH 36 (TH 120 to TH 5) – Convert to freeway.
- TH 97 (US 61 to TH 95) – Expand to four-lanes.
- US 61 (TH 97 to North County Border) – Add lane.
- TH 120 (I-494 to TH 244) – Expand to four-lanes.
- I-494 (I-94 to West County Border) – Expand to six-lane freeway.
- TH 5 in Lake Elmo/Bayport – Add turn lanes.
- TH 95 (Bailey Road to US 61) – Add turn lanes.
- TH 97 (I-35 to US 61) – Expand to four-lanes.
- TH 95 (TH 36 to I-94) – Expand to four-lanes.
- TH 95 (I-94 to US 61) – Expand to four-lanes.

  TH 95 (TH 97 to TH 96) – Add turn lanes/shoulders.



Appendix 4-E

Transit Oriented Development

Efforts to implement all-day two direction fixed-guideway transit in these corridors are inhibited by low ridership forecasts that are due to a large extent to the lack of density and walkability in the immediate vicinity of the proposed guideway.

How do communities like Washington County create the conditions necessary to justify the investment in fixed-guideway transit? One of the most effective ways is to create an environment that brings potential riders closer to the proposed transitway line. A land use pattern that is compatible with transit promotes efficient energy use, more active, stronger, and safer communities, and more efficient delivery of public services. Ridership on fixed guideway transit is increased when a compatible land-use pattern exists around stations.

The Transportation/Land Use Relationship

Urban geography and transportation technology are closely interdependent. Before motorized transport, cities were compact. Workers lived closed to their places of employment. Commercial activities were small and decentralized and densities were high. The stratification of land uses into separate residential, commercial, and industrial areas did not occur until the development of early non-motorized transit systems. With the invention and widespread adoption of the streetcar, commercial areas became even more concentrated at the center and city residents were able to live farther away from where they worked. Yet, the necessity of walking to and from the streetcar stops still kept the city relatively compact.

Since the development of the automobile and its ultimate adoption as the primary mode of personal transportation, cities have become more dispersed and land use patterns, particularly in areas that have developed since the early 1960's, have become 'auto-oriented.' Wide streets, large parking lots, and often the absence of sidewalks are indicators of this influence. Suburban communities in particular exhibit land-use patterns that favor movement by automobile.

Attempts to provide traditional local bus service outside of the core city often results in routes with poor ridership and with limited

funding available, these routes are often the first to be cut when funding constraints cause routes to be eliminated. To date, the most successful transit services in suburban areas are the peak hour express routes to/from the central cities that typically originate at large centrally located park and rides. These are supplemented in some areas with circulator services that are focused on a community transit center.

Despite the difficulty in establishing transit services in suburban areas, there is a widespread desire to reverse this trend and increase the range of transportation options available to suburban residents. The reasons for this are varied; traffic congestion, energy prices, public health, and an aging population all contribute to the demand for more and better transit service, bicycle facilities, and walkable neighborhoods. The fact that suburban development patterns inhibit the establishment of an efficient transit system and that popular sentiment for better transit is not universal, presents challenges to the transit planner.

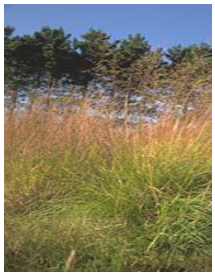
Definition of Transit Oriented Development

Transit Oriented Development (TOD) is a term used to represent several design principles that emphasize the interrelationship of transit facilities and the surrounding land use pattern. Like many such concepts, there are a variety of formal definitions.

The Metropolitan Council presents the following TOD definition in the Council's Guide for Transit Oriented Development:

> Transit-Oriented Development (TOD) refers to residential and commercial centers designed to maximize access by transit and non-motorized transportation and with other features to encourage transit ridership. A TOD neighborhood has a center with a rail or bus station, surrounded by relatively high-density development with progressively lower density spreading outwards.

Embedded within this definition are several key characteristics that typify TOD style development.



Appendix 4-E

- Transit – The essential ingredient for successful TOD neighborhoods is good transit service, usually in the form of BRT, LRT, commuter rail or heavy rail transit (i.e., subway, metro, or underground). The transit station is at the center of the neighborhood.

- Compact development – Medium- to high-density residential and employment within easy walking distance of the transit station, from one-fourth to one-half mile radius.

- Mix of uses – Diverse and complementary high-activity uses within the central area of a TOD and adjacent to transit. This includes retail, professional services, housing, and employment.

- Pedestrian orientation – A network of pedestrian-scaled streets connecting the transit stops or station with the mixed uses that comprise the TOD neighborhood.

- Design – A higher level of design detail is necessary to create a pedestrian focused scale, an attractive 'friendly' environment and a sense of 'place.'

- Intermodal facilities – Besides good walk connections to the neighborhood, the station area would include bicycle storage, and automobile parking.

TOD is not a specific design but a set of design principles that need to be adapted to specific situations. Transit arterials with frequent local bus service will look different than a suburban TOD development focused on a transitway.

The foundation of a TOD development is frequent, five- to seven-day a week transit service. A transit stop or station should be near the center of the development. TOD developments do not necessarily need to be on a fixed guideway transit line. Local bus routes on urban arterials with high-frequency service will also benefit from TOD neighborhoods, though fixed guideway transit lines are more attractive to private developers because of the higher public investment and increased access to potential customers. The objective is to create a synergy between the transit service and the surrounding land use.

Compact Development

The transit service depends, upon and is supported by, the transit users within easy walking distance of the transit line. Higher densities within a 10-minute walk, about one-fourth to one-half mile, will provide the critical mass to support the high quality transit service being provided. Beyond the one-fourth to one-half mile radius, residents will benefit from the presence of the transit line even if they are not regular users.

Mix of Uses

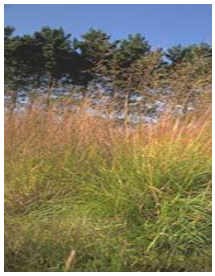
TOD neighborhoods require a diverse and complementary integration of high-activity uses, such as retail, professional services, housing, and employment within the central area and adjacent to the transit station. The design and composition of TOD neighborhoods not only provide a focus on transit, the mix of uses promote shorter trips and more walking trips, reducing the overall level of automobile travel. A balance between housing, jobs, and compatible uses allows for developments that are active at all times of the day, creating a lively, safe atmosphere and providing opportunities for shared parking.

Pedestrian Orientation

TOD neighborhoods also require an attractive pedestrian environment, with street-facing buildings and a network of pedestrian-scaled streets connecting the transit stop or station with commercial, civic, and residential areas. Pedestrian-oriented design includes some or all of the following features:

- Reduced right-of-way and pavement width.
- On-street parking.
- Sidewalks on both sides of the street.
- Boulevard trees.
- Alleys and roundabouts.
- Trails and bicycle paths.
- Bus stops/park-and-rides.

Pedestrian-oriented design is really a focus on people rather than automobiles and includes all the elements of the built environment.



Appendix 4-E

A safe, pleasant environment encourages walking. While a one-half mile or ten-minute walk is considered an easy walk, comfortable surroundings will make even longer walks seem reasonable. Bicycle access is also important and accommodations for bicycle movement, parking, and storage need to be provided.

Design

The design of TOD developments includes not just the buildings but also the sidewalks, streets, bus zones, and parks in the station area. Good design encourages interaction and comfort through the incorporation of amenities such as street furniture, lighting, landscaping, public art, and open space. But just as important are wider sidewalks, street-level orientation of buildings, and grid style street systems.

Intermodal Facilities

While reducing automobile travel is an objective of TOD, TOD developments still require parking. Eliminating automobile access is not desirable and can lead to the failure of the types of businesses needed to support TOD. The key is to maintain automobile accessibility without losing the qualities that promote walkability. This means carefully assessing the number of parking spaces required, providing on-street parking for access to street level businesses, and in many cases, structured parking for longer term needs that is accessible while still being screened from view or designed in a complementary manner.

What-If Scenario: Analysis of Potential Land Use Changes

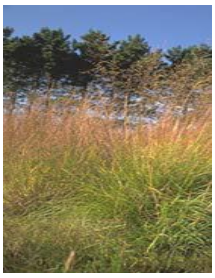
To determine if the effort to modify land use in these corridors would have a significant effect on the feasibility of fixed-guideway transit, a "what-if" exercise was devised to test the impact of modifying the land use intensity in these corridors. The I-94 Corridor between TH 120 (Century Avenue) and TH 95 (Manning Avenue) was selected as the initial corridor for this purely-hypothetical analysis.

Between now and 2030, substantial increases in households and employment are expected along the I-94 Corridor. Although the Metropolitan Council forecasts that approximately 40 percent of the

county's total growth during this time will occur within communities adjacent to I-94, this level of growth is only marginal for supporting fixed-guideway transit in the corridor.

To model a future scenario of intensified land use in the I-94 service area, 20 percent of the county's total households and employees projected between now and 2030 were redistributed to appropriate areas with available capacity within one mile of I-94. As a result, the ridership forecast for the I-94 Corridor increased from 9,500 per day to 14,000 per day, increasing the feasibility of implementing fixed-guideway transit.

In order for ridership forecasts to warrant implementation of LRT, local communities would need to make adjustments in their comprehensive plans to not just allow, but to encourage the level of development required to support the forecast ridership levels. The same land use adjustments made in the TH 36, I-35W, Rush Line, and Red Rock Corridors should have a similar impact on the feasibility of fixed-guideway transit in those corridors.



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