CHAPTER 9
PLAN IMPLEMENTATION

Introduction

Goals, Strategies, and Performance Measures
Chapter 9 Plan Implementation

9.1 Introduction

This chapter of the plan focuses on plan implementation. It is structured by listing the transportation goals followed by a number of implementation strategies and the respective performance metrics that will be used to evaluate the county’s progress toward accomplishing the goals. The system performance measures will be used for long range investment planning purposes as well as a component in determining projects for the 5-year Capital Improvements Program (CIP). The five goals and the various metrics are listed in Table 9-1.

System evaluation is the process of periodically examining the performance of the various modal systems and key system elements to determine how they are performing relative to identified targets or performance metrics. There are a number of new performance metrics that are being introduced as part of this plan, therefore, some qualifications need to be made to better interpret them and how they relate to achieving the goals. The qualifications include:

- Because many of the performance measures are using new baseline data and/or new baseline data will need to be developed, this information is untested. This will likely require refinement as more experience is gained. Leaders and stakeholders should look at these metrics as the first step in this process and acknowledge that these measures will likely need to be refined over time to get to metrics and targets that are reflective of system performance as well as user expectations.

- Hennepin County is one of a number of transportation agencies in a larger system; it has some but not total control over a number of the outcomes. For example, VMT on the county system depends on many factors including but not limited to local land use decisions, improvements or lack of improvements on state trunk highways, availability of convenient transportation alternatives and cost of driving (fuel and vehicle costs). These types of measures and resulting outcomes while important must be put in the context of these and other influencing factors.
In addition, fiscal constraints will likely result in trade-offs and/or limited investments in various areas. The performance metrics are intended to show the results and/or impacts of these policy choices.

The HC - TSP establishes the framework for sustaining the economic competitiveness of Hennepin County and the quality of life of its residents by enhancing transportation mobility, improving transportation safety, increasing transportation choices, and influencing land use and development density to increase system efficiency. These factors will be important to attracting both major corporations and future workforce to Hennepin County and the Twin Cities metropolitan area.

The county’s transportation goals and associated metrics are shown in Table 9-1. These metrics are intended to guide investment and policy decisions, as well as to inform stakeholders of the county’s progress toward accomplishing the goals within a reasonable dedication of available resources. In addition, many of the metrics are relatively new with limited baseline data; these metrics will likely need to be refined over time to ensure that they are reflective of system performance, user expectations, and available resources. Finally, the county is one of a number of agencies in the larger transportation system; it has some but not total control over a number of outcomes. The goals, strategies, and metrics are outlined in the remaining portion of this chapter.

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1 Brookings Institution, MSP Business Plan Executive Summary, April 2011
Table 9-1 Hennepin County Transportation Goals and Metrics

<table>
<thead>
<tr>
<th>Goal</th>
<th>Evaluation Item</th>
<th>Measure</th>
<th>Target by 2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Preserve and modernize the existing transportation system</td>
<td>Pavement</td>
<td>Pavement Serviceability (PSR)</td>
<td>Two-thirds of pavements with serviceability rating (PSR) &gt; 3.0; No more than 5 percent of pavements with (PSR) &lt;2.5</td>
</tr>
<tr>
<td></td>
<td>Signals</td>
<td>% within Life Cycle</td>
<td>All signalized intersections within 25 year life cycle</td>
</tr>
<tr>
<td></td>
<td>Bridges</td>
<td>Bridges Programmed</td>
<td>All structurally deficient bridges programmed for replacement or rehabilitation; no more than 8 % structurally deficient at any one time</td>
</tr>
<tr>
<td>2. Improve safety for all transportation users</td>
<td>Vehicles</td>
<td>County Average Crash Rate</td>
<td>50 % reduction in year 2000 rate (0.5 X 4.82) = (2.41 crashes per million vehicle miles [mvm]) by 2030</td>
</tr>
<tr>
<td></td>
<td>Vehicles</td>
<td>Segment Crash Rate</td>
<td>50 % reduction in year 2000 rate (0.5 X 2.01) = (1.01 crashes per mvm) by 2030</td>
</tr>
<tr>
<td></td>
<td>Vehicles</td>
<td>Intersection Crash Rate</td>
<td>50 % reduction in year 2000 rate (0.5 X 0.81) = (0.41 crashes per million vehicles [mv] entering) by 2030</td>
</tr>
<tr>
<td></td>
<td>Bicycles</td>
<td>Bicycle Crash History**</td>
<td>50 % reduction in year 2000 crashes (0.5 X 191) = 81 crashes by 2030; prepare to convert to crash rate by 2013</td>
</tr>
<tr>
<td></td>
<td>Pedestrians</td>
<td>Pedestrian Crash History</td>
<td>50 % reduction in year 2000 crashes (0.5 X 184) = 92 crashes by 2030</td>
</tr>
<tr>
<td>3. Provide mobility and choice to meet the diversity of transportation needs as well as to support health objectives throughout the county</td>
<td>Transit</td>
<td>Regional Transit Ridership</td>
<td>Double 2003 regional transit ridership by 2020 (2 x 73.3) = 146.6 million riders</td>
</tr>
<tr>
<td></td>
<td>Bicycles</td>
<td>Bicycle usage**</td>
<td>Double bicycle usage by 2030: TBD</td>
</tr>
<tr>
<td></td>
<td>Bicycles</td>
<td>Miles Bikeways Facilities Built</td>
<td>Completion of bicycle system by 2030</td>
</tr>
<tr>
<td></td>
<td>Bicycles</td>
<td>Barriers and Gaps Removed</td>
<td>Average of five gaps closed per year with all gaps closed by 2030</td>
</tr>
<tr>
<td></td>
<td>Pedestrians</td>
<td>% of urban roadways with walks</td>
<td>% of urban roadways with walks; provide sidewalks on all urban roadways by 2030</td>
</tr>
<tr>
<td></td>
<td>Roadways</td>
<td>Volume to capacity ratio</td>
<td>All county roadway segments have V/C ratios &lt;1.0 unless adverse societal impacts will result</td>
</tr>
<tr>
<td></td>
<td>Roadways</td>
<td>Intersection Level of Service (LOS)</td>
<td>All intersections on county projects designed to provide LOS “D” or better unless adverse societal impacts will result</td>
</tr>
<tr>
<td></td>
<td>System</td>
<td>Accessibility**</td>
<td>X % of residential units within 25 minutes of major employment center by roadway; X % of residential units within 25 minutes of major employment center by transit</td>
</tr>
<tr>
<td>4. Increase spatial efficiency of system</td>
<td>Land Use</td>
<td>Proximity of growth near major transit facilities**</td>
<td>60 percent of new residents and new jobs (growth) within ½ mile of a major transit corridor and/or free standing transit hubs</td>
</tr>
<tr>
<td></td>
<td>Land Use</td>
<td>Housing and Transportation Affordability Index**</td>
<td>To be determined</td>
</tr>
<tr>
<td>5. Reduce the county’s environmental footprint</td>
<td>Vehicles</td>
<td>Vehicle miles traveled per capita</td>
<td>Reduce VMT per capita to year 2000 levels</td>
</tr>
<tr>
<td></td>
<td>Air Quality**</td>
<td>Hennepin County to maintain its attainment status. Specific elements for tracking air quality are to be determined.</td>
<td></td>
</tr>
</tbody>
</table>

* These metrics will help guide investment and policy decision and inform stakeholders within a reasonable dedication of available resources.

**Additional effort is needed to specifically define the evaluation measures and identified targets.
9.2 Goals, Strategies, and Performance Measures

This section lists the five transportation goals introduced in Chapter 1. In addition to the goals, strategies and performance measures to implement and monitor progress are described. Currently, the Hennepin County Public Works Business Line is in the process of updating its Strategic Plan. The Strategic Plan also includes performance measures to monitor specific goals. Upon completion of the Strategic Plan, a review of the performance measures in that document and the HC-TSP is needed to insure that the measures are consistent. This will be done at a future time.

Goal 1. Preserve and modernize the existing transportation system

While a certain share of the county’s transportation budget is set aside each year for maintenance, much of the county’s infrastructure is aging. This is particularly challenging in the older, more developed parts of the county. Many county roadways, particularly in the urban core and first ring suburbs, are in need of rehabilitation or reconstruction. Many of these roads are old, were not initially designed to support the land use forms desired today, are not pedestrian or bicycle friendly, and are in need of both infrastructure and land use revitalization. Deferred maintenance has undesirable consequences from a financial as well as a user perspective, and effective planning is needed to ensure that quality infrastructure is sustained over time.

Strategies

- Increase preservation/modernization activities to raise quality of pavements with special emphasis inside the I-494/I-694 ring where a higher percentage of poor pavements exist.
- Integrate where feasible and practical, bicycle and pedestrian accommodations as part of rehabilitation/modernization improvement projects.
- As part of reconstruction efforts, identify and implement areas where bicycle and pedestrian accommodations can be effectively integrated into the design.
- Identify traffic signal needs that are beyond life-cycle and develop a program for replacement/upgrades.

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2 Modernize means to update/improve existing roadway infrastructure without capacity expansions (e.g., refurbish pavement and sidewalks, update signal and drainage systems without adding lanes)

3 These projects are typically quick hitting projects with short planning and design timeframes; as such, limited staff time is available to study and analyze complex issues involving striping, signing, parking, maintenance, intersection operations issues. These projects also have limited to no public involvement. The county will make its best efforts to coordinate and implement these elements where they are feasible with existing resources.
• Based on annual bridge inspection programs, identify structurally deficient bridges and timing for rehabilitation/replacement.

• Consider implementation of Intelligent Transportation Systems (ITS) to efficiently manage the system and improve safety as well as communicate traveler information to users.4

**Performance Measures**

**Pavement Serviceability**

Hennepin County implemented a pavement management system in 1996 to identify roadway maintenance priorities. The initial study examined the overall condition of the county pavement network and highlighted options that Hennepin County could pursue to improve and maintain the pavement conditions.

The pavement management system tracks pavement condition to help decision-making regarding the cost / benefit trade-offs of road reconstruction versus lower level maintenance strategies. As Exhibit 9-1 illustrates, as the pavement condition decreases, the cost for the appropriate method of repair can increase significantly.

**Exhibit 9-1 Relationship of Road Improvement Costs as the Quality (condition) of a Road Deteriorates**

[Diagram showing the relationship between pavement condition and improvement costs]

*Source: “The Hole Story,” American Public Works Association*

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4 Hennepin County completed an ITS Strategic Plan in June 2007 that included implementation strategies and priorities. As recommended in the report, some pilot deployments of warning signage and purchase of improved automated traffic counting technologies have been completed.
Maintenance activities applied to surfaces in better condition, such as sealcoats, thin or structural overlays may prove to be more cost effective than waiting until the pavement is in poor condition when it is necessary to perform more costly maintenance or reconstruction.

The Hennepin County roadway system is monitored via an annual inspections program which rates pavements for their ride quality. This data is used by the pavement management system to produce the Present Serviceability Rating (PSR). The rating varies from 0.0 (Very Poor) to 5.0 (Very Good). Exhibit 9-2 illustrates the percent of lane miles rated as “Good” or better (PSR>3.0) since the monitoring program began in 1997.

Exhibit 9-2 Present Serviceability Rating Percent of Lane Miles Rated “Good” or better (PSR>3.0)

Signals within Life Cycle

Signal systems provide important traffic controls for roadways throughout the county. They control various movements to maintain safety and traffic flows as well as provide for pedestrian crossings. Signals are becoming increasingly sophisticated with options for transit priority, emergency interrupt as well as remote management. Hennepin County maintains 780 traffic signals across the county. With an average life cycle of 25 years it should be replacing/updating approximately 30 signals per year to fully maintain their condition.

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5 Standard of practice in the industry is 20 to 30 years.
Structurally Deficient Bridges Programmed

The bridge condition measure is based on the National Bridge Inventory (NBI) sufficiency rating. This rating measures the structure's ability to remain in service. The rating ranges from zero to 100 with zero being an entirely insufficient or deficient bridge and 100 being an entirely sufficient bridge. There are many factors that go into this rating. Structures with a rating of 50 or less qualify for federal replacement funds and structures less than 80 can qualify for federal rehabilitation funds. The county’s performance measure is the percentage of county structures that have a sufficiency rating of less than 50. The performance target is to have no more than 10 percent of its structures less than 50. Exhibit 9-3 illustrates the percent of Hennepin County bridges with sufficiency ratings less than 50.

Exhibit 9-3 Bridges with Sufficiency Ratings Less Than 50

![Graph showing percentage of bridges with sufficiency ratings less than 50 from 2006 to 2014.]
Goal 2. Improve safety for all transportation users

Providing a safe transportation system for all users is always a high priority for the county. This needs to be accomplished through a combination of engineering, education and enforcement, and needs to be targeted towards all users including drivers, bicyclists and pedestrians. Strategies that will be pursued to achieve this goal include but are not limited to the following:

**Strategies**

- Annually review crash rate information for roadway segments and intersections to determine spot locations and/or segments that have potential safety issues. Identify lower cost/high benefit solutions that could be pursued to address issues and/or incorporate potential solutions into ongoing program and/or maintenance activities.

- Annually review pedestrian and bicycle crash information to determine conditions that are potential safety issues. Work with local agencies, bicycle community and private partners to implement solutions.\(^6\)

- Proactively work with local and regional partners as well as the private sector to incorporate safety into all transportation designs that impact county facilities.

- Work with other partner agencies to establish a community education program that better educates pedestrians, bicyclists and motorists on how to share the road safely.

- Continue Spot Safety Evaluation in coordination with operations/maintenance actions

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\(^6\) Map G in the report pocket entitled “Spot Safety and Corridor Issue Areas” shows locations that exceed critical crash rate and have total crash severity that exceed $200,000 per year. A total of 71 intersections were identified – 12 of which fall within the limits of a currently funded project in the county capital improvements program or within some other funded project (a county maintenance project or city project
Performance Measures

Crash Rate Analysis

Hennepin County crash information is obtained annually from the Minnesota Department of Public Safety. This information undergoes an audit process within the county whereby the accuracy of the data is verified, clarifications are added, and crash locations are checked to enhance the usability and accuracy of the computerized information.

From this data, basic statistical analysis is completed including a review of countywide crash rates and comparisons to other crash rate trends. Exhibit 9-4 shows the historical crashes and crash rates for Hennepin County. The crash rate in 2006 is at the lowest level since statistics were first calculated in 1972. Beginning in 1998, crashes within the City of Minneapolis were added to the county totals (about 45 percent of all county crashes occur in Minneapolis).

Exhibit 9-5 compares Hennepin County crash rates with those observed for Minnesota and the nation. While county crash rates compare favorably with the averages for the United States (slightly lower), the rates are higher than the averages for Minnesota.

The final step in the crash rate analysis process includes the evaluation of roadway segments and intersections with respect to the “critical rate.” The critical rate is the statistical upper control based on the average rates for all similar type locations. If the observed crash rate is greater than the critical rate, the deviation is probably not due strictly to chance, but to an unfavorable characteristic of the location that warrants further study.

Crash rates are used as part of the signal / roundabout needs evaluation for current non-signalized intersections. Crash rates are also used in an annual ranking of all Hennepin County major intersections. Similar to the critical rate comparisons, these rankings help to identify locations that may need to be looked at for specific improvements and/or crash mitigation measures.
Once improvements are made, before/after studies are annually performed to determine whether a reduction in the crash rate was achieved.
Bicycle Crashes

Exhibit 9-6 illustrates the number of bicycle crashes that occurred on the county roadway system in suburban Hennepin County since 1970. The county has recently begun tracking statistics that include the City of Minneapolis. Overall, the crash trend decreased in the late 1990s even as more people were bicycling and traffic volumes were increasing. However, data from the last couple of years indicates a change in this trend and a possible increase in bicycle crashes.

Exhibit 9-6 Bicycle Crash History 1970-2008

Source: Minnesota Department of Public Safety
Pedestrian Crashes

Exhibit 9-7 illustrates the number of pedestrian/motor vehicle crashes that occurred in Hennepin County since 1976. The county has recently begun tracking statistics that include the City of Minneapolis. Additional detailed crash analysis should be pursued to understand the reasons and trends behind pedestrian crashes. Characteristics should be categorized by the locations, weather, intersection geometrics, etc. of the crashes. Clusters of crashes should be examined to determine what courses of action can be taken to increase pedestrian safety and reduce crashes.

Exhibit 9-7 Pedestrian/Vehicle Crashes
Goal 3. Provide mobility and choice to meet the diversity of transportation needs as well as to support health objectives throughout the county

Hennepin County is a very large and diverse county that encompasses the high density downtown core of Minneapolis, the older first ring suburbs, the lower density but developed second ring suburbs, newly developing third ring suburbs and rural areas. Transportation needs in the county are common — people need transportation to access jobs, schools, shopping, and recreation; however transportation choices vary dramatically throughout the county due to this diversity of development and land form. Hennepin County recognizes that this diversity of development provides a variety of choices for residents and businesses and this requires a diversity of transportation strategies and investments.

While the county’s transportation vision includes a more diverse multimodal transportation system, it recognizes that it is not feasible or responsible to provide for the same level of mobility and choice throughout the county. The county will develop and provide transportation systems including roadways, rail transit, multi-use bikeways and walkways which link metropolitan systems and local systems. These transportation systems will be provided and maintained to enhance residents’ mobility, to support economic vitality, and to allow for flexibility in individual travel mode choices.

The county’s highway network and bicycle trail network will be developed to provide mobility and opportunities for “active living” with reasonable coverage over the entire county and pedestrian accommodations will be provided on all urban7 roadways as stated in the Complete Streets policy. Hennepin County has adopted both “Active Living” and “Complete Streets” policies intended to encourage residents to become healthier through a more active lifestyle that encompasses greater walking and biking. There has been a significant increase in both walking and biking in recent years and this trend is expected to continue, particularly with the support of public policy and public infrastructure investment. The provision of sidewalks, bikeways and trails is critical to the successful realization of these policies.

Hennepin County and the HCRRA will continue to play a leadership role in the planning and implementation of transit facilities in the county and, through CTIB, in the region. Major transit investments will be focused key transit corridors (consistent with the Metropolitan Council Transportation Policy Plan). In addition, the county may facilitate and help plan other related transit facilities that extend transit connections to a free standing growth centers that help feed major transit corridors. However, the construction and operation of transit facilities and transit

7 An urban roadway is one with raised curbs, closed drainage, sidewalks or the ability to incorporate sidewalks, and is in an area with higher land densities.
services is primarily the responsibility of the Metropolitan Council and Metro Transit. Many of the regional transitway corridors are located in Hennepin County including the existing Hiawatha LRT and the proposed Central Corridor LRT currently under construction. Hennepin County is committed to insuring that these transitways are successful, and this requires the close coordination of roadway investments, land use investments, transit investments, and investments in bicycle and pedestrian facilities. A coordinated approach to optimizing these investments will be necessary to achieve the increased ridership needed for success.

Strategies

- Transit Strategies
  - Move environmental processes forward on major transit corridors including Southwest LRT, Bottineau Transitway, and Downtown Minneapolis Transportation Interchange.
  - Develop long-term funding strategy for major transit corridors.
  - Work with local communities and other stakeholders on station planning, park and rides, and land use.
  - Work with Minnesota Department of Transportation (Mn/DOT) and other partners to coordinate improvements on connecting facilities.
  - Consider development of a Hennepin County Transit Strategy document.

- Bicycle Strategies
  - Review and revise the bicycle system plan including a complete walkway system map.
  - Integrate bicycle facilities into roadway projects in accordance with the county bikeway plan and Complete Streets policies.
  - Incrementally address bikeway gaps.
  - Integrate bicycle parking and other amenities into transit stations.
  - Ensure that bicycle connections are made along other key routes to feed transit stations.
  - Develop a comprehensive, county-wide strategy for improving bicycle access to schools.
  - Partner with cities and agencies to make off-road trails available to bicyclists 365 days a year.
• Pedestrian Strategies
  ▪ Develop a pedestrian system plan that integrates city plans and a complete walkway system map.
  ▪ Ensure that pedestrian accommodations are integrated into urban roadway reconstruction/rehabilitation projects.
  ▪ Ensure that pedestrian connections are integrated into transit stations and bus stops and along key routes that feed transit stations.
  ▪ Incorporate the Americans with Disabilities Act (ADA) Transition Plan strategies in roadway reconstruction/rehabilitation projects.
  ▪ Develop a comprehensive, county-wide strategy for improving pedestrian access to schools.

• Roadway Mobility Strategies
  ▪ Integrate transit advantages and transit priority into traffic operations where appropriate.
  ▪ Work with local agencies and private sector to identify roadway and bridge improvements needed to accommodate growth/development.
  ▪ Work with local agencies and Mn/DOT to coordinate improvements on connecting facilities.
  ▪ Identify chronic congestion and safety problems and identify, develop, and implement mitigation strategies to address these issues. Work with local partners and other stakeholders to obtain right of way to accommodate future transportation improvements.

Performance Measures

Regional Transit Ridership
The responsibility for data collection and the evaluation of bus transit service rests with the agencies of the Metropolitan Council, Metro Transit, and other local providers such as the Plymouth MetroLink, Maple Grove Transit and SouthWest Transit. Hennepin County does not measure transit system statistics directly, but it monitors the data provided by the regional transit providers.

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8 Right-of-way and easements are being acquired as development and redevelopment occurs. When a preliminary plat or site plan is received for review, recommendations are made to the individual cities to reserve space if the development is adjacent to a county roadway identified on the Bicycle System Plan map. The amount of right-of-way and/or easement is determined in consultation with city staff using the typical roadway sections.
Historical transit ridership statistics are reported by the Metropolitan Council. Most recent data for has shown transit ridership experiencing significant increases, especially in light of the recent increases in gasoline prices. The following exhibit provided by the Metropolitan Council shows the annual ridership goal versus actual ridership between 2003 and 2010.

**Exhibit 9-8 Annual Ridership Goal: 2003 through 2010**

The Metropolitan Council has monitored transit travel patterns through its four Travel Behavior Inventories taken every ten years since 1970. The Metropolitan Council has also forecasted transit ridership levels in their modeling process. Of particular importance is the regional goal that has been adopted to achieve a doubling of transit ridership by 2030. The patronage for Year 2003 is used as the base for the future doubling goal to 2030. Exhibit 9-8 shows the progress toward meeting this goal. Metro Transit has prepared long-range transit improvement plans aimed at providing service improvements to meet this goal. Growth in regional transit ridership over the past eight years was 2.7 percent per year.

The county prefers to take a more aggressive approach and double regional transit ridership (147,000,000) before 2030. This depends on a number of factors including but not limited to successful development of the Central Corridor LRT, Southwest LRT, Bottineau Transitway, I-35W BRT, and Cedar Avenue BRT, as well as continued operation of current bus services by Metro Transit and other local providers. In addition, it depends heavily on future land use and its proximity to major transit corridors as well as accessibility to major activity centers. The county is committed to encouraging its partners to pursue an earlier achievement of the goal (i.e. double transit ridership by 2025).
Bicycle Usage

There are a number of agencies that have collected bicycle system usage information. A consistent methodology and process is needed for collecting and reporting bicycle usage over time to track trends. It is recommended that agencies develop a consistent method for data collection. This method should have the ability to capture the additional usage of the bicycle system due to the addition of new trails and the closing of bicycle system gaps.

Miles of Bikeway Facilities Built

The Bicycle System Plan map includes a total of 805 miles of potential bikeways within Hennepin County. Of the total miles, 515 miles (57 percent) have been built to date by the various agencies within the county. Since the Bicycle Transportation Plan was developed in 1995-96, 68.4 miles of new bikeways have been constructed in partnership with cities and other agencies such as Mn/DOT and Three Rivers Parks. Exhibit 9-9 shows the historical trend in bikeway construction. Currently, 16 bikeway projects are tentatively programmed over the next 5 years. Hennepin County is anticipating contributing approximately $2.1 million toward these projects.

Exhibit 9-9 County Bicycle Facilities Miles Constructed

![Graph showing cumulative miles of bikeways constructed from 1995 to 2015.]

Source: Hennepin County Bikeway Projects Spreadsheet
Barriers and Gaps Removed
The Bicycle System GAP Study prepared in 2002 identified about 90 separate missing segments between existing bikeway facilities. Almost one-third (29) of these original gaps have now been closed, however as new facilities are built more gaps are identified. Since the Bike GAP program was begun, Hennepin County has contributed about $600,000 toward these projects.

Percentage of Urban Roadways\(^9\) with Pedestrian Accommodations
Pedestrians utilize both walkways and multi-use trails within the county roadway right-of-ways. Consistent with the emergence of the Complete Streets and Active Living initiatives, pedestrian facilities are a component of the county’s multi-modal planning efforts. As part of the Complete Streets inventory, the county will be monitoring the percentage of county roadway miles that have pedestrian facilities provided where pedestrian occur and/or are expected to occur.

Volume to Capacity Ratio
Another category of system effectiveness relates to roadway congestion and operating levels of service. The quality of roadway operations are measured using indicators such as the volume to capacity ratio (V/C), Level of Service (LOS), and vehicle delay (minutes). For system-wide evaluations, the V/C ratio is an appropriate means of analyzing roadway performance since it highlights segments that have roadway volumes that exceed the capacity of the roadway lanes.\(^10\) Significant congestion is anticipated for many of the state trunk highways and interstate highways in the metropolitan area. This congestion for many principal arterials is a concern since this trend is an indicator of potential diversion to the minor arterial system.

Typically, roadway facilities are designed to provide adequate service over a 20-year design life. The V/C ratio and additional considerations such as the roadway geometrics (today and future) were used to evaluate roadway operations for the forecast Year 2030. Map F in the report pocket entitled “Roadway System Adequacy - 2030 Operations” highlights roadway segments based on the level of anticipated future congestion.

As in the 2000 HC-TSP, the future traffic forecasts also found heavy travel demands across the northwestern portion of the county. Anticipated future residential development growth just outside Hennepin County in the St. Michael / Albertville area.

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\(^9\) An urban roadway is one with raised curbs, closed drainage system, sidewalks or the ability to incorporate sidewalks, and is in an area with higher land densities and pedestrian activities.

\(^10\) Roadway capacities were estimated for Year 2030 based on values originally developed by the Metropolitan Council for the regional forecasting model as documented in *Model Calibration Technical Memo #5 - 1990 Highway Network and TAZ Documentation*. The Metropolitan Council capacities were hourly lane volumes categorized by area type and facility type. For average daily analysis, these values were converted to daily capacities and categorized by Functional Classification and Facility Type.
areas and the Otsego / Elk River areas appear to generate trips which are attracted to activity nodes in the metropolitan area such as the future commercial / office areas in the Rogers and Maple Grove areas. These travel patterns tend to put stress on existing 2-lane rural county roadways in Corcoran, Dayton, and Hassan Township.

County roadways in the northwest area of the county that are expected to experience significant congestion over the next 20 years include:

- CSAH-13 (Dayton / Rogers)
- CSAH-30 (Corcoran / Hassan Township)
- CSAH-81 (Maple Grove, Rogers)
- CSAH-101 (Corcoran / Dayton / Hassan Township)
- CSAH-116 (Rogers)
- County Road 116 (Corcoran)

Western portions of the county roadway system also have segments that are anticipated to experience congestion. Growth in the Rockford / Delano areas and Orono / Long Lake areas are forecasted to contribute new vehicle trips. The lack of principal arterials between Trunk Highway 55 / Interstate 94 corridors and the constraints of Lake Minnetonka channel traffic to just a few roadways in these areas. County roadways with potential congestion that appear in this western area include:

- CSAH-6 (Orono)
- CSAH-15 (Minnetonka Beach / Orono)
- CSAH-19 (Tonka Bay)
- CSAH-92 (Minnetrista / St. Bonifacius)
- County Road 139 (Delano / Independence)

Potential future congested county roadways also are sprinkled within Minneapolis and the first / second tier suburbs. Some key roads are:

- CSAH-30 / 93rd Avenue (Brooklyn Park)
- CSAH-81 / Bottineau Blvd. (Brooklyn Park / Brooklyn Center)
- CSAH-121 / Fernbrook Lane (Dayton / Maple Grove)
- CSAH-152 / Cedar Avenue (Minneapolis)
- CSAH-21 / 50th Street (Minneapolis)
Intersection Level of Service (LOS)

As mentioned previously, the V/C Ratio only describes part of the roadway operations picture. Congestion in urban areas is often more a function of the peak hour characteristics and related to the operations of the major signalized intersections. As noted above, the peak hour intersection operations are examined in more detail at the project level by the SPAR report analysis. Based on the current regional policy Hennepin County designs its intersections to LOS “D” or better unless adverse societal impacts will result.

Accessibility of Transit and Roadway Systems

Accessibility is a new concept that has received significant study by the University of Minnesota. More work is needed in this area to define an appropriate measure and related targets. It is unclear at this time how this measure will reflect back to project-level investments and/or whether this measure will be used as more of an indicator of how the transportation system is responding to user demands and economic forces over time.

Emerging Issues

The multi-modal transportation systems will need to address competing needs on regional, corridor, and local levels. Map E in the report pocket entitled “Jurisdiction and Long Range Transportation Issue Areas” illustrates some of the locations in Hennepin County where future transportation issues will need to be evaluated. In many cases, consensus has not been reached, nor have final official actions been taken. Hennepin County will not pursue any implementation with regard to these items until the affected agencies agree on the course of action and adequate public input has been considered.
Goal 4. Increase spatial efficiency of system\textsuperscript{11}

While the County does not have land use authority, it is committed to working with its local partners and the private sector to leverage transportation investments to enhance livability, economic vitality and the success of transit investments. Previous projects such as the Hiawatha light rail project, the Lowry Avenue project, the Silver Lake Road project and others have demonstrated that the strategic use of transportation investments (whether roadway, transit, bicycle/pedestrian, and/or streetscaping improvements) can be effectively used to influence local land use development patterns and development densities, and these strategic investments can support and encourage urban revitalization where it is needed. Strategies that will be pursued include but are not limited to the following:

Strategies

- Identify opportunities such as the Corridors of Opportunity program, collaboratively sponsored by Living Cities and the U.S. Department of Housing and Urban Development’s Sustainable Communities Program. The work includes planning and engaging citizens to create distinctive places, strengthen local assets, increase transit ridership, and expand access to jobs, affordable housing, and essential services for residents of all incomes and backgrounds.

- Fully employ and maximize the results of TOD, affordable housing, and brownfield redevelopment through the incentive-based funding programs, TOD, AHIF, and the ERF, respectively.

- Collaborate with partners to leverage public and private investments to achieve housing, transportation, economic development, and environmental goals.

\textsuperscript{11} Spatial efficiency is a term used to characterize the ease with which economic activities are geographically organized and transacted within a region (Hennepin County) -- the organization of physical assets, such as buildings, infrastructure, and green space and how efficiently these assets are connected through transportation systems to minimize time, effort, or cost required to conduct economic activities.
Performance Measures

Proximity of Growth Near Major Transitways
This measure focuses on expanding growth in and along major transit corridors and/or freestanding centers with transit hubs. The objective is to partner with local and private stakeholders to promote growth in these corridors to help increase spatial efficiencies of the system and provide real transportation options. The success of this will be to measure the new residential and employment growth within one-half mile of the major transit corridors and free-standing growth centers that have a major transit hub as compared to growth that occurs elsewhere in the county. How this will be measured will be determined at a later date.

Housing and Transportation Affordability Index
Americans traditionally consider housing affordable if it costs 30 percent or less of their income. The Housing + Transportation (H+T) Affordability Index, in contrast, offers the true cost of housing based on its location by measuring the transportation costs associated with place.

H+T has been developed as a more complete measure of affordability beyond the standard method of assessing only housing costs. By taking into account both the cost of housing as well as the cost of transportation associated with the location of the home, H+T provides a more complete understanding of affordability. The Center for Neighborhood Technology has defined an affordable range for H+T as the combined costs consuming no more than 45 percent of income. More work is needed with respect to identifying how this measure could be applied in Hennepin county and how it would affect transportation strategies and investments.
Goal 5. Reduce the county’s environmental footprint

This goal is consistent with the county’s “cool county” initiative\textsuperscript{12} and reflects the objectives of reducing energy consumption, protecting the environment, and supporting a sustainable lifestyle. Given the potential for changes to the air quality standards, it is also important for the county to support initiatives that will insure continued growth while maintaining compliance with air quality standards. The strategies that will be pursued to accomplish this focus on travel demand strategies including reducing the need for trips (i.e., telework) as well as providing travel options (i.e., bicycle, pedestrian and transit). include but are not limited to the following:

Strategies

- Encourage Travel Demand Management (TDM) for its employees including support for telework, biking, walking, transit (subsidies for transit passes), and linking employees with carpooling and vanpooling\textsuperscript{13} (See Exhibit 9-10).
- Encourage Transit Oriented Development (TOD), support for expansion of transit services that feed major transit corridors and/or where it can be demonstrated that investments will provide significant transit benefits.
- Work with local partners and other stakeholder to encourage land use patterns that promote alternative modes of travel (reduce reliance on vehicles)
- Incorporate within highway and bridge designs an overall footprint that minimizes hard surfaces while meeting necessary safety and mobility requirements.

\textsuperscript{12} See Policy 1 in Chapter 10

\textsuperscript{13} TDM measures are the most effective means of reducing commuter trips as the strategies accommodate a greater diversity in the factors that influence a commuter’s choice of travel mode. Hennepin County participates in TDM efforts as a regional transportation partner and also as a major employer. The county is a member of the Minneapolis Travel Management Organization, which developed a TDM program in 1996 in an effort to reduce peak hour travel in downtown Minneapolis. As an employer, Hennepin County has implemented TDM measures such as flexible work hours, telecommuting, a subsidized transit pass program, an internal employee carpool matching service, and support for annual programs promoting bicycling and transit use.
Vehicle Miles Traveled

Vehicle Miles of Travel (VMT) is another performance measure used to gauge the usage of the roadway system. Nationally, highway VMT over the next 20 years is anticipated to continue growing at approximately 2 percent per year. For Hennepin County, VMT grew at an annual rate of about 3 percent per year from the early 1970s to the late 1990s. Since 1998, when statistics were modified to include the City of Minneapolis, the VMT has grown at an annual rate of less than 1 percent per year. A graph of the historical data is shown in Exhibit 9-11.

Exhibit 9-11 also includes a projection of VMT to the Year 2030 based on the traffic forecasting model. As mentioned previously, the model incorporates the anticipated land use growth from cities’ comprehensive plans and the Metropolitan Council goal of doubling transit ridership over the next 20 years.
Exhibit 9-11 Vehicle Miles Traveled (VMT) for Hennepin County