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# Transit Services

Report #98-03

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A P r o g r a m E v a l u a t i o n R e p o r t

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Office of the Legislative Auditor  
State of Minnesota

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STATE OF MINNESOTA  
**OFFICE OF THE LEGISLATIVE AUDITOR**  
JAMES R. NOBLES, LEGISLATIVE AUDITOR

February 6, 1998

Members  
Legislative Audit Commission

For a number of years, the Legislature has debated the merits of investing additional resources in transit and highways. There has been disagreement particularly over the respective roles of transit and highway expansion in responding to growing congestion and other transportation problems in the Twin Cities metropolitan area. As a result, in May 1997, the Legislative Audit Commission directed us to conduct a study of statewide transit services. This study follows an evaluation we conducted last year of state trunk highways.

While resolving the deadlock over transportation funding will be difficult, we think that the policy discussion would benefit from better information on the merits of various policy options in the Twin Cities area, including the expansion of transit. Policy makers first need accurate and consistent information from the Metropolitan Council and the Minnesota Department of Transportation (Mn/DOT) on their projections of future congestion. In addition, policy makers need to know how various policy options stack up in terms of their costs and their ability to address congestion and other transportation problems.

Outstate transit services have grown significantly over the last decade, reflecting increased local interest in providing rural transit services and growing state assistance. However, overall transit ridership has been relatively constant over the last decade, and the performance of outstate transit systems varies widely. We think there is a need for Mn/DOT to more closely review the performance of outstate transit systems.

This report was researched and written by John Yunker (co-project manager), Elliot Long (co-project manager), and John Patterson. We received the full cooperation of the Metropolitan Council, Mn/DOT, and various transit providers.

Sincerely,

Handwritten signature of James Nobles in cursive.

James Nobles  
Legislative Auditor

Handwritten signature of Roger Brooks in cursive.

Roger Brooks  
Deputy Legislative Auditor

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# Transit Services

## SUMMARY

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In recent years, Minnesota policy makers have wrestled with questions about highway and transit funding without satisfactorily resolving them. Transit advocates point to an imbalance in spending between highways and transit, noting that state and local government expenditures on highways are more than ten times as much as transit spending. In addition, Minnesota's highway spending is significantly more than the national average, while its transit spending is well below the national average. Transit advocates also suggest that expanding transit would reduce the need to expand highways in the Twin Cities metropolitan area where congestion has been growing in recent years. Expanded transit services might also improve the mobility of individuals throughout the state who do not have access to an automobile.

Highway advocates emphasize the declining role of transit in serving the transportation needs of citizens. For example, since 1960, transit ridership per capita declined by about 50 percent in the Twin Cities metropolitan area and now accounts for only about 2 to 3 percent of daily trips. Highway advocates also suggest that expanding transit would not significantly reduce the need for highway expansion but would result in additional spending.

This report cannot resolve the long-standing policy debates over transit and highways. However, the report attempts to provide information and analysis which may help guide further discussion and debate. The report reviews the trends in transit ridership, services, and spending over the last decade and examines how transit services in Minnesota compare with transit services across the nation.<sup>1</sup> In addition, the report recommends changes in the planning process which would enable the Legislature and the Governor to get better and more comprehensive information from the Metropolitan Council and the Minnesota Department of Transportation (Mn/DOT) on the advantages and disadvantages of alternative ways of addressing Minnesota's transportation problems. In particular, our report addresses the following questions:

- **What types of transit services are currently provided in Minnesota, how much service is provided, and how are these services financed?**
- **How have transit ridership, services, and spending changed over the last decade?**

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<sup>1</sup> An analysis of the trends, performance, and needs of the State Trunk Highway system was provided in Office of the Legislative Auditor, *Highway Spending* (St. Paul, 1997).

- **How do transit services in Minnesota compare with those in other states?**
- **Do the Metropolitan Council and Mn/DOT provide policy makers with adequate information and analysis on the role that transit can play in addressing transportation problems in the Twin Cities metropolitan area?**

In carrying out this study, we interviewed staff at the Metropolitan Council, Mn/DOT, and various transit agencies. We thoroughly analyzed data on transit ridership, services, and spending from the Metropolitan Council, Mn/DOT, and national sources. In addition, we examined a variety of planning documents and corridor studies available from the Metropolitan Council and Mn/DOT, as well as planning documents and analyses conducted in several metropolitan areas in other states. Our research included a review of relevant literature on transit needs and planning.

## BACKGROUND

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**In 1996, transit operating costs were \$166 million in the Twin Cities area and \$24 million in outstate Minnesota.**

In 1996, transit operators in the seven-county metropolitan area of the Twin Cities carried close to 66 million passengers and provided 2.6 million vehicle hours of service at a total operating cost of \$166 million. Metro Transit, an organization within the Metropolitan Council and the primary operator in the area, provided most of the transit service, accounting for over 90 percent of the passengers. Regular route service is also provided by a number of private operators with whom the Metropolitan Council has contracts. Twelve suburban communities that opted out of the metropolitan transit system in the 1980s and early 1990s provide a variety of services to residents in southern and western suburbs. The services include regular route and demand responsive services and are provided by Metro Transit and various private operators. Metro Mobility, the region's specialized service for those with disabilities or mobility limitations, is provided by two private operators under contract with the Council. In addition, there are five small communities within the metropolitan area that have dial-a-ride services for residents with special needs who do not qualify for Metro Mobility and ten rural transit systems providing specialized services to senior citizens and persons with disabilities.

In outstate Minnesota, there were 70 public transit systems that provided 800,000 hours of service and served more than 8 million passengers at an operating cost of about \$24 million in 1996. These services range from regular route service and specialized services for the elderly and disabled in larger cities to dial-a-ride services in small cities and rural areas. The systems include one large urbanized system (Duluth), 4 urbanized area systems (East Grand Forks, Moorhead, Rochester, and St. Cloud), 24 small urban systems in communities ranging from 2,500 to 50,000 in population, 4 elderly/disabled systems (Duluth, Moorhead, Rochester, and St. Cloud), and 37 rural systems. More than half of the operating expenditures and about 70 percent of the outstate ridership come from Duluth and the 4 large urbanized area systems.

Transit services are funded throughout Minnesota through a combination of local, state, and federal support, along with fare and other operating revenues. Compared with outstate transit systems, transit in the metropolitan area is more reliant on local property taxes and less reliant on state appropriations and federal grants. In 1996, property taxes and other local contributions accounted for 42 percent of total operating revenues in the Twin Cities area and 15 percent in outstate Minnesota, while state appropriations accounted for 26 percent in the Twin Cities area and 44 percent in outstate Minnesota. Federal grants provided less than one percent of operating funds in the Twin Cities area and 12 percent outstate. Fares and other operating revenues provided similar shares of operating revenues—32 percent in the Twin Cities area and 28 percent outstate.

The overall operating cost per rider for all transit services in outstate Minnesota is similar to that for transit services in the Twin Cities metropolitan area. The cost per rider averaged \$2.83 in outstate Minnesota and \$2.53 in the Twin Cities area in 1996. Operating costs per vehicle mile tend to be lower outstate due to lower wage and benefit packages and the greater use of volunteer drivers and smaller vehicles. However, these lower costs are offset by lower numbers of passengers served per vehicle mile. The lower productivity of outstate transit services results

**The overall operating cost per rider was \$2.53 in the Twin Cities area and \$2.83 in outstate Minnesota in 1996.**

**Table 1: Performance of Minnesota Transit Systems, 1996**

<u>Twin Cities Area Systems</u>	<u>Operating Cost per Rider</u>	<u>Operating Cost per Vehicle Mile</u>	<u>Riders per Vehicle Mile</u>
Metro Transit <sup>a</sup>	\$2.10	\$5.68	2.71
Private Operators	3.57	3.85	1.08
Opt-Out Communities	5.70	3.76	0.66
Metro Mobility <sup>b</sup>	16.12	3.17	0.20
Small Urban	6.38	1.77	0.28
Rural	10.72	1.79	0.17
<b>Total</b>	<b>\$2.53</b>	<b>\$4.73</b>	<b>1.87</b>
<u>Outstate Systems</u>			
Large Urbanized	\$2.40	\$3.86	1.61
Urbanized	1.72	2.52	1.47
Elderly/Disabled	6.65	1.94	0.29
Small Urban	2.91	1.97	0.68
Rural	6.44	0.95	0.15
<b>Total</b>	<b>\$2.83</b>	<b>\$1.79</b>	<b>0.63</b>

NOTE: Vehicle miles for systems in the Twin Cities area and outstate are measured differently. In the Twin Cities area, it is the number of miles that vehicles drive while in service. In the outstate area, it is the number of miles that vehicles drive whether in service or not.

<sup>a</sup>Does not include its opt-out services.

<sup>b</sup>Vehicle miles are an estimate.

SOURCE: Unpublished data from the Metropolitan Council and Minnesota Department of Transportation.



from the lower population densities in areas served by outstate transit services and the greater share of dial-a-ride and specialized services delivered outstate.

## TRENDS

Overall:

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**Since 1987, transit ridership has declined in the Twin Cities area and increased modestly outstate.**

- **The trend throughout Minnesota over the last decade has been toward increased service, but ridership has declined in the Twin Cities area and increased only modestly outstate.**

From 1987 to 1996, miles of transit service increased 20 percent in the Twin Cities metropolitan area and 86 percent in outstate Minnesota. Over the same period, ridership decreased 10 percent in the Twin Cities and increased 4 percent in outstate Minnesota. In the Twin Cities metropolitan area, service increases primarily occurred in the western and southern suburbs that opted out of the metropolitan transit system. Ridership increased in these suburbs, but ridership fell on other parts of the regular route system. Service increases outstate occurred in every program category except the large urbanized program operated in Duluth. However, more than 85 percent of the outstate service increase occurred in rural areas, where a large number of new transit systems were funded and service increased more than 300 percent overall. Outstate ridership trends reflect a 25 percent decline in ridership in Duluth and increases across other categories of service.

Operating expenditures in inflation-adjusted dollars increased less than the amount of service increased between 1987 and 1996. Spending was up 11 percent in the Twin Cities area and 20 percent in outstate Minnesota. This reflects the fact that the expanded services tended to cost less per mile of service than existing services. State appropriations for transit increased more than 50 percent in constant dollars in both the Twin Cities area and outstate Minnesota. This growth offset declining federal operating assistance for transit, particularly in the Twin Cities area, and provided some increase in operating expenditures. Funding from local and regional tax sources and from fare revenue also increased over the last 10 years.

Overall:

- **The inflation-adjusted cost per rider rose 23 percent in the Twin Cities metropolitan area and 20 percent in outstate Minnesota from 1987 to 1996.**

This trend was the result of ridership declines on the Twin Cities regular route system and in Duluth. In addition, the expanded services in Twin Cities suburbs and rural outstate areas tended to cost more per rider than existing services. The cost per mile of service, however, fell 13 percent in the Twin Cities area and 33 percent in outstate Minnesota. This decline reflects the lower per-mile costs of expanded services as well as some possible economies such as the increased use of smaller vehicles. The average productivity of transit services, as measured by

**Table 2: Transit Trends, 1987-96**

<u>Operating Statistics</u>	<u>Twin Cities Area<sup>a</sup></u>	<u>Outstate Minnesota</u>
Ridership	-10%	4%
Amount of Service <sup>b</sup>	20	86
Operating Costs	11	25
State Appropriations	51	57
<u>Performance Measures</u>		
Cost per Rider	23%	20%
Cost per Mile	-13	-33
Riders per Vehicle Mile	-25	-44

NOTE: All financial figures are in 1996 dollars.

<sup>a</sup>Figures based on vehicle miles are for Metro Transit, private operators, and opt-out communities. Data on 1987 vehicle miles were not available for Metro Mobility and rural systems in the Twin Cities area.

<sup>b</sup>Measured in vehicle miles. However, vehicle miles are measured differently in the Twin Cities area and outstate. In the Twin Cities area, it is the number of miles that vehicles travel while in service. In the outstate area, it is the number of miles that vehicles travel whether in service or not.

SOURCE: Unpublished data from the Metropolitan Council and Minnesota Department of Transportation.

**The overall cost per rider has increased in both the Twin Cities area and in outstate Minnesota.**

the number of passengers per vehicle mile, declined by 25 percent in the Twin Cities area and 44 percent in outstate Minnesota. This trend is primarily due to the declining ridership on regular route services in the Twin Cities and Duluth and the lower productivity of expanded services.

## NATIONAL COMPARISONS

Extensive data are available from the Federal Transit Administration to make comparisons of transit services in Twin Cities area with services in other large urban areas throughout the United States. Much less information is available for purposes of comparing outstate transit services to those in other states. The limited data available suggest that:

- **Minnesota spends more than most states on transit in non-urbanized areas.**

Minnesota's operating expenditures per capita ranked 9th highest out of 41 states reporting data. These data do not include spending in urbanized areas such as the Twin Cities, Duluth, East Grand Forks, Moorhead, Rochester, and St. Cloud. As a result, they exclude outstate spending in the large urban and urbanized area programs.

We compared transit services in the Twin Cities area with services in 31 other urbanized areas in the United States with a 1990 population between 900,000 and

4 million. These areas range in population from Indianapolis to Detroit. The Twin Cities urbanized area had a population of 2.1 million in 1990 and was the 9th largest in population of the 32 urbanized areas. In 1995, 20 of the 32 urbanized areas had a form of rail transit operating, while the Twin Cities and 11 others did not have rail transit.

**The Twin Cities area has below average transit ridership, but appears to serve commuters relatively well.**

In comparison with this group, we found that:

- **The Twin Cities area has below average transit ridership per capita, as well as a below average amount of service per capita and below average spending per capita.**

Data from the Federal Transit Administration indicate that transit ridership, spending for transit operations, and the amount of transit service in the Twin Cities area are all between 35 and 40 percent lower than the average per capita for the comparison group in 1995.<sup>2</sup> However, these comparative data need to be interpreted carefully, since half of the ridership in the comparison group is from just 5 urbanized areas and only 10 areas have above average ridership per capita. Consequently, it is important to consider how the Twin Cities area ranks relative to other areas. Of the 32 urbanized areas, the Twin Cities area's ridership per capita ranked 18th highest, while the amount of vehicle miles of service per capita and spending per capita ranked 23rd and 19th highest respectively. In each case, the Twin Cities ranked in the lower half of the 32 areas.

Despite the Twin Cities' ranking in the lower half in overall ridership per capita:

- **The Twin Cities area has ranked fairly high in the percentage of commuters who use transit to get to work.**

**Table 3: Comparisons of Metropolitan Area Transit Systems, 1995**

	<u>Riders per Capita</u>	<u>Vehicle Miles per Capita</u>	<u>Vehicle Hours per Capita</u>	<u>Operating Cost per Capita</u>
Average of 32 Urbanized Areas	43.0	16.5	1.1	\$92.2
Average of 12 Non-Rail Areas	21.1	11.9	0.8	47.0
Average of 20 Rail Areas	54.2	18.9	1.2	115.4
Metro Transit <sup>a</sup>	27.4	10.3	0.7	\$56.1
Rank within 32 Urbanized Areas	18th Highest	23rd Highest	23rd Highest	19th Highest
Rank within 12 Non-Rail Areas	3rd Highest	6th Highest	6th Highest	4th Highest

<sup>a</sup>Includes its opt-out services.

SOURCE: Program Evaluation Division analysis of transit operating data from Federal Transit Administration, *Data Tables for the 1995 National Transit Database Report Year*, Tables 11 and 26. The population estimates for urbanized areas were developed by the Program Evaluation Division.

<sup>2</sup> The Twin Cities area would probably be even farther below the comparison group average for total transit spending per capita, considering the large capital investment made by those cities with rail transit. We were unable to include capital spending in our spending comparison because of the lack of adequate national data.

In 1990, the Twin Cities area ranked 9th highest of 29 metropolitan areas for which data were collected on the percentage of morning work commutes taken on transit. An estimated 5.3 percent of morning commutes in the Twin Cities were taken using transit compared with a average of 5.5 percent for our comparison group. On this dimension, the Twin Cities ranked ahead of Atlanta (4.7 percent), which has an extensive heavy rail subway system and, according to national data, had a 1990 transit ridership per capita more than twice that in the Twin Cities. The Twin Cities ranked just behind Portland (5.4 percent), which has received much acclaim for its light rail system and reliance on transit. National data for 1990 indicate that Portland had about 50 percent more riders per capita than the Twin Cities.

The Twin Cities' higher ranking on transit service for commuters than on overall transit ridership is due to two factors. First, to a greater extent than all but one of the urbanized areas in our comparison group, the Twin Cities area focuses its transit services on the peak commuting periods. The Twin Cities area has the second highest ratio of transit vehicles used during peak periods to vehicles used during midday. Second, unlike the data on work commutes, the ridership data available from the federal government overstates transit ridership and causes problems with comparisons when the transit systems in two urbanized areas have different transfer rates. National ridership data counts the total number of transit boardings rather than "linked trips" (those that may require one or more transfers). As a result, national data from the Federal Transit Administration count a morning commute as two transit trips if the commuter first takes the bus and then transfers to another bus or to a rail system. While national data indicate that Atlanta has twice the ridership per capita in the Twin Cities, data we obtained on the transfer rates in Atlanta and the Twin Cities suggest that Atlanta has only 30 to 40 percent more riders per capita when transit trips are appropriately counted.

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**Transit in the Twin Cities area operates in an environment that is relatively automobile-friendly.**

Regardless of how transit ridership is measured, it appears that:

- **Transit ridership in the Twin Cities ranks fairly high considering the area's relatively low population density as well as several other factors which make the area automobile-friendly.**

In 1990, the Twin Cities area ranked 29th out of the 32 urbanized areas in population density. Only Indianapolis, Atlanta, and Kansas City had fewer people per square mile. The Twin Cities area also has a high number of roadway miles per capita (6th highest out of 32), more than the average number of vehicles per household (8th highest out of 29), and lower than average congestion costs per person of driving age (25th out of 31). Lower than average population density makes it more costly for transit to provide the trips desired by the public. Large, less congested highway networks encourage residents to drive rather than ride transit.

Even though the Twin Cities area has a relatively low population density, we found that:

- **The operating cost per rider in the Twin Cities area was about average for bus systems.**

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**Transit in the Twin Cities area has higher than average fares and an unusually high reliance on property taxes.**

In 1995, Metro Transit's operating cost per rider was \$2.05, while the average for bus systems in the 12 urbanized areas without rail was \$2.06. Metro Transit ranks 9th highest among the 12 areas.<sup>3</sup> Because Metro Transit has heavily focused its services on the most productive times of the day (the peak commuting hours), it has the 3rd highest number of riders per vehicle mile. However, for similar reasons, Metro Transit also has the 2nd highest cost per vehicle mile of service. The combined effect of these two factors is an operating cost per rider that is slightly lower than average.

National data also indicate that the financing of transit services in the Twin Cities differs from typical financing methods. In particular, they show that:

- **The Twin Cities transit system has an unusually large share of funds coming from property taxes.**

About 45 percent of Metro Transit's operating funds came from dedicated property taxes in 1995, compared with an average of only 2 percent elsewhere. While the use of the property tax has created some explicit expectations for cities about how much transit service they should receive, transit services in the Twin Cities area are theoretically less vulnerable to year-to-year decisions at the state and federal levels about funding for operations. Twin Cities area transit services receive a higher percentage of operating funds from dedicated taxes than the average system in our comparison group. We also found that:

- **Twin Cities area transit services charge higher fares per rider than other comparable systems.**

In 1995, fare revenue per rider was 65 cents for Metro Transit, while the average for the non-rail areas in our comparison group was 55 cents. The Twin Cities ranked 3rd highest among the 12 urbanized areas without rail. National data also suggest that transit services in the Twin Cities area receive lower government subsidies per rider than average. However, because the data for other areas include services not reported by the Twin Cities area to the Federal Transit Administration, it is unclear how the Twin Cities area ranks in terms of government subsidies per rider.

National data show a trend in ridership that should be of concern to policy makers in Minnesota. In particular:

- **Ridership per capita has fallen much faster in the Twin Cities area than has typically been the case in large metropolitan areas.**

Between 1988 and 1995, Metro Transit's ridership per capita declined 22 percent while the average decline for a comparison group was only 6 percent. During this period, Metro Transit's ridership per vehicle mile of service declined by 17 percent while the average decline for bus operations in the comparison group was only 6 percent.

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<sup>3</sup> If privately-operated bus services in the Twin Cities area were included, then the bus operating cost per rider was \$2.17 in 1995 and ranked 7th highest among the 12 non-rail urbanized areas in our comparison group.

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**Declining  
ridership in the  
Twin Cities  
area is a cause  
for concern.**

There are a number of reasons why ridership has dropped in the Twin Cities area. However, because many of the trends affecting ridership here have also affected ridership elsewhere across the country, it is less clear why the drop here has been larger than in most metropolitan areas. Suburbanization made it more difficult for transit operators to generate ridership in the Twin Cities area. In addition, social and economic changes occurred that increased the area's reliance on the automobile. For example, the number of two-income families increased. As a result, people wanted the flexibility that a car provides to carry out the activities of their increasingly complicated lives. In addition, per capita personal income increased and gasoline prices fell in constant dollars. People were able to afford more cars and drive more often. Finally, policy decisions on fares and services contributed to the decline. Metro Transit's fare revenue per rider increased faster than the average for the non-rail comparison group (16 percent vs. 6 percent). In addition, the area's heavy reliance on property taxes to fund transit has at times caused metropolitan agencies to cut transit services on the most productive routes in Minneapolis and St. Paul in order to serve suburbs that had not been receiving services in line with their property tax contributions. For example, service on Route 16—once the region's most highly traveled route—was cut by 17 percent between 1987 and 1996.<sup>4</sup> While the amount of service has increased overall, the growth has been largely in the suburbs, particularly in those communities that opted out of the metropolitan transit system. Suburban routes generally produce less ridership per revenue mile than inner city routes like Route 16.

## TWIN CITIES METROPOLITAN AREA

Over the last decade, the Legislature and the Governor's Office have supported significant increases in state appropriations for Twin Cities area transit operations. Because of declining federal grants, these state increases have permitted transit spending to grow slightly. Elected officials have not, however, provided support for more significant growth in transit operations and have not approved plans for major capital expansions of the transit system in the metropolitan area.

Several plans for major expansions have been put forward over the last decade. The Regional Transit Board (RTB), which existed between 1984 and 1994, lobbied along with the county regional railroad authorities for a 9-line light rail system. After failing to get approval for that plan, the RTB and the Metropolitan Council proposed a new "vision for transit" in the early 1990s, which included two light rail lines, expanded bus service, development of numerous bus hubs, and new park-and-ride lots. The new vision was never fully funded by the Legislature, although the Metropolitan Council, with various sources of capital funding including some financial assistance from Mn/DOT, has proceeded to develop additional hubs and park-and-ride lots.

In addition, Mn/DOT has provided additional financial support for transit through the construction of ramp meter bypasses for transit vehicles and carpoolers, bus-

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<sup>4</sup> Route 16 provides service between St. Paul and Minneapolis on local streets, while express bus service between the downtowns is provided by Routes 94B, 94C, and 94D. Although express bus service increased between 1987 and 1996, service on Route 16 combined with express service declined 8 percent.

only shoulder lanes on Twin Cities area freeways, high occupancy vehicle lanes on portions of two area freeways, and downtown Minneapolis parking garages with special rates for carpoolers. The Metropolitan Council has been deeply involved in the needed redesign of the existing bus system.

In recent years, the Metropolitan Council's long-range transportation plan has been limited to projects which can be supported by existing levels and sources of funding. This "fiscally constrained" approach is mandated by both state and federal law and is desirable in that it forces planning agencies to focus its efforts on plans that can be supported with available funds. The Council's long-range transportation plan for the years 2001 through 2020 includes more than \$1.6 billion for highway improvements and expansion but only \$85 million for transit capital improvements such as transitways.

The Metropolitan Council's long-range planning efforts appear to be somewhat limited in comparison with metropolitan planning organizations in other major urban areas. Planning organizations elsewhere tend to provide policy makers with an analysis of possible options beside those in their fiscally constrained plans. The Council staff's reluctance to put other options forward may be due to past rejections by elected officials, as well as their preoccupation since 1994 with the significant challenges of running Metro Transit and keeping Metro Mobility services operating smoothly.

The lack of alternative plans and analysis might be less of a concern if travel within the Twin Cities area were expected to level off. However, the Council is projecting a 29 percent growth in population between 1995 and 2020 and a 46 percent increase in vehicle miles traveled in the metropolitan area. With continued growth projected in the amount of traffic on Twin Cities streets and highways, the Council needs to consider alternative approaches to solving the area's transportation problems, including transit expansion options. We recommend that:

- **The Metropolitan Council, with assistance from Mn/DOT, should supplement its fiscally constrained long-range transportation plan with a more detailed examination of alternative ways of addressing the growing transportation problems in the Twin Cities area.**

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**Policy makers need better information on how best to address the area's growing transportation problems.**

In preparing such an analysis, the Council should consider a variety of approaches including expanded bus service, reduced bus fares, implementation of rail transit, construction of additional high-occupancy vehicle facilities or transitways, further improvements in traffic management, use of parking or congestion pricing strategies, and additional highway expansion. Policy makers do not need a wish list of projects but would benefit from a clear and comprehensive analysis of what different approaches, and combinations of approaches, could accomplish in improving transportation in the Twin Cities metropolitan area. Policy makers do need to be realistic, however, in their expectations about what various options can accomplish. It will not be easy to deal with the region's continuing growth in traffic in light of local and national trends in transit ridership and carpooling.

Some observers might suggest that enough studies have been done and additional studies will not affect the deadlock among policy makers over transportation

funding. Studies have been completed on highway and transit options in various transportation corridors and on such issues such as congestion pricing. In addition, Mn/DOT is currently doing a study of commuter rail options as a result of a 1997 legislative mandate.

These studies, along with the region's experience with high-occupancy lanes, help to provide a base of understanding. However, they do not answer some of the key questions facing policy makers or provide policy makers with a comprehensive understanding of what can be achieved under various policy options. For example, it is unclear how much highway congestion would be affected by expanding transit service in comparison with other strategies. Policy makers and the public are reluctant to invest additional dollars in transit or highways or to commit to a new approach such as congestion pricing or tolls without an objective analysis of the relative benefits and costs of various options. Additional analysis is no guarantee that policy makers will agree to provide additional funding for transit or highways but will help policy makers to reach a better understanding of the choices available to them and can help the Twin Cities metropolitan area make more informed decisions about its future. We also recommend that:

- **The Metropolitan Council and Mn/DOT should do a better job of projecting, analyzing, and presenting information to policy makers on future traffic patterns and congestion problems in the Twin Cities metropolitan area.**

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**Better information is also needed on the future growth in congestion.**

Very little information is contained in the Council's current long-range plan on projected traffic growth, estimated changes in average speeds on Twin Cities highways, and growth in the number of miles of congested highways. Elsewhere, the Council has used an outdated measure of highway capacity for Twin Cities freeways and has overstated the number of congested miles of highways. In its long-range plan, Mn/DOT's Metro Division appropriately reports on the estimated change in congested highway miles under its fiscally constrained plan but fails to analyze how spending an additional \$6.6 billion on "unmet" highway expansion needs would affect congestion and average speeds.

Both agencies have reported data on the estimated change in highways speeds from 1990 to 2020 but neither has published these estimates in their long-range plans. Typically, the agencies have reported that peak hour speeds will decline significantly, particularly on highways other than freeways. Freeway speeds will remain relatively constant due to ramp metering, but the waiting time at ramp meters may increase.

We found, however, that the regional travel forecasting model used by the Council and Mn/DOT provides more than one calculation of average highway speed. One method of calculation shows results similar to those described above. A second method suggests that average speed during the peak hour will decline only one to two miles per hour between 1995 and 2020 rather than the six to seven miles per hour estimated using the other method. According to Council staff, the reason for the modest decline estimated by the second method could be that some of the traffic growth during the peak hours is expected to divert from the freeways and main arterial highways to lesser highways and city streets. Many of these other roads have excess capacity during peak hours, so travelers can arrive at their



destinations in roughly the same amount of time using these roads as when using congested freeways. Consequently, average speeds may not slow down much at least through the year 2020. However, average speeds may slow significantly once these roads also become congested.

The Metropolitan Council and Mn/DOT need to examine this discrepancy in estimates of average speeds and clarify how they project average speeds to change in the future. In addition, both agencies should provide better and more complete information on projected changes in miles of congested highways during peak hours, the expected spread of congestion beyond peak hours, estimated changes in ramp meter waiting time, and the relationship between congestion on freeways and major arterial highways and the amount of traffic expected on other metropolitan area roads.

Finally, we recommend that:

- **The Metropolitan Council should use linked transit trips in planning future transit redesigns or expansions and in reporting transit ridership to policy makers.**

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**The current method for measuring transit ridership needs to be changed.**

The use of unlinked trips counts transfers as additional transit trips and thus overstates the number of people using transit. Adding rail to a bus system can increase the number of transfers significantly. The Council's transit redesign appears to have modestly increased the number of transfers in recent years. Transit redesign tends to truncate long existing bus routes at newly created transit hubs in the suburbs and then creates feeder bus routes in the suburbs. Transfer rates increase because riders transfer from one bus route to another. If unlinked trips are used to measure ridership, an increase in ridership may be reported even if the number of people using buses has not changed.

While Council staff and Mn/DOT have tended to use linked transit trips when analyzing light rail plans in the past, the Council is not generally using linked trips to measure the region's bus ridership. Since the Legislature has recently shown interest in setting targets for increasing Metro Transit's ridership, we think it is important to focus on linked trips. Between 1995 and 1996, Metro Transit's ridership, as measured by linked trips fell by 0.4 million, while the number of unlinked trips rose 0.8 million.

## **OUTSTATE MINNESOTA**

The last decade has been a period of rapid expansion of outstate transit services into new geographical areas. Four new small urban systems were added, bringing the total number of small urban systems to 24 in 1996. Rural systems grew in number from 14 in 1986 to 37 in 1996. Total system mileage in outstate transit systems doubled since 1986.

By 1996, municipal transit systems were operating in 34 of 39 outstate regional centers, and rural systems were operating in 53 of 80 outstate counties. Mn/DOT anticipates growth in the future but says that it has received adequate funding for all transit assistance grant proposals so far and has not had to cut off funding for any operating systems. Not every county or city in the state is a candidate for

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**Closer scrutiny  
of outstate  
transit  
performance is  
needed.**

public transit. State transit assistance requires a significant local match, and not every community is willing to raise the needed local funding. Some may also be adequately served by transit services run by human services providers or by private operators.

It seems unlikely that the next ten years can match the growth of the period 1986 to 1996. Outstate transit appears to be entering a period of slower growth but the need for transit may nevertheless grow as the population ages and health delivery becomes more centralized. In any case, it is appropriate to pay closer attention to performance of existing systems rather than establishment of new systems. In fact, transit services in Duluth and some other areas have been losing riders and may need to be restructured.

We recommend that Mn/DOT closely review systems where performance is substandard. At some point, Mn/DOT may well have to choose between cutting back funding of below average performers in order to establish or expand efficient and effective transit systems elsewhere in the state. We do not recommend adoption of rigid performance criteria or funding formulas, but Mn/DOT should formally compare similar services on several performance indicators and routinely investigate the reasons behind poor performance by those that are failing to achieve an adequate level of performance.

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# INTRODUCTION

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**P**ublic transit systems provide essential mobility for many people. In addition, transit use may relieve highway congestion, help save fuel, and reduce pollution. For these reasons and others, transit operations are subsidized by federal, state, and local governments. Even so, transit use has been declining in many metropolitan areas around the country including the Twin Cities. In outstate Minnesota, communities have established many new public transit systems, but total ridership has not increased over the last ten years.

Transit operations cost \$166 million in the Twin Cities area and \$24 million in the balance of the state in 1996. The great majority of these funds came from state and local sources. In 1996, state assistance totaled \$43 million for Twin Cities transit operations and nearly \$11 million for outstate operations.

Transit policy has been vigorously debated in recent years, and transit advocates make strong claims for the benefits of transit. This report does not settle any of the long-standing debates. Instead, it provides information and analysis which can guide further discussion. In particular, the report addresses the following questions:

- **What types of transit services are currently provided in Minnesota, how much service is provided, and how are these services financed?**
- **How have transit ridership, services, and spending changed over the last decade?**
- **How do transit services in Minnesota compare with those in other states?**
- **Do the Metropolitan Council and MnDOT provide policy makers with adequate information and analysis on the role that transit can play in addressing transportation problems in the Twin Cities metropolitan area?**

In carrying out this study, we interviewed staff at the Metropolitan Council, MnDOT, and various transit agencies. We assembled and analyzed data on transit ridership, services, and spending from the Council, Mn/DOT, and national sources. In addition, we examined planning documents and corridor studies available from the Metropolitan Council and Mn/DOT, as well as studies conducted in several metropolitan areas in other states.

Chapter 1 of this report looks at current transit operations in the Twin Cities area and transit trends over a ten-year period. Chapter 1 also compares transit system performance in the Twin Cities area with transit in other major urban areas. Additional tables relating to topics discussed in Chapter 1 are presented in an appendix. Chapter 2 examines the reasons for declining transit ridership in the Twin Cities area and the Metropolitan Council's strategy to improve transit services. Chapter 3 considers longer term transit planning in the broader context of transportation policy. This chapter evaluates the strengths and weaknesses of the long-range planning work done by the Metropolitan Council and the Minnesota Department of Transportation and recommends changes in the planning process. Changes are needed in order to provide policy makers with answers to important questions about the role transit might play in addressing transportation problems in the Twin Cities area. Finally, we look at outstate transit in Chapter 4. Minnesota has 70 public transportation systems outside the seven-county Twin Cities area, with a ridership of about 8.5 million per year.

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# Transit Services in the Twin Cities Area

## CHAPTER 1

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**T**his chapter provides an overview of the transit services in the seven-county metropolitan area of the Twin Cities. It addresses the following questions:

- **What types of services are currently provided in the area, how much service is provided, and how are these services financed?**
- **How do transit services in the Twin Cities area compare in terms of performance criteria, such as riders per vehicle mile of service?**
- **How have transit ridership, services, and spending in the Twin Cities area changed over the last decade?**
- **How do transit services in the Twin Cities area compare in size, financing, and performance with transit in other major metropolitan areas?**

We found that the transit system in the Twin Cities area provides less transit service and has lower ridership per capita than systems in most other metropolitan areas of similar size. Furthermore, ridership appears to be declining faster here than in other major metropolitan areas across the country. However, transit ridership in the Twin Cities is higher than might be expected based on its relatively low population density, extensive roadway system, and low degree of roadway congestion. In addition, the operating cost per rider in the Twin Cities is about average for bus systems.

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## BACKGROUND

**About 2 to 3 percent of all trips in the Twin Cities area are made on public transit.**

The Twin Cities metropolitan area is car oriented, and, in general, public transit plays only a limited role. While automobiles account for 93 percent of all trips taken in the region, public transit accounts for only 2 to 3 percent. In fact, school buses account for more trips than public transit. Nevertheless, transit is making a significant contribution in some areas and for some individuals. As of 1990, transit accounted for 5 percent of all trips between home and work and 25 percent of all trips to the central business districts of Minneapolis and St. Paul. Most importantly, transit serves people who have no other reasonable transportation

alternative available to them. About 50 percent of transit riders live in households without an automobile or do not have access to their household's automobile.<sup>1</sup> For these reasons, the Twin Cities area needs an efficient and effective transit system. In fact, state law sets the following transit goals for the metropolitan area:

- to provide, to the greatest feasible extent, a basic level of mobility for all people in the metropolitan area;
- to arrange to the greatest feasible extent for the provision of a comprehensive set of transit and paratransit services to meet the needs of all people in the metropolitan area;
- to cooperate with private and public transit providers to assure the most efficient and coordinated use of existing and planned transit resources; and
- to maintain public mobility in the event of emergencies or energy shortages.<sup>2</sup>

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**The  
Metropolitan  
Council is the  
public agency  
primarily  
responsible  
for transit  
planning,  
administration,  
and operations.**

The primary player in achieving these goals is the Metropolitan Council, the regional government of the Twin Cities. It carries out planning activities, operates the region's public transit company (Metro Transit), contracts with private operators to provide additional service, and oversees the performance of all operators in the region. By law, Metro Transit provides "regular route"<sup>3</sup> transit service within the region's "fully developed service area" except for those regular routes which were operated on June 2, 1989 by private, for-profit operators. Figure 1.1 shows the fully developed service area, and Figure 1.2 provides a description of various transit services. Outside the fully developed service area, Metro Transit is entitled to operate regular route services it was operating on June 2, 1989.<sup>4</sup> Metro Transit provides over 90 percent of all transit rides in the region.

As mentioned, the Council contracts with private, for-profit operators to provide some regular route service. These operations include the Bloomington-Edina BE Line, University of Minnesota Route 52, Roseville Circulator, North Suburban Lines, West Suburban Route 55, and Stillwater's Valley Transit. In addition, the Council contracts with two private operators to provide Metro Mobility services. Metro Mobility is the region's primary paratransit service, which largely provides demand responsive services for persons who cannot use regular route transportation due to a disability or mobility limitations. The Council, as part of the Metro Mobility program, also contracts with these operators for some regularly scheduled service to and from senior centers.

The Council also works in conjunction with other governments and communities to provide transit services. In the 1980s and early 1990s, 12 suburban communities—called "opt-out communities"—replaced their Metro Transit

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<sup>1</sup> Metropolitan Council, *1990 Travel Behavior Inventory Summary Report*, (St. Paul, June 1994), 9, 16, & 24.

<sup>2</sup> *Minn. Stat.* §473.371 subd. 2.

<sup>3</sup> When providing regular route services, vehicles operate on a fixed route and schedule. These services include radial, crosstown, limited stop, and express services. Figure 1.2 provides more detail.

<sup>4</sup> *Minn. Stat.* §473.385.

### Figure 1.1: Transit Taxing District, Fully Developed Service Area, and Opt-Out Communities

SOURCE: Program Evaluation Division.

services with their own operations. These communities felt that they were not receiving transit services commensurate with their financial contribution to regional transit. Legislation from 1980 permitted these communities to provide replacement services and receive, for transit operations, up to 90 percent of their communities' regional property levy that is dedicated for transit operations. As shown in Figure 1.1, these 12 communities operate five opt-out programs: 1) Minnesota Valley Transit Authority (Apple Valley, Burnsville, Eagan, Prior Lake, Rosemount, and Savage), 2) Southwest Metropolitan Transit Commission (Chanhassen, Chaska, and Eden Prairie), 3) Shakopee, 4) Plymouth, and 5) Maple

**Many types of transit services are provided in the Twin Cities area.**

### **Figure 1.2: Descriptions of Transit Services in the Twin Cities Area**

Local Radial - As part of regular route service, buses stop at most street corners, and the routes start or end at one of the two downtowns.

Local Crosstown - As part of regular route service, buses make frequent stops but do not serve one of the two downtowns.

Limited Stop - As part of regular route service, buses make limited stops along a route in order to achieve faster service to selected destinations.

Express - As part of regular route service, buses operate on controlled access roads or interstate highways for at least four miles and make limited stops.

Circulator - Buses circulate around a community, usually suburban.

Vanpool - Vans are made available for people to commute to and from work and school together.

Paratransit - Vehicles provide flexible service that does not follow a fixed route. Many paratransit services are demand response/dial-a-ride services that provide door-through-door service upon request. These services are often limited to the elderly and persons with disabilities but are available to the general public in some areas.

Grove. These systems contract with private operators and Metro Transit to provide services, including express, local routes (including circulator routes), vanpools, and demand responsive. Opt-out communities devote a large portion of their resources to express service to downtown Minneapolis and St. Paul. For example, express service accounts for 79 percent of Minnesota Valley Transit Authority's ridership.<sup>5</sup> (Minnesota Valley Transit Authority is the largest opt-out system and accounts for about half of all opt-out ridership.)

Finally, "small urban" and "rural" communities, within the metropolitan area, coordinate their own service. Five small urban communities with a population between 2,500 and 50,000 (Hastings, Hopkins, White Bear Lake, northeast suburban, and St. Louis Park) provide general public dial-a-ride services. Service is generally provided to community residents who have special needs but do not qualify for Metro Mobility. In addition, paratransit services are available for rural residents in the metropolitan area that do not have transportation alternatives available to them. These programs primarily serve senior citizens and persons with disabilities.

<sup>5</sup> Minnesota Valley Transit Authority, Pie chart titled "Ridership by Type (August 1997)," October 8, 1997.



**In 1996, transit in the Twin Cities area carried 66 million passengers.**

In this report, we refer to the six subsystems within the metropolitan region—Metro Transit, private operators, opt-out communities, Metro Mobility, small urban systems, and rural systems. In this context, “private operators” refer to the providers that Metropolitan Council has contracted with to provide regular route service. “Private operators” does not refer to any operators providing service within the other subsystems even though some of them are private. In addition, the “rural systems” are providers operating in rural areas of the metropolitan region.

In 1996, these six subsystems provided 35 million vehicle miles and 2.6 million vehicle hours of service, carried nearly 66 million passengers, and spent about \$166 million to operate. Table 1.1 provides a breakdown of these operating statistics by the six individual subsystems. Metro Transit (excluding the services that it provided to opt-out communities) provided the most transit services in the

**Table 1.1: Size of the Regional System, 1996**

	Vehicle Miles of Service <sup>a</sup>	Vehicle Hours of Service <sup>b</sup>	Ridership <sup>c</sup>	Operating Costs
Metro Transit <sup>d</sup>	22,293,748	1,651,455	60,448,493	\$126,651,923
Private Operators	1,100,893	77,864	1,186,176	4,234,601
Opt-Out Communities	3,567,608	189,196	2,352,758	13,421,492
Metro Mobility <sup>e</sup>	5,119,460	511,946	1,005,886	16,212,577
Small Urban Systems	377,433	22,904	104,779	668,476
Rural Systems	2,627,891	153,236	439,366	4,709,597
Entire System	35,087,043	2,606,601	65,537,458	\$165,898,666

NOTE: N/A means data is not available.

<sup>a</sup>Vehicle miles of service is measured in vehicle revenue miles—the number of miles vehicles drive while collecting fares.

<sup>b</sup>Vehicle hours of service is measured in vehicle revenue hours—the number of hours vehicles drive while collecting fares.

<sup>c</sup>Ridership is measured in unlinked passenger trips—the number of boardings. A trip with one transfer is two unlinked trips.

<sup>d</sup>Does not include its opt-out services.

<sup>e</sup>Vehicle miles of service is an estimate.

SOURCE: Program Evaluation Division analysis of unpublished data from the Metropolitan Council’s Transportation Division.

**Metro Transit carries over 90 percent of the region’s transit riders.**

region, accounting for 64 percent of the vehicle miles of service, 63 percent of the vehicle hours of service, 92 percent of the passengers, and 76 percent of the region’s transit operating spending. Opt-out communities and Metro Mobility are the two other large subsystems. The opt-out communities (including services that Metro Transit is under contract to provide them) accounted for 10 percent of the vehicle miles of service, 7 percent of the vehicle hours of service, nearly 4 percent of the passengers, and 8 percent of the region’s operating spending. Even though Metro Mobility carried less than 2 percent of the passengers, it provided 15 percent of the vehicle miles and 20 percent of the vehicle hours of service and spent 10 percent of the region’s operating funds. The combination of the other three subsystems carried less than 3 percent of the region’s passengers.

Funds to operate these services come from a variety of sources. The federal government provides grants to state and local governments for both operating and capital spending; the state appropriates funds to the Metropolitan Council for operating spending; the Council assesses a property tax to cover operating spending and to finance bonds which cover capital spending; and county and local governments make their own financial contributions. On the top of these subsidies, transit operators generate their own revenue from operations, most of which comes from fares paid by passengers. (They generate a small amount of additional revenue from other sources, such as advertising on buses, interest, and net borrowing for transit operations.)

The Council levies its regional property tax in the Twin Cities metropolitan area. For tax purposes, the metropolitan area is divided into two parts, a transit taxing district and the remainder of the seven-county area (as shown in Figure 1.3). Communities within the transit taxing district receive three possible levels of service—(1) full peak and off-peak, (2) full peak and limited off-peak, and (3) peak only. Communities that do not receive full peak and off-peak service are subject to a lower tax rate for transit operations. The rate is reduced by 51 percent for communities receiving full peak and limited off-peak service and 77 percent for communities receiving peak only service. The pattern of reduced taxes is known as “tax feathering.” (A separate tax, which has the same rate across the transit taxing district, is assessed for bond financing.) The parts of the seven-county area that are outside of the taxing district are subject to the regional levy but the rate is reduced by 90 percent.<sup>6</sup> Finally, legislation enacted in 1996 permits opt-out communities to levy their transit taxes locally. In the past, the Council collected the tax and returned up to 90 percent of it to communities operating replacement services. Most opt-out communities have decided to levy the tax locally.

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**In 1996, funding for transit operations and capital improvements in the Twin Cities area totaled \$208 million.**

In 1996, \$208 million were made available for transit in the metropolitan region. As Table 1.2 shows, operating funds accounted for \$165 million, and capital funds accounted for \$43 million.<sup>7</sup> On the operating side, property taxes accounted for 41 percent of the funds, fare revenues accounted for 30 percent, and state appropriations accounted for 26 percent. On the capital side, the major contributors were the federal government and property taxes. While federal grants accounted for only a minimal amount of operating funds, they accounted for the majority (64 percent) of the capital funds.

## REGIONAL PERFORMANCE

In reviewing performance, we found that:

- **Each of the region’s subsystems provide a different array of services and serve very different transit markets. These factors affect the cost efficiency and effectiveness of each subsystem.**

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<sup>6</sup> *Minn. Stat.* §473.446.

<sup>7</sup> In general, operating funds pay for the daily operation of a transit system while capital funds are used to purchase tangible property that has an expected life of greater than one year.

**Figure 1.3: Seven-County Metropolitan Area and Transit Taxing District**

SOURCE: Program Evaluation Division.

Table 1.3 provides various performance statistics for the subsystems. Metro Transit (excluding the services that it provides opt-out communities) was the most expensive subsystem in terms of operating cost per vehicle mile and hour of

**Table 1.2: Financing Sources, 1996**

	Operating Funds		Capital Funds	
	Dollars	Percentage of Total	Dollars	Percentage of Total
Federal Grants	\$ 473,227	0.3%	\$27,512,000	63.8%
State Appropriations and Grants	43,063,748	26.1	0	0.0
Regional Funds <sup>a</sup>	67,795,151	41.1	15,000,000	34.8
County and Local Contributions	1,495,242	0.9	0	0.0
Fares	50,114,110	30.4	0	0.0
Other Revenues	<u>2,099,317</u>	<u>1.3</u>	<u>602,000</u>	<u>1.4</u>
Total	\$165,040,795	100.0%	\$43,114,000	100.0%

<sup>a</sup>Regional operating funds come from regional property taxes while regional capital funds come from regional bond proceeds that are financed by regional property taxes.

SOURCE: Program Evaluation Division analysis of unpublished data from the Metropolitan Council's Transportation Division.

service.<sup>8</sup> According to Metropolitan Council staff, the higher cost was largely a result of higher pay and more restrictive work rules for Metro Transit drivers. For example, Metro Transit was limited in what duties it could require drivers to perform in addition to driving a bus. However, Metro Transit's ridership per vehicle mile and hour of service were twice as high as any of the other subsystems because its routes were concentrated in the urban core with its higher population density. This high ridership more than offset the high operating costs per mile and hour of service, making Metro Transit the most efficient subsystem in terms of operating cost per rider.

Operating costs per vehicle mile and hour of service for private operators and opt-out communities were lower than Metro Transit but were higher than the paratransit services provided by Metro Mobility and small urban and rural systems. Paratransit services were the least expensive to provide because they only required small buses, vans, or cars and, in some cases, used volunteer drivers. However, paratransit systems had the lowest ridership per vehicle mile and hour of service which resulted in a high cost per rider. Paratransit systems, by their nature, provide a very individualized service which limits their ability to generate high ridership per vehicle mile or hour of service.

<sup>8</sup> The operating costs for private operators and some Metro Mobility, rural, and small urban services include depreciation of vehicles that private, for profit operators provide to each of these subsystems while the costs of the other services do not include depreciation. A better comparison would exclude depreciation from the cost of all services. Based on the data that the Met Council provided us, we were only able to eliminate depreciation from the operating costs of the opt-out communities. Specifically, we excluded public vehicle credits and private vehicle payments from operating costs and operating funds for 1993 through 1996. Prior to 1993, opt-out communities did not separately report these depreciation factors to the Met Council. Therefore, operating costs prior to 1993 include depreciation. Based on the data from opt-out communities, we estimate that depreciation accounts for 10 to 20 percent of operating costs when it is included.

**Table 1.3: Performance of the Regional System, 1996**

	<u>Riders per Vehicle Mile</u>	<u>Riders per Vehicle Hour</u>	<u>Operating Cost per Vehicle Mile</u>	<u>Operating Cost per Vehicle Hour</u>	<u>Operating Cost per Rider</u>
Metro Transit <sup>a</sup>	2.71	36.60	\$5.68	\$76.69	\$2.10
Private Operators	1.08	15.23	3.85	54.38	3.57
Opt-Out Communities	0.66	12.44	3.76	70.94	5.70
Metro Mobility <sup>b</sup>	0.20	1.96	3.17	31.67	16.12
Small Urban Systems	0.28	4.57	1.77	29.19	6.38
Rural Systems	0.17	2.87	1.79	30.73	10.72
Entire System	1.87	25.14	4.73	\$63.65	\$2.53

<sup>a</sup>Does not include its opt-out services.

<sup>b</sup>Vehicle miles are an estimate.

SOURCE: Program Evaluation Division analysis of unpublished data from the Metropolitan Council's Transportation Division.

As Table 1.4 indicates, wide variation exists in the importance of fare and non-fare operating funds in financing transit operations in the Twin Cities area. While Metro Transit received 35 percent of its operating funds from fares, Metro Mobility received only 10 percent. While the fares collected by Metro Transit averaged 72 cents per rider, fares collected by Metro Mobility averaged \$1.64 per rider. Finally, while non-fare operating funds received by Metro Transit averaged \$1.36 per rider, non-fare operating funds received by Metro Mobility averaged \$14.47. (As Table 1.2 showed, subsidies from government entities made up nearly all of the non-fare operating funds.)

The metropolitan region's fare policy caused some of this variation. Currently, the base fare for all bus services, regardless of which subsystem provides it, is 90 cents per trip. The fare increases 10 cents if the rider pays with cash rather

**Table 1.4: Fare and Non-Fare Operating Funds, 1996**

	<u>Fare Revenue as a Percentage of Operating Funds</u>	<u>Fare Revenue per Rider</u>	<u>Non-Fare Operating Funds per Rider</u>
Metro Transit <sup>a</sup>	34.8%	\$0.72	\$ 1.36
Private Operators	16.4	0.58	2.99
Opt-Out Communities	24.2	1.38	4.33
Metro Mobility	10.2	1.64	14.47
Small Urban Systems	19.8	1.26	5.12
Rural Systems	13.4	1.44	9.28
Entire System	30.4%	\$0.76	\$ 1.75

<sup>a</sup>Does not include its opt-out services.

SOURCE: Program Evaluation Division analysis of unpublished data from the Metropolitan Council's Transportation Division.

than using a convenience fare card, another 50 cents if the rider takes an express bus, and another 50 cents if the trip is during peak commuting hours.<sup>9</sup> Therefore, the maximum fare is \$2.00. Paratransit services have a different fare policy.<sup>10</sup> Metro Mobility charges \$2.00 during the base period and \$2.50 during the peak. The fares for paratransit services in the metro region provided by small urban and rural communities range from 50 cents to \$6.00.

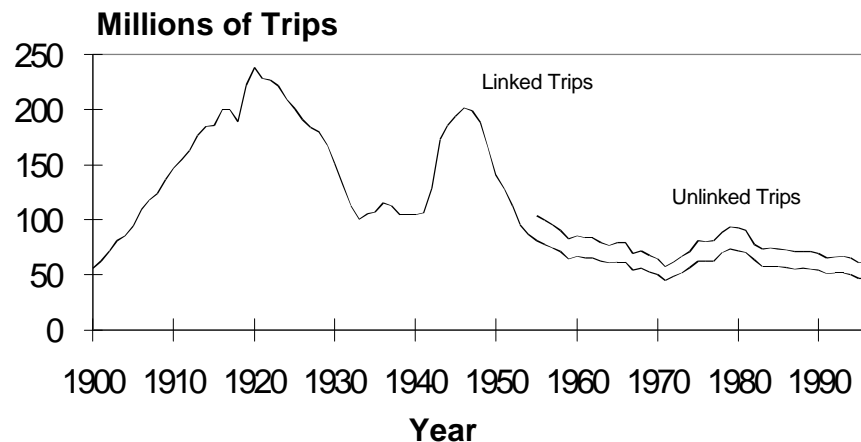
The cost and performance of transit services explain the rest of the variation in the relative importance of fare and non-fare operating funds in transit financing. For example, even though Metro Transit services had a high cost per vehicle mile of service and its fare revenue per rider was relatively low, Metro Transit had a low subsidy per rider because its routes generated so many more riders per vehicle mile of service than other services in the region. The additional fare revenues resulting from the higher ridership more than offset the relatively high cost per vehicle mile of service and low fare revenues per rider.

## REGIONAL TRENDS

We examined the trends in transit over the last decade in the context of what has happened to transit in the Twin Cities area over the last century. Figure 1.4

**Transit ridership has declined for many years. Ridership increased temporarily during World War II and the energy crises of the 1970s.**

**Figure 1.4: Metro Transit Ridership, 1900-96**



NOTE: A trip from origin to destination is a linked trip. Each leg of a linked trip is an unlinked trip. For example, a bus trip which involves one transfer is counted as two unlinked trips.

SOURCE: Unpublished data from the Metropolitan Council and Metro Transit.

<sup>9</sup> Fare revenue per rider for the region is less than the fare charged for a trip from origin to destination because of discount and free trips and transfers. Passengers are not charged for a transfer trip.

<sup>10</sup> Fares for paratransit services covered under the Americans with Disabilities Act cannot be more than two times the fare charged for regular route service.

displays transit ridership for Metro Transit and its predecessors since 1900. Ridership grew very rapidly from 1900 to 1920 with the development of the street car system. Ridership started to drop around 1920, and this decline continued with the economic depression in the late 1920s and 1930s. World War II caused a brief boom in transit ridership, due to gasoline rationing. Since then, ridership has generally been in decline. By 1955, the street car system was no longer operating. During the 1950s and 1960s, the country experienced an economic boom, the interstate highway system was under construction, and an increasing number of people bought cars and moved to the suburbs. Between 1971 and 1979, gasoline shortages caused high gasoline prices, and transit ridership increased. Since 1979, ridership has been in decline. As Table 1.5 shows, the decline in ridership is much more striking when viewed in per capita terms. In 1920, the Twin Cities area had 314 annual linked trips per capita.<sup>11</sup> On average, every person in the area was taking transit almost once a day. By 1990, per capita trips were down to 24.

**Table 1.5: Transit Ridership per Capita in the Seven-County Twin Cities Area**

Year	Linked Trips <sup>a</sup>	Population	Linked Trips per Capita
1900	56,284,102	492,439	114
1910	147,216,473	653,175	225
1920	238,631,992	759,318	314
1930	151,424,528	913,318	166
1940	104,313,619	1,000,558	104
1950	140,441,387	1,185,694	118
1960	67,201,682	1,525,297	44
1970	50,556,756	1,874,612	27
1980	72,068,665	1,986,823	36
1990	54,399,068	2,283,975	24

NOTE: A trip from origin to destination is a linked trip. Each leg of a linked trip, between transfers, is a separate unlinked trip. For example, a bus trip which involves one transfer is counted as two unlinked trips.

<sup>a</sup>Trips provided by Metro Transit (including its opt-out services) and its predecessors.

SOURCE: Program Evaluation Division analysis of unpublished data from the Metropolitan Council and Metro Transit.

**Over the last decade, transit spending has increased while ridership has declined.**

Transit is playing a smaller and smaller role in the lives of people living in the Twin Cities area, and transit providers are finding it difficult to attract riders. When we examined trends in the size of the system over the last decade, we found that:

- **Between 1987 and 1996, overall ridership declined 10 percent despite an 11 percent increase in operating spending in inflation-adjusted dollars.**

<sup>11</sup> Transit ridership can be measured in linked or unlinked trips. A trip from origin to destination is a linked trip. Each leg of a linked trip, between transfers, is a separate unlinked trip. If a person travels by bus from his or her home to work and makes one transfer during the trip, the single linked trip is counted as two unlinked trips.

In short, greater spending and increased service did not lead to increased ridership in the region. Table 1.6 shows some key statistics on the size of the system.

Even though the overall use of transit is declining in the Twin Cities area, ridership for all the subsystems except for Metro Transit increased by between 1 percent (small urban systems) and 673 percent (opt-out communities). In comparison, Metro Transit’s ridership declined by 14 percent. The increases in the other subsystems occurred as they experienced a dramatic increase in their

**Table 1.6: Change in Size of the Regional System, 1987 to 1996**

**In the last 10 years, transit ridership has declined despite large increases in some suburban systems.**

	<u>Ridership</u>	<u>Real Operating Costs</u>	<u>Vehicle Miles</u>
Metro Transit <sup>a</sup>	-14.4%	-4.8%	5.5%
Private Operators	118.9	83.5	60.7
Opt-Out Communities	673.1	450.6	454.8
Metro Mobility	5.6	70.1	N/A
Small Urban Systems	0.5	50.1	64.7
Rural Systems	98.6	181.9	N/A
Entire System	-9.9%	11.0%	N/A

NOTE: N/A means data is not available.

<sup>a</sup>Does not include its opt-out services.

SOURCE: Program Evaluation Division analysis of unpublished data from the Metropolitan Council's Transportation Division. Dollar figures were converted to constant dollars using a chain-type price index for state and local government expenditures and gross investments that was provided by the Minnesota Department of Finance.

operating budgets and level of service. Their operating budgets increased by 50 to 451 percent and their vehicle miles of service (where data is available) increased by 61 to 455 percent. In comparison, Metro Transit experienced a 5 percent decline in its operating budget and a 6 percent increase in its vehicles miles. As a result of these changes,

- **The mix of services provided in the Twin Cities area changed significantly over the past decade.**

Metro Transit’s share of total transit ridership dropped from 97 percent in 1987 to 92 percent in 1996, and its share of total operating spending dropped from 89 percent to 76 percent.

The relative decline of Metro Transit is partially explained by the fact that opt-out communities and private operators acquired some of their routes between 1987 and 1991. For example, opt-out communities that started up their replacement services between 1987 and 1991 acquired Metro Transit routes operating in their jurisdictions. (In some cases, they contracted with Metro Transit to continue providing the service.) Furthermore, private operators acquired some Metro Transit routes, such as University of Minnesota Route 52 in 1989. Metro Transit



lost some of its ridership, spending, and service due to the reallocation of these routes. In addition, the growth in services provided by opt-out communities and private operators is artificially inflated by these acquisitions. They did not create all of their new services, they acquired some existing service from Metro Transit.

The growth in service provided by private operators and opt-out communities is significantly different if one examines the period between 1991 and 1996, when route acquisitions rarely occurred. Ridership and operating spending in constant dollars for private operators did not increase; they declined by 10 percent and 5 percent respectively. However, the opt-out communities did experience a significant increase during this period; it was just less dramatic than the increase between 1987 and 1996. Their ridership, operating spending in constant dollars, and vehicle miles increased by 53 percent, 69 percent, and 102 percent respectively. The increase in service since 1991 occurred as the opt-out communities brought their transit spending more in line with their property tax contributions and as more communities had their property taxes become unfeathered in response to service improvements.

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**Metro Mobility grew sharply between 1987 and 1990. Since then, both spending and ridership have declined.**

The growth in Metro Mobility was concentrated between 1987 and 1990. Expressed in 1996 dollars, operating spending climbed from \$9.5 million in 1987 to \$19.4 million in 1990. Since then, spending in constant dollars has leveled off and declined slightly, falling to \$16.2 million in 1996. Ridership climbed from 950,000 riders in 1987 to 1.6 million in 1990, then fell back to 1.0 million by 1996. When asked about the large drop in ridership since 1990, staff at the Metropolitan Council stated that they suspect that the ridership figures for the early 1990s were inflated by the operators. Contract payments to Metro Mobility operators used to be based on the number of rides that they provided.

In addition, Metro Mobility experienced a significant disruption of service in October of 1993. To keep the system up and running, Governor Carlson called out the National Guard to drive the vehicles. Several factors caused the disruption. Metro Mobility was feeling the effects of a budget that was no longer growing; enactment of the Americans with Disabilities Act (ADA) put new requirements on the system; several operators were in financial trouble and had difficulty providing enough drivers to meet their responsibilities; and the firm that was contracted with to provide reservation, scheduling, and dispatch services was using software that did not work properly. The Metropolitan Council has since stabilized the situation.

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**Still, Metro Mobility provides more rides than similar services in other large cities.**

Even though Metro Mobility experienced operating difficulties and lost riders over the last several years, it still provides a lot of service compared to paratransit agencies in other metropolitan regions. We examined paratransit services in 6 other regions—Boston, Dallas, Houston, Miami, Pittsburgh, and Seattle.<sup>12</sup> Only Pittsburgh provided more riders on a per capita basis in 1995. The Twin Cities area made a commitment to paratransit service before the federal government passed ADA. In fact, staff at the Metropolitan Council point out that Metro Mobility's services in some respects exceeded the requirements of ADA when it

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<sup>12</sup> We analyzed data from Metropolitan Council's Transportation Division; Access Services Incorporated (Los Angeles' paratransit operator), Table titled "Comparative Performance : ASI - Other Large ADA Paratransit Services;" and Federal Transit Administration, *Data Tables For the 1995 National Transit Database Report Year*, Table 26.

was enacted into law. Facing financial constraints, the Council has been reducing some aspects of Metro Mobility service.

In examining financing trends, we found that:

- **Between 1991 and 1996, a growing share of funds to operate the region's transit system came from the state.**

As Table 1.7 for shows, between 1991 and 1996, the state's contribution increased by 64 percent from \$26.2 million in 1991 (expressed in 1996 dollars) to \$43.1 million in 1996.<sup>13</sup> This increase more than offset the reduction in federal operating assistance and "other revenues." Federal operating funds dropped by 95 percent from \$8.5 million in 1991 (expressed in 1996 dollars) to \$0.5 million in 1996.<sup>14</sup> "Other revenues" declined by 75 percent from \$8.3 million in 1991 (expressed in 1996 dollars) to \$2.1 million in 1996. Despite growth in state appropriations and regional property taxes, the metropolitan area was more reliant on fares in 1996 than it was in 1992. The percentage of total operating funds coming from fares increased by 6.2 percent.<sup>15</sup> As Table 1.8 shows, fare revenue per rider increased in constant dollars by 19.7 percent while non-fare operating funds per rider (mostly government subsidies) increased in constant dollars by 9.9 percent.

Trends in capital funding are harder to assess because the funding level (expressed in 1996 dollars) fluctuates widely from year to year. For example, in 1990 capital

**While federal operating support declined, real growth in state funding, regional property taxes, and fares caused an increase in operating funds over the last decade.**

**Table 1.7: Change in Operating Funding, by Source, 1991 to 1996**

	1991 <sup>a</sup>	1996	Real Change
Federal Grants	\$ 8,519,006	\$ 473,227	-94.5%
State Appropriations and Grants	26,201,449	43,063,748	64.4
Regional Property Taxes	63,796,328	67,795,151	6.3
County and Local Contributions	1,233,077	1,495,242	21.3
Fares	43,874,216	50,114,110	14.2
Other Revenues	8,312,944	2,099,317	-74.8
Total	\$151,937,020	\$165,040,795	8.6%

<sup>a</sup>These figures are expressed in 1996 dollars.

SOURCE: Program Evaluation Division analysis of unpublished data from the Metropolitan Council's Transportation Division. Dollar figures were converted to constant dollars using a chain-type price index for state and local government expenditures and gross investments that was provided by the Minnesota Department of Finance.

<sup>13</sup> Our analysis of financing trends is limited to the 1991 to 1996 period because of missing data.

<sup>14</sup> The federal government's contribution to transit operations was especially low in 1996. In 1995, it was \$4 million, and in 1997, it should increase to nearly \$6 million. In any event, the federal contribution is declining.

<sup>15</sup> Missing data limits our analysis to the 1992 to 1996 period.

**Table 1.8: Change in Fare and Non-Fare Operating Funds, 1992 to 1996**

	<u>Real Fare Revenue per Rider</u>	<u>Real Non-Fare Operating Funds per Rider</u>
Entire System	19.7%	9.9%

SOURCE: Program Evaluation Division analysis of unpublished data from the Metropolitan Council's Transportation Division. Dollar figures were converted to constant dollars using a chain-type price index for state and local government expenditures and gross investments that was provided by the Minnesota Department of Finance.

funding was \$59.0 million while two years later it had dropped to only \$8.1 million. In fact, capital funding in 1996 (\$43.1 million) is not very different than the level in 1988 (\$40.8 million). Based on nine years of data, we cannot decipher a trend in capital funding in total or from any of the sources.

In looking at performance trends, we found that:

- **The decline in ridership from 1987 to 1996 led to a decline in the overall performance of the system.**

**Bus ridership per vehicle mile of service has declined 25 percent over the last decade.**

The bus system (Metro Transit, private operators, and opt-out communities) became a lot less effective in generating riders per vehicle mile of service.<sup>16</sup> Table 1.9 shows some trends in key performance indicators. During this period, ridership per vehicle mile of service decreased by 25 percent. This trend affected the cost efficiency of the system. Even though bus services became cheaper to provide per mile of service (operating cost per vehicle mile of service dropped in constant dollars by 13 percent), these costs were spread over fewer riders. As a result, the remaining passengers became more expensive to serve (operating cost per rider increased in constant dollars by 17 percent.) During this period, operating costs per rider for the entire system (bus and paratransit) increased in constant dollars by 23 percent.

## NATIONAL COMPARISONS

In this section, we examine how transit operations in the Twin Cities area compare with transit systems across the country. Specifically, we answer the following questions:

- **Does the Twin Cities area have a larger or smaller system compared to other areas?**

<sup>16</sup> We call Metro Transit, private operators, and opt out communities the bus system and Metro Mobility and small urban and rural systems the paratransit system. This categorization is a generalization. For example, the opt-out communities mostly provide bus service but provide some paratransit services.

**Table 1.9: Change in Performance of the Regional System, 1987 to 1996**

	<u>Riders per Vehicle Mile</u>	<u>Real Operating Cost per Vehicle Mile</u>	<u>Real Operating Cost per Rider</u>
Bus System <sup>a</sup>	-25.4%	-12.7%	17.0%
Entire System <sup>b</sup>	N/A	N/A	23.3

NOTE: N/A means data is not available.

<sup>a</sup>Bus system means Metro Transit, private operators, and opt-out communities. It excludes para-transit services.

<sup>b</sup>Bus and paratransit systems.

SOURCE: Program Evaluation Division analysis of unpublished data from the Metropolitan Council's Transportation Division. Dollar figures were converted to constant dollars using a chain-type price index for state and local government expenditures and gross investments that was provided by the Minnesota Department of Finance.

- **How does the area's financing system compare with others?**
- **Is the area's system performing better or worse than those other systems?**
- **Are the trends experienced in the Twin Cities area the same or different than those experienced elsewhere?**

Answering these questions will shed additional light onto the Twin Cities area's transit system.

## Methodology

We compiled data for the 32 urbanized areas in the country with a 1990 population between 900,000 and 4 million from the Federal Transit Administration's (FTA) National Transit Database.<sup>17</sup> (The Twin Cities urbanized area had an estimated population of 2.1 million in 1990 and was the 9th largest in population of the 32 urbanized areas.) For each urbanized area, we aggregated all the transit agencies that report to the FTA and are located in that area.<sup>18</sup> Figure A.1 in Appendix A provides a list of all 32 urbanized areas and their transit

<sup>17</sup> In general, the U.S. Bureau of the Census defines an urbanized area as a place with a minimum of 50,000 people and includes all contiguous territory with a population density of at least 1,000 people per square mile. Our comparison group excludes the four largest urbanized areas in the country—New York, Los Angeles, Chicago, and Philadelphia.

<sup>18</sup> The service area for some agencies cover more than the urbanized area that we examined. In some cases, the service area even includes an additional urbanized area, which inflates the amount of service being provided in the urbanized area that we examined. Furthermore, when one transit agency contracts with another to provide services, the resulting services are sometimes reported twice. When double counting occurred, we made the necessary adjustments to correct for it.

agencies. According to FTA staff, their database captures the vast majority of transit services in each urbanized area; however not all transit agencies report to the FTA. In fact, in the Twin Cities area, only Metro Transit (including the services it provided to opt-out communities) reports to the FTA. In order to provide a more complete picture, we report both the Metro Transit data from the FTA and the region-wide data from the Metropolitan Council in our comparisons. Furthermore, many of the comparisons that we make in this report are in per capita terms. We estimated urbanized area populations for non-census years using growth rates for an urbanized area's corresponding metropolitan statistical area (MSA) or primary metropolitan statistical area(s) (PSMA).<sup>19</sup>

Finally, when making our comparisons, we note which urbanized areas have rail and which do not.<sup>20</sup> Areas that provide rail service made a large capital investment to achieve operational efficiencies. The best way to compare the cost of transit services would be to include both operating and capital costs. Unfortunately, adequate national data on capital spending are not available. Existing data do not permit capital spending to be amortized over the life of a project. As a result, we can only compare operating costs but provide separate data for areas with and without rail.

## Size

When comparing the size of transit systems, we found that:

- **Transit ridership per capita in the Twin Cities area was lower than the average for comparable metropolitan areas. Ridership was consistent with the amount of transit service and spending that was occurring.**

Ridership, service, and operating spending on a per capita basis for Metro Transit was between 35 and 40 percent lower than the average for the comparison group in 1995. However, it is important to examine how Metro Transit ranked relative to the comparison group because half of all ridership in the comparison was from just 5 urbanized areas and only 10 areas had above average ridership. As Table 1.10 shows, of the 32 urbanized areas, Metro Transit ranked 18th highest in ridership per capita while it ranked 23rd in vehicle miles and hours of service per capita and 19th highest in spending per capita. Even though per capita ridership in the Twin Cities area was well below the average, it ranked near the middle. Boston, San Francisco, and Washington ranked the highest in ridership, each carrying more than 100 annual riders per capita. Table 1.11 provides transit data for each of the 32 urbanized areas. Some of the other urbanized areas with large systems in per capita terms included Atlanta, Baltimore, New Orleans, Portland, and Seattle. All of these areas annually provided more than 50 rides per capita while Metro Transit provided about 27 rides per capita. However, with respect to

<sup>19</sup> The U.S. Bureau of the Census defines an MSA as a city with at least 50,000 people and all the counties which have 50 percent of their population in that city's urbanized area. Other counties are included in an MSA if they meet the requirements of metropolitan character and commuting to the central counties. In certain cases, a MSA is broken down into its component pieces called PMSAs.

<sup>20</sup> An area is designated as having rail if any form of rail (including automated guideway, cable car, commuter rail, heavy rail, incline plane, light rail, or monorail) was operating in 1995, the last year for which complete data is available.

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**In 1995, the Twin Cities area had below average ridership per capita compared to other large urbanized areas.**

**Table 1.10: Size of Transit Systems in Comparison Areas, 1995**

	<u>Riders per Capita</u>	<u>Vehicle Miles per Capita</u>	<u>Vehicle Hours per Capita</u>	<u>Operating Cost per Capita</u>
Average of 32 Urbanized Areas	43.0	16.5	1.1	\$92.2
Average of 12 Non-Rail Areas	21.1	11.9	0.8	47.0
Average of 20 Rail Areas	54.2	18.9	1.2	115.4
Metro Transit <sup>a</sup>	27.4	10.3	0.7	\$56.1
Rank within 32 Urbanized Areas	18th Highest	23rd Highest	23rd Highest	19th Highest
Rank within 12 Non-Rail Areas	3rd Highest	6th Highest	6th Highest	4th Highest
All Systems in the Twin Cities Area	29.0	N/A	1.2	\$71.9
Rank within 32 Urbanized Areas	17th Highest	N/A	14th Highest	15th Highest
Rank within 12 Non-Rail Areas	3rd Highest	N/A	3rd Highest	2nd Highest

NOTE: N/A means data is not available.

<sup>a</sup>Includes its opt-out services.

SOURCE: Program Evaluation Division analysis of transit operating data from Federal Transit Administration, *Data Tables for the 1995 National Transit Database Report Year*, Tables 11 and 26 and from unpublished data from the Metropolitan Council's Transportation Division. The population estimates for urbanized areas were developed by the Program Evaluation Division.

the 12 areas without rail, Metro Transit was above average. Only Milwaukee and San Antonio provided more rides per capita than the Twin Cities.

In 1995, Metro Transit experienced a strike which suspended service for about three weeks. Therefore, the amount of service provided in 1995 was lower than it would have otherwise been. Measuring the effect of the strike is difficult. While ridership, service, and operating spending in constant dollars dropped by 7 percent for Metro Transit in the year of the strike, ridership, service, and spending in constant dollars only rebounded by 1 or 2 percent the following year. With or without the strike, the level of service has been reduced.

Despite below average ridership per capita, a relatively high number of commuters in the Twin Cities area took transit to work in 1990. As Table 1.12 shows, we found that:

- **The Twin Cities area was just below average in the percent of people who took transit to work in 1990 and ranked 9th highest of 29 MSAs.<sup>21</sup>**

It is interesting to note that even though Atlanta annually provided twice as many rides per capita as Metro Transit (59 vs 27) in 1995 and Portland annually provided nearly twice as many (53 vs 27), a lower percentage of people took transit to work in the Atlanta area, with its extensive heavy rail subway system, than in the Twin Cities area (4.7 percent vs. 5.3 percent) in 1990 and nearly the same percentage of people took transit to work in the Portland area, with its highly acclaimed light rail system, as in the Twin Cities area (5.4 percent vs. 5.3 percent). Table 1.13 provides commuting data for the 29 MSAs. The fact that the

<sup>21</sup> These MSAs correspond to 29 of the 32 urbanized areas that are in our comparison group.

FTA data is from 1995 and the commuting data is from 1990 explains some of the discrepancy with respect to Portland but not Atlanta. In 1990, Portland's per capita ridership was only about 50 percent higher than the Twin Cities, rather than

**Table 1.11: Size of Transit Systems, 1995 Data for All 32 Urbanized Areas**

Urbanized Area	Riders per Capita		Vehicle Miles per Capita		Operating Cost per Capita	
	Number	Rank	Number	Rank	Dollars	Rank
Atlanta	58.6	5	20.3	8	\$ 85.2	13
Baltimore	55.5	7	17.3	12	119.4	6
Boston	115.7	1	26.9	3	204.2	3
Buffalo	30.6	15	9.9	24	67.3	15
Cincinnati*	22.2	21	11.7	21	49.8	24
Cleveland	34.7	14	15.8	13	105.5	8
Columbus*	17.5	25	8.7	27	45.5	25
Dallas*	16.4	27	12.5	19	53.3	21
Denver	39.2	12	18.3	11	88.3	12
Detroit	18.4	24	7.6	29	45.3	26
Ft. Lauderdale	19.8	23	12.1	20	53.3	20
Houston*	24.8	20	14.0	15	56.8	18
Indianapolis*	11.1	28	7.2	31	26.3	31
Kansas City*	11.0	29	6.8	32	30.6	28
Miami	40.7	11	19.2	10	97.1	10
Milwaukee*	46.8	9	19.2	9	81.2	14
New Orleans	74.1	4	14.3	14	95.0	11
Norfolk*	10.3	32	7.5	30	22.6	32
Phoenix*	16.6	26	8.5	28	27.5	30
Pittsburgh	45.7	10	24.0	6	119.8	5
Portland	52.8	8	21.9	7	116.0	7
Riverside*	10.9	30	9.8	25	31.2	27
Sacramento	20.2	22	9.3	26	50.8	23
Saint Louis	26.5	19	13.6	17	57.9	17
San Antonio*	38.9	13	25.0	5	65.3	16
San Diego	28.5	17	13.4	18	53.2	22
San Francisco	105.9	2	32.6	1	216.2	1
San Jose	30.2	16	13.7	16	99.5	9
Seattle	56.7	6	27.9	2	209.0	2
Tampa Bay	10.8	31	10.7	22	28.8	29
<b>Twin Cities-Metro Transit* &amp; a</b>	<b>27.4</b>	<b>18</b>	<b>10.3</b>	<b>23</b>	<b>56.1</b>	<b>19</b>
Washington	103.1	3	25.5	4	198.3	4
<b>All Systems in the Twin Cities Area *</b>	<b>29.0</b>	<b>17</b>	<b>N/A</b>	<b>N/A</b>	<b>\$ 71.9</b>	<b>15</b>

NOTE: N/A means data is not available.

\*Urbanized area without rail in 1995.

<sup>a</sup>Includes its opt-out services.

SOURCE: Program Evaluation Division analysis of transit operating data from Federal Transit Administration, *Data Tables for the 1995 National Transit Database Report Year*, Tables 11 and 26 and from unpublished data from the Metropolitan Council's Transportation Division. The population estimates for urbanized areas were developed by the Program Evaluation Division.

**Table 1.12: Commuting to Work in Metropolitan Statistical Areas, 1990**

	<u>Percentage of Morning Work Commutes Taken on Transit</u>
Average of 29 MSAs	5.5%
Average of 11 MSAs without Rail	3.2
Average of 18 MSAs with Rail	6.5
Twin Cities MSA	5.3%
Rank within 29 MSAs	9th Highest of 29
Rank within 11 MSAs without Rail	The Highest of 11

NOTE: Fort Lauderdale, Riverside, and San Jose are not included in the comparison because data was not available.

NOTE: Transit includes bus, subway/rail, and taxi.

SOURCE: Program Evaluation Division Analysis of data from the Federal Highway Administration, *Journey-To-Work Trends in the United States and its Major Metropolitan Areas*, FHWA-PL-012 (November 1993).

**In 1990, the Twin Cities ranked 9th out of 29 metropolitan areas in the share of commuters using transit.**

nearly twice as high. Atlanta's per capita ridership was twice as high in 1990 and 1995.

Two factors explain the remaining discrepancy in the FTA and commuting data. First, the FTA data, unlike the commuting data, overstates transit ridership and causes problems with comparisons when transit systems have different transfer rates. The FTA measures ridership in unlinked trips (i.e. transit boardings) rather than linked trips. As a result, transit agencies that report to the FTA count each commuter trip from home to work as two unlinked trips if the commuter transfers from a bus to another bus or to a rail system. Harvard economist John F. Cain provides evidence that the introduction of Atlanta's subway system increased the system's transfer rate (unlinked trips minus linked trips/linked trips) from 29 to 99 percent. This occurred as MARTA, Atlanta's primary transit operator, started introducing rail, redesigning many of its radial bus routes, and creating a feeder bus network for the rail system. According to Cain, the introduction of rail artificially inflated Atlanta's ridership by forcing people to transfer from bus to rail rather than taking a single bus ride.<sup>22</sup> Ridership inflation, to the extent found in Atlanta, is not occurring in the Twin Cities area. Metro Transit's transfer rate has remained relatively constant over the last couple of decades, generally remaining between 27 percent and 29 percent. (However, the rate started to increase in 1994, reaching 33 percent in 1996.) Even though the FTA data indicates that Atlanta's per capita ridership was twice as high as the Twin Cities in 1990, Atlanta's per capita ridership was only 30 to 40 percent higher after adjusting for transfer rates. We did not obtain transfer data for Portland, but Portland, with its light rail system, may also have a higher transfer rate than the Twin Cities.

22 John F. Cain, "Cost-Effective Alternative to Atlanta's Rail Rapid Transit System," *Journal of Transport Economics and Policy* XXXI, no. 1 (January 1997): 26-28.



**Table 1.13: Commuting to Work in Metropolitan Statistical Areas, 1990 Data for 29 of the 32 Comparison Areas**

<u>Metropolitan Area</u>	<u>Percentage of Morning Work Commutes Taken on Transit</u>	
	<u>Percent</u>	<u>Rank</u>
Atlanta	4.7%	11
Baltimore	7.7	5
Boston	10.6	2
Buffalo	4.7	12
Cincinnati*	3.7	18
Cleveland	4.6	13
Columbus*	2.7	21
Dallas*	2.4	24
Denver	4.3	15
Detroit	2.4	22
Ft.Lauderdale	N/A	N/A
Houston*	3.8	16
Indianapolis*	2.1	28
Kansas City*	2.1	26
Miami	4.4	14
Milwaukee*	4.9	10
New Orleans	7.3	6
Norfolk*	2.2	25
Phoenix*	2.1	27
Pittsburgh	8.0	4
Portland	5.4	8
Riverside*	N/A	N/A
Sacramento	2.4	23
Saint Louis	3.0	20
San Antonio*	3.7	17
San Diego	3.3	19
San Francisco	9.3	3
San Jose	N/A	N/A
Seattle	6.3	7
Tampa Bay	1.5	29
<b>Twin Cities*</b>	<b>5.3</b>	<b>9</b>
Washington	13.7	1

NOTE: N/A means data is not available.

NOTE: Transit includes bus, subway/rail, and taxi.

\*Urbanized area without rail in 1995.

SOURCE: Program Evaluation Division Analysis of data from the Federal Highway Administration, *Journey-To-Work Trends in the United States and its Major Metropolitan Areas*, FHWA-PL-012 (November 1993).

The fact that Metro Transit focuses its resources on the peak commuting hours explains the remaining difference in the FTA and commuting data. In transit jargon, Metro Transit has a very high “peak-to-base ratio”—the number of vehicles used during the peak commuting periods relative to the number used during the midday. In 1995, Metro Transit’s peak-to-base ratio was 2.74 while

Atlanta’s and Portland’s were respectively 1.85 and 1.77.<sup>23</sup> As a result, Metro Transit has relatively higher commuting ridership than ridership in general. To a greater extent than the Twin Cities area, people in Portland and Atlanta use transit for purposes other than commuting to and from work.

**Low population density and an extensive roadway system work against transit in the Twin Cities area.**

Regardless of which set of ridership data we examined, we found that:

- **Transit ridership in the Twin Cities ranked fairly high considering the area’s relatively low population density as well as several other factors which make the area automobile-friendly.**

Even though, the Twin Cities area ranked 29th out of 32 urbanized areas in population density, it ranked higher in ridership, 18th in riders per capita and 9th (out of 29 MSAs) in the percentage of people taking transit to work. Table 1.14 provides summary data on population density. Low population density increases the cost of providing transit. Vehicles have to travel farther and longer to pick up riders. The only way to support service in low density areas is to have relatively high fares or high subsidies; however, a high fare will discourage people from using the service. It is interesting to note that the 12 urbanized areas without rail service all ranked in the bottom 17 in population density. The economics of

**Table 1.14: The Transit Environment**

	1990 Population Density of the Urbanized Area <sup>a</sup>	1995 Roadway Miles per 1,000 People in the Urbanized Area	1990 Automobiles per Household in the Metropolitan Statistical Area <sup>b</sup>	1994 Cost of Roadway Congestion per Person of Driving Age in the Urbanized Area <sup>c</sup>
Average of Comparison Areas	2,784	3.73	1.66	\$625
Twin Cities Area	1,956	4.62	1.74	\$360
Twin Cities' Rank	29th Highest of 32	6th Highest of 32	8th Highest of 29	25th Highest of 31

NOTE: The comparison regions are the 32 urbanized areas or their corresponding metropolitan statistical area unless otherwise specified.

<sup>a</sup>People per square mile.

<sup>b</sup>Fort Lauderdale, Riverside, and San Jose are not included in the comparison because data was not available.

<sup>c</sup>Buffalo is not included in the comparison because data was not available.

SOURCE: Program Evaluation Division analysis of various data sources. Density data are from U.S. Bureau of the Census, *1990 Census of Population and Housing: Summary of Population and Housing Characteristics*, 1990 CPH-1-1 (March 1992), Table 8. Roadway mile data are from Federal Highway Administration, *Highway Statistics 1995*, FHWA-PL-96-017 (November 1996), Table HM-72. The vehicle and household data are from Federal Highway Administration, *Journey-To-Work Trends in the United States and its Major Metropolitan Areas*, FHWA-PL-012 (November 1993). Congestion data are from Texas Transportation Institute, "Table 12. Estimated Unit Costs of Congestion in 1994," WWW document, URL <http://tti.tamu.edu/mobility>, (November 4, 1997). The population estimates for urbanized areas were developed by the Program Evaluation Division.

<sup>23</sup> Program Evaluation Division analysis of data from Federal Transit Administration, *Data Tables For the 1995 National Transit Database Report Year*, Table 28. Unlike Tables 1.18 and A.3, the comparison made here applies to all forms of transit operating in these three urbanized areas. Purchased services are excluded.

providing rail service in a thinly settled area may have inhibited these areas from providing rail service; however, it has not precluded some thinly settled areas from doing so. Both Atlanta and Pittsburgh have rail and ranked in the bottom 6 in population density of the 32 urbanized areas. Table 1.15 provides data on density and other characteristics for each of the 32 urbanized areas.

In addition to having a low population density, the Twin Cities area is relatively “automobile friendly.” As shown in Table 1.14, the area had the 6th highest number of roadway miles per capita, the 8th highest number of vehicles per household, and the 25th highest cost of roadway congestion per person of driving

**Table 1.15: Transit Environment in Comparison Areas**

Metropolitan Region	1990 Population Density in the Urbanized Area <sup>a</sup>		1995 Roadway Miles per 1,000 People in the Urbanized Area		1990 Automobiles per Household in the Metropolitan Statistical Area		1994 Cost of Roadway Congestion per Person of Driving Age in the Urbanized Area	
	Number	Rank	Number	Rank	Number	Rank	Dollars	Rank
Atlanta	1,898	31	4.80	4	1.80	2	\$800	7
Baltimore	3,190	12	3.28	24	1.57	23	460	15
Boston	3,114	13	3.13	25	1.54	24	660	11
Buffalo	3,343	8	4.14	8	1.47	27	N/A	N/A
Cincinnati*	2,370	25	4.11	11	1.69	13	310	27
Cleveland	2,638	19	3.28	23	1.62	21	260	28
Columbus*	2,741	16	3.36	22	1.71	11	320	26
Dallas*	2,216	26	5.07	2	1.74	7	747	10
Denver	3,309	9	3.87	16	1.77	4	580	12
Detroit	3,303	10	3.43	20	1.66	17	820	6
Ft. Lauderdale	3,785	5	3.02	27	N/A	N/A	380	23
Houston*	2,465	23	4.76	5	1.65	19	890	4
Indianapolis*	1,951	30	4.09	12	1.71	12	250	30
Kansas City*	1,674	32	5.52	1	1.72	10	230	31
Miami	5,429	1	2.79	28	1.49	26	760	8
Milwaukee*	2,395	24	3.98	15	1.59	22	260	29
New Orleans	3,851	4	3.10	26	1.41	29	410	20
Norfolk*	1,994	28	3.78	17	1.68	14	440	16
Phoenix*	2,707	17	4.08	13	1.65	18	550	13
Pittsburgh	2,157	27	5.03	3	1.45	28	380	24
Portland	3,021	14	4.16	7	1.75	5	510	14
Riverside*	2,543	22	3.53	19	N/A	N/A	1,100	1
Sacramento	3,285	11	3.37	21	1.78	3	430	18
Saint Louis	2,673	18	4.01	14	1.66	16	440	17
San Antonio*	2,578	21	4.13	9	1.63	20	420	19
San Diego	3,403	7	2.38	32	1.75	6	390	22
San Francisco	4,152	3	2.45	31	1.73	9	960	3
San Jose	4,241	2	2.70	30	N/A	N/A	750	9
Seattle	2,967	15	3.68	18	1.81	1	870	5
Tampa Bay	2,630	20	4.11	10	1.52	25	400	21
<b>Twin Cities*</b>	<b>1,956</b>	<b>29</b>	<b>4.62</b>	<b>6</b>	<b>1.74</b>	<b>8</b>	<b>360</b>	<b>25</b>
Washington	3,560	6	2.77	29	1.67	15	1,030	2

NOTE: N/A means data is not available.

\*Urbanized area without rail in 1995.

<sup>a</sup>People per square mile.

SOURCE: Program Evaluation Division analysis of various data sources. Density data are from U.S. Bureau of the Census, *1990 Census of Population and Housing: Summary of Population and Housing Characteristics*, 1990 CPH-1-1 (March 1992), Table 8. Roadway mile data are from Federal Highway Administration, *Highway Statistics 1995*, FHWA-PL-96-017 (November 1996), Table HM-72. The vehicle and household data are from Federal Highway Administration, *Journey-To-Work Trends in the United States and its Major Metropolitan Areas*, FHWA-PL-012 (November 1993). Congestion data are from Texas Transportation Institute, “Table 12. Estimated Unit Costs of Congestion in 1994,” WWW document, URL <http://tti.tamu.edu/mobility>, (November 4, 1997). The population estimates for urbanized areas were developed by the Program Evaluation Division.

age.<sup>24</sup> The area has a lot of roads and cars and relatively low congestion. It is difficult for transit to compete for travelers when it is relatively easy to get around by car.

Considerable disagreement exists on the causes of urban sprawl and low density settlement patterns. Some people argue that government policy decisions, such as zoning laws, parking policies, gas tax levels, and the provision of transit, greatly affect settlement patterns. Under this point of view, a low population density should not deter the Twin Cities area from expanding transit services and introducing rail because the lack of an extensive transit system contributed to the area's settlement pattern. Furthermore, with government policies that support transit oriented development, additional transit services (including rail) could create the population density needed to support the system. A contrary point of view contends that consumer preference, income, geography, and time (i.e. when a city or section of a city developed), not government policies, are the major factors affecting settlement patterns. The transportation and planning literature is full of articles and studies that address this debate.<sup>25</sup> While the issue has very important policy implications for transit, it is beyond the scope of this report.

## Financing

When examining transit financing in our comparison group of 32 urbanized areas, we found that:

- **The Twin Cities transit system had a higher than average share of operating funds coming from dedicated taxes and an usually large share of these dedicated funds were from property taxes.**

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**In 1995, 45 percent of Metro Transit's operating funds came from dedicated property taxes.**

As Table 1.16 shows, about 45 percent of Metro Transit's operating funds came from property taxes, the sole dedicated funding source for the region. On average, the 31 urbanized areas (data are missing for Indianapolis) received about 32 percent of their operating funds from dedicated taxes. Income and sales taxes were the predominant source of dedicated taxes for the other systems. In fact, no other system was as reliant on property taxes as the Twin Cities. Buffalo was the closest with 8 percent of its operating funds coming from property taxes. Table A.1 in Appendix A provides dedicated tax data for each of the 31 urbanized areas.

We also found that:

- **Transit fares in the Twin Cities area were relatively high compared to other areas without rail.**

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<sup>24</sup> Cost of roadway congestion is based on the dollar value of time waiting in traffic and consuming extra fuel.

<sup>25</sup> Alan Black, *Urban Mass Transportation Planning* (New York: McGraw-Hill, Inc., 1995), 232-253; and Office of Technology Assessment, *Saving Energy in U.S. Transportation*, OTA-ET1-589 (Washington D.C., June 1994), 210-211. These sources provide nice summaries of the debate.

**Table 1.16: Taxes Dedicated for Transit in Comparison Areas, 1995**

	Dedicated Taxes as a Percentage of Operating Funds	Dedicated Property Taxes as a Percentage of Operating Funds
Average of 31 Urbanized Areas	32%	2%
Average of 11 Non-Rail Areas	53	6
Average of 20 Rail Areas	28	1
Metro Transit <sup>a</sup>	45%	45%
All Systems in the Twin Cities Area	43%	43%

NOTE: Detailed revenue data for Indianapolis was not available for 1995.

<sup>a</sup>Including its opt-out services.

SOURCE: Program Evaluation Division analysis of transit operating data from Federal Transit Administration, *Data Tables for the 1995 National Transit Database Report Year*, Tables 1, 2, 3, and 4 and from unpublished data from the Metropolitan Council's Transportation Division.

**In 1995, Metro Transit's fare revenue per rider was 65 cents, compared to an average of 55 cents in non-rail urbanized areas.**

As Table 1.17 shows, in 1995, fare revenue per rider was 65 cents for Metro Transit (including its opt-out services), just below the average for the 32 urbanized areas.<sup>26</sup> However, the average for the areas without rail was only 55 cents. Fare collections per rider were higher for rail systems. By their nature, rail systems provide a better ride, and riders are willing to pay more for this service. Furthermore, fare revenue per rider for Metro Transit increased in 1996, from 65 cents to 74 cents. Unfortunately, we do not have national data for 1996. Table A.2 in Appendix A provides fare data for each of the 32 urbanized areas. The FTA data also suggests that transit operators in the Twin Cities area received lower than average government subsidies per rider. However, because the FTA data for the Twin Cities area does not include paratransit and other high subsidy services that are reported by at least some of the other urbanized areas, it is unclear how the Twin Cities area ranked in terms of non-fare operating funds per rider. While Metro Transit had below average non-fare operating funds per rider, the region as a whole was above average.

## Performance

When examining performance of transit systems in our comparison group, we found that:

- **Operating cost per rider in the Twin Cities area was about average for bus services.**

<sup>26</sup> We made an adjustment to the data Metro Transit reported to the FTA. Metro Transit categories contract payments from opt-out communities as fare revenue in addition to the fares that it collects from passengers. We recategorized these contract payments as non-fare operating funds.

**Table 1.17: Fare and Non-Fare Operating Funds in Comparison Areas, 1995**

	Fare Revenue per Rider	Fare Revenue as a Percentage Operating Funds	Non-Fare Operating Funds per Rider	Non-Fare Operating Funds per Capita
Average of 32 Urbanized Areas	\$0.66	29.4%	\$1.60	\$68.60
Average of 12 Non-Rail Areas	0.55	23.8	1.76	37.10
Average of 20 Rail Areas	0.69	30.5	1.56	84.90
Metro Transit <sup>a</sup>	\$0.65	31.6%	\$1.41	\$38.60
Rank within 32 Urbanized Areas	13th Highest	10th Highest	24th Highest	22nd Highest
Rank within 12 Non-Rail Areas	3rd Highest	3rd Highest	9th Highest	6th Highest
All Systems in the Twin Cities Area	\$0.67	27.1%	\$1.79	\$52.02
Rank within 32 Urbanized Areas	13th Highest	15th Highest	14th Highest	16th Highest
Rank within 12 Non-Rail Areas	3rd Highest	4th Highest	5th Highest	3rd Highest

<sup>a</sup>Including its opt-out services. Metro Transit categorizes contract payments from opt-out communities as fares, we recategorized them as non-fare operating funds.

SOURCE: Program Evaluation Division analysis of transit operating data from Federal Transit Administration, *Data Tables for the 1995 National Transit Database Report Year*, Tables 1 and 26 and from unpublished data from the Metropolitan Council's Transportation Division. The population estimates for urbanized areas were developed by the Program Evaluation Division.

We limited our analysis of performance to bus services only. Different forms of transit (commuter rail, light rail, bus, demand responsive, etc.) have very different operating characteristics and serve different transit markets. A transit system's performance as a whole depends not only on how efficiently or effectively it is operating but on the mix of services that it provides. In addition, even though we provide data on bus services for areas with rail, comparing the Twin Cities area to areas without rail is a more objective analysis. Bus operations in areas with rail are generally relegated to less productive routes. However, areas with rail generally have higher population densities than areas without it. The higher population density may make their less productive routes more productive than the best routes in areas without rail.

### **The operating cost per bus rider in the Twin Cities area was about average.**

As Table 1.18 shows, Metro Transit's operating cost per rider was just below the average for areas without rail, but if other bus systems in the Twin Cities area (private operators and opt-out communities) are included, operating cost per rider was 5 percent above average in the Twin Cities area. However, with respect to operating cost per vehicle mile of service, Metro Transit was 19 percent higher than average while the whole bus system in the Twin Cities area was 13 percent higher than average. No matter which set of data is used (the FTA or region-wide), operating cost per rider in the Twin Cities area was closer to the average than was operating cost per vehicle mile of service. Metro Transit's high peak-to-base ratio explains part of this pattern. Metro Transit employs enough drivers to provide a lot of service during the commuting hours but has too many drivers for the rest of the day when the amount of service is reduced. As a result, Metro Transit has high operating costs relative to the vehicle miles of service that it provides. On the other hand, Metro Transit has high ridership per vehicle mile of

**Table 1.18: Performance of Bus Operations in Comparison Areas, 1995**

	Operating Cost per Rider	Operating Cost per Vehicle Mile	Operating Cost per Vehicle Hour	Peak to Base Ratio <sup>a</sup>	Riders per Vehicle Mile	Riders per Vehicle Hour
Average of 32 Urbanized Areas	\$2.10	\$5.52	\$74.44	1.97	2.63	35.41
Average of 12 Non-Rail Areas	2.02	4.59	64.55	2.07	2.23	31.35
Average of 20 Rail Area	2.12	5.90	78.24	1.93	2.79	36.96
Metro Transit <sup>b</sup>	\$2.05	\$5.46	\$75.79	2.74	2.67	36.99
Rank within 32 Urbanized Areas	21st Highest	14th Highest	14th Highest	The Highest	10th Highest	8th Highest
Rank within 12 Non-Rail Areas	9th Highest	2nd Highest	2nd Highest	The Highest	3rd Highest	3rd Highest
All Bus Systems in the Twin Cities Area <sup>c</sup>	\$2.17	\$5.19	\$74.78	N/A	2.39	34.42
Rank within 32 Urbanized Areas	17th Highest	16th Highest	14th Highest	N/A	15th Highest	11th Highest
Rank within 12 Non-Rail Areas	7th Highest	2nd Highest	2nd Highest	N/A	3rd Highest	3rd Highest

NOTE: N/A means data is not available.

<sup>a</sup>Directly operated services only. Excludes purchased services.

<sup>b</sup>Includes its opt-out services.

<sup>c</sup>Bus systems are Metro Transit, private operators, and opt-out communities.

SOURCE: Program Evaluation Division analysis of transit operating data from Federal Transit Administration, *Data Tables for the 1995 National Transit Database Report Year*, Tables 11, 26, and 28 and from unpublished data from the Metropolitan Council's Transportation Division.

service which results in relatively lower operating costs per rider. The high ridership per vehicle mile largely occurs because Metro Transit focuses its resources on the most productive hours of the day, peak commuting hours. Table A.3 in Appendix A provides performance data for each of the 32 urbanized areas.

## Trends

In order, to determine if the trends in transit service, financing, and performance that the Twin Cities area experienced are similar to the trends experienced elsewhere, we examined eight years of data. Our analysis is limited to 23 urbanized areas, 13 with rail and 10 without. The University of North Carolina's Center of Interdisciplinary Transportation Studies at Charlotte has compiled data from 1988 to 1995 from the FTA's National Transit Database.<sup>27</sup> However, the data are limited to the largest transit agency for each city. To keep our comparisons of the urbanized areas as representative as possible, we limited the analysis to only those urbanized areas where the largest agency carries at least 90 percent of the passengers in the urbanized area.<sup>28</sup>

<sup>27</sup> David T. Hartgen and Mark W. Horner, *Comparative Performance of Major U.S. Bus Transit Systems: 1988-1995 (Fourth Annual Report)* (Charlotte, NC: University of North Carolina Charlotte, May 30, 1997), Volume II: Data.

<sup>28</sup> In cases where an urbanized area contains two major cities and each has its own transit operator, we combined the two operators. This situation occurs in Dallas/Forth Worth and Portland/Vancouver.

When we compared trends in the level of service that was provided, we found that:

- **Even though other transit systems were struggling to maintain ridership, the loss of ridership was worse in the Twin Cities area than in most other places.**

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**Metro Transit's per capita ridership declined by 22 percent between 1988 and 1995, compared with a decline of about 6 percent elsewhere.**

As Table 1.19 shows, between 1988 and 1995, Metro Transit's per capita ridership declined by 22 percent while the average decline for the 23 areas was only 6 percent. While other systems were maintaining their per capita operating spending and significantly increasing per capita vehicle miles, Metro Transit was not. Metro Transit's reduced service may have contributed to the loss of riders. Obviously, the 1995 strike contributed to the lower levels; however, as described earlier, ridership, service, and spending in constant dollars did not significantly rebound in 1996, the year following the strike.

Of the 23 urbanized areas that we examined, nine areas did not experience a drop in per capita ridership between 1988 and 1995—Boston, Denver, Miami, Phoenix, Portland, Sacramento, Saint Louis, San Antonio, and San Jose. Table A.4 in Appendix A provides trend data on the size of transit services in each of the 23 urbanized areas. It is difficult to know exactly why these urbanized areas were able to maintain per capita ridership without a detailed study of each. Rail may have been a contributing factor. Seven of the nine systems had rail—only Phoenix and San Antonio did not. However, as explained earlier, the introduction of rail may artificially inflate ridership. In fact, six of these seven areas with rail introduced a new form of rail during or right before this period—Denver in 1994, Miami in 1984, Portland in 1986, Sacramento in 1987, Saint Louis in 1993, and San Jose in 1987. While introducing rail should boost ridership, it is impossible to tell how much ridership actually increased using data on unlinked trips. An

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**Table 1.19: Change in Size of Transit Systems in Comparison Areas, 1988 to 1995**

	Riders per Capita	Real Operating Cost per Capita	Vehicle Miles per Capita
Average of 23 Urbanized Areas	-6.4%	1.2%	10.4%
Average of 10 Non-Rail Areas	-12.3	-0.6	17.7
Average of 13 Rail Areas	-3.6	2.8	8.1
Metro Transit <sup>a</sup>	-22.3%	-6.4%	-3.6%
All Systems in the Twin Cities Area	-20.5%	1.7%	N/A

NOTE: N/A means data is not available.

<sup>a</sup>Includes its opt-out services.

SOURCE: Program Evaluation Division analysis of transit operating data from David T. Hart and Mark W. Horner, *Comparative Performance of Major US Bus Transit Systems: 1988-1995 (Volume II: Data)*, (Charlotte, NC: University of North Carolina at Charlotte, 1997) and from unpublished data from the Metropolitan Council's Transportation Division. Population estimates for urbanized areas were developed by the Program Evaluation Division. The dollar figures were converted to constant dollars using a chain-type price index for state and local government expenditures and gross investment that was provided by the Minnesota Department of Finance.

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increase in unlinked trips may only reflect an increase in transfers rather than an actual increase in ridership.

An expanding system can also explain growing ridership. San Antonio and Boston—two of the three remaining systems—experienced the largest increase in per capita service of all 23 areas. Boston increased vehicle miles of service by 55 percent, and San Antonio increased it by 56 percent. Phoenix—the remaining area—is an anomaly. It increased its per capita ridership by 42 percent (the largest increase of all 23 urbanized areas) but only increased its per capita service by 19 percent. In addition, it does not have rail. Phoenix did have the second biggest reduction in fare revenue per rider of all 23 urbanized areas and the biggest increase in riders per vehicle mile of service. Lower fares entice more people to use transit.

As described earlier in the report, the growth in transit in the Twin Cities area has occurred outside of Metro Transit. Considering all transit operations, the region maintained spending and service in constant dollars and per capita terms. Nevertheless, per capita ridership still declined at a rapid pace, a 21 percent decline. Thus, each vehicle mile of service that the region provided in 1995 carried fewer riders than in prior years.

When comparing trends in transit financing, we found that:

- **Metro Transit's fare revenue per rider in inflation-adjusted dollars increased faster than fares in other urbanized areas.**

As Table 1.20 shows, Metro Transit increased its fare revenue per rider by 16 percent between 1988 and 1995 while the 10 urbanized areas without rail, on average, increased their fare revenue per rider by 6 percent. Nevertheless, fares became a declining share of Metro Transit's total operating funds during this period because non-fare operating funds per rider increased even faster. However, as described earlier in the report, Metro Transit had particularly low fare revenues per rider in 1995 compared to 1996. In fact, fare revenues per rider increased faster than non-fare operating funds between 1992 and 1996, as Table 1.8 showed. Table A.5 in Appendix A provides trend data on fare revenues for each of the 23 urbanized areas.

When we examined trends in transit performance, we found that:

- **Between, 1988 and 1995, Metro Transit's bus ridership per vehicle mile of service declined by 17 percent, compared with a 10 percent decline for urbanized areas without rail.**

Table 1.21 displays trends in some key performance indicators. Just like previous comparisons of performance, we focused our analysis on bus operations in urbanized areas without rail. Even though Metro Transit's 17 percent decline was bigger than the average decline, Metro Transit only had only the fifth largest decline among the 10 areas. The strong performance of Phoenix, which experienced a 48 percent increase, significantly offset the weaker performance in other cities. Table A.6 in Appendix A provides trend data on bus performance for each of the 23 urbanized areas.

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**Metro Transit increased its fare revenue per rider by 16 percent between 1988 and 1995.**

**Table 1.20: Change in Fare and Non-Fare Operating Funds in Comparison Areas, 1988 to 1995**

	Real Fare Revenue per Rider	Real Non-Fare Operating Funds Per Rider
Average of 23 Urbanized Areas	11.7%	1.6%
Average of 10 Non-Rail Areas	6.4	10.3
Average of 13 Rail Areas	12.8	-1.0
Metro Transit <sup>a</sup>	15.8%	19.7%
All Systems in the Twin Cities Area	N/A	N/A

NOTE: N/A means data is not available.

<sup>a</sup>Including its opt out services. Operating funds reported by the University of North Carolina (UNC) at Charlotte were significantly different than the funds that the Met Council said were reported to the National Transit Database. We replaced the UNC data with the Met Council data. In addition, we adjusted the fare data for Metro Transit. Metro Transit categorizes contract payments from opt-out communities as fare revenue, we recategorized these payments as non-fare operating funds.

SOURCE: Program Evaluation Division analysis of transit operating data from David T. Hartgen and Mark W. Horner, *Comparative Performance of Major US Bus Transit Systems: 1988-1995 (Volume II: Data)*, (Charlotte, NC: University of North Carolina at Charlotte, 1997) and from unpublished data from the Metropolitan Council's Transportation Division. The dollar figures were converted to constant dollars using a chain-type price index for state and local government expenditures and gross investment that was provided by the Minnesota Department of Finance.

**Metro Transit has experienced a higher than average loss of bus riders per mile of service.**

The higher than average loss of bus riders per vehicle mile of service decreased the cost effectiveness of Metro Transit's service. As Table 1.21 shows, the cost of providing each vehicle mile of service held steady in inflation-adjusted dollars for Metro Transit and the operators in the other areas, but Metro Transit's operating cost per rider increased a lot faster—18 percent compared to 8 percent. Even though Metro Transit operated its buses at a lower cost per vehicle mile in 1995 than earlier years, it had to drive farther and longer to generate ridership. As a result, the cost per rider increased. This pattern is worse if the other bus operators (private operators and opt-out communities) in the region are included. While the cost of providing bus services declined by 9 percent, the cost of carrying each passenger increased by 22 percent. This occurred because ridership per vehicle mile of service declined by nearly 26 percent.

## SUMMARY

National data indicate that the Twin Cities area has below average transit ridership per capita when compared with other metropolitan areas of similar size. In addition, transit ridership appears to be declining faster here than in most other large metropolitan areas across the country.

However, transit ridership in the Twin Cities area ranks higher than one might expect based on the area's characteristics. The Twin Cities area has more roads and automobiles per capita than most metropolitan areas and relatively low levels

**Table 1.21: Change in Performance of Bus Operations in Comparison Areas, 1988 to 1995**

	Riders per Vehicle Mile	Real Operating Cost per Vehicle Mile	Real Operating Cost per Rider
Average of 23 Urbanized Areas	-6.2%	2.1%	6.8%
Average of 10 Non-Rail Areas	-9.5	-2.2	7.5
Average of 13 Rail Areas	-4.0	4.9	6.4
Metro Transit <sup>a</sup>	-17.0%	-1.7%	18.4%
All Bus Systems in the Twin Cities Area <sup>b</sup>	-25.8%	-9.2%	22.4%

NOTE: Averages are unweighted.

<sup>a</sup>Including its opt-out services.

<sup>b</sup>Bus system means Metro Transit, private operators, and opt-out communities. It excludes para-transit services.

SOURCE: Program Evaluation Division analysis of transit operating data from David T. Hartgen and Mark W. Horner, *Comparative Performance of Major US Bus Transit Systems: 1988-1995 (Volume II: Data)*, (Charlotte, NC: University of North Carolina at Charlotte, 1997) and from unpublished data from the Metropolitan Council's Transportation Division. The dollar figures were converted to constant dollars using a chain-type price index for state and local government expenditures and gross investment that was provided by the Minnesota Department of Finance.

of roadway congestion. In addition, the Twin Cities has relatively high transit fares which discourages the use of transit and a low population density which makes it more difficult to provide efficient and effective transit services.

Despite these barriers, the Twin Cities area ranked in the top one-third of metropolitan areas in the percentage of commuters using transit in 1990. In addition, even though operating cost per bus rider in the Twin Cities area increased faster than average in comparison to other areas, it was about average in 1995.

**Metro Transit's performance has declined in comparison to bus operations in other areas.**

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# Policy Issues in the Twin Cities Area

## CHAPTER 2

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**T**he continuing decline in transit ridership in the Twin Cities area should concern policy makers. When the Legislature increased the Metropolitan Council's transit appropriation by nearly \$10 million from the 1996-97 biennium to the 1998-99 biennium, it also set a ridership goal of 131 million riders for the current biennium, more than a 2 million rider increase from the previous biennium.<sup>1</sup> However, it remains to be seen if the Council can stop the decline in ridership, let alone increase it, with these additional resources. As shown in Chapter 1, additional resources did not increase ridership in the Twin Cities area between 1987 and 1996. In order to understand the prospects of better ridership performance in the Twin Cities area, we address the following questions in this chapter.

- **Why has transit ridership declined in the Twin Cities area?**
- **What is the Metropolitan Council's strategy to improve transit services and increase ridership?**
- **How should success in addressing the ridership issue be measured?**

### CAUSES OF DECLINING RIDERSHIP

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**Several factors help explain the decline of transit use in the Twin Cities area.**

We have some idea of why transit ridership is dropping in the Twin Cities area. However, we cannot say why it is dropping faster here than elsewhere because we have not reviewed detailed data on the other urbanized areas. As described earlier, the drop in ridership for the Twin Cities area is not limited to the last several years. As Figure 1.4 showed, ridership has been on a downward path since 1947, with some limited periods of growth, most notably the 1970s. Any policy designed to increase ridership, or at least stem the decline, must confront the automobile dependency of the Twin Cities area.

In general, people do not choose transit for most trips. In some locations of the Twin Cities area, transit service is not provided, and in other locations, it is not always available when it is needed. Furthermore, a rider may be required to

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<sup>1</sup> *Minn. Laws* (1997), ch. 159, art. 1, sec. 3, subd. 3. The \$10 million increase in funding does not include the \$2 million pass-through funding for welfare-to-work initiatives sponsored by the counties. In addition, the 131 million ridership goal excludes opt-out services provided by private operators because they do not receive any funds from state appropriations.

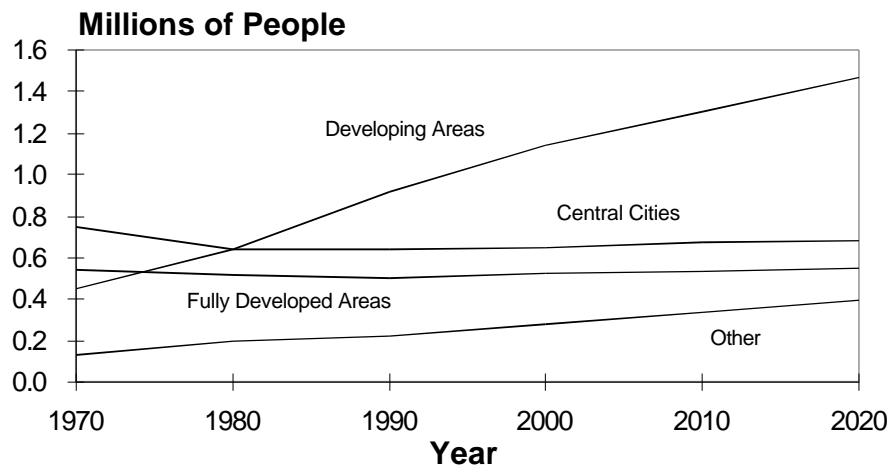
transfer at least once, and frequent stops may lengthen the travel time. For many people, these factors outweigh any cost advantage that transit may have over car use and ownership. Several demographic, social, economic, and policy changes have occurred in the last couple of decades that have tipped the scales even more in favor of the automobile.

## Demographic Changes

The Twin Cities area is becoming more suburban. While the central cities (Minneapolis and St. Paul) are important origins and destinations for trips, they do not account for as large a share of trips as they once did. As Figures 2.1 and 2.2 show, the central cities experienced little or no growth in population and employment in the last two and one-half decades. The developing suburbs have seen and will continue to see a large share of the region’s population and employment growth. As a greater share of people and jobs are located in the

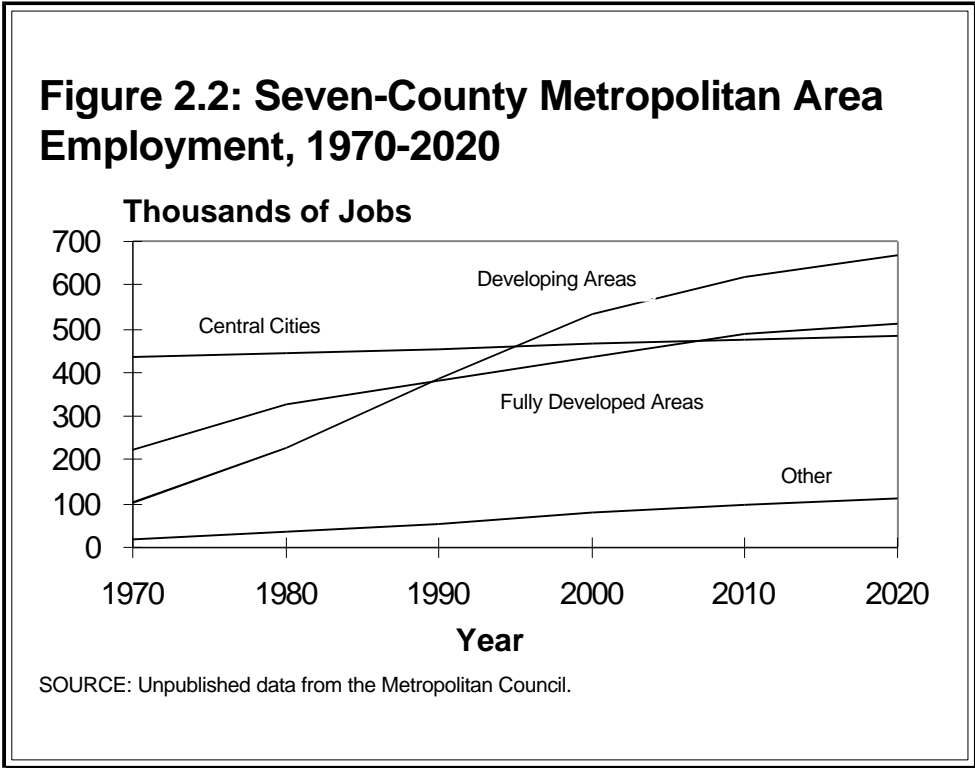
**The Twin Cities area is becoming more suburban.**

**Figure 2.1: Seven-County Metropolitan Area Population, 1970-2020**



SOURCE: Unpublished data from the Metropolitan Council.

suburbs, a greater share of trips will occur within and between these suburbs rather than within, to, or from the central cities. As Table 2.1 shows, the percent of trips within the region involving the central cities as an origin or destination declined from 49 percent in 1970 to 32 percent in 1990; however the actual number of daily trips involving the central cities actually increased from 2.5 million to 2.8 million. The settlement patterns and population densities of suburban areas are not as conducive to transit as those of the central cities. Transit works best when it connects and travels through areas of high population and employment density. When transit serves thinly developed areas, vehicles have to travel farther and longer to generate ridership. As the metropolitan area’s transit system has tried to serve growing suburban areas with a growing share of



its resources (as reflected in the growth of opt-out communities), the region’s average ridership per vehicle mile of service has declined, and its cost per rider has risen. However, as discussed in Chapter 1, some people argue that a combination of transit and government policies that encourage transit oriented development can create the densities necessary to make transit efficient and effective. A contrary point of view contends that consumer preference, income, geography, and time (i.e. when a city or section of a city developed), not government policies, are the major causes of settlement patterns.

**A smaller share of trips involve travel in the central cities.**

**Table 2.1: Travel Within the Twin Cities Metropolitan Area**

	Daily Trips in 1970	Daily Trips in 1990
Regional Total	5,095,040	8,860,660
Minneapolis or St. Paul as Origin or Destination	2,472,113	2,837,164
Minneapolis and St. Paul as Percentage of Total	48.5%	32.0%

SOURCE: Program Evaluation Division analysis of data from Metropolitan Council, *A Summary Report of Travel in the Twin Cities Metropolitan Area* (St. Paul, April 1974) and Metropolitan Council, *1990 Travel Behavior Inventory Summary Report* (St. Paul, June 1994).

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**Social and economic changes have encouraged the use of automobiles and negatively affected transit ridership.**

## Social Changes

Important social changes have also occurred in the region over the last two decades. The percentage of families with two or more workers increased from 38 percent in 1970 to 69 percent in 1990.<sup>2</sup> With two members working, families have less time for other responsibilities such as shopping and taking clothes to the dry cleaners. As a result, people are making their commute home a multi-task trip, stopping at the grocery store and dry cleaners and picking up the kids from day care. The flexibility of a car makes it more convenient than transit when making these multi-task trips. In fact, the percentage of households with two or more cars increased from 33 percent in 1970 to 65 percent in 1990.<sup>3</sup> This evidence suggests that many families are finding two cars a necessity and, having invested in two cars, do not rely on transit.

## Economic Changes

Over the last couple of decades, families have been increasingly able to afford two cars because per capita personal income in the Twin Cities' metropolitan area was increasing. Between 1970 and 1994, it increased by 43 percent in inflation-adjusted dollars. Between 1987 and 1994, it increased by 5 percent.<sup>4</sup> As transit competes with cars for ridership, cost is a major factor in people's decisions. A car is expensive, considering the cost of buying it and paying for insurance, maintenance, parking, and gas. For people who already have a car, the cost of gasoline is an important factor in the decision to use the car or transit. Between 1970 and 1996, the price of gasoline dropped by 6 percent in inflation-adjusted dollars. Between 1987 and 1996, it dropped by 4 percent.<sup>5</sup> As the price of gasoline drops, cars become cheaper to drive and fewer people use transit. As Figure 2.3 reflects, a strong correlation exists between gas prices and transit ridership.

## Policy Changes

Decisions on funding, service levels, resource allocation, service type, and financing mechanisms also affect transit use. One important decision made in the metropolitan area was to improve suburban service in response to complaints that it was not commensurate with the suburban communities' transit tax contributions. This led to transit growth in the opt-out communities. Another important decision was to improve service for some of the most transit dependent populations, the elderly and disabled, by expanding Metro Mobility's budget in the late 1980s. Given finite transit resources, these decisions have restrained the growth of Metro Transit. In fact, staff at the Metropolitan Council believe that the

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2 Metropolitan Council, *1990 Travel Behavior Inventory*, (St. Paul, June 1994), 7.

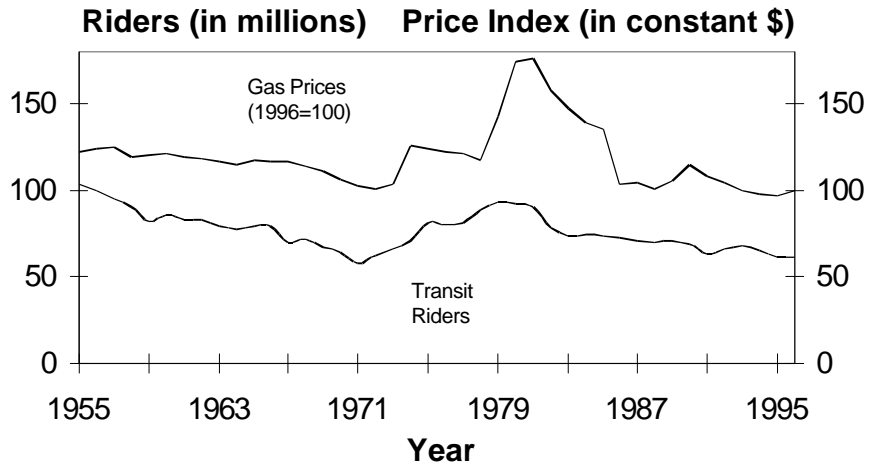
3 *Ibid.*, 8.

4 Unpublished data from the Metropolitan Council.

5 Bureau of Labor Statistics, WWW document, URL <http://www.stats.bls.gov>.

**Transit ridership and gasoline prices have both declined in recent years.**

**Figure 2.3: Metro Transit Riders and Gas Prices, 1955-96**



SOURCE: Metro Transit and Bureau of Labor Statistics.

growth of these other services came at the expense of the urban core and overall ridership, and we found some evidence to support this conclusion.

**Service has been reduced on some of Metro Transit's most productive routes, while suburban service has grown.**

Metro Transit's operating budget (excluding the services that it provides to opt-out communities) declined in real terms by nearly 5 percent between 1987 and 1996 while the region's budget as a whole increased by 11 percent. (However, it should be pointed out that Metro Transit's vehicle miles of service increased by 6 percent during this period.) In addition, some of the region's most productive routes have experienced a reduction in service. For example, vehicle miles of service on Route 16 (once the region's most highly traveled route)—which runs along University Avenue between downtown Minneapolis and downtown St. Paul—was cut by 17 percent between 1987 and 1996. Expanded express service between downtown Minneapolis and downtown St. Paul along Interstate 94 has substituted for some of this service. However, when these express routes (94B, 94C, and 94D) are combined with Route 16, vehicle miles of service still declined by 8 percent and ridership declined by 30 percent. We examined a few of the other urban local routes that are highly traveled. In these other cases, we had difficulty disentangling true service reductions from route restructuring and expansion of competing routes. For example, Route 5—which currently runs between the Mall of America and Brooklyn Center via downtown Minneapolis—lost 28 percent of its vehicle miles of service between 1987 and 1996; however, the Metropolitan Council truncated the route at the Mall of America and Brooklyn Center when the Council created transit hubs at these points. The Council reallocated service that



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**Increased transit fares may have caused a decline in transit ridership.**

used to be provided by Route 5 to new suburban local routes that feed into the transit hubs.<sup>6</sup> Putting these ambiguous cases aside, evidence exists that some of the regions most productive routes have lost service. With limited resources, ridership will fall if resources are reallocated from routes that have high ridership per vehicle mile (urban local) to routes that generate fewer riders (opt-out and Metro Mobility).

Another cause of declining ridership may be the region's fare policy. Between 1987 and 1996, fare revenue per rider for Metro Transit (excluding its opt-out service) increased by 22 percent in inflation-adjusted dollars. Some of the increase can be explained by fare increases, and some of it can be explained by the expansion of express services, which have a higher fare per passenger. Transit experts generally agree that a 10 percent increase in fares leads to a 2 to 4 percent decline in ridership. When people make a decision to use transit or another mode of transportation, they factor in the cost of using transit (the fare). In order to boost ridership, or stem the decline, policy makers have the option of reducing fares; however, such a policy would require greater subsidies or a reduction in service somewhere in the system.

## **METROPOLITAN COUNCIL STRATEGY FOR TRANSIT**

We inquired into the Council's plans to address transit needs, improve transit operations, and increase ridership in the Twin Cities area. We asked:

- **What is the Council's overall conceptual design for transit in the Twin Cities area?**
- **What is the level of capital and operating spending that the Council has asked for in order to implement its "vision for transit?"**
- **In the near term, how does the Council propose to improve ridership and achieve the statutory 131 million ridership goal for the 1998-99 biennium?**

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**The Council's conceptual design for transit includes inter-connected downtown and suburban hubs.**

### **Vision for Transit**

The Council's vision for transit was first articulated in the early 1990s by the Regional Transit Board (RTB).<sup>7</sup> The term "vision for transit" comes from a 1991 report of the same name by the RTB proposing capital and service improvements for the period 1992 to 1996, and the concept was adopted by the Metropolitan

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<sup>6</sup> This analysis of urban local routes is based on unpublished data provided by the Metropolitan Council.

<sup>7</sup> The Regional Transit Board was established in 1984 to do short and mid-range transit planning, contract for transit services, and review and approve transit budgets. In 1994, the RTB and the Metropolitan Transit System (now called Metro Transit) were merged with the Metropolitan Council, and the RTB no longer exists as a separate organizational entity.

## Figure 2.4: Vision for Transit Concept

SOURCE: Regional Transit Board.

Council in 1992.<sup>8</sup> The vision for transit lays out a general design around which facilities and services are to be built. Figure 2.4 presents the Council's vision for transit concept. The key elements of the vision for transit are: interconnected transit hubs in the two downtowns and about 17 mostly suburban locations; transit services associated with the hubs, including circulator routes feeding the hubs and express routes linking the hubs with downtown centers and one another; park and ride lots at the hubs and elsewhere; and transitways connecting concentrations of population and employment. In the early 1990s, it was contemplated that light rail transit would link the two downtowns and run south

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<sup>8</sup> The Regional Transit Board, *Vision for Transit*, (St. Paul, 1991), and The Metropolitan Council, *Regional Transit Facilities Plan*, (St. Paul, February 1992). Subsequent RTB reports were produced called *Vision '97*, and *Vision '99* that cover later five-year periods.

along Interstate 35W. This idea has receded in the absence of needed financing. Now, dedicated transitways for buses or (conceivably) light rail are being discussed for three routes. One route, along Hiawatha from downtown Minneapolis to the airport, appears likely to be built.

At a conceptual level, we think the vision for transit makes sense because the Twin Cities area, like most metropolitan areas, is becoming multi-centered and spread out, rather than oriented to one or two dominant centers that are the origin or destination for most trips. As discussed earlier, while the two downtowns are still important centers, they account for a declining share of the region's trips.

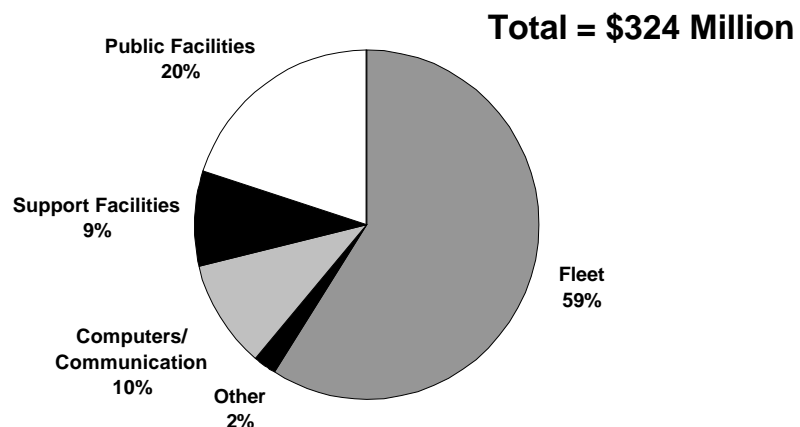
## Capital Improvement Program

**The Council has proposed a capital improvement program that will require substantial new funding.**

The Council has proposed a \$324 million dollar regional transit capital improvement program for the five years 1998 to 2002. As Figure 2.5 shows, about 59 percent of this amount is proposed for fleet replacement and about 20 percent for public facilities including park and ride lots, transit hubs, passenger shelters, bus shoulder lanes, and meter bypasses. Support facilities account for about 9 percent of the \$324 million, nearly all of which would be spent to replace the Snelling Avenue Garage which several studies have described as outmoded. Most of the remaining capital improvement funds would be spent on a new transit communications center and communications system.

This capital improvement program would require considerable new funding authorization; only about \$96 million of the \$364 million is currently authorized. It also goes beyond the \$48 million per year listed in the Council's Transportation Policy Plan (TPP) as annual capital investment requirements for all regional transit providers. However, the percentage breakdown presented in the TPP

**Figure 2.5: Twin Cities Regional Transit Capital Improvement Program, 1998-2002**



SOURCE: Metropolitan Council, *Proposed Transit Improvement Program: 1998-2002* (St. Paul, September 29, 1997), 3.

between fleet, public facilities, support facilities and communications is very similar to the capital improvement program just described.

## Operating Spending

Metropolitan Council staff feel that transit has declined in the Twin Cities because operating funding has not grown sufficiently to preserve the system and make needed enhancements. They point out that federal operating support has declined, and property tax revenue has grown slowly. The Legislature has not provided the funds they have requested, even though their requests have been tempered by political reality and are already lower than amounts they feel are needed. According to staff, in the 1994-95 biennium, the Council asked for \$77.8 million and received \$69.1 million in state funding for transit. In the 1996-97 biennium, they asked for \$93.3 million and got \$89 million of which \$6 million came in 1997 and was not as useful as if it had come in the first year of the biennium. In the 1998-99 funding process, the Council asked for \$112 million, and received \$98.7 million plus \$2 million for welfare-to-work transit projects that was to be passed through to counties. For informational purposes, the Council also presented an expanded request for \$122 million. This is the amount of state operating support they feel they need on an biennial basis to preserve the transit system and provide needed enhancements described in the vision for transit.

As we pointed out in Chapter 1, regional transit has lost federal operating support. Support fell by more than half between 1991 and 1995. But the Council has actually received state funding that more than replaced the loss of federal support. In constant dollars, state support grew from \$26 million in 1991 to \$43 million in 1996, an increase of 64 percent. Considering all sources, transit operating funds grew 8.6 percent from 1991 to 1996. If we look just at Metro Transit, state operating funds grew 106 percent in real dollars between 1991 and 1996, and property tax revenues nearly kept up with inflation. In total, Metro Transit operating funds grew 6.4 percent. However, as we saw in the last chapter, ridership continued to decline during the period.

The Council does not think it has received enough funding, but it has, in fact, experienced positive growth in state and local revenues that more than makes up for the loss of federal operating support. Thus, the loss of ridership during the period can not be attributed to a decline in transit spending. This being the case, the Council needs to make a stronger case for additional spending than it has heretofore. The Council's request for additional funding to the Legislature last year projected ridership growing from about 129 million passengers to 131 million during the current biennium primarily as a result of "service preservation," meaning no fare increases or further service cuts. In the face of national and local data showing a decline in ridership per revenue mile of operations, just keeping service and fares unchanged may not produce new riders.

It may be that the Council needs to make a case for increased transit spending even in the face of declining ridership. There is a substantial percent of the population for whom transit is not an option, but a practical necessity. Even if the size of this population is declining, and even if ridership on productive inner-city routes is declining, a transit system is still needed by many people.

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**Over the last several bienniums, the Council has not received the operating funds it has requested.**

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**However, growth in state and local revenues has more than compensated for the decline of federal support in recent years.**

## Strategy to Improve Performance

In 1996, the Council published a planning document called Transit Redesign that addresses the issue of improving transit operations. While it remains to be seen if the redesign strategies actually work in the face of larger economic and social forces working against transit success, many of the proposed strategies make sense in our view.

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**The Council's "Transit Redesign" contains a number of promising strategies.**

Transit Redesign starts with the recognition that "transit is slowly losing relevance in the Twin Cities metropolitan area."<sup>9</sup> The redesign strategy defines several transit markets and recommends matching different services with the market areas. For example, regular route transit is appropriate in areas and corridors that meet criteria of population or employment density. A large part of the central metropolitan region can sustain frequent service up to 24 hours a day, seven days a week. Other parts can support peak period service, or weekday service with longer time intervals.

Another key element of the redesign is measuring performance for each type of service and identifying performance that is too far below average for the service category. Two performance measures are used for this purpose, subsidy per passenger (operating costs funded from sources other than transit operations) and passengers per revenue hour.

The Council also has announced its intention to foster a more competitive transit environment. Routes that are not performing well can become candidates for contracting out. The use of competitive contracting is limited by law and it is not well suited to every situation, but private companies generally operate with a lower cost structure and more permissive work rules than Metro Transit.

Finally, the Council would like to reduce its reliance on the property tax to finance transit. The gasoline tax, used in some other states, is not available in Minnesota because of a constitutional provision reserving its use for highway improvements. The Council would like to see the sales tax used, as it is in some other areas. The region's reliance on the property tax for financing transit is higher than any other metropolitan area as we pointed out in Chapter 1.

In addition to the Transit Redesign document, Metro Transit published a "Business Plan" in November 1996 that is designed to put transit redesign into operation. Furthermore, a new general manager for Metro Transit was hired in early 1997 after a period of problems in the organization including a strike in 1995. It is too soon to tell how successful the Council and Metro Transit will be in reversing the decline of transit in the Twin Cities and implementing the reforms known as transit redesign. The numbers reviewed in this report, most of which pertain to earlier years, do not reflect more recent efforts.

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<sup>9</sup> Metropolitan Council, *Transit Redesign*, (St. Paul, 1996), 1.

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**The economics of public transit are influenced by many factors outside the control of transit planners.**

## Other Policy Options

The Metropolitan Council has long advocated land use policies designed to control suburban sprawl and promote economical infrastructure investments in the metropolitan region. The council has tried to use its powers and influence to promote local land use decisions that encourage pedestrian-oriented development and the effective use of transit. In addition, the Council and MnDOT have collaborated in developing congestion pricing ideas.

Effective policies could promote the use of transit by making automobile use less attractive or more expensive. Earlier we noted that transit use increased when the price of gasoline increased in the 1970s. The Legislature, the region, or individual cities could increase the cost of automobile use through higher parking fees or restrictions on parking; through higher gasoline taxes; or through zoning provisions favoring higher population density. We have low automobile ownership costs compared to many European countries and higher automobile use.

These and other policy tools that go beyond the administrative responsibility of transit operators and planners need to be considered. It must be noted, however, that the effectiveness of land use planning as it has been practiced in the metropolitan area over the years is questionable. The Council was established about 30 years ago to control suburban development, and, as we have seen in Chapter 1, the Twin Cities remains one of the nation's least densely settled urban areas of its size. If history is a reliable guide, it is unreasonable to suppose that the current approach to land use policy will materially change the market for transit in the Twin Cities anytime soon.

An adequate analysis of broader policy options was outside the scope of our study. In the area of transit policy, the Council has two major policy options to improve ridership: expanding and improving the system (adding light rail is one option) and reducing fares. Both of these options may require greater governmental financial support. The Council may succeed in obtaining more capital or operating funds for transit in the Twin Cities area, but the likelihood is that it will not be orders of magnitude more than we have seen in recent years, so change will be incremental and difficult choices will have to be made among desirable projects.

- **A good case can be made for treating the needs of people dependent on public transit as a higher priority than those for whom transit is an option.**

The core area of the Twin Cities is best able to support frequent regular route service covering most of the area. In addition, services in these areas serve the transit dependent. A substantial majority of households without automobiles live

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**There are at least two distinct challenges to transit planners: serving the transit-dependent and reducing congestion.**

in the central cities.<sup>10</sup> This is the most productive transit area from the standpoint of the subsidy required per rider. By this logic, it should be the area that receives prioritized investment of transit resources.<sup>11</sup> The limitations of this approach is that people for whom transit is not an option are going to be riding the system anyway; if transit ridership is to be expanded, then optional users have to be the target of efforts to expand ridership. Getting people out of cars is a fundamentally different goal than serving the transit dependent.

So, policy makers face a difficult choice. In the short run, transit benefits are tied to ridership, and it would seem to make no sense to subsidize riders at \$3 dollars per ride (typical of many express routes) if some urban local routes require a subsidy of only fifty cents per rider. On the other hand, it costs less per hour to operate many suburban routes, and operating a wider system may ultimately develop riders for the future.

Finally, we conclude:

- **The case for greatly increased transit spending has not been well made in recent years.**

If a successful case is to be made to the Legislature, a plan that translates the conceptual “vision” into concrete projects with costs and benefits will have to be provided. It is quite difficult to tell from the planning documents we reviewed exactly what is proposed to improve the system and achieve the vision. What is needed is a status report on what has been built and what is operating. For example, how many of the proposed hubs have coordinated circulator service, or how many are connected with other hubs? How has service improved in terms of ridership or other measures because of these changes?

The Council and in earlier years, the Regional Transit Board, have published volumes of plans and studies that appear to be similar or subtly different. There is a discontinuity between the concepts in the Vision for Transit or the Transit Redesign and the projects that are actually being funded. By all appearances, regional transit planners have focused on maintenance of daily operations or crisis management, rather than the development and pursuit of a long term plan to build the system that the region needs.

The Transit Redesign document calls for specific strategies such as contracting out routes, restructuring routes, and improving communications. This document can provide a useful framework for reporting progress in the future.

## MEASURING SUCCESS

Whether evaluating the success of transit redesign or the prospect of light rail transit, we recommend that:

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<sup>10</sup> Metropolitan Council, *Twin Cities Transportation System Performance Audit: Draft Report*, (St. Paul, December 1997), 4-11.

<sup>11</sup> The Transit Redesign plan says as much on page II-12.

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**The current method for measuring transit ridership needs to be changed.**

- **The Metropolitan Council should publish data on ridership measured in linked trips, as well as unlinked trips.**

As the discussion of Atlanta's transfer rate in Chapter 1 demonstrates, unlinked trip data can be very misleading. An increase in unlinked trips may only reflect additional transfers rather than greater ridership. In fact, some people suspect that the transit redesign that the Metropolitan Council has been carrying out for the last couple of years is increasing the transfer rate in the Twin Cities area. As part of this effort, the Council is truncating radial routes at newly created transit hubs and creating feeder bus networks in the suburbs to support the hubs. While such a policy makes sense in order to better serve suburban communities and their low population densities, the policy will increase the transfer rate. For example, in the last year, the Council improved bus services in the area of St. Paul Park, Cottage Grove, and Newport by creating a feeder bus network to support a radial route running into downtown St. Paul. In the first month of operations, the number of daily unlinked trips jumped by 200 from 500 to 700. Transfers accounted for 100 to 150 of the additional unlinked trips. Furthermore, as Table 2.2 shows, we found that:

- **Metro Transit's transfer rate started to increase in 1994 after remaining nearly constant for two decades.**

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**Table 2.2: Metro Transit Linked and Unlinked Ridership (Millions), 1980-96**

	<u>Unlinked Trips</u>	<u>Linked Trips</u>	<u>Transfers</u>	<u>Transfer Rate</u>
1980	92.7	72.1	20.6	28.6%
1981	90.5	70.3	20.2	28.8
1982	78.0	63.8	14.2	22.3
1983	73.8	57.3	16.5	28.8
1984	74.4	57.8	16.6	28.7
1985	73.7	57.4	16.3	28.5
1986	72.9	56.8	16.1	28.3
1987	70.8	54.9	15.8	28.8
1988	71.2	55.9	15.3	27.4
1989	70.8	55.0	15.8	28.6
1990	69.5	54.4	15.1	27.7
1991	65.3	50.7	14.6	28.9
1992	66.2	51.5	14.7	28.5
1993	66.5	51.7	14.9	28.8
1994	65.5	49.8	15.6	31.3
1995	61.1	46.8	14.3	30.5
1996	61.9	46.4	15.4	33.2

NOTE: Figures include opt-out service provided by Metro Transit.

SOURCE: Unpublished data from the Metropolitan Council's Transportation Division and Metro Transit.

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The result is that ridership is becoming artificially inflated.<sup>12</sup> In fact, between 1995 and 1996, Metro Transit's ridership, as measured in linked trips, fell by 0.4 million while the number of unlinked trips rose by 0.8 million. While we support the Council's effort to improve service through its transit redesign, we believe that ridership must be accurately measured by using data on linked trips. This recommendation has bearing on the Legislature's desire to have unlinked trips increase by over 2 million during the 1998-99 biennium. If the area's transfer rate continues to increase as a result of the Council's transit redesign, it is possible that this goal could be achieved without increasing the number of linked trips.

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<sup>12</sup> The increase in the transfer rate in 1994 may be partially due to the fact that Metro Transit directly counted transfers for the first time. In prior years, Metro Transit estimated the number of transfers. However, the transfer rate increased even more in 1996, well after Metro Transit started directly counting transfers.



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# Transit and Highway Planning

## CHAPTER 3

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**L**ike many metropolitan areas across the country, the Twin Cities has experienced strong growth in automobile use, declining transit use, and growing congestion. Planners here and elsewhere have forecast further growth in congestion. They have also concluded that it is either not possible or would be very costly to build enough highways to eliminate congestion.

But congestion has a real economic impact by increasing travel time for people and by increasing fuel usage. Researchers have estimated that the cost of congestion in the Twin Cities area in 1994 was \$620 million, or about \$290 per person. These figures are up sharply from the \$325 million, or \$176 per person, estimated for 1986.<sup>1</sup>

This chapter examines the region's long-range plans for dealing with congestion and other transportation problems. We are particularly concerned with whether the Metropolitan Council and the Minnesota Department of Transportation (Mn/DOT) have appropriately analyzed the various transit and highway options available to deal with growing congestion. The following questions are addressed in this chapter:

- **What are the Metropolitan Council's long-range plans for transit and highways? What are Mn/DOT's plans for metropolitan area highways?**
- **What are the Council's forecasts for changes in vehicle traffic and transit use over the next 20 years?**
- **What are the strengths and weaknesses of the region's long-range transportation plans?**
- **What lessons can be learned from experience with transit and highways here and elsewhere?**

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<sup>1</sup> Texas Transportation Institute, "Urban Mobility Study," October 1997, WWW document, URL <http://tti.tamu.edu/mobility/>, (November 4, 1997). These estimates are based solely on the miles of major highways in metropolitan areas, as well as the volume of traffic on the highways. They do not consider a metropolitan area's actual experience with congestion, the distribution of traffic over the hours of a day, or the traffic management tools such as metered freeway ramps which might be used to reduce the severity of an area's congestion problem. The estimates for 1986 differ from published figures because we converted the 1986 estimates to 1994 dollars.

- **What changes are needed in long-range transportation planning in the Twin Cities metropolitan area?**

## LONG-RANGE PLANS

In the Twin Cities metropolitan area, the key long-range planning documents are the Transportation Policy Plan (TPP) prepared by the Metropolitan Council and the Transportation System Plan (TSP) prepared by the Metro Division of Mn/DOT. The TPP serves as the metropolitan area's comprehensive policy plan for transportation for the years 2001 through 2020 and deals primarily with highways and transit, as well as bicycles, pedestrians, and freight movement.<sup>2</sup> The TSP deals primarily with highways under Mn/DOT's control and explains how Mn/DOT developed priorities for future projects.<sup>3</sup> Like the TPP, the TSP covers the years 2001 through 2020.<sup>4</sup>

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**Both the Metropolitan Council and Mn/DOT have prepared long-range transportation plans that are fiscally constrained.**

The TPP is prepared pursuant to the requirements of both state and federal law. State law requires the Metropolitan Council to prepare a comprehensive development guide for the metropolitan area. That guide consists of the Council's Regional Blueprint and comprehensive policy plans for transportation, airports, wastewater treatment, and regional recreation open space. The Regional Blueprint presents a growth strategy for the Twin Cities metropolitan area and sets some overall priorities for regional facilities and services.<sup>5</sup> The TPP also meets the planning requirements of the Federal Intermodal Surface Transportation Efficiency Act (ISTEA).

Both state and federal law require that the Council's Transportation Policy Plan be fiscally constrained. In other words, the plan must reflect funding expected to be available in the future based on current funding levels. In the TPP, the Metropolitan Council estimated that resources totaling \$4.7 billion, or about \$235 million per year, would be available to fund capital projects on the region's highway and transit system. As Table 3.1 shows, \$3.4 billion of the \$4.7 billion is allocated to Mn/DOT for projects on the State Trunk Highway System. Funds specifically allocated to transit include \$700 million for transit capital needs including bus and transit facility replacement and \$85 million for transit expansion, which is included in the trunk highway category. The \$85 million could be used for additional transitways beyond the Hiawatha transitway between downtown Minneapolis and the airport. The Hiawatha transitway is being built with funds available prior to 2001. The funds allocated for selected regional projects, enhancements, and congestion management and air quality can be used for a variety of purposes. Their use is determined by competitive selection processes conducted annually.

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<sup>2</sup> Metropolitan Council, *Transportation Policy Plan* (St. Paul, December 1996).

<sup>3</sup> Minnesota Department of Transportation, Metro Division, *Transportation System Plan* (Roseville, 1997).

<sup>4</sup> Shorter range plans are contained in the Metropolitan Council's Transportation Improvement Program (TIP) and Mn/DOT's State Transportation Improvement Program (STIP). The TIP, for example, lists the transportation projects scheduled over the next four years.

<sup>5</sup> Metropolitan Council, *Regional Blueprint* (St. Paul, December 1996).

**Table 3.1: Transportation Policy Plan Financial Allocations, 2001-2020**

	Allocation (in Millions)	Percentage of Total
Trunk highway projects	\$3,400	72.3%
Transit capital	700	14.9
Selected regional projects	440	9.4
Enhancements	80	1.7
Congestion management/air quality projects	<u>80</u>	<u>1.7</u>
Total	\$4,700	100.0%

SOURCE: Metropolitan Council, *Transportation Policy Plan* (St. Paul, December 1996), 87.

**The plans for 2001-2020 include \$85 million for additional transitways.**

Mn/DOT’s Transportation System Plan was developed by Mn/DOT’s Metro Division to define its vision for maintaining and improving state trunk highways in the Twin Cities area to serve all modes of transportation. The plan attempts to translate “broad state and regional policy direction into fiscally-realistic highway program goals and strategies.”<sup>6</sup> A draft of the first TSP was released for comment in late 1996 and the final report was released in August 1997.

For the most part, Mn/DOT developed the TSP subject to the same fiscal constraints as the TPP. Like the TPP, the TSP assumes that \$3.4 billion will be available to fund capital projects on the trunk highway system in the Twin Cities metropolitan area between 2001 and 2020. As Table 3.2 shows, close to one-half of the funds will go for trunk highway improvement or expansion projects.<sup>7</sup> About one-third of the funds is targeted for preservation projects such as resurfacing highways and repairing or replacing bridges. Almost one-tenth of the total is allocated for management projects including transportation system management, access management, intelligent transportation systems, safety investments, park-and-ride lots, bus-only shoulders, and high occupancy vehicle (HOV) bypasses to freeway ramp meters.<sup>8</sup> The remaining funds are being set aside for right-of-way and other costs that cannot be specified at this time.

6 *Transportation System Plan*, iii.

7 Some breakdowns of the TPP and TSP show that only about one-fourth of the funds allocated to the trunk highway system will go for improvement and expansion purposes and that close to one-half of the funds are for preservation purposes. Such breakdowns understate the planned spending on improvement and expansion and overstate the proposed preservation and set aside allocations. For example, these breakdowns include the right-of-way costs attributable to improvement and expansion projects in the set aside category. In addition, they include pavement reconstruction costs of improvement and expansion projects in the preservation category. This is misleading since, absent the need for improvement or expansion, it is unlikely that pavements would need to be reconstructed for preservation purposes. Instead, a less costly resurfacing would most likely be selected. The breakdown shown in Table 3.2 is not perfect either. It will tend to overstate improvement and expansion costs, since some preservation activities such as pavement resurfacing would need to be done on those highway segments scheduled for improvement or expansion if the improvement or expansion project was not done.

8 The TSP includes \$20 million for park-and-ride lots and bus-only shoulder lanes and \$40 million for HOV bypasses to be used over the 20-year period.

**Table 3.2: Trunk Highway Funding Plan, by Project Type, 2001-2020**

<u>Project Type</u>	<u>Allocation (in Millions)</u>	<u>Percentage of Total</u>
Preservation	\$1,097	32.3%
Management	310	9.1
Improvement	587	17.3
Expansion	1,036	30.5
Set Asides <sup>a</sup>	<u>371</u>	<u>10.9</u>
Total	\$3,400	100.0%

<sup>a</sup>Includes supplemental agreements, cooperative agreements, and additional right-of-way acquisition.

SOURCE: Minnesota Department of Transportation, *Transportation System Plan* (Roseville, August 1997), 5-18.

Unlike the TPP, however, the TSP estimates the needs that cannot be met within the financial constraint of \$3.4 billion for the 20-year period. According to the TSP, there are additional unmet highway needs totaling about \$6.6 billion. These unmet needs include the addition of lanes to existing highways, the conversion of some highways to freeways, the construction of some new freeway miles, and the conversion of some roads to divided highways. The unmet needs include expansion work on about 495 miles of trunk highways in the Twin Cities metropolitan area, or about 43 percent of all highway miles under the jurisdiction of Mn/DOT's Metro Division. Funding these unmet needs would require the Metro Division of Mn/DOT to receive 5 to 6 times as much funding from state sources as it is expected to receive over the 20-year period.<sup>9</sup>

As Table 3.3 suggests, spending on the trunk highway system in the Twin Cities area has become more focused on preservation and management than on expansion of the existing system. During the late 1950s and 1960s, Mn/DOT added about 60 lane miles per year to the area's freeway system. Expansion fell to half that level during the 1970s and 1980s and declined again by more than 50 percent during the 1990s. As the amount of expansion declined, Mn/DOT began relying more on ramp metering to expand the effective capacity of the existing freeways. During the 1990s, Mn/DOT expects to add fewer than 14 lane miles of capacity per year to the freeway system, and the installation of more ramp meters will add another 8 lane miles per year in effective capacity.

Under the fiscally constrained plans of Mn/DOT and the Metropolitan Council, spending will continue to focus less on expansion. Over the 20-year period covered by its TSP, Mn/DOT's Metro Division proposes to add about 9 lane miles of freeways per year. The addition of ramp meters would add more effective capacity to the freeway system than construction.

**The plans include less expansion of the freeway system than in the past.**

<sup>9</sup> We are assuming that no additional federal funds would be available to pay for any of the costs of addressing these unmet needs.

**Table 3.3: Lane Miles Added per Year to the Twin Cities Metropolitan Area Freeway System, 1958-2020**

	1958-1969	1970-1981	1982-1989	1990-2000	Mn/DOT Plan 2001-2020	Mn/DOT Plan With Unmet Needs 2001-2020
Lane miles added	60.0	31.98	29.1	13.7	9.3	26.2
Lane mile equivalents added due to metering	0.0	1.8	5.4	7.5	10.2	10.2
Lane mile equivalents added due to upgrading of arterials to freeways	NA	NA	NA	NA	NA	2.0
Lane miles added to existing arterials	NA	NA	NA	NA	NA	21.4
Totals	60.0	33.5	34.5	21.2	19.5	59.8

NA = Not available.

SOURCE: Minnesota Department of Transportation, Metro Division, *Transportation System Plan* (Roseville, August 1997), 7-6; and memorandum from Metro Division (October 30, 1997).

If funding was available to address the unmet needs in the Metro Division's TSP, the amount of expansion activity on Twin Cities area freeways would be similar in overall magnitude to that experienced during the 1970s and 1980s. In addition, the unmet needs scenario would include a significant addition of lane miles to existing arterial highways not on the freeway system. However, the nature of the expansion activity would probably be different from that during the 1970s and 1980s in that fewer miles of new freeways would be built. Instead, the expansion activity would be more focused on adding lanes to existing freeways and arterial highways.

## FORECASTS

According to the Metropolitan Council's Transportation Policy Plan:

The large amount of growth forecasted for the next 25 years will have a significant impact on the regional transportation system since little road - way expansion is planned. If current transportation investment levels and priorities are projected to 2020, congestion on major metropolitan roadways, a barometer of the ability of the system to meet travel demand, is expected to increase from 100 miles in 1995 to 220 miles in the year 2020.

Regional accessibility to various destinations (for example, work, busi - ness, education, recreation) will deteriorate significantly. Today, it is possible to access almost any point within the region in less than 60 min - utes during the peak hour. This makes it possible for the region to func - tion as a well interconnected economic entity. In 2020, only 60 to 70 percent of the metropolitan area will be accessible within 60 minutes from any point in the region. This constraint in the movement of people and goods will result in lost economic productivity, higher overall cost of

doing business and decreased regional competitiveness in the world economy.<sup>10</sup>

These are fairly strong words, and they raise significant concerns about the adequacy of the fiscally constrained Transportation Policy Plan to address future transportation problems. As a result, we examined the Metropolitan Council's forecasts of future travel behavior and congestion. Before considering alternative approaches to solving the metropolitan area's transportation problems, we wanted to be sure that the Council's forecasts were based on realistic assumptions. We also felt it was important to review the Council's forecasts because they have not been published and, thus, may not have received much scrutiny from policy makers or the public.

We found it difficult and time-consuming to obtain the Council's forecasts for the year 2020. Furthermore, we found that, in generating forecasts, the Council staff tended to compare results for 2020 with results for 1990—not with results for a more recent year. Consequently, it was difficult to assess whether the changes being forecast would primarily occur in the future or had already occurred, for the most part, during the early 1990s.

## Changes from 1995 to 2020

To address these concerns, we asked Council staff to provide us with their assumptions and forecasts for the years 1995 and 2020, rather than 1990 and 2020. Table 3.4 presents these data for 1995 and 2020. In generating the forecasts, the Council's transportation staff assumed that population and employment in the seven-county metropolitan area would increase 29 percent between 1995 and 2020. The growth in the number of households was assumed to be 36 percent. The assumptions about the growth of population, employment, and households are based on forecasts made by the Council's demographic experts.

### Highway Trips and Transit Ridership

The Council's transportation staff has projected a 46 percent growth in vehicle miles traveled on metropolitan area highways between 1995 and 2020. This growth is the result of a 29 percent increase in the number of highway trips and a 14 percent growth in the average length of trips. Council staff has forecast no change in the average automobile occupancy rate. Transit ridership is expected to grow 20 percent even though forecasters assumed no change in transit routes and frequency of service through the year 2020.

On a per capita basis, the Council forecasts no change in the number of highway trips. Vehicle miles traveled on highways would increase 14 percent per capita because of the increased length of trips. The number of transit trips per capita would decrease 7 percent.

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**The Metropolitan Council is projecting a 29 percent increase in vehicle trips between 1995 and 2020.**

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<sup>10</sup> *Transportation Policy Plan*, 6.



**Table 3.4: Metropolitan Council Travel Forecasts for the Twin Cities Metropolitan Area, 1995-2020**

	1995	2020 <sup>a</sup>	Percentage Change
<b>Demographic Variables</b>			
Population	2,427,500	3,124,650	29%
Number of households	937,350	1,274,800	36
Employment	1,396,250	1,797,250	29
<b>Highway and Transit Trips</b>			
Daily highway vehicle miles	51,669,200	75,531,100	46%
Daily highway vehicle trips <sup>b</sup>	6,744,705	8,675,790	29
Average miles per highway trip	7.7	8.7	14
Daily transit trips <sup>c</sup>	222,732	266,500	20
<b>Miles and Trips per Capita</b>			
Daily vehicle miles per capita	21.3	24.2	14%
Daily highway trips per capita	2.8	2.8	0
Daily transit trips per capita	0.1	0.1	-7
<b>Highway Trips: Speed, Time, and Distance</b>			
Average speed: AM peak hour	39.8	38.2	-4%
Average speed: PM peak hour	38.4	36.5	-5
Average trip time (in minutes):			
AM Peak Hour	16.5	19.2	16
Average trip time (in minutes):			
PM Peak Hour	14.2	16.8	18
Average distance per trip			
(in miles): AM Peak Hour	11.0	12.2	11
Average distance per trip			
(in miles): PM Peak Hour	9.1	10.2	12
<b>Costs of Highway Travel</b>			
Daily travel time costs <sup>d</sup>	\$22,368,605	\$33,428,700	49%
Daily operating costs <sup>e</sup>	\$ 7,750,400	\$11,329,700	46
<b>Pollution</b>			
Daily Carbon Monoxide Emissions (in tons)	984	876	-11%

<sup>a</sup>The 2020 forecast is based on the preferred growth option selected by the Metropolitan Council and the highway network in the Transportation Policy Plan.

<sup>b</sup>Highway trips exclude truck trips and grade school trips.

<sup>c</sup>Transit routes and service frequency are assumed to be unchanged over the 25 year period.

<sup>d</sup>Travel time costs are valued at \$12.50 per person hour.

<sup>e</sup>Operating costs are based on an estimate of 15 cents per mile for variable costs and do not include fixed costs such as depreciation or financing charges.

SOURCE: Correspondence with Metropolitan Council staff.

## Average Peak Hour Speed

According to the Council's forecasts, the average trip time during the morning peak hour would increase from 16.5 minutes in 1995 to 19.2 minutes by the year 2020. Much of this 16 percent increase in travel time is due to an 11 percent increase in trip length. Some of the additional travel time during the morning peak hour is expected to arise because of a modest slowing of average highway speed. The average highway speed during the morning peak hour is expected to decline 4 percent from 39.8 miles per hour in 1995 to 38.2 miles per hour in 2020. Council staff is forecasting similar changes to travel time, trip length, and average speed during the afternoon peak hour.

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**It is unclear how much average highway speed will decline by the year 2020.**

At first, Council staff presented us with two different estimates of the change in average speeds during the peak hour. The estimate described above is based on trip frequency data that show the estimated miles and minutes for each trip occurring during the peak hour. The other estimate is automatically generated by the model and showed a more significant decline in average speed—24 percent during the afternoon peak hour. However, it was somewhat unclear what this number represented. The Council staff member responsible for travel forecasting indicated that the trip frequency data provided an accurate estimate of the overall change in average peak hour speeds so we used the trip frequency data.

He indicated that a modest 4 to 5 percent drop in peak hour speeds is possible even though the number of daily highway trips is expected to increase 29 percent. Increasing congestion on the freeway system, and on freeway entrance ramps, in the early 1990s has already caused some motorists to use alternative routes in the peak hours. The congestion is also expected to cause many more motorists to choose alternative routes in the future since these routes may be as fast as the congested freeways for some trips. Most of these alternative routes—mainly principal arterials and minor arterials—currently have excess capacity and are expected to continue to have some excess capacity through at least 2020. As a result, speeds on the alternative routes would not be expected to decline significantly. At some time after 2020, if automobile travel continues to grow, these routes would experience a decline in speed when traffic demand begins to approach capacity.

## Number of Congested Miles

The number of miles of congested highways is also expected to grow between the mid-1990s and the year 2020. However, estimates available from the Council and Mn/DOT show considerably different degrees of growth in congestion due to differences in the traffic forecast data and highway capacities used by the two agencies. The estimates may also differ since the Council's estimate includes other highways in addition to the state trunk highways under Mn/DOT's control.

Council staff provided us with data showing that the number of miles of metropolitan area highways with traffic volumes equal to or in excess of capacity during either the morning or afternoon peak hour is expected to grow from about 220 miles in 1995 to more than 500 miles in 2020. The Council's estimates probably overestimate the growth in the number of congested miles because they are based on outdated assumptions about the capacity of modern freeways. The

Council used capacities of 1,950 vehicles per hour per lane for metered freeways and 1,750 vehicles for unmetered freeways. Data from Mn/DOT’s Traffic Management Center suggest that metered and unmetered freeways have capacities of 2,200 and 2,000 vehicles per hour per lane respectively.

Using these updated capacities, Mn/DOT’s Transportation System Plan provided an estimate of the change in the number of congested miles of state trunk highways in the Twin Cities metropolitan area from 1994 to 2020. Mn/DOT’s estimate was based on the planned highway network for the year 2020 but used the Council’s traffic forecasts for the year 2015 since the Council’s forecasts for the year 2020 were not yet available. Table 3.5 shows that the number of congested miles is expected to increase slightly. Mn/DOT classified trunk highways by level of service. Level of Service “F” means that traffic volumes at the peak hour exceed capacity. The percentage of metropolitan area trunk highways at Level of Service “F” is expected to grow from 8 percent to 11 percent. The table also shows that the percentage of trunk highways at Level of Service “E” is expected to grow from 10 percent to 12 percent. Level of Service “E” means that a freeway’s traffic volume is between 85 percent and 100 percent of capacity at peak hour.<sup>11</sup>

**Table 3.5: Trunk Highway Miles by Level of Service in the Twin Cities Metropolitan Area, 1994-2020**

	<u>Level of Service E</u>		<u>Level of Service F</u>	
	<u>Miles</u>	<u>Percentage of Total</u>	<u>Miles</u>	<u>Percentage of Total</u>
1994	117	10%	87	8%
2020 <sup>a</sup>	139	12	129	11

<sup>a</sup>Forecasts for 2020 were based on the Metropolitan Council’s traffic projections for 2015.

SOURCE: Minnesota Department of Transportation, Metro Division, *Transportation System Plan* (Roseville, August 1997), 7-8.

**The number of miles of congested highways will likely grow by the year 2020, but the magnitude of the increase is unclear from existing analyses.**

Because the Council and Mn/DOT have used different methods and data and their estimates are quite different, it is difficult to conclude how much the number of congested miles is likely to grow by the year 2020. The Council’s estimate shows significant growth in the number of congested miles but overstates future congestion since it is based on outdated assumptions about freeway capacity. Mn/DOT’s estimate shows modest growth in the number of congested miles of trunk highways but understates the growth in congestion through the year 2020 because it had to be based on older traffic forecasts that extend only to the year 2015.

<sup>11</sup> For non-freeway arterial highways, Level of Service “E” means that a highway’s traffic volume at peak hour is between 91 and 100 percent of capacity.

## Discussion

Our examination of the Council's forecasts raised a number of issues. First:

- **We are concerned that, because the Metropolitan Council's travel forecasts have not been published yet, policy makers have not had an opportunity to assess the reasonableness of the forecasts.**

The Transportation Policy Plan for 2020 has been public for about one year, but the forecasts underlying the plan and the implications of the plan for the future have not been released. The Council is currently reviewing the traffic forecasts with cities and may make adjustments in the forecasts before finalizing them. It is unclear whether and how the Council will share the forecasts with legislators and other policy makers once the forecasts are finalized.

Second:

- **Without publication of the forecasts and opportunity for outside review, there is a potential for misstating the implications of the Metropolitan Council's transportation plan for future highway and transit users.**

In fact, the Transportation Policy Plan may have itself misstated the implications for future congestion. The citation at the beginning of this section suggests that access to points within the area, and thus average highway speeds, will decline significantly between 1996 and 2020. The assertion that travel speeds will decrease significantly appears to be based on maps that the Council produced. However, the maps show how access will decline between 1990 and 2020, not between 1996 and 2020. Furthermore, one of the estimates we received from Council staff suggests that, while average speeds declined significantly during the early 1990s, they may decline only modestly in the near future. This discrepancy in estimates of average speed is a technical issue of great significance and needs to be resolved by the Council and Mn/DOT.

Third:

- **There is reason to question whether the Council's travel forecasts may understate the future growth in automobile trips and perhaps overstate the growth in transit trips.**

Council staff have projected that highway trips per capita will remain constant through the year 2020 and transit trips per capita will decline 7 percent. Historically, the number of highway trips per capita has increased significantly, while transit ridership per capita has declined. From 1970 to 1990, the percentage increase in highway trips was more than three times the 20 percent growth in population. As we saw in Chapter 1, transit ridership per capita fell 20 percent between 1988 and 1995.

While changes in some of the factors underlying these trends—such as the decline in household size and the increase in labor participation rates of women—are

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**The  
Metropolitan  
Council's long-  
range travel  
forecasts need  
to be publicly  
scrutinized.**

unlikely to continue at the pace set during the last several decades, it may still be unrealistic to assume that no growth in highway trips per capita will occur in the future. If incomes increase relative to inflation, we may continue to see a growth in the number of automobiles owned per household. Increased automobile availability would suggest a growth in the number of highway trips per capita and a decline in the number of transit trips per capita.

## STRENGTHS AND WEAKNESSES

Our examination of long-range planning efforts includes the long-range plans prepared by the Council and Mn/DOT, as well as major corridor studies completed in recent years. The corridor studies are an important part of the planning process. Corridor studies help the Council and Mn/DOT select among a variety of transportation alternatives. Prior to pursuing a major highway expansion in a particular transportation corridor, the Council and Mn/DOT conduct a major investment study to examine a variety of alternatives including highway expansion, transit, travel demand management, transportation system management, and a no-build alternative.

### Strengths

The most notable strength is that:

- **The Transportation Policy Plan and the Transportation System Plan have a reasonable approach toward allocating limited funds.**

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**The long-range plans do a good job of allocating scarce resources.**

Preservation of existing infrastructure is given the highest priority. The Council and Mn/DOT believe that the region must first adequately preserve its existing infrastructure. The plans then attempt to squeeze as much capacity as possible out of the existing highway system through management investments such as freeway ramp metering, communication systems, addition of turn lanes to at-grade arterials, traffic-responsive signal systems, and consolidation of access points. The plans also attempt to accommodate transit needs through the addition of HOV bypass ramps, park-and-ride lots, bus-only shoulder lanes, and funds for the establishment of additional transitways.<sup>12</sup> Finally, the plans have established reasonable procedures and criteria for determining how to allocate the funds available for improvement or expansion purposes.

It should also be noted that the Metropolitan Council has been involved in redesigning transit services particularly for routes which have high subsidies. Furthermore, the Council staff have been involved in fostering competition in the delivery of transit services on high-subsidy routes or with small vehicles. Our 1992 evaluation of transit planning criticized the Regional Transit Board for its

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<sup>12</sup> Mn/DOT, Metro Transit, the Metropolitan Council, and other public entities have been involved since 1990 in a partnership called Team Transit. This partnership has been instrumental in implementing more than 80 miles of bus-only shoulder lanes, numerous HOV ramp bypasses, new and expanded park-and-ride lots, and other improvements designed to facilitate transit usage. The long-range plans of both Mn/DOT and the Council reflect a continuation of that type of work.

failure to pay adequate attention to the existing bus system and to implement an adequate policy on competitive bidding.<sup>13</sup> After assuming the duties of the Board in 1994, the Council addressed these problems, and its Transportation Policy Plan recognizes these strategies as important to the future of transit in the Twin Cities metropolitan area.

## Weaknesses

The long-range planning efforts of the Council and Mn/DOT have a number of weaknesses. First:

- **Existing long-range plans do not adequately consider the expansion of transit service as a viable option in addressing the Twin Cities metropolitan area's transportation problems.**

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**Long-range planning efforts do not adequately consider the merits of expanded transit service.**

Because the Council's TPP is a fiscally constrained plan, the TPP does not consider an expansion of the region's bus system or implementation of light rail or commuter rail as a possible transportation strategy.<sup>14</sup> The TPP says that existing revenue levels are insufficient to meet all transportation needs, but the list of unmet needs in the TPP primarily mentions highway needs. The only unmet transit need listed is for unspecified additional transitways.<sup>15</sup> As we noted before, Mn/DOT's TSP highlights \$6.6 billion in unmet needs, all of which are highway improvement or expansion projects.

The Council's plan mentions that light rail projects in the 35W and Central Corridors were once part of the region's transportation plans but never received funding. The Council now favors an incremental approach toward developing transitways. The Council is focusing on creating exclusive transit corridors but intends to use buses on the transitways initially. According to the TPP, this approach does not preclude light rail or commuter rail—either “as an evolution of an existing transitway or as an entirely new initiative.”<sup>16</sup> However, the use of non-bus technologies depends on a demonstration of their cost-effectiveness and the availability of sufficient funding.

While the transitway concept may have some appeal, there has been very little analysis of what benefits transitways offer in terms of increased transit ridership and improved travel times for transit riders or highway users. The Council has endorsed the concept and the Hiawatha transitway without a detailed analysis of the benefits and costs. Furthermore, there has been no analysis of whether expanded bus service in other corridors would provide greater benefits relative to their costs compared with the possible transitway investments.

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<sup>13</sup> Office of the Legislative Auditor, *Regional Transit Planning* (St. Paul, March 1992), 25-26.

<sup>14</sup> It is generally believed that state constitutional restrictions on the use of gasoline and vehicle registration taxes prevent these funds from being used for rail capital projects or any transit operating expenditures.

<sup>15</sup> *Transportation Policy Plan*, 34, 77-78.

<sup>16</sup> *Transportation Policy Plan*, 55.

A second weakness is that:

- **The region's planning efforts do not consider the full transportation costs of various modes of transportation.**

Transit alternatives tend to fare poorly next to highway alternatives in major corridor studies when only project-related costs are considered. Transit alternatives may appear extremely expensive because both their operating and capital costs are considered project-related costs and paid by public agencies. Highway projects involve some publicly-borne infrastructure costs, but the operating and capital costs of automobiles are privately borne and not considered part of a project's costs. In addition, the highway alternative may impose additional pollution costs on a region although highway users are not required to pay for them. In the transportation field, there is an increasing recognition that the full costs of transportation need to be considered when analyzing the benefits and costs of transportation alternatives. A transit expansion project may require the expenditure of greater amounts of public funds than a highway expansion project but, in some instances, may save the public money in the long run by reducing automobile operating costs, congestion delay costs, and pollution.

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**Planning efforts need to be more comprehensive in their analysis of costs and benefits.**

Numerous studies have attempted to estimate the full transportation costs of motor vehicle use, and these estimates vary. One respectable study found that motor vehicle users pay for 66 to 80 percent of the social costs of motor vehicle use but that only 49 to 61 of the total costs of motor vehicle usage were efficiently priced. The costs are considered to be efficiently priced if motor vehicle users fully recognize them and pay them as a direct cost of driving. Costs not efficiently priced include the costs of air pollution, global warming, free parking, national defense of international energy sources, and congestion delays.<sup>17</sup> Some caution needs to be taken in using these or other estimates. These estimates are based on the average costs imposed on society from motor vehicle use not the marginal costs. Even though the average costs would include some costs of national defense, it is unlikely that charging Twin Cities residents these costs based on their use of motor fuels would affect national defense costs at all. Also, there is considerable uncertainty about estimates of the costs of global warming associated with carbon dioxide emissions and some controversy about estimates of the damages caused by various air pollutants.<sup>18</sup>

Another concern we have about major corridor studies is that some transit benefits are not always considered. For example, improving or expanding transit service may reduce travel time for transit users and possibly also for highway users by diverting some highway users to transit. Some corridor studies have not explicitly considered the time saving benefits of transit. Instead, they have focused more narrowly on the cost per rider or cost per new transit rider. Alternatively, some studies have examined the time savings to transit users but have not explicitly examined the potential time savings to highway users caused by a diversion of former highway users to transit. However, most corridor studies have examined the reduced travel time savings resulting from highway expansion projects, and

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<sup>17</sup> United States Congress, Office of Technology Assessment, *Saving Energy in U.S. Transportation* (Washington, D.C., 1994), 98-111.

<sup>18</sup> Office of Technology Assessment, 103.

none asked about the cost per new highway user. Corridor studies need to evaluate transit and highway alternatives in a consistent and fair manner.

We also think that:

- **Mn/DOT's Transportation System Plan inaccurately represents the unmet needs for highway expansion.**

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**Mn/DOT's estimate of \$6.6 billion in unmet trunk highway needs is questionable.**

The TSP says that “. . . \$10 billion would be required to *fully-preserve* and *fully-manage* the system, as well as to *improve* and *expand* it to maintain current mobility levels through 2020.”<sup>19</sup> The TSP includes \$3.4 billion, while the unmet needs include \$6.6 billion for about 500 miles of highway expansions or improvements. In addition, the TSP says that “. . . the estimate of needs and the impacts of not meeting these needs are understated because they are based on 2015 growth projections, not on the new 2020 growth projections.”<sup>20</sup>

These statements suggest that more than \$6.6 billion in additional funding is needed in order to keep mobility levels—perhaps measured by the number of miles of congested highways or the average speed on trunk highways in the Twin Cities area—at their current levels. However, we found that Mn/DOT has not analyzed how mobility levels would change if all of the unmet needs were met. In fact, it is possible that the \$6.6 billion would reduce the number of congested miles below current levels.

Mn/DOT's Metro Division developed the unmet needs estimate by identifying those highways that were projected to have a level of service of D or worse in 2020. Then, the Metro Division estimated the cost of adding enough capacity to those highways to bring the future level of service up to at least C. This means that implementing the unmet needs would improve nearly all metropolitan area trunk freeways to the point where projected traffic volumes during the peak hour (based on the 2015 projections) are 70 percent or less of capacity. For non-freeway arterial highways, projected volumes would be 80 percent or less of capacity.<sup>21</sup>

It is not entirely clear how far the \$6.6 billion might go toward reducing the number of congested miles to below current levels because Mn/DOT used 2015, not 2020, traffic projections. It is also unclear how automobile users might adjust their travel behavior with the substantial increase in highway capacity. Some drivers would undoubtedly be attracted to the expanded highways from other roads. As a result, it is possible that the \$6.6 billion would not be enough funding to prevent an increase in congestion. However, the conclusions reached in the Transportation System Plan are inappropriate since Mn/DOT has not conducted the analysis necessary to reach those conclusions. In order for Mn/DOT to estimate the impact on congestion or average speed of spending an additional \$6.6 billion, Mn/DOT would have to run the region's travel behavior model using the

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<sup>19</sup> *Transportation System Plan*, iv.

<sup>20</sup> *Transportation System Plan*, 7-1, 7-2. The 2020 traffic projections were not available at the time Mn/DOT's Metro Division was preparing the TSP.

<sup>21</sup> Minnesota Department of Transportation, Metro Division, *Mn/DOT Transportation System Plan: Travel Demand Forecasting Process Report, Final Draft* (Roseville, May 1997), 15.



expanded highway network that includes all the projects in the unmet need category.<sup>22</sup>

Finally, we are concerned that:

- **Neither Mn/DOT nor the Metropolitan Council have provided much information in their plans about how they developed estimates of long-range preservation needs.**

Mn/DOT's Metro Division allocated \$422 million over the 20-year period for pavement resurfacing in its Transportation System Plan. The Metro Division also included \$270 million for bridge repair and \$203 million for bridge replacement. The plan also includes \$469 million for pavement reconstruction and bridge work to be done as part of expansion or improvement projects.

However, it is unclear how many miles of resurfacing activity the Metro Division is anticipating and whether the amount of activity will be sufficient to maintain the current rating of pavement quality in the metropolitan area. It is similarly unclear how many bridges would be repaired or replaced and how the amount of bridge work would affect average bridge condition ratings in the area.

In a recent report, we found that Mn/DOT needs to do a better job of estimating its pavement and bridge preservation needs. We found that Mn/DOT did not have an estimate of its pavement preservation needs and needed to revise its methods for estimating bridge preservation needs. We were particularly concerned that Mn/DOT may have to increase the rate at which it resurfaces highways, since each successive overlay of a highway tends to last less than the previous overlay.<sup>23</sup> The failure to take this factor into account would tend to understate future pavement preservation needs. As a result, Mn/DOT's Office of Investment Management, along with Mn/DOT experts in pavement management, have been working to develop better estimates of pavement preservation needs. The Metro Division could apply techniques similar to those being developed in order to check its estimate of pavement preservation needs.

It is important to have a good estimate of preservation needs. A significant understatement of preservation needs would cause the amount of funds available for highway improvement and expansion to be deficient and could have undesirable impacts on highway users. It could also cause expensive planning work to become useless since the highway expansions being planned cannot be funded. A significant overstatement of preservation needs is undesirable since Mn/DOT needs lead time to plan for highway improvement and expansion projects. If more money is available for such projects than was anticipated, Mn/DOT may not be able to use the funds in a timely manner because the needed planning and design work has not yet been completed.

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## Estimates of highway preservation needs should be improved.

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22 Expanded highway capacity could also induce additional automobile trips that would not otherwise be taken. Estimating this stimulated demand for highways is beyond the capability of the model.

23 Office of the Legislative Auditor, *Highway Spending* (St. Paul, March 1997), 57-60, 64-65.

## EXPERIENCE WITH TRANSIT AND HIGHWAY OPTIONS

The purpose of this section is to consider what can be learned from experience with transit, HOV lanes, highway expansion projects, and economic incentives such as congestion pricing and parking fees. One of our criticisms of long-range planning in the Twin Cities area is that the Metropolitan Council and Mn/DOT have not considered transportation options beyond the fiscally constrained plan and evaluated them in a systematic manner so that policy makers can determine whether a greater investment in transportation is desirable. While it is easy to make such a criticism, it is fair to ask what the metropolitan area might gain from an increased investment in transit or highways. We do not wish to prejudge what a more inclusive and systematic long-range planning effort might discover, but we think it is necessary to make sure that policy makers and others have reasonable expectations about what might be achieved with greater levels of investment.

### Congestion and Transit

One issue of concern to policy makers is whether expansion of transit could be a cost-effective way of reducing congestion and a better alternative than highway expansion. Transit proponents tend to emphasize the higher people-carrying capacity of transit options and the high cost of highway projects, while highway proponents emphasize the declining share of trips served by transit and the high cost of rail transit. For example, transit proponents have observed that a rail system has the capacity to serve 30,000 passengers per hour, or the equivalent of about 12 freeway lanes.<sup>24</sup> They also cite the high costs of some highway expansion projects which can run as much as \$100 million per mile. In contrast, highway proponents claim that light rail and subways cost 10 to 100 times more per mile to build than do roads and, in most cities, will never account for more than a small percentage of all trips.<sup>25</sup>

We think that it is difficult to resolve this debate over the cost-effectiveness of either transit or highway expansion in reducing congestion in the abstract. Relative costs, ridership or usage, and the reduction in congestion all depend on the particular metropolitan area and particular transportation corridor in question.

### Costs

The fact is that highway expansion costs per mile vary considerably depending on the need for and the cost of acquiring right-of-way, widening or replacing bridges, and making other changes. Mn/DOT estimated the cost per mile for expansion projects that cannot be funded in the TSP at between \$4 and \$100 million per mile. The range in cost per mile for rail transit can also vary considerably

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24 For example, see Central Puget Sound Regional Transit Authority, *The Ten-Year Regional Transit Plan, Appendix C: Benefits, System Use and Transportation Impacts of Sound Move* (Seattle, 1996), C-24.

25 Randal O'Toole, Cato Institute, *ISTEA: A Poisonous Brew for American Cities* (Washington, D.C., 1997).

depending on right-of-way costs and the extent to which the project includes tunneling or elevation of structures. The capital cost of light rail systems built in the United States, for example, have ranged from \$11 million to over \$100 million per mile.<sup>26</sup>

### Impact of Transit Improvements

The focus on superior capacity by transit proponents is, for the most part, misplaced. The focus should be on projected transit ridership. A rail system that can carry a lot of passengers but carries very few at a high cost per passenger would not be considered a success by most people. Similarly, a highway that adds considerable excess capacity but is underutilized might be considered to be a “white elephant.”

For transit expansion projects to reduce congestion they must, at a minimum, be able to increase transit ridership by attracting automobile users to transit. However, it would be difficult for increased transit use to greatly affect overall congestion and access across the Twin Cities metropolitan area for several reasons. Because transit trips are only a small percentage of all trips taken in the metropolitan area, a large increase in transit use would have only a small effect on the number of automobile trips taken. Figure 3.1 shows that if 10 percent of the commuters within the area switched from autos to transit, this would represent more than a 25 percent increase in transit ridership just from those switching at the peak hour in the morning and the peak hour in the afternoon. However, this would result in only a 5 percent reduction in automobile trips at the peak hour since not all peak hour drivers are commuters.

In addition, the effect on congestion and average speeds may be limited because any capacity freed up on freeways and other major arterials will be filled by those using parallel routes. As Figure 3.1 shows, a 5 percent reduction in automobile trips results in just a 1 percent increase in average speeds on Twin Cities roads during the peak hour in either the morning or afternoon.<sup>27</sup>

In studying the Central Corridor between downtown Minneapolis and downtown St. Paul, the Mn/DOT and regional railroad authorities for Hennepin and Ramsey counties examined several alternatives including improved bus service, a busway, and light rail transit (LRT).<sup>28</sup> As part of this alternatives analysis, the agencies had a consultant estimate the change in congestion of I-94 during the afternoon peak hour. The consultant found that, for the most part, the volume-to-capacity ratio on I-94 would be unchanged under any of the alternatives when compared with a no-build alternative. The consultant estimated a small reduction in congestion on one portion of I-94 (Prior Avenue to Snelling Avenue), where the estimated volume-to-capacity ratio was expected to be 0.93 with light rail transit and 1.03 under the no-build alternative.

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**Even a significant increase in transit ridership may have a modest effect on congestion.**

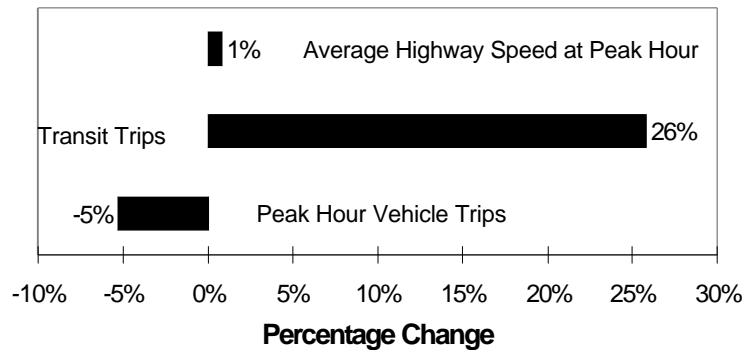
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26 Robert T. Dunphy, “Review of Recent American Light Rail Experiences,” *Seventh National Conference on Light Rail Transit: Volume 1* (Washington, D.C., 1995), 107.

27 This estimate of the change in average speeds is based on trip frequency data and, as discussed earlier, is lower than the estimate that is automatically generated by the forecasting model.

28 Minnesota Department of Transportation, Hennepin County Regional Railroad Authority, and Ramsey County Regional Railroad Authority, *Central Corridor Alternatives Analysis/Draft Environmental Impact Statement* (St. Paul, 1993).

**Figure 3.1: Effects of a 10 Percent Reduction in Home-Based Work Trips in 2020**



SOURCE: Correspondence with the Metropolitan Council.

It may also be difficult and costly to achieve a significant increase in transit ridership. Table 3.6 shows that implementing LRT in the Central Corridor was estimated to cost state and local governments in the Twin Cities area close to \$40 million annually and would increase areawide transit ridership by only a little more than 3 percent.<sup>29</sup> Other options would increase ridership by lesser amounts but do so at a lower cost per rider. For example, improved bus service would get about 55 percent of the ridership increase expected from LRT at a little more than 30 percent of the additional costs. Compared with the no-build alternative, the state and local cost per new transit rider would be about \$7.70 for improved bus service, \$11.50 for the busway, and \$13.50 for LRT. The extra riders LRT is expected to attract over a busway would cost about \$26.40 each.

It is important to note that the analysis of the Central Corridor appropriately focused on the potential increase in linked transit trips rather than unlinked trips. Transit proponents often focus on the increase in unlinked trips, in part due to lack of available national data on linked trips. However, as we noted in Chapter 1, transit improvements may cause a transit rider to take both a bus and then rail to get to work when the rider previously took just one bus ride to get to work. This increased transfer activity should not be counted as increased transit ridership since it does not increase the number of people using transit instead of

<sup>29</sup> The LRT and busway cost figures include some system costs which would not need to be incurred if additional LRT lines or busways were constructed in the Twin Cities area. For example, LRT system costs include the cost of downtown rail construction in Minneapolis and St. Paul and the cost of a maintenance shop and vehicles. The annual system costs are about \$9.5 million for LRT and \$1.5 million for a busway. Excluding system costs, the LRT option would cost about \$30 million more annually than the no-build alternative, and the busway option would cost about \$27.5 million more than the no-build alternative.

**Table 3.6: Projected Transit Ridership and Costs under Various Alternatives for the Central Corridor**

	Daily Systemwide Ridership in 2010 <sup>a</sup>	Percentage Change from No-Build Alternative	Annual State and Local Operating and Capital Costs	Additional Annual Costs Compared with the No-Build Alternative <sup>b</sup>	State and Local Cost per New Transit Rider (Compared with No-Build Alternative)	State and Local Cost per Transit Rider (Compared with Prior Alternative)
No-Build	239,600	—	\$134.4	—	—	—
Improved Bus Service	244,000	1.8%	146.8	\$12.4	\$7.72	\$7.72
Busway	246,500	2.9	163.3	28.9	11.48	18.08
Light Rail Transit	247,600	3.3	173.9	39.5	13.53	26.40

<sup>a</sup>In linked trips. Transfers are excluded.

<sup>b</sup>In millions of 1993 dollars. A 50 percent federal contribution towards capital costs was assumed.

SOURCE: Minnesota Department of Transportation, Hennepin County Regional Railroad Authority, and Ramsey County Regional Railroad Authority, *Alternatives Analysis and Draft Environmental Impact Statement: Central Corridor* (St. Paul, December 1993).

automobiles. The Central Corridor analysis also appropriately focused on the increase in overall transit ridership rather than just the number of total riders using the busway or LRT. Since most of the riders using the busway or LRT are former bus riders, they do not represent an increase in transit ridership.

**The effect of a transit improvement on congestion needs to be carefully analyzed.**

Although the Central Corridor analysis did not find any significant positive impact on congestion on I-94 from a variety of transit improvements, one should be careful not to generalize too much from this conclusion for several reasons. First, there may be transportation corridors in the Twin Cities area in which the potential for congestion relief is greater than in the Central Corridor.<sup>30</sup> Second, the analysis did not examine the potential time savings to highway users on either I-94 or parallel routes between Minneapolis and St. Paul. While the savings per highway user were probably quite small, these savings could be significant when aggregated across all users.

## Congestion and Highway Improvements

It is also appropriate to ask whether various types of highway improvements are likely to offer congestion relief. In this section, we consider both highway expansion projects and high occupancy vehicle (HOV) lanes.

### HOV Lanes

An HOV lane is a highway lane reserved for vehicles carrying more than one person. The purpose of reserving a lane for HOV use only is to increase the people-carrying capacity of a freeway or highway during the peak periods for

<sup>30</sup> This conclusion also should not be applied to other cities. In those cities in which population density is high or where congestion on the freeways and main arterial highways is already high, transit may be able to provide congestion relief. Similarly, if congestion on minor arterials and city streets becomes high in the Twin Cities, then transit expansion may be able to provide congestion relief.

traffic during the morning and afternoon. While an HOV lane may not carry as many vehicles per hour as a regular highway lane, it should carry more people per hour by serving buses and carpoolers rather than single occupant vehicles (SOVs). The lighter volume of traffic on a HOV lane is expected to make travel time a little more competitive for buses and carpoolers compared with SOVs than would otherwise be the case.

There are two freeways in the Twin Cities area with HOV lanes. They are I-394 west of Minneapolis and a portion of I-35W south of Minneapolis. I-394 is an 11-mile freeway west of downtown Minneapolis. For the three miles immediately west of downtown, I-394 consists of three general purpose lanes in each direction and two barrier-separated, reversible HOV lanes. The HOV lanes are open to buses, carpools, vanpools, and motorcycles during three-hour peak periods in both the morning and afternoon. They operate in an easterly direction in the morning and a westerly direction in the afternoon. The remaining eight miles of I-394 consist of an HOV (or diamond) lane and two general purpose lanes in each direction. These diamond lanes are open to general purpose traffic during all hours except a 3-hour period during either the morning (for eastbound traffic) or afternoon (for westbound traffic).<sup>31</sup> I-35 has similar diamond lanes between Highway 13 in Burnsville and I-494 in Bloomington. The diamond lanes on I-394 and I-35W are not barrier-separated.

The Metropolitan Council and Mn/DOT are considering adding HOV lanes to a number of highways over the next 20 or so years. They include portions of I-35W both north and south of downtown Minneapolis, I-35E, I-494, I-694, I-94, Highway 36, and Highway 169. In light of this potential expansion of HOV facilities in the Twin Cities area, it is important to ask how existing HOV lanes are performing.

Table 3.7 provides data comparing the percentage of lane capacity represented by the HOV lanes on these two freeways to the percentage of people and vehicles moved during the morning and afternoon peak periods. Table 3.8 provides data on overall automobile occupancy rates for these freeways, as well as the violation rates within the HOV lanes. The tables show that:

- **The HOV lanes on I-394 have carried more people per lane than on the general purpose lanes only between 7:00 a.m and 8:00 a.m.**
- **The HOV lanes on I-35W have carried fewer people per lane than on the general purpose lanes and have a high violation rate.**

On I-394, the reversible lanes represent 40 percent of the lane capacity in the peak direction. These lanes carry 49 percent of the people and 25 percent of the vehicles from 7:00 am to 8:00 am. The diamond lane on I-394 represents 33 percent of the lane capacity and carries 37 percent of the people and 17 percent of the vehicles during the same one-hour period. At all other times these lanes carry a smaller share of the people than is represented by their share of lane capacity. The violation rate, or percentage of vehicles illegally using the HOV lanes, is

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**Existing high-occupancy vehicle lanes in the Twin Cities area have experienced limited success.**

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<sup>31</sup> The use of the HOV lanes is also encouraged through reduced downtown parking fees for car - pools at parking ramps built during the construction of I-394.

**Table 3.7: Comparison of People and Vehicles Moved to Lane Capacity for High-Occupancy Vehicle Lanes, Second Quarter 1997**

	HOV Percentage of:		
	Lane Capacity	People Moved <sup>a</sup>	Vehicles Moved <sup>a</sup>
<b>I-394</b>			
Eastbound between Pennsylvania Avenue and Dunwoody Boulevard			
6:00 to 7:00 am	40%	27%	11%
7:00 to 8:00 am	40	49	25
8:00 to 9:00 am	40	32	16
Eastbound at Winnetka Avenue			
6:00 to 7:00 am	33	20	7
7:00 to 8:00 am	33	37	17
8:00 to 9:00 am	33	23	11
Westbound between Pennsylvania Avenue and Dunwoody Boulevard			
3:00 to 4:00 pm	40	21	11
4:00 to 5:00 pm	40	37	17
5:00 to 6:00 pm	40	38	19
Westbound at Winnetka Avenue			
3:00 to 4:00 pm	33	18	10
4:00 to 5:00 pm	33	29	13
5:00 to 6:00 pm	33	32	16
<b>I-35W</b>			
Northbound at Minnesota River			
6:00 to 7:00 am	33	22	11
7:00 to 8:00 am	33	29	14
8:00 to 9:00 am	33	22	13
Southbound at Minnesota River			
3:00 to 4:00 pm	33	22	16
4:00 to 5:00 pm	33	29	17
5:00 to 6:00 pm	33	33	20

<sup>a</sup>Includes single-occupant vehicles that are illegally using HOV lanes.

SOURCE: Minnesota Department of Transportation, Metro Division.

quite small on I-394. On the barrier-separated lanes, the violation rate averages 4 percent in the morning and 7 percent in the afternoon. The violation rate on the diamond lanes averages 7 percent in the morning and 12 percent in the afternoon.<sup>32</sup>

The I-35W diamond lanes represent 33 percent of the lane capacity but carry between 22 and 33 percent of the people and between 11 and 20 percent of the vehicles. However, they have a high violation rate—32 percent in the morning and 35 percent in the afternoon. If we exclude violators, then the performance of the I-35W diamond lanes is even worse. For example, from 5:00 pm to 6:00 pm, the southbound diamond lane carries 33 percent of the people and 20 percent of

<sup>32</sup> Minnesota Department of Transportation, Metro Division, Freeway Operations Section, *I-394 HOV Report: 1997-2nd Quarter* (Roseville, 1997).

**Table 3.8: Auto Occupancy Rates and Violation Rates on High-Occupancy Vehicle Lanes, Spring Quarter 1997**

	Auto Occupancy Rate		Violation Rate	
	Peak Hour	Peak Period	Peak Hour	Peak Period
Morning Rush Hours <sup>a</sup>				
I-394 Barrier Lanes	1.28	1.21	3%	4%
I-394 Diamond Lane	1.23	1.18	4	7
I-35W Diamond Lane	1.17	1.13	28	32
Afternoon Rush Hours <sup>b</sup>				
I-394 Barrier Lanes	1.25	1.22	6	7
I-394 Diamond Lane	1.23	1.21	12	12
I-35W Diamond Lane	1.29	1.22	30	35

<sup>a</sup>The morning peak hour is from 7:00 am to 8:00 am for I-394 and from 8:00 am to 9:00 am for I-35W. The peak period for both freeways is from 6:00 am to 9:00 am.

<sup>b</sup>The afternoon peak hour is from 5:00 pm to 6:00 pm, and the peak period is from 3:00 pm to 6:00 pm.

SOURCE: Minnesota Department of Transportation, Metro Division.

the vehicles. Excluding SOVs illegally using the diamond lane, the lane carries just 28 percent of the people and 14 percent of the vehicles.<sup>33</sup> The data in Table 3.7 make the performance look better than it is when the high violation rate is considered.<sup>34</sup>

**The high-occupancy vehicle lanes on I-394 have not performed up to expectations, but have performed better than those on I-35W.**

Automobiles using I-394 during the morning and afternoon peak periods average about 1.2 occupants per vehicle. The average for I-35W is about 1.18. During the morning peak hour, the average automobile occupancy rate is 1.28 for the portion of I-394 with barrier lanes, 1.23 for the portion of I-394 with diamond lanes, and 1.17 for the part of I-35W with diamond lanes. During the afternoon peak hour, I-394 averages 1.25 occupants per automobile in the segment with barrier lanes and 1.23 in the segment with diamond lanes, while I-35W averages 1.29 occupants per vehicle.

The performance of the I-394 HOV lanes is disappointing in light of earlier forecasts but is not unexpected considering the decline in carpooling and transit use in the Twin Cities area. Mn/DOT had estimated that the peak hour automobile occupancy rate on I-394 would increase from 1.15 in 1984 (prior to the construction) to 1.30 in 1994 and eventually 1.60 in the year 2000.<sup>35</sup> The

<sup>33</sup> Minnesota Department of Transportation, Metro Division, Freeway Operations Section, *I-35W HOV Report: 1997-2nd Quarter* (Roseville, 1997).

<sup>34</sup> The same observation is true for I-394 but to a lesser degree. Excluding the violators reduces the percentage of people carried by the HOV lanes by between about 0.5 and 1.5 percentage points depending on the location and time of day. However, the conclusions we reach about I-394 are unaffected.

<sup>35</sup> These projections were for the segment of I-394 near Penn Avenue, the peak load point. See Strgar-Roscoe-Fausch, Inc. for the Minnesota Department of Transportation, *394 HOV Lane Case Study: Final Report, Executive Summary* (Plymouth, 1995), 7.

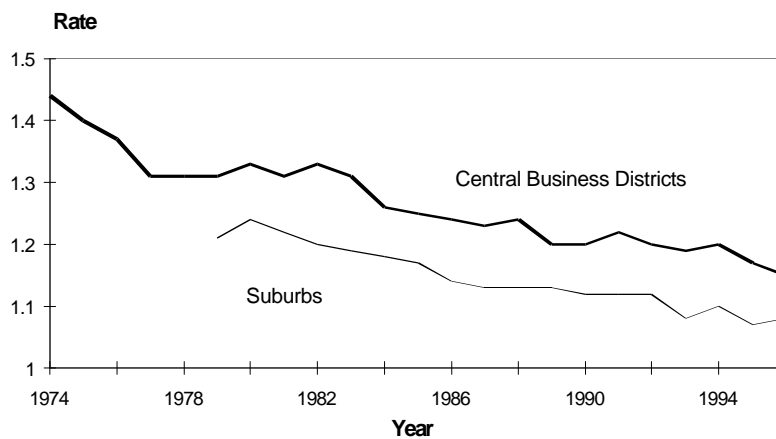


automobile occupancy rate during the spring of 1997 was 1.28 in the morning and 1.22 in the afternoon. Both represent slight declines from actual rates during 1994. The number of carpools during the morning peak hour actually exceeds prior predictions. However, contrary to expectations, there are very few carpools or vanpools that carry more than 2 persons per vehicle. As a result, the current automobile occupancy rate is well below the 1.60 level projected for the year 2000. Transit ridership is also below expectations even though a number of previously existing bus routes were shifted to run on I-394 rather than their former routes. Estimated ridership on I-394 around Penn Avenue in the morning peak hour was 1,629 during the spring of 1997. This represents an increase from 1,000 in 1984 but falls short of the projections of 2,000 for 1994 and 2,700 for 2000.

Figure 3.2 shows that automobile occupancy rate in the Twin Cities has declined significantly since the mid-1970s.<sup>36</sup> These rates are based on data collected by Mn/DOT at selected central business district and suburban sites throughout the Twin Cities area. The number of occupants per automobile has declined from 1.44 in 1974 to 1.15 in 1996 at central business district sites in Minneapolis and St. Paul during the morning peak hour. This decline is roughly equivalent to saying that the percentage of cars with a passenger has declined from 44 to 15 percent. Data from suburban locations show a decline in the automobile occupancy rate from 1.20 in 1979 to 1.08. This trend toward less carpooling, as well as the systemwide decline in transit ridership, have undoubtedly affected the degree to which I-394 has been able to meet original projections.

**A general decrease in carpooling has occurred here and across the nation.**

**Figure 3.2: Automobile Occupancy Rates, Twin Cities Area, 1974-96**



SOURCE: Minnesota Department of Transportation, Metro Division.

<sup>36</sup> The decline in carpooling is a national trend. See Eric Ferguson, "Recent National Declines in Carpooling," in U. S. Department of Transportation, 1990 NPTS Report Series: Travel Mode Special Reports (Washington, D.C., 1994),

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**The construction of I-394 has improved travel time for both automobiles and transit vehicles.**

While the number of people carried by the HOV lanes on I-394 is below expectations, it is important to recognize that the construction of the interstate highway has been a success in other important ways. As noted above, bus ridership and the automobile occupancy rate increased on I-394. In addition, travel times for both buses and automobiles were significantly improved. The interstate replaced a 4-lane highway which was interrupted by numerous intersections with stoplights. In 1984, average peak hour travel time from Highway 101 to downtown Minneapolis was 25 minutes for express buses and 23 minutes for automobiles. In 1994, after construction of I-394, travel time was considerably lower—12 minutes for express buses and carpools and 14 minutes for single occupant vehicles. Accident rates have also fallen significantly from 4.3 per million vehicle miles traveled in 1984 to 0.9 per million vehicle miles traveled in 1994.<sup>37</sup>

The limited success of HOV lanes in the Twin Cities area thus far raises questions about future plans to add more HOV lanes in area freeways. HOV lanes have been more successful in some other metropolitan areas. For example, HOV lanes in Houston are carrying 2 to 3 times the number of people per lane during the peak hour that general purpose freeway lanes carry.<sup>38</sup> In the Twin Cities area during the spring of 1997, only the HOV lanes on I-394 during the morning peak hour carried more persons per lane than the general purpose lanes, and their degree of success was much more limited. The barrier-separated lanes carried 45 percent more people per lane than the general purpose lanes, and the diamond lane carried 18 percent more people per lane. During the afternoon peak hour, the I-394 HOV lanes carried 6 percent fewer people per lane than the general purpose lanes. On I-35W, the HOV diamond lane carried 20 percent fewer people per lane than general purpose lanes during the morning peak hour and 3 percent fewer during the afternoon peak hour.

It may not be reasonable to expect the Twin Cities to achieve the degree of success already achieved in Houston. The Twin Cities area has less congestion, different demographic characteristics, a more limited HOV system, and less experience with HOV lanes. But, the issue is whether we can expect to improve on the performance of I-394 and I-35W.

### **Highway Expansion Projects**

In some ways, highway expansion and improvement projects have a greater potential to affect people's travel time than transit under current conditions in the Twin Cities area. This is because automobiles and other vehicles using highways constitute a much larger percentage of the trips being made than does expansion of transit. The example of I-394 mentioned above also shows how travel time can be significantly reduced when a region is removing a significant bottleneck or adding a significant amount of capacity in a particular corridor.

But it is debatable whether highway expansion projects reduce congestion, as measured by the comparison of a highway's capacity to its traffic volume. For

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<sup>37</sup> Strgar-Roscoe-Fausch, Inc., 7.

<sup>38</sup> Texas Transportation Institute, *An Evaluation of High-Occupancy Vehicle Lanes in Texas* (College Station, 1993), 48. The typical Houston HOV lane is a reversible, barrier-separated lane which is located in the freeway median.

example, the Metropolitan Council's TPP indicates that I-394 was already congested by 1995. The freeway had most likely attracted traffic that would have used other less desirable routes. In addition, the expansion of highway capacity is believed by many to stimulate additional demand for driving and thus to encourage more trip-making than would otherwise occur.

Analyses of the time savings from large highway expansion projects are generally measured by using the region's travel behavior model to estimate the areawide time savings from a project. The analysis generally needs to consider systemwide impacts of the expansion project or it will miss the interaction between the highway being expanded and alternative routes that might be used by travelers.

The region's travel behavior model does not, however, consider the potential stimulation of travel that may be caused by highway expansion projects. The Metropolitan Council and Mn/DOT need to consider how they might incorporate the concept of stimulated demand into their analyses.

## Congestion and Economic Incentives

Both the Metropolitan Council and Mn/DOT are aware of the role that economic incentives may play in helping to address congestion problems in the Twin Cities area and have been involved in several studies of economic incentives. The agencies commissioned a study of congestion pricing on Twin Cities areas freeways and expressways, and Mn/DOT contracted for a study of tolling single-occupant vehicles for the use of existing and potential new HOV lanes. In addition, the Council's TPP says that the Council will develop a regional parking policy to address the need to "establish pricing mechanisms to encourage alternatives to the single-occupant vehicle and raise revenues to support transit/ridesharing options."<sup>39</sup>

We think that the Council and Mn/DOT should be encouraged to continue to examine economic incentives as part of a package of strategies to address the region's growing transportation problems. Although there is very limited experience with these economic incentives, studies strongly suggest that economic incentives "are potentially powerful strategies to improve the efficiency of the road transport system."<sup>40</sup> Pricing parking may have a particularly significant effect on automobile travel. Parking charges have been found to decrease the amount of travel by single-occupant vehicles by as much as 40 percent and to increase carpooling significantly. Data from the much-publicized LUTRAQ (Land Use Transportation Air Quality) planning process in Portland, Oregon suggest that economic incentives such as parking and congestion pricing may have as large an effect on transit usage as a significant investment in transit expansion combined with a substantial change in land use.<sup>41</sup>

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**Economic incentives can play an important role in influencing travel behavior.**

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<sup>39</sup> *Transportation Policy Plan*, 41.

<sup>40</sup> Office of Technology Assessment, 232.

<sup>41</sup> Cambridge Systematics, Inc. and Parsons, Brinkerhoff, Quade & Douglas for the 1000 Friends of Oregon, *Making the Land Use Transportation Air Quality Connection, Volume 5: Analysis of Alternatives* (Portland, 1996), 15. Also, see the discussion in U.S. Department of Transportation, Bureau of Transportation Statistics, *Transportation Statistics Annual Report 1996* (Washington, D.C., 1996), 199-202.

Although the Council and Mn/DOT have studied some of these economic incentives on a piecemeal basis, we think that the agencies need to do a more comprehensive examination of alternatives including economic alternatives along with other options such as transit and highway expansion. One of the key reasons why policy makers had a negative reaction to congestion pricing is that the congestion pricing study found that congestion pricing on freeways and expressways would shift about 20 to 40 percent of the freeway traffic onto other roads including city streets.<sup>42</sup> While policy makers viewed such a shift as undesirable, it should be recognized that some shift may occur even without congestion pricing as travelers respond to growing traffic on the freeways and longer waits at freeway ramps.<sup>43</sup> Policy makers need to see the full array of options presented in a comprehensive manner so that they can fully appreciate the choices that are available.

## Discussion

While much of this section of the report has focused on the effect of transit and highway improvements in reducing highway congestion, it is important to recognize that both transit and highway improvements can provide other benefits. For example, improving transit service may reduce travel time for transit users, provide needed service to those without access to an automobile, and perhaps help change land use. Also, one of the major goals of many highway improvement projects is to improve safety and reduce accidents.

These benefits, as well as the congestion impacts, of transit and highway improvement projects are best analyzed by examining a transportation corridor in detail or by analyzing several different sets of options for a particular metropolitan area. While it can be helpful to examine the experience of other metropolitan areas, it is important to recognize that what works well in one metropolitan area may not work well in another. Furthermore, what may work well in one transportation corridor in the Twin Cities metropolitan area may not work well in others.

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### **There are no easy solutions to congestion or other transportation problems.**

In general, we think that there are no easy solutions to congestion or other transportation problems. It is essential that the Metropolitan Council and Mn/DOT present better and more complete information on the implications of the region's growing motor vehicle traffic. In addition, they need to analyze the impact of alternative approaches to meeting the area's future transportation needs. These different approaches could include improved bus service, lower transit fares, transitways, rail service, HOV lanes, pricing strategies, highway expansions, traffic management strategies, or some combination of the above. Through a systematic analysis of alternatives, the Council and Mn/DOT can help policy makers better understand the advantages and disadvantages of different approaches and can help the Legislature and the Governor make decisions about the need for additional transit or highway funding.

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<sup>42</sup> Wilbur Smith Associates et. al. for the Minnesota Department of Transportation and the Metropolitan Council, *Road Pricing Study: Final Report* (New Haven, 1997), 21.

<sup>43</sup> The congestion pricing study made this point but did not estimate or highlight the potential shifting that would occur in the absence of congestion pricing.

## RECOMMENDATIONS

First, we think that:

- **The Metropolitan Council and Mn/DOT need to do a better job of projecting, analyzing, and presenting information to policy makers on future traffic patterns and congestion problems in the Twin Cities metropolitan area.**

Some information recently presented to policy makers suggests a significant decline in access over the next 20 to 25 years, while other information we have gathered during this study suggests that average highway speeds will decline only slightly. The Metropolitan Council and Mn/DOT need to resolve or explain this apparent discrepancy. In addition, the Council needs to present its long-term transportation forecasts and identify and justify the key assumptions. The Council should also examine how sensitive the results on average speeds and congestion are to alternative assumptions about items such as the propensity of households to take automobile trips.

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**The Metropolitan Council and Mn/DOT need to provide better information to policy makers on the projected changes in congestion.**

The Council and Mn/DOT also need to better explain the various dimensions of projected congestion. The questions which need to be addressed include:

- How is the average speed of vehicles on the metropolitan area highway system expected to change from now until the year 2020 for both peak hour and off-peak travel? Are the results substantially worse for certain highways?
- How are ramp meter waits for freeways expected to change?
- How is the distribution of miles of highways by level of service (i.e., the degree of congestion) during the peak and off-peak hours expected to change? To what extent will the duration of congested conditions grow beyond the peak hour?
- What is the relationship between congestion on area freeways and the use of other arterial highways or minor arterials? If congestion on freeways is diverting traffic to non-freeway routes, how long will it be before the excess capacity on those alternative routes is gone and speeds slow there as well?

Limited answers to some questions have been available, but we think that policy makers need better and more complete answers to these questions and that the answers should focus on the changes between today and the year 2020. As we saw in this chapter, projections using a base year like 1990 can be confusing. Those projections leave one wondering how much of the change has already occurred and how much is expected to occur in the future.

Second, we recommend that:

- **The Metropolitan Council, with assistance from Mn/DOT, should supplement its fiscally constrained long-range plan with a more detailed examination of unmet transportation needs.**

Fiscally constrained plans are both necessary and desirable. They help guide the work of the Metropolitan Council and Mn/DOT so that it does not become divorced from the reality of what can be funded. A recognition of fiscal constraints helps to focus the options available for corridor studies and to limit the development of wish lists of projects which have not been thoroughly studied.

Fiscally constrained plans are necessary, but the Metropolitan Council and Mn/DOT also need to be able to identify opportunities for policy makers to make additional public investments in transit or highways which make sense from economic and social perspectives. As traffic levels grow in the future, automobile ownership and operating costs will grow. In addition, traffic delays and associated congestion costs, as well as certain environmental costs, may increase. In some instances, investments in additional transit service or transit expansion may help area residents save more in travel time and vehicle operating costs (as well as societal environmental costs) than the additional public costs of providing the service. In other instances, additional spending on highway improvements may be a wiser use of resources.

Policy makers do not need a wish list of projects which have very little chance of being funded. They have gotten such lists before and have usually chosen not to fund them. Lists of so-called highway expansion “needs” have been prepared before in a number of previous studies of transportation funding adequacy. Also, the Regional Transit Board and metropolitan area counties put together plans for a 9-line light rail system without adequately analyzing the transportation impacts and benefits of such a system.

However, the Council and Mn/DOT need to provide policy makers with practical, realistic analysis and recommendations about how to improve the area’s transportation systems. The process of identifying unmet needs in Mn/DOT’s recent Transportation System Plan helps to focus on highway corridors which are likely to experience some traffic problems in 2020 despite the expenditure of an expected \$3.4 billion on highway and transit capital needs from 2001 through 2020. However, in identifying \$6.6 billion in unmet needs, the TSP does not consider alternative solutions to highway expansion. In addition, the TSP does not address the relative benefits and costs of the needs it identifies. The Legislature and the Governor need good information on what various transportation alternatives are likely to achieve if they support additional funding for them.

Some observers might suggest that enough studies have been done and additional studies will not affect the deadlock among policy makers over transportation funding. Studies have been completed on highway and transit options in various transportation corridors and on such issues such as congestion pricing. In addition, Mn/DOT is currently doing a study of commuter rail options as a result of a 1997 legislative mandate.

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**The Council and Mn/DOT need to provide better information on how best to address the area’s growing transportation problems.**

These studies, along with the region's experience with high-occupancy lanes, help to provide a base of understanding. However, they do not answer some of the key questions facing policy makers or provide policy makers with a comprehensive understanding of what can be achieved under various policy options. For example, it is unclear how much highway congestion would be affected by expanding transit service in comparison with other strategies. Policy makers and the public are reluctant to invest additional dollars in transit or highways or to commit to a new approach such as congestion pricing or tolls without an objective analysis of the relative benefits and costs of various options. Additional analysis is no guarantee that policy makers will agree to provide additional funding for transit or highways but will help policy makers to reach a better understanding of the choices available to them and can help the Twin Cities metropolitan area make more informed decisions about its future.

Third, we suggest that:

- **The Metropolitan Council and Mn/DOT should continue to examine the role that economic incentives such as parking charges or highway usage pricing might play in addressing future transportation problems.**

The public has the perception that it is not necessary to impose additional charges on automobile users since they already pay for the use of their vehicles and for the costs of the highway system. However, studies generally indicate that automobile users do not directly pay for the full infrastructure costs or for the full environmental costs they impose on society. Furthermore, assessing automobile owners additional costs for using the existing highway infrastructure may be an economically efficient way of avoiding the need to raise taxes in the future as growing congestion requires additional highway infrastructure.

Finally, we recommend that:

- **The Metropolitan Council and Mn/DOT should seriously examine the performance of existing HOV lanes in the Twin Cities area, as well as experience with HOV lanes in other metropolitan areas, before they consider plans to greatly expand the number of HOV lanes in the Twin Cities.**

The performance of existing HOV lanes has generally been below expectations, and carpooling has generally fallen in the Twin Cities metropolitan area during the 1980s and 1990s. While some HOV lane additions should probably be part of the area's long-range plans, future plans need to be reassessed in light of the area's experience, as well as the experience of other areas.

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# Outstate Transit Services

## CHAPTER 4

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**R**oughly half the state's population lives outside the Twin Cities area, and there are about 70 public transit systems operating in outstate Minnesota with total annual ridership of over 8 million people. The last decade has been a period of growing state support for outstate transit and expansion of outstate transit systems into new areas. At the same time, some established systems have struggled to keep ridership levels from falling. Legislators with whom we discussed the scope of this study suggested we include an examination of outstate transit systems. As a result, in this chapter we address the following questions:

- **How are outstate transit services organized, financed, and administered?**
- **What types of transit services are provided in outstate Minnesota? How have transit services changed and grown over the last decade or so?**
- **What has been the performance of outstate transit systems in recent years?**
- **To what extent do outstate transit systems meet identified transit needs?**

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**Mn/DOT administers state and federal transit assistance for outstate systems.**

We found that Minnesota spends more on transit in non-urban areas than most other states. Minnesota has rural transit systems in 53 of 80 outstate counties and municipal transit systems in 34 of 39 regional centers. However, we also found that despite a growing number of systems, total ridership has not grown over the last decade and the cost per rider, controlling for inflation, has increased.

## **ADMINISTRATION AND FINANCING**

Funding for transit outside the seven-county Twin Cities metropolitan area is provided through the Minnesota Public Transit Assistance Program established in



1977.<sup>1</sup> The Office of Transit in the Minnesota Department of Transportation (Mn/DOT) administers state and federal transit assistance funds for outstate Minnesota.

The statutory purposes of the Public Transit Assistance Program include providing access to transit for persons who have no alternative transportation, increasing the efficiency and productivity of public transit systems, and alleviating problems of automobile congestion and energy consumption. This chapter does not make a systematic effort to evaluate the extent to which these or other goals are being achieved. Instead we examine available information on transit costs and ridership. Most transit benefits are directly tied to ridership since people have to use transit services in order for either users or society to obtain a benefit.

The statutory goals for outstate transit systems are similar to transit goals in the Twin Cities area, however outstate transit generally serves transit markets in which the population is smaller and more dispersed than in the Twin Cities. Small vehicle, demand-responsive service is typically offered outside the larger outstate centers. As we saw in Chapter 1, the economics of transit services are strongly affected by population size and density. The great majority of outstate systems have the elderly or disabled as their primary users whereas a major purpose of transit in larger cities is work-related trips during peak commuting periods.

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**Outstate transit operating costs totaled \$24 million in 1996.**

## Financing

Total outstate transit operating costs reached \$24 million in 1996. Table 4.1 shows transit operational costs for the state as a whole and five transit system categories. Transit financing is primarily a state and local responsibility. In 1996, 44 percent of transit revenues came from state government, and an additional 43 percent came from local sources, principally taxes and fares. About 12 percent came from the federal government. Over the last ten years, the share of operating costs funded by the state has increased from 33 percent to 44 percent, the share from federal sources has declined from 21 percent to 12 percent, and the local share has declined from 46 percent to 43 percent.

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**Table 4.1: Outstate Transit Operating Costs by Source of Revenue, 1996**

	Costs				Percent of Total Cost		
	Total Cost	State	Federal	Local	State	Federal	Local
Duluth	\$ 7,997,946	\$ 3,240,636	\$ 358,440	\$ 4,398,870	40.5%	4.5	55.0
Urbanized	4,653,591	2,200,387	591,767	1,861,437	47.3	12.7	40.0
Small Urban	3,798,098	1,570,374	708,491	1,519,233	41.3	18.7	40.0
Rural	6,515,726	3,027,999	1,203,843	2,283,884	46.5	18.5	35.0
Elderly/Disabled	1,053,370	557,363	127,327	368,680	52.9	12.1	35.0
Total	\$24,018,731	\$10,596,759	\$2,989,868	\$10,432,104	44.1%	12.4	43.4

NOTE: Cost estimates based on 1996 contracts and differ slightly from actual spending.

SOURCE: Minnesota Department of Transportation.

**State transit assistance requires a local share of 35 to 55 percent, including fare revenue.**

The required size of the local share depends on the type of system as defined in Minnesota law.<sup>2</sup> The required local share for operating support is 55 percent for transit systems in “large urbanized” areas (100,000 or more in population); 40 percent for systems in “urbanized” areas (50,000 to 100,000 population) and “small urban” areas (2,500 to 50,000 population); 35 percent for transit in “rural” service areas; and 35 percent for elderly and handicapped services. Figure 4.1 shows the systems within each category in 1996. As Figure 4.1 shows, Duluth is the only outstate urbanized area classified as a “large urbanized” system. Four

**Figure 4.1: Outstate Transit Systems, 1996**

Large Urbanized System	Rural Systems
Duluth DTA	Annandale
	Appleton
Urbanized Systems	Arrowhead
East Grand Forks	Beltrami Co.
Moorhead	ForksBrown Co.
Rochester	Chisago Co.
St. Cloud	Clay Co.
	Clearwater Co.
Elderly/Disabled Systems	Cottonwood Co.
Duluth STRIDE	Dawson
Moorhead	Fosston
Rochester ZVIPS	Hubbard Co.
St. Cloud Spec Serv.	Isanti Co.
	Lake of Woods
Small Urban Systems	Lincoln Co
Albert Lea	Mahnomen Co
Bemidji	Mahube
Benson	Meeker Co
Brainerd	Mille Lacs Co
Cloquet	Mower Co
Fairmont	Murray Co
Faribault	Nobles Co
Granite Falls	Ortonville
Hibbing	Pelican Rapids
Hutchinson	Pine River
Le Sueur	Prarie Five
Mankato	Renville Co
Marshall	Rock Co
Montevideo	Roseau Co
Monticello	Semcac
Morris	Sherburne Co
Northfield	Steele Co
Pipestone	Tri Cap
Red Wing	Tri Valley
St. Peter	Upsala
Stewartville	Wescap
Virginia	West Central
Willmar	
Winona	

SOURCE: Minnesota Department of Transportation.

<sup>2</sup> Minn Stat. §174.24

systems are “urbanized,” 24 systems are classified as “small urban,” and 37 systems are classified as “rural.” In addition, there are specialized elderly/disabled systems in Duluth, Moorhead, Rochester and St. Cloud.

Table 4.2 presents a further breakdown of the source of the local share in each type of system for 1996. The local share may be met from farebox collections, other operating revenues (such as advertising or special route guarantees) or local government revenues. Across all systems, Mn/DOT estimates that 21 percent of the operating spending came from farebox revenues and an additional 8 percent from other operating revenues in 1996. About 15 percent comes from local governmental sources including taxes. Fare revenues are a bigger share of

**Table 4.2: Outstate Transit System Revenue, 1996**

	<u>Total Cost</u>	<u>Local Share</u>	<u>Percent of Total Cost</u>			<u>Total</u>
			<u>Farebox</u>	<u>Other Operating Revenue</u>	<u>Local Government</u>	
Duluth	\$7,997,946	\$4,398,870	27.8%	9.7	17.5	55.0%
Urbanized	4,653,591	1,861,437	20.8	4.5	14.7	40.0
Elderly/Disabled	1,238,370	433,429	13.9	0.8	20.3	35.0
Small Urban	3,798,143	1,519,217	23.7	1.4	15.0	40.0
Rural	6,708,395	2,348,003	11.3	12.6	11.1	35.0
Total	\$24,396,445	\$10,560,956	20.6%	7.8	15.0	43.3%

NOTE: Estimates for Elderly/Disabled and Rural systems differ slightly from contracted amounts presented in other tables.

SOURCE: Minnesota Department of Transportation.

revenues in Duluth, accounting for 28 percent of transit funding in 1996. Fare revenues are a smaller share in rural and elderly and disabled systems which are mostly dial-a-ride systems whose fares typically do not cover a large part of operating costs. As Table 4.1 showed, these categories are required to make a 35 percent local match compared to 40 to 55 percent for the other categories.

Transit systems generally require public subsidies in order to operate, but the size of the subsidy (conversely, the amount of revenue derived from fares or other operations) varies considerably in Minnesota, as Table 4.3 shows:

**Fares contributed about 21 percent of outstate transit revenue in 1996.**

- **In Minnesota in 1996, about 29 percent of all outstate transit revenues were derived from operations (chiefly fares), and 71 percent were from government subsidies.**
- **The share of operating funds coming from operating revenues is highest in the Duluth regular route system (37 percent) and lowest for the specialized Elderly/Disabled systems in four larger outstate centers (18 percent).**
- **Fares and other operating revenues have declined as a source of revenues between 1986 and 1996 for the outstate systems as a whole, although the share of total revenues from operations has increased in the rural systems.**

**Table 4.3: Percent of Spending from Operating Revenues by Type of System, 1986-1996**

	1986	1988	1990	1992	1994	1996
Duluth	44.6%	41.8%	42.6%	42.2%	39.9%	37.5%
Urbanized	26.6	27.2	23.2	29.0	23.7	25.3
Elderly/Disabled	17.6	20.0	16.7	16.5	20.0	18.3
Small Urban	28.2	25.6	25.8	28.1	28.0	25.4
Rural	20.6	25.0	24.0	22.6	29.0	24.4
Total	33.9%	32.8%	31.3%	32.1%	31.3%	28.8%
Operating Revenue	\$4,860,258	\$ 5,016,401	\$ 5,508,249	\$ 6,353,258	\$ 6,574,983	\$ 6,922,361
Subsidy	9,480,419	10,296,806	12,106,218	13,450,568	14,433,805	17,096,370
Total Operating Costs	\$14,340,677	\$15,313,207	\$17,614,467	\$19,803,826	\$21,008,788	\$24,018,731

SOURCE: Minnesota Department of Transportation, Annual Transit Reports 1986-96.

**Government transit subsidies have increased over the last ten years.**

Another way of describing this trend is to say that governmental subsidies as a share of transit revenues have increased somewhat over time. Much of this trend is due to the fact that transit spending is increasing in dial-a-ride type services that require higher subsidies, and declining in regular route services that require lower public subsidies. In subsequent sections we will examine what has happened over the 1986 to 1996 period in transit ridership and take a look at indicators of transit effectiveness and efficiency.

**OUTSTATE TRANSIT SERVICES**

In this section we look at the size, type, and location of outstate transit operations. Figure 4.2 presents a map showing the location of outstate transit system in 1996. In 1996, 53 of 80 outstate counties had transit systems and 37 cities had municipal systems.<sup>3</sup> This represents substantial growth in systems over the last 10 years. In 1986 there were systems in 21 counties, and 29 municipalities.

The transit systems vary greatly in size and type. Table 4.4 shows the number of systems with fixed route, route deviation, and dial-a-ride service.<sup>4</sup> A system can have more than one type of service, and if it does, both types of service are

<sup>3</sup> These numbers do not correspond to the five-way categorization of transit systems used throughout this report. (See Table 4.1, for example). Some transit systems take in multi-county regions, and some municipal systems are not classified as “small urban” systems because they are in places too small to qualify for “small urban” financing.

<sup>4</sup> The terms “dial-a-ride” and demand responsive are used interchangeably to refer to transit service that provides door-to-door service by pre-arrangement. Route deviation is transit service that operates on a fixed route, from which it may deviate in response to a call for its service, or to take a passenger to a destination not on the route.

**Figure 4.2: Outstate Transit Systems, 1996**

SOURCE: Minnesota Department of Transportation

counted in Table 4.4. Fixed route and route deviation are suited to population centers and dial-a-ride service is suited to settings in which transit users' origins and destinations are too scattered to be served with regular routes even during peak times. Duluth and the four urbanized systems operate fixed route service. In addition, Duluth and three other larger centers operate dial-a-ride services for the elderly and disabled. However, only one of 24 small urban systems has fixed route service (although 11 have route-deviation service) and 20 have dial-a-ride service. None of the 37 rural systems has a fixed route system, 19 offer route deviation service, and 36 have dial-a-ride service.

Table 4.5 shows the number and type of vehicles used in outstate transit systems. Duluth and the four other systems in larger urban centers primarily use large buses. Duluth used 79 buses in 1995, the four other systems used a total of 59

**There are six fixed route transit systems in outstate Minnesota and 60 dial-a-ride systems.**

**Table 4.4: Number of Systems Operating Specific Route Types, 1995**

	<u>Fixed Route</u>	<u>Dial-A-Ride</u>	<u>Route Deviation</u>	<u>Total Systems</u>
Duluth	1	0	0	1
Urbanized	4	0	0	4
Elderly/Disabled	0	4	0	4
Small Urban	1	20	11	24
Rural	0	36	20	37

NOTE: Some systems operate multiple types of service.

SOURCE: Minnesota Department of Transportation, *1996 Transit Report*.

vehicles. In contrast, the elderly/disabled systems and the small urban and rural systems primarily use small buses or vans. The four elderly/disabled systems used 5-8 vehicles each (a total of 27), the 24 small urban systems used a total of 86 vehicles, virtually all of which were vans or small buses. The biggest system in this category, Mankato, had 15 vehicles in 1995. Most other systems used 3 to 5 vehicles.

Nearly all of the rural systems operate with less than six vehicles and many have just one small bus or van. An exception is the Arrowhead system, by far the largest rural system, which uses 53 vehicles including large, medium and small buses.<sup>5</sup>

Table 4.6 presents 1996 operating expense data for each outstate Minnesota transit system. Operating spending totaled about \$24 million altogether, and the Duluth

**Table 4.5: Number of Systems Operating Specific Vehicle Types, 1995**

	<u>Large Bus</u>	<u>Medium Bus</u>	<u>Small Bus/Van</u>	<u>Total Systems</u>	<u>Total Vehicles</u>
Duluth	1			1	79
Urbanized	4		2	4	59
Elderly/Disabled			4	4	27
Small Urban	1		24	24	86
Rural	1	7	37	37	146

NOTE: Some systems operate more than one type of vehicle.

SOURCE: Minnesota Department of Transportation, *1996 Transit Report*.

<sup>5</sup> The Arrowhead system is a large multi-county transit system in Northeast Minnesota stretching east and south from International Falls to Aitkin and Carlton counties. It operates some inter-city routes and demand responsive routes within cities.

**Table 4.6: Outstate Minnesota Transit Systems, Operating Expenses, 1996**

Duluth	\$7,752,690	Rural	
Urbanized		Annandale	\$70,594
East Grand Forks	\$140,113	Appleton	33,397
Moorhead	698,531	Arrowhead	2,183,320
Rochester	1,480,830	Beltrami Co.	108,334
St. Cloud	2,460,614	Brown Co.	274,406
	<u>\$4,780,088</u>	Chisago Co.	185,958
Small Urban		Clay Co.	105,605
Albert Lea	\$45,587	Clearwater Co.	145,364
Bemidji	138,218	Cottonwood Co.	48,638
Benson	103,904	Dawson	46,356
Brainerd	215,315	Fosston	35,870
Cloquet	77,856	Hubbard Co.	101,003
Fairmont	167,459	Isanti Co.	190,798
Faribault	132,919	Lake of Woods	29,308
Granite Falls	64,930	Lincoln Co.	109,750
Hibbing	130,022	Mahnomen Co.	72,950
Hutchinson	148,535	Mahube	173,245
LeSueur	126,403	Meeker Co.	78,212
Mankato	809,510	Mille Lacs Co.	44,511
Marshall	146,271	Mower Co.	273,525
Montevideo	83,880	Murray Co.	54,871
Monticello	65,262	Nobles Co.	63,376
Morris	167,886	Ortonville	31,756
Northfield	129,863	Pelican Rapids	1,829
Pipestone	69,943	Pine River	40,207
Red Wing	166,341	Prairie Five	196,362
St. Peter	114,336	Renville Co.	55,624
Stewartville	55,039	Rock Co.	149,556
Virginia	154,453	Roseau Co.	54,293
Willmar	116,532	Semcac	43,730
Winona	234,154	Sherburne Co.	239,150
	<u>\$3,664,616</u>	Steele Co.	19,214
Elderly/Disabled		Tri Cap	205,538
Duluth	\$360,303	Tri Valley	267,375
Moorhead	120,310	Upsala	15,809
Rochester	223,045	Wescap	416,989
St. Cloud	405,687	West Central	<u>588,668</u>
	<u>\$1,109,345</u>	Total	\$24,062,229

SOURCE: Minnesota Department of Transportation.

transit system (regular route service) accounted for about a third of this amount. The four systems in the state's next largest urban centers spent \$4.8 million, most of which went to transit operations in St. Cloud and Rochester. About \$1.1 million supported operations for the elderly and handicapped in four large urban centers. These systems supplement the regular route service in these places.

A total of \$3.7 million was spent on operations in 24 small urban systems shown in Table 4.6. In this category the biggest systems are in Mankato, Winona, Brainerd, Morris, Fairmont, Red Wing, and Virginia.<sup>6</sup>

Finally, there are a total of 37 rural systems. By definition, these are systems that operate in rural areas and urban places of less than 2,500 people. Category labels can be misleading, however, because some of the rural systems are larger than many of the small urban systems, and one rural system, the Arrowhead Transit system is one of the largest systems in the state. Arrowhead Transit operates in seven Northeastern Minnesota counties from Cook to Koochiching in the northern part of the service area to Itasca and Carlton counties in the south. Arrowhead operations cost \$2.2 million in 1996. The rural systems as a whole had operating costs of \$6.8 million in 1996.

## TRANSIT SYSTEM PERFORMANCE

### Operating costs increased 23 percent in constant dollars between 1986 and 1996.

Chapter 1 examined several performance measures for Metro Transit and other transit operations in the Twin Cities Metropolitan Area. In general, there is less statistical information available on the smaller transit systems in outstate Minnesota, but we were able to assemble data reflecting the scope of outstate transit operations such as spending, ridership, hours of operation, and system miles and on effectiveness and efficiency, such as cost per rider, cost per mile, and cost per hour.

First, we reviewed operating cost trends from 1986 to 1996. Table 4.7 presents summary data for the state as a whole and the five transit system categories we have been using. We found:

- **Operating costs increased about 23 percent in constant dollars over the ten year period. Total operating costs were about \$24 million in 1996 and \$19.6 million (in 1996 dollars) in 1986.**

**Table 4.7: Operating Expenses by Type of Transit System, 1986-1996**

	1996 Dollars						Change 1986-96
	1986	1988	1990	1992	1994	1996	
Duluth	\$8,907,392	8,463,656	\$8,240,217	\$8,004,989	\$8,187,815	\$7,752,690	-13.0%
Urbanized	3,973,865	3,892,462	4,001,455	4,291,488	4,713,020	4,780,088	20.3
Elderly/Disabled	692,687	755,159	773,776	894,642	1,005,491	1,109,345	60.2
Small Urban	3,383,229	3,262,348	3,498,990	3,585,897	3,519,424	3,664,616	8.3
Rural	<u>2,677,550</u>	<u>3,172,060</u>	<u>4,217,962</u>	<u>4,314,380</u>	<u>4,957,576</u>	<u>6,755,491</u>	<u>152.3</u>
Total	\$19,634,723	\$19,545,685	\$20,732,400	\$21,091,395	\$22,383,326	\$24,062,229	22.5%

SOURCE: Minnesota Department of Transportation.

<sup>6</sup> These are systems with operating spending of \$150,000 or more in 1996.



Over the period, operating costs in constant dollars declined in Duluth, remained about the same in the four larger urban areas and in the small urban systems, and rose sharply in the elderly/disabled systems and rural systems. In the case of the rural systems this reflects growth in the number of rural transit systems during the decade.

We examined several performance indicators: ridership, cost per passenger, cost per mile, and cost per hour. We found:

- **Total ridership has fluctuated from year to year, but is essentially constant over the period.**

As we show in Table 4.8, ridership declined from 8.6 million passengers in 1986 to 8.5 million in 1996. While total ridership has changed little, there are significant differences in ridership growth between the five transit system categories. Duluth suffered a sharp ridership loss from 1986 to 1996. Ridership was 4.5 million in 1986, but fell to 3.2 million in 1996. Actually, Duluth ridership exceeded 5 million in 1982, so a substantial decline had occurred prior to the period covered in Table 4.8.

**Table 4.8: Ridership and Cost per Rider, 1986-1996**

Ridership	1986	1988	1990	1992	1994	1996	Change 1986-96
Duluth	4,464,397	4,701,121	3,662,230	3,426,517	3,217,001	3,229,420	-27.7%
Urbanized	2,329,427	2,384,816	2,728,483	2,766,870	2,769,898	2,786,268	19.6
Elderly/Disabled	101,115	127,826	130,113	132,054	145,797	166,787	64.9
Small Urban	1,244,275	1,161,018	1,273,997	1,267,966	1,280,221	1,258,242	1.1
Rural	<u>428,801</u>	<u>483,055</u>	<u>714,808</u>	<u>698,723</u>	<u>832,942</u>	<u>1,049,273</u>	<u>144.7</u>
Total	8,568,015	8,857,836	8,509,631	8,292,130	8,245,859	8,489,990	-0.9%
Cost Per Rider (1996 Dollars)							
Duluth	\$2.00	\$1.80	\$2.25	\$2.34	\$2.55	\$2.40	20.3%
Urbanized	1.71	1.63	1.47	1.55	1.70	1.72	0.6
Elderly/Disabled	6.85	5.91	5.95	6.77	6.90	6.65	-2.9
Small Urban	2.72	2.81	2.75	2.83	2.75	2.91	7.1
Rural	<u>6.24</u>	<u>6.57</u>	<u>5.90</u>	<u>6.17</u>	<u>5.95</u>	<u>6.44</u>	<u>3.1</u>
Total	\$2.29	\$2.21	\$2.44	\$2.54	\$2.71	\$2.83	23.7%

SOURCE: Minnesota Department of Transportation.

Ridership increased substantially in the four elderly/disabled systems, going from 101,115 rides in 1986 to 166,787 rides in 1996. In rural systems, ridership more than doubled, from 428,801 to 1.0 million passengers in 1996. In the four larger urban centers (86 percent of 1996 ridership in this category is in St. Cloud and Rochester) ridership rose slightly from 2.3 million passengers to 2.8 million. St. Cloud ridership increased by nearly one-half million, and Rochester ridership declined by 120,000 passengers.

We have seen that ridership has declined a little in outstate systems over ten years and that costs were up 23 percent in constant dollars. It follows that the cost per ride will have increased during the same period, and Table 4.8 shows that:

- **The cost per rider in constant dollars was up about 24 percent over the decade.**

The cost per rider (in 1996 dollars) was \$2.29 in 1986 and \$2.83 in 1996. Over the ten year period, the cost per rider was steady to higher in all categories but the elderly/disabled systems, where there was a decline of 2.9 percent to \$6.65 per ride. In addition, the cost per rider is lowest in urban systems and higher in rural systems.

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**The cost per rider has increased 24 percent in constant dollars between 1986 and 1996.**

The three categories of urban systems shown in Table 4.8, large urban, urbanized, and small urban all have per rider costs half as high as the rural or elderly/disabled systems. In the urban categories, per ridership costs ranged from \$1.72 to \$2.91 in 1996 compared to \$6.44 per ride in the rural systems and \$6.65 in the elderly/disabled systems. The elderly/disabled and rural systems mostly provide individualized dial-a-ride service, and this type of service is inherently more expensive than regular route service.

The question may be asked if essentially flat ridership from 1986 to 1996 is due to a decline in transit vehicle miles. Vehicle miles reflect the scope of transit operations in particular places or statewide, and a decline in transit service might well be accompanied by a loss of riders. Table 4.9 shows, to the contrary, that there has been significant growth in total outstate vehicle miles over the period 1986 to 1996. Total miles were 6.7 million miles in 1986 and 13.4 million miles in 1996. This represents growth over the period of about 100 percent. As we noted earlier, total operating expenses increased by about 23 percent in constant dollars, so it follows that the cost per mile has declined between 1986 and 1996. Table 4.9 shows that the cost per mile declined about 39 percent overall with the largest decline (51 percent) occurring in the rural systems. The number of rural systems increased from 14 to 37 between 1986 and 1996. The cost per mile declined about 34 percent in the established systems (as we will see later in this chapter), but newer systems also helped lower the average per mile cost of rural transit systems. Rural systems generally operate small vehicles, often using volunteer drivers so an increasing share of such systems should lower the cost per mile, and this has happened.

Static ridership over the period 1986 to 1996 combined with a doubling of vehicle miles traveled means that:

- **The number of passengers carried per mile has decreased substantially.**

Passengers (or riders) per mile is a widely used measure of transit system effectiveness. As Table 4.9 shows, outstate systems carried 1.30 riders per mile in 1986. By 1996, this number decreased to 0.63 riders per mile, a decrease of 51 percent. A look at riders per mile for the different types of systems helps explain what is happening. Riders per mile in 1996 was 1.61 in Duluth but only 0.29 for the elderly/disabled systems and 0.15 for the rural systems.

Total outstate riders per mile declined quite sharply because the share of total outstate ridership increased significantly in the elderly/disabled and rural categories. The elderly/disabled and rural systems are the rapidly growing

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**Transit systems are carrying fewer passengers per mile of service.**

**Table 4.9: Vehicle Miles, Cost per Mile and Riders per Mile, 1986-1996**

<u>Vehicle Miles</u>	<u>1986</u>	<u>1988</u>	<u>1990</u>	<u>1992</u>	<u>1994</u>	<u>1996</u>	<u>Change 1986-96</u>
Duluth	2,006,872	2,128,173	2,133,703	2,028,532	2,019,630	2,010,956	0.2%
Urbanized	1,539,234	1,653,681	1,628,970	1,774,796	1,928,197	1,894,572	23.1
Elderly/Disabled	324,949	383,425	409,152	457,478	497,024	571,519	75.9
Small Urban	1,443,683	1,446,782	1,714,506	1,714,851	1,816,309	1,860,334	28.9
Rural	<u>1,380,273</u>	<u>1,962,463</u>	<u>3,554,615</u>	<u>3,617,980</u>	<u>5,089,254</u>	<u>7,078,026</u>	<u>412.8</u>
Total	6,695,011	7,574,524	9,440,946	9,593,637	11,350,414	13,415,407	100.4%
<u>Cost per Mile (1996 Dollars)</u>							
Duluth	\$4.44	\$3.98	\$3.86	\$3.95	\$4.05	\$3.86	-13.1%
Urbanized	2.58	2.35	2.46	2.42	2.44	2.52	-2.3
Elderly/Disabled	2.13	1.97	1.89	1.96	2.02	1.94	-8.9
Small Urban	2.34	2.25	2.04	2.09	1.94	1.97	-15.9
Rural	<u>1.94</u>	<u>1.62</u>	<u>1.19</u>	<u>1.19</u>	<u>0.97</u>	<u>0.95</u>	<u>-50.8</u>
Total	\$2.93	\$2.58	\$2.20	\$2.20	\$1.97	\$1.79	-38.8%
<u>Riders per Mile</u>							
Duluth	2.22	2.21	1.72	1.69	1.59	1.61	-27.8%
Urbanized	1.51	1.44	1.67	1.56	1.44	1.47	-2.8
Elderly/Disabled	0.31	0.33	0.32	0.29	0.29	0.29	-6.2
Small Urban	0.86	0.80	0.74	0.74	0.70	0.68	-21.5
Rural	<u>0.31</u>	<u>0.25</u>	<u>0.20</u>	<u>0.19</u>	<u>0.16</u>	<u>0.15</u>	<u>-52.3</u>
Total	1.30	1.17	0.90	0.86	0.73	0.63	-50.5%

SOURCE: Minnesota Department of Transportation.

categories of service. In addition, there were declines in riders per mile within each category. For example, riders per mile declined 22 percent in the small urban systems.

Another way of looking at the same issue is to consider miles per passenger instead of passengers per mile. Clearly, transit systems differ in the types of trips they provide. Regular route transit systems like those in Duluth and other urban centers with fixed routes travel shorter distances per passenger in a relatively densely settled urban environment. Rural and demand-responsive systems travel greater distances over a more thinly settled area. The dial-a-ride systems for the elderly and disabled in the four larger outstate urban centers traveled an average of 2.9 miles per passenger in 1987 and 3.4 miles in 1996. The rural systems averaged 3.7 miles per passenger in 1987 and 6.7 miles in 1996. As noted, these two service categories are where the greatest growth in transit services is occurring.

The ten-year trend in passengers per mile or miles per passenger in outstate transit is not much different from the general trend for the Twin Cities we examined in Chapter 1. Ridership gains have been in types of service characterized by relatively longer trips that cost more money per trip.

Another measure of transit system performance in widespread use is cost per hour. We were able to assemble data for the period 1991 to 1996. As Table 4.10 shows:

- **Hours of service increased 4.5 percent between 1991 and 1996.**

### **The cost per mile has declined between 1986 and 1996.**

- **Cost per hour (in 1996 dollars) remained virtually constant from 1992 to 1996.**
- **Large buses cost more to operate than small buses and vans, so hourly operating costs are higher in systems like the one in Duluth than in the rural systems.**

Table 4.10 shows that hours of service increased from 764,000 hours to 798,000 hours (4.5 percent) between 1991 and 1996. In comparison, vehicle miles increased 38 percent during the same period. This is another illustration of the fact, noted earlier, that trips are becoming longer and vehicle miles are increasing faster than hours of operation.

**Table 4.10: Hours of Service and Cost per Hour, 1991-1996**

Hours	1991	1992	1993	1994	1995	1996	Change 1991-1996
Duluth	155,024	152,975	152,323	152,511	149,970	149,615	-3.5%
Urbanized	115,381	120,206	124,230	127,343	130,618	128,992	11.8
Elderly/Disabled	34,859	35,760	46,051	39,908	44,497	48,719	39.8
Sm Urban	149,867	152,460	147,705	158,251	158,338	160,948	7.4
Rural	<u>308,897</u>	<u>214,060</u>	<u>245,466</u>	<u>267,559</u>	<u>274,654</u>	<u>309,754</u>	<u>0.3</u>
Total	764,028	675,461	715,775	745,572	758,077	798,028	4.5%
<b>Cost Per Hour (1996 Dollars)</b>							
Duluth	\$51.79	\$52.33	\$51.22	\$53.69	\$52.13	\$51.82	0.1%
Urbanized	35.01	35.70	36.16	37.01	35.74	37.06	5.9
Elderly/Disabled	24.80	25.02	20.46	25.20	24.21	22.77	-8.2
Sm Urban	23.11	23.52	24.17	22.24	22.63	22.77	-1.5
Rural	<u>13.63</u>	<u>20.16</u>	<u>18.54</u>	<u>18.53</u>	<u>21.57</u>	<u>21.81</u>	<u>60.0</u>
Total	\$26.97	\$31.23	\$29.84	\$30.02	\$30.43	\$30.15	11.8%

SOURCE: Minnesota Department of Transportation.

Table 4.10 shows that the cost per hour has stayed almost constant in all but one transit system category (rural systems) from 1991 to 1996. In fact, the cost per hour was quite steady in the rural systems from 1992 to 1996. The 1991 number is out of line, and it is possible that there is a problem with the 1991 hours estimate for the rural systems. In any case, we conclude that transit hourly costs are not increasing faster than inflation.

## SAME-SYSTEM ANALYSIS

As we have seen, despite increased spending on transit operations and significant subsidies to riders, transit ridership has not increased in outstate systems as a whole. Growth has been centered in the elderly/disabled systems and the rural systems. Below, we examine the issue of how much of the change in various transit performance indicators has occurred in the systems that were operating both in 1986 and 1996.

The number of systems in some categories has not changed. In both 1986 and 1996 Duluth was the only “large urbanized” system, and the elderly/disabled and urbanized categories also stayed the same. The number of rural systems has sharply increased over the ten-year period. In 1986 there were 14 rural systems, and in 1996 there were 37 rural systems in outstate Minnesota. There were 20 small urban systems in 1984 and 24 in 1996. Thus, we were able to compare data on 14 rural systems and 20 small urban systems for both years in addition to all the elderly/disabled, urbanized, and large urbanized systems.

Table 4.11 presents data on the transit systems that operated both in 1986 and 1996. The table shows:

- **In Duluth, operating spending declined about 13 percent in constant dollars between 1986 and 1996, from \$8.9 million to \$7.8 million. Ridership dropped 28 percent.**
- **Operating spending in the elderly/disabled systems rose 60 percent in constant dollars to \$1.1 million in 1996, and ridership increased 65 percent.**
- **Operating spending increased about 20 percent to \$4.8 million in constant dollars in the four urbanized area systems in 1996, and ridership was up close to 20 percent.**
- **In 20 small urban systems, operating costs were almost unchanged and ridership declined 7 percent in the decade.**
- **In 14 rural systems, operating costs increased 31 percent in real dollars and ridership rose 26 percent.**

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**In general, transit ridership has increased less than operating costs.**

The data just introduced generally show transit ridership in established systems increased more slowly (in percentage terms) than operating expenditures in constant dollars. This suggests there has been no general improvement in cost-effectiveness over the decade. Cost per rider increased in every category except elderly/disabled.

However, cost per mile, a measure of operational efficiency, declined in each case.<sup>7</sup> Cost per mile declined 13 percent in Duluth, 2 percent in the four urbanized systems, 9 percent in the elderly/disabled systems, 16 percent in the small urban systems and 35 percent in the 14 rural systems. These numbers could reflect a switch to smaller vehicles, lower fuel prices, better management, or other factors.

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<sup>7</sup> We could make the same point by looking at cost per hour which is correlated with cost per mile, but we do not have cost per hour data for years before 1991.

**Table 4.11: Change in Operating Costs, Ridership and System Miles, 1986-1996**

	Operating Cost (Constant Dollars)	Ridership	Vehicle Miles
Duluth DTA	-13.0%	-27.7%	0.2%
Urbanized			
East Grand Forks	13.2%	49.4%	-2.4%
Moorhead	1.9	28.3	0.4
Rochester	14.4	-12.6	37.4
St. Cloud	<u>31.5</u>	<u>45.2</u>	<u>27.7</u>
Total	20.3%	19.6%	23.1%
Elderly/Disabled			
Duluth STRIDE	60.6%	50.9%	85.8%
Moorhead	44.4	29.3	26.3
Rochester ZVIPS	31.9	7.9	44.0
St. Cloud Spec Serv.	<u>87.9</u>	<u>171.2</u>	<u>108.5</u>
Total	60.2%	64.9%	75.9%
Small Urban			
Albert Lea	-0.6%	-33.7%	0.3%
Bemidji	-5.8	64.7	23.8
Benson	201.2	455.2	561.6
Brainerd	13.8	37.2	68.1
Cloquet	-44.7	9.3	-21.7
Fairmont	27.8	46.1	48.6
Faribault	-26.8	-42.9	-45.2
Hibbing	10.6	94.6	155.8
Hutchinson	16.9	6.8	13.5
Le Sueur	24.4	-20.8	-2.2
Mankato	-5.7	-31.7	-10.6
Marshall	101.6	108.3	94.2
Montevideo	-47.9	-45.1	-23.5
Morris	11.0	1.2	-8.1
Northfield	14.8	48.6	78.3
Pipestone	59.4	11.5	94.4
Red Wing	74.0	201.2	106.7
Virginia	-31.4	-0.7	-12.7
Willmar	-26.6	9.6	64.6
Winona	<u>-18.6</u>	<u>-42.2</u>	<u>-10.9</u>
Total	-0.5%	-6.6%	18.7%
Rural			
Appleton	3.3%	-2.5%	6.9%
Arrowhead	24.9	29.7	107.2
Chisago Co.	263.4	229.8	101.8
Clearwater Co.	376.6	299.4	811.0
Cottonwood Co.	153.0	0.8	94.8
Lincoln Co.	8.8	13.6	-31.2
Mahube	-6.3	-18.9	34.1
Ortonville	-20.6	36.6	100.4
Pelican Rapids	-6.0	22.5	11.4
Pine River	7.3	-40.3	-31.1
Tri Cap	70.2	83.4	236.5
Tri Valley	11.9	1.3	5.3
Upsala	<u>12.3</u>	<u>-58.2</u>	<u>17.6</u>
Total	31.3%	26.1%	101.4%

**Ridership has declined significantly in a number of systems including Duluth, Albert Lea, Faribault, Montevideo, and Winona.**

**Ridership has increased significantly in St. Cloud, Bemidji, Fairmont, Hibbing, Marshall, Red Wing, and in other systems.**

SOURCE: Minnesota Department of Transportation.

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**On the whole, ridership declined between 1986 and 1996 in transit systems that were operating over this period. This decline was largely offset by the creation of new systems.**

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**Minnesota is 9th of 41 states in transit spending outside urbanized areas.**

These two facts, lower cost per mile to operate vehicles, but increased cost per rider due to increased operations in sparsely settled areas, raise a question about the potential for expanded transit operations.<sup>8</sup> We conclude:

- **At least during the last decade or so, many transit systems have had to travel farther and spend more money (in constant dollars) to serve passengers. Taking all systems together, there was no growth over ten years in the number of people using transit systems in operation over the period. Where growth did occur, it was generally due to expansion of transit service into new areas.**

## ADEQUACY OF TRANSIT SERVICES

There is no perfect approach to measuring the adequacy of transit services in outstate Minnesota. We look at two types of data: transit spending outside the urbanized areas of Minnesota compared to other states, and the extent to which outstate centers of population and economic activity are served by transit.

First we take a look at how transit spending outside of the urbanized areas compares with transit spending in non-urbanized areas in other states. The best data on this point come from the American Association of State Highway and Transportation Officials (AASHTO), however the data do not conform to the Twin Cities metropolitan/outstate Minnesota division used in this report (and in Minnesota funding and administration of transit services). AASHTO provides statistics on transit in urbanized areas and outside urbanized areas. In Minnesota, outside of the Twin Cities area, the following cities are part of urbanized areas as defined by the Census Bureau: Duluth, Rochester, St. Cloud, East Grand Forks, and Moorhead.<sup>9</sup>

The most recent AASHTO report presented data on transit for 1994. AASHTO estimates that transit operating budgets outside urbanized areas in Minnesota totaled \$12.8 million in 1994.<sup>10</sup> Table 4.12 shows how Minnesota compares to other midwestern states and to the national average. Minnesota's operating spending was \$6.41 per person in 1994 in non-urbanized areas compared to an (unweighted) national average for 41 reporting states of \$6.04. As shown in Table 4.12, only Iowa spends more than Minnesota among midwestern states. Minnesota spending is 9th highest among the 41 states reporting data to AASHTO. We think this limited information suggests:

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<sup>8</sup> In Chapter 1 we found the same trends in the Twin Cities area.

<sup>9</sup> The Census Bureau defines urbanized areas as one or more central cities plus contiguous areas with a density of at least 1,000 people per square mile. The total population of urbanized areas must be 50,000 or more.

<sup>10</sup> This estimate was based on data provided by Mn/DOT, however Mn/DOT now feels that \$11.9 million is a more accurate estimate of 1994 transit spending in non-urbanized areas. Use of this number changes the per-capita estimate of transit spending from \$6.41 to \$5.94, but Minnesota's rank among the states remains the same.

**Table 4.12: Transit Operating Costs, Non-Urbanized Areas, 1994**

	1990 Non-Urbanized Population	Operating Costs Per Person
Illinois	2,951,915	\$2.77
Iowa	1,834,102	9.83
<b>Minnesota</b>	<b>2,004,164</b>	<b>6.41</b>
No. Dak.	436,466	5.75
Ohio	4,190,141	2.74
So. Dak.	532,018	2.76
Wisconsin	<u>2,427,048</u>	<u>3.67</u>
US Total (41 States)	90,450,995	\$6.04

SOURCE: American Association of State Highway and Transportation Officials, Survey of State Involvement in Public Transportation.

- **Minnesota transit spending in non-urbanized areas is relatively high compared to other midwestern states and the nation as a whole.**

This finding is consistent with comparisons of Minnesota public spending in other areas, but the AASHTO survey does not provide more detailed information which might support further analysis of the factors behind inter-state differences in transit spending.

In the following section we examine how many of the regional centers in Minnesota now have transit systems. This will provide one measure of the potential for future outstate transit growth in new areas. A study by the Center for Urban and Regional Affairs (CURA) at the University of Minnesota classified urban places in Minnesota and other upper-Midwest states based on population and economic activity.<sup>11</sup> Table 4.13 lists the primary regional trade centers, secondary regional trade centers, and “complete shopping centers” from the CURA study, and indicates which have public transit systems.<sup>12</sup> As Table 4.13 shows, one of ten secondary trade centers, La Crescent in Houston County, does not have transit and four of 27 complete shopping centers, Breckenridge, Fergus Falls, Little Falls, and Waseca, do not have transit.

Thus, transit systems are operating in nearly all primary, secondary, and tertiary regional centers in Minnesota and, as we observed earlier, in 53 out of 80 outstate counties. According to Mn/DOT there is room for future expansion, but not every county and community is interested in transit, or interested in transit if it requires

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**Minnesota has county or multi-county transit systems in 53 of 80 outstate counties and municipal systems in 34 of 39 regional centers.**

<sup>11</sup> Thomas L. Anding, John S. Adams, William Casey, Sandra de Montille, and Miriam Goldfein, *Trade Centers of the Upper Midwest: Changes from 1960 to 1989*, University of Minnesota, Center for Urban and Regional Affairs, Publication No. CURA 90-12, 1990.

<sup>12</sup> These categories correspond to the CURA report’s trade center classes 1, 2, and 3. In addition (not shown here) there are classes 4 through 6: Partial Shopping Centers, Full Convenience Centers, and Minimum Convenience Centers.



**Table 4.13: Public Transit Systems Serving Outstate Regional Centers, 1997**

<u>Regional Center</u>	<u>Center Type</u>	<u>Population</u>	<u>Transit</u>
Albert Lea	S	18,310	Yes
Alexandria	C	8,029	Yes
Austin (Mower)	C	21,953	Yes
Bemidji	S	11,172	Yes
Brainerd	S	12,353	Yes
Breckenridge (Wilkin)	C	3,708	No
Buffalo (Wright)	C	6,856	Yes
Cloquet	C	10,885	Yes
Crookston	C	8,119	Yes
Detroit Lakes	C	7,151	Yes
Duluth	P	85,493	Yes
East Grand Forks	S	8,658	Yes
Elk River	C	11,143	Yes
Fairmont	C	11,265	Yes
Faribault	C	17,090	Yes
Fergus Falls (Otter Tail)	C	12,701	No
Grand Rapids	C	7,976	Yes
Hibbing	C	18,046	Yes
Hutchinson	C	11,455	Yes
International Falls	C	8,325	Yes
LaCrescent (Houston)	S	4,320	No
Little Falls (Morrison)	C	7,232	No
Mankato	S	31,419	Yes
Marshall	C	12,023	Yes
Montevideo	C	5,499	Yes
Moorhead	P	32,295	Yes
New Ulm (Brown)	C	13,132	Yes
Northfield	C	14,684	Yes
Owatonna (Steele)	C	19,386	Yes
Park Rapids	C	2,863	Yes
Red Wing	C	15,139	Yes
Rochester	S	70,997	Yes
St. Cloud	S	48,812	Yes
Thief River Falls	C	8,010	Yes
Virginia	C	9,431	Yes
Waseca (Waseca)	C	8,385	No
Willmar	S	17,531	Yes
Winona	S	26,286	Yes
Worthington	C	9,977	Yes
Total		658,109	

P = Primary Regional Center  
 S = Secondary Regional Center  
 C = Complete Shopping Center

SOURCE: Minnesota Department of Transportation Interregional Corridors Study, Statewide Transportation Plan Research Centers defined in "Trade Centers of the Upper Midwest: Changes from 1960 to 1990" University of Minnesota Center for Urban and Regional Affairs.

a significant local financial match.<sup>13</sup> Mn/DOT anticipates growth in outstate transit in the future, but says that it has been able to fund all grant proposals so far, and has not cut off funding for any operating systems. One measure of the adequacy of transit funding is whether there are Minnesota cities or counties that want transit, can arrange to raise the local match, but are prevented from going forth with their plans because there is not enough state money available. This is not the case at the moment. Mn/DOT estimates the cost of starting up a small system at about \$100,000 in annual operating spending with an additional \$100,000 required for two vehicles.

## The Relationship of Funding and Performance

In this section we examine the question of what Mn/DOT does when it observes poor transit performance in one of the outstate systems receiving state support. In addition we raise the question of how closely transit funding should be tied to performance.

Mn/DOT's policy is to monitor transit system performance, but not to base funding decisions on a close comparison of performance against quantitative standards. A review of performance data on individual systems shows examples of systems with performance problems at a given point in time. In many cases, Mn/DOT is working with the systems to improve performance. Part of the responsibility of Mn/DOT's project managers in the Office of Transit is to provide technical assistance. We did not set out to evaluate the performance of the Office of Transit on this function or others. We did seek to understand their approach to overseeing the local systems and learned that their governing philosophy is to continue funding systems with performance problems if at all possible, and work with them to correct any problems. There is no expectation that different systems should achieve the same performance level since the local conditions they face are quite different.

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**Transit performance statistics vary quite widely.**

Having said this, in Table 4.14 we present two performance indicators, cost per rider and cost per mile for each transit system operating in both 1986 and 1996, and the percentage change over the decade in the measures. Financial data are in 1996 dollars, so the effect of inflation over the period is controlled.

As Table 4.14 shows, the cost per rider in 1996 varies quite widely within each category. For example, the cost per rider is \$11.63 in the Duluth STRIDE system (serving the elderly and disabled) compared to an average of \$6.65 for the elderly/disabled category as a whole. The cost per rider in the small urban systems varies from \$1.82 in Winona to \$6.05 in Hutchinson. In the rural systems, the cost per rider varies from a low of \$0.55 per rider in the Pelican Rapids system to \$9.88 in the Tri-Cap system (serving Benton and Stearns

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<sup>13</sup> Some transit fleets, not considered in this report, are operated by human service organizations serving the elderly or disabled. These may significantly serve the needs of particular areas. Also, medically related transportation of people on medicaid is covered everywhere.

**Table 4.14: Change in Cost per Rider and Cost per Mile, 1986-1996**

	1996		Percent Change 1986-1996 (Constant Dollars)	
	Cost per Rider	Cost per Mile	Cost per Rider	Cost per Mile
Duluth	\$2.40	\$3.86	20.3%	-13.1%
Urbanized				
East Grand Forks	\$5.98	\$2.92	-24.2%	16.0
Moorhead	2.03	1.93	-20.6	1.5
Rochester	1.78	2.46	31.0	-16.7
St. Cloud	<u>1.55</u>	<u>2.79</u>	<u>-9.4</u>	<u>3.0</u>
Total	\$1.72	\$2.52	0.6%	-2.3%
Elderly/Disabled.				
Duluth STRIDE	\$11.63	\$1.66	6.4%	-13.6%
Moorhead	8.02	3.94	11.7	14.3
Rochester ZVIPS	5.10	1.67	22.3	-8.4
St. Cloud Spec Serv.	<u>5.27</u>	<u>2.12</u>	<u>-30.7</u>	<u>-9.9</u>
Total	\$ 6.65	\$ 1.94	-2.9%	-8.9%
Small Urban				
Albert Lea	\$3.06	\$2.25	50.0%	-0.9%
Bemidji	2.15	1.55	-42.8	-24.0
Benson	2.26	1.52	-45.7	-54.5
Brainerd	2.92	1.71	-17.0	-32.3
Cloquet	3.29	1.35	-49.4	-29.4
Fairmont	3.13	1.41	-12.5	-14.0
Faribault	4.24	2.31	28.1	33.5
Hibbing	2.46	1.48	-43.2	-56.8
Hutchinson	6.05	3.33	9.4	3.0
Le Sueur	4.82	3.47	57.2	27.2
Mankato	2.98	3.50	38.1	5.5
Marshall	4.21	1.33	-3.2	3.8
Montevideo	2.78	1.93	-5.1	-31.9
Morris	3.08	2.46	9.8	20.8
Northfield	3.28	1.72	-22.8	-35.6
Pipestone	3.18	2.09	42.9	-18.0
Red Wing	3.35	1.57	-42.2	-15.8
Virginia	2.56	1.60	-30.9	-21.4
Willmar	1.93	1.36	-33.0	-55.4
Winona	<u>1.82</u>	<u>1.48</u>	<u>40.8</u>	<u>-8.6</u>
Total	\$2.89	\$1.96	6.5%	-16.2%
Rural				
Appleton	\$3.59	\$2.81	6.0%	-3.4%
Arrowhead	6.10	1.23	-3.8	-39.7
Chisago Co.	6.08	1.10	10.2	80.1
Clearwater Co.	8.38	0.61	19.3	-47.7
Cottonwood Co.	4.05	1.08	151.0	29.9
Lincoln Co.	7.42	3.50	-4.2	58.2
Mahube	7.49	1.13	15.5	-30.2
Ortonville	2.93	2.57	-41.9	-60.4
Pelican Rapids	0.55	0.41	-23.2	-15.6
Pine River	6.32	4.21	79.7	55.7
Tri Cap	9.88	1.01	-7.2	-49.4
Tri Valley	9.71	2.52	10.4	6.3
Upsala	<u>6.11</u>	<u>1.28</u>	<u>168.4</u>	<u>-4.5</u>
Total	\$6.42	\$1.24	4.1%	-34.8%

SOURCE: Minnesota Department of Transportation.

counties).<sup>14</sup> In comparison, the cost per mile varies less across systems and system categories. The cost per rider has increased in each type of system except elderly/disabled, and the cost per mile has decreased in each category.

As noted, differences in the numbers should not be assumed to reflect differences in efficiency or effectiveness of the systems. We did not investigate the individual system performance numbers in any detail. Some numbers do raise questions, and we inquired about the reasons in some cases in order to develop a general sense of Mn/DOT's response to potential problems. We learned that some of the systems with apparent performance problems have recently undertaken efforts, with Mn/DOT's assistance, to restructure their transit operations. It is worth noting that Mn/DOT does have an information system that collects financial and performance data monthly, and publishes annual reports that present useful information on outstate transit operations.

## CONCLUSIONS

Most of the growth in transit ridership and transit spending is in demand responsive systems serving the elderly or operating in rural areas. Many established systems in larger urban centers are stable or declining in ridership. And, as we have just seen there are only a few regional centers that are not now served by some type of public transit. We conclude that outstate transit has just about completed its period of rapid expansion, and is entering a period in which closer attention should be paid to performance of existing systems than establishment of new systems.

Mn/DOT favors continued funding of transit systems that are functional, even those whose performance leaves substantial room for improvement. Mn/DOT has not discontinued funding for any system in the last ten years because of poor performance. An alternative approach is possible, tying funding more closely to performance and rewarding superior performance with more money. Mn/DOT's approach may be more suited to an era when outstate transit is being developed, than an era when new transit money is scarce and good proposals for new systems or expansion of existing systems are relatively few. If not now, then at some point in the future, in order to get the most from limited dollars, Mn/DOT may well have to choose between funding below average performers and funding more efficient and effective transit systems elsewhere in the state.

We do not recommend moving to a mechanistic or rigid application of performance criteria or formulas, but closer attention to performance of individual systems will be necessary if demand for transit assistance exceeds the availability of state funds. We suggest that Mn/DOT periodically compare similar transit services on major performance indicators and make a formal effort to understand the reasons behind poor performance by those that are significantly underperforming by quantitative standards. Metro Transit in the Twin Cities

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**We recommend that Mn/DOT carry out a more formal review of systems that are under-performing.**

<sup>14</sup> The Pelican Rapids transit system is very small, with operating expenses of about \$1,829 f or 1996, as reported in Table 4.6. The service runs one van using a group of volunteer drivers. As we note in the text, there are reasons why some systems should cost less than others, and the numbers in Table 4.14 cannot be interpreted without additional information. They do provide a starting point for Mn/DOT in monitoring transit performance.

subjects routes to varying levels of review based on two performance indicators, and a similar approach could productively be used by Mn/DOT.

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# Additional Comparisons of Metropolitan Transit Systems Across the Country

## APPENDIX

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### Figure A.1: Urbanized Areas and Transit Agencies in Our Comparison Group

**Atlanta, GA**

Cobb Community Transit  
Douglas County Rideshare  
Metropolitan Atlanta Rapid Transit Authority (MARTA)

**Baltimore, MD**

Harford County Transit Service  
Mass Transit Administration (MTA)  
The Columbia Transit System

**Boston, MA**

Cape Ann Transportation Authority  
Massachusetts Bay Transportation Authority (MBTA)

**Buffalo-Niagara Falls, NY**

Niagara Frontier Transit System, Inc. (NFTA)

**Cincinnati, OH-KY**

Southwest Ohio Regional Transit Authority (SORTA)  
Transit Authority of Northern Kentucky

**Cleveland, OH**

Brunswick Transit Alternative  
Greater Cleveland Regional Transit Authority (RTA)  
LAKETRAN

**Columbus, OH**

Central Ohio Transit Authority (COTA)

**Dallas-Forth Worth, TX**

City of Mesquite Parks and Recreation  
Dallas Area Rapid Transit Authority (DART)  
Dart Contract Services  
Fort Worth Transportation Authority (The T)  
Handitran Special Transit Division

**Denver, CO**

Regional Transportation District (RTD)

**Detroit, MI**

City of Detroit Department of Transportation  
Detroit Transportation Corporation  
Suburban Mobility Authority for Regional Transportation

**Fort Lauderdale-Hollywood-Pompano Beach, FL**

Broward County Mass Transit Division  
Broward Contract Services  
Tri-County Commuter Rail Authority

**Houston, TX**

Metropolitan Transit Authority of Harris County (Metro)

**Indianapolis**

Indianapolis Public Transportation Corporation (Metro)

**Kansas City, MO-KS**

Johnson County Transportation Department  
Kansas City Area Transportation Authority (KCATA)

**Miami-Hialeah, FL**

Metro-Dade Transit Agency (MDTA)  
MDTA Contract Services

**Milwaukee, WI**

Milwaukee County Paratransit System  
Milwaukee County Transit System  
Waukesha County Transportation Department  
Waukesha Transit System Utility

**Minneapolis-Saint Paul, MN**

Metro Transit

**New Orleans, LA**

Louisiana Department of Transportation  
Louisiana Transit Company, Inc.  
Regional Transit Authority  
Westside Transit Lines

**Norfolk-Virginia Beach, Newport News, VA**

Peninsula Transportation District Commission  
Tidewater Transportation District Commission

**Phoenix, AZ**

City of Mesa  
City of Scottsdale Transit Department  
Glendale Dial-A-Ride  
Maricopa County Special Transportation Services  
Peoria Transit  
Public Transit Department (PTD)  
Regional Public Transit Authority  
Sun Cities Area Transit System  
Surprise Dial-A-Ride Transit System

**Pittsburgh, PA**

Beaver County Transit Authority  
G G & C Bus Company, Inc.  
Port Authority of Allegheny County (PAT)  
PAT Contract Service  
Westmoreland County Transit Authority

## Figure A.1: Urbanized Areas and Transit Agencies in Our Comparison Group, Continued

### Portland-Vancouver, OR-WA

Clark County Public Transportation Authority (C-Tran)  
Tri-County Metropolitan Transportation District (Tri Met)

### Riverside-San Bernardino, CA

City of Corona Transit System  
City of Riverside Special Transportation  
Riverside Transit Agency  
OMNITRANS

### Sacramento, CA

Sacramento Regional Transit District (RT)  
Yolo County Transit Authority

### Saint Louis, MO-IL

Bi-State Development Agency (Bi-State)  
Madison County Transit District

### San Antonio, TX

VIA Metropolitan Transit (VIA)

### San Diego, CA

North San Diego County Transit Development Board  
San Diego Regional Transportation Service  
San Diego Transit Corporation  
San Diego Trolley, Inc.

### San Francisco-Oakland, CA

Bay Area Rapid Transit District  
CalTrain Peninsula Corridor Joint Powers Board  
Central Contra Costa Transit Authority  
Contra Costa Transit District  
Golden Gate Bridge District  
Livermore/Amador Valley Transit Authority  
Oakland Ferry Service  
San Francisco Municipal Railway  
San Mateo County Transit District  
Vallejo Transit  
Western Contra Costa Transit Authority

### San Jose, CA

Santa Clara County Transit District (SCCTD)

### Seattle, WA

City of Seattle Monorail  
Everett Transit  
King County Department of Metropolitan Services  
Senior Services of Snohomish County  
Snohomish County Transportation Benefit Area Corporation  
Washington State Department of Transportation

### Tampa Bay-Saint Petersburg-Clearwater, FL

Hillsborough Area Regional Transit Authority  
Pasco Area Transportation Service  
Pinellas Suncoast Transit Authority

### Washington, DC-MD-VA

Fairfax Connector  
Potomac and Rappahannock Transportation Commission  
Ride-On Montgomery County Government  
Virginia Railway Express  
Washington Metro. Area Transit Authority (WMATA)

**Table A.1: Taxes Dedicated for Transit, 1995 Data for 31 of the 32 Urbanized Areas**

<u>Urbanized Area</u>	<u>Dedicated Taxes as a Percentage of Operating Funds</u>		<u>Dedicated Property Taxes as a Percentage of Operating Funds</u>	
	<u>Percent</u>	<u>Rank</u>	<u>Percent</u>	<u>Rank</u>
Atlanta	48%	14	0%	
Baltimore	0	29	0	
Boston	0	30	0	
Buffalo	42	16	8	2
Cincinnati*	51	13	0	
Cleveland	66	6	0	
Columbus*	59	9	0	
Dallas*	81	1	0	
Denver	73	3	0	
Detroit	37	19	0	
Ft. Lauderdale	21	21	0	
Houston*	64	8	0	
Indianapolis*	N/A	N/A	N/A	N/A
Kansas City*	57	10	0	
Miami	0	31	0	
Milwaukee*	1	27	0	
New Orleans	42	17	0	
Norfolk*	15	22	0	
Phoenix*	1	26	0	
Pittsburgh	0	28	0	
Portland	69	5	0	
Riverside*	66	7	0	
Sacramento	1	25	0	
Saint Louis	7	23	0	
San Antonio*	69	4	0	
San Diego	41	18	0	
San Francisco	36	20	2	5
San Jose	80	2	0	
Seattle	57	11	3	3
Tampa Bay	54	12	0	
<b>Twin Cities-Metro Transit* &amp; a</b>	<b>45</b>	<b>15</b>	<b>45</b>	<b>1</b>
Washington	4	24	2	4
<b>All Systems in the Twin Cities Area*</b>	<b>43%</b>	<b>15</b>	<b>43%</b>	<b>1</b>

NOTE: N/A means data is not available.

\*Urbanized area with rail in 1995.

<sup>a</sup>Includes its opt-out services.

SOURCE: Program Evaluation Division analysis of transit operating data from Federal Transit Administration, *Data Tables for the 1995 National Transit Database Report Year*, Tables 1, 2, 3, and 4 and from unpublished data from the Metropolitan Council's Transportation Division.



**Table A.2: Fare and Non-Fare Operating Funds, 1995 Data for All 32 Urbanized Areas**

Urbanized Area	Fare Revenue per Rider		Fare Revenue as Percentage of Operating Funds		Non-Fare Operating Funds per Rider		Non-Fare Operating Funds per Capita	
	Dollars	Rank	Percent	Rank	Dollars	Rank	Dollars	Rank
Atlanta	\$0.53	24	33.7%	7	\$1.04	31	\$ 60.74	12
Baltimore	0.82	2	37.9	4	1.35	25	74.67	10
Boston	0.63	15	29.3	14	1.52	20	175.45	1
Buffalo	0.72	9	33.0	8	1.45	22	44.39	18
Cincinnati*	0.68	12	30.3	12	1.57	19	34.83	24
Cleveland	0.74	7	23.0	21	2.48	4	85.95	8
Columbus*	0.61	17	21.0	24	2.29	6	39.92	21
Dallas*	0.48	27	12.5	32	3.37	1	55.23	14
Denver	0.45	30	17.9	29	2.06	9	80.74	9
Detroit	0.59	19	23.0	20	2.00	11	36.62	23
Ft. Lauderdale	0.65	14	24.0	19	2.05	10	40.62	20
Houston*	0.56	21	24.2	18	1.73	16	43.06	19
Indianapolis*	0.62	16	26.5	17	1.71	17	19.03	31
Kansas City*	0.57	20	20.3	25	2.23	7	24.46	28
Miami	0.79	3	31.1	11	1.75	15	71.19	11
Milwaukee*	0.60	18	34.2	6	1.15	28	53.79	15
New Orleans	0.49	26	39.7	2	0.75	32	55.50	13
Norfolk*	0.78	4	35.3	5	1.42	23	14.68	32
Phoenix*	0.45	29	26.9	16	1.24	27	20.52	30
Pittsburgh	0.75	5	28.2	15	1.91	12	86.99	6
Portland	0.48	28	21.1	23	1.80	13	94.86	5
Riverside*	0.54	22	18.1	28	2.47	5	26.90	27
Sacramento	0.71	10	29.4	13	1.70	18	34.36	25
Saint Louis	0.50	25	21.8	22	1.79	14	47.44	17
San Antonio*	0.26	32	17.2	30	1.24	26	48.40	16
San Diego	0.72	8	38.7	3	1.15	29	32.72	26
San Francisco	0.70	11	32.2	9	1.47	21	155.86	3
San Jose	0.45	31	13.6	31	2.84	3	85.99	7
Seattle	0.75	6	20.2	26	2.94	2	166.79	2
Tampa Bay	0.54	23	20.2	27	2.14	8	23.03	29
<b>Twin Cities-Metro Transit* &amp; a</b>	<b>0.65</b>	<b>13</b>	<b>31.6</b>	<b>10</b>	<b>1.41</b>	<b>24</b>	<b>38.64</b>	<b>22</b>
Washington	0.88	1	44.2	1	1.11	30	114.84	4
<b>All Systems in the Twin Cities Area*</b>	<b>\$0.67</b>	<b>13</b>	<b>27.1%</b>	<b>15</b>	<b>\$1.79</b>	<b>14</b>	<b>\$ 52.02</b>	<b>16</b>

\*Urbanized area without rail in 1995.

<sup>a</sup>Includes its opt-out services. Metro Transit categorizes contract payments from opt-out communities as fares; we recategorized them as non-fare operating funds.

SOURCE: Program Evaluation Division analysis of transit operating data from Federal Transit Administration, *Data Tables for the 1995 National Transit Database Report Year*, Tables 1 and 26 and from unpublished data from the Metropolitan Council's Transportation Division. The population estimates for urbanized areas were developed by the Program Evaluation Division.

**Table A.3: Performance of Bus Operations, 1995 Data for All 32 Urbanized Areas**

Urbanized Area	Operating Cost per Rider		Operating Cost per Vehicle Mile		Peak to Base Ratio <sup>a</sup>		Riders per Vehicle Mile	
	Dollars	Rank	Dollars	Rank	Number	Rank	Number	Rank
Atlanta	\$1.71	27	\$4.79	21	2.01	15	2.80	7
Baltimore	1.59	29	6.67	4	2.52	6	4.19	2
Boston	1.96	23	7.82	1	1.64	23	4.00	3
Buffalo	2.33	11	5.95	11	2.20	9	2.55	14
Cincinnati*	2.12	17	4.59	24	2.16	10	2.17	22
Cleveland	2.85	4	6.37	7	2.02	14	2.24	20
Columbus*	2.51	7	5.64	13	1.98	16	2.25	19
Dallas*	2.91	3	5.18	17	2.65	2	1.78	29
Denver	2.24	15	4.89	20	2.10	13	2.19	21
Detroit	2.32	13	6.02	9	1.93	18	2.60	12
Ft. Lauderdale	1.77	26	4.33	26	1.05	32	2.45	15
Houston*	2.18	16	4.63	23	2.25	8	2.12	23
Indianapolis*	2.39	10	4.64	22	1.54	25	1.94	25
Kansas City*	2.60	5	5.02	19	2.40	7	1.93	26
Miami	1.95	24	5.25	15	1.45	26	2.69	9
Milwaukee*	1.61	28	5.03	18	1.67	22	3.14	5
New Orleans	1.27	32	6.64	5	2.63	4	5.23	1
Norfolk*	2.06	19	3.21	31	1.83	19	1.56	30
Phoenix*	1.44	30	3.92	27	1.35	28	2.73	8
Pittsburgh	2.30	14	5.98	10	2.13	11	2.60	11
Portland	2.02	22	5.22	16	1.80	20	2.58	13
Riverside*	2.49	8	3.58	30	1.06	31	1.44	32
Sacramento	2.44	9	5.72	12	1.42	27	2.35	16
Saint Louis	2.33	12	4.46	25	2.11	12	1.92	27
San Antonio*	1.32	31	3.10	32	1.95	17	2.34	17
San Diego	1.78	25	3.68	29	1.30	29	2.07	24
San Francisco	2.06	20	6.42	6	1.76	21	3.12	6
San Jose	3.10	2	7.02	3	1.62	24	2.26	18
Seattle	3.38	1	6.15	8	2.53	5	1.82	28
Tampa Bay	2.58	6	3.80	28	1.20	30	1.48	31
<b>Twin Cities-Metro Transit*<sup>&amp; b</sup></b>	<b>2.05</b>	<b>21</b>	<b>5.46</b>	<b>14</b>	<b>2.74</b>	<b>1</b>	<b>2.67</b>	<b>10</b>
Washington	2.06	18	7.38	2	2.65	3	3.58	4
<b>All Bus Systems in the Twin Cities Area*<sup>&amp; c</sup></b>	<b>\$2.17</b>	<b>17</b>	<b>\$5.19</b>	<b>16</b>	<b>N/A</b>	<b>N/A</b>	<b>2.39</b>	<b>15</b>

NOTE: N/A means data is not available.

\*Urbanized area without rail in 1995.

<sup>a</sup>Directly operated services only. Excludes purchased services.

<sup>b</sup>Includes its opt-out services.

<sup>c</sup>Bus systems are Metro Transit, private operators, and opt-out communities.

SOURCE: Program Evaluation Division analysis of transit operating data from Federal Transit Administration, *Data Tables for the 1995 National Transit Database Report Year*, Tables 11, 26, and 28 and from unpublished data from the Metropolitan Council's Transportation Division.

**Table A.4: Change in Size of Transit Systems, 1988-95, Listed Highest to Lowest in Riders per Capita**

<u>Urbanized Area and Transit Agency</u>	<u>Riders per Capita</u>	<u>Real Operating Cost per Capita</u>	<u>Vehicle Miles per Capita</u>
Phoenix—PTD*	41.5%	2.8%	18.8%
Sacramento—RT	28.5	22.0	36.9
San Jose—SCCTD	18.8	2.4	-1.3
Miami—MDTA	13.3	3.5	19.9
Boston—MBTA	12.5	5.4	54.9
San Antonio—VIA*	11.9	41.4	55.7
Denver—RTD	10.5	4.7	12.1
Saint Louis—Bi-State	10.4	-4.1	18.1
Portland-Vancouver—Tri Met and C-Tran	4.2	26.7	5.2
Houston—Metro*	-1.1	-5.1	33.0
Washington—WMATA	-7.2	-5.7	0.1
Buffalo—NFTA	-9.5	-0.7	-12.2
Baltimore—MTA	-13.1	33.6	20.1
Indianapolis—Metro*	-13.7	-7.0	12.9
Columbus—COTA*	-16.1	-9.3	-11.8
Pittsburgh—PAT	-17.4	1.8	-35.2
Cincinnati—SORTA*	-18.4	-6.0	11.5
Dallas-Fort Worth—DART and The T*	-18.5	2.7	27.1
Atlanta—MARTA	-21.4	-8.1	-0.8
<b>Twin Cities-Metro Transit* &amp; a</b>	<b>-22.3</b>	<b>-6.4</b>	<b>-3.6</b>
Milwaukee—Milwaukee County Transit*	-24.8	4.4	-1.4
Kansas City—KCATA*	-28.4	-14.9	-7.0
Cleveland—RTA	-28.5	4.8	-3.9
<b>All Systems in the Twin Cities Area*</b>	<b>-20.5%</b>	<b>1.7%</b>	<b>N/A</b>

NOTE: N/A means data is not available.

\*Urbanized area without rail in 1995.

<sup>a</sup>Includes its opt-out services.

SOURCE: Program Evaluation Division analysis of transit operating data from David T. Hartgen and Mark W. Homer, *Comparative Performance of Major US Bus Transit Systems: 1988-1995 (Volume II: Data)*, (Charlotte, NC: University of North Carolina at Charlotte, 1997) and from unpublished data from the Metropolitan Council's Transportation Division. Population estimates for urbanized areas were developed by the Program Evaluation Division. The dollar figures were converted to constant dollars using a chain-type price index for state and local government expenditures and gross investment that was provided by the Minnesota Department of Finance.

**Table A.5: Change in Fare and Non-Fare Operating Funds, 1988-95, Listed Highest to Lowest in Real Fare Revenue per Rider**

<u>Urbanized Area and Transit Agency</u>	<u>Real Fare Revenue per Rider</u>	<u>Real Non-Fare Operating Funds per Rider</u>
Cincinnati—SORTA*	46.4%	4.1%
Cleveland—RTA	40.1	42.4
Milwaukee—Milwaukee County Transit*	33.4	41.4
Atlanta—MARTA	32.6	6.6
Boston—MBTA	29.2	-11.6
Baltimore—MTA	25.6	104.2
Buffalo—NFTA	21.9	0.9
Kansas City—KCATA*	18.9	17.6
<b>Twin Cities-Metro Transit* &amp; a</b>	<b>15.8</b>	<b>19.7</b>
San Jose—SCCTD	15.3	-30.9
Pittsburgh—PAT	12.8	31.7
Columbus—COTA*	10.5	188.4
Sacramento—RT	8.3	-15.0
Washington—WMATA	3.8	-19.1
Miami—MDTA	2.4	-10.1
Portland-Vancouver—Tri Met and C-Tran	-0.9	12.4
Denver—RTD	-2.1	-10.8
Houston—Metro*	-5.1	92.0
Indianapolis—Metro*	-8.6	26.2
Saint Louis—Bi-State	-12.6	-13.0
San Antonio—VIA*	-12.6	-12.7
Phoenix—PTD*	-14.6	-20.2
Dallas-Fort Worth—DART and The T*	-15.5	-17.8
<b>All Systems in the Twin Cities Area*</b>	<b>N/A</b>	<b>N/A</b>

NOTE: N/A means data is not available.

\*Urbanized areas without rail in 1995.

<sup>a</sup>Includes its opt-out services. Operating funds reported by the University of North Carolina (UNC) at Charlotte were significantly different than the funds that the Met Council said were reported to the National Transit Database. We replaced the UNC data with the Met Council data. In addition, we adjusted the fare data for Metro Transit. Metro Transit categorizes contract payments from opt-out communities as fare revenue; we recategorized these payments as non-fare operating funds.

SOURCE: Program Evaluation Division analysis of transit operating data from David T. Hartgen and Mark W. Homer, *Comparative Performance of Major US Bus Transit Systems: 1988-1995 (Volume II: Data)*, (Charlotte, NC: University of North Carolina at Charlotte, 1997) and from unpublished data from the Metropolitan Council's Transportation Division. The dollar figures were converted to constant dollars using a chain-type price index for state and local government expenditures and gross investment that was provided by the Minnesota Department of Finance.

**Table A.6: Change in Performance of Bus Operations, 1988-95, Listed Highest to Lowest in Riders per Vehicle Mile**

<u>Urbanized Area and Transit Agency</u>	<u>Riders per Vehicle Mile</u>	<u>Real Operating Cost per Vehicle Mile</u>	<u>Real Operating Cost per Rider</u>
Phoenix—PTD*	47.9%	-0.8%	-32.9%
San Jose—SCCTD	25.1	8.2	-13.6
Sacramento—RT	13.4	5.7	-6.8
Denver—RTD	13.0	1.0	-10.6
Portland-Vancouver—Tri Met and C-Tran	8.2	17.6	8.7
Columbus—COTA*	4.1	11.2	6.8
Buffalo—NFTA	-0.3	17.3	17.7
Boston—MBTA	-0.5	10.9	11.5
San Antonio—VIA*	-2.1	4.4	6.7
Washington—WMATA	-3.6	-0.1	3.6
Baltimore—MTA	-3.8	18.3	22.9
Miami—MDTA	-6.8	-14.0	-7.7
Indianapolis—Metro*	-8.5	-1.7	7.5
Houston—Metro*	-8.8	-12.4	-3.9
Atlanta—MARTA	-9.0	4.9	15.2
Pittsburgh—PAT	-10.7	9.8	22.9
<b>Twin Cities-Metro Transit* &amp; a</b>	<b>-17.0</b>	<b>-1.7</b>	<b>18.4</b>
Saint Louis—Bi-State	-17.2	-18.6	-1.7
Kansas City—KCATA*	-17.7	-6.1	14.1
Dallas-Fort Worth—DART and The T*	-18.8	-1.9	20.9
Milwaukee—Milwaukee County Transit*	-24.3	6.8	41.1
Cincinnati—SORTA *	-24.6	-14.7	13.2
Cleveland—RTA	-35.1	6.4	64.0
<b>All Bus Systems in the Twin Cities Area* &amp; b</b>	<b>-25.8%</b>	<b>-9.2%</b>	<b>22.4%</b>

\*Urbanized area without rail in 1995.

<sup>a</sup>Includes its opt-out services.

<sup>b</sup>Bus systems are Metro Transit, private operators, and opt-out communities.

SOURCE: Program Evaluation Division analysis of transit operating data from David T. Hartgen and Mark W. Homer, *Comparative Performance of Major US Bus Transit Systems: 1988-1995 (Volume II: Data)*, (Charlotte, NC: University of North Carolina at Charlotte, 1997) and from unpublished data from the Metropolitan Council's Transportation Division. The dollar figures were converted to constant dollars using a chain-type price index for state and local government expenditures and gross investment that was provided by the Minnesota Department of Finance.



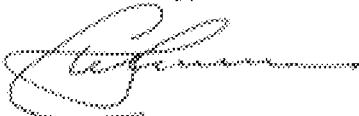
So far, there is scant evidence of official recognition, beyond the Council's own reports and plans, that mobility is a key factor in maintaining the region's competitiveness. And that building better transit service is the only viable strategy over time. As the report itself points out, there has been little incentive to promote major transit expansion and innovation given a history of prior rejections and a still-deadlocked debate.

Finally, the report raises questions about future levels of congestion. While we make no claims beyond a standard of reasonable forecasting, we would strongly assert that the Council is in the best position to register the best guess.

The Council projects 650,000 more people, 330,000 more households and 410,000 more jobs in the Twin Cities region by 2020. It is reasonable to assume, based not only on future projections, but also on trends of the past five to ten years, that residents will continue to experience growing congestion on the region's highways unless there is a concerted effort at all levels to focus on transportation alternatives.

Again, thank you for your hard work and attention to this issue. I believe your report confirms two fundamental points we have tried to convey as the region's principal planning organization. The current system is productive and efficient--though seriously underfunded. And, if it is to have any chance of responding to the growing needs of the region, a new commitment of resources and strategic investment is imperative.

Sincerely,



Curt Johnson  
Metropolitan Council Chair



Transportation Building  
395 John Ireland Boulevard  
Saint Paul, Minnesota 55155-1899

January 27, 1998

Mr. James R. Nobles, Legislative Auditor  
Office of the Legislative Auditor  
100 Centennial Office Building  
658 Cedar Street  
St. Paul, MN 55155

Dear Mr. Nobles:

Thank you for the opportunity to comment on the "Transit Services" report. The report highlights the complicated nature of transportation decision making and confirms the key role the Minnesota Department of Transportation (Mn/DOT) plays in the provision of transit service, not only in Greater Minnesota but in the Twin Cities metropolitan area as well. On behalf of Mn/DOT, I want to express our appreciation for the professional manner with which your audit was conducted and the constructive manner in which you have expressed the issues concerning transit services in Minnesota.

Mn/DOT has statutory responsibility for the provision of transit service in the 80 counties of Greater Minnesota. The Metropolitan Council has such responsibility for the seven county metropolitan area. However, Mn/DOT works closely with the Council in developing long range plans, in expediting the movement of busses on the trunk highway system, and in examining various transit options such as commuter rail, light rail transit (LRT) and dedicated bus ways.

Mn/DOT and the Metropolitan Council, in cooperation with the University of Minnesota have recently embarked on a multi-phase research and education program on transportation and regional growth. This joint effort will focus on identifying and communicating regional trends, building consensus around regional growth policies and identifying transportation strategies consistent with those policies. The first study, which has been completed, analyzed the underlying regional Minneapolis/St. Paul dynamics that direct development and generate demands for transportation, including housing market behavior, fiscal structure, and regulatory constraints. The report also addressed the role of transportation services in regional growth patterns. Future studies include passenger and freight travel demand patterns, full transportation costs and cost incidence, and transportation financing alternatives.

Mn/DOT has efforts in place to improve areas of weakness identified in this report and in the Legislative Auditor's March 1997 report on highway spending. Task forces have recently completed detailed studies of bridge and pavement preservation and maintenance activities. Information from these studies, as well as the latest revenue estimates and traffic forecasts will be



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used in the update to the metropolitan area's Transportation System Plan. This update, which is currently underway, will achieve consistency with the Metropolitan Council's Transportation Policy Plan. This should eliminate differences in describing future congestion levels and provide an opportunity to present the forecasts more completely.

With regard to Greater Minnesota, the audit report noted a steady growth in transit service in the last few years. This trend has been possible because of state appropriations and local contributions which have made real the vision set forth in Mn/DOT's 1993 State Transit Plan. The new systems, like those long established, provide a vital means for Minnesota citizens to access critical services. The need for additional public transportation is routinely demonstrated both in areas with no transit services and those with existing systems attempting to meet growing demand. Mn/DOT will continue to monitor the performance of this growing sector to assure that service provided by each transit system is both cost effective and efficient.

Mn/DOT looks forward to the continuing dialogue regarding the nature and scope of transportation facilities and services. As stated in our Strategic Plan, we pledge to develop a coordinated transportation network that not only preserves and improves the state's highway system but also promotes and supports transit.

Sincerely,



James N. Denn  
Commissioner