

County State Aid Highway System

April 1985

Program Evaluation Division
Office of the Legislative Auditor
State of Minnesota

Program Evaluation Division

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STATE OF MINNESOTA

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JAMES R. NOBLES, LEGISLATIVE AUDITOR

April 26, 1985

Senator Randolph W. Peterson, Chairman
Legislative Audit Commission

Dear Senator Peterson:

In December 1984, the Legislative Audit Commission directed the Program Evaluation Division to extend its study of highway maintenance and to examine the County State Aid Highway system. This report summarizes the progress made toward achieving the goals of the state aid system and analyzes whether the state should continue its current method of distributing aids to counties.

We received the full cooperation of the Department of Transportation. We also appreciate the sincere and candid comments offered by the many county highway engineers with whom we spoke.

This report was written by Joel Alter, Allan Baumgarten (project manager), and Thomas Hiendlmayr.

Sincerely yours,

A handwritten signature in black ink, appearing to read "James R. Nobles", with a stylized flourish at the end.

James R. Nobles
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Roger A. Brooks
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Executive Summary

Established in the late 1950s, Minnesota's County State Aid Highway (CSAH) system is an important element in the state's transportation network. Our study examined how the system has developed and changed. We asked:

- What prompted the establishment of the county state aid highway system, and are its original objectives still appropriate?
- Should the state continue the current method for distributing state aid funds to counties?

A. BACKGROUND

A 1956 amendment to the Minnesota Constitution mandated that 29 percent of the revenues collected from the state gas tax and motor vehicle registration fees would be used to finance construction and maintenance of a system of county roads. The amendment authorized a system of 30,000 miles of roads.

In 1958, the first year of the system, \$24 million was distributed in county state aids. By 1985, the amount of aids apportioned to counties had grown to \$171 million. County state aids now contribute about 45 percent of county expenditures for highway construction and maintenance.

The system is administered by the Office of State Aid in the Minnesota Department of Transportation. The office is responsible for reviewing counties' construction plans and providing technical assistance to counties. The office is also responsible for providing staff assistance to the County Screening Board for its annual review of counties' highway construction needs.

B. CONSTRUCTION PROGRESS AND STANDARDS-BASED FUNDING

Between 1958 and 1985, counties spent over \$1 billion to construct state aid highways. About two-thirds of the system is now paved. However,

- The pace of improving and paving CSAH roads has slowed in the past ten years.

In the late 1970s, counties paved over their gravel roads at the rate of about 350 miles per year. In 1984, counties paved only 152 miles of gravel roads. At the current rate of paving gravel roads, it would take counties over 40 more years to complete an all-paved CSAH system. In addition, counties are currently grading their roads at a rate of once every 128 years. We conclude that:

- It is unrealistic to expect that the county state aid highway system will be completely built to standard in the next 25 years, although that goal is currently assumed by the CSAH funding formula.

According to our analysis, completing construction of the state aid system to standard in the next 25 years would require at least doubling and perhaps tripling CSAH funding levels.

Progress has slowed for two primary reasons. First, construction standards for state aid highways have become increasingly stringent. For example, in 1957 roads with between 100 and 399 vehicles per day were built to a five-ton design. Today these roads are built to a seven-ton design with the ability to ultimately carry nine tons. Because of more stringent standards, some roads that were built to standard in the past are now regarded as deficient.

Second, counties are paying increasing attention to preservation of their existing systems. In the past ten years, counties have used state aid to complete about \$100 million of special resurfacing projects that improved certain roads without bringing them to current standards. The state aid funding system is oriented to new construction and reconstruction. It does not fully recognize the importance of preservation activities and penalizes counties that use state aid funds for special resurfacing.

Construction design standards play a key role in the current state aid funding system. By statute, half of state aid funds are allocated to counties on the basis of each county's estimated "money needs." A money need is the cost of bringing a

road up to existing design standards. For example, if two counties have CSAH systems of equal size, the county with more sub-standard roads generally receives a larger money needs state aid apportionment.

Two critical assumptions drive this *standards-based funding system*. First standards-based funding assumes that all state aid roads can, should, and will be built to standard. Second, standards-based funding assumes that projections of future traffic levels are accurate, since those projections determine the design standards of roads.

We found that:

- Roads with little traffic account for a significant proportion of some counties' construction needs.

In 24 counties, for example, roads currently used by fewer than 200 vehicles per day account for over half the reported future construction needs. Counties say that many of these roads will never be constructed, and our analysis of recent construction on the CSAH system supports this. We conclude that:

- Standards-based funding inadequately reflects the choices and priorities that must be made in the future. It is inaccurate to assume that all CSAH roads are equally important and equally likely to be built.

We also examined the traffic projections used for CSAH roads and found that:

- MnDOT makes projections of future CSAH traffic with straight-line projections of past trends.

Using this method, the average county assumes that traffic will increase 60 percent on its state aid roads in the next 20 years. For some counties, this projection may be accurate. However, we question whether the trends that produced large traffic increases on state aid highways in past years will continue. For example, the populations of some Minnesota counties are projected to decline in coming years. Unreliable traffic projections may contribute to an over-estimation of highway needs for some counties.

We also question the appropriateness of existing CSAH standards, most of which are designed to ensure highway safety. Currently, one-third of state aid highways meet existing design standards. Our review of national transportation literature leads us to question whether Minnesota's current standards are appropriate for low traffic roads in all cases. We believe that:

- It may be possible to make selective use of design improvements and to implement more flexible standards without adding to highway safety risks.

While it is true that many state aid roads are below current CSAH standards, we also found that many state trunk highways fail to meet the same standards. Given the larger traffic volumes on trunk highways, greater safety benefits probably result from trunk highway safety improvements.

Overall, we conclude that design standards should not serve as the foundation of the state aid funding system. Use of standards-based funding ignores the choices and priorities required for the state aid system in the future. Standards-based funding allocates state aid using a *wish list*, not a *needs list*.

C. IS THE APPORTIONMENT FORMULA STILL VALID?

The Minnesota Constitution apportions 29 percent of the Highway Users Tax Distribution Fund to county state aid highways. Counties receive these funds on the basis of a statutory funding formula established in 1957. The funding formula provides for the following distribution: 30 percent is based on the proportion of CSAH *mileage* in each county; 10 percent is based on the proportion of *vehicle registrations* in each county; 10 percent is shared *equally* among the 87 counties; and 50 percent is based on counties' estimates of their future *construction needs*.

In our analysis of the formula's factors, we found that:

- The mileage factor, which the Legislature apparently included to reflect maintenance needs, inadequately reflects these needs in counties with multi-lane state aid highways.
- In the judgement of the 1956 Legislature and MnDOT, vehicle registrations do not adequately reflect county state aid road use. More accurate measures are now available.
- The equalization factor benefits some counties more than others.

State law allocates the largest portion of state aid on the basis of counties' construction needs estimates. A Screening Board made up of nine county engineers oversees county needs analyses. We found that:

- County needs estimates grew rapidly in recent years.

Incremental Screening Board adjustments explain some of this increase in needs. In making these adjustments, the board added significantly to the complexity of state aid allocation, making it difficult for one to fully understand the needs analysis process. However:

- It is not clear that the incremental adjustments made to needs assessments over the years have improved the overall equity of the state aid system.

There are many ways in which the actual highway needs of counties are not reflected in the current method of calculating needs. For example, due to state law and Screening Board action, eight counties receive a minimum share of county state aids, in excess of their entitlement under the formula. In addition, state law permits counties to claim needs on only the center portion of their urban roads, although there is no clear rationale for this requirement. Finally, the 25-year timeline assumed in the needs assessment is clearly unrealistic.

Perhaps most important, as noted earlier, we question whether a system of standards-based funding equitably distributes state aid on the basis of need. Such a system of needs assessment assumes that a road with 1,000 cars per day is "needed" no more than a road with 50 cars per day.

We found that the county state aid Screening Board serves some useful purposes, particularly by involving county engineers in the CSAH apportionment process. However, some counties have concerns about the board's composition. The board has two members from Twin Cities metropolitan counties and seven members from non-metropolitan counties. There is some evidence that the board has been slow to address metropolitan concerns in past years.

D. LOCAL TAX EFFORT AND EQUITY ISSUES

We examined broad issues of equity in the county state aid highway system for two reasons. First, the system divides a large amount of money among 87 counties. Second, state aid covers a larger portion of highway costs in some counties than in others.

Property tax levies account for 29 percent of all spending on county state aid and county highways, and state aid accounts for 45 percent. The local tax burden for roads varies considerably among Minnesota counties, depending on the availability of

non-local revenues to counties, the size of county highway systems, local mill rates, and other factors. We found that:

- The proportion of county highways receiving state aid in each county ranges from 40 percent to 100 percent.
- *Per capita levies* for county highways are higher in rural counties than urban counties.
- *Road and bridge mill rates* are higher in rural counties than in urban counties.
- Rural counties receive a larger proportion of their highway budgets from state aid than urban counties do.
- Total county receipts from CSAH funds, municipal state aid funds, and federal aid are much smaller per capita in urban counties than in rural counties.

It is difficult to assess conclusively the equity of current state aid apportionments because the goals of the CSAH system are not entirely clear. Our report presents a variety of data that we hope will prompt legislative discussion of local tax effort and apportionment equity.

There is no requirement that a county levy a minimum property tax for highways to match state aids. However, since 1958, state law has required a "mill levy deduction" from the annual construction needs of counties to account for local effort. Four-tenths of one mill is subtracted from the needs of urban counties, and two-thirds of one mill is subtracted from rural county needs. We found that:

- The mill levy deduction is a poor means of considering local tax effort or taxing ability.

The mill levy deduction does not fully reflect the tax burdens faced by counties, some of whom maintain large county road networks which do not receive state aids. In addition, neither the mill rate nor the taxable valuation are adjusted to reflect variations in county assessment practices. We think it is inappropriate to address the issue of local tax effort within the calculation of local construction needs. Legislative consideration of the local tax effort issue is needed.

We also looked at the equity of maintenance funding. Counties currently receive maintenance funds under the assumption that maintenance costs per mile are roughly the same statewide. We found that:

- Average highway maintenance costs range from \$980 per mile to \$16,832 per mile in Minnesota counties.
- State aid covers all CSAH maintenance costs in some counties and covers only one-third of maintenance costs in others.

E. RECOMMENDATIONS

We think that the statutory CSAH funding formula developed in 1957 needs revision. We identify a number of options for legislative consideration, ranging from modifications of the existing formula to complete revision of the current standards-based funding system. We recommend that:

- The Legislature should adopt an alternative to standards-based funding for county state aid highways.
- The Legislature should establish a commission to review the state aid system and recommend goals and priorities for the future. Alternatively, the House and Senate Transportation Committees should hold interim hearings to discuss the future of the state aid system.
- The legislative commission should evaluate the three alternative methods of funding county state aid highways suggested in this report: the *life-cycle costing* method, the *block grant* method, and the *targeted improvements* method. The chosen approach should target state goals and priorities for the CSAH system.
- Future discussions of CSAH funding options should focus on the statewide merits of these options, with less attention to specific "winners" and "losers" among the 87 counties.
- The Legislature should repeal the "24-foot restriction" on county needs and the statutory provision that protects counties from receiving less than their 1958 share of state aid. The Legislature should replace the mill levy needs deduction with a better measure of local effort.

- The Legislature should change the CSAH formula's mileage factor to a measure of lane miles per county. The Legislature should change the motor vehicle registration factor to a measure of CSAH vehicle miles. The Legislature should repeal the equalization factor.
- The Minnesota Department of Transportation should reassess its funding of safety improvements on all state highway systems, ensuring that the most effective safety improvements receive top priority. The department should also consider adding flexibility to its CSAH geometric standards.
- The Commissioner of Transportation should direct regions conducting jurisdictional studies to examine their CSAH and county road systems in addition to trunk highways. For regions estimating the cost of jurisdictional changes, the commissioner should request cost estimates that are not based on geometric standards.

Introduction

Minnesota's County State Aid Highway (CSAH) system was established in 1985. In this report, we discuss the CSAH system both as a *network of roads* and a *method of funding* the construction and maintenance of those roads.

Outside of aids for education, the CSAH system involves one of the largest transfers of state-collected revenues to local governments in Minnesota. The system undergoes constant internal review by the Screening Board of county engineers. However, the system has received relatively little outside oversight in the past 27 years.

We examined three basic questions:

- How has the County State Aid Highway system changed since its establishment? What prompted the system's establishment, and are its objectives still relevant?
- How have incremental changes in the method of allocating state aids affected the complexity and equity of the system?
- Should the state continue the current system for distributing state funds?

During our study, we met with 28 county highway engineers as well as engineers in the Minnesota Department of Transportation. We analyzed data on counties' highway revenues and expenditures, traffic volumes, and anticipated construction needs. To gain a full understanding of the history and objectives of the state aid system, we also reviewed reports from legislative study commissions.

Chapter 1 of this report describes the history, financing, and administration of the CSAH system. Chapter 2 presents our analysis of construction progress and the standards-based funding system. In Chapter 3, we discuss counties' estimates of 25-year

construction needs, which continue to be the driving element in apportioning funds among counties. Chapter 4 examines issues of equity in the CSAH system and compares the importance of state aids and local property taxes in funding Minnesota's state-aid roads. In Chapter 5, we address a number of related issues, such as highway jurisdiction.

Several appendices are attached. Appendix A provides a chronology of the development of the County State Aid Highway System. Appendix B presents data on counties and their state aid roads for all counties, in alphabetical order. Appendix C summarizes changes in CSAH construction standards since 1957.

State Aids for County Highways: Background

Chapter 1

In this chapter we trace the history of the County State Aid Highway (CSAH) system, review its current status, and discuss how the system is financed and administered.

A. HISTORY

The evolution of Minnesota's County State Aid Highway system can be traced to the period before statehood, when counties played a key role in the construction and maintenance of important roads. In this section, we discuss the historical role of county and state government in county road finance. Appendix A contains a more complete chronology of highway development and finance in Minnesota.

1. 1849-1948: EARLY ISSUES OF FINANCE AND JURISDICTION

Development of roads during Minnesota's territorial years (1849-1858) facilitated commerce and early settlement. The territory's population increased 20-fold during these years. Following legislation by the 1849 territorial legislature, newly-created boards of county commissioners laid out roads and collected road taxes.

For two years following Minnesota's admission to the union in 1858, county boards had authority to establish or discontinue county roads. The Legislature placed all Minnesota roads under the jurisdiction of town authorities in 1860, but two years later the Legislature made counties responsible for "state roads" which were designated by counties. This role was relatively minor compared to the broad authority retained by town boards.

Until 1898, the Minnesota Constitution prohibited state involvement in road building. But by constitutional amendment and by

subsequent legislation, Minnesota's first state aid road tax was levied in 1905.

Counties received their first state aid in 1907 and federal aid in 1917. Until 1921, counties used state aid to construct and maintain "state roads." Counties could not use state aid to construct county roads. Table 1.1 provides an overview of expenditures and revenues on county state aid roads since the beginning of this century.

By 1921, counties had designated 13,653 miles of state roads. Many of these roads were among the 6,850 miles placed on the newly-created trunk highway system during 1921. State roads not placed on the trunk highway system became known as "state aid roads" and were funded with a one mill state levy.

Minnesota adopted its first gas tax in 1924. Four years later, a constitutional amendment placed two-thirds of the gas tax into a trunk highway fund. One-third of the tax funded "county aid roads" (county roads of secondary importance). Thus, starting in 1929, the state funded important county roads ("state aid roads") with a state tax levy, while the state funded less important county roads ("county aid roads") with a gas tax.

The number of county aid roads grew rapidly after 1929--these roads were designated by county boards. By 1946, counties received gas tax funding for 26,000 county aid miles. During this time, the number of state aid miles remained fairly stable.¹

2. 1948-1958: LEGISLATIVE STUDY AND CHANGE

In 1948, voters rejected a constitutional amendment that would have split gas tax revenues evenly between trunk highways and county aid highways. However, it was becoming clear that state revenues could not keep up with the public demands for state and county road improvements.

Following a 1949 legislative study of highway funding, the Legislature doubled the maximum road and bridge tax that counties were allowed to levy. The Legislature also required county boards to establish continuous, integrated networks of state aid roads.

The 1954 Minnesota Highway Study Commission authorized a report on the highway system's appropriate size, done by the Automotive

¹Minnesota Department of Highways and U.S. Public Roads Administration of the Federal Works Agency, *History and Organization of Highways: State of Minnesota*, February 1948.

TABLE 1.1

STATE AID ROADS: COUNTY MILES, COUNTY EXPENDITURES, AND STATE AIDS RECEIVED
1908 - 1983

YEAR	COUNTY STATE AID ROAD MILES	COUNTY EXPENDITURES ON STATE AID ROADS		STATE AID RECEIVED BY COUNTIES	
		CONSTRUCTION	MAINTENANCE	CONSTRUCTION	MAINTENANCE
1908	N/A	\$ 110,629 ^a	N/A ^b	\$ 65,167	N/A ^b
1913	16,724	864,844	N/A	368,569	N/A
1918	13,199	3,796,709	\$1,018,973	1,409,815	\$ 444,509
1923	12,135	6,799,952	1,851,327	1,388,708	540,672
1928	15,562	7,960,247	2,291,880	2,657,116	643,242
1933	16,531	1,152,159	2,362,910	1,053,244	515,629
1938	14,854	1,638,112	2,644,545	1,050,514 ^c	409,607
1943	15,501	245,113	3,402,339	232,145 ^c	1,022,075
1948	16,216	6,082,145	5,806,127	811,730 ^d	784,679
1953	15,490	8,609,878	7,361,402	13,455,780	
<u>CSAH MILES</u>					
1958	29,003	N/A ^e	N/A ^e	11,213,152	
1963	29,207	N/A	N/A	13,503,685	
1968	29,615	N/A	N/A	37,537,958	
1973	29,807	N/A	N/A	47,988,586	
1978	29,952	N/A	N/A	90,669,325	
1983	30,084	N/A	N/A	\$135,210,972	

Sources: 1908-1953 data from Commissioner's Biennial Reports. 1958-1983 data from MnDOT Office of State Aid and from the department's Financial Analysis Unit. Aids received based on actual payments and may differ from official allotments.

^aEstimated. The average of the total allotments to counties and total expenditures by counties for 1907 and 1908.

^bState aids for road maintenance were not provided until 1913.

^cConstruction activity was greatly reduced during and shortly after World War II.

^dFrom 1953 through 1983, figures reflect total construction and maintenance state aid receipts.

^eThe State Aid Office of the Minnesota Department of Transportation does not collect or tabulate total county expenditures on the CSAH system.

Safety Foundation (ASF), a private, non-profit research organization.² The study concluded that Minnesota's trunk highway system should be reduced from 11,850 miles to 8,750 miles, with 3,100 miles of rural trunk highway placed on a 30,500 mile system of primary county roads.

While the ASF study recommended a total 39,000 mile system, the 1954 legislative commission preferred a 42,000 mile system. In 1957, the Legislature established a system similar in size to that recommended by the 1954 commission, limited to 12,200 miles of trunk highways and 30,000 miles of "county state aid highways." It is interesting to note that the size of the total approved system (42,000 miles) was 3,000 miles larger than the ASF system. These "extra" 3,000 miles apparently went on the county state aid highway system.

The 1954 Highway Study Commission decided that a 30,000 mile county system could be completely built in 15 years. This assumed that roads would be built to "minimum conditions," which, for some roads with little traffic, meant gravel surfaces. The ASF estimated for the commission that half of the proposed county state aid system was acceptable, half deficient. Meeting the needs of these roads over a 15-year span would cost \$341 million, the ASF estimated. The legislative commission accepted this 15-year program, believing it could be financed without increases in highway user taxes. The ASF recommended giving priority to those roads requiring "dustless surface construction."³

The 1954 legislative study commission also recommended that 62 percent of highway user taxes should be spent on trunk highways, 30 percent on a newly designated county state aid highway system, and 8 percent on a new municipal state aid street system. A 1956 study by another legislative commission developed the allocation formula for county state aid, which we discuss later in this chapter.

In recommending a 30,500 mile CSAH system, the Automotive Safety Foundation developed criteria to choose which highways such a system should include. These criteria were later adopted as state rules. The ASF said that primary rural county roads are those which:

1. Carry relatively heavier traffic volumes;

²Automotive Safety Foundation, *Highway Transportation in Minnesota: An Engineering Analysis* (a report to the Highway Study Commission), September 1954.

³*Ibid.*, p. 54.

2. Connect towns, communities, shipping points and markets within a county or in adjacent counties;
3. Provide access to rural churches, schools and community meeting halls;
4. Serve as principal arteries of rural mail routes and school bus routes;
5. Act as collectors of traffic from several roads of individual interest;
6. Occur at reasonable intervals consistent with the density of population.⁴

The ASF used these criteria to estimate the number of primary rural roads in each county. After the Legislature authorized creation of a state aid system in 1957, counties used the ASF criteria to select roads for the new system. The Minnesota Highway Department adjusted county requests to arrive at a 29,003 mile system. In some cases, the roads placed on the system differed significantly from the ASF's choices. For example, Pope County received 84 percent more CSAH miles than recommended by the ASF study, and Koochiching County received 48 percent more miles than proposed by the ASF.

After passage of a 1956 constitutional amendment and 1957 statutes, the county state aid highway system came into being in 1958. In that year, counties received \$23.9 million for state aid roads.

Overall, the studies preceding the establishment of the CSAH system suggest legislative interest in an integrated, comprehensive highway network. In the 1950s, it was not always possible to drive from one location to another on a continuous stretch of highway, and the changes of that decade responded to needs for greater highway continuity. The Legislature appears to have been concerned with laying out a logical road network, not with ensuring paved surfaces on all state-funded roads.

3. 1958-1985: INCREMENTAL ADJUSTMENTS IN THE FACE OF SWEEPING CHANGES

Since the establishment of the current county state aid system in 1958, there have been two important trends. The CSAH funding system has undergone a series of internal, incremental adjustments without significant legislative reform. At the same time, Minnesota's transportation system has changed dramatically.

⁴*Ibid.*, p. 23.

Most of these incremental funding changes to the state aid system have been made by the county state aid Screening Board, a body of nine county engineers that oversees county estimates of future highway needs. The original statutory funding formula remains intact, with no major legislative changes to the state aid system in the past 27 years.

The only noteworthy legislative changes affecting county state aid highways occurred in 1965 and 1969. In 1965, the Legislature designated a portion of the highway user tax distribution fund to reimburse counties for repairs to former trunk highways which were turned over to county jurisdiction. In 1969, the Legislature relaxed the 30,000 mile limit on the CSAH system. It allowed the CSAH system to exceed 30,000 miles by the number of miles of trunk highways which had been turned over to county jurisdiction.

While the statutes governing the CSAH system have not changed significantly since 1958, many changes in transportation have affected highway use in recent decades. First, Minnesota's population grew 21 percent between 1960 and 1983. The seven-county Twin Cities area experienced 32.9 percent growth during these years, while the rest of Minnesota's population increased 11.5 percent.

Second, the number of motor vehicles in Minnesota more than doubled between 1958 and 1985. The post-war baby boom population started buying and driving cars in these years. Vehicles registered in the Twin Cities seven-county area represent 47.1 percent of all vehicles in Minnesota today, compared to 38.9 percent in 1958. In addition, the number of vehicles per person in Minnesota grew from .46 in 1958 to .86 in 1985.

Third, driver behavior and traffic patterns changed. With economic growth in the 1960s and 1970s, people used their cars more. The state built interstate highways and other freeways, making it convenient to commute to work from a distant suburb. People took longer trips to work and did more leisure driving. While gasoline shortages and price increases affected travel in recent years, the number of miles traveled on Minnesota highways continues to increase.

Fourth, there were changes in the types of vehicles using highways. Manufacturers built smaller passenger cars in response to energy shortages. The consolidation of rural school districts increased the use of large buses to transport students. Meanwhile, trucks increased their cargo capacity, and this caused increased damage to highways.

The contrast between *incremental change* in the CSAH funding system and *major change* in highway transportation poses an issue the Legislature should address: Does the state aid system need updating to reflect the transportation changes of the past 27 years? In later chapters, we address this issue further.

B. CURRENT STATUS

1. CHARACTERISTICS OF THE COUNTY STATE AID SYSTEM

a. Size

The 1956 constitutional amendment limited the size of the county state aid system to 30,000 miles. Although that limitation is no longer in the constitution and was never in statute, it has been retained in the administrative rules of the Department of Transportation. The current limitation allows an exemption for former trunk highways turned over to county jurisdiction.

There has been little change in the size of individual counties' CSAH systems. Most additions of roads have resulted from turnbacks of former trunk highways to counties and occurred after completion of interstate highway segments. Between 1965 and 1984, 771.8 trunk highway miles were turned over to counties and added to the state aid system. Some counties have sought to add miles to their CSAH networks. Such requests are reviewed by the Screening Board, which recommends action by the commissioner. The Board generally directs counties to evaluate their existing networks and to take mileage off the CSAH system in one place when adding new roads in another. While the Board has recommended approval of many requests, all but a few have involved small segments of less than one mile in length.

In 1985, the county state aid system includes just over 30,000 miles of highways. St. Louis County has the largest system of CSAH roads, with more than 1,361 miles. Cook has the smallest system: 178 miles. Table 1.2 shows the size of the county state aid networks in selected counties.

b. Condition, Traffic, and Functional Classification

As we discuss in Chapter 2, counties have made considerable expenditures to upgrade their state aid roads. By 1984, about two-thirds of state aid road miles were paved, while about 27 percent still had gravel surface.

According to the Department of Transportation, county state aid roads carry about 21 percent of vehicle travel in Minnesota. The CSAH system carries an average daily traffic load of more than 20 million vehicle miles. About 14 percent of the system carries more than 750 vehicles a day. In contrast, some roads carry relatively little traffic: one-fifth of the roads have average daily traffic of less than 100 vehicles.

County state aid highways are classified by their traffic volume and functional importance. Most county state aid highways (83 percent) are designated as "collectors" in Minnesota's functional classification system. About 14 percent of the state aid

TABLE 1.2
SIZE OF COUNTY STATE AID SYSTEMS
(Selected Counties)

TOTAL SIZE			
<u>County</u>	<u>Miles</u>	<u>County</u>	<u>Miles</u>
St. Louis	1,361.8	Cook	178.1
Otter Tail	912.6	Red Lake	186.4
Polk	810.2	Scott	186.6
Itasca	648.9	Lake of the Woods	187.0
Marshall	640.3	Washington	188.8

CSAH MILES PER SQUARE MILE			
<u>County</u>	<u>Miles Per Square Mile</u>	<u>County</u>	<u>Miles Per Square Mile</u>
Ramsey	1.47	Koochiching	0.08
Hennepin	0.88	Lake	0.10
Steele	0.69	Cook	0.13
Freeborn	0.64	Lake of the Woods	0.14
LeSeuer	0.61	Beltrami	0.19

Source: MnDOT Office of State Aid.

system is "local". Some counties have significant amounts of state aid roads classified as "local roads." In 20 counties, local roads account for more than 20 percent of the state aid systems. Seven counties have more than 100 miles of local roads on their CSAH systems.

In contrast, highways in some counties tend to have higher functional classifications. Over one-half of Hennepin County's state aid system is comprised of "arterial" routes. More than half of the state aid roads in cities over 5,000 population are arterials.

2. OTHER ROAD SYSTEMS

The County State Aid Highway system is closely related to several other local road systems. First, with the exception of

two counties, Minnesota counties operate a system of county roads which are not on the state aid system. Most of the funding for these roads comes from local property taxes, although state local government aid and federal revenue sharing funds also support county roads. Counties such as St. Louis maintain very large county road networks. Table 1.3 presents data on the county road systems in selected counties and shows the proportion of county-operated roads on the state aid system.

TABLE 1.3
SIZES OF COUNTY ROAD AND CSAH ROAD SYSTEMS
(Selected Counties)

<u>County</u>	<u>Size of County Road System^a</u>	<u>Size of CSAH System</u>	<u>Percent of County Roads Receiving State Aid</u>
Houston	0.0 miles	251.3 miles	100.0%
Meeker	0.0	271.7	100.0
Brown	18.3	318.4	94.6
Hennepin	46.9	485.0	91.2
Otter Tail	132.8	914.7	87.3
Kanabec	211.6	206.2	49.3
Grant	240.1	228.7	48.8
Wadena	253.0	228.9	47.5
St. Louis	1,561.6	1,368.3	46.7
Pennington	377.0	259.9	40.8

Source: MnDOT Transportation Information System, 1985.

^aPart of Houston County's road and bridge tax levy aids townships with their roads. Meeker County maintains township roads. In some counties, the county maintains township roads in unincorporated townships.

The *Municipal State Aid Street* system consists of 2,130 miles of streets in cities with more than 5,000 population. This system was created at the same time as the CSAH system and also receives funds from gas tax and vehicle registration revenues. In 1958, the system included 58 municipalities with 920 miles of designated streets. In 1985, 111 cities participate in the system.

The *township road* system is the largest in the state in mileage. However, it is one of the smallest systems in the volume of traffic it carries. In 1983, the township road system included more than 55,000 miles of road, carrying an estimated two percent of state traffic.

3. COUNTY HIGHWAY DEPARTMENTS

Each county has a highway department with responsibilities for designing, constructing, and maintaining county state aid roads and other county roads. In some counties, these departments have taken on additional duties and are known as departments of public works. They range in size from a permanent staff of five in Mahnomon County to 293 in Hennepin County.

Counties typically contract with private firms for road construction. Several counties make extensive use of contractors for routine maintenance activities. Counties also contract with townships and cities to maintain local roads and to share equipment.

By statute, each county must appoint a registered engineer as county highway engineer.⁵ In two instances in western Minnesota, two counties share one engineer. In all but a few counties, the county engineer is the only registered engineer in the department.

C. FUNDING

Since 1958, counties have received \$1.8 billion in state highway aid. As provided in the Minnesota Constitution, counties receive 29 percent of the Highway User Tax Distribution Fund, composed of motor fuel taxes and motor vehicle registration fees. The trunk highway system receives 62 percent of this fund, and municipalities with over 5,000 population receive 9 percent.

1. REVENUES

Annual county state aid funding increased from \$23.9 million in 1958 to \$171 million in 1985. The CSAH system experienced a recent infusion of new funds from two sources. First, the tax on most motor fuels was increased in two steps in 1983 and

⁵*Minn. Stat.* §163.07. A registered engineer has completed education and work experience requirements and has passed a comprehensive examination.

1984. Second, the 1983 and 1984 Legislature agreed to transfer 75 percent of the proceeds from the motor vehicle excise tax to the Highway User Tax Distribution Fund. The transfer is being phased in, beginning on July 1, 1984. The transfer will be completed on July 1, 1991. Proceeds from the excise tax will be distributed to the three road systems in the same proportions as the other revenues.

Estimates of future excise tax revenues suggest that CSAH aids will be increased by \$11.4 million from this source in 1986, rising to an increase of \$63.9 million in 1992.⁶

2. ALLOCATION FORMULA

A statutory formula allocates state aid among counties.⁷ Before developing this formula, a 1956 legislative commission chose the following criteria for selecting formula factors:

1. The factors chosen should measure the needs of county roads and the need for road funds in each county.
2. The factors should accurately reflect changes in need.
3. The factors should account for regional cost differences to assure comparable service levels throughout the state.
4. The factors should be capable of simple and accurate measurement.
5. The factors chosen should not be determined by nor subject to influence of county officials.⁸

To meet these criteria, the 1956 commission recommended four factors, all of which were adopted by the 1957 Legislature:

- *Equalization factor.* 10 percent of state aid is divided evenly among the 87 counties.

⁶Highway Study Commission, *Final Report*, 1984, p. 20.

⁷Prior to apportioning the state aids to the counties, the Commissioner of Transportation takes deductions from the available funds for administrative costs, a disaster account, a research account, and a state park road account.

⁸Minnesota Highway Department, *County State-Aid Highway: History, Apportionment, Accomplishment*, 1969, p. 5.

- *Mileage factor.* 30 percent of state aid is allocated based on each county's share of the state's CSAH miles.
- *Motor vehicle registration factor.* 10 percent of state aid is allocated based on each county's share of motor vehicles registered in the state.
- *Money needs.* 50 percent of state aid is allocated based on each county's estimate of its construction needs for the next 25 years.

The first two factors, accounting for 40 percent of the allocation, have not changed significantly over the past 27 years. Counties receive roughly the same proportion of state aid from these first two factors that they received in 1958. Growth in the third factor, motor vehicle registrations, benefited urban counties somewhat more than rural counties since 1958.

The fourth factor, money needs, has grown enormously since creation of the CSAH system. In 1958, 25-year construction needs totaled \$705 million. Today, 25-year construction needs are \$3.6 billion. Between 1980 and 1985, construction needs increased 64 percent.

Money needs grew faster in rural counties than in metropolitan counties between 1958 and 1985. In 1958, the seven-county Twin Cities area accounted for 15.1 percent of money needs. In 1985, the metropolitan area had 13.0 percent of the state's money needs.

Between 1958 and 1985, there was a slight decrease in the proportion of state aid going to the seven-county Twin Cities area compared to the rest of Minnesota. In 1958, the seven-county area received 14.1 percent of the total state aid allotment. In 1985, the Twin Cities area received 13.8 percent of the allotment. While all counties have received increased aid in each of the past four years, the rate of increase in the metropolitan counties' state aid was slower than the rate elsewhere in Minnesota.

D. ADMINISTRATION

The MnDOT Office of State Aid administers the municipal and county state aid systems. The office, which is located in MnDOT's Technical Service Division, has three major responsibilities:

1. Reviewing county and municipal construction projects funded through state or federal aids and authorizing the release of funds.
2. Providing technical assistance to local governments in the design, construction, and maintenance of their state aid streets and highways.
3. Providing staff support to the County State Aid Screening Board and the Municipal State Aid Screening Committee in their respective studies of construction needs.

The county screening board is made up of nine county engineers, one from each of MnDOT's nine construction districts. Each is elected for a two-year term by the county engineers in the district. The municipal screening committee consists of one city engineer from each of MnDOT's nine districts and one engineer from each city of the first class. We discuss the importance of the county screening board at length in this report.

1. STAFF

The office has a complement of 20, including 9 engineers, and is directed by the State Aid Engineer. However, much of the work of the office takes place in other MnDOT administrative offices and in MnDOT's construction districts. Staff in these offices are not included in the complement of the Office of State Aid. Three persons in MnDOT's Office of Financial Management have accounting responsibilities for state aid programs. Furthermore, one engineer and one assistant in the Office of Bridges and Structures are assigned full-time to state aid duties.

District state aid engineers play an important role in the system. They are managing engineers in each of MnDOT's nine construction districts who report to the State Aid Engineer. In districts 1 (Duluth), 5 (Golden Valley), and 9 (Oakdale), the district state aid engineer has a technical assistant. District state aid engineers:

- perform the initial review when counties and cities submit construction plans, requests to add roads to the state aid systems, and needs analysis;
- provide technical assistance to counties;
- evaluate maintenance of state aid highways and streets; and
- attend meetings at which contracts are let, particularly when federal funds are involved. On federal projects, the district state aid engineer attends the contract letting as the designated representative of the Commissioner of Transportation.

The relative weight given each of these duties varies in different parts of the state. In our interviews, we heard that state aid engineers in rural districts were closely involved in helping counties solve engineering problems. In urban districts, the state aid engineer has significant responsibilities for municipal state aid systems. In our interviews, both county engineers and MnDOT engineers expressed their pride in the CSAH system and said that the working relationship between MnDOT and the counties is very good.

2. BUDGET

The Office of State Aid budget is about \$710,000 in 1985. For 1986 and 1987, the governor has recommended an increase of about \$100,000, including funding for two new positions. Table 1.4 shows the office's budget since 1977.

TABLE 1.4
MnDOT OFFICE OF STATE AID
BUDGET AND STAFF COMPLEMENT

1977-1987^a

<u>Year</u>	<u>Budget</u>	<u>Staff (FTE)</u>
1977	\$285,400	12
1978	321,400	12
1979	308,700	11
1980	339,500	11
1981	349,600	11
1982	545,200	18
1983	595,800	18
1984	660,900	18
1985 ^b	710,900	20
1986 ^c	808,700	20
1987 ^c	810,900	20

Sources: *Biennial Budget*, 1979-1981, 1981-1983, 1983-1985, 1985-1987.

^astate fiscal year.

^bEstimated.

^cGovernor's recommendation.

The office's budget is only a portion of the total administrative costs for the state aid systems. Table 1.5 shows the total amount charged to the state aid accounts for administration, including the Office of State Aid, district state aid engineers and their assistants, accounting staff, and bridge engineers.

TABLE 1.5
ADMINISTRATIVE COSTS OF COUNTY AND MUNICIPAL
STATE AID SYSTEMS

	<u>1.5 Percent of Aids</u>	<u>Expended</u>	<u>Returned</u>
1982	\$2,525,090	\$1,660,261	\$ 864,829
1983	2,656,483	1,685,665	970,818
1984	2,945,675	1,757,995	1,187,680

Sources: Office of State Aid, Minnesota Department of Transportation, 1982-1985 *County State Aid Highway Apportionment Data*.

Administrative expenses are appropriated from the trunk highway fund. However, the two state aid accounts reimburse the trunk highway fund for the costs of administering the state aid systems. By statute, the commissioner deducts 1.5 percent of the total aids available before distribution for the department's administrative costs. The Legislature appropriates funds to each unit as part of its biennial budget process. Since the full amount is not appropriated or spent, the balance is returned to the state aid accounts for distribution in later years.

The table shows that the 1.5 percent administrative account has grown as the available aids have increased. Furthermore, the unspent amount returned to the state aid accounts has also grown each year. The Legislature may wish to lower the percentage set aside for administrative costs so that the amount reflects past experience and so that additional funds are available for distribution. It may also wish to see the state aid administration budget presented in a unified manner, showing all costs associated with the state aid systems.

Standards

Chapter 2

Minnesota counties use 60 percent of their annual state aid allocation to construct or reconstruct CSAH highways. Construction standards strongly influence the amount of money counties receive from the state and the manner in which these funds are spent. In our study, we asked:

- What progress have counties made since 1958 in building their state aid roads to standard?
- How appropriate are current standards for state aid highways?
- Does it make sense to allocate 50 percent of CSAH funds on the basis of construction needs and standards?

A. PROGRESS IN UPGRADING THE COUNTY STATE AID SYSTEM

1. MEASURES

Between 1958 and 1985, counties spent over \$1 billion of state highway user taxes to construct state aid highways. At 1985 funding levels, it will take less than a decade to spend an additional \$1 billion on CSAH construction. To evaluate the results of this investment, we examined the current status of the CSAH system and several measures of recent construction progress.

We found that:

- Approximately two-thirds of the CSAH system mileage is now paved, and one-third of the system mileage meets current state aid standards.

Table 2.1 groups county state aid highways by type of road surface. Almost all highways with traffic volumes over 750 vehicles per day are paved. Ninety-nine percent of the CSAH system's gravel roads have traffic less than 750 vehicles per day. The system includes about 65 miles of "non-existent" roads. Counties say they will build these someday, but currently the "roads" exist only as lines on a map. The number of "non-existent" roads increased slightly in the past ten years.

TABLE 2.1
MILES OF COUNTY STATE AID HIGHWAY
WITH VARIOUS ROAD SURFACES

<u>Road Surface</u>	<u>Projected Average Traffic of 1-749 Vehicles Per Day^a</u>	<u>Projected Average Traffic of 750+ Vehicles Per Day^a</u>
Graded and Drained	90.4 miles	6.2 miles
Soil Surfaced	8.7	0.3
Gravel	8,304.0	68.8
Bituminous Treated	31.1	33.2
Bituminous	12,023.6	6,957.6
Asphaltic Concrete	1,483.1	714.9
Concrete	57.0	237.2
Brick	0.0	2.1
Non-existent	<u>34.1</u>	<u>31.7</u>
TOTAL	22,032.0 miles	8,052.0 miles

Source: MnDOT Office of State Aid, 1984 Needs Study.

^aTraffic projected 20 years from most recent traffic count.

Table 2.2 shows the number of state aid roads that fail to meet current state geometric standards. *Geometrics* are the proportions to which highways are built, such as road width and thickness. Data on geometric deficiencies do not reflect road characteristics such as surface roughness and cracking.¹

¹There is no statewide system of road surface "condition rating" for county state aid highways as there is for Minnesota trunk highways.

TABLE 2.2
GEOMETRIC CONDITION OF STATE AID HIGHWAYS
1983

<u>Present Condition</u>	<u>Miles</u>	<u>Percent of CSAH System</u>
Adequate	9,987.7	33.2%
Deficient in Cross Section	2,673.7	8.9
Deficient in Design Speed	39.6	0.1
Deficient in Structure	2,217.5	7.4
Deficient in Cross Section and Design Speed	1,468.5	4.9
Deficient in Cross Section and Structure	5,749.2	19.1
Deficient in Design Speed and Structure	58.2	0.2
Deficient in Cross Section, Design Speed and Structure	<u>7,892.1</u>	<u>26.2</u>
Total	30,087.2	100.0%

Source: MnDOT Office of State Aid, 1983 Needs Study.

Explanation of Conditions:

"Adequate" refers to highways that meet all geometric standards.

"Cross section" includes lane width, shoulder width and roadside slopes.

"Structure" refers to the design strength of highways.

"Design speed" refers to the horizontal and vertical alignment of highways.

We also looked at three measures of the rate of construction progress made in recent years. First, we examined the annual rates at which counties paved gravel roads in the past decade. Second, we analyzed the rate at which counties built roads to standard. Third, we looked at the amount of road grading counties did in the past nine years.

a. Rate of Paving Gravel Roads

It is clear that the number of paved county state aid highways is increasing, and the number of gravel state aid roads is decreasing.² However, the rates of these changes slowed dramatically in the past ten years. Figure 2.1 shows the annual decrease in gravel state aid roads. Counties reduced their gravel road mileage in 1984 by 168 miles compared to over 350 miles per year in the late 1970's. Similarly, Figure 2.2 suggests that counties added 152 miles of paved roads to their systems in 1984, compared to over 300 per year in the late 1970's. At current rates of paving gravel roads, it would take counties over 40 years to complete an all-paved CSAH system.

b. Rate of Building Roads to Standard

A second measure of progress is the rate at which counties made geometrically deficient roads "adequate" in recent years. Table 2.3 summarizes the limited information available on this measure.³ The rate at which "deficient" roads are brought to standard slowed significantly in recent years. From 1971 to 1974, the state averaged a 2.4 percent annual increase in the number of adequate roads. At that rate, all deficient roads would have been built to standard by the year 2006. However, the rate of highway improvement slowed between 1974 and 1982. During this span, the state averaged only a 1.3 percent annual increase in the number of adequate state aid roads. At this rate, 1982 road deficiencies could not be eliminated until 2031. But counties may have a difficult time sustaining even the 1974-82 rate. In 1983, the number of adequate state aid roads actually decreased from the previous year.

c. Rate of Road Grading

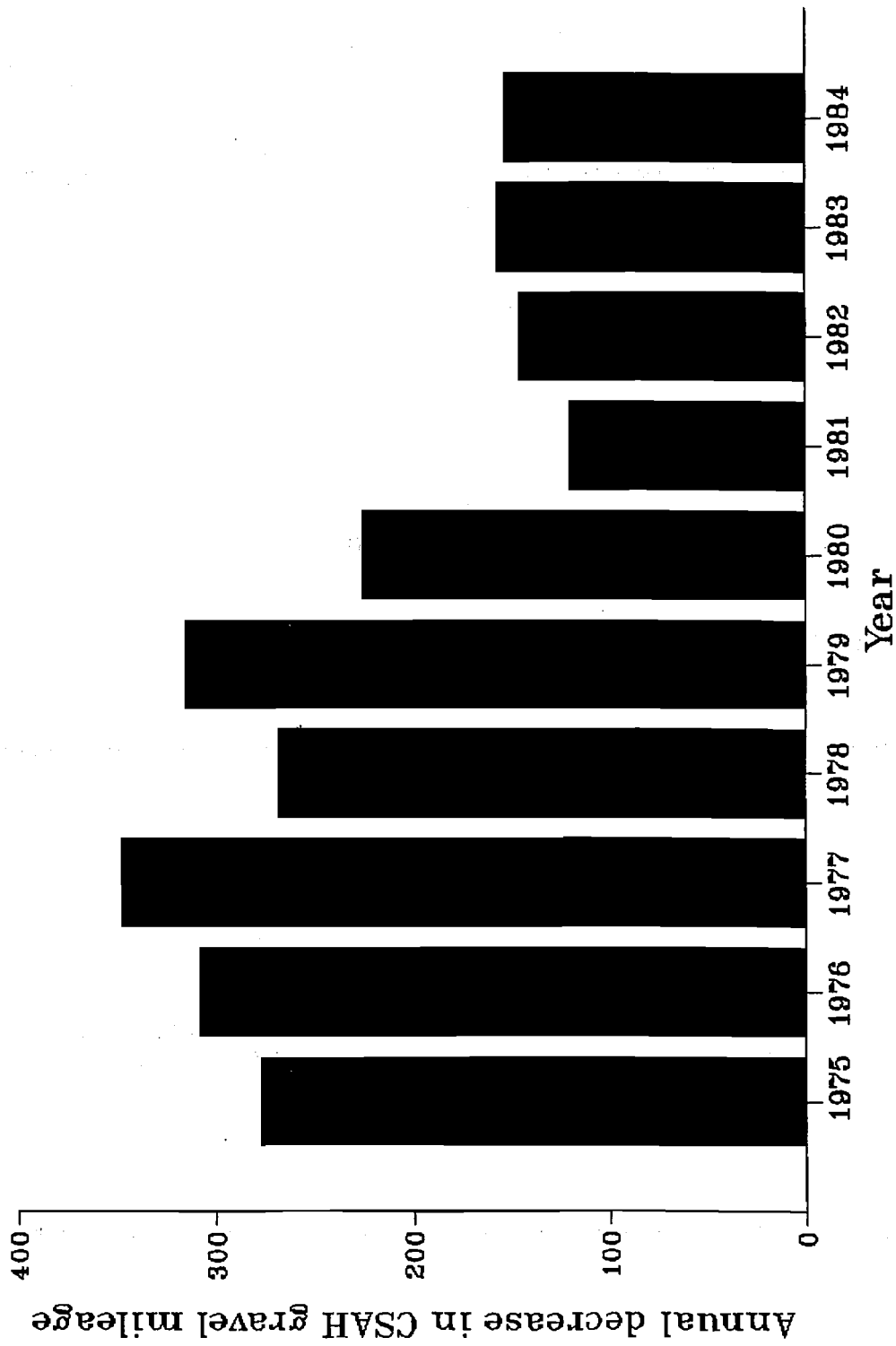
A final measure of progress on the county state aid system is the amount of road grading done by counties. Grading is the process of readying a roadbed for road construction or reconstruction. We examined the amount of grading done on highways with "rural design."⁴ Between 1975 and 1983, only seven percent of the rural design roads were graded. At this rate of

²There are two explanation for this trend. First and most common, counties pave gravel roads. Second, counties sometimes replace gravel roads currently on the CSAH system with paved roads on other systems, giving the paved roads CSAH designation.

³MnDOT has complete data only for the years shown.

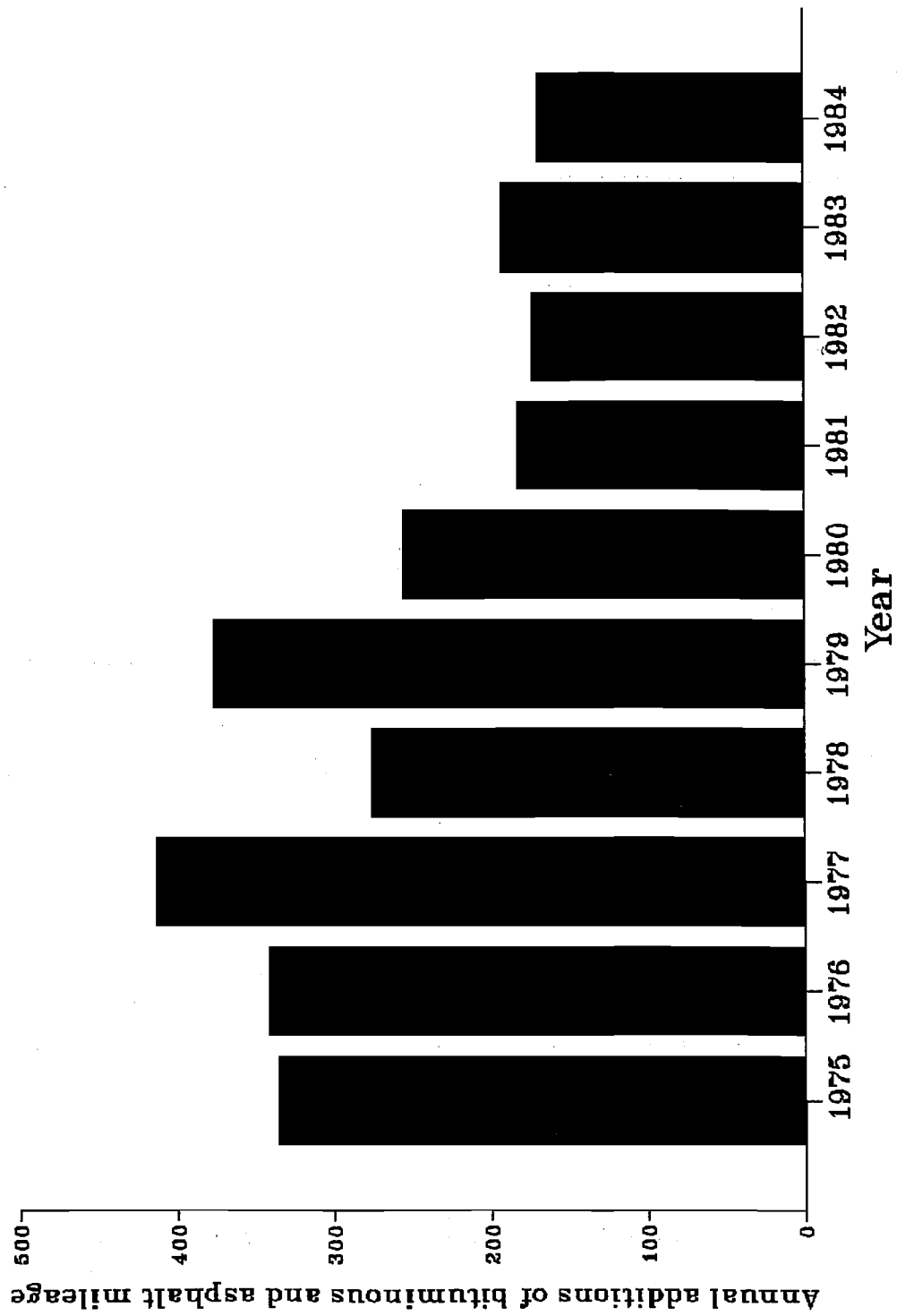
⁴"Rural design" accounts for 94 percent of all state aid highways. The design planned for a given highway determines which geometric standards to use in the needs study.

Figure 2.1
ANNUAL DECREASE IN THE NUMBER OF GRAVEL MILES
ON THE COUNTY STATE AID HIGHWAY SYSTEM, 1975-1984



Source: MnDOT Office of State Aid

Figure 2.2
ANNUAL INCREASE IN THE NUMBER OF BITUMINOUS AND ASPHALT
MILES ON THE COUNTY STATE AID HIGHWAY SYSTEM, 1975-1984



Source: MnDOT Office of State Aid

TABLE 2.3
PERCENTAGE OF COUNTY STATE AID HIGHWAYS
MEETING GEOMETRIC STANDARDS

1971-74, 1982-84

	<u>Percentage of CSAH System that Meets Standards</u>	<u>Percentage of CSAH System That Does Not Meet Standards</u>
1971	16.5%	83.5%
1972	18.3	81.7
1973	22.0	78.0
1974	23.7	76.3
1982	34.4	65.6
1983	33.2	66.8
1984	33.3	66.7

Source: MnDOT Office of State Aid.

progress, it would take 128 years to grade the entire system. This assumes that there is no reconstruction during this 128-year period, which is extremely unlikely. The rural counties that did the most grading between 1975 and 1983 (LeSeuer and Chippewa counties) grade their systems at a rate of once every 45 years (assuming no reconstruction).

As mentioned in Chapter 1 and described more fully in Chapter 3, the CSAH funding formula assumes that roads will be built and reconstructed on a 25-year cycle. Our three measures of progress lead us to the following conclusion:

- Given the slow rate of progress in improving the CSAH system and current funding levels, it is unrealistic to expect a system completely built to standard in the next 25 years.

The rates of progress we report did not incorporate some major factors. Specifically, these projections did not consider: (1) the increasing amount of future reconstruction required for roads graded in the early years of the county state aid system⁵; (2) the possibility of more stringent standards in

⁵In 1984, for example, counties reported 577 miles of highway that had reached their twenty-fifth year since initial grading.

coming years; and (3) the impact of motor vehicle excise tax transfers to the Highway User Tax Distribution Fund. With or without these considerations, it is likely that the county state aid system could be built to standard in 25 years only if state funding doubled or possibly tripled.

2. EXPLANATIONS FOR PROGRESS

In 1954, a study commissioned by the Minnesota Legislature reported that "it is impractical to delay major needed improvements [on the county road system] for 20 years."⁶ Yet, 31 years later, the 30,000-mile county state aid system still is not nearing complete construction-to-standard. We looked at several possible explanations for this slow progress.

County officials we interviewed often claimed that their portion of the Highway Users Tax Distribution Fund is insufficient (currently they receive 29 percent). We found that:

- CSAH funding historically has met a high percentage of the needs claimed by counties.

Each year, counties estimate their "25-year construction needs" (we discuss these needs more fully in the next chapter). Figure 2.3 shows the portion of annual county needs met by state and federal funds between 1958 and 1985.⁷ During this time span, state and federal construction funds met about 75 percent of the construction needs claimed by counties on an annualized basis. Given that the average county today gets one-third of its annual revenues from local sources, it appears that counties receive most or all of the money they claim to need.⁸

Inflation limited CSAH progress in recent years, but increases in state aid apportionments covered much of this cost. The cost of construction increased 163 percent between 1971 and 1983. During this time, the state aid apportionment increased 126 percent.

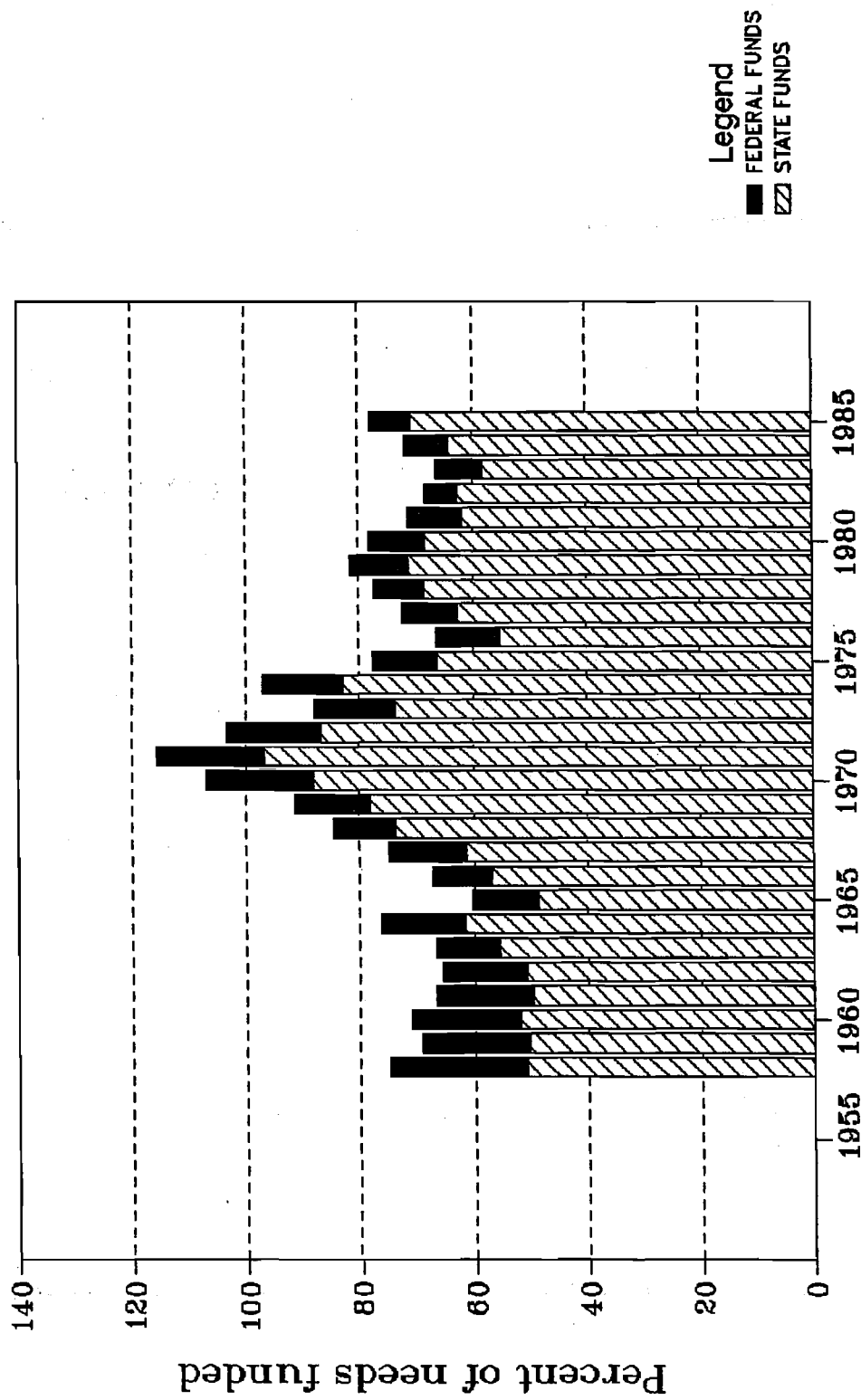
In our view, two primary factors account for the slow progress on the state aid system. First, geometric standards increased

⁶Automotive Safety Foundation, *Highway Transportation in Minnesota: An Engineering Analysis* (A Report to the Minnesota Highway Study Commission), 1954, p. 47.

⁷Annual construction needs are simply 1/25 of 25-year construction needs.

⁸According to *Report of the State Auditor of Minnesota on the Revenues, Expenditures, and Debt of the Counties in Minnesota*, 32.7 percent of all county revenue was raised by property taxes in 1982.

Figure 2.3
PERCENTAGE OF ANNUAL CSAH CONSTRUCTION NEEDS FUNDED
1958-1985



Source: MnDOT Office of State Aid
 State funds = county state aids; federal funds = Federal Aid Secondary

gradually over the past 27 years. We learned that counties built many roads to standards that existed at the time of construction, but the development of more stringent standards caused those roads to become "deficient." Thus, more county state aid roads have been built "to standard" than comparisons to current standards would indicate. We discuss issues related to standards later in this chapter.

A second reason for the lack of progress on the CSAH system is counties' increasing attention to preservation of their existing roads rather than construction of new roads. Table 2.4 compares the materials used for construction in 1971 and 1983. Counties reduced their use of base and sub-base materials during this time--these are materials used for new construction. In contrast, counties increased their use of materials such as bituminous and shoulder gravel for overlays and preservation work. There appears to have been a shift in county priorities during those years. From the data and from our interviews with county engineers, we concluded that:

- Many counties perceive a need to preserve their existing system before building new roads or reconstructing old roads.

TABLE 2.4
MATERIALS USED IN RURAL STATE AID HIGHWAY CONSTRUCTION
1971 and 1983

<u>Material</u>	<u>1971 Tons</u>	<u>1983 Tons</u>	<u>Percent Change</u>
Sub-Base	2,090,773	802,909	-61.6
Gravel Base	3,000,346	1,778,096	-40.7
Bituminous	1,505,877	2,062,338	+37.0
Bituminous Surface ^a	122,775	132,818	+ 8.2
Bituminous Surface ^b	35,983	19,786	-45.0
Gravel Surface	459,593	176,024	-61.7
Gravel Shoulders	578,640	830,487	+43.5

Source: MnDOT Office of State Aid, 1984 County Screening Committee Data, June 1984.

^aBituminous surface type 2341.

^bBituminous surface type 2351-2361.

This trend is further confirmed by the increase in special resurfacing projects done by counties in recent years. *Special resurfacing* refers to projects in which counties use state aid construction funds to resurface roads without bringing them to standard. By a 1967 resolution of the county state aid Screening Board, counties that spend state funds on special resurfacing projects receive allocation deductions for a period of 10 years following the work.⁹ Thus, there is a disincentive for counties to do special resurfacing projects with state aid funds.¹⁰ Nevertheless, Table 2.5 shows that the number of these projects continues to grow each year. Counties performed about \$100 million of special resurfacing in the past decade. This suggests that counties perceive a need to do some road preservation work without meeting standards. We conclude that:

- Counties have significant needs for preservation work on their highways, but the state aid apportionment process does not fully recognize those needs.

While counties can claim *construction* needs for all state aid highways, counties can only claim *preservation* needs for highways currently meeting state aid standards. We discuss the method of computing highway "needs" later in this chapter and in Chapter 3.

B. COUNTY STATE AID CONSTRUCTION STANDARDS

1. HISTORICAL PERSPECTIVE

Minnesota's 1957 Legislature established the current state aid highway system and gave the Commissioner of Transportation authority to promulgate rules and regulations. After consulting with a committee of county commissioners and county engineers, the commissioner promulgated rules setting construction standards for county state aid highways in August, 1957.

⁹Counties using state funds for special resurfacing have the state cost of these projects annually deducted from their 25-year needs for a 10 year period.

¹⁰Many counties are able to raise local tax money for special resurfacing projects, thus avoiding penalties. This creates an equity issue, since some counties are less able to raise local funds.

TABLE 2.5
SPECIAL RESURFACING DONE BY COUNTIES
1974-1984

<u>Year</u>	<u>Number of Projects</u>	<u>Cost</u>
1974	34	\$ 2,651,787
1975	47	4,350,571
1976	52	4,467,272
1977	61	4,361,918
1978	65	6,627,241
1979	59	9,448,649
1980	57	8,776,808
1981	79	12,858,301
1982	97	13,028,316
1983	100	13,658,836
1984 ^a	<u>117</u>	<u>23,385,321</u>
TOTAL	703	\$103,615,020

Source: MnDOT Office of State Aid.

^aPreliminary estimate--these projects will be reviewed prior to being deducted from 1985 needs.

Standards changed quite significantly between 1957 and 1985, most notably in required design strength. In 1957, roads with projected traffic of 1,000 vehicles per day required a "seven ton ultimate nine ton" design¹¹; today, standard design strength on these roads is nine tons. In 1957, roads with projected traffic of 100 to 399 vehicles per day required a five ton design; today, these roads require a "seven-ton ultimate nine-ton" design.

There have also been changes in roadway width standards. Counties must now build roads used by 100 to 399 vehicles per day two feet wider than required in 1957. Requirements for shoulder width are up to five feet greater per shoulder than they were in 1957. There were no standards for roadside slopes in 1957; today, slope standards exist for all state aid roads. Appendix C provides a summary of changes in standards since 1957.

¹¹"seven ton ultimate nine ton" refers to a road initially built to handle seven ton axle loads but that eventually could handle nine ton axle loads if given additional surfacing.

Standards affect counties in two ways. First, standards affect the county state aid allocations. Counties receive state aid apportionments based on the extent to which their state aid roads are below standard. Assuming that two counties have the same amount of state aid mileage, a county with many sub-standard roads typically receives more money than a county with few sub-standard roads.

Second, standards determine the actual construction practices of counties, thus affecting highway costs. The extent to which safety standards add to construction costs depends on factors such as terrain and local right-of-way costs. A study by the Office of State Aid suggested that lower roadside slope standards reduce construction costs by five to ten percent.¹² This decrease would likely be greater in urban areas due to higher right-of-way costs.

The effect of safety standards on maintenance costs is less evident. Higher standards generally increase the width of roadways, adding to maintenance costs. However, some standards produce maintenance efficiencies. For example, wide shoulders and roadside slopes make snow clearance easier.

Standards also affect highway liability costs, although this is difficult to document from the relatively few CSAH cases in which the state is a defendant. State officials we talked with recalled only one case in which the State of Minnesota paid any damages for a CSAH accident. In general, however, it seems logical to assume that higher standards increase the number of highways that do not meet standard, perhaps resulting in increased liability.

2. REVIEW OF LITERATURE ON STANDARDS FOR LOW-VOLUME ROADS

Most of the standards applicable to county state aid roads are safety standards. Road design elements affected by CSAH safety standards include: lane width, shoulder width, roadside slopes, right-of-way, obstacle-free "clear zones," sight distance, and curvature. The only geometric standard not directly related to safety is design strength. Strength standards exist to accommodate heavy vehicles.

Because the state has CSAH standards primarily for safety reasons, the key issue surrounding standards is this: to what extent do standards on county state aid highways add to safety, and is this safety benefit worth the cost? We reviewed national

¹²Slopes were decreased from a 6:1 rate of incline to a 4:1 rate of incline, resulting in lower costs.

research literature to assess accident frequency on low traffic roads and to evaluate the cost-effectiveness of design standards. Our review of the literature revealed that:

- Viewed as part of the entire transportation network, low traffic roads account for relatively few accidents.

Nationally, the average road with 50 cars per day has one accident per year for every 10.2 miles, and the average road with 400 cars per day has one accident per year for every 2.7 miles.¹³ A road with 100 cars per day averages one run-off-the-road accident per year each 30 miles and one fatality every 2,700 miles.¹⁴ In addition, relatively few head-on collisions occur on low traffic roads. The number of potential head-on collisions expected per year varies with traffic levels, as seen in Table 2.6. Overall, total highway accident costs increase as traffic volumes increase, both nationally and in Minnesota.

TABLE 2.6

POTENTIAL HEAD-ON COLLISIONS DUE TO VEHICLES STOPPED ON ROADWAY^a

Average Vehicles Per Day on Road	Expected Number of Hazards Per Mile Per Year ^b
50	1/9
400	54
3,000	6,500

Source: John C. Glennon, *Design and Traffic Control Guidelines for Low-Volume Rural Roads*, National Cooperative Highway Research Program Report 214, p. 6.

^aIncludes both emergency and leisure stops.

^bA hazard occurs when a car passing a vehicle stopped on a road encounters an oncoming car. The result may or may not be a collision.

¹³John Glennon, *Design and Traffic Control Guidelines for Low-Volume Roads*, National Cooperation Highway Research Program (NCHRP) Report 214, 1979, p. 3.

¹⁴Clarkson Oglesby, "Dilemmas in the Administration, Planning, Design, Construction and Maintenance of Low-Volume Roads," *Low-Volume Roads*, Transportation Special Report 160, 1975, p. 13.

Because of data such as this, many transportation researchers question the cost-effectiveness of certain safety standards and safety improvements on low traffic roads. Here is a sampling of comments we found in the literature:

In general, expensive improvements (high standards) on low-volume facilities in the name of safety and efficient operation are less justifiable than on high-volume facilities. On this basis, the lower volume, two-lane rural highways would be prime candidates for cost savings without a commensurate loss in safety effectiveness.¹⁵

...it makes little sense, except in extraordinary circumstances, to make any roadside improvements on highways with relatively low traffic volumes when there are higher volume highways in need of pavement widening, shoulder widening, and stabilization and/or roadside design improvements.¹⁶

In general, little safety benefit is derived for extensive safety upgrading of local roads and rural secondary roads and arterials and collectors; safety funds allocated for these low volume roads should be redirected to highways with greater traffic volume. However, spot improvements dictated by specific site conditions and/or adverse accident exposure may be warranted for any road.¹⁷

No longer can we conclude that anything that makes the road safer is justified regardless of cost.¹⁸

...the designer of low-volume roads finds little opportunity to use imaginative approaches that will stretch limited dollars over more miles of roads....The question can well be asked of those who hold the purse-strings, 'Are you putting too high a price tag on our low-volume roads to avoid a few design mistakes, if they are mistakes?'¹⁹

¹⁵Roy Jorgenson Associates, Inc., *Cost and Safety Effectiveness of Highway Design Elements*, NCHRP Report 197, 1978, pp. 8-10.

¹⁶Jerry Graham and Douglas Hardwood, *Effectiveness of Clear Recovery Zones*, NCHRP Report 247, 1982, p. 12.

¹⁷Jarvis Michie, *Enhancing Highway Safety Through Engineering Management in an Age of Limited Resources*, 1981, Transportation Research Board et.al., p.38.

¹⁸M. Graham, *Enhancing Highway Safety*, p. 139.

¹⁹Oglesby, p. 9.

Researchers also question the cost-effectiveness of specific design elements. A recent study by the Transportation Research Board evaluated the cost-effectiveness of current designs. The study found that pavement width has relatively little effect on accidents, and that 12-foot lanes (as required on almost all state aid roads) are not safer than 11-foot lanes. In concluding that the safety-effectiveness of shoulder width is not clearly established, the study reported that accident rates often increase on low volume roads as shoulder width increases. In addition, the study found that reconstruction projects on low traffic highways offer great potential for design cost savings.²⁰

While we cannot fully report the findings from safety research here, we can say that many studies question the cost- and safety-effectiveness of geometric improvements to low traffic roads. The research on these issues continues, but there are increasing calls for flexibility in standards and selective use of geometric improvements on high-risk road segments.

3. IMPLICATIONS FOR FUTURE CSAH CONSTRUCTION

Minnesota engineers and legislators have not unquestioningly accepted rising construction standards. In 1967, counties protested increases in national design standards, leading MnDOT to adopt state aid standards less stringent than national standards.²¹ More recently, MnDOT modified standards after deciding that state aid roadside slope requirements were excessive. Also, the Legislature established a Variance Committee to permit deviations from standards, although relatively few counties apply for variances.²²

Despite MnDOT's past moderation of some standards, we believe two important conclusions regarding standards warrant the department's future attention. First, we conclude that:

- Rather than viewing the sub-standard parts of the state aid system in isolation, it is important for the department to view the benefits of CSAH improvements relative to the benefits of improvements on other state road systems (especially the trunk highway system).

While Minnesota has many county state aid roads that do not meet state aid standards, the state also has many trunk highways that

²⁰NCHRP Report 197.

²¹The national standards were developed by the American Association of State Highway Officials.

²²The Variance Committee (composed of five local engineers and elected officials) advises the Commissioner of Transportation.

do not meet these standards. For example, 576 miles of trunk highway are less than 20 feet wide, and 1,492 trunk highway miles are less than 22 feet wide. There are 522 trunk highway miles with no shoulders and about 1,700 miles with less than two feet of shoulder. Nearly one-third of Minnesota's rural trunk highways are in "no passing zones," signifying inadequate sight distances.

Overall, there are significant numbers of "sub-standard" trunk highways just as there are significant numbers of "sub-standard" state aid roads. With these many needs, safety improvements cannot be ends in themselves. The state should set safety priorities, making improvements where the greatest safety benefits result for the dollar spent. Given the greater traffic volumes on the trunk highway system, it is likely that improvements done for safety's sake should focus on these highways rather than secondary roads.

Similarly, the state must consider its priorities in upgrading the strength of its roads. Table 2.7 shows a comparison of weight restrictions on the trunk highway and state aid systems. Increases in trunk highway weight limits affect the loads traveling on other road systems. While some might wish to have all state aid roads designed for the heaviest trucks, such a goal would require major increases in state aid funding. A more reasonable approach requires that choices be made. This approach would focus road strength improvement dollars on those roads with the most critical needs, whether the roads are trunk highways or county state aid roads.

Unfortunately, the constitutional distribution of highway user taxes to trunk highways, county state aid highways, and municipal state aid streets inhibits departmental priority-setting. The three funds are administered separately by MnDOT. As a result, the effects of expenditures in the different systems are rarely compared with each other, and expenditures on the three systems are not adequately coordinated.

We also conclude that:

- Many factors affect the safety and quality of state aid highways, only one of which is geometric standards.

First, highway signing and pavement marking affect safety. Improvements in these areas may reduce some road hazards at a relatively low cost. Second, addressing issues such as seat belts and drunk driving is an alternative approach to safety goals. Many of Minnesota's tort liability suits involve intoxicated drivers. Laws, education, or incentives to influence driver behavior represent an option that is relatively inexpensive.

TABLE 2.7

SEASONAL WEIGHT RESTRICTIONS:
TRUNK HIGHWAYS AND COUNTY STATE AID HIGHWAYS

<hr/>		
<u>Trunk Highways:</u>	5 ton	1,307 miles
	6 ton	721
	7 ton	1,831
	8 ton	89
	9 ton	5,983
	10 ton	<u>2,155</u>
	Total	12,086
<u>County State Aid Highways:</u>	5 ton or less ^a	15,818 miles
	6-8 ton	11,178
	9 ton	2,873
	10 ton	<u>149</u>
	Total	30,108
<hr/>		

Source: Minnesota Department of Transportation.

^a Includes gravel roads.

Third, a highway's contribution to the public good is determined, in part, by the quality of its road surface. A county that resurfaces a highway in poor condition lowers the vehicle operating costs of highway users. Good road surfaces also affect local economies, since drivers may avoid roads with poor surfaces. In 1976, the Federal Highway Administration (FHWA) approved the use of federal funds for resurfacing projects. The FHWA's intent was to extend highway road life without necessarily improving geometric features.²³ At the state level, however:

- There is no comparable recognition in the county state aid system that resurfacing sub-standard roads without making geometric improvements constitutes a legitimate highway need.

123. ²³John Hibbs (FHWA), *Enhancing Highway Safety*, p.

RECOMMENDATIONS:

In light of our findings and conclusions, we recommend that:

- The Department of Transportation should reassess its funding of safety improvements on all state highway systems, ensuring that the most effective safety improvements receive top funding priority.
- The department should reassess CSAH geometric standards, considering research on cost- and safety-effectiveness. MnDOT should build flexibility into its standards, and the department should encourage greater use of variances that do not affect highway safety.

It may not be possible to employ flexibility on that half of Minnesota's CSAH roads that are on the Federal Aid Secondary system. Deviation from FAS standards might endanger federal funds.

- Counties should continually assess the effects of CSAH standards, asking for variances when appropriate.
- The Legislature should encourage *selective* use of geometric improvements on major county state aid roads, perhaps through modifications to the funding formula.

As an example, counties in east-central Minnesota recently established a network of inter-county roads bearing new highway designations. Intended to benefit through traffic using county roads, this network reflects counties' recognition of highway priorities. The Legislature should consider targeting "priority roads" for future CSAH geometric improvements.

C. "STANDARDS-BASED" FUND ALLOCATIONS

In Chapter 3, we discuss the formula used to determine county state aid allotments. However, before we examine the formula in detail, it is important to emphasize the unique role that geometric design standards play in CSAH funding.

MnDOT allocates one-half of state aid funds to counties on the basis of "money needs." For new construction, a money need is the cost of bringing a road up to the relevant standards. As shown in Figure 2.4, the department's estimate of future traffic on state aid roads determines the standards used in needs estimates.

Two critical assumptions drive this *standards-based funding system*. First and most important, we found that:

- Standards-based funding assumes that all state aid roads can, should, and will be built to standard.

FIGURE 2.4

METHOD OF CALCULATING COUNTY STATE AID HIGHWAY NEEDS

1. *Estimate current traffic* on a state aid highway. For example, a rural state aid road might have 200 cars per day according to periodic MnDOT traffic counts.
2. *Estimate future traffic* on the highway by multiplying current traffic times the county's "traffic projection factor" (MnDOT determines this factor). For example, 200 cars per day times a 1.6 projection factor equals an estimate that 320 cars per day will use the road 20 years from now. The average projection factor is 1.6.
3. *Estimate the quantity of materials needed* to build the road to current geometric standards. MnDOT uses quantity assumptions based on projected traffic and current soil conditions. For example, MnDOT assumes that one mile of two-lane rural highway built on poor soil and projected to have 300 cars per day will require: 15,857 tons (13 inches) of sub-base, 3,271 tons (3 inches) of base, 1,210 tons (1.5 inches) of bituminous base, 1,162 tons (1.5 inches) of initial bituminous surface, 1,548 tons (2 inches) of additional surface at a later date, 631 tons of gravel shoulder, and 525 tons of gravel re-shoulder.
4. *Estimate materials prices and total needs.* The Screening Board decides what prices should be assumed for these materials in various counties based on studies of current prices. MnDOT applies the adopted prices to the estimated quantities to arrive at a total needs estimate for each road segment. Using 1983 materials prices (statewide average), the needs of the above mile of road would be estimated at approximately \$150,000.
5. *Adjustments.* The needs which counties can report are adjusted by Screening Board resolutions and state laws, as described in Chapter 3. For example, counties can only report needs on the center portion of state aid highways in cities over 5,000 population.

Thus, for the purpose of calculating needs, all state aid roads are assumed to be of equal importance. Standards-based funding presumes that Minnesota needs state aid roads with 50 cars per day built to standard just as much as Minnesota needs state aid roads with 1,000 cars per day built to standard.

Second, we found that:

- Use of standards-based funding makes the accuracy of future traffic projections very important, since those projections are used to calculate county state aid needs.

1. ASSUMPTION: ALL STATE AID ROADS ARE OF EQUAL IMPORTANCE

To judge this assumption, three questions need to be answered. Can all state aid roads be built to standard? Will all state aid roads be built to standard within the near future? Should all state aid roads be built to standard?

In some cases, counties cannot build state aid roads to standard. For example, existing development sometimes prevents roads from being built to full standard at reasonable cost. Such cases predominantly exist in highly urbanized areas. Thus, standards-based funding does overstate the needs of certain state aid roads that cannot, in fact, be built to standard.

The larger issue is whether all state aid roads will and should be built to standard. We examined which state aid roads currently generate the most state aid needs. We analyzed counties' 1984 needs by dividing state aid highways into classes on the basis of current average daily traffic volume. Although MnDOT bases the annual CSAH needs analysis on 20-year projections of traffic volume, we used current volumes for two reasons. First, as discussed later, we question the reliability of the traffic projection factors used in the needs analysis. Second, county highway engineers told us that they expect future construction to be limited mainly to roads that currently have relatively high traffic.

Table 2.8 shows that nearly one-third of the construction needs reported by counties are on roads with current traffic of less than 200 vehicles per day. About 29 percent of the needs are on the busiest roads in the system, those with traffic of more than 750 vehicles per day.

a. Needs on Low Volume Roads

About 5,900 miles, or one-fifth, of CSAH roads have average daily traffic (ADT) volume of less than 100 vehicles. According to the 1984 needs analysis, counties reported nearly \$567 million in needs on those highways. As shown in Table 2.9, 15.6 percent of the state's construction needs was on those highways.

TABLE 2.8

TWENTY-FIVE YEAR CONSTRUCTION NEEDS ON COUNTY STATE AID HIGHWAYS
RELATED TO TRAFFIC VOLUME

<u>Current Average Daily Traffic</u>	<u>Miles of Road</u>	<u>Percent of Miles in State</u>	<u>Apportionment Needs</u>	<u>Percent of State Apportionment Needs</u>
0- 99 vehicles	5,897.46	19.6%	\$ 566,936,999	15.6%
100-199	6,392.94	21.3	611,043,603	16.8
200-299	4,908.84	16.3	408,882,627	11.3
300-399	3,463.44	11.5	338,660,184	9.3
400-749	5,082.13	16.9	665,557,118	18.3
750 plus	<u>4,339.15</u>	<u>14.4</u>	<u>1,041,618,779</u>	<u>28.7</u>
TOTAL	30,083.96	100.0%	\$3,632,699,310	100.0%

Source: Program Evaluation Division analysis of report prepared by Office of State Aid, Department of Transportation, 1985.

TABLE 2.9
COMPARISON OF COUNTY NEEDS ON HIGHWAY SEGMENTS
WHERE PRESENT TRAFFIC = 0-99 ADT

(Selected Counties)

<u>County</u>	<u>Percent of County's Apportionment Needs</u>	<u>Percent of County's CSAH Miles</u>
Lake of the Woods	65.2%	59.4%
Roseau	59.9	55.8
Pennington	58.3	51.5
Traverse	54.3	60.4
Norman	50.7	49.3
Marshall	49.9	43.7
Koochiching	46.4	56.3
Kittson	45.4	51.0
Mahnomen	42.3	39.1
Cook	41.9	41.6
Rice	2.7	2.6
McLeod	2.1	2.7
Stearns	1.5	2.8
Scott	1.3	1.5
Ottertail	1.2	2.3
Washington	1.2	1.1
Wright	0.3	0.3
Anoka	0.3	1.2
Sherburne	0.2	0.5
Ramsey	<u>0.0</u>	<u>0.0</u>
STATE TOTAL	15.6%	19.6%
COUNTY MEDIAN	13.9%	15.2%

Source: Program Evaluation Division analysis of report prepared by Office of State Aid, Department of Transportation, 1985.

We found that:

- Some counties report a significant portion of their needs on low volume roads.

Five counties in northern and western Minnesota report more than half of their construction needs on roads with average daily traffic of less than 100 vehicles.

Furthermore, ten counties report more than two-thirds of their construction needs on roads with average daily traffic of less than 200 vehicles. Twenty-four counties report more than half of their needs on roads with average daily traffic of less than 200 vehicles.

On the other hand, some counties have very few low volume county state aid highways and, consequently, very few needs on low volume roads. Eleven counties report less than three percent of their construction needs on such roads. Ramsey County reports no roads with ADT of less than 100 vehicles.

b. Needs on Higher Volume Roads

About 4,340 miles of state aid highways have current traffic of 750 or more vehicles a day. Half of these roads are in ten counties. As shown in Table 2.10, six counties report that more than half of their construction needs are on these high volume roads.

By contrast, many counties have very few miles of state aid road with traffic volumes of more than 750 vehicles per day. Twelve counties reported that less than five percent of their total construction needs were for these high volume roads.

c. Will and Should Low Volume Roads Be Built in the Near Future?

Earlier in this chapter we concluded that it is unrealistic to expect a fully-built CSAH system in the next 25 years. We made a rough estimate that building the entire CSAH system to standard within this time span might require as much as a tripling of CSAH funds over the next 25 years. In other words, if the Legislature devotes most of the state highway user funds for the next 25 years to county state aid highways, the entire system could probably be built to standard. During this time, little state money would be spent on trunk highways. Clearly, this option is unreasonable.

Given that the CSAH system cannot be fully constructed in the foreseeable future, we conclude that:

- The standards-based funding currently used for the state aid road system inadequately reflects the choices and priorities that must be made in the future.

TABLE 2.10
COMPARISON OF COUNTY NEEDS ON HIGHWAY SEGMENT
WHERE PRESENT TRAFFIC = 750 PLUS ADT
(Selected Counties)

<u>County</u>	<u>Percent of County Needs</u>	<u>Percent of County Miles</u>
Ramsey	97.4%	95.3%
Hennepin	89.6	91.6
Anoka	84.4	79.8
Dakota	76.6	70.5
Washington	75.7	70.1
Scott	69.8	45.4
Stearns	48.7	29.9
Carver	48.7	38.5
Wright	45.9	38.2
Steele	39.6	22.2
Yellow Medicine	4.2	2.5
Meeker	4.0	5.4
Roseau	2.3	0.7
Clearwater	2.3	0.6
Traverse	2.3	0.8
Murray	2.0	1.6
Norman	1.3	0.5
Kittson	0.8	0.4
Marshall	0.7	0.5
Lake of the Woods	<u>0.3</u>	<u>0.3</u>
STATE TOTAL	28.67%	14.4%
COUNTY MEDIAN	14.4%	4.5%

Source: Program Evaluation Division analysis of report prepared by Office of State Aid, Department of Transportation, 1985.

We do not criticize the construction choices counties made during the first 27 years of the CSAH system. Counties paved and improved the geometrics of roads they thought were important. In general, counties constructed roads having commercial importance or heavy traffic.

It is inequitable, however, that the CSAH funding system does not reflect these choices. The system views all roads as equally important and equally likely to be built. Counties with heavy concentrations of low volume roads benefit from the current funding system, even though it is likely that many of these roads never will be constructed.

2. ASSUMPTION: TRAFFIC PROJECTIONS ARE ACCURATE

Each county state aid highway has a "traffic projection factor," representing the traffic increase expected in the next 20 years. For example, MnDOT assumes that a road with 1,000 vehicles per day and a 1.6 traffic projection factor will have 1,600 cars per day in two decades.

Traffic projection factors heavily influence the size of county state aid apportionments. MnDOT applies geometric standards to roads based on their projected traffic. For example, the department assumes that a road projected to have 775 cars per day needs higher standards than a road projected to have 725 cars per day. Higher standards increase the "needs" of counties, which in turn increase county apportionments.

Because of the importance of traffic projections, we examined the method used to make them. Figure 2.5 briefly explains the method. We found that:

- The department makes future state aid traffic projections with a straight-line projection of past trends.

We acknowledge the difficulty of traffic projections. It is difficult to foresee future driver behavior. But we see several problems with the department's current method of traffic projection, which now estimates a 60 percent traffic increase on the average state aid road in the next 20 years. Most important, there is evidence that the experience of the past twenty years may not repeat itself in the next twenty.

First, the number of drivers increased dramatically in the past 20 years as the baby boom population matured. The peak of Minnesota's baby boom population was between the ages of 15 and 24 in 1980, capping an era of increasing numbers of new drivers. The State Demographer's Office projects that the "new driver" population (ages 15-19) will be 26 percent lower in 1990 than it was in 1980.²⁴

²⁴Minnesota State Demographer's Office Minnesota Population Projections 1980-2010.

FIGURE 2.5

METHOD OF PROJECTING COUNTY STATE AID TRAFFIC

History In the 1958 study of CSAH construction needs, all state aid roads were assumed to have a 20-year traffic projection factor of 2.0, meaning a doubling of traffic. In the 1960s, MnDOT began using one of four traffic projection factors for each county, ranging from 1.8 to 2.5. MnDOT adopted the current method of traffic projection in the late 1970s.

STEP ONE: TRAFFIC COUNTING. In the past, rural counties received complete CSAH traffic counts about once every six years. Most rural counties now have their traffic counted once every four years. Metropolitan counties receive traffic counts once every two years.

STEP TWO: COMPUTE VEHICLE MILES. MnDOT translates traffic counts into vehicle miles of traffic by multiplying a segment's ADT times its mileage. MnDOT computes total vehicle miles per county and then computes the vehicle miles per CSAH mile in each county.

STEP THREE: "LEAST SQUARES REGRESSION." For rural counties, MnDOT uses the last four traffic counts to estimate future traffic; for metropolitan counties, MnDOT usually uses the last five or six counts to make the estimate. The department fits a straight line to past estimates of vehicle miles and projects this to the future. For example, Brown County's 1999 CSAH traffic is estimated on the basis of counts from 1963, 1968, 1973, and 1979.

STEP FOUR: APPLICATION. MnDOT applies a county's traffic projection factor to all CSAH roads in that county. For example, a county with a 1.6 projection factor generally assumes increases of 60 percent for its CSAH roads with 50 cars per day and for its roads with 1,000 cars per day. A county can request that a different projection factor be used on certain roads.

Results The traffic projection factors of Minnesota counties range from 1.3 in five counties to 2.6 in Scott County. The average county projection factor is 1.6. Among the counties with high traffic projection factors are several with very large CSAH systems: Pine (1.9 factor, 473 miles), Beltrami (1.8 factor, 466 miles), Clay (1.8 factor, 407 miles).

Second, some important social trends contributed to the traffic growth of the past 20 years. The labor force increased, particularly as more women worked outside their homes. The number of households increased, and the size of those households decreased. The number of cars per person doubled since 1958, and there are more single occupant vehicles on the road today. The length of trips to work increased. The amount of leisure travel increased. These trends permitted sizable traffic increases to accompany relatively modest increases in population.

Many of these trends have not peaked, but it is likely that several will slow in coming years. It is worth asking: what will continue to cause traffic to increase at past rates if these factors do not? While the State Demographer's Office predicts an 11 percent increase in state population in the next 20 years, the MnDOT Office of State Aid projects 60 percent increases in county state aid highway traffic levels. The State Demographer predicts population decreases in many southwestern and northeastern Minnesota counties.²⁵

A final traffic projection issue is that the same projection factors generally apply to all roads in a given county. Consequently, counties can assume that gravel roads which primarily provide access to land-owners will have traffic increases comparable to tourist routes.

It is possible that some counties will experience rapid traffic growth, perhaps even 60 percent, in the next 20 years. Trends from the past few years show that some regions of the state continue to see such traffic growth. Also, the number of households in many rural counties increased in recent years much faster than population growth. However, traffic growth curves appear to have flattened somewhat in western Minnesota, for example. When traffic trends slow down, straight-line projections produce an over-estimation of future traffic. Consequently, this could lead to an over-estimation of future CSAH needs and the use of excessive standards.

The main reason for raising the traffic projection issue is not to suggest more sophisticated projection techniques, although the department may wish to consider this for scheduled road projects. Rather, we conclude that:

- A key assumption used to determine geometric standards and county state aid allocations--straight-line traffic projections--is questionable, and this may contribute to an over-estimation of some highway needs.

²⁵Minnesota State Demographer's Office, *Population Notes*, December 1984.

D. CONCLUSIONS AND RECOMMENDATIONS

Standards play an important role in the county state aid system, particularly in the way they affect CSAH funding. However, we conclude that:

- Standards should not be the foundation of the CSAH fund allocation system, as they now are.

Several findings support this conclusion. First, counties are spending an increasing amount of money preserving their systems, rather than building new roads to standard. Second, the rate at which counties are bringing roads to standard precludes the possibility of ever building the entire CSAH network to standard.

Third, certain non-geometric improvements result in public benefits but are not recognized as "needs" in a standards-based funding system. Fourth, we have doubts about some of the traffic projection factors that determine standards. Fifth, it is difficult to consider geometric improvements on roads with 100 cars per day as "needs" when a large number of Minnesota's trunk highways do not meet these same standards.

Sixth, some roads cannot be built to the standards presumed in the needs study. Seventh, it is difficult to justify taking standards as a given when current literature calls for selective use of geometric improvements on low volume roads. In sum, standards-based funding currently allocates state aid using a *wish list*, not a *needs list*. We recommend:

- The Legislature should adopt an alternative to standards-based funding for state aid highways.

Chapter 3 discusses possible alternatives more fully.

In developing an alternative method of funding, the Legislature should help determine the priorities of the state aid system. We do not think that all state aid roads are of equal importance, since some roads affect driver safety and local economies more than others. Determining which goals (and which roads) are important for the state aid system is, in part, a legislative responsibility. Thus, we recommend:

- The Legislature should establish a commission to review the state aid system and to recommend goals and priorities for the future. The Legislature should tie CSAH funding to these goals and priorities, as discussed in Chapter 3. Alternatively, the House and Senate Transportation Committees should hold interim hearings to discuss the future of the state aid system.

CSAH Allocation Formula

Chapter 3

In accordance with the Minnesota Constitution, counties receive 29 percent of the Highway Users Tax Distribution Fund for their county state aid highways. The 1957 Legislature established a formula for allocating county state aid highway construction and maintenance funds. In 1958, the statutory formula distributed \$24 million in state user taxes to counties. In 1985, the formula distributes \$171 million to counties. During these 28 years, there were no changes in the statutory formula, although the county state aid Screening Board made several changes in the method of allocation. In our study, we asked:

- Does the current state aid allocation formula carry out legislative intent?
- Does the formula need updating, due to changes in the county state aid highway system since 1957?
- How equitable is the formula's largest element, 25-year construction needs?

Currently, state law requires allocation of county state aid based on four factors:

- 10 percent shared equally among counties;
- 30 percent based on the proportion of CSAH mileage in each county;
- 10 percent based on the proportion of vehicle registrations in each county; and
- 50 percent based on counties' estimates of their future construction needs.

This chapter evaluates how appropriate these factors are. The Legislature may wish to revise these existing factors or select a new method of funding; both options are discussed in this chapter.

A. THE MILEAGE FACTOR

Each county receives state aid based on its share of the state's total CSAH mileage. State law requires the allocation of 30 percent of county state aid in this way. As with other factors in the state aid formula, the mileage factor stems largely from the 1956 *Report of the Legislative Interim Commission on Highway Taxes Distribution*. The report recommended a mileage factor for two reasons: (1) to reflect the number of important secondary roads in each county (as opposed to minor county roads), and (2) to reflect maintenance needs.

The establishment of a system of county state aid highways in 1957 eliminated the first reason for a mileage factor. The 1957 legislation prohibited counties from spending state highway aid on roads without state aid designation, so the state automatically targeted funds to the most important roads.¹

Thus, the primary reason for the 30 percent mileage factor is to reflect maintenance needs on county state aid roads. The 1956 report said that maintenance costs "are assumed to be fairly equal throughout the state; thus a county having greater mileage will receive a greater sum of money to compensate for added maintenance costs."² A 1969 report by MnDOT confirmed that inclusion of a mileage factor reflects maintenance needs.

However,

- The current mileage factor is not an adequate measure of maintenance needs for certain counties.

This is because some counties have many "multi-lane" roads, a change from the typical two-lane state aid road of the 1950's. There now are 320 miles of three-, four-, and six-lane roads on the CSAH system. Most of these are in the seven county metropolitan Twin Cities area, where per mile maintenance costs are the highest in the state.

A four-lane road requires more maintenance than a two-lane road, on average. There are more potholes to patch, and there is more snow to clear. We conclude that:

- The number of lane miles per county is a better measure for maintenance needs than the number of centerline miles.

¹Counties are allowed to use CSAH funds for county roads in "hardship" cases (requiring approval from the Office of State Aid), but this rarely occurs.

²*Report of the Legislative Interim Commission on Highway Taxes Distribution*, September 1956, p. 18.

Centerline miles measure highway length regardless of the number of driving lanes. *Lane miles* reflect a segment's number of driving lanes. A one-mile segment of highway with four driving lanes equals four lane miles. Changing the mileage factor to lane miles reflects the additional needs faced by multi-lane roads.

The effect of this change on most counties would be small. A typical county would lose about \$5,000 from its allocation. Four metropolitan counties would share most of the gains from this change. Hennepin, Ramsey, Anoka and Dakota counties would each gain enough money from this change to employ at least one more maintenance worker. Using 1985 apportionments, Hennepin County gains about \$222,000 under this alternative mileage factor. Table 3.1 shows the effect of the change on several counties' mileage factors.

B. MOTOR VEHICLE REGISTRATION FACTOR

According to state law, 10 percent of the CSAH allocation is determined by each county's share of the state's registered motor vehicles. The 1956 *Report of the Legislative Interim Commission on Highway Taxes Distribution* recommended a registration factor to reflect road use and deterioration, as well as the source of highway user revenue.³ MnDOT's 1969 report on the state aid system said the Legislature developed a registration factor to reflect road use.⁴

Vehicle registrations apparently were not the Legislature's first choice as a proxy for road use. The Highway Taxes Distribution Commission preferred using *vehicle miles* as a measure of road use and highway revenue. A vehicle mile is one mile traveled by one vehicle. In 1956, however, the highway department had incomplete data on county road vehicle miles.

MnDOT's 1969 report concurred with the 1956 commission's preference for vehicle miles. According to the report: "The best measure of road use is probably the number of vehicle miles travelled, when and if such information is available..."⁵

The department began gathering vehicle mile data on all county state aid roads in the early 1970's. Traffic engineers with the

³*Ibid.*

⁴Minnesota Highway Department, *County State-Aid Highway: History, Apportionment, Accomplishment*, April 1969, p. 6.

⁵*Ibid.*

TABLE 3.1
EFFECT OF CHANGING COUNTY STATE AID MILEAGE FACTOR
FROM MILES TO LANE MILES
(Selected Counties)

COUNTY	MILEAGE FACTOR USING 1984 MILES ¹	MILEAGE FACTOR USING 1984 LANE MILES ²	CHANGE	DOLLAR IMPACT(\$) ³
HENNEPIN	1.6584	2.0910	+.4326	+222,118
RAMSEY	.7587	.9311	+.1724	+ 88,504
DAKOTA	.9060	1.0052	+.0992	+ 50,939
ANOKA	.8087	.8881	+.0794	+ 40,785
STEARNS	2.0054	2.0249	+.0196	+ 10,040
ST. LOUIS	4.5266	4.4760	-.0507	- 26,010
ITASCA	2.1568	2.1157	-.0411	- 21,082
OTTER TAIL	3.0335	3.0080	-.0255	- 13,115
POLK	2.6931	2.6718	-.0212	- 10,891
COOK	.5919	.5710	-.0210	- 10,775

¹Mileage factor is the percentage of total state CSAH miles located in this county.

²Mileage factor is the percentage of total state CSAH lane miles located in this county.

³Dollar impact of the change, using 1985 apportionment data and assuming this factor remains 30 percent of the apportionment formula.

Source: Program Evaluation Division analysis of MnDOT data.

department report that vehicle mile data are now available for all county state aid highways. Thus, we conclude that:

- By statute, the department allocates funds based on a "second-best" proxy for road use when a better measure is available.

If the Legislature decides to change this proxy, the remaining question is: What measure of vehicle miles best replaces the current vehicle registration factor? We see two options:

1. Each county's share of total state vehicle miles;
2. Each county's number of vehicle miles per lane mile of highway;

Figure 3.1 compares the merits of each alternative. Table 3.2 shows several counties in which these alternatives would have noticeable impact.

C. EQUALIZATION FACTOR

By statute, MnDOT divides 10 percent of CSAH funds equally among counties. Each county receives 1/87th of the "equalization" funds available. In 1985, this is \$195,706 per county. The 1956 legislative report and the 1969 MnDOT report suggest two reasons for this factor. First, all counties have basic administrative costs, including highway department staff and supplies. According to state law, counties must employ a registered engineer.⁶ The equalization factor makes partial provision for these expenses. Second, all counties have "inter-county traffic" that is not considered in the formula's motor vehicle registration factor. The equalization factor accounts for some of the costs of this traffic.

CSAH administrative costs vary widely throughout the state. As a result, the equalization factor covers a much bigger share of some counties' administrative overhead than other counties'. For example, total administrative costs in Mower County are about ten times the administrative costs of Mahanomen County, but each receives the same equalization apportionment.⁷

⁶Some counties share a registered engineer with another county.

⁷Based on 1983 county annual highway reports and a 1985 report prepared by the Governmental Information Division of the Office of the State Auditor.

FIGURE 3.1

TWO OPTIONS FOR A "VEHICLE MILE FACTOR"

Currently, the Department of Transportation uses the "motor vehicle registration factor" to apportion 10 percent of state aid. Counties receive this money based on the number of registered motor vehicles in their county. Below are two options for replacing the motor vehicle registration factor. These options should be judged by how well they measure road use.

OPTION 1: Basing the apportionment on *VEHICLE MILES PER COUNTY*. Each county would receive part of its allotment based on the county's share of Minnesota's total vehicle miles traveled on the CSAH system. For example, if County X's state roads have 3.1 percent of the traffic on the whole CSAH system, County X would receive 3.1 percent of the state allotment for this factor.

This option measures road use better than the "motor vehicle registration factor." Counties that have many motor vehicles may have relatively little CSAH traffic (for example, if the county has few CSAH roads). Changing to a vehicle miles factor allows the state aid formula to reflect (1) the number of state aid highways in each county, and (2) the traffic on these roads.

The main disadvantage of this option is that it does not necessarily reflect the *intensity* of road use on the CSAH system. Two counties may have equal amounts of CSAH traffic (measured in vehicle miles), but the county with fewer CSAH roads experiences greater road wear. A second disadvantage of this option is its large negative effect on Ramsey County's allocation.

OPTION 2: Basing the apportionment on each county's *VEHICLE MILES PER LANE MILE*. This option bases the allocation on the amount of traffic each county has per lane mile of state aid highway. For example, assume County X has 400 CSAH lane miles and County Y has 800 CSAH lane miles. Also assume that County X annually receives twice as much total traffic on its state aid highways as County Y. Using Option 2, both counties would receive the same state aid apportionment.

Option 2's primary advantage is that it reflects the intensity of road use better than Option 1. Option 2, unlike Option 1, is not biased in favor of counties with large CSAH networks. Option 2 targets money to those counties that experience highway wear-and-tear from high traffic levels.

The main disadvantage of Option 2 is its severe effect on Hennepin County, decreasing that county's apportionment by \$1.7 million. Apparently, Hennepin residents do not use county state aid roads in proportion to their share of the state's population.

TABLE 3.2
EFFECT OF CHANGING FROM A VEHICLE REGISTRATION FACTOR
TO A VEHICLE MILE FACTOR
(Selected Counties)

COUNTY	DOLLAR IMPACT OF CHANGING TO OPTION 1 (\$) ^a	DOLLAR IMPACT OF CHANGING TO OPTION 2 (\$) ^b
ANOKA	+101,033	+ 427,582
DAKOTA	- 21,635	+ 152,839
HENNEPIN	- 99,901	-1,655,878
OLMSTED	-118,438	- 72,199
OTTERTAIL	+ 86,060	- 101,113
RAMSEY	-572,364	- 164,711
ST. LOUIS	+ 54,369	- 603,870
STEARNS	+ 64,149	- 134,558
STEELE	+ 92,812	+ 153,798
WASHINGTON	-145,752	+ 136,377

Source: Program Evaluation Division analysis of 1985 MnDOT data.

^aDollar impact of change from current factor to Option 1, as described in Figure 3.1. Uses 1985 apportionment data and assumes that this factor remains 10 percent of the formula.

^bDollar impact of change from current factor to Option 2, as described in Figure 3. Uses 1985 apportionment data and assumes that this factor remains 10 percent of the formula.

The second reason given for an equalization factor is inter-county traffic. Like administrative costs, inter-county traffic varies considerably throughout the state. For example, counties with important tourist attractions draw high levels of inter-county traffic.

In sum:

- The equalization factor benefits certain counties more than others.

The primary beneficiaries of the equalization factor are counties with low administrative expenses, with relatively few

miles on the CSAH system, or with relatively little inter-county traffic. It is worth asking whether continued provision of benefits to counties with these characteristics is an important goal of the county state aid system.

Further, adding a vehicle mile component to the state aid allocation formula (discussed in the previous section) would account for inter-county traffic. Vehicle miles account for all traffic, regardless of its point of origin. Thus, we note that:

- A key rationale for the equalization factor will disappear if the Legislature changes the motor vehicle registration factor to a vehicle mile factor.

D. MONEY NEEDS

The Minnesota Department of Transportation determines 50 percent of state aid apportionments based on the "money needs" of each county. 1957 legislation defined these needs as "the estimated total annual costs of constructing, over a period of 25 years, the county state-aid highway system..."⁸

At least two major reports in the mid-1950's contributed to this conception of needs. The 1954 Automotive Safety Foundation report to the Minnesota Highway Study Commission estimated the costs of bringing all state road systems up to "minimum conditions." In order to estimate future costs conservatively, the report did not estimate the cost of building all roads to "modern construction standards."⁹ In their 1956 report, the Highway Taxes Distribution Commission recommended a "money needs factor" for county state aid allocations. This report defined a need as the difference between a road's current condition and accepted engineering standards.

The 1957 Legislature adopted the definition of the 1956 report, and counties continue to use standards to define future construction needs. Counties plan the type of road improvement they expect to make on all state aid segments, and they submit this information to MnDOT's Office of State Aid. The office applies geometric design standards to all segments, depending on the type of improvement planned and the traffic projected. The Office of State Aid then estimates the amount of materials

⁸Minn. Laws 1957, Chap. 843.

⁹Automotive Safety Foundation, *Highway Transportation in Minnesota: An Engineering Analysis* (A report to the Minnesota Highway Study Commission), September 1954, p. 35.

needed for each planned segment, based on engineering assumptions and guidance from the county state aid Screening Board. Figure 2.4 shows an example of a needs calculation.

1. THE SCREENING BOARD

A nine-person Screening Board with rotating membership oversees the determination of money needs. Composed of one county engineer from each of MnDOT's nine districts, the Screening Board advises the Commissioner of Transportation.¹⁰ The board recommends methods for determining construction needs, and it recommends resource prices to apply to those needs. In 1984, the Screening Board reviewed over \$85 million in state aid apportionments. Overall, the board has considerable power to define "money needs" and shape state aid allocations. Through its past decisions and resolutions, the Screening Board has become more than a technical advisory body. It is, in many ways, a *policy-making* body.

The Screening Board also formalizes ties among the engineers of Minnesota's 87 counties. We found that:

- The Screening Board allows counties to participate in the CSAH apportionment process, enabling ongoing county self-appraisal and the dissemination of useful information.

While the Screening Board serves an important function, two issues regarding the board's composition concern us. First, board members have a financial stake in their own decisions, since board decisions determine county allocations. The board often views its actions in terms of "who gains" and "who loses," and these considerations sometimes overshadow the merits of actions being considered.¹¹ Part of the reason for this emphasis is that Screening Board members are elected to the board by county engineer peers in their MnDOT districts.

Second, the board has seven members from outside the Twin Cities metropolitan area and two from the metropolitan counties. Some counties believe that past board actions neglected metropolitan concerns. We discuss this issue later in the chapter.

¹⁰The Commissioner of Transportation rarely alters Screening Board recommendations.

¹¹The "24-foot restriction," discussed later in this chapter, is an example. In the past, counties that faced apportionment decreases from changes in this restriction generally opposed the changes, despite the fact that few counties could explain why the restriction existed in the first place.

As noted earlier, the Screening Board's primary duty is review of counties' estimated construction needs. We found that:

- County estimates of construction needs grew rapidly in recent years.

Despite the fact that construction of a road eliminates some needs from the CSAH system, total state construction needs increased sharply in recent years. Since 1971, needs increased 316 percent, while state aid apportionments increased 204 percent.

Screening Board actions explain some of the increase in needs. Items that were not counted as needs in 1958 now are included, as a result of board resolutions. Figure 3.2 describes needs adjustments made annually by the Screening Board. For example, the 1984 Screening Board changed a single assumption in its calculation of county grading needs, adding \$123 million in "new needs" to the state aid system. Table 3.3 shows how various counties' needs changed between 1982 and 1984.

In general, there is a logic to these annual adjustments. Some adjustments were designed to promote apportionment equity, some to encourage construction progress, and some to promote incremental (rather than rapid) changes in money needs. However:

- In making these adjustments, the Screening Board added significantly to the complexity of state aid allocation.

The method of determining CSAH money needs is more complex than most methods used by other state agencies to allocate local aids. Numerous assumptions, rules, and formulas produce this complexity.

We found that gaining an understanding of CSAH money needs allocations requires considerable effort. Despite the many virtues of detail in public policy, we have several concerns about the complexity of the construction needs calculations. First, program complexity may inhibit legislative oversight and understanding of county state aid allocations. Second, complexity may inhibit understanding among county engineers. Finally, complicated apportionment formulas are valuable only if they significantly improve the equity of allocations.

Regarding the last concern, there are several ways in which the "true needs" of counties are not reflected by current needs calculations. Figure 3.3 summarizes some of these issues. In the next four sections, we describe some specific inequities in the needs determination process.

FIGURE 3.2

NEEDS ADJUSTMENTS MADE ANNUALLY BY THE SCREENING BOARD (SB)

- *Soil factors.* The SB accepts or rejects counties' estimates of soil conditions that may affect future construction.
- *Unit prices.* To estimate the costs of future construction, the SB develops unit prices for each county's highway work.
- *Regrading needs.* The SB allows highways to claim full needs on highways that have not been graded for 25 years.
- *Traffic update.* About one-fourth of the counties have new traffic counts each year, and the SB considers needs changes resulting from new counts.
- *Restriction of needs changes.* The SB prohibits annual increases or decreases in the needs of individual counties from exceeding a certain percent (this amount varies each year).
- *FAS fund balance deduction.* The SB deducts needs from counties that have large amounts of Federal Aid Secondary funds on hand.
- *Rural grading adjustments.* If actual grading costs differ from previously-assumed grading costs in a given county, the SB makes an adjustment to better reflect actual costs.
- *Special resurfacing.* If a road is resurfaced without being brought up to geometric standards, the SB deducts needs from the county.
- *Bond account adjustments.* Counties receive needs adjustments for the portion of their highway bonded debt that is amortized.
- *Construction fund balance deduction.* The SB deducts needs from counties with large balances of unencumbered funds.
- *Mill levy deductions.* The SB deducts needs based on the tax valuations of individual counties.
- *After-the-fact bridge deck needs.* The SB increases the needs of counties that recently completed bridge repairs using non-state aid funds.
- *After-the-fact right-of-way needs.* The SB increases the needs of counties that recently purchases right-of-way.
- *Minimum allotments.* The SB prevents the allocations of counties from falling below a base level.
- *Mileage additions.* The SB approves or rejects requests to change CSAH jurisdiction designations.

FIGURE 3.3

SOME WAYS IN WHICH THE CURRENT CSAH ALLOCATION METHOD DOES NOT
REFLECT ACTUAL COUNTY NEEDS

- *Definition of needs*--Counties collect needs on roads that will not be upgraded anytime soon and perhaps should not be upgraded. (Chapter 2)
- *Standards*--In some cases, geometric standards may be higher than required for safe driving. Further, some roads that cannot be built to standard (due to terrain or surrounding development) collect full needs. (Chapter 2)
- *Traffic assumptions*--There is no correction of county needs when past traffic projections prove false. Traffic assumptions affect highway standards and needs.
- *"24-foot restriction"*--In cities with over 5,000 people, counties can collect no needs on the outer portions of roadways. (Chapter 3)
- *25-year assumption*--Counties can collect needs on deficient roads for an unlimited number of years despite the fact that the CSAH system assumes a 25-year construction cycle. Further, counties can claim re-grading needs on roads 25 years after initial grading, regardless of whether the roads need reconstruction. (Chapter 2)
- *Soil factors*--First, the needs rarely reflect changes in soil factors that would adversely affect county apportionments. Second, some counties have, in the past, been unable to afford soil studies that might change their needs. Third, there are engineering solutions to some soil problems that are not reflected in county needs. Fourth, although the Screening Board now says Soil Conservation Service studies alone are insufficient evidence for changes in needs, millions of dollars of needs changes from these soil studies continue to affect county allocations.
- *Rural grading adjustments*--The Screening Board permits adjustments to county grading needs to reflect, for example, inflation. However, this adjustment rewards past activities and is not an attempt to recognize *full* needs. Counties that graded large parts of their system in the past can get credit for larger portions of their grading needs each year.
- *Resurfacing*--Counties can collect resurfacing needs only on CSAH roads that meet full geometric standards.
- *After-the-fact needs*--Counties collect needs on some items (like right-of-way) "after-the-fact." However, \$1 of after-the-fact needs is actually worth less than \$1 of before-the-fact needs. This is because \$1 today is worth more than \$1 at a later date. Thus, counties receive less than full reimbursement for after-the-fact items. This makes a particular difference in roadside costs. Rural counties collect most of their roadside needs before-the-fact since right-of-way is a relatively small portion of costs. In contrast, allocations do not reflect many urban counties' roadside needs until after the roads are built.
- *Minimum needs*--Eight counties receive allocations in excess of their "money needs" due to statutory and Screening Board resolutions. (Chapter 3)
- *Mill levy deduction*--This needs deduction is the only part of the formula that accounts for different revenue-raising capacities among counties. However, the deduction is a poor measure of this capacity (Chapter 4).

TABLE 3.3
COUNTIES THAT GAINED OR LOST THE MOST "MONEY NEEDS"
1982 - 1984

<u>COUNTY</u>	<u>1982 Needs</u>	<u>1984 Needs</u>	<u>Change (in percent)</u>
Stevens	\$10,342,207	\$17,225,001	+66.6
Koochiching	20,064,694	33,162,999	+65.3
Freeborn	33,123,459	52,081,336	+57.2
Cook	20,070,453	29,545,178	+47.2
Grant	7,645,216	11,208,287	+46.6
Scott	39,513,657	32,304,726	-18.2
Traverse	17,696,538	16,236,847	- 8.2
Sherburne	14,087,185	13,623,357	- 3.3
Washington	45,913,909	44,760,830	- 2.5
Chisago	32,733,463	32,502,546	- 0.7

Source: 1982, 1984 County Screening Board data.

2. THE 25-YEAR TIMELINE

By statute, the department bases half of state aid allotments on "25-year construction needs." It is not entirely clear why the 1957 Legislature chose 25 years for the needs timeline. We found three possible explanations, all of which have serious shortcomings:

25 years is a goal for completion of the CSAH system. Minnesota legislative reports in the 1950's suggested a need for "adequate" secondary roads within 5 to 25 years, although it is not clear if the establishment of "25-year construction needs" arose from this goal. Judging by the number of roads that do not meet standard today, the goal was not met, and this has equity implications for CSAH allocations. Many unimproved roads have received "25-year needs" for 27 years already, and they will likely collect "25-year needs" for many more years.

25 years is the average life of a road. In 1956, the Highway Taxes Distribution Commission reported that a 25-year period "...on the average approximates the theoretical time within which it would be necessary to

replace all roads on a selected system."¹² Is a 25-year life cycle realistic? A 25-year cycle is far more rapid than the state trunk highway replacement cycle, now conservatively estimated at 112 years.¹³ Further, a Metropolitan Council study of secondary road life suggested cycles ranging from 50 years for minor arterials to 80 years for minor collectors.¹⁴

25 years is a planning horizon for county highway construction. Perhaps the Legislature intended to have counties collect needs only on those roads scheduled for improvement in the next 25 years. However, counties routinely collect needs on all roads, despite the fact that a 25-year construction cycle for the system's 30,000 miles is unrealistic.

It appears that a 25-year construction period is hard to justify with any of these three explanations. Nevertheless, the importance of this assumption is growing.

Specifically, the 1983 Screening Board decided that roads should collect complete re-grading needs 25 years after their initial grading, thus formalizing the 25-year life cycle. A county can now claim that a road graded in 1960 needs re-grading after 1985, and the county's CSAH apportionment will reflect this "new need." In 1984, counties claimed over \$56 million in these new needs. A single county (Steele) claimed \$6.6 million in re-grading needs for 79 miles of road.

Overall, we conclude:

- At best, a 25-year construction timeline is unrealistic. At present rates, counties grade roads an average of once every 129 years. (See Chapter 2's discussion of grading progress on the CSAH system.)

¹²Report of the Legislative Interim Commission on Highway Taxes Distribution, 1956, p. 16.

¹³In Fiscal Year 1985, Minnesota constructed 24 miles of trunk highway and reconstructed 85 miles of its 12,100 mile system. Projections for the next two fiscal years indicate road-building rates half those experienced in 1985.

¹⁴Metropolitan Council Transportation Advisory Board, Phase II Final Report of the Highway Jurisdiction Task Force, 1984, pp. 43, 63. The estimated life cycles were based on review of MnDOT and Hennepin County data; the metropolitan counties concurred with these estimates.

3. THE "24-FOOT RESTRICTION"

Minnesota statutes permit counties to claim money needs only on the center portions of county state aid highways located in cities with 5,000 or greater population. Usually this restricts needs on urban roads to the center 24 feet. If traffic levels on these highways are high enough to warrant additional driving lanes, counties may claim more roadway needs. For example, a county may claim needs on the center 48 feet of a four-lane urban highway projected to carry 7,000 cars per day. The restriction affects 1,253 miles of county state aid roads in 43 counties and significantly limits the shoulder, curb and gutter needs claimed by urbanized counties. Eighty-one percent of the affected roads are in the seven-county metropolitan area.

Table 3.4 shows the effect of this restriction on various counties. For example, eliminating the restriction would increase Ramsey County's apportionment by one-fifth. The typical non-metropolitan county would lose one to five percent of its current apportionment with such a change.

TABLE 3.4
EFFECTS OF REPEALING THE 24 FOOT RESTRICTION
(Selected Counties)

<u>COUNTY</u>	<u>DOLLAR IMPACT (\$)</u> ^a	<u>PERCENT CHANGE</u> ^b
RAMSEY	+ 952,686	+20.1
DAKOTA	+ 364,783	+13.6
HENNEPIN	+1,244,125	+13.2
SCOTT	+ 154,083	+10.9
ANOKA	+ 201,208	+ 9.9
FILLMORE	- 92,494	- 3.4
WABASHA	- 64,490	- 3.3
PINE	- 88,893	- 3.2
FARIBAULT	- 73,272	- 3.2
JACKSON	- 67,768	- 3.1

Source: MnDOT Office of State Aid.

^aThe dollar impact on total state aid apportionment, using 1985 apportionment data.

^bPercentage change in state aid apportionment due to lifting the restriction.

Our review of county state aid documents revealed no explicit rationale for the 1957 Legislature's inclusion of a "24-foot restriction" in statute. The original legislation does permit highways restricted by this statute to be designated municipal state aid roads *outside* the restricted width. However, very few highways have both county state aid and municipal state aid designations, and the Office of State Aid prefers a single designation per road.¹⁵

County and state officials we interviewed could tell us little about the origin of the 24-foot restriction. In the past, rural counties opposed eliminating the restriction because this action would reduce rural apportionments. However, there appears to be a recent consensus among Minnesota counties that the restriction unfairly limits the apportionments of certain counties.

We found no reason to believe that a road's center 24 feet serve a greater state interest than the area outside this zone, particularly when state standards require construction of roadways wider than 24 feet. Many of the roads subject to the restriction have greater commercial importance than unrestricted state aid roads. Overall, we conclude:

- There is no strong rationale for continuing the 24-foot restriction, although lifting the restriction would adversely affect the apportionments of most counties. The restriction creates inequity in CSAH allocations, especially in its negative effect on urbanized counties.

4. SOIL FACTORS

In large part, the 1957 Legislature established the money needs formula factor to account for regional variations in highway needs. A key variable that affects the cost of road-building is soil condition. Construction on poor soil is often expensive because it requires thick highway sub-structure.

The Screening Board permits a county to claim more needs for a road built on top of bad soil than a comparable road built on good soil. As a result, counties have developed soil maps showing soil types in detail. When counties update their soil ratings, the CSAH money needs usually change. It is interesting, however, that:

- New county assessments of soil conditions often lead to increases in CSAH money needs, but they rarely lead to decreases in needs.

¹⁵There are only 42 CSAH miles in Minnesota with joint designations, 30 of which are in Hennepin County.

We examined counties' money needs changes between 1983 and 1984 to determine what impact soil factor changes had on needs. We found that new soil factors added about \$18 million to 12 counties' CSAH money needs, affecting over 400 miles of highway. Only three counties reported soil factor decreases, and these totaled about \$144,000. In addition, one county told us that counties sometimes do not submit new soil data to the Screening Board if the data will result in a money needs decrease. Overall, we question whether the money needs accurately reflect regional variations in soil conditions.¹⁶

5. MINIMUM ALLOTMENTS

One might think that the complexity of the CSAH allocation process permits allocations to accurately reflect complete highway needs. However, eight of the state's 87 counties receive state aids in proportions greater than their computed shares of construction needs. In 1985, these counties received \$1.5 million in excess of their proportionate share of money needs apportionments.

Two factors account for this extra funding. First, state law mandates that no county can receive a smaller percentage of state aid in a given year than it received in 1958.¹⁷ This "hold-harmless" provision increased the total apportionments of two counties (Koochiching and Lake of the Woods) by \$807,000 in 1985. Three other counties (Big Stone, Mahnomen, and Red Lake) benefitted to a lesser degree. Second, the Screening Board decided in 1966 that no county should receive less than 0.586782 percent of the total county state aid apportionment.¹⁸ In 1985, this provision permitted three counties to receive apportionments in excess of their proportionate share of aids (Grant, Sherburne, Wadena).

We question the equity of these two adjustments. The statutory adjustment ties several counties' current apportionments to their 1956 apportionments. While this provision protected counties from losses of state aid in the late 1950s, the provision serves no clear purpose today.

As to the Screening Board resolution, the main beneficiaries are counties with relatively few CSAH miles, few registered vehi-

¹⁶See Figure 3.3 for additional reasons why soil factors do not always reflect needs.

¹⁷The 1957 Legislature mandated that no county's 1958 apportionment should be less than its 1956 apportionment plus 10 percent.

¹⁸This was the percentage in Red Lake, Mahnomen, and Big Stone counties in 1966.

cles, or few construction needs. We question whether such counties *should* receive state aid in excess of their needs allotment. At best, the Screening Board, by its resolution, suggested that its "needs" formula does not reflect counties' actual needs.

We conclude that:

- The state subsidizes several counties in excess of their money needs, and this compromises the equity of statewide CSAH allocations.

E. THE APPORTIONMENT FORMULA: RECOMMENDATIONS

The Legislature faces three choices regarding the county state aid apportionment formula. The Legislature can (1) maintain the existing formula as is; (2) make adjustments to the formula within its current structure; (3) establish a new approach to CSAH funding. Several of the following recommendations address changes needed within the current formula, but these changes should not preclude legislative consideration of larger-scale modifications. In addition to the substantive recommendations mentioned here, the Legislature should consider changes in the weights given to formula factors.

1. MILEAGE FACTOR (presently 30 percent)

The 1957 Legislature included a mileage factor in the apportionment formula to reflect maintenance costs, which comprise 40 percent of the total CSAH allocation. It is interesting to note the simplicity of this proxy for "maintenance needs," in contrast to the complexity of "construction needs" estimates.

The Legislature could require counties to make more detailed estimates of "maintenance needs." For example, maintenance costs for gravel roads may be very different from blacktop maintenance costs. And as discussed in Chapter 4, maintenance costs for metropolitan state aid highways are much higher per mile than rural maintenance costs. However, the factors that account for differences in Minnesota county maintenance costs are not well-documented.

It is clear, however, that multi-lane roads have higher maintenance costs than two-lane highways. Thus, we recommend:

- The Legislature should use lane miles rather than centerline miles to allocate funds for state aid highways.

This change would not eliminate the wide disparities in county maintenance costs or in the proportion of maintenance costs funded by state aids. We discuss these issues in Chapter 4.

2. MOTOR VEHICLE REGISTRATION FACTOR (presently 10 percent)

As described earlier, use of motor vehicle registrations as a proxy for road use satisfies neither legislative intent nor MnDOT's own judgement. To correct this, we recommend that:

- The Legislature should use a measure of vehicle miles traveled instead of vehicle registrations to reflect road use. Specifically, we recommend a "vehicle miles per lane mile factor," since this factor best reflects road use. The Minnesota Department of Transportation should monitor the accuracy of vehicle mile data.

Should part of the allocation formula benefit those counties that contribute the most highway revenues to the Highway Distribution Fund? Metropolitan counties contribute significant amounts to the state gas tax, and the CSAH formula's "motor vehicle registration factor" currently benefits these counties. We do not see the necessity of tying apportionments to revenue sources for a single highway system. It is true that urban drivers subsidize non-metropolitan county highways. However, counties should not necessarily get back as much money in aid as they pay in gas taxes. Urban counties benefit from a strong rural secondary road system, one that facilitates efficient commerce. We conclude that some transfer of CSAH funds from urban to rural counties is not harmful provided the CSAH allocation formula somehow reflects highway traffic levels, a condition met by the "vehicle miles factor."

3. EQUALIZATION FACTOR (presently 10 percent)

We recommend that:

- The Legislature should eliminate the "equalization factor," which is poorly correlated to the needs of the CSAH system.

4. MONEY NEEDS FACTOR (presently 50 percent)

A "money needs factor" serves some useful purposes in the CSAH apportionment formula. This factor permits consideration of regional variations in construction costs. The Screening Board process involves county engineers in useful discussions of highway issues. Further, it is good to see county engineers trying to estimate complex highway needs in a complex way.

Nevertheless, we think there is reason to reform current estimates of construction needs. In the past 27 years, the needs assessment grew complicated and assumption-laden, and it is not clear that these adjustments added to the equity of county allocations. More important, as discussed in Chapter 2, the estimates of construction needs (1) bear little resemblance to actual road expenditures in many counties, and (2) do not reflect the priorities counties must establish in coming years.

Currently, the statewide money needs estimate is a wish list. It assumes that all roads can, should and will be built to standard in the next 25 years. This is unrealistic. Consequently, construction standards are a poor starting point for needs estimates.

We recommend that:

- The Legislature should consider alternative methods of funding the county state aid system. The methods should better reflect county needs and state priorities.

a. Options

There are three major alternatives to the current method of needs assessment: the life-cycle costing method, the block grant method, and the targeted improvements method.

In its 1984 study of highway jurisdiction, the Metropolitan Council's Transportation Advisory Board employed the *life-cycle costing method*. The board estimated the cost of various types of maintenance and improvements on different functional classifications of highway. The board also estimated the frequency of these activities based on actual experience. In assessing future needs, the board consciously chose not to employ a standards-based needs estimate, such as that used on the county state aid system.

A second option for needs assessment is some form of *block grant*. This approach requires a formula with factors that, in a simple way, approximate highway needs and the local revenue-raising efforts of counties. In essence, half of the CSAH allocation formula is now a block grant, although there are some restrictions on the use of CSAH money. The key issue seems to be the extent to which a block grant formula can reflect regional cost variations. A block grant approach probably would eliminate the necessity of a Screening Board.

A third option for CSAH apportionments is the *targeted improvements* approach. Given that the state cannot fund construction-to-standard on all state aid highways, the Legislature may wish to give certain types of highway improvements priority over others. For example, the Legislature may prefer design strength

improvements to roadside improvements. Or the Legislature may prefer improvements on the most important CSAH routes to improvements on other state aid roads. These preferences could be expressed either in the statutory funding formula or in MnDOT's approval process for state aid projects.

Figure 3.4 presents a summary of the three alternatives the Legislature could select for CSAH apportionments. We further recommend that:

- The Legislature should judge new funding options on their merits, with less attention to specific winners and losers among the 87 counties.

The financial impact of these options is important and should be considered, especially in cases where dramatic effects result. However, consideration of impacts should remain secondary to discussions of which options best further the goals set for the CSAH system.

We do not object to complexity in funding formulas if this complexity significantly improves the equity of allocations. However, we think that it is better to address the issues such as local effort (discussed in Chapter 4) in a complex way than to continue making needs computations more complicated. As discussed in that chapter, the complex issue of local effort is currently addressed by statute in a simplistic way.

Two final legislative issues related to construction needs are "minimum allocations" and the "24-foot restriction." We see little rationale for maintaining either state law, and we recommend:

- The Legislature should repeal the statutory provision that prevents counties from receiving less than their 1958 share of state aid. The Screening Board should repeal the minimum allocation resolution it passed in 1966.
- The Legislature should repeal the 24-foot restriction.

b. Screening Board Composition

As noted earlier, the Screening Board has two members from the Twin Cities metropolitan area and seven non-metropolitan members. Some of the metropolitan counties claim the board inadequately reflects metropolitan concerns. Specifically, the board only recently added items such as right-of-way, bridge deck repair, and retaining walls to the annual needs assessment--items that primarily reflect urban needs. Also, the board voted down several requests by metropolitan counties in recent years that would have added mileage to their county state aid

FIGURE 3.4

ALTERNATIVE WAYS OF FUNDING THE COUNTY STATE AID SYSTEM

OPTION	WHAT NEW DATA WOULD NEED TO BE COLLECTED?	WHAT DECISIONS WOULD HAVE TO BE MADE?	IS A SCREENING BOARD REQUIRED?	CAN REGIONAL COST VARIATIONS BE CONSIDERED?	CAN HIGHWAY IMPROVEMENTS BE TARGETED?	COMMENTS
1) LIFE-CYCLE COSTING	<ul style="list-style-type: none"> Accurate estimates of the life cycles of different types of road. Accurate estimates of the cost of various life-cycle construction work. 	Decide the extent to which new construction should be a goal of the CSAH system.	Maybe--for example, to approve estimates of life cycles and road work costs.	If desired.	If desired. For example, the state could fund life-cycle improvements on all CSAH roads, while selectively choosing new CSAH construction projects.	Stronger focus on preservation of existing CSAH system, rather than building new roads. Issue: Can life-cycle costing be done realistically, without producing a "wish list" of needs?
2) BLOCK GRANT	Depends on what factors are included in the allocation formula.	Need to decide what factors predict future maintenance and construction needs.	Only if some sort of "needs estimate" remains in the funding formula.	If desired, but this would add to the complexity.	If desired.	The strength of the block grant is its simplicity. However, simplicity may be useful only if the block grant is more equitable than the current funding system.
3) TARGETED IMPROVEMENTS	Decide what the goals of state aid funding are: safety maximization? Increased design strength? Bridge replacement? Full funding for important county roads, but less funding for other roads? Decisions can be made at either state or local levels.	Decide what the goals of state aid funding are: safety maximization? Increased design strength? Bridge replacement? Full funding for important county roads, but less funding for other roads? Decisions can be made at either state or local levels.	Only if a "needs estimate" remains in the funding formula.	If desired.	Definitely.	Allows the state to direct CSAH funding to where it is most needed to meet the system's goals. Issue: the state could target construction funds either through a new funding formula or through a competitive project selection process.

systems. Many of these proposed additions had higher traffic than state aid roads already on the system.

We think that Screening Board composition is an important issue, one the Legislature should consider. The eight counties in the two metropolitan MnDOT construction districts represent: 6.8 percent of Minnesota's CSAH miles, 7.6 percent of the lane miles, 49.6 percent of the population, 43.6 percent of the vehicle miles, 47.8 percent of the registered vehicles, 15.8 percent of the CSAH money needs, and 14.6 percent of total CSAH apportionments.

While it makes sense to *administer* state aid through MnDOT's nine district offices, it is not clear that the composition of a *policy-making* board should be determined by these same boundaries. Alternatives include favor Screening Board representation based on congressional district boundaries, or increasing the board's size through addition of members from urban counties.

We think the issue lends itself to the political arena more than to a program evaluation. While we think it is possible to have a fair, broad-minded Screening Board regardless of regional composition, the Legislature should be the final judge of the board's fairness and whether change is needed.

c. Role of the Legislature

The county state aid highway system has received little scrutiny from the Legislature over the past 27 years. Because the state constitution establishes the CSAH share of the Highway User Tax Distribution Fund, the Legislature handles CSAH budget requests fairly routinely. We think there should be greater legislative oversight of program results and system priorities.

We recommend that:

- The Legislature should provide direction for the future of the state aid highway system. The Legislature should help determine priorities such as: the type of roads on which improvements should occur; the importance of CSAH safety improvements relative to trunk highway safety improvements; the importance of design strength on county state aid highways.

In our view, the Legislature should strive to improve the targeting of CSAH funds with whatever alternative allocation formula it chooses. Not every state aid road can be built to full safety standards and design strength at reasonable cost. The funding formula should reflect the Legislature's state aid goals.

Local Effort and the Equity of State Aid Distributions

Chapter 4

In previous chapters, we noted that the system for distributing state aids to county highways has become very complex. We examined whether the system treated counties equitably and how changes in the system have affected equity.

Chapter 3 addressed the equity of specific elements of the state aid allocation formula. In this chapter, we discuss broader questions:

- What is the relationship between the CSAH funding formula and counties' local efforts to pay for state aid highways?
- What proportion of county highway budgets are funded by state aid and by local property taxes?
- what proportion of CSAH and county road maintenance costs are covered by state aid?

A. THE NEED TO DEFINE EQUITY

Equity issues are important to a study of the County State Aid Highway System for two reasons. First, the system divides a large amount of money among 87 counties. Second, the state aid system pays for a larger portion of highway costs for some counties than others. Because counties do not receive the same amount of funding they pay into the state aid system, the CSAH system has redistributive effects. The extent of this redistribution is important to consider.

While it is clear that the Legislature should be concerned with the equity of state aid allocations, it is less clear how the equity of those allocations should be judged. This chapter presents some issues necessary for a full discussion of state

aid equity, although the information alone cannot resolve the issues. In the previous chapters, we recommended that the Legislature establish new goals for the state aid system. We also think that, in formulating those new goals, the Legislature should decide what characterizes an equitable system.

The following comments and questions provide a starting point for our discussion of equity:

- The equity (or inequity) of the CSAH system was set in part by road designations made in the 1950s. In some counties, very large CSAH networks were designated, including many roads with little traffic. Other counties received small state aid road networks that today include very few low-traffic roads.
- As we noted in Chapter 1, almost all counties operate two road systems: a county state aid system and a system of county roads which receive no direct state aids. The proportion of county-operated roads which are on the two systems varies widely among counties (see Table 1.3). Some counties have large county road systems which they must finance locally while other counties have very few roads which are not on the state-aid system.
- In an equitable state aid system, should state aids fund the same portion of every county's highway construction and maintenance budget? Should aids be distributed in direct proportion to population, traffic volume, contributions of user taxes, land area, or miles of roads?
- In an equitable state-aid system, should counties levy taxes using the same rates or raising the same amount per capita?
- Is each mile of county state aid highway as important as the next? In Chapter 2, we concluded that some roads are more important, particularly in light of limited CSAH funding. How should functional importance of roads be reflected in allocating state aids?

There are no explicit measures in statute by which the fairness of CSAH distributions should be judged, although statutes say that allocations should be based on "need." The sections that follow provide descriptive information related to issues of equity.

B. LOCAL TAX EFFORT

In 1983, counties spent about \$330 million for construction and maintenance of county highways (both CSAH and non-state aid roads) and for the operation of their county highway departments. About \$144.6 million (45.4 percent) came from state highway aids. The other major source of funding is the property tax levy, which raised \$92.6 million, or 29 percent of highway revenues. Other funding sources are state local government aids and federal general revenue sharing.

There are no provisions in the state constitution, statute, or rule which establish a standard or minimum level of local tax effort for county state aid highways. State law provides that:

The amount of money to be appropriated by the counties from other funds for use in the establishment, location, construction, reconstruction, improvement, and maintenance of the state-aid highway system is left to the discretion of the individual county boards.¹

We examined several measures of local effort in support of all county highways including *per capita levy*, *mill rate*, and the portion of a county's highway budget coming from property taxes.

1. TAXABLE PROPERTY VALUATION

Counties vary widely in the amount of property value on which they can levy taxes. As shown in Table 4.1, Hennepin County has, by far, the largest tax base: more than \$7.2 billion, which is about one quarter of all taxable property valuation in the state. The average county tax base is about \$300 million.

However, the size of a county's tax base looks different when the county's property valuation is related to its population. Table 4.2 shows that agricultural counties in southern and western Minnesota have the highest per capita valuation. Eight counties have per capita property valuation over \$12,000, well above the state average of about \$7,190.² Hennepin County is a little above average, while the other metro area counties are below the state average.

¹Minn. Stat. §162.08, Subd. 8.

²Based on data on 1984 property valuations which has been received by the Minnesota Department of Revenue, it is clear that agricultural land values in parts of Minnesota have dropped, reducing the tax base of those counties.

TABLE 4.1

TAXABLE PROPERTY VALUATIONS FOR TAXES PAYABLE IN 1984

(Selected Counties)

<u>County</u>	<u>Taxable Valuation</u>	<u>Tax Levy Payable</u>
Hennepin	\$ 7,200,505,246	\$ 17,272,856
Ramsey	2,985,106,415	5,361,861
Dakota	1,190,293,695	2,224,654
Anoka	954,612,669	5,097,620
St. Louis	805,740,617	7,396,681
Washington	678,413,426	1,970,788
Olmsted	523,411,137	2,718,067
Stearns	510,752,633	2,493,489
Goodhue	388,645,101	1,857,720
Blue Earth	356,723,591	2,846,676
Wright	346,089,538	2,418,820
Itasca	308,153,728	5,190,580
Lincoln	\$ 72,602,675	\$ 457,395
Grant	71,476,015	450,539
Koochiching	62,967,749	811,156
Big Stone	59,420,774	506,859
Kanabec	47,743,579	525,178
Wadena	44,854,265	378,569
Lake	43,620,462	680,040
Red Lake	39,548,474	502,266
Clearwater	38,933,021	304,065
Cook	36,753,311	426,450
Mahnomen	30,746,800	220,146
Lake of the Woods	20,565,048	218,400
STATE TOTAL	\$26,794,767,474	\$119,586,282
COUNTY MEDIAN	\$ 145,960,533	\$ 865,033

Source: Program Evaluation Division analysis of report prepared by Governmental Information Division, Office of the State Auditor, 1985.

TABLE 4.2
PER CAPITA TAXABLE PROPERTY VALUATIONS
FOR TAXES PAYABLE IN 1984

(Selected Counties)

<u>County</u>	<u>Per Capita Valuation</u>	<u>Equalized Mill Rate^a</u>
Jackson	\$16,232	3.376
Renville	13,976	2.651
Cottonwood	13,715	3.715
Traverse	13,543	6.320
Murray	12,758	4.419
Redwood	12,671	3.581
Faribault	12,392	3.827
Kittson	12,292	4.467
Martin	11,968	3.548
Watsonwan	11,629	4.218
Wilkin	11,099	5.632
Lac Qui Parle	10,772	3.969
Clearwater	\$ 4,299	6.592
Houston	4,234	5.861
Morrison	4,178	8.205
Mille Lacs	4,170	9.310
Kanabec	3,861	8.602
Todd	3,800	8.078
St. Louis	3,772	7.289
Koochiching	3,757	9.546
Lake	3,424	12.410
Beltrami	3,370	4.573
Isanti	3,322	8.702
Wadena	3,204	6.406
STATE TOTAL	\$ 6,463	3.704
COUNTY MEDIAN	\$ 6,751	5.089

Source: Program Evaluation Division analysis of report prepared by Governmental Information Division, Office of the State Auditor, 1985.

^aWe adjusted each county's certified mill rate on the basis of the Department of Revenue's sales ratio studies.

2. PER CAPITA LEVY

All counties, except Hennepin and Ramsey, designate a portion of their annual property tax levy to a county road and bridge fund for construction and maintenance of county roads. Property owners pay additional taxes for roads under the jurisdiction of cities and townships. Hennepin and Ramsey counties collect property taxes into a general fund, a portion of which is budgeted for highway operations.

We found that:

- Per capita levies for county highways are higher in rural counties than urban counties.

For taxes payable in 1984, the median per capita levy for county road and bridge funds was \$42.19.³ As shown in Table 4.3, however, the range is quite wide. Six rural counties levied more than \$80 per capita. Eleven counties, including five in the metropolitan Twin Cities area, levied less than \$25 per capita.

3. MILL RATES

Counties and other taxing districts establish a mill rate for levying property taxes. A rate of one mill yields one dollar for each thousand dollars of assessed property valuation. In order to correct for inconsistencies in local assessment practices, we adjusted the reported mill rates. The adjustment was based on the ratio of assessed values to sales, using the sales ratio studies of the Minnesota Department of Revenue.

We found that:

- Road and bridge mill rates are higher in rural counties than in urban counties.

Table 4.4 shows the road and bridge mill rates in each county for taxes payable in 1984. The average rate for all counties is about five and one-half mills. Six counties in northern and central Minnesota levy more than nine mills. Other counties have a much lower road and bridge mill rate. Six counties, including four in the metropolitan Twin Cities area, levy less than three mills for county highway operations.

³Property taxes payable in 1984 are based on property valuations and mill rates established in 1983.

TABLE 4.3
PER CAPITA ROAD AND BRIDGE LEVY
FOR TAXES PAYABLE IN 1984

(Selected Counties)

<u>County</u>	<u>Per Capita Levy</u>	<u>Equalized Mill Rate^a</u>
Traverse	\$115.66	6.320
Itasca	115.23	14.873
Cook	99.50	9.132
Red Lake	94.06	10.897
Norman	83.12	7.290
Wilkin	75.13	5.632
Chippewa	69.94	7.379
Kittson	65.53	4.467
Yellow Medicine	65.32	5.756
Pipestone	63.02	8.068
Dodge	62.75	6.618
Big Stone	62.71	6.747
Douglas	\$ 25.32	3.966
Clay	24.64	3.966
Anoka	24.58	4.496
Becker	23.09	3.697
Stearns	21.91	3.891
Sherburne	21.05	2.681
Beltrami	20.15	4.573
Otter Tail	19.96	3.107
Hennepin	18.26	2.001
Washington	16.35	2.243
Ramsey	11.73	1.564
Dakota	10.68	1.361
STATE TOTAL	\$ 28.85	3.704
COUNTY MEDIAN	\$ 42.19	5.089

Source: Program Evaluation Division analysis of report prepared by Governmental Information Division, Office of the State Auditor, 1985.

^aEach county's certified mill rate is adjusted on the basis of the Department of Revenue's sales ratio studies.

TABLE 4.4
ROAD AND BRIDGE MILL RATES
FOR TAXES PAYABLE IN 1984
(Selected Counties)

<u>Name of County</u>	<u>Equalized Mill Rate^a</u>	<u>Per Capita Levy</u>
Itasca	14.873	\$115.23
Lake	12.410	53.38
Red Lake	10.897	94.06
Koochiching	9.546	48.40
Mille Lacs	9.310	47.23
Cook	9.132	99.50
Isanti	8.702	38.49
Kanabec	8.602	42.47
Lake of the Woods	8.284	55.64
Morrison	8.205	40.86
Steele	3.543	\$ 25.62
Jackson	3.376	59.90
Nobles	3.305	31.94
Otter Tail	3.107	19.96
Sherburne	2.681	21.05
Renville	2.651	40.67
Washington	2.243	16.35
Hennepin	2.001	18.26
Ramsey	1.564	11.73
Dakota	<u>1.361</u>	<u>10.68</u>
STATE TOTAL	3.704	\$ 28.85
COUNTY MEDIAN	5.089	\$ 42.19

Source: Program Evaluation Division analysis of report prepared by Governmental Information Division, Office of the State Auditor, 1985.

^aEach county's mill rate is adjusted on the basis of the Department of Revenue's sales ratio studies.

4. STATE AIDS AND LOCAL TAXES

We compared counties on the proportion of highway revenue they derived in 1983 from the most important sources: state highway aids and property taxes. The median county received 52 percent of its highway revenues from state aids.

We found that:

- Rural counties receive a larger proportion of their highway budgets from state aids than urban counties.

As shown in Table 4.5, twelve counties received more than 60 percent of their highway revenue from state aids. Of those twelve counties, six raised less than 15 percent of their highway revenues from local property taxes.

By contrast, Olmsted County and five counties in the metropolitan Twin Cities area received less than 30 percent of their highway revenues from state aids. These six counties raised more than 40 percent of their highway revenues through local property taxes.

We also examined the relationship between state aids received and the number of state aid highway lane miles. As shown in Table 4.6, Hennepin and Ramsey counties received the highest 1985 apportionments on a per lane mile basis. The other five counties in the Twin Cities metropolitan area counties also lead the list, though well behind the first two.

This relationship is partly explained by two key factors in the allocation formula: the size of those counties' construction needs and the number of motor vehicle registrations. Furthermore, the metropolitan area counties have relatively small County State Aid Highway systems. All but one of the metropolitan area counties have a smaller CSAH system than the state average of 696 lane miles. The exception is Hennepin County, which has the sixth largest system in the state. In contrast, Otter Tail County has the second largest CSAH system in the state and a relatively low aid per lane mile.

Table 4.7 compares counties on the relationship between their 1985 state aids apportionment and the traffic volume on their CSAH roads. The table shows how much each county receives in 1985 for each average daily vehicle mile. For example:

- Lake of the Woods County's 1985 state aid apportionment was \$1,076,963. The Department of Transportation reports that the average daily miles traveled on that county's state aid highways was 18,861 vehicle miles. Thus, the county's 1985 apportionment can be thought of as \$57.10 for every average daily travel mile.

TABLE 4.5
PROPORTION OF COUNTY HIGHWAY REVENUES
FROM STATE AIDS AND PROPERTY TAXES IN 1983
(Selected Counties)

<u>County</u>	<u>State Aids/ Receipts</u>	<u>Taxes/ Receipts</u>
Clearwater	79.56%	8.05%
Wadena	71.16	10.49
Beltrami	70.77	12.40
Roseau	68.91	12.61
Marshall	67.90	13.26
Freeborn	63.41	24.66
Benton	63.14	17.58
Otter Tail	62.80	13.64
Mahnomen	61.95	16.07
Houston	61.40	16.39
Pipestone	36.04%	32.90%
Dakota	34.39	37.34
Itasca	34.00	38.07
Steele	33.40	15.64
Kandiyohi	32.08	33.82
Stevens	30.67	32.81
Ramsey	29.12	42.95
Hennepin	28.05	49.69
Olmsted	25.88	44.64
Anoka	21.16	45.55
Washington	19.15	49.45
Scott	<u>18.93</u>	<u>43.24</u>
STATE TOTAL	45.37%	29.07%
COUNTY MEDIAN	51.69%	26.53%

Source: Program Evaluation Division analysis of report prepared by Governmental Information Division, Office of the State Auditor, 1985.

TABLE 4.6
COUNTY STATE AIDS PER LANE MILE
1985
(Selected Counties)

<u>County</u>	<u>CSAH Aids Per Lane Mile</u>	<u>County</u>	<u>CSAH Aids Per Lane Mile</u>
Ramsey	\$7,163.36	Hubbard	\$1,769.40
Hennepin	6,277.08	Todd	1,763.41
Washington	4,018.51	Pope	1,749.69
Dakota	3,718.11	Stevens	1,737.39
Scott	3,556.96	Otter Tail	1,699.43
Carver	3,437.20	Roseau	1,695.91
Anoka	3,219.16	Murray	1,686.38
Koochiching	3,193.81	Morrison	1,685.25
Wabasha	3,128.60	Becker	1,647.71
Olmsted	3,123.17	Marshall	1,625.02
STATE TOTAL	\$2,374		
COUNTY MEDIAN	\$2,182		

Source: MnDOT 1985 County State Aid Highway Apportionment Data;
MnDOT Transportation Information System, January 28,
1985.

TABLE 4.7
STATE AIDS RELATED TO VEHICLE MILES TRAVELED
1985
(Selected Counties)

<u>County</u>	<u>Aids Per Average Daily Vehicle Miles Traveled</u>	<u>County</u>	<u>Aids Per Average Daily Vehicle Miles Traveled</u>
Lake of the Woods	\$57.10	Scott	\$ 6.58
Koochiching	40.05	Olmsted	6.40
Traverse	31.34	Sherburne	5.60
Norman	28.22	Wright	5.51
Aitkin	27.64	Steele	4.91
Kittson	26.69	Washington	4.79
Mahnomen	26.17	Stearns	4.73
Big Stone	26.01	Ramsey	2.94
Roseau	24.92	Dakota	2.65
Red Lake	24.59	Hennepin	2.00
		Anoka	1.89
STATE TOTAL	\$ 7.91		
COUNTY MEDIAN	\$14.73		

Source: MnDOT 1985 County State Aid Highway Apportionment Data;
MnDOT Transportation Information System, January 28,
1985.

From this table, it is clear that state aids are inversely proportional to measures of traffic. The aids apportioned to urban counties are very small in proportion to traffic volume. However, this analysis does not reflect different types of traffic, such as heavy commercial or commuter. If a road with relatively low traffic serves important functions, then it would be appropriate to reflect that importance in aids decisions.

Table 4.8 compares counties on four categories of 1985 highway aid allotted to the counties or to cities within the counties:

1. *County state aids* for construction and maintenance of designated county state aid highways (\$171.1 million);
2. *Municipal state aids* for construction and maintenance of designated streets in cities of over 5,000 population within 45 counties (\$56.8 million);
3. The counties' share of federal aid for construction of secondary highways (*F.A.S.*) (\$10.5 million); and
4. Federal aid for construction of urban highways (*F.A.U.*) received by counties or cities within those counties (\$7.2 million).

More than \$245 million in highway aids was apportioned to Minnesota counties in 1985. About 30 percent of all aids goes to the seven counties in the metropolitan Twin Cities area or to cities in those counties. Cities in Hennepin and Ramsey Counties receive much more in municipal aids (\$19.6 and \$9.9 million, respectively) than those counties receive in county state aids.

When all four aids are viewed together, the median county received a per capita aid of \$97. While many counties had a much higher per capita aid, the total amount of aid received by those counties is small. For example, the 15 rural counties that received per capita aids of more than \$130 received less than 10 percent of all highway aids apportioned in 1985. Most of these counties have no cities above 5,000 which would receive municipal aids.

In contrast, urban counties received a much smaller per capita aid, as low as \$29.74. While their per capita aid was relatively low, the dollars received were substantial. The eight counties with the highest population received more than 35 percent of all aids. About 57 percent of the population of the state lives in those eight counties.

In summary, it is clear that the equity of local tax effort is a complex issue. While the tax effort of counties in the metro-

TABLE 4.8
HIGHWAY AIDS TO COUNTIES
AND TO CITIES IN THOSE COUNTIES

	COUNTY STATE AIDS	MUNICIPAL STATE AIDS	FEDERAL AID SECONDARY	FEDERAL AID URBAN	TOTAL AIDS	TOTAL AIDS PER CAPITA	PORTION OF ALL AIDS
HENNEPIN	9,419,453	19,622,262	131,437	2,713,786	31,886,938	\$33.71	13.0
RAMSEY	4,735,280	9,915,394	12,445	283,714	14,946,833	32.70	6.1
ST. LOUIS	8,907,120	4,063,684	542,968	664,916	14,178,688	66.37	5.8
DAKOTA	2,681,190	4,485,412	118,641	432,729	7,717,972	37.05	3.1
ANOKA	2,035,031	3,815,936	101,830	214,457	6,167,254	29.74	2.5
POLK	3,730,439	471,790	248,761	78,395	4,529,385	131.05	1.8
OTTER TAIL	3,850,429	254,212	267,579	57,560	4,429,780	80.74	1.8
STEARNS	2,879,772	1,024,379	211,437	266,482	4,382,070	38.50	1.8
OLMSTED	2,406,001	1,063,096	111,674	276,060	3,856,831	40.26	1.6
WASHINGTON	1,790,530	1,723,793	76,583	251,972	3,842,878	31.89	1.6
POPE	1,201,900						
ISANTI	1,163,312		66,953		1,268,853	107.04	0.5
LINCOLN	1,120,699		76,513		1,239,825	49.19	0.5
KANABEC	1,121,439		90,574		1,211,273	151.94	0.5
TRAVERSE	1,018,632		63,212		1,184,651	95.80	0.5
WADENA	1,004,186		68,695		1,087,327	201.28	0.4
GRANT	1,004,187		64,451		1,068,637	76.33	0.4
RED LAKE	1,004,186		56,146		1,060,333	147.08	0.4
BIG STONE	1,004,187		54,121		1,058,307	198.18	0.4
MAHONEN	1,004,185		42,919		1,047,106	129.87	0.4
			39,076		1,043,261	183.77	0.4
GRAND TOTAL	\$171,133,770	\$56,780,693	\$10,479,811	\$7,169,789	\$245,564,063	59.23	100.0%
COUNTY MEDIAN						\$97.18	8.0%

NOTES: Federal aids reported for federal fiscal year 1985: twelve months ending September 30, 1985.

Federal Aid Urban for Twin Cities metropolitan area counties is allotted to counties, cities, the Department of Transportation, and others on the basis of qualifying projects selected by the Metropolitan Council. Figures in this table are based on the percentage of FAU funds distributed in each county since 1974 applied to a total federal fiscal year 1985 allotment to the metro area of \$8,223,594.

SOURCES: Minnesota Department of Transportation, 1985 County State Aid Apportionment Data; 1985 Municipal State Aid Apportionment Data; Office of State Aid; Office of Highway Programs.

politan area looks low in some respects, these counties levy enough taxes to finance a large proportion of their highway operations. And, while the aids received by metropolitan area counties are high in relation to their miles of state aid roads, their aids are low in proportion to population and traffic volume.

C. MILL LEVY DEDUCTION

Although there is no requirement that a county levy a minimum tax for highways to match state aids, there is an adjustment to the needs calculation based on a county's taxing ability. State law provides that each county's 25-year construction cost estimates be reduced by a mill levy against the county's taxable property valuation.⁴ Urban counties, defined as those with a population of 200,000 or more, have four-tenths of one mill subtracted from their construction needs. A levy of two-thirds of one mill is subtracted from the money needs of rural counties. The mill levy is deducted from the annual construction needs, which is 1/25th of the 25-year construction needs.

The mill levy deduction apparently originated in the 1956 report of the Legislative Interim Commission on Highway Taxes Distribution. In describing a needs-based system for apportionment of funds, the report states that a portion of future construction costs would not be covered by user taxes, and would therefore be the counties' liability.

In order to measure the extent to which the counties can meet this liability a 2-mill levy on the rural counties total valuation and a 1.2 mill levy for urban counties should be used. The funds produced by this levy in each county subtracted from the total costs would represent the county money needs factor.⁵

The mill rates were reduced to their current levels by legislative actions in 1971 and 1973 which changed the calculation of property values and made corresponding adjustments in statutory mill rates.

We found that:

- The mill levy deduction is a poor means of accounting for local tax effort.

⁴Minn. Stat. §162.07.

⁵Report of the Legislative Interim Commission on Highway Taxes Distribution, 1956, page 16-17.

A first concern is the equity of the current mill rates used in the deduction. It is not clear that a four-tenths mill levy deduction equally reflects the local tax effort of urban counties and that a two-thirds mill deduction equally reflects the local effort of rural counties. For example, the current law assumes that a two-thirds mill deduction applied to two rural counties should most affect the county with the highest assessed valuation. However, the actual tax burden borne by residents of these two counties may be determined more by the relative sizes of their CSAH and county systems than by their assessed valuations. Counties with large non-CSAH county systems may be able to devote little local tax money to their state aid roads.

Second, the deduction for urban counties is very large and has a very redistributive effect. For the 1985 apportionment, Cook County received a deduction of \$24,503 while Hennepin County's deduction was \$3,241,546. Cook County's deduction was two percent of its annual construction needs, while Hennepin's deduction was 31 percent of its annual construction needs. We think the size of this transfer of resources merits legislative attention.

Third, neither the mill rate nor the taxable valuation are adjusted to reflect variations in assessment practices from county to county. Since counties generally assess at less than market value, as demonstrated by recent sales, the deduction is lower than it would be if counties did assess at full market value. Counties which assess closer to market value take a larger deduction than those whose assessments are much lower than market value.

Fourth, the current distinction between urban and rural counties is not sensitive to rapid population changes. As of this year, only three counties--Ramsey, Hennepin, and St. Louis--are treated as urban counties. Two other counties--Anoka and Dakota--had populations under 200,000 at the time of the 1980 census. However, the State Demographer's 1983 estimates of population indicate that these two counties have passed the 200,000 population mark. Other categorical aid programs as well as other aspects of the highway state aid system use the most recent measures of population.

Finally, it is not clear why the mill levy deduction should be subtracted from a county's annual construction needs. (One reason may be that the needs analysis is the only flexible element in the aids apportionment formula.) If the intent is to ensure that the county pays for some portion of constructing its county state aid highways, then it may be preferable to require a local matching contribution on each construction project.

In conclusion, we think that the Legislature should reexamine the relationship between state aids and local tax effort. The mill levy deduction is the primary means by which the CSAH allocation formula addresses local tax effort, and the deduction

does this poorly. As this chapter shows, equity is a complex issue, subject to many interpretations.

We think it is preferable to separate the issue of local tax effort from the construction needs analysis. Future construction costs are hypothetical, but the equity of local efforts affects counties and their taxpayers in a very real way.

D. COMPARING COSTS OF HIGHWAY MAINTENANCE

By law, 40 percent of each county's state aids are allocated for maintenance of county state aid highways. In general, this does not cover the total costs of maintaining state aid highways. Counties use other sources, particularly the property tax, to help finance highway maintenance. The funding of CSAH maintenance is an equity issue primarily because the extent to which state aids cover local maintenance costs varies significantly among counties. In addition, since the Legislature never intended state aid to cover all CSAH costs, it is important to consider the equity of current local effort for maintenance.

As required by law, county highway departments prepare annual reports for presentation to their boards. These reports are also submitted to the MnDOT Office of State Aid and are used to certify each county's maintenance costs.

We used information from those reports for 1983 to compare the costs of maintenance in counties. We examined three specific issues: overall costs of maintenance; costs of maintenance on state aid roads compared to other county roads; and costs of maintenance on roads within cities of less than 5,000 population.

1. OVERALL COSTS OF MAINTENANCE

In 1983, 86 counties reported total maintenance expenditures on all county state aid highways and other county roads of \$124.7 million.⁶ About two-thirds of that was spent on the state aid system. St. Louis County had the largest maintenance budget: more than \$10.4 million. Big Stone County reported the smallest maintenance budget: just under \$400,000.

Table 4.9 compares the overall maintenance costs of counties. The average county reported spending \$2,804 per mile for maintenance. The table shows that Hennepin and Ramsey Counties

⁶Data for Scott County were not available for this analysis.

TABLE 4.9
MAINTENANCE EXPENDITURES ON
ALL COUNTY AND STATE AID ROADS
(Selected Counties)

<u>County</u>	<u>Total Expenditures</u>	<u>Total Miles</u>	<u>Avg. Cost Per Mile</u>
Hennepin	\$ 9,998,097	593.98	\$16,832
Ramsey	3,292,973	237.00	13,894
Washington	2,086,129	293.04	7,119
Anoka	2,678,676	419.50	6,385
Lake	1,562,062	294.65	5,301
Dakota	2,242,057	463.78	4,834
Goodhue	1,929,142	401.27	4,808
Wabasha	1,584,787	371.62	4,265
Houston	1,061,559	250.20	4,243
Mower	1,685,596	405.28	4,159
Marshall	\$ 1,216,705	814.56	1,494
Meeker	1,502,453	1,051.38	1,429
Wadena	667,907	483.66	1,381
Kittson	612,663	459.02	1,335
Wilkin	648,881	507.42	1,279
Clearwater	644,273	517.20	1,246
Todd	770,264	622.82	1,237
Roseau	835,060	712.87	1,171
Pennington	716,364	648.08	1,105
Big Stone	397,568	405.74	980
STATE TOTAL	\$124,681,451	46,170.51	\$2,700
COUNTY MEDIAN			\$2,335

Source: Program Evaluation Division Analysis of 1983 County Highway Department annual reports submitted to State Aids Section, Minnesota Department of Transportation. Data for Scott County not available.

have the highest costs per mile. Counties in northern and western Minnesota spend the least on maintenance.

We also compared counties on the sources of their state aid highway maintenance budgets. On the basis of their annual reports, thirteen counties received more than 90 percent of their maintenance budgets from state aids. As noted earlier, the Legislature never intended state aid to cover all CSAH costs, so these high levels of CSAH subsidy raise equity issues. Seventeen counties reported that less than half of their state aid road maintenance expenditures were paid for by state aids received, and state aid in two counties (Hennepin, Lake) covered less than one-third of maintenance costs.

2. MAINTENANCE ON RURAL STATE AID ROADS

For purposes of the County State Aid Highway system, *rural* refers to areas outside of cities of less than 5,000 population. About 95 percent of state aid roads are outside these small cities and are considered rural routes.

In 1983, the average county reported spending about \$2,800 per mile for maintenance of state aid rural routes. Table 4.10 shows that the range of expenditures is quite wide. Hennepin County spent nearly \$20,000 per mile while twelve counties spent less than \$1,500 per mile. As noted in Chapter 3, the current CSAH funding formula assumes that state aid roads throughout Minnesota have roughly the same maintenance costs per mile.

3. MUNICIPAL ACCOUNT

By law, CSAH apportionments for construction and maintenance are divided into two accounts: a *regular* account for roads in rural areas and a *municipal* account for roads within cities of less than 5,000 population.⁸ The size of the municipal account is based on the portion of each county's 25-year construction needs on roads which lie within small cities. For example:

- In 1984, 9.5 percent of Carlton County's construction needs were on county state aid roads within nine small cities. Therefore, 9.5 percent, or \$145,321, of its state aid apportionment are assigned to the municipal account. Of this amount, 40 percent is assigned to maintenance.

⁷Analysis of 1983 county highway department annual reports.

⁸Minn. Stat. §162.08.

TABLE 4.10
MAINTENANCE EXPENDITURES ON STATE AID RURAL ROADS
(Selected Counties)

<u>County</u>	<u>Avg. Cost Per Mile</u>	<u>County</u>	<u>Avg. Cost Per Mile</u>
Hennepin	\$19,691	Grant	\$1,379
Ramsey	15,179	Kittson	1,283
Anoka	7,431	Mahnomen	1,268
Washington	6,948	Wadena	1,258
Lake	5,364	Clearwater	1,220
Goodhue	5,123	Wilkin	1,213
Wabasha	4,545	Todd	1,189
Dakota	4,495	Pennington	1,176
Houston	4,279	Roseau	1,152
Mower	4,108	Big Stone	1,146
County Median	\$ 2,171		

Source: Program Evaluation Division analysis of 1983 County Highway Department annual reports submitted to State Aids Section, Minnesota Department of Transportation. Data for Scott County not available.

If a county does not spend the full amount of its municipal maintenance account, the balance is transferred to the municipal construction account. Counties have some flexibility to spend the municipal account money outside of the small cities.

It appears that a concern for equity led to the establishment of the municipal account. The Legislature wanted to ensure sufficient CSAH spending in small towns. There apparently was concern that county boards, whose members are often oriented toward rural interests, might neglect the road needs of the small cities.

In our discussions with county highway engineers, many agreed that the separate municipal account serves a useful purpose. Although they doubted that they would spend less money on roads in small cities in the absence of a requirement, they said that it provided a useful visibility to the small cities and their road needs. Others said that it had no effect on their construction and maintenance programs and was not needed. The engineers generally agreed that the additional bookkeeping associated with the separate accounts was not burdensome.

Most rural counties reported higher average maintenance costs for municipal sections of roads than for non-municipal roads. According to the 1983 county reports, the average county spent about \$3,700 for maintenance of these sections. Table 4.11 shows that the range is quite wide.

TABLE 4.11
MAINTENANCE EXPENDITURES ON STATE AID MUNICIPAL ROADS
(Selected Counties)

<u>County</u>	<u>Avg. Cost Per Mile</u>	<u>County</u>	<u>Avg. Cost Per Mile</u>
Pennington	\$22,946	Koochiching	\$1,231
Hennepin	16,025	Norman	1,183
St. Louis	10,590	Morrison	1,163
Ramsey	9,908	Meeker	1,123
Mower	9,833	Cass	1,082
Rock	8,379	Lake of the Woods	1,018
Washington	8,311	Benton	875
Lake	6,663	Hubbard	605
Jackson	6,376	Kanabec	359
Murray	5,811	Cook	289
County Median	\$ 2,744		

Source: Program Evaluation Division analysis of 1983 County Highway Department annual reports submitted to State Aids Section, Minnesota Department of Transportation. Data for Scott County not available.

From the reports, it appears that:

- Twenty-five counties spent less on municipal maintenance than they received in aid.⁹

⁹These reports are prepared using cash basis accounting and that the timing of key payments or aid receipts would affect the calculations. Furthermore, some county engineers said that their time accounting methods, in which activities are reported in 15-minute units, may not fully reflect time spent on municipal road sections. In general, unspent maintenance allocations are transferred to the construction account.

RECOMMENDATIONS

The data presented in this chapter describe the local tax effort of counties on CSAH roads and the redistributive effect of CSAH allocations. It is not clear whether current levels of local effort and redistribution meet legislative intent, because the Legislature has not explicitly stated its notions of CSAH equity. We recommend that:

- The Legislature should determine goals for the state aid system and should decide whether current funding meets or violates legislative notions of equity.

We recommend that:

- The Legislature repeal the mill levy deduction.

If the Legislature wants to incorporate a measure of local tax effort in the apportionment of state aid, then it is more appropriate to approach that issue outside of the construction needs analysis. To more equitably account for local effort in the CSAH formula, the Legislature should consider data such as that presented in this chapter.

Related Issues

Chapter 5

In the broad discussions of previous chapters, several topics have not been addressed. This chapter raises additional issues the Legislature may wish to consider.

A. HIGHWAY JURISDICTION

Highway jurisdiction is an important issue in any consideration of county state aid equity. This is particularly true considering that the current CSAH funding system permits counties to claim that a road with 50 cars per day is "needed" no less than a road with 1,000 cars per day.

It is difficult to judge conclusively whether the jurisdictional designations given to roads in the 1950s were appropriate. However, we can say that many miles of state aid road today provide little more than residential access, and their status as CSAH roads should be re-examined.

Most counties have roughly the same proportion of Minnesota's state aid mileage today that they had in 1958. This is because (1) the CSAH system is only 1,000 miles larger today than it was in 1958, and (2) counties usually alter highway jurisdiction through "swaps," which result in little net loss or gain of CSAH mileage. An example of a swap is when a county places 10 miles of CSAH roads on the county system while adding CSAH designations to 10 other miles of county road.

We conclude that:

- Swaps of highways within a county may address jurisdiction issues for that county, but these techniques do not address jurisdiction inequities between counties.

For example, the CSAH Screening Board has often refused to approve new CSAH designations for Twin Cities metropolitan counties unless these counties agree to relinquish state aid designations for a comparable number of roads. As documented in Chapter 1, however, Minnesota's transportation system changed dramatically since 1958, particularly with rapid suburban growth. It probably is true that some growing counties have fewer CSAH designations than deserved. For example, Anoka County has a non-CSAH county road with 20,000 cars per day, whereas many counties have 50 vehicle-per-day roads on their state aid systems.

In 1984, the legislative Highway Study Commission examined highway jurisdiction, particularly as it related to Minnesota trunk highways. The commission recommended regional studies of highway jurisdiction to address improperly designated roads and the impacts of jurisdictional changes. It is not clear whether the commission intended regions to conduct full assessments of CSAH and county road designations, in addition to a review of trunk highways.

We think CSAH and county road designations merit attention. Thus, we recommend:

- Any regional highway jurisdiction studies mandated by the Legislature should address CSAH and county road designations. The Legislature may also wish to have the regional studies determine "priority" county state aid highways for future funding purposes.

Two issues concern us about these studies. First, studies done by regions may not adequately address inter-region inequities in highway designation. Unless the Commissioner of Transportation carefully scrutinizes regional recommendations, jurisdictional problems may persist.

Second, it is not clear what methods regions will use to estimate the future costs of jurisdictional transfers. A 1984 study by the Metropolitan Council's Transportation Advisory Board rejected a "standards-based" method of estimating financial impact and instead chose a "life-cycle costing" method (see Chapter 3). It is not clear what methods other regions will choose to make cost estimates.

To address these issues, we recommend that:

- The Legislature should provide for some state-level veto power over the jurisdiction recommendations of regions. This could rest with the Commissioner of Transportation or with a review board. The Legislature may also wish to consider whether a permanent state body should recommend CSAH realignment on an ongoing basis to facilitate state transportation changes in coming years.

- The Commissioner of Transportation should define for regions the method of assessing financial impacts of jurisdictional change. The method chosen should not be a standards-based method as is now used to fund state aid roads.

B. THE 30,000 MILE LIMIT

The 1956 constitutional amendment creating the county state aid system placed a 30,000 mile limit on the size of that system. When the Constitution was revised in 1974, the 30,000 mile limit language was deleted. Since 1974, the 30,000 mile limit has existed only in rule. By 1969 legislative action, total CSAH mileage may exceed 30,000 miles if the newly added miles are trunk highway turnbacks.

The 30,000 mile limit explains why counties generally have made jurisdictional swaps rather than outright additions to their CSAH systems. If one county adds mileage to its CSAH system, comparable mileage must leave the CSAH system to remain below the 30,000 mile limit.

While it may be true that some counties deserve more county state aid mileage, we do not think that eliminating or raising the 30,000 mile limit is an appropriate action. A 30,000 mile system may already be too large, as suggested by counties' lack of rapid progress in improving CSAH roads.

C. GRAVEL ROADS

In earlier chapters, we stressed that it is time to establish county state aid priorities. Not every state aid road can be paved or built to standard at a reasonable cost, so counties must continue to improve those highways that are most important. This will likely mean that many county state aid roads will not be paved.

While having gravel roads on the CSAH system may not be ideal, low volume gravel roads may be more justifiable than low volume roads built to full standard. First, studies in the 1950's did not envision a fully paved CSAH system. Second, many county engineers told us the damage done by heavy trucks to gravel roads is less expensive to repair than the damage to paved roads. Third, the economic benefits of a paved road with little traffic are probably shared by relatively few people.

While paved road surfaces are preferable to gravel roads, the capital and maintenance costs of this preference are difficult to justify for certain roads at a time when busier roads need attention.

D. MUNICIPAL STATE AID SYSTEM

Many of the policy issues addressed in this study of county state aid highways parallel issues within the Municipal State Aid Street (MSAS) system. That system employs standards-based funding, and the system has not been examined externally for many years. We think the recommendations of this study may prove applicable to the MSAS system, but a further review should determine this. We encourage the Legislature, MnDOT and the municipal state aid Screening Board to initiate a complete review.

Appendices

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APPENDIX A
CHRONOLOGY OF STATE ROAD DEVELOPMENT
AND FINANCING

<u>DATE</u>	<u>EVENT OR ACTIVITY</u>	<u>CITATION</u>
1789 to 1857	Road construction carried on by federal, territorial and county governments. Territory of Minnesota organized; Wisconsin laws, with county as road building unit, retained. Counties required to maintain federal roads.	Minn. Laws 1849, c. 19. Minn. Laws 1856, c. 109.
1858	Minnesota admitted to statehood. Constitution prohibited state participation in works of internal improvement. Town boards created with general supervision over roads, except they could not lay out, alter or discontinue state or county roads. Town boards set property taxes for roads and the number of days men should work on roads. Town board chairmen in each county constituted the county boards. County boards could lay out, alter or discontinue county roads.	Minn. Const., art. 9, sec. 5. Minn. Laws 1858, c. 75.
1860	Separate county and town boards created. All roads, including territorial, state and county roads, were declared town roads which could be altered, discontinued or reopened by town authorities. Roads running through more than one county were established by special acts of the Legislature.	Minn. Laws 1860, c. 15. Minn. Laws 1869, c. 4.
1862	State roads declared county roads, to be altered or discontinued only by county commissioners. County boards empowered to establish, alter or vacate roads in more than one township.	Minn. Laws 1862, c. 68.
1865	County boards authorized to appropriate for roads \$1,000 for each \$500,000 of real estate in the county.	Minn. Laws 1865, c. 31.
1872	Provision for establishing roads by judicial proceedings when petition made for roads running through two or more counties. Internal improvement land fund created.	Minn. Laws 1872, c. 40.
1881	Constitutional amendment prohibited establishing roads by special acts of the Legislature.	Minn. Const., art. 4, sec. 33.
1898	Constitutional amendment adopted permitting state participation in road building, creating State Road and Bridge fund, and authorizing creation of a state highway commission.	Minn. Const., art. 9, sec. 16.

Appendix A, Continued

<u>DATE</u>	<u>EVENT OR ACTIVITY</u>	<u>CITATION</u>
1905	Law passed creating State Highway Commission which was appointed the following year. Law passed levying 1/20 mill state aid road tax.	Minn. Laws 1905, c. 163.
1909	State registration of all motor vehicles required.	Minn. Laws 1909, c. 259.
1910	Constitution amended to permit the state to assume half the cost of road and bridge projects.	
1911	State aid tax levy increased to 1/4 mill. Highway Department enlarged.	Minn. Laws 1911, c. 33.
1912	Constitutional amendment provided for one-mill tax for road and bridges.	<u>Minn. Const.</u> , art. 9, sec. 16.
1913	General road law adopted: One mill state road tax levy adopted to be used for constructing and maintaining county and town roads; Three classes of roads defined: 1. State roads constructed and maintained by the counties with state aid and under the rules of the State Highway Commission. 2. County roads to be constructed by the county boards under rules of the Commission, and maintained by the town boards. 3. Town roads to be constructed and maintained by the town boards.	Minn. Laws 1913, c. 235.
1915	Motor vehicle license fees credited to the road and bridge fund rather than the general revenue fund.	
1916	Federal highway aid law passed. Federal aid system of 6,200 miles established in Minnesota by the State Highway Commission. This network connected all county seats and other population centers, and became the forerunner of the trunk highway system.	Stat. 39: 355-359 (1916).
1917	State Highway Commission abolished, and office of Commissioner of Highways created. An allotment board (composed of the Commissioner of Highways, State Treasurer and State Auditor) created to make annual apportionment of state road and bridge fund to counties.	Minn. Laws 1917, c. 119.
1920	Trunk highway plan proposed as a constitutional amendment adopted.	<u>Minn. Const.</u> , art. 16, sec. 1.

Appendix A, Continued

<u>DATE</u>	<u>EVENT OR ACTIVITY</u>	<u>CITATION</u>
1921	<p>13,653 miles of "State" roads existed at the beginning of 1921. General Highway Act passed:</p> <p>Trunk highway plan made effective by designating 6,850 miles of "State" roads as trunk highways (70 routes).</p> <p>State aid roads (formerly "state" roads) continued as secondary roads of which there were 8,358 miles at the end of 1921.</p> <p>The 1-mill state aid fund made available for a system of state aid roads to include former "state" roads not taken into the trunk highway system and such other roads as county boards might designate.</p> <p>Tax on motor vehicles adopted.</p> <p>Four classes of roads defined:</p> <ol style="list-style-type: none"> 1. Trunk Highways, built and maintained by the state; 2. State Aid Roads, built and maintained by the counties with state aid and supervision; 3. County Roads, established by county boards or by district courts, improved by counties and maintained by town boards. 4. Town Roads, established, improved and maintained by town boards. 	<p><u>Reports</u>, Commissioner of Highways. Minn. Laws 1921, c. 323.</p> <p>Minn. Laws 1921, c. 323.</p>
1923	County bond issues for trunk highway improvements authorized.	Minn. Laws 1923, c. 320.
1924	Gasoline tax amendment adopted, with proceeds going to the trunk highway fund.	<u>Minn. Const.</u> , art. 9, sec. 5.
1925	Two cent gasoline tax for trunk highway fund levied.	Minn. Laws 1925, c. 297, 418
1926	System of U.S. numbered highways established.	
1928	Constitutional amendment adopted placing one-third of gas tax in state road and bridge fund, two-thirds in trunk highway fund.	<u>Minn. Const.</u> , art. 9, sec. 5.
1929	County aid road system created, supported by the state road and bridge fund. Gas tax increased to 3 cents.	Minn. Laws 1929, c. 283.
1931	State highway bonds authorized. Provision for gross earnings tax on motor vehicles added to constitution.	Minn. Laws 1931, c. 113.
1933	<p>At the beginning of 1933 there were 16,782 miles of state aid roads.</p> <p>Trunk highway system enlarged by 4,500 miles, many of these again coming out of the state aid system.</p> <p>Motor vehicle taxes decreased about 40 percent.</p> <p>Legislature authorizes Governor to appoint a committee to investigate advisability of including all county and township roads in the trunk highway system.</p>	<p><u>Reports</u>, Commissioner of Highways. Minn. Laws 1933, c. 440.</p>

Appendix A, Continued

<u>DATE</u>	<u>EVENT OR ACTIVITY</u>	<u>CITATION</u>
1934	The Governor's Committee reported that consolidation of local road systems with trunk highways was impractical from a financial and operating standpoint and was universally opposed by township, city and county officials. Recommendations included: better coordination of road planning, construction and maintenance; gradually shift burden of road costs from real estate to road users; retain present motor vehicle and gasoline taxes for the construction and maintenance of the State Highway System. Minnesota State Planning Board recommended an ultimate trunk highway system of 20,000 to 25,000 miles, to be developed over a long time period.	<u>Highways and Public Finance in Minnesota</u> , December 1934.
1937	Gas tax increased to 4 cents.	Minnesota State Planning Board Reports, 1934.
1940	Gas tax reverted to 3 cents.	Minn. Laws 1937, c. 383.
1941	Gas tax of 4 cents made permanent. One mill state aid tax repealed. \$1.2 million appropriated annually for continuance of state aid system.	Minn. Laws 1937, c. 383. Minn. Laws 1941, c. 162.
1944	Federal Aid Highway Act authorized funds in separate programs for urban highways and for secondary rural roads. Federal Aid Highway Act provided for creation of a national system of interstate highways, with three routes in Minnesota, totaling 847 miles.	Minn. Laws 1941, c. 160, 161.
1946	At the end of 1946 there were 16,202 miles of state aid roads, and 26,093 miles of county aid roads.	Reports, Commissioner of Highways.
1947	Legislative Interim Commission created to make comprehensive study of road laws, road needs and finances. Constitutional amendment submitted to voters to credit one-half of motor fuel tax receipts to state trunk highway fund and one-half to state road and bridge fund.	Minn. Laws 1947, c. 615 Minn. Laws 1947, c. 639
1948	In the general election, the proposed amendment failed to pass thereby leaving unchanged the constitutional requirement that two-thirds of the gasoline tax receipts go to the trunk highway fund and one-third to the state road and bridge fund, for allotment to the counties. At this time, the trunk highway system included 11,221 miles. 1,891 miles were unimproved by construction and 2,842 miles were untreated gravel surfaces. Paved trunk highway included about 500 miles of two lane, 18-foot pavement located on heavy traffic routes.	Legislative Manual, 1949. Report of the Legislative Interim Commission on Highways, 1949, p. 11.

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<u>DATE</u>	<u>EVENT OR ACTIVITY</u>	<u>CITATION</u>
1948 cont'd.	<p>The county road system was composed of 16,216 miles of state aid roads (non-trunk highway roads in the Federal Aid secondary system) and 26,390 miles of county aid or gas tax roads; a total of 42,606 miles. State aid roads were routes of primary county use and need and the county aid those of secondary county use. The township road system was composed of 65,080 miles of roads and streets.</p> <p><u>Report of the Legislative Interim Commission on Highways. Findings:</u></p> <p>It is not economically feasible to meet all public demands for road improvements. To meet the more urgent demands in the face of increased maintenance and construction cost, added revenues required. Simultaneous improvement of all classes of roads is needed.</p> <p>Transferring a road to the trunk highway system will not ensure its early improvement. Over half the mileage added sixteen years ago is not yet improved by permanent construction. Local roads may best be administered locally where they will qualify for improvements on a higher priority.</p> <p>Recommended consideration of a progressively higher tax on the heavier truck units.</p> <p>Road user taxes at current levels would not provide sufficient revenue to carry out the ten-year construction programs considered necessary to make the state and county road systems reasonably adequate to traffic.</p>	<p>Minn. Laws 1949, c. 678. Minn. Laws 1949, c. 188.</p> <p>Minn. Laws 1949, c. 663. Minn. Laws 1949, c. 672.</p>
1949	<p>Gasoline excise tax increased from four to five cents per gallon. Only for the years 1949 and 1950, the maximum amount to be levied by any county for road and bridge purposes is 20 mills. Thereafter, the maximum was to be ten mills on the dollar of the taxable valuation of the county.</p> <p>73 new routes added to the trunk highway system.</p> <p>With the approval of the Commissioner of Highways, county boards required to extend state aid roads into or through towns where necessary to connect them with trunk highways, other state aid roads, marketing centers, state aid roads in other counties, or the principal highways of adjoining states or provinces, so as to form an integrated and connected state aid road system.</p>	
1950	In the general election, a proposed constitutional amendment was defeated which would have apportioned the gas tax proceeds 50 percent to the trunk highway fund, 44 percent to the state road and bridge fund, and 6 percent for road and street purposes on the basis of population among cities over 100,000 population.	<u>Legislative Manual, 1951.</u>
1951	Legislation permitted designation of less than the full width of any street or road within a city or village as a state aid road.	Minn. Laws 1951, c. 513.

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<u>DATE</u>	<u>EVENT OR ACTIVITY</u>	<u>CITATION</u>
1951 cont'd.	Legislation required county boards to extend county aid roads into or through towns where necessary to connect them with a trunk highway, state aid road, county aid road, or a principal highway of an adjoining state or province so as to form an integrated and connected road system.	Minn. Laws 1951, c. 589.
1952	In the general election, a proposed constitutional amendment was defeated which would have apportioned the motor vehicle excise tax 65 percent to the trunk highway sinking fund, 10 percent to cities, villages and boroughs in proportion to their population, and 25 percent to counties by a computation giving one-half in the ratio which the rural population of the county bore to the total rural population of the state and one-half in the ratio which the total mileage of county and township roads bore to the total mileage of all the county and township roads in the state.	<u>Legislative Manual</u> , 1953.
1953	Legislature created a Highway Study Commission to investigate all matters related to highways for the purpose of determining sound highway policy for the state and reasonable requirements for all highway and street systems within the state.	Minn. Laws 1953, c. 692.
1954	Minnesota Highway Study Commission reports: <u>Engineering Analysis</u> -recommendations: reduce an 11,850 mile trunk highway network to 8,750 miles; create a 30,500 mile primary county road system, replacing the 15,490 mile state-aid and 26,160 mile county-aid systems and including approximately 3,000 miles of lesser used rural state trunk highway; create a system of arterial streets in municipalities of 5,000 or more population totaling approximately 850 miles. <u>Highway Program Financing methods</u> -recommendations: establish a single State Highway Fund to control the collection and disbursement of all highway user revenues; distribute highway user revenues between the state and local jurisdictions on a statutory rather than on a constitutional basis; rescission or modification of constitutional provisions which prescribe specific trunk highway routes; prescribe in statute the formula to be used in distributing money among local jurisdictions; specify what proportion of allocations to local jurisdictions should be expended in accordance with standards prescribed by the Commissioner of Highways; remove mill restrictions on local tax levies for road purposes so that local jurisdictions can better equate their road requirements and resources; legislation should be revised to provide for a motor fuel tax, a vehicle registration fee, and a weight tax with vehicles liable for a tax of more than \$500 paying the tax on a mileage basis; the formula for distribution of highway funds	Report of the Automotive Safety Foundation Report of the Public Administration Service.

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among counties should provide for an administrative allowance, a bridge allowance, a vehicle mile factor, and a road mileage factor; all funds allotted to local rural highway systems should be administered by the counties.

1954
cont'd.

Highway Study Commission-Proposals for a constitutional amendment:
A mileage ceiling on the state trunk highway system of 12,200 miles exclusive of (1) additional mileage of state trunk highways required by the federal government as part of the interstate system and (2) highways financed entirely from tolls; permit the legislature to change legislative additions to the trunk highway system, but continues constitutional routes numbered one through seventy as part of the trunk highway system; a mileage ceiling of 30,000 miles on a county state aid system to include about 27,500 miles of county primary roads and 1,835 miles of arterials in municipalities under 5,000 population; selection of county state-aid roads should have state approval; a mileage ceiling of 1,000 miles for a system of state aid arterial streets in cities of 5,000 population or over, and selection of the municipal state aid street system should have approval of the state; highway user tax distribution fund created apportioned 62 percent to the state trunk highway fund, 30 percent to the county state aid highway fund, and 8 percent to the municipal state aid street fund, and legislature may change the proportions at six year intervals but such changes may not exceed 5 percent of the total highway user tax distribution fund.

Recommended legislative changes to implement the proposed constitutional amendment: legislation to establish a Metropolitan Highway Commission to coordinate highway and street programs in the Twin City cities metro area; establish a county urban division in the State Highway Department to coordinate state supervision of county and municipal road programs; create interim committees to develop a formula for distribution of county and municipal state aid funds among the counties and municipalities; a legislative requirement as to the distribution of trunk highway funds between urban and rural projects; legislation providing the manner of selecting routes on the county state aid and municipal state aid street systems; provision for the use of 40 percent of the county state aid fund for maintenance with the balance reserved for construction and right of way (20-80 percent split suggested for municipal system); legislation to authorize use of county and municipal state aids on other county and municipal roads under certain conditions; legislation to establish uniform accounting and reporting, to provide for an annual report with funds withheld for lack of compliance, and to encourage long range planning.

Supplementary Statement (by representatives of metropolitan areas):
The proposal to give a 30 percent share of the highway user taxes to the counties and an 8 percent share to municipalities does not give adequate weight to the factor of travel on the various systems, and

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<u>DATE</u>	<u>EVENT OR ACTIVITY</u>	<u>CITATION</u>
1954 cont'd.	that the 8 percent share is not fair for the municipalities; highway users should support the highways which they use in proportion to the extent and intensity of such use, and the 30,000 mile county state-aid system (which is to be supported almost fully from the highway user taxes) contains 5,000 miles of roads which carry from 50 to 100 vehicles per day and 7,000 miles which carry less than 50 vehicles per day; the overly liberal sharing of highway user taxes with the counties makes possible a substantial reduction in property tax support for roads in rural areas and will necessitate increased property taxes in the urban areas; in 1930 there were 34 municipalities over 5,000 population and in 1954 there are at least 56, and continuation of this trend will make the 8 percent fund less and less sufficient.	
1955	Legislature proposed an amendment to the state constitution that would: consolidate and combine several provisions of the constitution relating to highways into a single article; provide for systems of public roads to be constructed, improved and maintained by the state, counties and municipalities; establish a fund for such purposes by the taxation of motor vehicles and motor fuel. Legislature established the Highway Taxes Distribution Commission "to study the formulation of a fair, equitable and definite formula for use in determining the distribution among the several counties and several cities, villages and boroughs of the state of the proceeds of any gasoline tax or motor vehicle license tax."	Minn. Laws 1955, c. 882. Minn. Laws 1955, c. 585.
1956	<u>Report of the Legislative Interim Commission on Highway Taxes Distribution-Recommendations:</u> Apportionment should be according to relative need in order to promote a balanced system of highways sufficient to serve the varied types and volumes of traffic; the dollar value of needs furnishes the most equitable and logical distribution ratios among the several counties and cities; county and municipal state aid funds should be authorized for expenditure on mileage outside the state aid system in those instances where a reasonable level of taxation does not provide sufficient funds to use on other county roads and municipal streets; the factors which should be used in a distribution formula for the 87 counties are: money needs, mileage, registration, and equalization; deductions should be made for a disaster fund and administrative costs before any allocation of funds; engineering standards developed by AASHO should be used in estimating the cost of needed improvements in the state aid system; projection of construction needs should be based on a 25 year period to approximate the theoretical time within which it would be necessary to replace all roads on the state aid system; construction needs estimates should include expenditures which are necessary for the	

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1956 cont'd.	<p>improvement of county roads routed over city streets in places under 5,000 population, and the center 24 feet of such streets in places of 5,000 population and over; a resurvey of the county state aid system should be made in accordance with state-aid rules and regulations; a committee of county engineers appointed by their membership should review and screen the cost factors submitted by each county; final approval of needs should be the responsibility of the commissioner of highways; a special factor should be included in the proposed formula to ensure each county a minimum increase of at least 10 percent over their last allotment; the mileage in each county should be selected by following the criteria recommended by [1954 Highway Study Commission] Automotive Safety Foundation report; The percentages which should be applied to each factor are 50 percent for money needs, 30 percent for mileage, 10 percent for registration and 10 percent for equalization; a revolving fund of \$300,000 should be created from the total highway user funds available to the counties for allocation in case of any hardship that a county might encounter beyond normal conditions; a deduction not to exceed 1.5 percent from the county share of the user fund should go toward the financing of a state aid division in the State Highway Department. Constitutional amendment adopted by election:</p> <p>Trunk highway system, not to exceed 12,200 miles in extent, established, to be constructed and maintained by the state; Detailed description of highway routes deleted from constitution. County state aid highway system, not to exceed 30,000 miles in extent except as increased or decreased by the legislature, established, to be constructed and maintained by the counties; Municipal state aid street system, not to exceed 1,200 miles in extent except as increased or decreased by the legislature, established, to be constructed and maintained by the legislature, populations of 5,000 or more.</p> <p>Highway user tax distribution fund created, consisting of motor vehicle tax and fuel tax proceeds, such proceeds to be distributed 62 percent to the trunk highway fund, 29 percent to the county state aid highway fund, and 9 percent to the municipal state aid street fund. All moneys in the state road and bridge fund transferred to the county state aid highway fund. Congress authorizes a program for the creation of a national network of interstate highways with 898 miles in Minnesota.</p>	Minn. Laws 1957, c. 943.
1957	<p>Various amendments to Minnesota Statutes to implement changes fostered by adoption of constitutional amendment. Five types of roads defined: trunk highways, county state aid highways, county roads, municipal state aid streets and town roads. All roads designated county aid highways prior to July 1, 1957, shall be county state aid highways under county jurisdiction. These laws did not contain the system mileage limits set forth in the constitution.</p>	

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<u>DATE</u>	<u>EVENT OR ACTIVITY</u>	<u>CITATION</u>
1957 cont'd.	Commission on Highway Laws established to perform a comprehensive review and revision of highway laws, deemed necessary to correct inconsistencies and inadequacies arising from statutory changes following adoption of the 1956 constitutional amendment and the authorization of the federal interstate program.	Minn. Laws 1957, c. 828.
1958	<u>Report of the Minnesota Legislative Highway Commission on Highway Laws:</u> Review and revision of highway laws were needed to accomplish the change in objective of a major portion of the state's transportation system. The 1956 state constitutional amendment was "predicated on the establishment of a balanced and integrated system of highways composed of trunk routes, county roads and municipal streets....The basic principal of [the federal establishment of a national network of interstate highways] is the creation of an integrated system of highways." No substantive changes to laws affecting the county and municipal state aid systems were recommended.	Minn. Laws 1959, c. 500.
1959	Recodification of highway laws, incorporating revisions recommended by the 1958 Commission on Highway Laws. Constitutional mileage limits were not included in statutes. Legislative Interim Commission on Highways created to study operation of State Highway Department, including the relationship of the department to other state departments, agencies and political sub-divisions in relation to the county state aid highway system and the municipal state aid street system, and with agencies of the federal government.	Minn. Laws 1959, Ext. Ses. c. 82.
1961	<u>Report of The Commission on Highways:</u> Recommended that municipalities be authorized to sell bonds for the purpose of constructing or improving county state aid, municipal state aid and trunk highway routes within municipal limits. Recommended that the municipal state aid street system mileage limitation of 1,200 miles [Minnesota Constitution, Article XVI, Section 4.] be increased to 1,500 miles in order that additional communities eligible as municipalities of 5,000 or more population may establish a municipal state aid street system. Minnesota Statutes sec. 162.09, subd. 1, amended by adding the sentence, "The extent of the municipal state aid street system shall not exceed 1500 miles."	Minn. Laws 1961, c. 19.
1963	Gasoline excise tax increased from five to six cents per gallon.	Minn. Laws 1963, c. 681.
1965	Legislature designated a portion of the Highway User Tax Distribution Fund to reimburse counties for repairs to trunk highways turned over to county jurisdiction.	Minn. Laws 1985, c. 672.

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<u>DATE</u>	<u>EVENT OR ACTIVITY</u>	<u>CITATION</u>
1967	Interim Commission on Highways created to study and consider matters relating to safety on public highways in the state. Gasoline excise tax increased from six to seven cents per gallon. Motor fuel road tax imposed on commercial motor vehicles calculated on the amount of motor fuel consumed in operations on Minnesota highways.	Minn. Laws 1967, Ext. Ses. c. 55. Minn. Laws 1967, c. 874. Minn. Laws 1967, c. 802.
1969	<u>Biennial Report of the 1967-1968 Highway Interim Commission:</u> Recommended that the legislature favorably consider supplementing the highway turnback accounts by bonding or other appropriate means; Recommended that the statutes be amended to increase the county state aid highway system from the 30,000 miles authorized under Section 3, Article XVI of the Constitution, by the addition of the mileage of all trunk highways reverted or turned back to the jurisdiction of the counties pursuant to law after July 1, 1965, and henceforth. The county state aid highway system increased in extent by the addition of the mileage of all trunk highways reverted or turned back to the jurisdiction of the counties after July 1, 1965 Allowable mileage of the municipal state aid system increased from 1500 to 2000, plus the mileage of all trunk highways reverted or turned back to the jurisdiction of cities on or after July 1, 1965.	Minn. Laws 1969, c. 63. Minn. Laws 1969, c. 214.
1971	Motor vehicle excise tax imposed at the rate of three percent on the purchase price of any motor vehicle. Motor vehicle excise tax increased from three to four percent.	Minn. Laws 1971, c. 853. Minn. Laws 1971. Ext. Ses. c. 31.
1972	<u>Minnesota Constitutional Study Commission, Transportation Committee Report-Recommendations:</u> a thorough restudy of the highway needs and of the funds necessary to provide an integrated highway system is needed because demographic changes have occurred since the 1954 apportionment study and the adoption of the constitutional amendment; any inquiry into the validity of the present constitutional distribution formula should also consider whether the three basic classifications are valid or whether additional categories might be added; bonding and interest limitations should be re-evaluated and authority for making changes should be vested with the legislature; a study of municipal state aid street mileage limitations is warranted because of a 66 percent increase in eligible communities.	
1974	Minnesota Constitution of 1857 amended and restructured: Mileage limitation on all classes of roads deleted; Highway user tax distribution fund allocation formula unchanged and retained in constitution; provisions renumbered;	

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<u>DATE</u>	<u>EVENT OR ACTIVITY</u>	<u>CITATION</u>
1975	Gas tax increased from seven to nine cents per gallon. Amendment to the apportionment of five percent of the net highway user tax distribution fund set aside pursuant to Minn. Const., art. 14, sec. 5: 60 percent, instead of 70 percent to the trunk highway fund and 31 percent, instead of 21 percent to the county turnback account.	Minn. Laws 1975, c. 203. Minn. Laws 1975, c. 203.
1979	Municipal state aid system mileage limit increased from 2,000 miles to 2,500 miles.	Minn. Laws 1979, c. 167.
1980	Gas tax increased from nine to eleven cents per gallon.	Minn. Laws 1980, c. 608.
1981	Gas tax increased from 11 to 13 cents per gallon. Amendments to allocation of revenue from the motor vehicle excise tax.	Minn. Laws 1981, c. 363. Minn. Laws 1981, c. 363.
1982	Motor vehicle excise tax increased from four to five percent on the purchase price of any motor vehicle.	Minn. Laws 1982, 3spl.
1983	Motor vehicle excise tax increased to six percent of the purchase price of any motor vehicle. Gas tax increased from 13 cents to 16 cents per gallon until December 31, 1983, and to 17 cents per gallon on January 1, 1984 and thereafter. Gas tax on aviation fuel reduced from 13 cents to five cents per gallon. Phased crediting of motor vehicle excise tax receipts to the highway user tax distribution fund, scheduled to begin June 30, 1983, delayed to July 1, 1985. Other scheduled increases in credits to the highway user fund postponed two years. Amendment to apportionment of five percent of the net highway user tax distribution fund set aside pursuant to Minn. Const., art. 14, section 5: 51 percent, instead of 60 percent, to the trunk highway fund, 41 percent, instead of 31 percent, to the county turnback account and 8 percent, instead of 9 percent, to the municipal account. <u>Use Road Revenue for the Roads That Are Used-Citizens League Recommendations:</u> Reduce the size of the overall 130,000 mile road and bridge system, beginning with a transfer of some 5,300 miles of trunk highways to local control; no recommendation as to proper size of county state-aid road system; the five percent turnback account should be used entirely for upgrading county roads being returned to cities and townships; an independent commission should be appointed to determine how the constitutional allocation formula for distribution of highway user funds should be changed; specific enumeration of trunk highway routes one through seventy should be removed from the constitution; legislation should be passed mandating a weight-mile tax on heavy vehicles;	Minn. Laws 1983, c. 342. Minn. Laws 1983, c. 17. Minn. Laws 1983, c. 326. Minn. Laws 1983, c. 17. Minn. Laws 1983, c. 17.

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<u>DATE</u>	<u>EVENT OR ACTIVITY</u>	<u>CITATION</u>
1984	Phased crediting of motor vehicle excise tax receipts to the highway user tax distribution fund, scheduled to begin July 1, 1985, advanced to July 1, 1984. Other scheduled increases in credits to the highway user fund unchanged.	Minn. Laws 1984, c. 654.
	<p>Phase II Final Report of the Highway Jurisdiction Task Force-Metropolitan Council Transportation Advisory Board. Recommendations: the rationale and objectives of the sources and distribution of funding provided for highways and streets in Minnesota should be re-examined; a distribution of state collected user funds to counties and local units of government which is broader and more closely to the contributions made by the residents of each county and local unit should be considered.</p> <p>Highway Study Commission, Final Report-Recommendations: county and regional proposals for highway jurisdiction transfers should be coordinated by the Commissioner of Transportation; limits on state-aid system mileage and the formula for allocating federal aid secondary funds should be amended or deleted so as to eliminate legal obstacles to jurisdiction transfers; former trunk highways turned back to county state-aid status should be exempt from the County State-Aid standards.</p>	Publication No. 26-84-126.

TABLE B.1
25-YEAR CONSTRUCTION NEEDS ON COUNTY STATE AID HIGHWAYS
(Chapter 2)

COUNTY	TOTAL CONSTRUCTION NEEDS	TOTAL CSAH MILES	ADT=0-199		ADT=200-299		ADT=400-749		ADT=750 PLUS	
			MILES	% OF NEEDS	MILES	% OF NEEDS	MILES	% OF NEEDS	MILES	% OF NEEDS
AITKIN	\$42,297,905	369.13	268.5	74.0%	63.6	9.8%	32.6	11.6%	4.4	4.6%
ANOKA	42,216,474	243.28	3.0	0.3	10.3	2.2	35.7	13.1	194.2	84.5
BECKER	28,937,584	467.50	182.7	36.1	183.3	36.7	71.3	15.6	30.2	11.6
BELTRAMI	48,282,140	466.29	219.7	44.4	120.4	14.5	71.8	20.8	54.4	20.3
BENTON	17,775,384	224.19	67.0	20.8	75.3	30.9	54.6	31.7	27.3	16.6
BIG STONE	8,024,410	211.70	163.6	60.0	35.4	20.5	8.8	5.5	3.9	14.0
BLUE EARTH	68,268,187	415.96	125.5	24.0	149.9	29.2	79.3	22.6	61.3	24.2
BROWN	28,381,751	317.67	103.8	25.5	98.5	21.8	69.5	27.5	45.8	25.1
CARLTON	29,127,394	294.44	133.8	48.3	54.3	18.5	31.2	9.5	75.2	23.8
CARVER	39,431,497	207.01	25.4	13.0	40.7	10.6	61.1	27.8	79.8	48.7
CASS	48,832,324	529.80	278.0	47.3	128.0	19.2	94.2	17.2	29.7	16.3
CHIPPEWA	24,494,339	244.22	131.8	31.9	72.3	34.4	30.6	21.0	9.5	12.7
CHISAGO	32,752,077	226.08	42.6	15.8	39.3	16.5	73.4	33.5	70.8	34.2
CLAY	57,191,387	406.63	183.2	39.8	51.1	7.6	89.4	16.2	82.9	36.4
CLEARWATER	23,729,489	327.59	192.3	62.2	106.2	22.0	27.1	13.6	2.1	2.3
COOK	29,453,501	178.08	111.0	63.3	41.3	21.1	20.1	9.4	5.7	6.2
COTTONWOOD	35,296,788	316.85	126.6	29.7	91.3	24.7	72.9	31.5	26.0	14.1
CROW WING	41,319,517	373.38	102.3	30.8	109.7	28.1	86.1	20.1	75.3	20.9
DAKOTA	69,786,474	272.56	19.7	7.2	24.6	5.2	36.1	10.9	192.2	76.6
DODGE	30,483,848	249.63	117.6	46.3	73.5	23.7	48.0	22.3	10.6	7.8
DOUGLAS	30,602,218	387.21	132.1	29.7	115.8	18.1	89.6	26.4	49.7	25.8
FARIBAULT	56,530,817	349.91	120.3	27.3	123.4	26.9	74.2	23.4	32.0	22.4
FILLMORE	66,474,851	395.14	186.4	50.9	144.7	31.6	48.3	11.1	15.8	6.5
FREEBORN	52,260,985	447.79	100.3	20.5	154.1	30.1	126.4	29.3	67.1	20.1
GOODHUE	49,514,703	326.62	65.0	19.8	96.8	18.1	114.3	39.8	50.5	22.3
GRANT	12,469,680	228.85	146.8	46.7	39.1	22.2	39.4	25.2	3.6	5.8
HENNEPIN	248,744,516	498.91	13.2	6.9	6.2	0.8	22.4	2.6	457.1	89.7
HOUSTON	39,592,695	250.18	112.3	49.5	95.3	26.4	34.2	18.6	8.5	5.6
HUBBARD	23,464,156	325.82	164.3	46.8	120.7	34.1	28.4	12.1	12.4	6.9
ISANTI	20,100,621	226.14	52.9	18.8	89.7	33.3	44.0	19.8	39.6	28.2
ITASCA	70,177,622	648.85	285.8	48.0	192.6	22.9	103.4	15.2	67.1	13.9
JACKSON	54,654,567	370.69	105.9	17.7	162.9	36.6	67.8	26.6	34.0	19.1
KANABEC	20,503,055	211.67	106.6	40.1	65.0	30.6	32.8	23.3	7.3	6.0
KANDIYOHI	39,415,247	419.10	111.3	24.5	140.7	23.7	106.4	34.7	60.7	17.2
KITTSON	30,909,370	372.64	283.3	68.5	80.9	25.8	7.1	4.9	1.4	0.8
KOOCHICHIING	31,652,839	248.93	204.0	75.2	30.1	12.1	5.2	2.8	9.6	9.9
LAC QUI PARLE	28,625,713	361.99	223.4	51.8	102.3	35.2	22.7	6.4	13.6	6.6
LAKE	27,599,608	214.02	115.8	56.4	38.2	13.4	38.8	18.8	21.3	11.4
LAKE OF THE WOODS	12,489,323	186.96	167.0	90.5	15.1	5.0	4.2	4.2	0.6	0.3
LE SUEUR	31,387,920	268.17	73.3	30.7	64.6	15.6	82.1	21.4	48.2	32.3
LINCOLN	19,838,929	255.05	137.1	31.9	96.1	45.6	16.0	11.9	6.0	10.7
LYON	37,345,087	317.59	117.7	24.1	134.0	46.8	48.4	18.7	17.4	10.4
MAHOMEN	12,291,993	195.19	149.8	72.8	32.2	12.7	11.8	9.3	1.5	5.2

COUNTY	TOTAL CONSTRUCTION NEEDS	TOTAL CSAH MILES	ADT=0-199		ADT=200-299		ADT=400-749		ADT=750 PLUS	
			MILES	% OF NEEDS	MILES	% OF NEEDS	MILES	% OF NEEDS	MILES	% OF NEEDS
MARSHALL	\$50,699,942	640.32	404.4	67.3%	180.8	23.0%	51.7	9.0%	3.3	0.7%
MARTIN	51,556,472	378.08	140.9	38.3	60.6	12.6	126.8	32.4	49.8	16.8
MCLEOD	32,485,135	236.80	45.4	14.1	73.6	26.1	73.3	35.0	44.5	24.8
MEEKER	23,784,452	272.12	97.7	35.8	114.1	42.2	45.8	17.9	14.6	4.1
MILLE LACS	23,752,680	253.77	100.4	34.2	89.7	23.2	45.1	20.6	18.6	22.0
MORRISON	32,148,642	430.08	124.7	18.5	203.6	44.0	80.6	21.3	21.2	16.1
MOWER	42,733,526	373.80	99.4	25.6	133.6	27.2	93.5	10.7	5.8	2.0
MURRAY	26,196,354	354.96	226.0	58.5	93.2	28.8	30.0	10.7	23.3	15.8
NICOLLET	24,897,068	245.32	104.2	41.2	63.1	17.4	54.9	25.6	23.3	15.8
NOBLES	46,293,775	343.77	132.6	32.4	134.1	31.2	21.4	5.2	55.7	31.1
NORMAN	39,694,015	393.53	294.2	67.8	83.6	23.4	13.9	7.4	1.9	1.3
OLMSTED	51,783,727	319.97	41.3	16.9	59.0	10.2	110.1	34.7	109.5	38.2
OTTER TAIL	76,836,355	912.61	202.2	9.7	389.6	35.6	186.4	27.1	134.5	27.7
PENNINGTON	17,455,341	260.60	168.5	75.2	50.1	13.3	19.1	4.2	22.9	7.3
PINE	62,794,792	473.22	290.5	57.5	89.6	19.4	37.9	12.3	55.2	10.8
PIPESTONE	19,699,099	227.31	141.6	57.4	58.1	26.3	24.5	10.3	3.1	5.9
POLK	80,527,273	810.18	475.1	62.4	184.1	12.5	81.1	11.9	69.9	13.2
POPE	20,651,193	299.33	192.8	55.0	92.7	32.8	7.7	5.7	6.2	6.5
RAMSEY	123,183,680	228.24	0.3	.0	2.9	0.5	7.4	1.9	217.6	97.5
RED LAKE	15,405,725	186.39	119.4	60.1	36.3	7.5	23.0	18.3	7.8	14.1
REDWOOD	36,626,765	385.10	136.7	34.6	122.6	26.0	105.1	32.0	20.8	7.4
RENVILLE	60,234,575	449.75	174.3	29.9	156.3	27.5	93.5	29.2	25.7	13.3
RICE	37,048,299	280.78	72.1	22.5	81.8	18.9	82.1	29.1	44.8	29.5
ROCK	26,409,276	259.48	93.9	29.2	95.8	42.2	48.5	19.1	21.2	9.6
ROSEAU	35,271,010	482.62	370.7	81.5	92.4	11.8	15.9	4.4	3.6	2.3
SCOTT	36,884,415	186.59	17.7	3.8	30.1	7.5	54.1	18.8	84.6	69.8
SHERBURNE	14,009,098	217.09	17.2	10.6	70.2	32.5	77.0	29.9	52.7	27.0
SIBLEY	35,737,778	287.63	96.7	22.8	110.2	39.0	63.7	28.4	17.1	9.8
ST. LOUIS	213,821,589	1,361.79	481.5	34.7	266.9	17.0	283.2	22.2	330.2	26.1
STEARNS	57,818,214	603.30	70.9	5.8	206.5	19.9	145.2	25.6	180.7	48.7
STEELE	29,934,275	292.41	54.1	11.8	103.0	21.3	70.5	27.3	64.9	39.6
STEVENS	19,874,811	243.91	156.5	50.5	76.3	35.7	5.1	2.7	6.0	11.2
SWIFT	30,491,180	329.76	188.1	47.6	114.8	39.6	23.9	8.3	2.9	4.4
TODD	31,782,114	412.56	119.6	18.3	182.7	38.8	74.6	27.9	35.7	15.0
TRAVERSE	16,628,689	243.82	202.9	78.2	30.8	13.0	8.2	6.6	1.9	2.3
WABASHA	48,252,444	276.60	85.8	32.9	107.2	27.1	63.0	25.5	20.7	14.4
WADENA	14,571,315	229.45	125.8	44.0	73.9	33.8	17.3	10.1	12.5	12.1
WASECA	35,545,911	250.58	103.7	37.6	52.2	13.9	73.6	33.0	21.1	15.6
WASHINGTON	43,635,966	188.80	3.7	1.7	16.1	7.7	36.6	14.9	132.4	75.7
WATONWAN	30,836,526	232.96	88.9	33.4	69.9	25.6	41.3	22.0	32.8	19.0
WILKIN	25,326,690	312.46	167.3	58.0	114.4	24.8	25.8	11.5	5.0	5.6
WINONA	48,383,986	315.92	109.7	40.1	105.1	27.7	60.8	15.9	40.3	16.3
WRIGHT	47,183,739	403.91	6.4	1.2	67.0	11.1	176.3	41.8	154.3	45.9
YELLOW MEDICINE	31,082,414	346.88	172.5	36.2	124.7	43.6	41.2	15.9	8.6	4.2
STATE TOTAL	\$3,632,699,310	30,083.96	12,290.4	32.4%	8,372.3	20.6%	5,082.1	18.3%	4,339.2	28.7%
COUNTY MEDIAN				34.7%		23.4%		18.8%		14.9%

Source: Program Evaluation Division analysis of report prepared by Office of State Aid, Department of Transportation, 1985.

TABLE B.2
EFFECT OF CHANGING THE COUNTY STATE AID MILEAGE FACTOR FROM MILES TO LANE MILES^a
(Chapter 3)

County	1984 CSAH Miles	Mile Factor	1984 CSAH Lane Miles	Lane Mile Factor	Change in Factor	Dollar Impact
AITKIN	369.13	1.2270	738.86	1.2183	-0.0087	(4,454)
ANOKA	243.28	0.8087	538.60	0.8881	0.0794	40,785
BECKER	467.50	1.5540	935.00	1.5417	-0.0122	(6,284)
BELTRAMI	466.29	1.5500	932.58	1.5378	-0.0122	(6,268)
BENTON	224.19	0.7452	443.38	0.7311	-0.0141	(7,247)
BIG STONE	211.70	0.7037	423.40	0.6982	-0.0055	(2,846)
BLUE EARTH	415.96	1.3827	836.04	1.3786	-0.0041	(2,104)
BROWN	317.67	1.0559	629.22	1.0375	-0.0184	(9,451)
CARLTON	294.44	0.9787	599.50	0.9885	0.0098	5,032
CARVER	207.01	0.6881	405.42	0.6685	-0.0196	(10,063)
CASS	529.80	1.7611	1,060.42	1.7486	-0.0125	(6,428)
CHIPPewa	244.22	0.8118	488.44	0.8054	-0.0064	(3,283)
CHISAGO	226.08	0.7515	452.16	0.7456	-0.0059	(3,039)
CLAY	406.63	1.3517	813.26	1.3410	-0.0106	(5,466)
CLEARWATER	327.59	1.0889	653.18	1.0770	-0.0119	(6,097)
COOK	178.08	0.5919	346.26	0.5710	-0.0210	(10,775)
COTTONWOOD	316.85	1.0532	633.70	1.0449	-0.0083	(4,259)
CROW WING	373.38	1.2411	746.36	1.2307	-0.0104	(5,358)
DAKOTA	272.56	0.9060	609.62	1.0052	0.0992	50,939
DODGE	249.63	0.8298	499.26	0.8232	-0.0065	(3,356)
DOUGLAS	387.21	1.2871	773.00	1.2746	-0.0125	(6,407)
FARIBAULT	349.91	1.1631	699.82	1.1539	-0.0092	(4,704)
FILLMORE	395.14	1.3135	790.28	1.3031	-0.0103	(5,312)
FREEBORN	447.79	1.4885	897.30	1.4796	-0.0089	(4,563)
GOODHUE	326.62	1.0857	650.84	1.0732	-0.0125	(6,422)
GRANT	228.85	0.7607	457.70	0.7547	-0.0060	(3,076)
HENNEPIN	498.91	1.6584	1,268.12	2.0910	0.4326	222,118
HOUSTON	250.18	0.8316	500.36	0.8251	-0.0066	(3,363)
HUBBARD	325.82	1.0830	651.64	1.0745	-0.0085	(4,380)
ISANTI	226.14	0.7517	453.28	0.7474	-0.0043	(2,193)
ITASCA	648.85	2.1568	1,283.10	2.1157	-0.0411	(21,082)
JACKSON	370.69	1.2322	741.38	1.2225	-0.0097	(4,983)
KANABEC	211.67	0.7036	421.94	0.6957	-0.0079	(4,031)
KANDIYOHI	419.10	1.3931	838.20	1.3821	-0.0110	(5,634)
KITTSON	372.64	1.2387	745.28	1.2289	-0.0098	(5,009)
KOOCHICHING	248.93	0.8275	496.24	0.8183	-0.0092	(4,718)
LAC QUI PARLE	361.99	1.2033	727.06	1.1989	-0.0044	(2,259)
LAKE	214.02	0.7114	420.68	0.6937	-0.0177	(9,108)
LAKE OF THE WOODS	186.96	0.6215	366.52	0.6044	-0.0171	(8,778)
LE SUEUR	268.17	0.8914	536.34	0.8844	-0.0070	(3,605)
LINCOLN	255.05	0.8478	510.10	0.8411	-0.0067	(3,429)
LYON	317.59	1.0557	633.12	1.0440	-0.0117	(6,013)
MCLEOD	236.80	0.7871	473.60	0.7809	-0.0062	(3,183)
MAHOMEN	195.19	0.6488	390.38	0.6437	-0.0051	(2,624)
MARSHALL	640.32	2.1284	1,280.64	2.1117	-0.0168	(8,608)

County	1984 CSAH Miles	Mile Factor	1984 CSAH Lanemiles	Lane Mile Factor	Change in Factor	Dollar Impact
MARTIN	378.08	1.2567	757.40	1.2489	-0.0079	(4,033)
MEEKER	272.12	0.9045	542.24	0.8941	-0.0104	(5,351)
MILLE LACS	253.77	0.8435	507.54	0.8369	-0.0066	(3,411)
MORRISON	430.08	1.4296	864.92	1.4262	-0.0034	(1,752)
MONER	373.80	1.2425	748.46	1.2342	-0.0084	(4,297)
MURRAY	354.96	1.1799	705.92	1.1640	-0.0159	(8,158)
NICOLLET	245.32	0.8155	490.64	0.8090	-0.0064	(3,298)
NOBLES	343.77	1.1427	687.54	1.1337	-0.0090	(4,621)
NORMAN	393.53	1.3081	785.14	1.2946	-0.0135	(6,915)
OLMSTED	319.97	1.0636	643.42	1.0610	-0.0026	(1,355)
OTTER TAIL	912.61	3.0335	1,824.22	3.0080	-0.0255	(13,115)
PENNINGTON	260.60	0.8662	521.64	0.8601	-0.0061	(3,131)
PINE	473.22	1.5730	946.44	1.5606	-0.0124	(6,361)
PIPESTONE	227.31	0.7556	454.62	0.7496	-0.0060	(3,056)
POLK	810.18	2.6931	1,620.36	2.6718	-0.0212	(10,891)
POPE	299.33	0.9950	598.66	0.9871	-0.0078	(4,024)
RAMSEY	228.24	0.7587	564.65	0.9311	0.1724	88,504
RED LAKE	186.39	0.6196	371.78	0.6130	-0.0065	(3,352)
REDWOOD	385.10	1.2801	770.84	1.2711	-0.0090	(4,635)
RENVILLE	449.75	1.4950	899.50	1.4832	-0.0118	(6,046)
RICE	280.78	0.9333	563.74	0.9296	-0.0038	(1,929)
ROCK	259.48	0.8625	518.96	0.8557	-0.0068	(3,488)
ROSEAU	482.62	1.6042	965.24	1.5916	-0.0126	(6,488)
ST. LOUIS	1,361.79	4.5266	2,714.48	4.4760	-0.0507	(26,010)
SCOTT	186.59	0.6202	378.24	0.6237	0.0035	1,775
SHERBURNE	217.09	0.7216	432.82	0.7137	-0.0079	(4,070)
SIBLEY	287.63	0.9561	577.56	0.9524	-0.0037	(1,919)
STEARNS	603.30	2.0054	1,228.04	2.0249	0.0196	10,040
STEELE	292.41	0.9720	589.06	0.9713	-0.0007	(341)
STEVENS	243.91	0.8108	487.82	0.8044	-0.0064	(3,279)
SWIFT	329.76	1.0961	659.52	1.0875	-0.0086	(4,433)
TODD	412.56	1.3714	825.12	1.3606	-0.0108	(5,546)
TRAVERSE	243.82	0.8105	487.64	0.8041	-0.0064	(3,278)
WABASHA	276.60	0.9194	553.20	0.9122	-0.0072	(3,718)
WADENA	229.45	0.7627	458.90	0.7567	-0.0060	(3,084)
WASECA	250.58	0.8329	494.76	0.8158	-0.0171	(8,786)
WASHINGTON	188.80	0.6276	386.92	0.6380	0.0104	5,352
WATONWAN	232.96	0.7744	462.46	0.7626	-0.0118	(6,061)
WILKIN	312.46	1.0386	624.92	1.0304	-0.0082	(4,200)
WINONA	315.92	1.0501	631.04	1.0405	-0.0096	(4,924)
WRIGHT	403.91	1.3426	813.92	1.3421	-0.0005	(266)
YELLOW MEDICINE	346.88	1.1530	693.76	1.1440	-0.0091	(4,663)
GRAND TOTAL	30,083.96	100.0000	60,645.63	100.0000	.0000	0

Source: Program Evaluation Division analysis of 1985 data from MnDOT Office of State Aid

^aThis table shows the impact of Chapter 3's recommendation that the mileage factor in the CSAH formula be modified. Dollar impacts shown assume that the mileage factor would remain 30 percent of the CSAH formula.

TABLE B.3
EFFECT OF CHANGING THE CSAH FORMULA'S VEHICLE REGISTRATION FACTOR TO A MEASURE OF VEHICLE MILES
(Chapter 3)

County	Vehicle Registration Factor	Impact of Using a Vehicle Mile Factor			Impact of Using a Vehicle Mile Per Lane Mile Factor		
		Vehicle Mile Factor	Change in Factor	Dollar Impact (\$)	Vehicle Miles Per Lane Mile Factor	Change in Factor	Dollar Impact (\$)
AITKIN	0.3565	0.3399	-0.0166	(2,844)	0.3441	-0.0124	(2,125)
ANOKA	4.3178	4.9082	0.5904	101,033	6.8163	2.4985	427,582
BECKER	0.7057	0.8771	0.1714	29,333	0.7017	-0.0040	(689)
BELTRAMI	0.7145	0.9805	0.2660	45,520	0.7864	0.0719	12,308
BENTON	0.5592	0.5265	-0.0327	(5,590)	0.8883	0.3291	56,315
BIG STONE	0.2132	0.1785	-0.0347	(5,946)	0.3153	0.1021	17,467
BLUE EARTH	1.2707	1.0625	-0.2082	(35,632)	0.9506	-0.3201	(54,781)
BROWN	0.8006	0.8042	0.0036	616	0.9560	0.1554	26,594
CARLTON	0.7738	0.8521	0.0783	13,396	1.0631	0.2893	49,514
CARVER	0.8864	0.9310	0.0446	7,630	1.7176	0.8312	142,254
CASS	0.5163	0.7060	0.1897	32,457	0.4980	-0.0183	(3,138)
CHIPPEWA	0.4113	0.3493	-0.0620	(10,617)	0.5349	0.1236	21,144
CHISAGO	0.7025	0.9174	0.2149	36,784	1.5177	0.8152	139,506
CLAY	1.0345	1.1863	0.1518	25,981	1.0911	0.0566	9,688
CLEARWATER	0.2150	0.2960	0.0810	13,865	0.3390	0.1240	21,218
COOK	0.1235	0.2342	0.1107	18,942	0.5059	0.3824	65,440
COTTONWOOD	0.4229	0.6537	0.2308	39,490	0.7715	0.3486	59,665
CROW WING	1.1116	1.0504	-0.0612	(10,475)	1.0527	-0.0589	(10,082)
DAKOTA	4.6181	4.4917	-0.1264	(21,635)	5.5112	0.8931	152,839
DODGE	0.3965	0.4234	0.0269	4,606	0.6344	0.2379	40,705
DOUGLAS	0.7162	0.8845	0.1683	28,804	0.8559	0.1397	23,907
FARIBAUT	0.5558	0.7439	0.1881	32,182	0.7951	0.2393	40,944
FILLMORE	0.5718	0.6058	0.0340	5,820	0.5734	0.0016	273
FREEBORN	0.9269	1.3411	0.4142	70,881	1.1179	0.1910	32,692
GOODHUE	1.0453	0.7535	-0.2918	(49,939)	0.8660	-0.1793	(30,691)
GRANT	0.2271	0.2225	-0.0046	(793)	0.3636	0.1365	23,353
HENNEPIN	22.7514	22.1676	-0.5838	(99,901)	13.0754	-9.6760	(1,655,878)
HOUSTON	0.4584	0.3878	-0.0706	(12,080)	0.5797	0.1213	20,765
HUBBARD	0.3655	0.4047	0.0392	6,704	0.4645	0.0990	16,943
ISANTI	0.5605	0.4983	-0.0622	(10,637)	0.8224	0.2619	44,813
ITASCA	1.1356	0.9951	-0.1405	(24,044)	0.5801	-0.5555	(95,064)
JACKSON	0.3739	0.7569	0.3830	65,552	0.7637	0.3898	66,707
KANABEC	0.2998	0.2690	-0.0308	(5,269)	0.4769	0.1771	30,305
KANDIYOH	0.9978	1.0710	0.0732	12,522	0.9557	-0.0421	(7,203)
KITTSON	0.1927	0.2777	0.0850	14,551	0.2787	0.0860	14,724
KOOCHICING	0.4452	0.2172	-0.2280	(39,012)	0.3274	-0.1178	(20,152)
LAC QUI PARLE	0.2882	0.4406	0.1524	26,084	0.4533	0.1651	28,255
LAKE	0.3211	0.4320	0.1109	18,972	0.7681	0.4470	76,488
LAKE OF THE WOODS	0.1037	0.1038	0.0001	23	0.2119	0.1082	18,518
LE SUEUR	0.6190	0.6089	-0.0101	(1,726)	0.8492	0.2301	39,396
LINCOLN	0.2045	0.3274	0.1229	21,036	0.4801	0.2756	47,167
LYON	0.6637	0.5335	-0.1302	(22,288)	0.6302	-0.0335	(5,725)
MCLEOD	0.8748	0.6596	-0.2152	(36,830)	1.0417	0.1669	28,568

County	Impact of Using a				Impact of Using a			
	Vehicle Registration Factor	Vehicle Mile Factor			Vehicle Miles Per Lane Mile	Vehicle Mile Per Lane Mile Factor		
		Vehicle Mile Factor	Change in Factor	Dollar Impact (\$)		Factor	Change in Factor	Dollar Impact (\$)
MAHONMEN	0.1389	0.1774	0.0385	6,581	0.3398	0.2009	34,385	
MARSHALL	0.3704	0.6004	0.2300	39,368	0.3507	-0.0197	(3,371)	
MARTIN	0.7174	0.8420	0.1246	21,315	0.8315	0.1141	19,525	
MEEKER	0.5455	0.4458	-0.0997	(17,064)	0.6149	0.0694	11,883	
MILLE LACS	0.4903	0.4378	-0.0525	(8,977)	0.6443	0.1550	26,521	
MORRISON	0.7050	0.7727	0.0677	11,590	0.6683	-0.0367	(6,288)	
MOWER	1.0583	0.8538	-0.2045	(34,991)	0.8533	-0.2050	(35,082)	
MURRAY	0.3094	0.3754	0.0660	11,290	0.3977	0.0883	15,119	
NICOLLET	0.5837	0.4049	-0.1788	(30,602)	0.6173	0.0336	5,742	
NOBLES	0.6287	0.6881	0.0594	10,162	0.7486	0.1199	20,516	
NORMAN	0.2699	0.3354	0.0655	11,208	0.3195	0.0496	8,492	
OLMSTED	2.3905	1.6984	-0.6921	(118,438)	1.9745	-0.4160	(71,199)	
OTTER TAIL	1.3510	1.8539	0.5029	86,060	0.7602	-0.5908	(101,113)	
PENNINGTON	0.3778	0.3288	-0.0490	(8,388)	0.4715	0.0937	16,027	
PINE	0.4850	0.8095	0.3245	55,534	0.6398	0.1548	26,487	
PIPESTONE	0.3034	0.2819	-0.0215	(3,687)	0.4637	0.1603	27,439	
POLK	0.8755	1.2036	0.3281	56,141	0.5556	-0.3199	(54,748)	
POPE	0.2864	0.3154	0.0290	4,968	0.3941	0.1077	18,433	
RAMSEY	10.6808	7.3362	-3.3446	(572,364)	9.7183	-0.9625	(164,711)	
RED LAKE	0.1393	0.1888	0.0495	8,473	0.3799	0.2406	41,170	
REDWOOD	0.5490	0.6300	0.0810	13,864	0.6113	0.0623	10,668	
RENVILLE	0.6033	0.6917	0.0884	15,124	0.5752	-0.0281	(4,813)	
RICE	1.0484	0.8018	-0.2466	(42,202)	1.0639	0.0155	2,645	
ROCK	0.2787	0.4482	0.1695	29,001	0.6460	0.3673	62,849	
ROSEAU	0.3410	0.3531	0.0121	2,068	0.2736	-0.0674	(11,531)	
ST. LOUIS	4.9917	5.3094	0.3177	54,369	1.4630	-3.5287	(603,870)	
SCOTT	1.2281	1.1067	-0.1214	(20,783)	2.1885	0.9604	164,352	
SHERBURNE	0.7383	0.8293	0.0910	15,572	1.4332	0.6949	118,916	
SIBLEY	0.4129	0.4886	0.0757	12,954	0.6328	0.2199	37,628	
STEARNS	2.5955	2.9704	0.3749	64,149	1.8092	-0.7863	(134,558)	
STEELE	0.7785	1.3208	0.5423	92,812	1.6772	0.8987	153,798	
STEVENS	0.2850	0.2485	-0.0365	(6,244)	0.3811	0.0961	16,438	
SWIFT	0.3667	0.3524	-0.0143	(2,445)	0.3997	0.0330	5,646	
TODD	0.5758	0.7204	0.1446	24,747	0.6531	0.0773	13,223	
TRAVERSE	0.1718	0.1537	-0.0181	(3,089)	0.2358	0.0640	10,959	
WABASHA	0.5353	0.5110	-0.0243	(4,152)	0.6910	0.1557	26,642	
WADENA	0.3509	0.3267	-0.0242	(4,145)	0.5325	0.1816	31,073	
WASECA	0.4940	0.5189	0.0249	4,269	0.7846	0.2906	49,724	
WASHINGTON	2.6183	1.7666	-0.8517	(145,752)	3.4152	0.7969	136,377	
WATONWAN	0.3538	0.5491	0.1953	33,421	0.8881	0.5343	91,439	
WILKIN	0.2316	0.3550	0.1234	21,119	0.4249	0.1933	33,084	
WINONA	1.0208	0.7904	-0.2304	(39,427)	0.9369	-0.0839	(14,358)	
WRIGHT	1.4910	1.9238	0.4328	74,063	1.7680	0.2770	47,396	
YELLOW MEDICINE	0.3829	0.4121	0.0292	5,002	0.4443	0.0614	10,515	
GRAND TOTAL	100.0000	100.0000	0.0000	0	100.0000	.0000	0	

Source: Program Evaluation Division analysis of 1983-85 data from MnDOT Office of State Aid and MnDOT Transportation Information System.

TABLE B.4
EFFECT OF ELIMINATING THE "24-FOOT
RESTRICTION" FROM STATE LAW^a

<u>County</u>	<u>Effect (\$)</u> <u>on 1985</u> <u>Allocation</u>	<u>Percent</u> <u>Change</u>
AITKIN	(61,714)	-3.0%
ANOKA	201,208	9.9
BECKER	(33,145)	-1.8
BELTRAMI	(33,004)	-1.4
BENTON	(19,060)	-1.8
BIG STONE	0	0.0
BLUE EARTH	(53,578)	-2.0
BROWN	(28,845)	-1.8
CARLTON	(10,316)	-0.7
CARVER	(4,047)	-0.3
CASS	(67,334)	-2.7
CHIPPEWA	(20,888)	-1.7
CHISAGO	(40,677)	-2.8
CLAY	(62,694)	-2.6
CLEARWATER	(36,212)	-2.5
COOK	(38,611)	-3.1
COTTONWOOD	(41,211)	-2.6
CROW WING	(53,423)	-2.5
DAKOTA	364,783	13.6
DODGE	(40,326)	-2.8
DOUGLAS	(29,202)	-1.7
FARIBAULT	(73,272)	-3.2
FILLMORE	(92,494)	-3.4
FREEBORN	(39,121)	-1.7
GOODHUE	(49,259)	-2.6
GRANT	0	0.0
HENNEPIN	1,244,125	13.2
HOUSTON	(54,183)	-3.1
HUBBARD	(29,013)	-2.1
ISANTI	(25,802)	-2.2
ITASCA	(85,461)	-2.7
JACKSON	(67,768)	-3.1
KANABEC	(27,262)	-2.4
KANDIYOHI	(39,005)	-2.0
KITTSO	(49,161)	-2.7
KOOCHICING	0	0.0
LAC QUI PARLE	(37,048)	-2.4
LAKE	(45,399)	-3.1
LAKE OF THE WOODS	0	0.0
LESEUER	(41,754)	-2.7
LINCOLN	(24,154)	-2.2
LYON	(38,644)	-2.2
MAHNOMEN	0	0.0
MARSHALL	(71,441)	-2.7
MARTIN	(55,269)	-2.5

<u>County</u>	<u>Effect (\$)</u> <u>on 1985</u> <u>Allocation</u>	<u>Percent</u> <u>Change</u>
MCLEOD	(22,895)	-1.5%
MEEKER	(25,802)	-1.9
MILLE LACS	(29,984)	-2.3
MORRISON	(27,553)	-1.6
MOWER	(19,598)	-1.0
MURRAY	(28,157)	-2.0
NICOLLET	(18,537)	-1.5
NOBLES	(33,753)	-1.7
NORMAN	(52,604)	-2.8
OLMSTED	(39,199)	-1.6
OTTER TAIL	(78,822)	-2.0
PENNINGTON	(19,565)	-1.7
PINE	(88,893)	-3.2
PIPESTONE	(28,702)	-2.4
POLK	(82,513)	-2.2
POPE	(23,706)	-2.0
RAMSEY	952,686	20.1
RED LAKE	0	0.0
REDWOOD	(32,358)	-1.8
RENVILLE	(69,853)	-2.9
RICE	(14,193)	-0.9
ROCK	(32,516)	-2.5
ROSEAU	(45,884)	-2.4
SCOTT	154,083	10.9
SHERBURNE	0	0.0
SIBLEY	(42,921)	-2.7
ST. LOUIS	(23,044)	-0.3
STEARNS	(61,362)	-2.1
STEELE	15,752	1.0
STEVENS	(12,081)	-1.1
SWIFT	(34,675)	-2.4
TODD	(37,309)	-2.2
TRAVERSE	(14,446)	-1.4
WABASHA	(64,490)	-3.3
WADENA	0	0.0
WASECA	(28,316)	-1.8
WASHINGTON	50,851	2.8
WATONWAN	(38,820)	-2.8
WILKIN	(32,994)	-2.4
WINONA	(51,885)	-2.6
WRIGHT	(63,700)	-2.7
YELLOW MEDICINE	(42,561)	-2.6
GRAND TOTAL	0	0.0

Source: MnDOT Office of State Aid, February 1985.

^aThe 24-foot restriction, described in Chapter 3, is a statutory limit on the highway needs counties can report. Counties can only claim needs on the center portions of CSAH roads in cities over 5,000 population.

TABLE B.5
COUNTY TAX EFFORT FOR HIGHWAYS DURING 1984
(Chapter 4)

COUNTY	POPULATION (1983 est.)	1983 TOTAL TAXABLE VALUATION	PER CAPITA VALUATION	1983 ROAD/ BRDG TAX LEVY PAYABLE '84	PER CAPITA LEVY	1983 ROAD/ BRDG MILL RATE PAYABLE '84	1983 SALES RATIO	EQUALIZED MILL RATE
AITKIN	13,595	\$ 96,109,408	\$ 7,069	\$ 518,988	\$38.17	5,400	0.799	4.315
ANOKA	207,355	954,612,669	4,604	5,097,620	24.58	5,340	0.842	4.496
BECKER	30,972	150,857,033	4,871	715,062	23.09	4,740	0.780	3.697
BELTRAMI	32,903	110,899,364	3,370	662,954	20.15	5,978	0.765	4.573
BENTON	26,434	122,669,031	4,641	904,316	34.21	7,372	0.798	5.883
BIG STONE	8,083	59,420,774	7,351	506,859	62.71	8,530	0.791	6.747
BLUE EARTH	52,844	356,723,591	6,751	2,846,676	53.87	7,980	0.798	6.368
BROWN	28,617	219,596,608	7,674	1,018,927	35.61	4,640	0.813	3.772
CARLTON	29,342	128,226,165	4,370	1,034,782	35.27	8,070	0.837	6.755
CARVER	39,573	233,130,887	5,891	1,203,881	30.42	5,164	0.822	4.245
CASS	21,334	149,977,607	7,030	900,013	42.19	6,001	0.805	4.831
CHIPPEWA	14,881	126,805,168	8,521	1,040,814	69.94	8,208	0.899	7.379
CHISAGO	27,559	120,388,157	4,368	978,273	35.50	8,126	0.764	6.208
CLAY	49,203	218,249,845	4,436	1,212,375	24.64	5,555	0.714	3.966
CLEARWATER	9,056	38,933,021	4,299	304,065	33.58	7,810	0.844	6.592
COOK	4,286	36,753,311	8,575	426,450	99.50	11,603	0.787	9.132
COTTONWOOD	14,178	194,445,212	13,715	775,833	54.72	3,990	0.931	3.715
CROW WING	42,287	248,293,263	5,872	1,173,932	27.76	4,728	0.756	3.574
DAKOTA	208,308	1,190,293,695	5,714	2,224,654	10.68	1,869	0.728	1.361
DODGE	15,144	126,362,045	8,344	950,235	62.75	7,520	0.880	6.618
DOUGLAS	29,505	149,918,411	5,081	747,041	25.32	4,983	0.796	3.966
FARIBAULT	19,218	238,152,027	12,392	1,015,044	52.82	4,262	0.898	3.827
FILLMORE	21,915	158,448,750	7,230	1,060,656	48.40	6,694	0.869	5.817
FREEBORN	35,398	279,317,590	7,891	1,250,223	35.32	4,476	0.975	4.364
GOODHUE	39,385	388,645,101	9,868	1,857,720	47.17	4,780	0.927	4.431
GRANT	7,209	71,476,015	9,915	450,539	62.50	6,303	0.834	5.257
HENNEPIN	945,970	7,200,505,246	7,612	17,272,856	18.26	2,399	0.834	2.001
HOUSTON	18,774	79,495,437	4,234	589,776	31.41	7,419	0.790	5.861
HUBBARD	15,264	91,762,884	6,012	660,140	43.25	7,194	0.826	5.942
ISANTI	25,203	83,715,749	3,322	970,011	38.49	11,587	0.751	8.702
ITASCA	45,047	308,153,728	6,841	5,190,580	115.23	6,844	0.883	14.873
JACKSON	13,549	219,926,816	16,232	811,529	59.90	3,690	0.915	3.376
KANABEC	12,366	47,743,579	3,861	525,178	42.47	1,000	0.782	8.602
KANDIYOHI	39,520	252,903,808	6,399	1,550,044	39.22	6,129	0.814	4.989
KITSON	6,774	83,266,094	12,292	443,891	65.53	5,331	0.838	4.467
KOOCHICHIING	16,759	62,967,749	3,757	811,156	48.40	2,882	0.741	9.546
LAC QUI PARLE	10,395	111,975,462	10,772	501,649	48.26	4,390	0.904	3.969
LAKE	12,740	43,620,462	3,424	680,040	53.38	5,590	0.796	12.410
LAKE OF THE WOODS	3,925	20,565,048	5,240	218,400	55.64	0.620	0.780	8.284
LE SUEUR	23,585	129,276,830	5,481	1,064,335	45.13	8,233	0.723	5.952
LINCOLN	7,972	72,602,675	9,107	457,395	57.38	6,300	0.895	5.638
LYON	25,770	184,508,136	7,160	800,764	31.07	4,340	0.917	3.980
MAHONEN	5,677	30,746,800	5,416	220,146	38.78	7,160	0.738	5.284
MARSHALL	12,804	127,350,206	9,946	709,467	55.41	5,571	0.754	4.201
MARTIN	24,669	295,239,188	11,968	1,195,716	48.47	4,050	0.876	3.548
MCLEOD	29,971	182,189,065	6,079	1,272,224	42.45	6,983	0.795	5.551

COUNTY	POPULATION (1983 est)	1983 TOTAL TAXABLE VALUATION	PER CAPITA VALUATION	1983 ROAD/ BRDG TAX LEVY PAYABLE '84	PER CAPITA LEVY	1983 ROAD/ BRDG MILL RATE PAYABLE '84	1983 SALES RATIO	EQUALIZED MILL RATE
MEEKER	20,920	\$154,828,891	\$ 7,401	\$ 795,819	\$38.04	5.140	0.894	4.595
MILLE LACS	18,316	76,376,043	4,170	865,033	47.23	11.326	0.822	9.310
MORRISON	30,046	125,539,509	4,178	1,227,648	40.86	9.779	0.839	8.205
MOWER	39,816	275,705,415	6,924	1,775,263	44.59	6.439	0.940	6.053
MURRAY	11,441	145,960,533	12,758	649,518	56.77	4.450	0.993	4.419
NICOLLET	27,976	179,696,725	6,423	885,905	31.67	4.930	0.731	3.604
NOBLES	21,934	194,630,336	8,873	700,668	31.94	3.600	0.918	3.305
NORMAN	9,534	94,793,741	9,943	792,476	83.12	8.360	0.872	7.290
OLMSTED	95,791	523,411,137	5,464	2,718,067	28.37	5.193	0.783	4.066
OTTER TAIL	54,864	271,461,678	4,948	1,095,344	19.96	4.035	0.770	3.107
PENNINGTON	14,036	75,563,836	5,384	524,034	37.33	6.935	0.918	6.366
PINE	20,576	92,792,730	4,510	990,654	48.15	10.676	0.756	8.071
PIPESTONE	11,405	83,379,776	7,311	718,734	63.02	8.620	0.936	8.068
POLK	34,562	253,438,862	7,333	1,480,079	42.82	5.840	0.801	4.678
POPE	11,854	85,633,637	7,224	480,404	40.53	5.610	0.798	4.477
RAMSEY	457,123	2,985,106,415	6,530	5,361,861	11.73	1.796	0.871	1.564
RED LAKE	5,340	39,548,474	7,406	502,266	94.06	12.700	0.858	10.897
REDWOOD	18,835	238,650,512	12,671	942,192	50.02	3.948	0.907	3.581
RENVILLE	19,685	275,112,747	13,976	800,576	40.67	2.910	0.911	2.651
RICE	47,012	210,675,528	4,481	1,305,975	27.78	6.199	0.818	5.071
ROCK	10,728	107,780,106	10,047	615,427	57.37	5.710	0.931	5.316
ROSEAU	12,845	82,464,726	6,420	389,974	30.36	4.729	0.837	3.958
SCOTT	48,885	262,935,682	5,379	1,808,480	36.99	6.878	0.755	5.193
SHERBURNE	33,258	226,451,315	6,809	700,186	21.05	3.092	0.867	2.681
SIBLEY	15,671	159,265,334	10,162	929,356	59.30	5.836	0.872	5.089
STEARNS	113,815	510,752,633	4,488	2,493,489	21.91	4.882	0.797	3.891
STEELE	30,498	189,197,939	6,204	781,372	25.62	4.130	0.858	3.543
STEVENS	11,191	83,749,137	7,484	621,419	55.53	7.420	0.804	5.966
ST. LOUIS	213,622	805,740,617	3,772	7,396,681	34.63	9.180	0.794	7.289
SWIFT	12,776	111,202,978	8,704	607,167	47.52	5.460	0.898	4.903
TODD	26,034	98,920,362	3,800	985,242	37.84	9.960	0.811	8.078
TRAVERSE	5,402	73,158,899	13,543	624,777	115.66	8.540	0.740	6.320
WABASHA	19,178	113,683,955	5,928	854,902	44.58	7.520	0.848	6.377
WADENA	14,001	44,854,265	3,204	378,569	27.04	8.440	0.759	6.406
WASECA	18,711	154,336,650	8,248	1,118,479	59.78	7.247	0.862	6.247
WASHINGTON	120,502	678,413,426	5,630	1,970,788	16.35	2.905	0.772	2.243
WATONWAN	12,046	140,077,062	11,629	750,814	62.33	5.360	0.787	4.218
WILKIN	8,348	92,653,496	11,099	627,169	75.13	6.769	0.832	5.632
WINONA	46,478	199,946,732	4,302	1,222,070	26.29	6.112	0.821	5.018
WRIGHT	62,199	346,089,538	5,564	2,418,820	38.89	6.989	0.825	5.766
YELLOW MEDICINE	13,095	133,586,387	10,201	855,356	65.32	6.403	0.899	5.756
STATE TOTAL	4,145,667	\$26,794,767,474	\$6,463	\$119,586,282	\$28.85	4.463	0.830	3.704
COUNTY MEDIAN		\$145,960,533	\$6,751	\$ 865,033	\$42.19	6.129	0.822	5.089

Source: Program Evaluation Division analysis of report prepared by Governmental Information Division, Office of the State Auditor, 1985.

TABLE B.6

SOURCES OF REVENUE FOR COUNTY HIGHWAYS, 1983
(Chapter 4)

COUNTY	PROPERTY TAXES	% FROM TAXES	STATE AIDS	% FROM STATE AIDS	TOTAL
AITKIN	\$ 392,474	18.5%	\$ 1,194,020	56.4%	\$2,116,325
ANOKA	4,234,408	45.6	1,967,181	21.2	9,295,349
BECKER	568,712	23.5	1,321,585	54.6	2,420,900
BELTRAMI	515,098	12.4	2,939,258	70.8	4,153,172
BENTON	594,092	17.6	2,133,278	63.1	3,378,671
BIG STONE	435,331	28.2	709,675	45.9	1,545,285
BLUE EARTH	2,416,792	37.1	2,567,122	39.4	6,508,217
BROWN	738,096	32.0	1,053,049	45.6	2,309,657
CARLTON	850,625	24.7	1,564,835	45.4	3,446,954
CARVER	940,801	28.8	1,418,387	43.4	3,269,038
CASS	743,380	25.3	1,499,640	51.1	2,936,510
CHIPPEWA	955,952	33.0	1,286,408	44.4	2,894,440
CHISAGO	751,265	25.2	1,537,203	51.6	2,977,534
CLAY	1,342,015	32.1	1,873,698	44.8	4,180,599
CLEARWATER	242,101	8.0	2,393,437	79.6	3,008,259
COOK	321,446	22.3	757,662	52.5	1,443,096
COTTONWOOD	573,390	27.7	1,139,094	55.1	2,066,276
CROW WING	853,943	28.0	1,243,445	40.8	3,047,343
DAKOTA	1,871,609	37.3	1,723,575	34.4	5,012,132
DODGE	764,584	26.9	1,483,697	52.2	2,843,984
DOUGLAS	611,653	24.0	1,100,451	43.2	2,546,195
FARIBAUT	882,016	24.4	1,986,667	54.9	3,620,309
FILLMORE	969,910	26.6	1,987,522	54.4	3,650,755
FREEBORN	1,207,358	24.7	3,104,105	63.4	4,895,261
GOODHUE	1,369,900	35.2	1,550,196	39.8	3,892,202
GRANT	367,641	24.3	802,236	53.0	1,512,439
HENNEPIN	12,059,940	49.7	6,806,425	28.0	24,268,043
HOUSTON	376,497	16.4	1,410,424	61.4	2,297,227
HUBBARD	543,829	28.7	1,000,340	52.8	1,895,200
ISANTI	613,740	28.4	855,843	39.5	2,164,624
ITASCA	3,202,961	38.1	2,860,569	34.0	8,412,818
JACKSON	693,549	24.5	1,730,038	61.2	2,827,785
KANABEC	340,852	20.2	952,971	56.5	1,685,541
KANDIYOHI	1,451,918	33.8	1,377,197	32.1	4,293,642
KITTSON	405,060	22.7	934,034	52.4	1,783,338
KOOCHICHIING	575,264	17.5	1,967,140	59.8	3,286,805
LAC QUI PARLE	416,605	25.3	893,800	54.3	1,645,399
LAKE	512,927	22.1	870,118	37.5	2,323,065
LAKE OF THE WOODS	256,521	21.8	671,602	57.0	1,177,503
LE SUEUR	775,360	26.8	1,374,390	47.5	2,894,833
LINCOLN	364,048	22.2	955,331	58.3	1,637,944
LYON	556,985	15.8	2,087,741	59.2	3,523,867
MAHOMEN	171,409	16.1	660,701	61.9	1,066,566

COUNTY RECEIPTS	PROPERTY TAXES	% FROM TAXES	STATE AIDS	% FROM STATE AIDS	TOTAL
MARSHALL	\$ 647,232	13.3%	\$3,315,084	67.9%	\$4,882,554
MARTIN	1,006,199	26.4	1,978,710	52.0	3,807,557
MCLEOD	899,597	25.7	1,759,244	50.2	3,502,036
MEEKER	605,389	23.2	1,098,814	42.1	2,610,810
MILLIE LACS	611,806	27.3	925,431	41.2	2,243,955
MORRISON	725,523	24.5	1,324,239	44.7	2,964,005
MOWER	1,307,880	31.1	1,878,915	44.7	4,203,848
MURRAY	501,697	20.3	1,433,492	58.0	2,470,478
NICOLLET	675,128	32.1	940,777	44.7	2,102,490
NOBLES	703,012	28.8	1,333,368	54.7	2,439,387
NORMAN	720,653	27.1	1,437,436	54.0	2,660,342
OLMSTED	1,926,951	44.6	1,117,120	25.9	4,316,488
OTTER TAIL	846,316	13.6	3,897,452	62.8	6,206,130
PENNINGTON	406,908	30.2	602,786	44.7	1,348,658
PINE	734,794	18.2	2,454,780	60.7	4,041,488
PIPESTONE	555,373	32.9	608,458	36.0	1,688,320
POLK	1,306,531	16.5	3,520,766	44.4	7,920,775
POPE	369,693	17.3	1,267,692	59.4	2,133,695
RAMSEY	5,176,515	42.9	3,509,862	29.1	12,053,592
RED LAKE	478,967	26.5	982,831	54.3	1,808,493
REDWOOD	779,495	28.7	1,328,976	49.0	2,713,576
RENVILLE	655,491	19.0	1,978,237	57.3	3,453,600
RICE	941,408	31.9	1,237,369	42.0	2,949,273
ROCK	468,579	27.0	989,380	57.0	1,737,211
ROSEAU	399,071	12.6	2,180,034	68.9	3,163,653
SCOTT	1,416,557	43.2	620,195	18.9	3,275,783
SHERBURNE	575,021	30.6	825,335	44.0	1,876,812
SIBLEY	719,313	31.1	1,023,845	44.2	2,316,062
ST. LOUIS	4,193,500	26.2	6,002,619	37.5	16,023,296
STEARNS	1,796,825	24.1	3,974,299	53.4	7,448,073
STEELE	579,983	15.6	1,238,938	33.4	3,709,279
STEVENS	485,248	32.8	453,679	30.7	1,479,130
SWIFT	639,308	29.9	981,287	45.9	2,138,851
TODD	661,634	21.0	1,633,890	51.9	3,147,489
TRAVERSE	566,158	29.0	1,026,416	52.7	1,949,476
WABASHA	622,921	23.5	1,442,422	54.4	2,649,332
WADENA	250,491	10.5	1,699,006	71.2	2,387,696
WASECA	910,282	30.1	1,722,779	57.0	3,022,034
WASHINGTON	2,272,068	49.4	880,130	19.2	4,595,096
WATONWAN	640,548	29.0	962,931	43.6	2,206,378
WILKIN	548,184	27.4	1,042,098	52.0	2,002,984
WINONA	968,326	29.9	1,411,217	43.6	3,237,981
WRIGHT	1,769,238	27.3	2,962,324	45.7	6,480,742
YELLOW MEDICINE	731,438	23.7	1,805,351	58.5	3,085,304
STATE TOTAL	92,629,307	29.1%	144,556,104	45.4%	318,609,309
COUNTY MEDIAN		26.5%		51.6%	

Source: Program Evaluation Division analysis of report prepared by Governmental Information Division, Office of the State Auditor, 1985.

TABLE B.7

1985 COUNTY STATE AIDS RELATED TO LANE MILES
AND VEHICLE TRAFFIC
(Chapter 4)

<u>COUNTY</u>	<u>CSAH LANE MILES</u>	<u>AIDS PER LANE MILE</u>	<u>ANNUAL VEHICLE MILES</u>	<u>AIDS PER AVERAGE VEHICLE MILES PER DAY</u>
AITKIN	738.3	\$2,311	22,533,640	\$27.64
ANOKA	522.8	3,219	325,406,990	1.89
BECKER	932.3	1,648	58,151,070	9.64
BELTRAMI	934.6	2,134	65,005,405	11.20
BENTON	449.5	2,040	34,908,600	9.59
BIG STONE	422.1	1,998	11,831,475	26.01
BLUE EARTH	833.3	2,658	70,441,715	11.48
BROWN	636.8	2,026	53,317,375	8.83
CARLTON	599.6	2,259	56,491,780	8.75
CARVER	401.8	3,437	61,723,325	8.17
CASS	1,059.4	1,911	46,804,315	15.79
CHIPPEWA	488.0	2,182	23,155,600	16.79
CHISAGO	454.3	2,890	60,825,425	7.88
CLAY	812.4	2,608	78,651,660	9.83
CLEARWATER	653.4	1,819	19,625,685	22.10
COOK	352.5	2,906	15,526,370	24.08
COTTONWOOD	632.6	1,931	43,336,815	10.29
CROW WING	743.1	2,379	69,639,810	9.27
DAKOTA	580.8	3,718	297,793,280	2.65
DODGE	502.7	2,450	28,071,785	16.01
DOUGLAS	770.6	1,899	58,642,360	9.11
FARIBAULT	693.9	2,770	49,316,610	14.22
FILLMORE	789.2	2,920	40,164,600	20.94
FREEBORN	896.8	2,038	88,912,540	7.50
GOODHUE	650.0	2,602	49,955,360	12.36
GRANT	457.5	1,843	14,749,285	20.87
HENNEPIN	1,283.0	6,277	1,469,690,385	2.00
HOUSTON	502.6	2,967	25,711,330	21.17
HUBBARD	653.1	1,769	26,829,325	15.72
ISANTI	449.7	2,146	33,039,800	10.66
ITASCA	1,282.7	2,085	65,974,115	14.80
JACKSON	736.7	2,298	50,184,580	12.31
KANABEC	412.4	2,298	17,834,995	19.40
KANDIYOHI	835.0	2,056	71,004,180	8.82
KITTSO	746.7	1,803	18,413,155	26.69
KOOCHICHING	494.8	3,194	14,402,535	40.05
LAC QUI PARLE	728.6	1,923	29,212,775	17.51
LAKE	411.3	2,770	28,638,630	14.52
LAKE OF THE WOODS	369.0	2,919	6,884,265	57.10
LE SUEUR	534.2	2,482	40,370,460	11.99
LINCOLN	512.2	1,872	21,707,645	16.12
LYON	635.4	2,333	35,367,770	15.30
MAHNOMEN	389.9	2,162	11,758,475	26.17
MARSHALL	1,282.4	1,625	39,808,725	19.11

<u>COUNTY</u>	<u>CSAH LANE MILES</u>	<u>AIDS PER LANE MILE</u>	<u>ANNUAL VEHICLE MILES</u>	<u>AIDS PER AVERAGE VEHICLE MILES PER DAY</u>
MARTIN	755.9	\$2,463	55,820,545	\$12.17
MCLEOD	469.1	2,724	43,729,920	10.66
MEEKER	543.3	2,057	29,555,145	13.81
MILLE LACS	497.7	2,100	29,028,450	13.14
MORRISON	860.0	1,685	51,230,670	10.33
MOWER	752.0	2,306	56,608,215	11.18
MURRAY	710.0	1,686	24,886,795	17.56
NICOLLET	486.4	2,104	26,843,195	13.92
NOBLES	688.5	2,407	45,619,160	13.26
NORMAN	782.0	2,198	22,236,165	28.22
OLMSTED	632.1	3,123	112,603,230	6.40
OTTER TAIL	1,830.3	1,699	122,910,465	9.24
PENNINGTON	519.7	1,850	21,798,165	16.10
PINE	946.5	2,358	53,669,600	15.18
PIPESTONE	454.7	2,103	18,686,540	18.68
POLK	1,614.2	1,981	79,794,475	14.63
POPE	594.3	1,750	20,912,675	18.15
RAMSEY	546.6	7,163	486,385,130	2.94
RED LAKE	368.7	2,287	12,518,040	24.59
REDWOOD	774.1	1,885	41,769,140	12.75
RENVILLE	900.1	2,193	45,857,505	15.71
RICE	565.0	2,357	53,158,235	9.14
ROCK	520.9	2,110	29,712,825	13.50
ROSEAU	942.3	1,696	23,409,275	24.92
SCOTT	371.6	3,557	73,370,110	6.58
SHERBURNE	426.1	1,979	54,981,410	5.60
SIBLEY	575.8	2,286	32,393,385	14.83
ST. LOUIS	2,740.5	2,734	352,007,460	7.77
STEARNS	1,225.1	2,085	196,931,005	4.73
STEELE	581.1	2,028	87,570,070	4.91
STEVENS	485.3	1,737	16,476,100	18.68
SWIFT	661.6	1,994	23,364,745	20.61
TODD	829.8	1,763	47,762,075	11.18
TRAVERSE	487.1	1,797	10,193,355	31.34
WABASHA	552.1	3,129	33,881,125	18.61
WADENA	457.8	1,875	21,658,370	14.46
WASECA	503.0	2,704	34,405,630	14.43
WASHINGTON	382.2	4,019	117,124,485	4.79
WATONWAN	471.3	2,375	36,404,370	11.22
WILKIN	625.5	1,856	23,536,660	18.00
WINONA	624.6	2,605	52,403,415	11.33
WRIGHT	809.5	2,378	127,544,505	5.51
YELLOW MEDICINE	694.9	1,982	27,323,535	18.40
STATE TOTAL	60,527.5	\$2,374	6,629,891,390	\$7.91
COUNTY MEDIAN		\$2,182		\$13.81

Source: MnDOT 1985 County State Aid Highway Apportionment Data;
MnDOT Transportation Information System, January 28,
1985.

TABLE B.8

HIGHWAY AIDS TO COUNTIES AND CITIES WITHIN COUNTIES
(Chapter 4)

	COUNTY STATE AIDS	MUNICIPAL STATE AIDS	FEDERAL AID SECONDARY	FEDERAL AID URBAN	TOTAL AIDS	TOTAL AIDS PER CAPITA	PORTION OF ALL AIDS
AITKIN	\$2,047,141		\$149,641		2,196,782	161.59	0.9
ANOKA	2,035,031	3,815,936	101,830	214,457	6,167,254	29.74	2.5
BECKER	1,799,287	148,592	120,069	32,439	2,100,387	67.82	0.9
BELTRAMI	2,285,495	302,802	167,429	49,982	2,805,708	85.27	1.1
BENTON	1,068,133	179,535	60,135		1,307,803	49.47	0.5
BIG STONE	1,004,187		42,919		1,047,106	129.87	0.4
BLUE EARTH	2,722,880	534,075	200,363	130,792	3,588,110	67.90	1.5
BROWN	1,571,627	308,066	108,531	62,792	2,051,016	71.67	0.8
CARLTON	1,529,694	451,582	99,341	50,863	2,131,480	72.64	0.9
CARVER	1,598,960	463,059	138,148	38,100	2,238,267	56.56	0.9
CASS	2,454,258		187,953		2,642,211	123.85	1.1
CHIPPEWA	1,249,845	155,924	108,686	26,851	1,541,306	103.58	0.6
CHISAGO	1,466,990		100,578		1,567,568	56.88	0.6
CLAY	2,442,042	674,689	172,029	149,134	3,437,894	69.87	1.4
CLEARWATER	1,472,853		84,981		1,557,834	172.02	0.6
COOK	1,247,163		126,650		1,373,813	320.53	0.6
COTTONWOOD	1,584,024		124,724		1,708,748	120.52	0.7
CROW WING	2,113,449	305,502	176,882	52,447	2,648,280	62.63	1.1
DAKOTA	2,681,190	4,485,412	118,641	432,729	7,717,972	37.05	3.1
DODGE	1,448,193		77,612		1,525,805	100.75	0.6
DOUGLAS	1,716,407	166,736	99,379	34,731	2,017,253	68.37	0.8
FARIBAULT	2,265,633		165,847		2,431,480	126.52	1.0
FILLMORE	2,706,690		130,068		2,836,758	129.44	1.2
FREEBORN	2,310,487	395,240	168,265	88,721	2,962,713	83.70	1.2
GOODHUE	1,914,251	431,078	148,077	62,705	2,556,111	64.90	1.0
GRANT	1,004,187		56,146		1,060,333	147.08	0.4
HENNEPIN	9,419,453	19,622,262	131,437	2,713,786	31,886,938	\$33.71	13.0
HOUSTON	1,720,117		86,607	17,708	1,824,432	97.18	0.7
HUBBARD	1,360,369		96,349		1,456,718	95.43	0.6
ISANTI	1,163,312		76,513		1,239,825	49.19	0.5
ITASCA	3,185,888	199,824	184,875	36,219	3,606,806	80.07	1.5
JACKSON	2,166,544		195,195		2,361,739	174.31	1.0
KANABEC	1,121,439		63,212		1,184,651	95.80	0.5

Table B.8, Continued

	COUNTY STATE AIDS	MUNICIPAL STATE AIDS	FEDERAL AID SECONDARY	FEDERAL AID URBAN	TOTAL AIDS	TOTAL AIDS PER CAPITA	PORTION OF ALL AIDS
KANDIYOH	1,978,284	337,456	126,046	7,561	2,449,347	61.98	1.0
KITTSO	1,790,550		113,776		1,904,326	281.12	0.8
KOOCHICHING	1,882,134	158,147	61,855	25,888	2,128,024	126.98	0.9
LAC QUI PARLE	1,559,805		118,835		1,678,640	161.49	0.7
LAKE	1,469,868		131,800		1,601,668	125.72	0.7
LAKE OF THE WOODS	1,282,525		47,201		1,329,726	338.78	0.5
LE SUEUR	1,544,789		82,399		1,627,188	68.99	0.7
LINCOLN	1,120,699		90,574		1,211,273	151.94	0.5
LYON	1,721,922	244,723	129,970	50,959	2,147,574	83.34	0.9
MAHOMEN	1,004,185		39,076		1,043,261	183.77	0.4
MARSHALL	2,694,993		163,685		2,858,678	223.26	1.2
MARTIN	2,208,228	269,664	151,112	52,525	2,681,529	108.70	1.1
MCLEOD	1,523,744	226,107	100,945	42,614	1,893,410	63.17	0.8
MEEKER	1,332,904	168,581	73,347	26,952	1,601,784	76.57	0.7
MILLE LACS	1,277,010		73,882		1,350,892	73.75	0.6
MORRISON	1,737,303	202,334	145,958	33,096	2,118,691	70.51	0.9
MOWER	2,016,960	379,604	125,249	105,205	2,627,018	65.98	1.1
MURRAY	1,384,356		116,908		1,501,264	131.22	0.6
NICOLLET	1,248,398	333,794	78,207	83,088	1,743,487	62.32	0.7
NOBLES	1,935,335	153,427	159,601	46,759	2,295,122	104.64	0.9
NORMAN	1,902,781		112,328		2,015,109	211.36	0.8
OLMSTED	2,406,001	1,063,096	111,674	276,060	3,856,831	40.26	1.6
OTTER TAIL	3,850,429	254,212	267,579	57,560	4,429,780	80.74	1.8
PENNINGTON	1,142,760	209,611	59,648	41,564	1,453,583	103.56	0.6
PINE	2,757,418		162,364		2,919,782	141.90	1.2
PIPESTONE	1,175,808	54,507	75,086		1,305,401	114.46	0.5
POPE	3,730,439	471,790	248,761	78,395	4,529,385	131.05	1.8
POPE	1,201,900		66,953		1,268,853	107.04	0.5
RAMSEY	4,735,280	9,915,394	12,445	283,714	14,946,833	32.70	6.1
RED LAKE	1,004,186		54,121		1,058,307	198.18	0.4
REDWOOD	1,760,354	130,542	133,995	23,784	2,048,675	108.77	0.8
RENNVILLE	2,379,872		195,066		2,574,938	130.81	1.0
RICE	1,603,964	684,303	97,847	131,486	2,517,600	53.55	1.0
ROCK	1,298,141	23,817	93,261		1,415,219	131.92	0.6
ROSEAU	1,940,728		123,404		2,064,132	160.70	0.8
SCOTT	1,412,543	465,773	88,826	132,144	2,099,286	42.94	0.9

Table B.8, Continued

	COUNTY STATE AIDS	MUNICIPAL STATE AIDS	FEDERAL AID SECONDARY	FEDERAL AID URBAN	TOTAL AIDS	TOTAL AIDS PER CAPITA	PORTION OF ALL AIDS
SHERBURNE	1,004,186	343,140	58,396	30,974	1,436,696	43.20	0.6
SIBLEY	1,564,613		128,673		1,693,286	108.05	0.7
ST. LOUIS	8,907,120	4,063,684	542,968	664,916	14,178,688	66.37	5.8
STEARNS	2,879,772	1,024,379	211,437	266,482	4,382,070	38.50	1.8
STEELE	1,540,448	444,322	93,118	85,055	2,162,943	70.92	0.9
STEVENS	1,058,454	150,184	87,179	24,583	1,320,400	117.99	0.5
SWIFT	1,473,619		115,853		1,589,472	124.41	0.6
TODD	1,700,179		139,482		1,839,661	70.66	0.7
TRAVERSE	1,018,632		68,695		1,087,327	201.28	0.4
WABASHA	1,972,023		119,469		2,091,492	109.06	0.9
WADENA	1,004,186		64,451		1,068,637	76.33	0.4
WASECA	1,564,225	138,766	99,706	37,530	1,840,227	98.35	0.7
WASHINGTON	1,790,530	1,723,793	76,583	251,972	3,842,878	31.89	1.6
WATONWAN	1,386,900		99,177		1,486,077	123.37	0.6
WILKIN	1,389,467		91,700		1,481,167	177.43	0.6
WINONA	1,990,442	505,229	95,660	114,468	2,705,799	58.22	1.1
WRIGHT	2,340,892		167,443		2,508,335	40.33	1.0
YELLOW MEDICINE	1,654,267		116,925		1,771,192	135.26	0.7
GRAND TOTAL	\$171,133,770	\$56,780,693	\$10,479,811	\$7,169,789	\$245,564,063	59.23	100.0%
COUNTY MEDIAN						\$97.18	8.0%

NOTES: Federal aids reported for federal fiscal year 1985: twelve months ending September 30, 1985.

Federal Aid Urban for Twin Cities metropolitan area counties is allotted to counties, cities, the Department of Transportation, and others on the basis of qualifying projects selected by the Metropolitan Council. Figures in this table are based on the percentage of FAU funds distributed in each county since 1974 applied to a total federal fiscal year 1985 allotment to the metro area of \$8,223,594.

SOURCES: Minnesota Department of Transportation, 1985 County State Aid Apportionment Data; 1985 Municipal State Aid Apportionment Data; Office of State Aid; Office of Highway Programs.

TABLE B.9
COUNTY HIGHWAY MAINTENANCE EXPENDITURES
(Chapter 4)

COUNTY	ALL COUNTY ROADS			CSAH RURAL ROADS			CSAH MUNICIPAL ROADS		
	MAINTENANCE EXPENDITURES	MILES	AVG COST PER MILE	MAINTENANCE EXPENDITURES	MILES	AVG COST PER MILE	MAINTENANCE EXPENDITURES	MILES	AVG COST PER MILE
AITKIN	\$1,035,298	519.5	\$1,993	\$692,602	369.9	\$1,872	\$24,757	7.3	\$3,391
ANOKA	2,678,676	419.5	6,385	1,492,223	200.8	7,431	179,274	43.1	\$4,162
BECKER	1,053,455	674.6	1,562	694,203	458.8	1,513	38,608	9.1	\$4,243
BELTRAMI	1,619,261	709.6	2,282	853,933	445.4	1,917	50,351	20.0	\$2,520
BENTON	916,908	452.3	2,027	382,965	211.1	1,814	12,517	14.3	\$875
BIG STONE	397,568	405.7	980	228,564	199.4	1,146	29,228	12.2	\$2,396
BLUE EARTH	2,707,958	717.0	3,777	1,472,910	399.9	3,683	39,186	16.7	\$2,344
BROWN	1,119,905	336.1	3,332	1,010,428	306.8	3,293	47,574	10.8	\$4,417
CARLTON	1,012,050	494.0	2,049	570,965	272.7	2,094	39,192	21.6	\$1,813
CARVER	914,972	259.2	3,530	702,219	193.8	3,623	50,052	11.1	\$4,505
CASS	1,388,220	781.3	1,777	862,725	505.8	1,706	30,018	27.8	\$1,082
CHIPPewa	725,881	298.8	2,429	503,842	239.2	2,107	19,671	5.1	\$3,872
CHISAGO	1,123,203	370.6	3,031	577,876	181.1	3,192	106,389	45.2	\$2,356
CLAY	1,309,100	753.4	1,738	778,181	392.8	1,981	46,113	13.9	\$3,315
CLEARWATER	644,273	517.2	1,246	390,251	319.8	1,220	14,938	7.6	\$1,966
COOK	750,125	270.4	2,774	400,823	174.0	2,304	1,180	4.1	\$289
COTTONWOOD	1,003,349	422.4	2,375	664,902	316.8	2,099	19,752	9.8	\$2,026
CROW WING	1,563,756	547.2	2,858	814,329	298.7	2,726	177,445	70.8	\$2,508
DAKOTA	2,242,057	463.8	4,834	1,183,256	263.2	4,495	58,145	14.4	\$4,038
DODGE	875,636	314.3	2,786	673,596	249.7	2,698	28,116		
DOUGLAS	882,845	534.7	1,651	555,288	366.3	1,516	27,510	20.8	\$1,322
FARIBAULT	1,324,610	449.2	2,949	1,017,582	330.1	3,082	27,193	21.6	\$1,259
FILLMORE	1,455,633	462.3	3,149	1,058,311	367.5	2,880	163,024	28.6	\$5,692
FREEBORN	1,726,197	634.0	2,723	1,107,676	433.9	2,553	37,222	13.9	\$2,686
GOODHUE	1,929,142	401.3	4,808	1,608,845	314.1	5,123	55,887	14.4	\$3,881
GRANT	688,078	460.3	1,495	298,018	216.1	1,379	22,055	12.8	\$1,718
HENNEPIN	9,998,097	594.0	16,832	7,281,614	369.8	19,691	2,098,601	131.0	\$16,025
HOUSTON	1,061,559	250.2	4,243	1,023,563	239.2	4,279	37,996	11.0	\$3,454
HUBBARD	861,160	539.8	1,595	543,916	327.4	1,661	5,143	8.5	\$605
ISANTI	882,160	361.6	2,440	547,671	224.6	2,439	16,093	5.0	\$3,212
ITASCA	4,658,383	1,298.6	3,587	2,078,846	630.6	3,297	66,610	20.0	\$3,336

Table B.9, Continued

COUNTY	ALL COUNTY ROADS			CSAH RURAL ROADS			CSAH MUNICIPAL ROADS		
	MAINTENANCE EXPENDITURES	MILES	AVG COST PER MILE	MAINTENANCE EXPENDITURES	MILES	AVG COST PER MILE	MAINTENANCE EXPENDITURES	MILES	AVG COST PER MILE
JACKSON	1,214,600	519.1	2,340	775,093	357.3	2,169	86,325	13.5	\$6,376
KANABEC	835,360	426.9	1,957	442,525	205.8	2,151	2,207	6.2	\$359
KANDIYOHI	1,492,169	643.9	2,317	860,338	415.9	2,069	27,735	14.3	\$1,934
KITSON	612,663	459.0	1,335	444,216	361.9	1,283	21,951	10.6	\$2,063
KOOCHICHING	1,096,777	438.5	2,501	545,752	230.1	2,371	22,253	18.1	\$1,231
LAC QUI PARLE	899,957	505.1	1,782	628,344	352.9	1,781	26,521	9.0	\$2,934
LAKE	1,562,062	294.7	5,301	1,128,617	210.4	5,364	58,764	8.8	\$6,663
LAKE OF WOODS	735,303	488.9	1,504	352,199	178.2	1,976	4,847	4.8	\$1,018
LINCOLN	732,891	389.8	1,880	425,622	245.6	1,733	32,496	9.7	\$3,336
LYON	1,083,803	488.4	2,219	619,543	294.6	2,103	84,716	22.9	\$3,698
MCLEOD	844,833	391.3	2,159	410,568	221.7	1,852	43,794	16.0	\$2,744
MAHONEN	409,775	264.7	1,548	247,608	195.2	1,268	17,384	3.7	\$4,698
MARSHALL	1,216,705	814.6	1,494	898,678	625.4	1,437	36,817	14.7	\$2,511
MARTIN	1,410,393	510.0	2,765	1,025,583	367.1	2,794	32,640	10.7	\$3,062
MEEKER	1,502,453	1,051.4	1,429	764,894	264.0	2,897	8,962	8.0	\$1,123
MILLE LACS	910,322	402.3	2,263	487,012	245.3	1,986	60,694	14.8	\$4,115
MORRISON	1,435,473	714.6	2,009	607,842	386.7	1,572	50,502	43.4	\$1,163
MOWER	1,685,596	405.3	4,159	1,523,289	370.8	4,108	34,120	3.5	\$9,833
MURRAY	1,056,343	446.0	2,368	744,948	343.1	2,171	79,028	13.6	\$5,811
NICOLLET	786,338	307.1	2,560	570,256	239.6	2,380	8,819	5.7	\$1,550
NOBLES	822,711	439.7	1,871	659,978	330.3	1,998	41,577	13.4	\$3,103
NORMAN	1,106,674	723.5	1,530	551,420	386.4	1,427	8,704	7.4	\$1,183
OLMSTED	2,067,316	529.5	3,905	1,186,034	304.1	3,900	30,442	15.2	\$2,004
OTTER TAIL	2,340,956	1,037.0	2,258	1,992,829	869.2	2,293	96,704	38.9	\$2,483
PENNINGTON	716,364	648.1	1,105	311,692	265.1	1,176	36,713	1.6	\$22,946
PINE	1,458,572	704.7	2,070	851,390	444.1	1,917	71,399	29.7	\$2,402
PIPESTONE	835,589	456.9	1,829	342,858	215.6	1,590	32,589	11.8	\$2,762
POLK	1,773,971	944.5	1,878	1,427,369	798.4	1,788	52,559	19.2	\$2,739
POPE	708,238	365.2	1,939	501,373	288.1	1,740	61,031	11.1	\$5,483
RAMSEY	3,292,973	237.0	13,894	2,650,630	174.6	15,179	33,391	3.4	\$9,908
RED LAKE	634,525	369.7	1,716	389,727	179.5	2,171	22,179	6.9	\$3,219
REDWOOD	1,390,787	511.8	2,717	1,045,017	360.5	2,899	60,355	25.0	\$2,411
RENVILLE	1,401,147	712.8	1,966	881,415	438.4	2,011	46,565	11.7	\$3,997
RICE	1,220,001	442.8	2,755	721,596	280.9	2,569	22,376	8.6	\$2,599
ROCK	733,750	315.0	2,330	553,451	255.3	2,168	34,941	4.2	\$8,379
ROSEAU	835,060	712.9	1,171	542,131	470.6	1,152	16,135	12.0	\$1,342
ST. LOUIS	10,402,026	2,963.7	3,510	4,757,497	1,294.7	3,675	710,890	67.1	\$10,590

Table B.9, Continued

COUNTY	ALL COUNTY ROADS			CSAH RURAL ROADS			CSAH MUNICIPAL ROADS		
	MAINTENANCE EXPENDITURES	MILES	AVG COST PER MILE	MAINTENANCE EXPENDITURES	MILES	AVG COST PER MILE	MAINTENANCE EXPENDITURES	MILES	AVG COST PER MILE
SHERBURNE	628,343	405.1	1,551	322,592	208.2	1,549	14,729	7.6	\$1,941
SIBLEY	1,072,992	384.9	2,788	759,015	281.1	2,700	23,374	6.5	\$3,585
STEARNS	2,353,595	964.5	2,440	1,362,608	548.2	2,485	128,486	54.4	\$2,361
STEELE	1,169,352	358.1	3,265	997,678	296.7	3,362	8,919	5.1	\$1,759
STEVENS	902,778	373.6	2,417	508,505	233.1	2,181	38,854	11.0	\$3,545
SWIFT	877,582	462.4	1,898	584,988	316.1	1,851	50,360	13.7	\$3,687
TODD	770,264	622.8	1,237	472,829	397.8	1,189	27,483	14.5	\$1,893
TRAVERSE	767,410	481.3	1,594	400,102	236.3	1,693	45,497	7.9	\$5,745
WABASHA	1,584,787	371.6	4,265	1,152,176	253.5	4,545	101,159	23.4	\$4,323
WADENA	667,907	483.7	1,381	273,629	217.5	1,258	48,592	12.1	\$4,026
WASECA	1,005,468	389.3	2,583	637,245	252.2	2,527	22,406	8.2	\$2,722
WASHINGTON	2,086,129	293.0	7,119	607,821	87.5	6,948	834,558	100.4	\$8,311
WATONWAN	932,401	350.8	2,658	581,620	218.3	2,664	35,649	14.6	\$2,440
WILKIN	648,881	507.4	1,279	379,080	312.5	1,213			
WINONA	1,044,586	386.3	2,704	785,167	297.3	2,641	71,064	19.3	\$3,682
WRIGHT	1,797,398	527.9	3,405	1,230,468	358.9	3,428	76,099	43.6	\$1,745
YELLOW MEDICINE	1,087,841	511.2	2,128	779,520	331.7	2,350	76,611	15.3	\$5,017
GRAND TOTAL	\$124,681,451	46,170.5	\$2,700	\$77,457,643	28,379.3	\$2,729	\$7,382,030	1,570.9	\$4,699
COUNTY MEDIAN			\$2,804			\$2,171			\$2,848

Source: Program Evaluation Division Analysis of 1983 County Highway Department annual reports submitted to State Aids Section, Minnesota Department of Transportation. Data for Scott County not available.

APPENDIX C

CHANGES IN COUNTY STATE AID HIGHWAY DESIGN STANDARDS: 1957-1985^a

- *Design strength.* 1957 standards: 5-ton design for 100-399 ADT; 7-ton for 400-999 ADT; 7-ton ultimate 9-ton for 1,000+ ADT. Current standards: 7-ton ultimate 9-ton for 100-999 ADT; 9-ton for 1,000+ ADT.
- *Lane width.* 1957: 11 feet for ADT less than 400; 12 feet for 400+ ADT. Current: 11 feet for ADT less than 100; 12 feet for 100+ ADT.
- *Single shoulder width.* 1957: 1 foot for less than 100 ADT; 2 feet for 100-999 ADT; 3 feet for 1,000+ ADT. Current: 1 foot for 0-49 ADT; 3 feet for 50-99 ADT; 4 feet for 100-749 ADT; 6 feet for 750-999 ADT; 8 feet for 1,000+ ADT.
- *Surface type.* 1957: Gravel surface for ADT less than 100; road mix surface for 100-399 ADT; plant mix surface for 400+ ADT.^b Current: Surface selected for roads with ADT less than 100 depends on traffic; paved surface for 100+ ADT.
- *Roadside slope.* 1957: No standards. Current: Slope incline of 3:1 for 0-99 ADT; incline of 4:1 for 100+ ADT.
- *Obstacle-free recovery area.* 1957: No standards. Current: 7 feet for 0-49 ADT; 9 feet for 50-99 ADT; 15 feet for 100-399 ADT; 20 feet for 400-749 ADT; 25 feet for 750-999 ADT; 30 feet for 1,000+ ADT.
- *New bridge width.* 1957: 24 feet for ADT less than 400; 30 feet for 400+ ADT. Current: 24 feet for 0-49 ADT; 28 feet for 50-99 ADT; 32 feet for 100-749 ADT; 36 feet for 750-999 ADT; 40 feet for 1,000+ ADT.

Sources: Minnesota Department of Transportation, *The Development of State Aid Construction Standards, Rules and Regulations*, 1978; MnDOT Technical Services Division, *Minnesota Department of Transportation State Aid Manual* (current).

^aAverage Daily Traffic (ADT) is projected traffic in 20 years. The standards shown are for "rural design."

^bRoad mix usually is cold at the time of placement, while plant mix generally is heated.

NOTE: Details of additional standards (such as those pertaining to design speed and allowable curvature) may be found in the above sources.

STUDIES OF THE PROGRAM EVALUATION DIVISION

Final reports and staff papers from the following studies can be obtained from the Program Evaluation Division, 122 Veterans Service Building, Saint Paul, Minnesota 55155, 612/296-4708.

1977

1. Regulation and Control of Human Service Facilities
2. Minnesota Housing Finance Agency
3. Federal Aids Coordination

1978

4. Unemployment Compensation
5. State Board of Investment: Investment Performance
6. Department of Revenue: Assessment/Sales Ratio Studies
7. Department of Personnel

1979

8. State-sponsored Chemical Dependency Programs
9. Minnesota's Agricultural Commodities Promotion Councils
10. Liquor Control
11. Department of Public Service
12. Department of Economic Security, Preliminary Report
13. Nursing Home Rates
14. Department of Personnel, Follow-up Study

1980

15. Board of Electricity
16. Twin Cities Metropolitan Transit Commission
17. Information Services Bureau
18. Department of Economic Security
19. Statewide Bicycle Registration Program
20. State Arts Board: Individual Artists Grants Program

1981

21. Department of Human Rights
22. Hospital Regulation
23. Department of Public Welfare's Regulation of Residential Facilities for the Mentally Ill
24. State Designer Selection Board
25. Corporate Income Tax Processing

26. Computer Support for Tax Processing
27. State-sponsored Chemical Dependency Programs, Follow-up Study
28. Construction Cost Overrun at the Minnesota Correctional Facility - Oak Park Heights
29. Individual Income Tax Processing and Auditing
30. State Office Space Management and Leasing

1982

31. Procurement Set-Asides
32. State Timber Sales
33. *Department of Education Information System
34. State Purchasing
35. Fire Safety in Residential Facilities for Disabled Persons
36. State Mineral Leasing

1983

37. Direct Property Tax Relief Programs
38. *Post-Secondary Vocational Education at Minnesota's Area Vocational-Technical Institutes
39. *Community Residential Programs for Mentally Retarded Persons
40. State Land Acquisition and Disposal
41. The State Land Exchange Program
42. Department of Human Rights: Follow-up Study

1984

43. *Minnesota Braille and Sight-Saving School and Minnesota School for the Deaf
44. The Administration of Minnesota's Medical Assistance Program
45. *Special Education
46. *Sheltered Employment Programs
47. State Human Service Block Grants

1985

48. Energy Assistance and Weatherization
49. Highway Maintenance
50. Metropolitan Council
51. Economic Development Programs
52. Post Secondary Vocational Education: Follow-Up Study
53. Procurement Set-Asides: Follow-Up Study
54. County State Aid Highway System

*These reports are also available through the U.S. Department of Education ERIC Clearinghouse.

