Study of Transportation Long-Range Funding Solutions

MINNESOTA DEPARTMENT OF TRANSPORTATION

Study of Transportation Long-Range Funding Solutions

Report to the Legislature

Minnesota Department of Transportation

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Prepared by

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Cost of Completing Study

This study cost approximately $85,000 to develop and print. The costs included:

- Mn/DOT agency staff and partner agency staff time
- University of Minnesota Center for Transportation Studies contract costs for Symposium
- Document printing

Executive Summary

The purpose of the Study of Transportation Long-Range Funding Solutions is to identify and evaluate options for transportation funding in Minnesota during the next 20 years. As directed by the Minnesota Legislature, the study investigates the ability of existing sources of revenue to meet current and future transportation needs. The study includes state trunk highways, Greater Minnesota transit and Twin Cities metropolitan area transit. Freight movements outside the trunk highway system and other modes of transportation such as air, water and intercity bus and rail are not included. This study builds on previous Minnesota Department of Transportation and Metropolitan Council plans as well as the work of two national commissions that have examined the issue of long-term funding for transportation.

The revenue-generating potential of current sources was compared with long-range plans for each system in the study. Projected future trends affecting the current fuel tax and motor vehicle registration and sales taxes were then considered. In particular, changes to the vehicle fleet, such as increased fuel economy and the potential of alternative fuels, are noted. Combined with rising construction costs and changing demographic patterns, the result of these effects is that future revenues are unlikely to be sufficient to maintain and operate the transportation system or sustainable if funding remains at current sources and levels. Alternative funding strategies are investigated, and their potential application in Minnesota is evaluated using several criteria.

Transportation Investment Needs

The Statewide 20-Year Highway Investment Plan 2009-2028, the Mn/DOT Draft Greater Minnesota Transit Plan 2010-2030 and the Metropolitan Council 2030 Transportation Policy Plan each contain information about investment needs and current funding sources. Highway investments are needed to improve traveler safety, preserve infrastructure and provide increased mobility. Increased transit operations in areas outside the Twin Cities will be needed as the population continues to grow and age. Transit expansions are also planned for the Twin Cities metropolitan area to provide an alternative to congestion and improve service, with a goal of doubling ridership by 2030.

The investment needs for each plan are summarized in the table to the right, along with the revenue projection from existing sources used to develop the plans. The state

Summary of 20-year transportation needs and revenues

Type of service	Investment need	Revenue projection
Highways[1]		
Operating	$14B	
Capital	$65B	
Total	**$79B**	**$29B**
Greater MN Transit[2]		
Operating	$2B	
Capital	$1B	
Total	**$3B**	**$2B**
Twin Cities Transit[3]		
Operating	$12B	
Capital	$9B	
Total	**$21B**	**$17B**
Total	**$103B**	**$48B**

Note: All figures in year-of-construction dollars

[1] *Statewide 20-Year Highway Investment Plan 2009-2028; operating estimate is based on current budget levels and does not reflect all performance-based needs. Mn/DOT is preparing to develop a highway operations and investment plan, which will better evaluate operations and maintenance needs.*

[2] *Mn/DOT Draft Greater Minnesota Transit Plan 2010-2030*

[3] *Metropolitan Council 2030 Transportation Policy Plan*

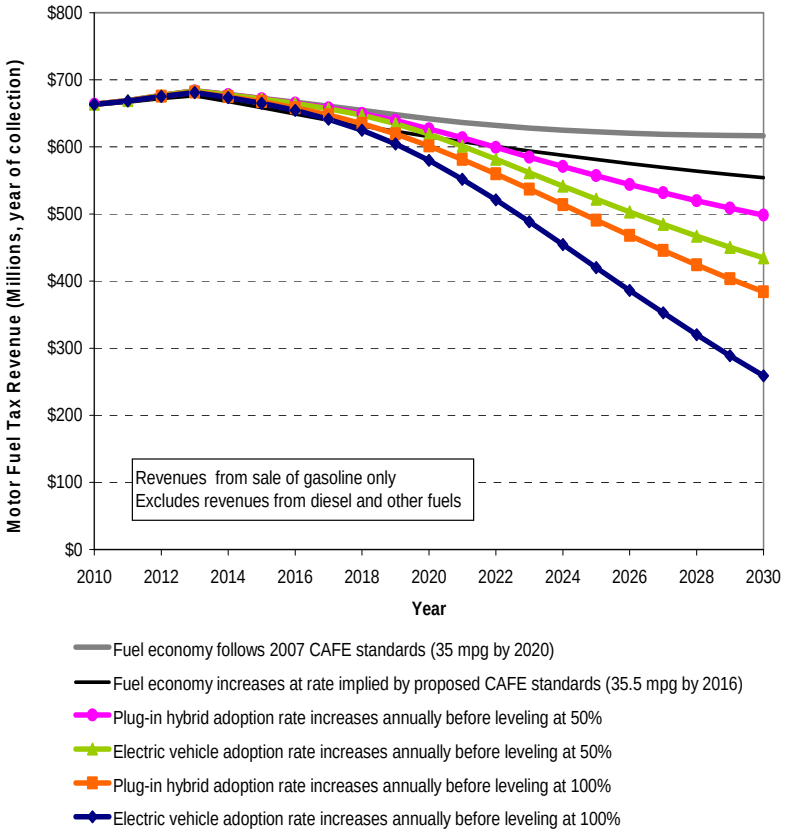
motor fuel tax, motor vehicle sales tax and motor vehicle registration tax are included in the revenue projection, along with projected federal and state general funds and other dedicated sources such as fares and local option sales taxes.

Current and Future Revenue Trends

Revenues from taxes on vehicles and fuel have not kept pace with needs, and are forecast to decline in the years ahead for a variety of reasons. Motor fuel tax revenue is likely to decrease due to increased fuel economy, and its buying power will decline because the rate does not keep up with inflation. Sharp increases in the price of fuel cause consumers to drive less and thus decrease revenue potential, since the fuel tax is fixed and does not vary with price. As electric vehicles, plug-in hybrids and alternative fuels are developed and become more widespread, this effect is magnified. The potential effects of increasing fuel economy, plug-in hybrids and electric vehicles are shown in the figure below. Federal funds collected from the national fuel tax are susceptible to the same trends as the state tax.

Changes to the vehicle fleet can also affect sales and registration tax revenues. The recent adjustments to the depreciation schedule for vehicles means owners of newer vehicles are paying a larger share of registration taxes. Therefore, revenues are sensitive to economic downturns that cause drivers to put off buying new vehicles. Smaller cars with better fuel economy also tend to be less expensive than the larger trucks and SUVs they are replacing. An extra challenge arises from funding transit operations with vehicle sales taxes. As transit ridership increases, vehicle sales and the associated tax revenues decrease.

Other economic and policy trends will have a broader impact. Volatility in the costs of construction materials makes the revenue needed for specific projects less predictable. Environmental policies and changing land use and demographic patterns can affect the demand for transportation services.



Assumptions:
Gas Tax remains at $0.285 starting 2013
Average annual VMT per vehicle assumed to be constant
Rate of new vehicle purchases is 5%
Fleet grows at 0.8% annually due to population growth
For plug-in hybrids, an average 100 miles per gallon was assumed

Effects of electric and plug-in hybrid vehicles on state motor fuel tax revenues

Source: Mn/DOT Office of Investment Management

Evaluation of Revenue Options for Minnesota

The potential effectiveness of several alternatives for use in Minnesota was evaluated based on the following categories of criteria:

- **Viability** –Revenue potential, implementation complexity, and public acceptance
- **Resilience** – Susceptibility to increased fuel economy and use of alternative fuels, increased use of alternate modes, and fuel price volatility
- **Policy Impact** – Potential to relieve congestion and reduce greenhouse gas emissions

The funding alternatives considered ranged from user fees and value capture strategies to existing sources and general revenues. The following strategies were evaluated:

- **Existing Sources** – Motor fuel excise taxes, motor vehicle sales taxes, vehicle registration taxes, state general funds, local option sales taxes, property taxes, High Occupancy Toll lanes, tax increment financing, wheelage taxes, fares, and advertising
- **Modification of Existing Sources** – Indexed motor fuel excise taxes, motor fuel sales taxes, and emission-based vehicle registration taxes
- **Potential Sources** – Mileage-based taxes, emission-adjusted mileage-based taxes, location- or time-adjusted mileage-based taxes, tolling existing lanes, tolling new lanes, tolling based on congestion level, cordon pricing, parking pricing, general sales taxes, land value taxes, transportation utility fees, and cap-and-trade revenues

Each strategy was given a positive, negative or neutral rating with respect to the criteria. No single strategy is perfect, and revenue will likely need to continue to come from a variety of sources.

Summary of Findings and Conclusions

With the Metropolitan Council and the Center for Transportation Studies at the University of Minnesota, Mn/DOT held a symposium to inform interested parties about long-range transportation plans and to gather input about what to include in the study. Based on the assessment of current and future needs, options and input from stakeholders, the following conclusions can be drawn:

1. **Minnesota's primary transportation revenue sources are unlikely to be sustainable in the long term.**
    - The combined effects of increases in fuel economy and alternative fuels, increasing use of alternative modes of transportation, and demographic shifts will begin to erode fuel tax revenue after the full rate increase is implemented in 2012.
    - Federal funds are heavily dependent on the federal motor fuel excise tax, which is susceptible to the same trends affecting Minnesota's motor fuel tax.
    - The constitutional dedication of the Motor Vehicle Sales Tax revenue to transportation has increased funding for transportation, but total MVST revenues

have been declining. The recent economic recession and increasing consumer preference for smaller, more fuel efficient cars have decreased MVST receipts in the past two years. Cars are lasting longer and the demand for additional vehicles has slowed, so MVST revenues are likely to be slow to recover.

- Fees from newer vehicles constitute a significant portion of annual vehicle registration fees because of the depreciation schedule for vehicles. As a result, at least in the short term, the same trends impacting MVST revenues also impact registration fees.
- New revenues have been dedicated to fund transit capital improvements, but funding transit operations is likely to be an ongoing challenge.

2. **Reliable and predictable funding sources are important for planning purposes.** Transportation investments are planned years in advance of construction, and it is difficult to plan and program investments if revenues fluctuate widely. Therefore, the sustainability and reliability of those revenue sources are important considerations.

3. **Despite the many options available, only a few revenue mechanisms offer the potential to generate significant revenue similar to the current primary revenue sources.** Most of the options considered in this study are unlikely to generate revenue similar to the current primary sources. Other than modifying existing sources, mileage-based fees, tolling existing lanes, and dedicating a portion of the general sales tax are the only three options with the potential to generate revenue comparable to the fuel tax.

4. **Dependence on a single revenue source exposes transportation funding levels to more risk.** A portfolio of revenue sources reduces the risk of negative trends and is more likely to provide stable revenue to fund the transportation system.

5. **Fuel taxes are still a viable option in the short term.** The fuel tax is inexpensive to administer and provides an incentive to reduce greenhouse gas emissions. Historically, it has taken roughly 20 years for the passenger vehicle fleet to fully turn over, so even with increasing fuel economy a decade may pass before fuel tax revenues are significantly reduced. Nevertheless, under the current CAFE standards (35 miles per gallon by 2020), fuel tax revenues are projected to begin decreasing after the increased tax rate is fully implemented in 2012. Even if the nominal value of tax revenues remained constant through rate increases, the purchasing power of the tax revenue would continue to decline due to inflation.

6. **Mileage-based fees, or VMT fees, have the potential to generate significant revenue, but there are many implementation and public acceptance issues that need to be resolved.** Mileage-based fees may be best implemented at the national level. More directly linking taxes to system use could help achieve other policy goals.

7. **Minnesota transportation revenue mechanisms could better recognize and support multiple established policy goals related to economic development, natural resource preservation, GHG emissions and safety.** These goals can conflict at times and can have unintended revenue consequences. The mix of revenue sources used should generate

sufficient and stable revenue, and support diverse goals and objectives for the Minnesota economy, transportation system and natural environment. Some options like congestion pricing may generate less revenue, but may be desirable for their environmental or congestion benefits.

8. **The Minnesota approach to funding could better support and enable the emerging vision of a multi-modal transportation system.** Both the Statewide Transportation Policy Plan and the Metropolitan Council 2030 Transportation Policy Plan envision a more multi-modal transportation system in the future. Mn/DOT and the Metropolitan Council are currently working together to develop strategies to optimize the existing system, provide advantages for transit and find other ways to meet transportation needs. Statewide plans are also being developed for freight, passenger rail and transit. These efforts offer an opportunity to create a safe, efficient and sustainable transportation system for the future. Minnesota revenue sources could be more consistent with these new approaches to achieving mobility and access objectives for the population of Minnesota.

I. Introduction

The Study of Transportation Long-Range Funding Solutions was undertaken in response to Minnesota legislation directing the commissioner of transportation to evaluate the long-range transportation needs in Minnesota and to determine possible strategies to meet them. The directive was originally passed in 2008, and amended in 2009 to read as follows:

> **Minnesota Laws 2009, Chapter 134**
>
> Sec. 8. Laws 2008, chapter 287, article 1, section 118, is amended to read:
> Sec. 118. **STUDY OF TRANSPORTATION LONG-RANGE SOLUTIONS.**
> (a) The commissioner of transportation shall conduct a study in consultation with other state agencies and key stakeholders to evaluate the current and long-range needs of the state's transportation system, and investigate possible strategies to meet these needs.
> (b) The study must include, but is not limited to:
> (1) evaluation of the current needs of the state's highway systems, bridges, and transit;
> (2) analysis and quantification of the needs for the next 20 years of the state's highway systems, bridges, and transit;
> (3) comparison of estimates of revenues raised by current transportation funding sources, with long-term needs of the state's transportation system;
> (4) identification of options for maintenance and improvement of the state's transportation system with specific reference to the effects of potential increases in vehicle fuel economy, availability of alternative modes of transportation, and extreme fuel price volatility on future transportation revenues;
> (5) analysis of alternative pricing options utilized in other states and countries, and their potential for use, public acceptance, alleviation of congestion, and revenue generation in this state; ~~and~~
> (6) identification of options for road-use pricing, other alternative financing mechanisms with particular consideration of key environmental impacts such as air quality, water quality, and greenhouse gas emissions, and estimates of implementation costs, user costs, and revenue~~.~~; and
> (7) evaluation of the impact of the use of electric vehicles, as defined in Minnesota Statutes, section 169.011, subdivision 26a, and plug-in hybrid vehicles, as defined in Minnesota Statutes, section 169.011, subdivision 54a, on the current funding mechanisms for the state's roadways and an analysis of methods to mitigate the impact.
> (c) The commissioner shall report the results of the study to the legislature no later than November 1, 2009.

The purpose of the Study of Transportation Long-Range Funding Solutions is to identify and evaluate options for transportation funding in Minnesota during the next 20 years. As directed by the Minnesota Legislature, the study investigates the ability of existing sources of revenue to meet current and future transportation needs. The study includes state trunk highways, Greater Minnesota transit and Twin Cities metropolitan area transit. Freight movements outside the trunk highway system and other modes of transportation such as air, water and intercity bus and rail

are not included. The main point of reference for highway needs was the Statewide 20-year Highway Investment Plan 2009-2028. For transit projects, both the Mn/DOT Draft Greater Minnesota Transit Plan 2010-2030 and the Metropolitan Council 2030 Transportation Policy Plan were considered. The executive summaries of these plans are included as appendices.

Two national commissions recently examined the long term trends in transportation funding and evaluated existing and potential revenue strategies. This study builds on the National Surface Transportation Policy and Revenue Study Commission's 2008 Report entitled *Transportation for Tomorrow* and the National Cooperative Highway Research Program's 2006 report entitled *Future Financing Options to Meet Highway and Transit Needs*.

The study investigates methods of generating funding rather than financing. The emphasis of the study is not simply to find ways to increase funding levels, but to improve the sustainability of the transportation funding system. A key consideration is the implication of different revenue strategies on the many other policy goals of Mn/DOT and Minnesota as a whole.

The effects of trends such as improvements in vehicle fuel economy, the increasing popularity of non-automobile modes of travel and fuel price volatility are projected. In particular, the impact of more widespread use of electric and plug-in hybrid vehicles on current funding mechanisms is evaluated. Strategies that have been implemented in other states and countries, including road use pricing, are analyzed in terms of potential for congestion mitigation, revenue generation, public acceptance and environmental effects.

To discuss the current and future condition of the state transportation network with key stakeholders, a symposium was held at the University of Minnesota in June 2008. The event brought together public, private and academic disciplines with the goal of informing participants about long-range transportation plans and hearing their perspectives on current and future transportation policy and funding.

The remainder of this report will discuss the conclusions of the study. Section II summarizes the current and future investment needs for the construction, maintenance and operations of transportation facilities and services. Section III describes current revenue sources, levels of funding, and trends, and outlines some challenges to the adequacy of current funding sources. Options to raise additional funds or replace existing funding mechanisms for transportation are presented in Section IV, including an evaluation of their viability, resilience and impact on policy objectives. Section V concludes the study with a summary of findings and conclusions.

II. Transportation Investment Needs

This project considers the long-range outlook for the state highway and transit systems in Minnesota. County State Aid Highways, Municipal State Aid Streets and other facilities maintained by local governments are not included in this analysis. Other modes of transportation, such as air, water, and rail freight are also left out, though the study does account for the impact of freight movements on state trunk highways.

The Statewide 20-year Highway Investment Plan 2009-2028 (Highway Investment Plan), the Mn/DOT Draft Greater Minnesota Transit Plan 2010-2030[1] and the Metropolitan Council 2030 Transportation Policy Plan each detail proposed improvements and projected funding during the next 20 years. In most cases, the investment necessary to reach targeted service levels exceeds the projected revenue from current sources. The plans include several strategies to reduce the difference between available funding and needs for investment. The resulting difference and the strategies already in use are summarized in this section.

State Trunk Highways

The Highway Investment Plan is comprised of the 20-year plans from each of the eight Mn/DOT districts. The plan was developed with the revenue outlook in mind, but unfunded needs are also included and prioritized. The targets for increased investment in highway infrastructure in Minnesota can be categorized as A) improvements necessary to meet system performance needs and B) projects that support local business and community development. Performance-based needs are related to five transportation policies as listed in the Minnesota Statewide Transportation Policy Plan 2009-2028:

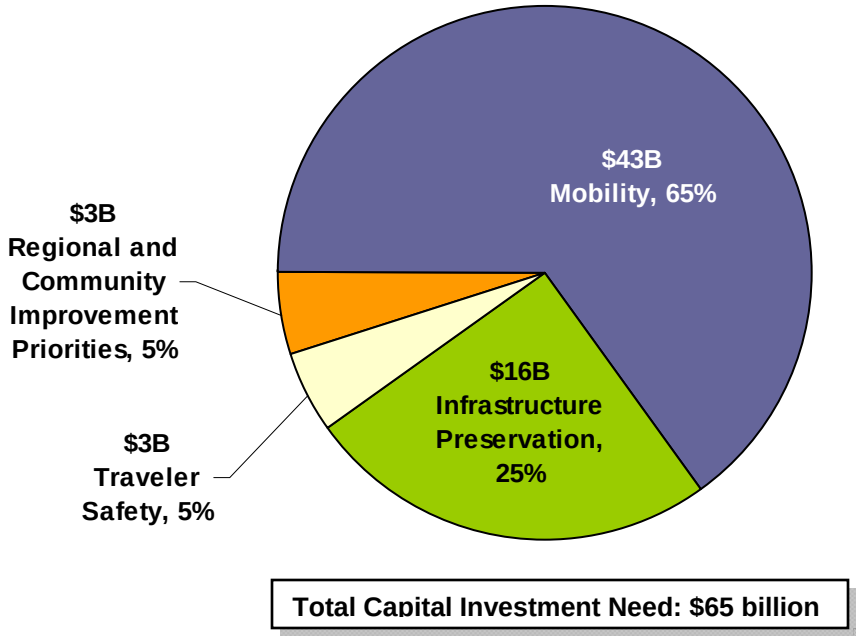
- Traveler safety
- Infrastructure preservation
- Statewide connections
- Mobility in the Twin Cities metropolitan area
- Mobility throughout Greater Minnesota

Traveler safety is addressed through roadway enhancements such as turn lanes, passing lanes and shoulders, and through additions to capacity. Infrastructure preservation includes pavements, bridges and other facilities such as signs, signals and rest areas. Statewide connections are corridors that link regional centers and are improved by expansion and changes in access or alignment. Mobility is the ability of a person or people to travel from one place to another. The goals of the mobility policies for corridors that link regional centers and other routes throughout Greater Minnesota are to maintain and improve the level of service. In the Twin Cities area, the goal is to reduce the rate of increase in congestion.

[1] The Greater Minnesota Transit Plan 2010-2030 is still being developed and as such any information from the draft plan is subject to change.

Regional and community investment priorities can include a variety of projects such as interchange reconstructions, noise walls and pavement enhancements that would not otherwise be needed for system performance.

Statewide investment to meet system performance targets during the 20-year planning period are estimated at approximately $62 billion, and the total grows to $65 billion when regional priorities are included. As illustrated in Figure 1, the largest portion is directed toward mobility improvements and congestion mitigation, both in the Twin Cities area and in Greater Minnesota. This total represents construction costs only and does not include maintenance operations or administration.



Note: Does not include $14 billion in estimated operating costs.

Figure 1. Statewide highway capital investment needs, 2009-2028.

Source: Mn/DOT Statewide Highway Investment Plan (Dollars are year of construction).

Assuming current tax rates are not increased and no new revenue sources are made available, revenues for highway investment were projected to generate $15 billion during the next 20 years in available funding for capital projects. The significant difference means the investment needs must be prioritized. The investments planned for the available funding are distributed as shown in Table 1. Remaining unfunded projects will be prioritized as follows if funding becomes available:

- Traveler Safety – 3 percent
- Interregional Corridor Mobility – 82 percent
- Infrastructure Preservation – 10 percent
- Regional and Community Investment Priorities – 5 percent

Operating costs are also a significant expense. These include system maintenance such as pavement repair and snow removal, as well as other expenses such as planning, design, inspection and administration. In developing the revenue estimate for the Statewide Highway Investment Plan, highway operations was assumed to be funded from existing sources under the current funding split between capital and operations. For planning purposes, the total operating expense for Mn/DOT was estimated to be approximately $14 billion during the 20-year period. Mn/DOT is preparing to develop a highway operations and investment plan, which will better evaluate the revenue needed for operations and maintenance.

Table 1. Planned highway investments for available funding, 2009-2028.

Investment Priority	Total ($m)	% of Total
Traveler Safety	**$1,390**	**9%**
Roadway Enhancements	$780	5%
Capacity Improvements	$610	4%
Infrastructure Preservation	**$11,600**	**78%**
Chp. 152 Bridge Program	$2,520	17%
Other Bridges	$2,600	17%
Pavement	$5,840	39%
Other Infrastructure	$640	4%
Mobility	**$1,030**	**7%**
Interregional Corridors	$80	0.5%
Greater MN Trade Centers	$60	0.4%
Twin Cities Metro Area	$890	6%
Regional and Community Improvement Priorities	$590	4%
Right of Way, Consultants, Supplemental Agreements	$370	2%
Total Investment	**$15,000**	**100%**

Source: Mn/DOT Statewide 20-year Highway Investment Plan 2009-2028 (Dollars are year of construction).

The Statewide Transportation Policy plan fully acknowledges that future transportation funding will never be increased to meet the almost $50 billion in "unmet need." The plan, therefore, emphasizes a new approach to meeting system improvement needs through stronger partnerships and innovation, especially for addressing mobility needs in the Twin Cities. The goal is a balanced approach that includes safety, mobility, preservation and community priorities.

Greater Minnesota Transit

The Mn/DOT Office of Transit is developing a 20-year plan for preserving and improving transit in Greater Minnesota. The plan has not yet been finalized, and as a result the numbers reported here are preliminary and may differ from those in the final plan. There are currently 63 transit systems providing some level of transit service to 76 of the 80 counties in Greater Minnesota. Types of service include fixed-route, deviated-route, and dial-a-ride. The long-term investment goals for these systems are to maintain and expand current services, in consideration of changing mobility needs of both individuals and the workforce in general.

By 2030, demand for Greater Minnesota transit is predicted to reach almost 18 million trips per year, nearly doubling current demand. More than half the demand – approximately 11 million trips – will occur in the five largest urban areas outside the Twin Cities: Duluth, Mankato, Moorhead, Rochester, and St. Cloud. In response, a goal of 1.7 million total service hours per year was established for 2030, with about one-third of this amount serving the five urban areas.

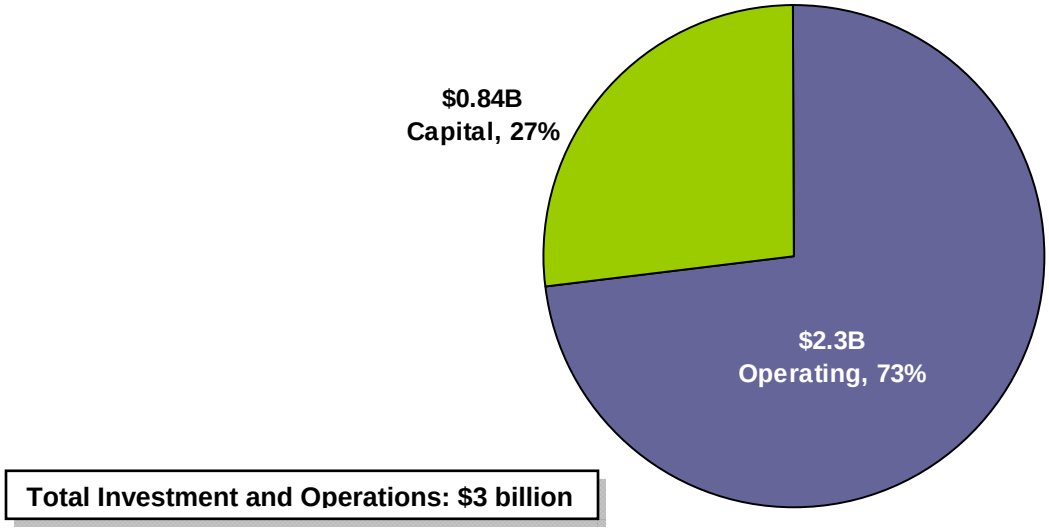


Figure 2. Greater Minnesota transit investment needs, 2010-2030.
Source: Mn/DOT Draft Greater Minnesota Transit Plan 2010-2030 (Dollars are year of expenditure).

The operating and capital shares of expenses are shown in Figure 2. The operating cost of Greater Minnesota transit service is projected to increase from $71 million in 2010 to $156 million in 2030. The total operating funding target for the 20-year planning period is about $2.3 billion. Capital funding is also needed to cover vehicle replacements for existing service and the purchase and maintenance of vehicles for expanded service. The total fleet-related capital expense during the 20-year period is estimated to be about $840 million.

The share of motor vehicle sales tax revenue directed to Greater Minnesota transit increases from 1.5 percent in 2008 to 4 percent in 2012. If the funding available from the other existing sources – fares, local contributions, state appropriations and federal funds – remains at 2008 levels and grows only with inflation (assumed for planning purposes to be 3 percent annually), about $2.2 billion will be available for Greater Minnesota transit over 20 years.

Twin Cities Metropolitan Area Transit

Several types of service exist within the seven-county Twin Cities area, including fixed-route bus service, light rail, commuter rail, dial-a-ride and vanpools. The largest operator is Metro Transit, and others include suburban transit providers, private contract providers and the University of Minnesota. In its 2030 Transportation Policy Plan, the Metropolitan Council set a goal of doubling ridership by 2030 from a base of 73 million annual rides in 2003. Factors contributing

to ridership growth include the opening of new light rail and bus rapid transit (BRT) corridors, college and employer pass programs, population growth within the region, increasing congestion and higher prices for parking and fuel. Additional facilities such as express services, park-and-ride facilities and bike racks on vehicles have made transit a more viable option.

Corridors currently under development include the Central Corridor between downtown Minneapolis and St. Paul, the Northstar Commuter Rail between Minneapolis and Big Lake, and bus rapid transit lines on I-35W and Cedar Avenue. Additional corridors are being considered for light rail or BRT development, and smaller infrastructure improvements, such as ramp meter bypasses and bus-only shoulders, are also planned. Other planned improvements include the expansion of passenger facilities, customer information systems, and support facilities for system control and maintenance.

The investment needs for transit in the Twin Cities metropolitan area can be categorized as capital costs to maintain the current system, capital cost to expand the system, operating costs for the current system and operating costs for the expanded system. The estimated expenses in the plan for each category are as follows:[2]

- Capital cost to maintain the existing system: $70 million per year.
- Capital cost to expand the system: $2.4-2.85 billion (2008-2020) and $2.3-2.65 billion (2020-2030). An average of $250 million per year is near the center of the ranges.
- Operating cost for existing system: $360 million per year (all systems).
- Operating cost for expanded system: $75-105 million per year by 2020 and $195-235 million per year by 2030. For this analysis, an average $100 million per year is assumed.

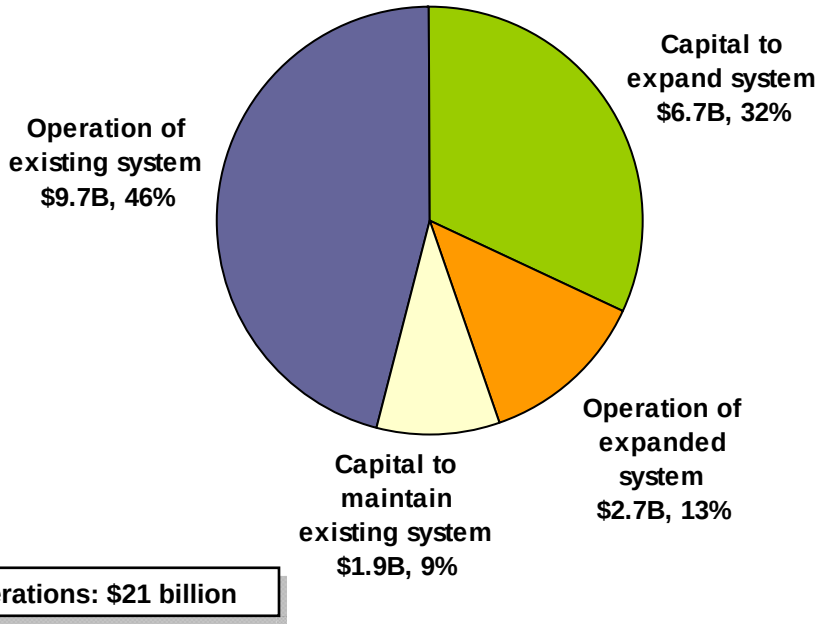


Figure 3. Twin Cities metropolitan area transit investment needs, 2009-2028.

Source: Metropolitan Council 2030 Transportation Policy Plan (Dollars are year of expenditure).

[2] The 2030 Transportation Policy Plan expresses revenues and expenses in 2008 dollars. In order to maintain consistency with the other plans, these were converted to year-of-expenditure dollars using a 3 percent discount rate.

The Metropolitan Council Transportation Policy Plan assumes that funding will be available from current sources to continue to operate the existing system, but that these sources will not provide sufficient funding to operate an expanded system. For capital projects, the plan assumes that general state sources will contribute 10 percent of costs, with the remaining 90 percent coming from federal and local sources.

Summary

A summary of total investment needs and projected revenues for state trunk highways, Greater Minnesota transit and Twin Cities metropolitan area transit is given in Table 2. A substantial difference exists between long-range transportation investment needs and dedicated revenue sources. The investment needs for highways have been prioritized to reconcile planned improvements with available revenues. An allocation has also been developed for additional projects should funding become available. The investment targets for the transit plans are based on projections of available revenue and do not include or prioritize additional projects. Fares are included under both investment needs and revenue projections for both plans. The transit plans include capital projects that are not likely to occur without federal funding. These projects are also represented in both columns.

Table 2. Summary of 20-year investment needs and revenue projections.

Type of service	Investment goal	Revenue projection
Highways[1]		
Operating	$14B	
Capital	$65B	
Total	**$79B**	**$29B**
Greater MN Transit[2]		
Operating	$2B	
Capital	$1B	
Total	**$3B**	**$2B**
Twin Cities Transit[3]		
Operating	$12B	
Capital	$9B	
Total	**$21B**	**$17B**
Total	**$103B**	**$48B**

Note: All figures in year-of-expenditure dollars

[1] *Statewide 20-year Highway Investment Plan 2009-2028; operating estimate is based on current budget levels and does not reflect all performance-based needs. Mn/DOT is preparing to develop a highway operations and investment plan, which will better evaluate operations and maintenance needs.*

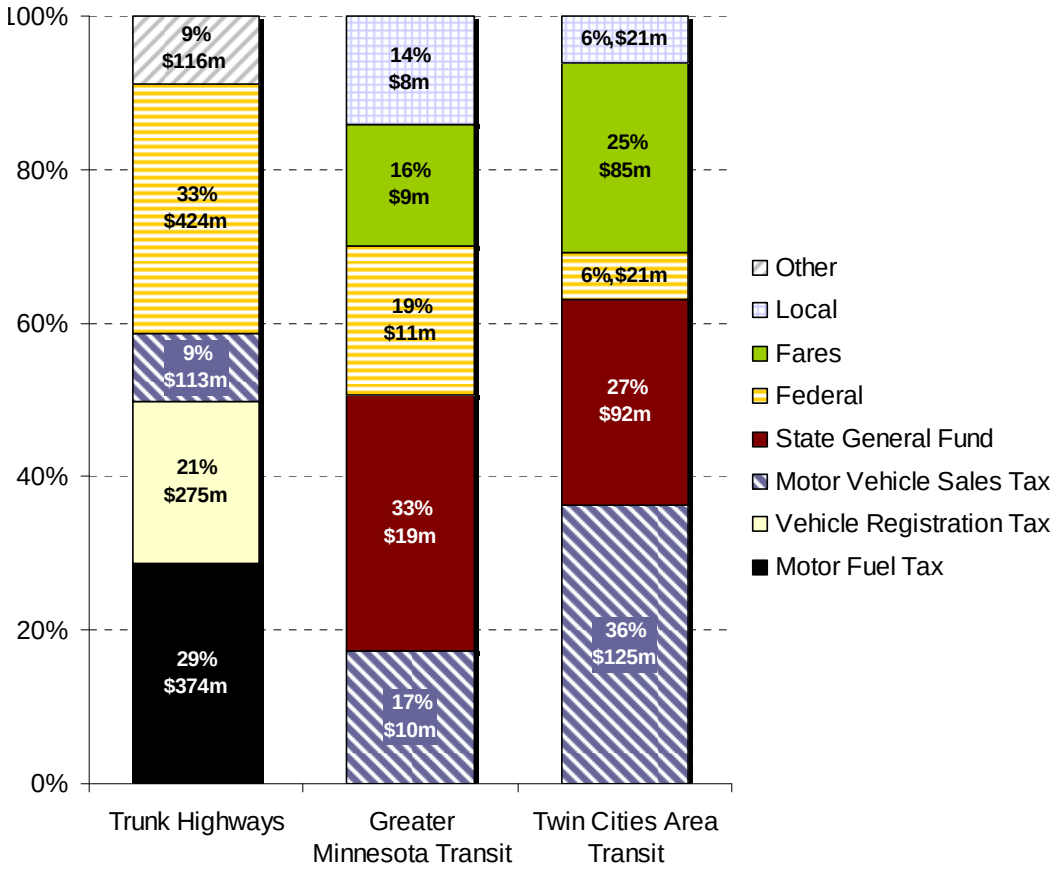
[2] *Mn/DOT Draft Greater Minnesota Transit Plan 2010-2030*

[3] *Metropolitan Council 2030 Transportation Policy Plan*

III. Current and Future Revenue Trends

For many reasons, revenues for transportation – even from dedicated sources – are difficult to accurately predict 20 years in advance. Even without accounting for likely future changes in population, travel patterns and fleet composition, the sustainability of existing funding sources presents a concern. This section first summarizes the existing funding structure for state trunk highways, Greater Minnesota transit and Twin Cities metropolitan area transit. The section then discusses the outlook for current revenue sources for transportation. In addition, potential effects of economic, environmental and demographic trends on the revenue capacity of these sources are presented.

Figures 4 and 5 present a summary of existing funding sources for trunk highways and transit in Minnesota. Figure 4 shows the relative contribution of each revenue source to each mode in 2008. Figure 5 illustrates the appropriation of sources toward capital and operating costs for each mode.



Note: The Local Option Sales Tax (see page 33) began collecting revenue in Fiscal Year 2009 and is therefore not represented in these numbers.

Figure 4. Relative contributions of existing funding sources to the budget for each service in 2008.

Source: Mn/DOT Office of Investment Management (Data from Mn/DOT Financial Management and Legislative Briefing, January 2009; Mn/DOT Draft Greater Minnesota Transit Plan 2010-2030; Metropolitan Council 2030 Transportation Policy Plan).

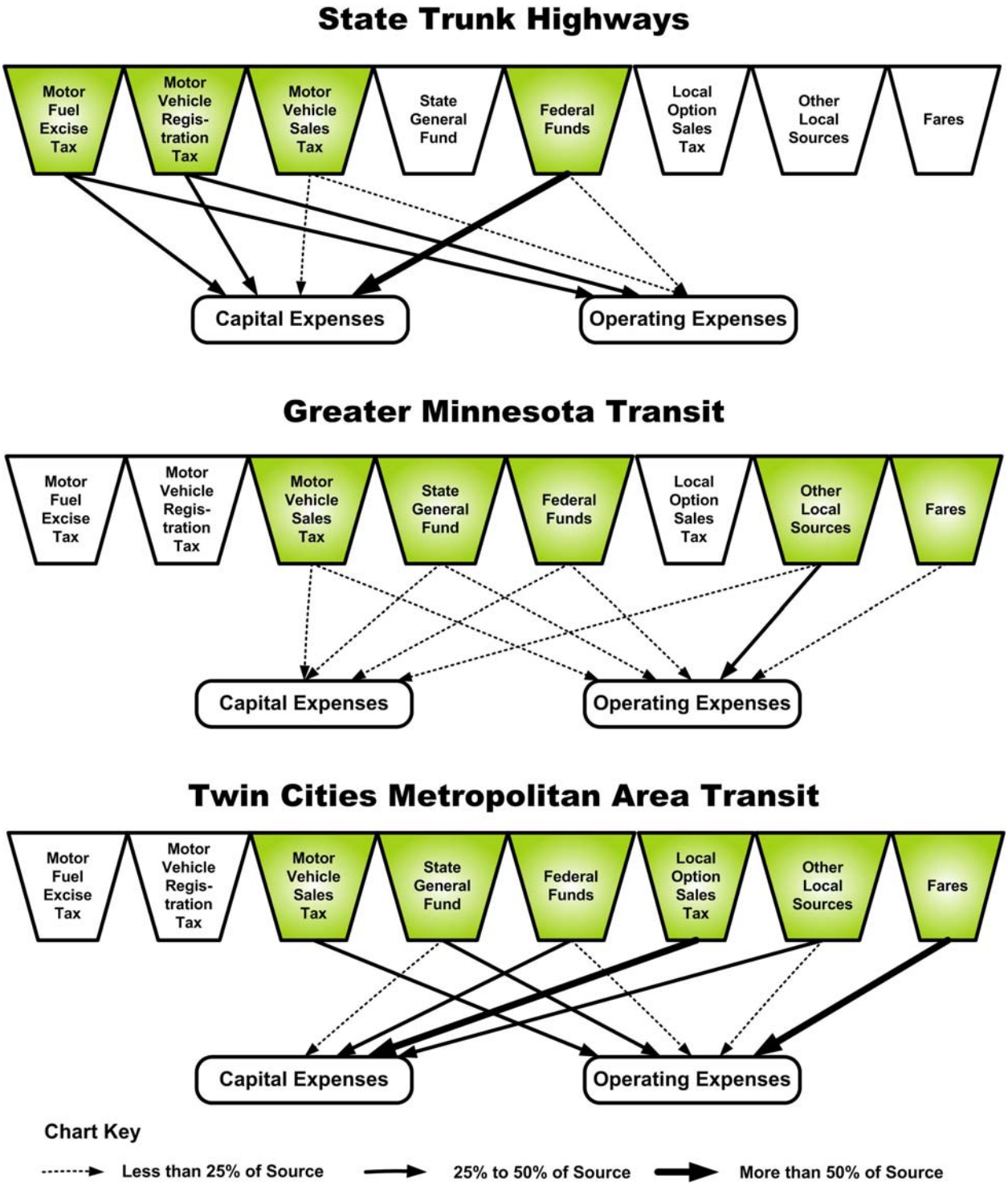


Figure 5. Distribution of existing transportation funding sources to capital and operating expenses.

Source: Mn/DOT Office of Investment Management

State Trunk Highway Funding Structure

The major sources of funding for highways in Minnesota are federal aid and state highway user taxes. Federal aid comes mostly from the federal motor fuel tax as formula funds and as earmarks for special projects. The state motor fuel tax, motor vehicle sales tax and part of vehicle registration fees are directed into the Highway User Tax Distribution Fund. The portion of the HUTD directed to the State Trunk Highway fund is nominally 58.9 percent. The remainder of trunk highway revenues is comprised of federal revenue, license fees, investment income and other miscellaneous sources. The trunk highway fund is then appropriated for the following purposes (Fiscal 2008 amounts and percentages shown):

- Highway construction ($680 million, 54.1 percent)
- Operations, maintenance and other expenses ($444 million, 35.3 percent)
- Department of Public Safety and torts ($77 million, 6.1 percent)
- Debt service ($56 million, 4.5 percent)

The revenue outlook for 2009-2028 highway construction program used to develop the Highway Investment Plan is shown in Figure 6. The outlook was developed in 2007 assuming current sources and distributions will remain unchanged during the 20-year period. For planning purposes, economic growth was assumed to be slower than in the past 20 years. Vehicle sales were not assumed to increase significantly, but fuel efficiency was assumed to improve with more stringent federal standards. The result was an average growth rate for available highway construction funds of about 1.6% per year.

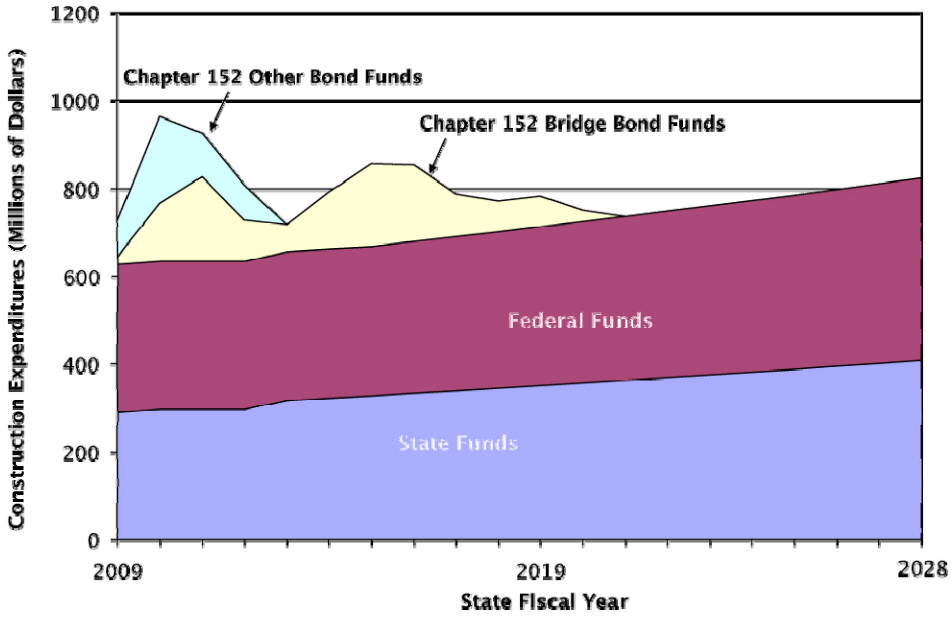


Figure 6. Highway construction program outlook, 2009 – 2028.

Source: Mn/DOT Statewide Transportation Policy Plan 2009-2028

Greater Minnesota Transit Funding Structure

The Mn/DOT Office of Transit administers funding from state and federal sources for transit in Greater Minnesota. Dedicated funding is generated by MVST, and other sources include the state general fund, federal funds, fares, contracted service and local contributions. A constitutional amendment passed in 2006 specifies that at least 40 percent of MVST revenues will be directed to transit throughout the state by 2012. The current legislative allocation provides 4 percent of the total MVST revenue for transit in Greater Minnesota in 2012.

Minnesota currently receives funding from eight different federal programs for transit in Greater Minnesota. These include formula funds as well as programs for planning, capital improvements, and targeted programs for the elderly, persons with disabilities, and low income individuals.

The local share of funding for transit in Greater Minnesota is set by a fixed funding formula. In Urbanized (more than 50,000 population) and Small Urban (2,500 to 50,000 population) areas, the local share is set at 20 percent. For rural areas (less than 2,500 population) and for programs serving the elderly and disabled, the local share is set at 15 percent. The local match can be met through a combination of fare box revenue, contracted service and direct municipal support.

Twin Cities Area Transit Funding Structure

Sources of operating funding for transit in the Twin Cities metropolitan area are similar to those for Greater Minnesota transit. Fares cover a larger percentage of operating costs, and the relative reliance on the state general fund is less. Revenues from MVST play a larger role both in relative and absolute terms. When the reallocation of MVST revenue is complete in 2012, 36 percent of total collections will be directed to transit in the Twin Cities region. The remainder of operating funding is covered by the state general fund, federal funds, fares and other local sources. Revenues are administered by Metropolitan Council, and funding for the suburban opt-out services is passed through to those providers.

For capital funding, federal formula funds are distributed each year and require a 20 percent local match. The match and other capital expenses, such as fleet replacement, maintenance and technology needs, are paid using Regional Transit Capital bonds. The bonds are authorized by the Minnesota Legislature annually and repaid with revenues collected from property taxes within the Transit Taxing District. Other federal sources of capital funding include Congestion Mitigation/Air Quality grants, and Federal New Starts funding for transitway construction.

Minnesota Laws 2008 Chapter 152 gave the seven metropolitan counties the authority to charge a 0.25 percent sales tax to apply toward transitway projects. The proceeds are allocated by the Counties Transit Improvement Board, a joint-powers board formed by the five counties that enacted the tax. Limits on this tax prohibit using the proceeds to offset any decline in operating revenues or to operate or expand the current bus system. The tax is expected to raise roughly $85 million annually in 2008 dollars. Additional legislation limited the county and state shares of construction costs for rail projects to 10 percent each with 50 percent coming from the federal government and 30 percent directed by CTIB.

The Metropolitan Council Transportation Policy Plan assumes that revenues from existing sources will grow over the long term at a rate sufficient to maintain current services. This growth is expected to occur primarily in motor vehicle sales tax revenue or increased state appropriations. Current revenue sources are not expected to increase enough to provide for expanded system operation, but the plan assumes the region will continue to receive federal funding and state bond fund appropriations for capital projects.

Federal Funding Trends

Each year, Minnesota gets a distribution of federal funding from the Federal Highway Trust Fund, which consists primarily of revenue from the federal motor fuel tax. The projected federal aid for transportation in Minnesota as assumed in 2007 for the development of the Statewide Transportation Policy Plan is shown in Figure 7. For planning purposes, federal aid was assumed to be flat through the next surface transportation authorization.

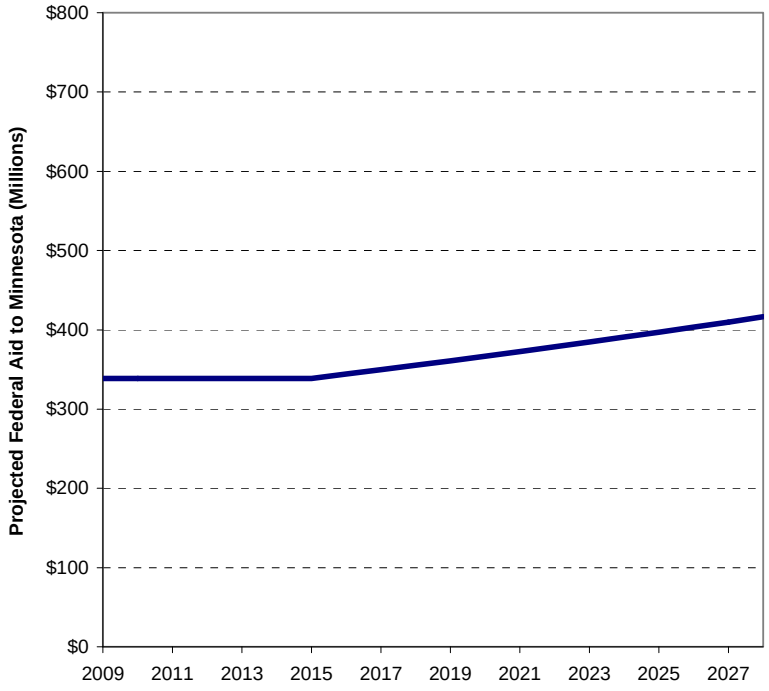


Figure 7. Federal Aid revenue for state roads projection used for 2009-2028 Statewide Plan.
Source: Mn/DOT Office of Investment Management

Under the current authorization, each state receives at least 92 percent of its contributions to the fund, but the outlook for the fund is uncertain. In 2008, Congress transferred $8 billion in general revenues to keep the Highway Trust Fund from reaching a negative balance. This was not a permanent solution, and within the next few years the fund is again projected to approach insolvency. The next federal surface transportation authorization will have a significant impact on future funding.

Motor Fuel Tax Trends

The motor fuel tax contributes the largest share to the Highway User Tax Distribution Fund. About half of the revenue deposited into the fund is generated by the excise tax on motor fuel, meaning future decreases in fuel use have a larger potential impact on trunk highway funding than fluctuations in revenues from other sources. The federal motor fuel excise tax is also the primary source of revenue for the Federal Highway Trust Fund, which funds both highway and mass transit programs. The federal motor fuel tax is susceptible to the same trends as the Minnesota State Motor Fuel Excise Tax.

Inflation

The motor fuel excise tax rate is currently not indexed for inflation and as a result has lost purchasing power during the last 20 years. Figure 8 shows the nominal and inflation adjusted fuel tax rate from 1988 to 2009 and the projected nominal and inflation adjusted rate through 2012. Even with the recent rate increase, the gas tax has not reached the same purchasing power on a per gallon basis as it had in 1988 and is not projected to when the full rate increase goes into effect in 2012.

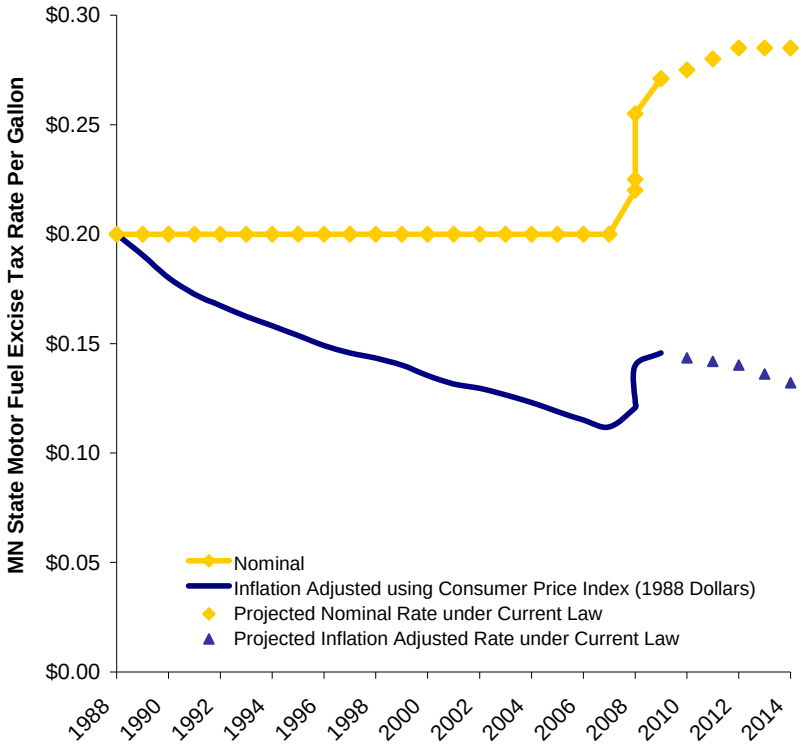


Figure 8. Minnesota State Motor Fuel Excise Tax Rate Adjusted for Inflation, 1988 – 2014.
Source: Mn/DOT Office of Investment Management

However, the combined effects of stable average vehicle fuel economy and vehicle miles traveled growing at roughly the rate of inflation resulted in fuel tax revenues approximately keeping pace with inflation during the 1990s and into the early part of this decade. In 2005, VMT growth slowed significantly (see Figure 9) and consequently fuel tax revenue stopped

keeping pace with inflation. The current rate increase has brought revenues back in line with inflation, but unless VMT growth resumes, fuel tax revenues are unlikely to keep pace with inflation after 2012.

Fuel Price Volatility

The recent retail price pattern for gasoline and annual miles traveled in Minnesota is shown in Figure 9. The price has grown increasingly more volatile during the last several years.

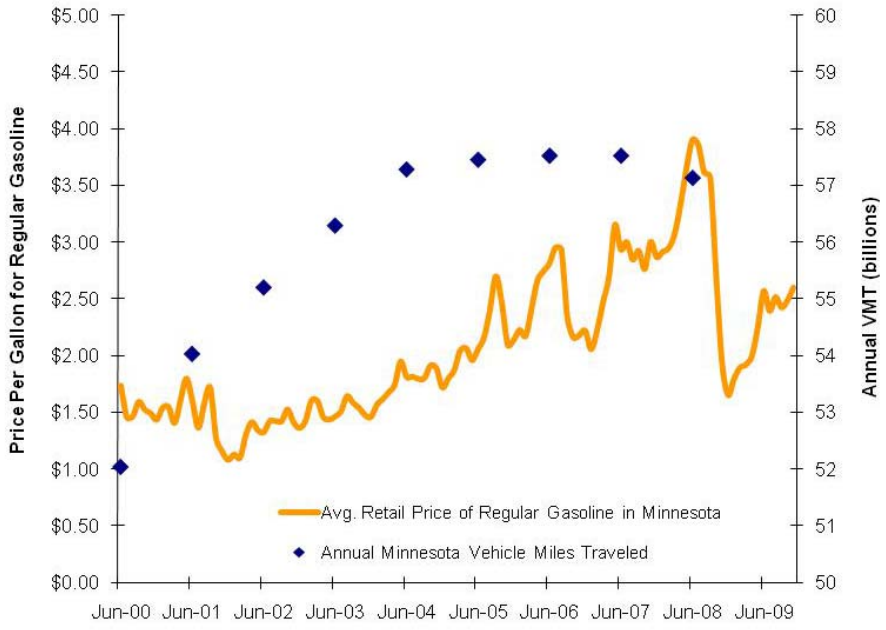


Figure 9. Average Monthly Retail Price of Regular Gasoline and Annual VMT in Minnesota 2000-2009.
Source: Energy Information Administration, Mn/DOT Office of Transportation Data and Analysis

In the short term, the price of fuel has only a modest effect on the amount of vehicle travel or on the revenue potential of the motor fuel tax. Travel patterns are difficult to change quickly, so immediate fuel-saving options are limited to measures such as eliminating or chaining discretionary trips, reducing speed, and accelerating more slowly. In the long term, the effect of rising fuel prices is greater as drivers have more options when determining how to respond. If prices remain high for a longer time, drivers can justify more lasting changes that will reduce demand for fuel, such as purchasing vehicles with better fuel economy or moving closer to their places of work. Figures 10 and 11 show the impact of high gas prices on highway funding and transit funding.

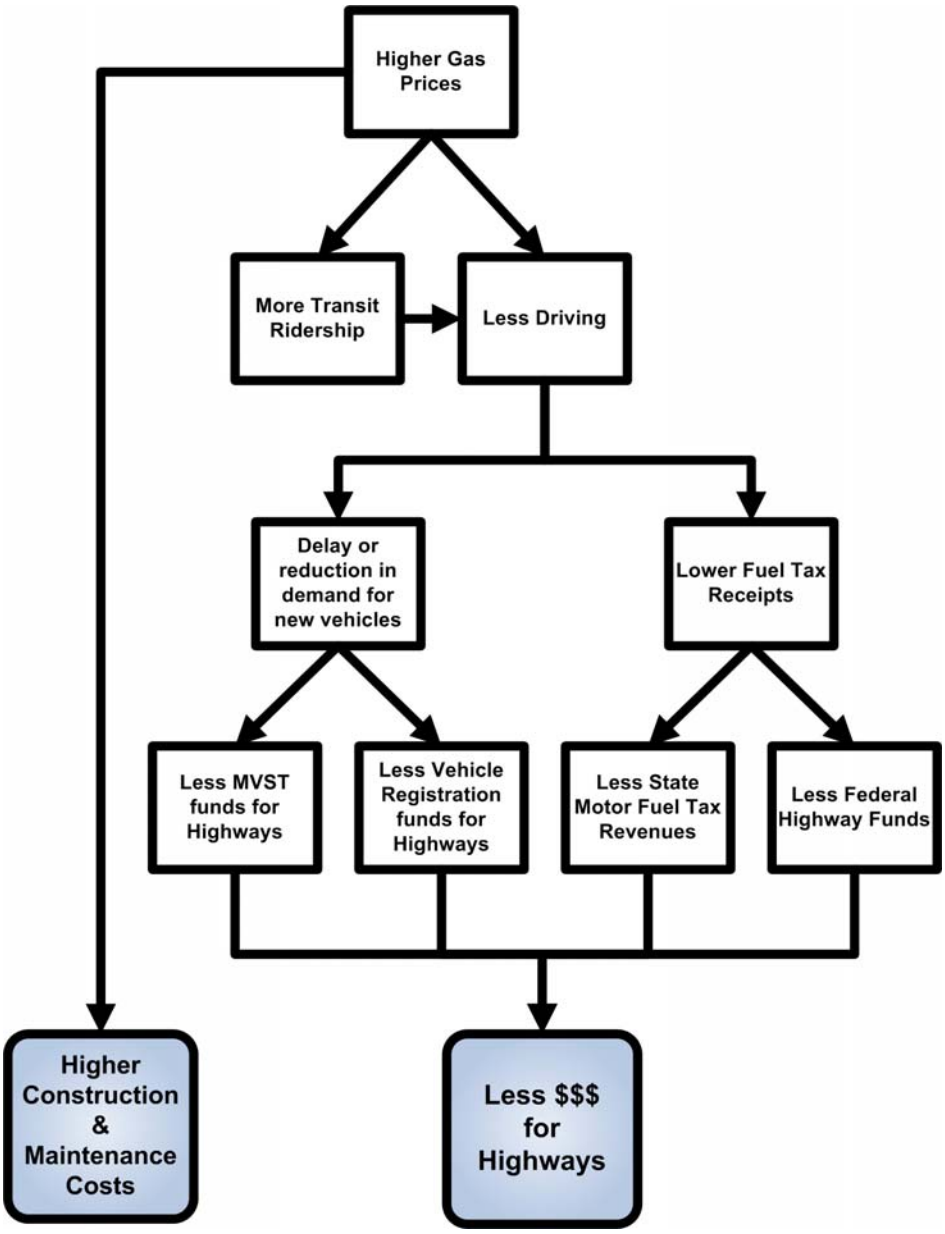


Figure 10. Effects of High Gas Prices on Highway Funding.

Source: Mn/DOT Office of Investment Management

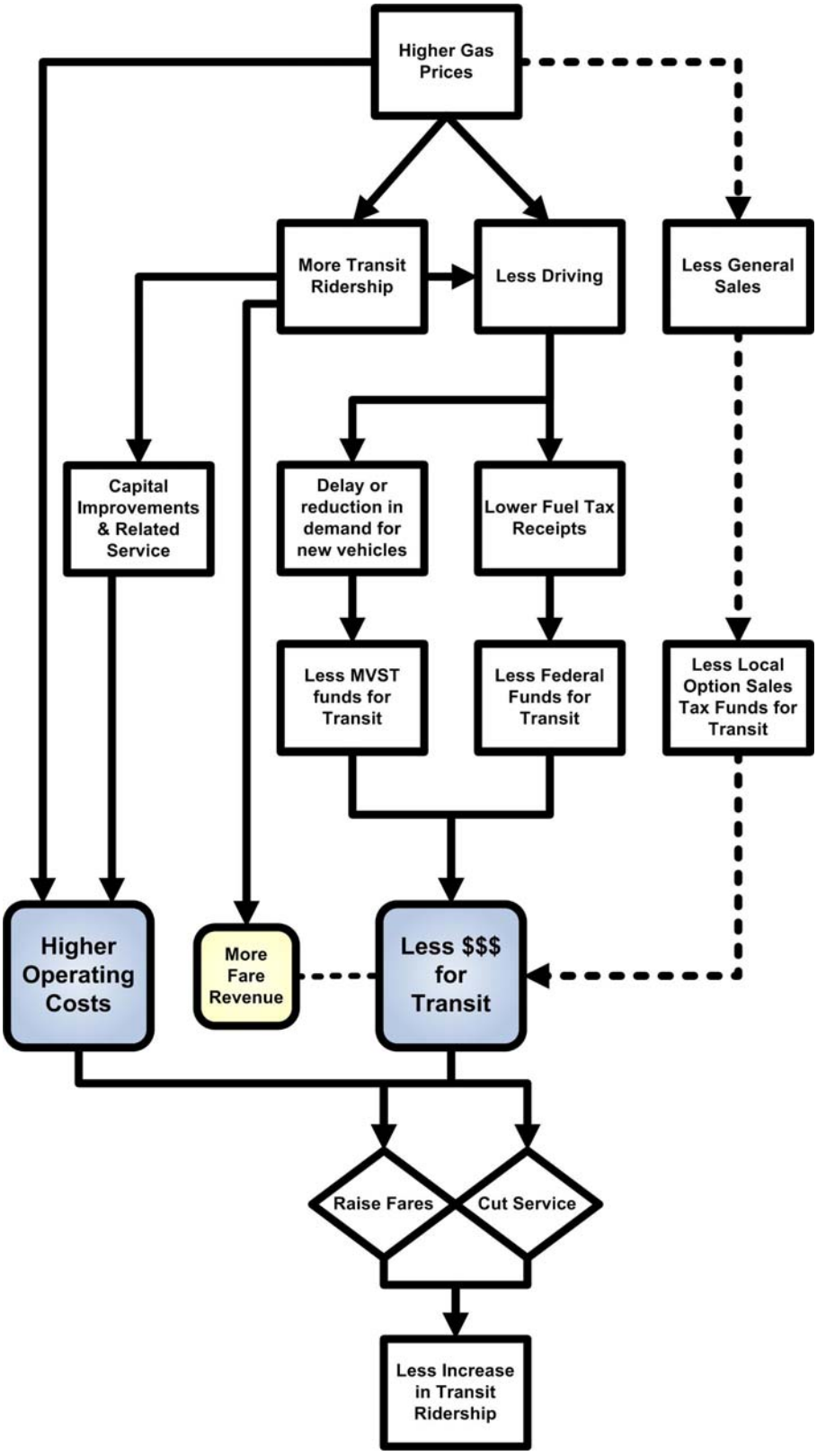


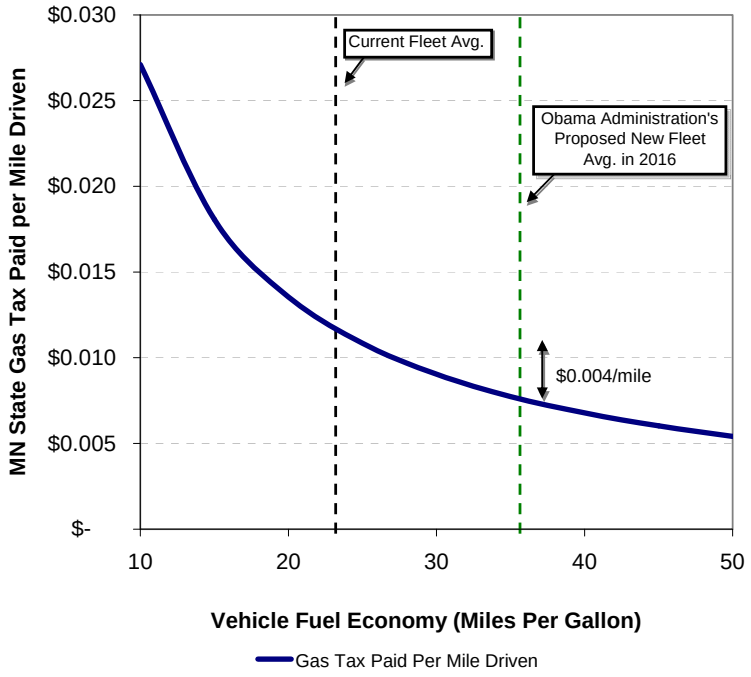
Figure 11. Effects of High Gas Prices on Transit Funding and Performance.

Source: Mn/DOT Office of Investment Management

One advantage of the current fuel tax over a sales tax on gas is the stability and predictability of the revenue generated. If the tax reflected the price of fuel, and the price dropped significantly, the effect on revenue for transportation infrastructure would be greater and occur sooner than with the current per-gallon tax. In addition, a sales tax would magnify rapid price increases and further escalate the effect of high gas prices on driving.

Increasing Fuel Economy

One of the major challenges to the sustainability of motor fuel tax revenue levels arises from increasing consumer preference for more fuel-efficient vehicles and increasingly strict federal standards for corporate average fuel economy. Figure 12 shows the relationship between vehicle fuel economy and fuel taxes paid per mile driven. On average, drivers currently pay slightly more than one cent in Minnesota motor fuel taxes per mile driven. A vehicle that gets 100 miles per gallon would pay only $0.003 per mile. Users of entirely electric vehicles pay no motor fuel taxes. They pay sales taxes on the electricity purchased, but those tax revenues are not dedicated to transportation funding.



Based on 2009 State Motor Fuel Excise Tax Rate of 27.1 cents per gallon

Figure 12. Minnesota State Motor Fuel Excise Taxes paid per mile driven based on vehicle fuel economy.
Source: Mn/DOT Office of Investment Management

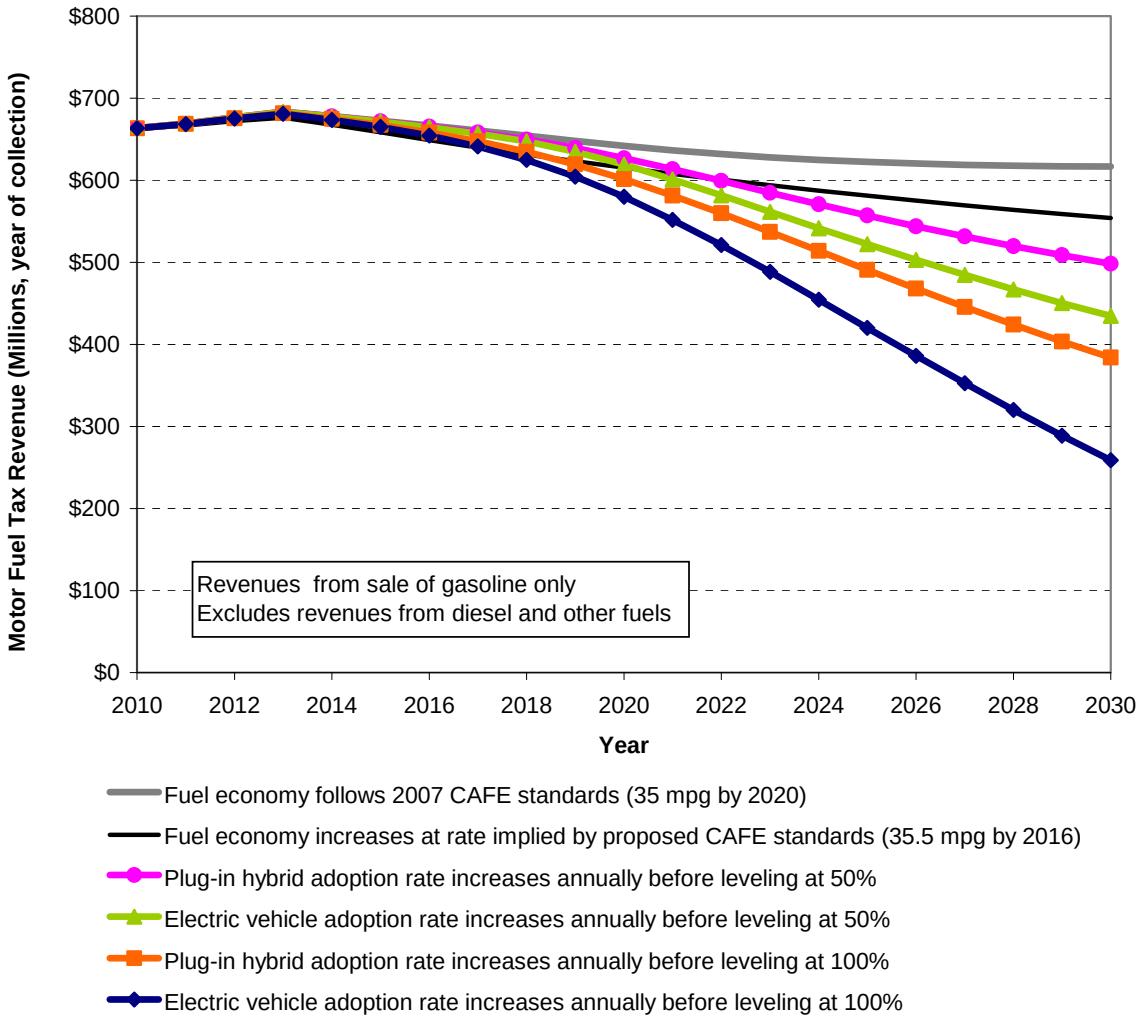
In 2007, federal legislation was enacted to raise the fuel economy requirement from its current level of 27.5 miles per gallon for passenger cars to 35 miles per gallon by 2020. The Obama administration has proposed increasing the corporate average fuel economy standards to 35.5 miles per gallon by 2016. If vehicle-miles traveled remain constant, the effect of the increase in efficiency would be less fuel tax revenue while demand for road improvements would not decrease. The other possibility is that drivers will respond to the decreasing cost of travel by

driving more, which would have less impact on revenue levels but increase the demand for investment in facilities.

Electric Vehicles, Plug-in Hybrids and Alternative Fuels

The development of alternative fuels and electric or hybrid vehicles could accelerate the effects of fuel economy discussed above. The gas-electric hybrid vehicles currently available provide significantly improved fuel economy compared to conventional gasoline-powered vehicles. Plug-in hybrids (PHEV), all-electric vehicles and hydrogen fuel cells would all substantially reduce or eliminate demand for gasoline and with it the revenue potential of the motor fuel tax.

The potential effects of sample scenarios for the adoption of electric vehicles and PHEVs into the fleet are displayed in Figure 13. The adoption pattern is assumed to follow an S-shaped curve, in which the percentage of new vehicles that are electric or PHEV increases slowly at first, gradually becoming more steep before leveling off. Maximum proliferation levels of 50 percent and 100 percent are shown for both types of vehicles. The fuel tax revenue generated under these conditions is compared with what could be expected without the introduction of alternative fuels under both the current CAFE standards and the accelerated proposed standards. Appendix B includes additional estimates based on different travel assumptions.



Assumptions:
Gas Tax remains at $0.285 starting 2013
Average annual VMT per vehicle assumed to be constant
Revenues exclude taxes on diesel and other fuels
Rate of new vehicle purchases is 5%
Fleet grows at 0.8% annually due to population growth
For plug-in hybrids, an average fuel economy of 100 miles per gallon was assumed

Figure 13. Potential effects of electric and plug-in hybrid vehicles on state motor fuel tax revenues.
Source: Mn/DOT Office of Investment Management

As compared to the base case, PHEVs would result in about a 15 percent drop in revenue by 2030 if adoption reaches 50 percent, and a 30 percent drop if adoption reaches 100 percent. Electric vehicles would cause about a 25 percent decrease in revenue if adoption reaches 50 percent, and a 45 percent drop if they comprise all new vehicle purchases by 2030. Additional fuel tax revenue would still be generated by trucks and tractors, which are likely to become more fuel-efficient but less likely to electrify.

Motor Vehicle Registration Tax Trends

The second-largest contribution to state highway funding in Minnesota comes from vehicle license and registration fees. Roughly 80 percent of the revenue from this source is generated by passenger vehicles. The registration tax consists of a $10 fixed fee and an additional component based on the vehicle's value. Tax levels were capped when the reallocation of MVST revenue was introduced, but the caps were later removed and the depreciation schedule for vehicles was adjusted. Projected revenues estimated in 2007 for planning purposes from vehicle registration taxes as assumed for the Statewide Transportation Policy Plan are shown in Figure 14.

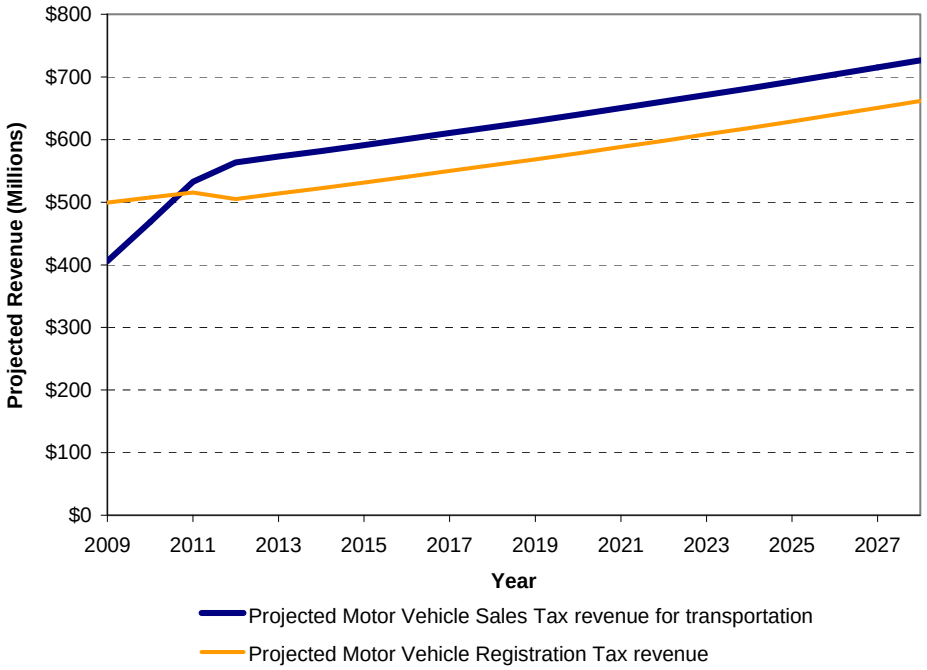


Figure 14. Motor vehicle registration and sales tax revenue projections used for 2009-2028 Statewide Plan.
Source: Mn/DOT Office of Investment Management

For the first two years, the registration tax applies to 100 percent of the vehicle's value, with the proportion of value taxed decreasing as the car gets older. The modified depreciation schedule and removal of the maximum taxes means that owners of new cars are paying a larger share of the total registration tax than owners of older cars. Improved materials and designs mean vehicles last longer, and recent economic conditions and unpredictable gas prices provide additional reasons to delay new vehicle purchases. Although hybrids are currently more expensive, smaller gasoline-powered cars with better fuel economy tend to be less expensive than the large trucks and sport-utility vehicles they are replacing. Finally, the vehicle market is nearly saturated, and the number of vehicles per capita is not expected to grow. Nevertheless, one advantage of the registration tax is that it is very stable and predictable, because the fleet changes slowly.

Motor Vehicle Sales Tax Trends

Like registration fees, motor vehicle sales taxes are also based on the price of the vehicle. Thus, the same trends that affect value-based registration fees will reduce the revenue potential of sales taxes. The projected revenue available from this source for highways used for preparation of the Statewide Transportation Policy Plan is shown in Figure 14.

A 2006 constitutional amendment dedicated 100 percent of MVST revenue to transportation by 2012. At least 40 percent is directed to transit with no more than 60 percent for highways. Although the dedication of MVST revenues to transportation has resulted in increased transportation revenue, overall MVST revenues have been declining. Figure 15 shows the forecast for total MVST revenue used to develop the statewide plan from 2007 and a revised forecast from 2009.

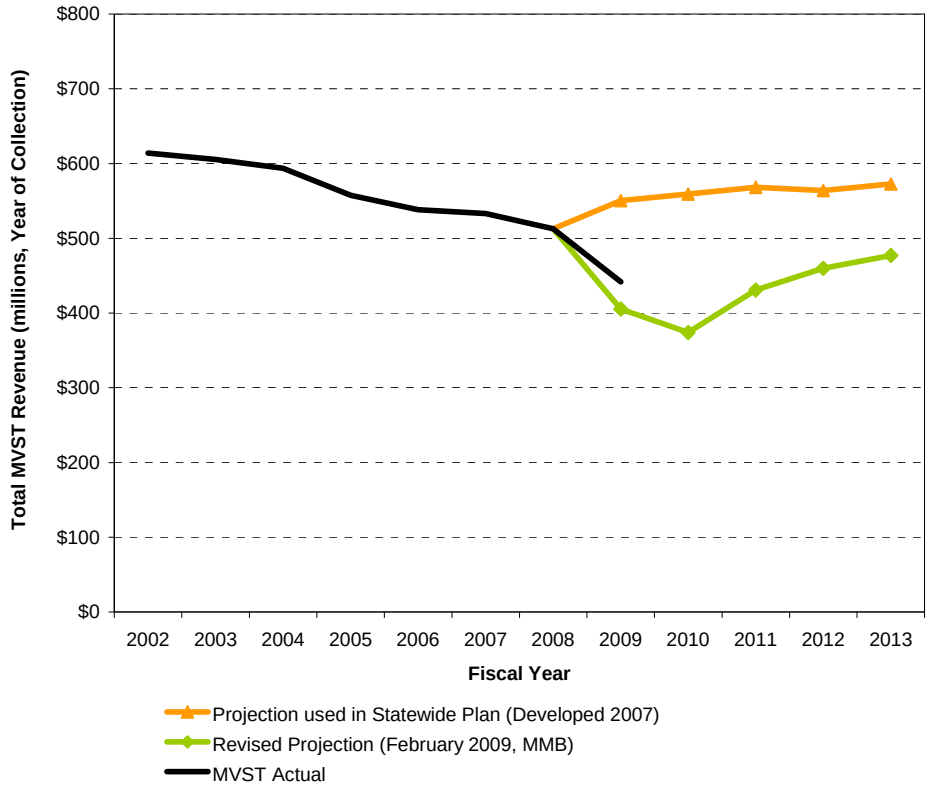


Figure 15. MVST revenue projection used for 2009-2028 Statewide Plan and revised 2009 projection.
Source: Mn/DOT Office of Investment Management, Minnesota Management and Budget

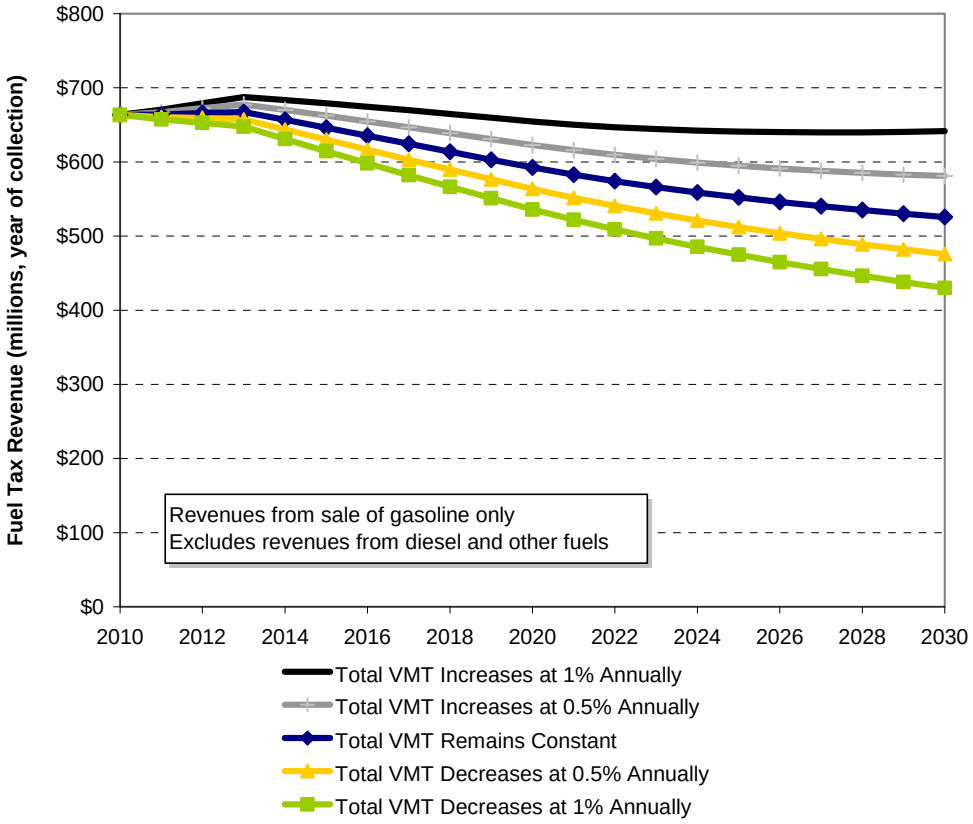
An additional challenge arises from funding transit operations with motor vehicle sales taxes. If the goal of increasing transit ridership is successful, the majority of the gains will likely come from current drivers. As households reduce the number of cars they own or eliminate them altogether, fewer vehicle sales will mean less tax revenue for transit, at the same time demand for transit is growing. Even if transit is only used for some trips, such as home to work, reduced car use will mean cars will last longer and more time will elapse between vehicle purchases.

Other Economic and Policy Trends

Certain other factors do not affect the major funding mechanisms in particular, but have an impact on demand for transportation facilities or on the costs of improvements. Changes in the economic climate, land use patterns and travel behaviors over the analysis period could affect the demand for transportation and the effectiveness of investments.

Environmental Policies

The environmental impacts of transportation investments have long been a public concern. More recently, the growing interest in reducing greenhouse gas emissions has highlighted the role transportation might play in emission reduction efforts. Several national and state policies are currently promoting greater vehicle fuel efficiency and the adoption of alternative fuels. Other environmental policies under consideration would reduce vehicle-miles traveled as a goal or a side effect. This would decrease the revenue potential of all three major sources of state transportation funding. Figure 16 shows the potential effect of VMT on state fuel tax revenue. Appendix B includes estimates of different VMT growth rates for other fuel economy scenarios.



Assumptions:
Gas Tax remains at $0.285 starting 2013
Rate of new vehicle purchases is 5%
Fleet grows at 0.8% annually due to population growth
Fuel economy follows 2007 CAFE standards (35 mpg by 2020)

Figure 16. Potential effects of vehicle miles traveled on state motor fuel tax revenues.
Source: Mn/DOT Office of Investment Management

Broad policies intended to reduce fuel consumption by reducing travel demand might serve to decrease emissions or reduce dependence on foreign oil. More localized policies might include permitting denser development, encouraging more pedestrian-friendly construction or improving bicycle path connectivity. These would be expected to cause an increase in demand for transit service, while at the same time causing a drop in one of its major revenue sources (MVST) by reducing reliance on automobile travel.

Policies that aim to reduce VMT would reduce the need to invest toward highway mobility improvements and congestion relief, but would not reduce the need for infrastructure preservation. Freezing and thawing cycles and the weight of heavy vehicles are much greater contributors to pavement and structure wear than high volumes of passenger vehicles, and would remain concerns even if VMT were reduced.

Demographic Shifts

Changing population characteristics will require adjustments to transportation services. In particular, the proportion of senior citizens in the population is increasing rapidly. As people age, they tend to drive less and make fewer, shorter trips. People living longer and driving longer is one contributing factor to increased congestion, but may not affect peak-period travel, since after retirement people have more freedom to travel during the day. A higher proportion of older adults will likely increase overall demand for transit. At the same time, retirees on fixed incomes would limit the feasibility of fare increases to cover the costs of increasing and improving service.

Another demographic factor to consider is the continued expansion and development in suburban areas. Lower-density development is more difficult to serve with public transportation, so demand for auto travel will remain high in such areas. In turn, residents of communities with less extensive transit service are often less willing to support increases in public funds for services from which they will not directly benefit.

Alternative Mode Choices

When fuel prices rise, alternatives to car travel become more economically attractive both for individuals and for businesses. Commuters traveling long distances would be more likely to form carpools. Businesses may be more likely to permit telecommuting or working from home. Travelers that formerly were reluctant to use transit because of lower perceived status might begin to consider it an option. Likewise, a growing awareness of the link between transportation choices and public health has supported a growing trend in bicycle and pedestrian trips. All of these trends would contribute to reduced demand for automobile travel, which would in turn reduce the need for further investment in roads and highways, but would also have an adverse effect on current revenue sources for all modes of transportation.

Construction Cost Volatility

Since 2004, the cost of construction materials has risen faster than prices for other goods and services after trailing it for most of the 1990s, though the steep upward trajectory of the construction index is not expected to continue. A comparison of the Mn/DOT construction cost index with the consumer price index is shown in Figure 17.

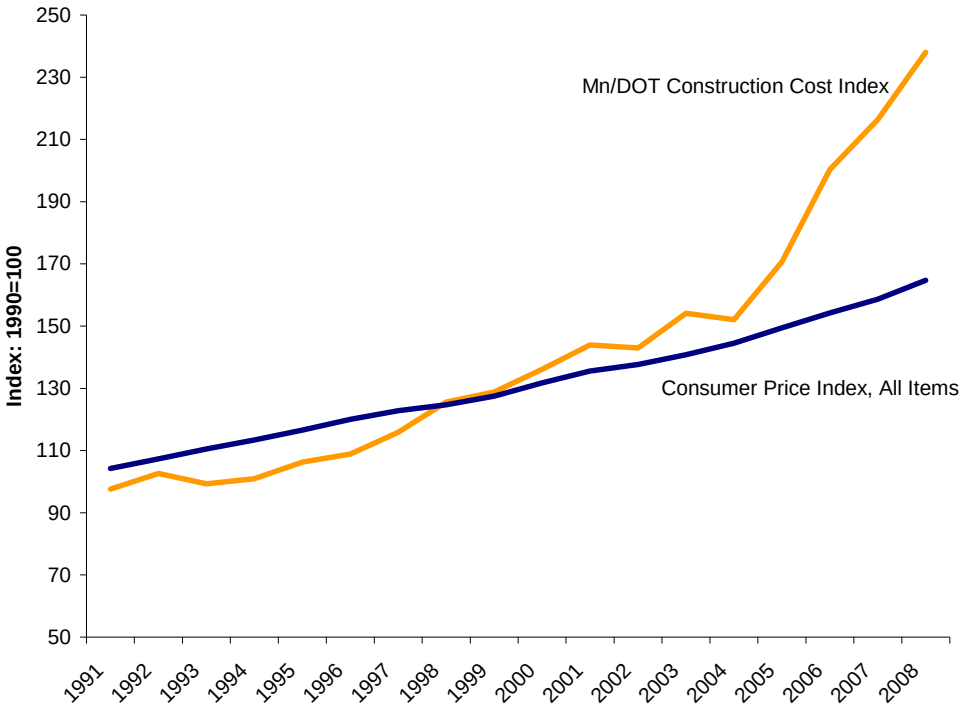


Figure 17. Comparison of Mn/DOT construction cost index with Consumer Price Index 1991-2008.
Source: Mn/DOT Office of Investment Management

Even if the gas tax or other funding sources were indexed to inflation or to the Consumer Price Index, revenues would still be likely to grow more slowly than construction costs during some periods. Investments do not go as far when this is the case, and the difference is not necessarily made up when construction costs are low because the construction industry cannot increase available resources quickly.

Summary

When faced with the combined effects of changes in demand for transportation, inflation and uncertain economic conditions, construction cost volatility and changes to the vehicle fleet, at current rates the existing transportation funding structure in Minnesota is not likely to be sustainable over the long term. Policies adopted for environmental and development purposes have positive outcomes, but negative impacts on the revenue potential of current sources. The addition of new strategies into the funding mix to complement or replace revenues from existing sources would provide for a transportation funding outlook that is more secure.

Although the current transportation funding structure in Minnesota is not likely to be sustainable over the long term, stakeholders generally did not consider the situation to be an immediate crisis. There is time for additional study and evaluation. Transportation technology changes quickly and during the next 20 years the technology available may be completely different.

IV. Evaluation of Revenue Options for Minnesota

This section discusses the viability, resilience and impact on policy objectives for existing and potential revenue sources. Based on reports by the National Surface Transportation Policy and Revenue Study Commission and the National Cooperative Highway Research Program, subjective ratings by Mn/DOT staff are provided for each option.[3] A summary of ratings and options can be found in Appendix C. Strategies and options for transitioning to new sources are also briefly discussed at the end of this section.

Table 3. Revenue Mechanisms Considered

Existing Sources	Modifications to Existing Sources	Potential Sources
Motor Fuel Excise Tax	Indexed Motor Fuel Excise Tax	Mileage-Based Tax (flat rate)
Motor Vehicle Sales Tax	Motor Fuel Sales Tax	Mileage-Based Tax (by emission level)
Motor Vehicle Registration Tax	Vehicle Registration Tax by Emissions Level	Mileage-Based Tax (by time of day and location)
General Funds		Tolling Existing Lanes
Local Option Sales Tax		Tolling New Lanes
Property Tax		Tolling with Congestion Pricing
HOT Lane Pricing		Cordon Pricing
Tax Increment Financing		Dynamic Parking Pricing
Wheelage Tax		General Sales Tax
Transit Fare Box Revenue		Value Capture – Land Value Tax
Advertising		Value Capture – Transportation Utility Fees
		Cap and Trade (skim 10% for Transit)

[3] These ratings are based on the National Surface Transportation Policy and Revenue Study Commission's Report entitled "Transportation for Tomorrow" and the National Cooperative Highway Research Program's reports entitled "Future Financing Options to Meet Highway and Transit Needs" and "Local and Regional Funding Mechanisms for Public Transportation."

Evaluation Criteria

In general, it is desirable for a revenue source to be stable, provide adequate predictable funding, promote positive environmental outcomes, be equitable, acceptable to the public, technically feasible, and have low administrative costs. Minnesota and the United States are experiencing rapid changes and overall the transportation revenue system needs to include a high level of resiliency. The following criteria were used to evaluate 25 existing and potential revenue sources listed in Table 3.

Overview

A brief overview of each mechanism is provided, including:

- *Description*: What is the mechanism? How does it work?
- *Current Use*: Where and how is the mechanism currently used in the United States or other countries?
- *Geographic Scope*: At what level of government and for what geographic area could the revenue be used?

Viability

The viability of each revenue mechanism was assessed based on the following categories:

- *Revenue Potential*: Is the mechanism likely to generate significant revenue? Could it achieve comparable revenue to one of the existing major sources of funding? How stable is the source?
- *Implementation Complexity*: How complicated and/or expensive would it be to implement? Is it technically feasible?
- *Public Acceptance*: Is the funding mechanism likely to achieve sufficient public support to be adopted? Is the mechanism understood? Are there significant concerns or barriers to implementation?

Resilience

In the long term, how sustainable is the revenue source. Is it susceptible to emerging trends?

- *Increases in Fuel Economy/Alternative Fuels*: What impact would increases in fuel economy and/or the use of alternative fuels have on revenue?
- *Increased Use of Alternative Modes*: What impact would increased use of public transportation, ride shares and non-motorized forms of transportation have on revenue?
- *Fuel Price Volatility*: What impact would extreme fuel price volatility have on revenue?

Policy Impacts

Each revenue source was evaluated based on the extent to which it helped achieve the policy objectives of reducing congestion and greenhouse gas emissions.

- *Congestion Mitigation*: To what extent would the funding mechanism impact the policy objective of mitigating congestion? Does it encourage mode shifts or reductions in driving?
- *Greenhouse Gas Emission Reductions*: The Next Generation Act has set targets to reduce Minnesota's GHG emissions from 2005 levels 15% by 2015, 30% by 2025 and 80% by 2050. To what extent would the funding mechanism impact the policy objective of reducing GHG emissions?

Existing Sources

Motor Fuel Excise Tax (per gallon)			
Overview	**Description**	A motor fuel excise tax is collected both by the State of Minnesota and the federal government. It is assessed on a cents per gallon basis and is not adjusted for inflation. The state motor fuel tax was most recently increased in 2008. The last time the rate had been increased was 1988.	
	Current Use	All 50 states and the District of Columbia levy an excise tax on motor fuel.	
	Geographic Scope	Statewide	
Viability	**Revenue Potential**	+	High yield and historically stable. However, the fuel tax rate has lost value over time due to inflation.
	Implementation Complexity	+	Simple and an established collection system with low compliance costs.
	Public Acceptance	+	Generally accepted form of revenue generation. Has been historically difficult to raise rate and higher fuel prices also make future rate increases politically challenging.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	—	As fuel economy improves, fuel sales decrease. The short-term impacts are likely to be modest, but over time increases in fuel economy will reduce revenue from the fuel tax.
	Increased Use of Alternative Modes	—	As drivers switch to transit, carpools, bicycles, telecommuting and other alternative modes of transportation, fuel sales will decrease and thus tax revenue will decrease.
	Fuel Price Volatility	—	Volatile fuel prices will cause some to decrease their fuel purchases and others to shift modes, both of which will reduce fuel sales and thus tax revenue will decrease.
Policy Impacts	**Congestion Mitigation**	∅	There is no connection between the fuel tax and congestion.
	Greenhouse Gas Emission Reductions	+	Higher fuel taxes offer an opportunity to reduce GHG emissions by encouraging improved fuel economy.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

Motor Vehicle Sales Tax			
Overview	**Description**	Prior to 2000, all revenues from the Motor Vehicle Sales Tax were deposited in the State General Fund. In 2000, the Legislature dedicated 30% of MVST revenue to the Highway User Tax Distribution Fund. In 2006, a constitutional amendment dedicated 100% of the MVST revenues to transportation with at least 40% for transit.	
	Current Use	Currently 45 states have a motor vehicle sales tax and the federal government levies a sales tax on heavy trucks. Only Minnesota constitutionally dedicates revenue from MVST for transportation.	
	Geographic Scope	Statewide	
Viability	**Revenue Potential**	+	Revenues are subject to vehicle sales and the value of vehicles sold. The current trend is toward smaller, less expensive vehicles.
	Implementation Complexity	+	Existing revenue source with relatively low administrative costs.
	Public Acceptance	∅	Existing tax. However, rate increases are likely to be unpopular.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	∅	Increased fuel economy and alternative fuels are unlikely to significantly impact vehicle sales. However, the trend is toward smaller, less expensive vehicles that may reduce the yield per vehicle sold.
	Increased Use of Alternative Modes	—	Increased use of alternative modes will reduce vehicle sales, and thus reduce sales tax revenues.
	Fuel Price Volatility	—	Fuel price volatility may lead to mode shift away from single occupancy vehicle trips, which could reduce the number of vehicle sales.
Policy Impacts	**Congestion Mitigation**	∅	There is no connection between the MVST and congestion.
	Greenhouse Gas Emission Reductions	∅	There is no connection between the MVST and GHG emissions.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

Motor Vehicle Registration Tax (Tab fees)			
Overview	**Description**	The motor vehicle registration tax is an annual fee paid by vehicle owners. The fee consists of a $10 fixed fee and a variable component based on the value of the vehicle. Caps on the tax instituted in 2000 were removed in 2008 and the depreciation schedule for vehicles was accelerated.	
	Current Use	All 50 states currently levy registration fees. Many charge higher or graduated fees for heavy vehicles.	
	Geographic Scope	Statewide	
Viability	**Revenue Potential**	+	Revenues are subject to the number and value of vehicles, which makes it relatively stable and easy to predict given the slow rate of change in the fleet.
	Implementation Complexity	+	Existing revenue source with relatively low administrative costs.
	Public Acceptance	+	Generally accepted existing tax.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	∅	Increased fuel economy and alternative fuels are unlikely to significantly impact the number of registered vehicles. However, the trend is toward smaller, less expensive vehicles that may reduce the tab fees per vehicle.
	Increased Use of Alternative Modes	—	Increased use of alternative modes could reduce the number of registered vehicles.
	Fuel Price Volatility	—	Fuel price volatility may lead to mode shift away from single occupancy vehicle trips, which could reduce the number of registered vehicles.
Policy Impacts	**Congestion Mitigation**	∅	There is no connection between tab fees and congestion.
	Greenhouse Gas Emission Reductions	∅	There is no connection between tab fees and GHG emissions.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

General Funds			
Overview	**Description**	Minnesota allocates some of the State General Fund for public transit in both the Twin Cities Metro Area and Greater Minnesota.	
	Current Use	Many states and local governments used general fund appropriations for transportation, usually transit.	
	Geographic Scope	State, County, Local	
Viability	**Revenue Potential**	+	Relatively stable and predictable source, but are not dedicated to transportation.
	Implementation Complexity	+	Overall tax code is complex, but transfer to transportation administratively simple.
	Public Acceptance	∅	There is acceptance for the use of general funds to support transit. However, funding must compete with other priorities.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	∅	Unless subsidized by the General Fund through tax breaks or other monetary incentives, increases in fuel economy or use of alternative fuels should have no impact on General Fund revenue.
	Increased Use of Alternative Modes	—	Increased use of transit will increase the demand for General Fund investment in public transportation.
	Fuel Price Volatility	—	Fuel price volatility may lead to lower levels of other consumption or have other negative economic impacts that would reduce the General Fund balance.
Policy Impacts	**Congestion Mitigation**	+	Higher general fund investment in transit could increase ridership and reduce congestion.
	Greenhouse Gas Emission Reductions	+	Higher general fund investment in transit could increase ridership and reduce GHG emissions.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

Local Option Sales Tax			
Overview	**Description**	In 2008, seven metro counties were authorized to levy a 0.25 percent sales tax. To date, five Twin Cities counties have levied the tax, which is administered by the Counties Transit Improvement Board. Revenue from the local option sales tax can only be used to fund capital expansion projects.	
	Current Use	Local Option Sales Taxes are used in some form in at least 46 states.	
	Geographic Scope	Local/Regional	
Viability	**Revenue Potential**	+	A sales tax draws from a broad base, and therefore has strong revenue potential. However, actual receipts are sensitive to the local economy.
	Implementation Complexity	+	Existing revenue source with relatively low administrative costs.
	Public Acceptance	+	Currently authorized in five Twin Cities metro counties.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	∅	Increases in fuel economy or use of alternative fuels should have no impact on local sales tax revenue.
	Increased Use of Alternative Modes	∅	Increased use of alternative modes of transportation should have no impact on local sales tax revenue.
	Fuel Price Volatility	—	Fuel price volatility may lead to lower levels of other consumption or have other negative economic impacts that reduce local sales.
Policy Impacts	**Congestion Mitigation**	+	Higher investment in transit could increase ridership and reduce congestion.
	Greenhouse Gas Emission Reductions	+	Higher investment in transit could increase ridership and reduce GHG emissions.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

Property Tax			
Overview	**Description**	Local municipalities currently use portions of their property tax revenues to pay for transportation improvements.	
	Current Use	While property taxes generally constitute a small percentage of transit funding, some states like Massachusetts and Vermont rely heavily on property taxes to fund transit.	
	Geographic Scope	Local	
Viability	**Revenue Potential**	+	Property taxes are a stable, high-yield source of revenue for local governments.
	Implementation Complexity	+	Existing revenue source with relatively low administrative costs.
	Public Acceptance	+	Currently used for local participation in state highways and local roads.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	∅	Increases in fuel economy or use of alternative fuels should have no impact on property tax revenue.
	Increased Use of Alternative Modes	∅	Increased use of alternative modes of transportation should have no impact on property tax revenue.
	Fuel Price Volatility	∅	Fuel price volatility should have no impact on property tax revenue.
Policy Impacts	**Congestion Mitigation**	∅	There is no connection between property taxes and congestion.
	Greenhouse Gas Emission Reductions	∅	There is no connection between property taxes and GHG emissions.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

HOT Lane Pricing			
Overview	**Description**	HOT Lane pricing charges a fee to single-occupancy vehicles to drive in High Occupancy Vehicle only lanes. The fee varies based on available capacity.	
	Current Use	HOT lanes are open in six states, including Minnesota. In addition to I-394, Mn/DOT is currently converting the HOV lanes on I-35W to MnPASS HOT Lanes. HOT lanes have been mixed in their ability to generate revenue above and beyond the cost of the project. Thus far, if variable tolls are planned for a new lane, the toll revenue will likely be sufficient to cover operating costs and some of the capital cost to construct the lanes.	
	Geographic Scope	State administered, but usually limited to a corridor.	
Viability	**Revenue Potential**	∅	Revenues are usually enough to cover operations and some of the construction cost.
	Implementation Complexity	—	Require the installation of electronic equipment. However, there may be economies of scale in administering a system of HOT lanes.
	Public Acceptance	+	HOT lanes currently have a modest, but loyal base of support.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	∅	Increases in fuel economy or use of alternative fuels should have no impact on HOT lane use.
	Increased Use of Alternative Modes	—	Increased use of alternative modes may mitigate future congestion, thus limiting the advantage provided by HOT lanes.
	Fuel Price Volatility	∅	It is unclear what impact fuel price volatility could have on HOT lane revenues. It could increase the value of avoiding stop and go traffic or it could reduce driving overall, thus reducing the advantage of HOT lanes.
Policy Impacts	**Congestion Mitigation**	+	Uses congestion pricing based on demand to ensure efficient traffic flow.
	Greenhouse Gas Emission Reductions	∅	HOT lanes could have a modest impact on GHG emissions through mitigating stop and go traffic conditions and advantages to transit.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

Tax Increment Financing			
Overview	**Description**	TIF uses the future increase in property values near a new development or infrastructure improvement to pay for the capital cost of the project.	
	Current Use	TIF has most often been used by local governments to fund infrastructure associated with new housing and economic development projects, but has been used in places like Chicago and Portland to fund transit projects. In Minnesota, TIF has been used extensively, both to fund housing and economic development projects as well as some interchanges.	
	Geographic Scope	Local - Project Specific	
Viability	**Revenue Potential**	—	Can generate part of the funding for specific projects, but cannot be used broadly.
	Implementation Complexity	—	Somewhat complicated to administer and only applicable at the local level.
	Public Acceptance	∅	Support generally varies by project.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	∅	Increases in fuel economy or use of alternative fuels should have no impact on TIF.
	Increased Use of Alternative Modes	∅	Increased use of alternative modes should have no impact on TIF.
	Fuel Price Volatility	∅	Fuel price volatility should have no impact on TIF.
Policy Impacts	**Congestion Mitigation**	∅	There is no connection between TIF and congestion.
	Greenhouse Gas Emission Reductions	+	If used to fund transit-oriented development, TIF could lead to increased transit use.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

Wheelage Tax			
Overview	**Description**	A wheelage tax is a fee levied on vehicles kept in a county. It is collected with the State Vehicle Registration Tax and the funds are distributed to counties.	
	Current Use	Anoka, Carver, Dakota, Scott and Washington counties levy a $5 wheelage tax on all vehicles kept in their county which are required by law to be registered annually.	
	Geographic Scope	County	
Viability	**Revenue Potential**	—	Currently generates a modest level of revenue for counties.
	Implementation Complexity	+	Collected with the State Vehicle Registration Tax.
	Public Acceptance	∅	Generally accepted because it funds local transportation needs.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	∅	Increased fuel economy and alternative fuels are unlikely to significantly impact the number of registered vehicles.
	Increased Use of Alternative Modes	—	Increased use of alternative modes could reduce the number of registered vehicles.
	Fuel Price Volatility	—	Fuel price volatility may lead to mode shift away from single occupancy vehicle trips, which could reduce the number of registered vehicles.
Policy Impacts	**Congestion Mitigation**	∅	There is no connection between the wheelage tax and congestion.
	Greenhouse Gas Emission Reductions	∅	There is no connection between the wheelage tax and GHG emissions.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

Transit Fare Box Revenue			
Overview	**Description**	Transit providers charge a fee per trip. In some instances, fees vary based on the time of day and location. Fares generally do not cover the full cost of providing a trip.	
	Current Use	Passenger fares currently generate 25% of Metro Transit's operating revenue. Most transit agencies use fare box receipts for operations and maintenance, but New York's MTA and Chicago's Metra Rail also use passenger fares to support capital programs.	
	Geographic Scope	Local/Regional	
Viability	**Revenue Potential**	+	Doesn't cover full cost of service, but does provide a significant source of revenue for Metro Transit. Revenue fluctuates with ridership.
	Implementation Complexity	+	Relatively simple to collect and provides ridership information.
	Public Acceptance	+	Well-accepted form of revenue. However, rate increases are unpopular.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	∅	Increased fuel economy and alternative fuels are unlikely to significantly impact transit ridership.
	Increased Use of Alternative Modes	+	Increased use of alternative modes will result in higher fare box receipts.
	Fuel Price Volatility	+	Fuel price volatility may lead to mode shift away from single occupancy vehicle trips to transit, which would result in higher fare box receipts.
Policy Impacts	**Congestion Mitigation**	—	Raising fares could lead to lower ridership and consequently increase the number of single occupancy vehicles.
	Greenhouse Gas Emission Reductions	—	Raising fares could lead to lower ridership and consequently increase the number of single occupancy vehicles.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

Advertising			
Overview	**Description**	Advertising space on transit vehicles and in transit stations is sold to generate revenues for transit providers. Additional possibilities include space on Mn/DOT construction vehicles, facilities and at construction sites.	
	Current Use	Metro Transit sells space at transit stops and on buses and trains.	
	Geographic Scope	Local	
Viability	**Revenue Potential**	∅	Although advertising generates a positive cash flow, it is unlikely to generate significant revenue.
	Implementation Complexity	+	Advertising programs already exist for transit providers and could be expanded.
	Public Acceptance	+	There is general public support for advertising on transit vehicles and stations.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	∅	Increases in fuel economy or use of alternative fuels should have no impact on transportation utility fees.
	Increased Use of Alternative Modes	+	Increased use of alternative could increase the value of advertising on transit vehicles to businesses.
	Fuel Price Volatility	∅	Fuel price volatility should have no impact on transportation utility fees.
Policy Impacts	**Congestion Mitigation**	∅	There is no connection between advertising and congestion.
	Greenhouse Gas Emission Reductions	∅	There is no connection between advertising and GHG emissions.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

Modifications to Existing Sources

Indexed Motor Fuel Excise Tax (per gallon)			
Overview	**Description**	An indexed Motor Fuel Excise Tax automatically increases based on some measure of inflation (i.e. the Consumer Price Index) or fuel prices.	
	Current Use	Currently, only Florida and Maine index their fuel tax to inflation. Wisconsin had indexed its fuel tax rate to inflation, but the policy was recently repealed. Some states have a fixed portion and an indexed variable portion of the fuel tax. For example, North Carolina adds a variable tax rate of 7 percent of the average wholesale price of motor fuel to its fixed tax of 17.5 cents per gallon.	
	Geographic Scope	Statewide	
Viability	**Revenue Potential**	+	High yield and historically stable. Indexing would protect the value from inflation.
	Implementation Complexity	+	Simple and an established collection system with low compliance costs.
	Public Acceptance	—	Generally accepted form of revenue generation, but there has been strong resistance to rate increases.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	—	As fuel economy improves, fuel sales decrease. The short-term impacts are likely to be modest and mitigated by indexing, but over time increases in fuel economy will reduce fuel tax revenue.
	Increased Use of Alternative Modes	—	As drivers switch to transit, carpools, bicycles, telecommuting and other alternative modes of transportation, fuel sales will decrease and thus tax revenue will decrease.
	Fuel Price Volatility	—	Volatile fuel prices will cause some to decrease their fuel purchases and others to shift modes, both of which will reduce fuel sales and thus tax revenue will decrease.
Policy Impacts	**Congestion Mitigation**	∅	There is no connection between the fuel tax and congestion.
	Greenhouse Gas Emission Reductions	+	Fuel taxes offer an incentive to reduce GHG emissions by encouraging improved fuel economy. Indexing will ensure the incentive doesn't dissipate due to inflation.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

Motor Fuel Sales Tax			
Overview	**Description**	In addition to the Motor Fuel Excise Tax, some states also charge a sales tax on motor fuels. Unlike an excise tax which is charge per unit (per gallon), a sales tax is charged as a percentage of the price and therefore fluctuates with the price of fuel. Revenue from a motor fuel sales tax is subject to the volatility of fuel prices, and a fuel sales tax could further escalate the impact of a sharp rise in fuel prices.	
	Current Use	Seven states currently levy a motor fuel sales tax: California (6 percent), Georgia (4 percent), Hawaii (4 percent), Illinois (6.25 percent), Indiana (5 percent), Michigan (6 percent), and New York (4 percent). During the 2008 spike in fuel prices, the New York Legislature imposed a cap on the motor fuel sales tax of 8 cents per gallon.	
	Geographic Scope	Statewide	
Viability	**Revenue Potential**	+	High yield and revenue would increase as fuel prices increase. However, yield would be subject to fluctuations in the wholesale market.
	Implementation Complexity	+	Relatively simple to administer.
	Public Acceptance	—	There is a general aversion to new taxes and a sales tax on motor fuel would amplify price volatility.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	—	As fuel economy improves, fuel sales decrease. The short-term impacts are likely to be modest, but over time increases in fuel economy will reduce revenue from the fuel tax.
	Increased Use of Alternative Modes	—	As drivers switch to transit, carpools, bicycles, telecommuting and other alternative modes of transportation, fuel sales will decrease and thus tax revenue will decrease.
	Fuel Price Volatility	—	Volatile fuel prices will cause some to decrease their fuel purchases and others to shift modes, both of which will reduce fuel sales and thus tax revenue will decrease.
Policy Impacts	**Congestion Mitigation**	∅	There is no connection between the fuel tax and congestion.
	Greenhouse Gas Emission Reductions	+	Fuel taxes offer an incentive to reduce GHG emissions by encouraging improved fuel economy.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

Vehicle Registration Tax (by emission level)			
Overview	**Description**	An emissions-based registration tax would charge higher fees on vehicles with higher emissions. This could be based on the EPA fuel economy rating for the make and model or some other measure of emissions.	
	Current Use	Several European countries, including Finland, Great Britain, Ireland, the Netherlands and Portugal, have recently adjusted their registration taxes to vary by CO_2 emission level.	
	Geographic Scope	Statewide	
Viability	**Revenue Potential**	+	Revenues are subject to the number and value of vehicles, which makes it relatively stable and easy to predict given the slow rate of change in the fleet.
	Implementation Complexity	+	Existing revenue source with relatively low administrative costs.
	Public Acceptance	∅	The registration tax is a generally accepted existing tax, but varying the rate on emissions could be unpopular.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	∅	Increased fuel economy and alternative fuels will result in fewer cars in the higher emissions categories, but higher fuel economy vehicles tend to cost more.
	Increased Use of Alternative Modes	—	Increased use of alternative modes could reduce the number of registered vehicles.
	Fuel Price Volatility	—	Fuel price volatility may lead to mode shift away from single occupancy vehicle trips, which could reduce the number of registered vehicles.
Policy Impacts	**Congestion Mitigation**	∅	There is no connection between tab fees and congestion.
	Greenhouse Gas Emission Reductions	+	Linking tab fees to GHG emissions would provide a price signal to consumers to purchase lower emission vehicles.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

Potential Sources

Mileage-Based Tax (flat rate)			
Overview	**Description**	A mileage-based tax or VMT tax would charge a fee per mile traveled. The tax could be collected at the fuel pump, during an annual inspection or through a monthly charge. It could be implemented for new vehicles only, which would pay the VMT tax instead of the motor fuel excise tax.	
	Current Use	Mileage-based systems have not yet been deployed in the United States, but Oregon recently completed a pilot using Global Positioning System technology to track travel in three zones: in-state, out-of-state, and during peak hours. Participants paid the VMT fee instead of the fuel tax when they purchased fuel. The Netherlands intends to begin charging a VMT fee in 2014 and Denmark plans to have a VMT-based system operating in 2016. The University of Iowa and others are currently testing VMT-based fees, and MnDOT and the University of Minnesota are currently developing technology that will reduce the cost and reduce privacy concerns of mileage-based systems.	
	Geographic Scope	Statewide	
Viability	**Revenue Potential**	+	Could be comparable to the motor fuel excise tax.
	Implementation Complexity	—	Although it could be as simple as an annual odometer reading, administering the tax will have significant costs because of the technology potentially required. However, the per vehicle cost of operating a VMT tax system is expected to decrease with economies of scale.
	Public Acceptance	∅	Could be phased in with new vehicles, but would require change. Acceptance will likely depend on the implementation and data collection methods used to administer the tax.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	∅	Increases in fuel economy or alternative fuels would have no impact on a VMT tax.
	Increased Use of Alternative Modes	—	Increased use of alternative modes will reduce vehicle miles traveled.
	Fuel Price Volatility	—	Fuel price volatility could result in fewer miles driven.
Policy Impacts	**Congestion Mitigation**	∅	There is no direct connection between congestion and a flat-rate mileage tax, but a VMT tax could reduce driving overall, which might ease congestion.
	Greenhouse Gas Emission Reductions	∅	There is no connection between GHG emissions and a flat-rate mileage tax. Switching from a gas tax to a VMT tax would remove the incentive to switch to more fuel efficient vehicles.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

Mileage-Based Tax (by emission level)			
Overview	**Description**	A VMT tax could be weighted by vehicle emissions. Vehicles with higher emissions would pay more per mile.	
	Current Use	In 2005, Germany implemented a distance-based fee for heavy commercial trucks (weighing 12 tons or more) that varies by emissions level. The "Toll Collect" program covers 12,000 kilometers and uses both electronic on-road toll sensors and off-road pay stations. The fee is based on kilometers traveled, number of axles, and emissions. Revenues from the program exceed $5 billion annually.	
	Geographic Scope	Statewide	
Viability	**Revenue Potential**	+	Could be comparable to the motor fuel excise tax.
	Implementation Complexity	—	Although it could be as simple as an annual odometer reading, administering the tax will have significant costs because of the technology potentially required. However, the cost of operating a VMT tax system is expected to decrease with economies of scale.
	Public Acceptance	∅	Could be phased in with new vehicles, but would require change. Acceptance will likely depend on the implementation and data collection methods used to administer the tax.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	—	Increases in fuel economy or alternative fuels would reduce emissions and therefore reduce the revenue from an emissions-based VMT tax.
	Increased Use of Alternative Modes	—	Increased use of alternative modes will reduce vehicle miles traveled.
	Fuel Price Volatility	—	Fuel price volatility could result in fewer miles driven.
Policy Impacts	**Congestion Mitigation**	∅	There is no direct connection between congestion and an emissions-based mileage tax, but a VMT tax could reduce driving overall, which might ease congestion.
	Greenhouse Gas Emission Reductions	+	Increasing the rate by emissions would create an incentive to reduce GHG emissions.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

Mileage-Based Tax (by time of day and location)			
Overview	**Description**	A VMT tax could charge a variable rate per mile based on time of day and location. This would essentially add a congestion charge to the VMT tax. To implement a VMT tax based on time of day and location, vehicle movement would need to be tracked, although the location-specific information could be based on a large geographic zone instead of specific locations.	
	Current Use	The Oregon pilot included a test of varying the per mile rate based on time of day such that drivers paid more to drive during peak hours.	
	Geographic Scope	Statewide	
Viability	**Revenue Potential**	+	Could be comparable to the motor fuel excise tax.
	Implementation Complexity	—	Although implementing a flat rate VMT tax could be a simple as an annual odometer reading, administering a time-of-day and location-based VMT tax will have significant costs because of the technology required. However, the cost of operating a VMT tax system is expected to decrease with economies of scale.
	Public Acceptance	—	Could be phased in with new vehicles, but would require change. There are also some concerns about privacy given the level of data collection required to administer the program.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	∅	Increases in fuel economy or alternative fuels would have no impact on a VMT tax.
	Increased Use of Alternative Modes	—	Increased use of alternative modes will reduce vehicle miles traveled.
	Fuel Price Volatility	—	Fuel price volatility could result in fewer miles driven.
Policy Impacts	**Congestion Mitigation**	+	Varying the tax by time of day and location would create a strong congestion price signal and could result in less congestion.
	Greenhouse Gas Emission Reductions	+	The congestion signal and overall incentive to lower VMT could result in fewer GHG emissions.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

Tolling Existing Lanes			
Overview	**Description**	Tolls could be added to existing free facilities. However, tolling is prohibited on the Interstate System with the exception of the reconstruction toll pilot provision in SAFETEA-LU.	
	Current Use	Currently, no states have added tolls to existing free facilities. Efforts to toll I-80 in Pennsylvania continue despite an initial application denial from FHWA. Wyoming is also planning to add tolls to I-80, and Washington State is proposing tolling on an existing bridge to pay for replacement and new bridges.	
	Geographic Scope	State, corridor or local	
Viability	**Revenue Potential**	+	Could generate significant revenue depending on how many miles were tolled.
	Implementation Complexity	—	Federal law currently restricts the use of tolls on existing Interstate Highways.
	Public Acceptance	—	There is strong opposition to tolling existing lanes given the perception of double paying, which is not true given the ongoing maintenance and operating costs.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	∅	Increases in fuel economy or alternative fuels would have no impact on toll revenue.
	Increased Use of Alternative Modes	—	Increased use of alternative modes would reduce toll revenue.
	Fuel Price Volatility	—	Fuel price volatility could result in less driving and therefore lower toll revenue.
Policy Impacts	**Congestion Mitigation**	+	Adding tolls tends to reduce travel and therefore reduces congestion. However, tolls could divert traffic onto other facilities, which may simply shift the location of congestion.
	Greenhouse Gas Emission Reductions	+	Adding tolls tends to reduce travel and therefore reduces GHG emissions.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

Tolling New Lanes			
Overview	**Description**	Tolls can be levied for the use of new roads, bridges or special lanes. The toll is generally a flat rate although the rate could vary by vehicle type.	
	Current Use	Other states have used tolls to fund road, bridge and tunnel projects for decades. Texas is relying heavily on tolls to expand its highway system.	
	Geographic Scope	Corridor	
Viability	**Revenue Potential**	∅	Revenue potential is likely sufficient to cover the cost of constructing and maintaining the new lanes.
	Implementation Complexity	∅	The existing MnPASS program has been successfully implemented, so the administrative structure already exists.
	Public Acceptance	—	There is a general opposition to tolling, but the resistance is lower for new lanes than it is for adding tolls to existing lanes.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	∅	Increases in fuel economy or alternative fuels would have no impact on toll revenue.
	Increased Use of Alternative Modes	—	Increased use of alternative modes would reduce toll revenue.
	Fuel Price Volatility	—	Fuel price volatility could result in less driving and therefore lower toll revenue.
Policy Impacts	**Congestion Mitigation**	+	Adding tolls tends to reduce travel and therefore reduces congestion. However, tolls could divert traffic onto other facilities, which may simply shift the location of congestion.
	Greenhouse Gas Emission Reductions	+	Adding tolls tends to reduce travel and therefore reduces GHG emissions.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

Tolling with Congestion Pricing			
Overview	**Description**	Tolls could vary with the level of congestion based on a schedule or dynamically adjusted to real time conditions. A rate cap could be established to prevent tolls from becoming too excessive.	
	Current Use	The MnPASS program currently increases the rate as congestion increases.	
	Geographic Scope	State, corridor or local (limited to congested areas)	
Viability	**Revenue Potential**	∅	Additional revenues above those generated from fixed tolls are not likely to significantly exceed program administrative costs. The congestion charge is designed to manage demand more than raise revenue.
	Implementation Complexity	—	Depending on the system used, tolling with congestion pricing would have a range of complexity beyond what is needed for fixed price tolls.
	Public Acceptance	—	HOT Lanes currently have a modest, but loyal base of support. However, there is still a general resistance to tolling.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	∅	Increases in fuel economy or alternative fuels would have no impact on toll revenue.
	Increased Use of Alternative Modes	—	Increased use of alternative modes would reduce toll revenue.
	Fuel Price Volatility	—	Fuel price volatility could result in less driving and therefore lower toll revenue.
Policy Impacts	**Congestion Mitigation**	+	Adding tolls with a congestion charge will reduce congestion. However, tolls could divert traffic onto other facilities, which may simply shift the location of congestion.
	Greenhouse Gas Emission Reductions	+	Adding tolls tends to reduce travel and therefore reduces GHG emissions. In addition, the congestion charge will reduce the amount of stop-and-go traffic, which also contributes to GHG emissions.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

Cordon Pricing (Congestion Area Pricing)			
Overview	**Description**	Cordon pricing charges vehicles a congestion fee for entering a specified zone (usually a central business district).	
	Current Use	London implemented a cordon pricing program in 2003 that reduced congestion by 25 percent and increased bus ridership by 37 percent in central London. Fees are approximately $16 to enter the 15-square mile zone. In 2006, Stockholm also implemented a cordon pricing program first as trial and then permanently in 2007. Fees range from $1.50 to $2.75 depending on the time of day and there is a maximum daily charge of $9. However, efforts to introduce cordon pricing in the United States have so far been unsuccessful. In 2008, a proposal to add cordon pricing to Manhattan was defeated in the New York state Legislature.	
	Geographic Scope	Local	
Viability	**Revenue Potential**	∅	Revenues would likely be enough to cover operations and possibly some additional transit service in the priced area.
	Implementation Complexity	—	Complicated to setup and administer.
	Public Acceptance	—	To date, there has been strong resistance to cordon pricing in the United States.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	∅	Increases in fuel economy or use of alternative fuels should have no impact on cordon pricing revenues.
	Increased Use of Alternative Modes	—	Increased use of transit and other modes would decrease the number of trips and therefore reduce the revenues from cordon pricing.
	Fuel Price Volatility	—	Fuel price volatility could result in fewer miles driven.
Policy Impacts	**Congestion Mitigation**	+	Cordon pricing could significantly reduce congestion in the priced area, which could reduce the demand for additional highway capacity.
	Greenhouse Gas Emission Reductions	+	Cordon pricing could reduce the number of trips taken or increase the use of alternative modes, thus reducing GHG emissions.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

Dynamic Parking Pricing			
Overview	**Description**	Variable parking rate programs aim to reduce the number of vehicles circling in search of a parking space and double parking by using price signals to ensure open spaces. Prices could vary according to a schedule or dynamically with a goal of at least 15 percent of parking spaces available at any given time.	
	Current Use	Chicago charges higher rates during peak periods and Washington, D.C. uses peak-hour pricing around the Nationals' Stadium. In late 2009, San Francisco plans to launch a variable parking rate program for 6,000 on street metered parking spaces and 12,500 spaces in city owned parking garages. Hourly rates will vary between $0.25 and $6.00 for meters and between $1.00 and $10.00 for garages. New York City is also conducting a series of six month pilot variable rate parking projects as part of the PARK Smart NYC program.	
	Geographic Scope	Local	
Viability	**Revenue Potential**	∅	Revenues would likely be enough to cover operations.
	Implementation Complexity	—	Dynamic parking systems can be complicated to setup and administer. Peak-hour pricing is less complicated, but requires significant public outreach.
	Public Acceptance	∅	Metered parking is generally accepted. However, dynamic and peak-hour parking programs are still a new concept and public acceptance is still uncertain. Operators of private parking facilities already vary prices based on demand.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	∅	Increases in fuel economy or use of alternative fuels should have no impact on parking pricing revenues.
	Increased Use of Alternative Modes	—	Increased use of transit and other modes would decrease the number of trips and therefore reduce the revenues from parking pricing.
	Fuel Price Volatility	—	Fuel price volatility could result in fewer miles driven and therefore lower demand for parking.
Policy Impacts	**Congestion Mitigation**	+	If travelers know they will be charged for parking, they are more likely to consider driving at off-peak times or using other modes of transportation.
	Greenhouse Gas Emission Reductions	+	Dynamic parking pricing could reduce the number of trips taken or increase the use of alternative modes, thus reducing GHG emissions.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

General Sales Tax			
Overview	**Description**	A portion of the general sales tax could be dedicated to transportation.	
	Current Use	California, Indiana, Massachusetts, New York, Pennsylvania and Virginia dedicate a portion of the state sales tax to transit.	
	Geographic Scope	Statewide	
Viability	**Revenue Potential**	+	A sales tax draws from a broad base, and therefore has strong revenue potential. However, actual receipts are sensitive to economic conditions.
	Implementation Complexity	+	Existing revenue source with relatively low administrative costs.
	Public Acceptance	—	There is resistance to raising tax rates.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	∅	Increases in fuel economy or use of alternative fuels should have no impact on local sales tax revenue.
	Increased Use of Alternative Modes	∅	Increased use of alternative modes of transportation should have no impact on local sales tax revenue.
	Fuel Price Volatility	—	Fuel price volatility may lead to lower levels of other consumption or have other negative economic impacts that would reduce local sales.
Policy Impacts	**Congestion Mitigation**	∅	There is no connection between the sales tax and congestion.
	Greenhouse Gas Emission Reductions	∅	There is no connection between the sales tax and transportation-related GHG emissions.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

Value Capture – Land Value/Split-Rate Property Tax			
Overview	**Description**	Land value taxes assess land and buildings separately at different rates. The increase in land value from infrastructure improvements can then be partially captured.	
	Current Use	To date, there have been few examples of split-rate property tax policies in the United States, but they have been adopted in Canada, Australia and New Zealand.	
	Geographic Scope	Local	
Viability	**Revenue Potential**	∅	Could provide modest revenue for a local municipality or fund part of a project's development costs.
	Implementation Complexity	∅	Would require adjusting the way property values are assessed, but the mechanisms to collect the revenue are already in place.
	Public Acceptance	∅	As there have been few examples of split-rate property taxes in the U.S., there may be some resistance to change.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	∅	Increases in fuel economy or alternative fuels would have no impact on revenue from a land value tax or split-rate property tax.
	Increased Use of Alternative Modes	+	Increased use of alternative modes could increase the value of property adjacent transit stations and therefore increase property taxes.
	Fuel Price Volatility	∅	Fuel price volatility should have no impact on a land value tax or split-rate property tax.
Policy Impacts	**Congestion Mitigation**	∅	There is no direct connection to congestion mitigation, but a land value tax may encourage denser development that could reduce the number or length of trips.
	Greenhouse Gas Emission Reductions	∅	There is no direct connection to GHG emissions, but a land value tax may encourage denser development that could reduce the number or length of trips and thus reduce GHG emissions.

Key: + = Positive/High ∅ = Neutral − = Negative/Low

Value Capture – Transportation Utility Fees			
Overview	**Description**	Transportation utility fees treat transportation like a public utility and charge a monthly user fee. The fee is levied by local municipalities on parcels based on a criteria linked to trip generation (i.e. square feet of retail space, units per building, etc.).	
	Current Use	Utility fees have mostly been used in Oregon. For example, the city of Hillsboro, OR added a monthly transportation utility fee of $3.10 per residential unit in 2009 to help fund street maintenance and sidewalk improvements. Business and other commercial properties are assessed a fee based on the square footage and use of their building.	
	Geographic Scope	Local	
Viability	**Revenue Potential**	∅	Could provide modest revenue for a local municipality.
	Implementation Complexity	—	Rate is linked to trip generation, which may be hard to measure.
	Public Acceptance	—	Local utility fees are already used for stormwater, but transportation utility fees are not currently authorized in Minnesota. Previous discussions in the Legislature have been generally unfavorable to Transportation Utility Fees.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	∅	Increases in fuel economy or use of alternative fuels should have no impact on transportation utility fees.
	Increased Use of Alternative Modes	∅	Increased use of alternative should have no impact on transportation utility fees.
	Fuel Price Volatility	∅	Fuel price volatility should have no impact on transportation utility fees.
Policy Impacts	**Congestion Mitigation**	∅	There is no connection between transportation utility fees and congestion.
	Greenhouse Gas Emission Reductions	∅	There is no connection between transportation utility fees and transportation-related GHG emissions.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

Cap and Trade (Skim 10% for Transit)			
Overview	**Description**	A portion of the revenue generated from auctioning emissions permits in a Cap and Trade system could be dedicated to fund transit.	
	Current Use	One of the Midwestern Greenhouse Gas Reduction Accord Advisory Group recommendations is the creation of a regional "cap and trade" program for GHG emissions.	
	Geographic Scope	Statewide/Multi-State	
Viability	**Revenue Potential**	?	It is unclear how much revenue a cap and trade system would generate and how stable the revenue would be over time.
	Implementation Complexity	—	A cap and trade emissions trading system would be very complicated to administer.
	Public Acceptance	∅	There is general support for a Cap and Trade policy, but there are some concerns about the economic impact of such a policy. The current proposal would affect energy generators and distributors.
Resilience	**Increases in Fuel Economy/Alternative Fuels**	—	Increased fuel economy or use of alternative fuels would reduce emissions and could therefore reduce the value of permits, which would lower the program revenue.
	Increased Use of Alternative Modes	—	Increased use of alternative modes would reduce fuel sales and could therefore reduce the value of permits, which would lower the program revenue.
	Fuel Price Volatility	—	Extreme fuel price volatility could reduce fuel sales and could therefore reduce the value of permits, which would lower the program revenue.
Policy Impacts	**Congestion Mitigation**	+	Higher investment in transit could increase ridership and reduce congestion.
	Greenhouse Gas Emission Reductions	+	In addition to the emissions reduction from the program itself, higher investment in transit could increase ridership and further reduce GHG emissions.

Key: + = Positive/High ∅ = Neutral — = Negative/Low

Comparing Mechanisms

Figure 18 locates each option with respect to its revenue potential and geographic scope. While some options generate significant revenue and are applicable to the entire system, other options either don't generate significant revenue or are only applicable at the project or local level.

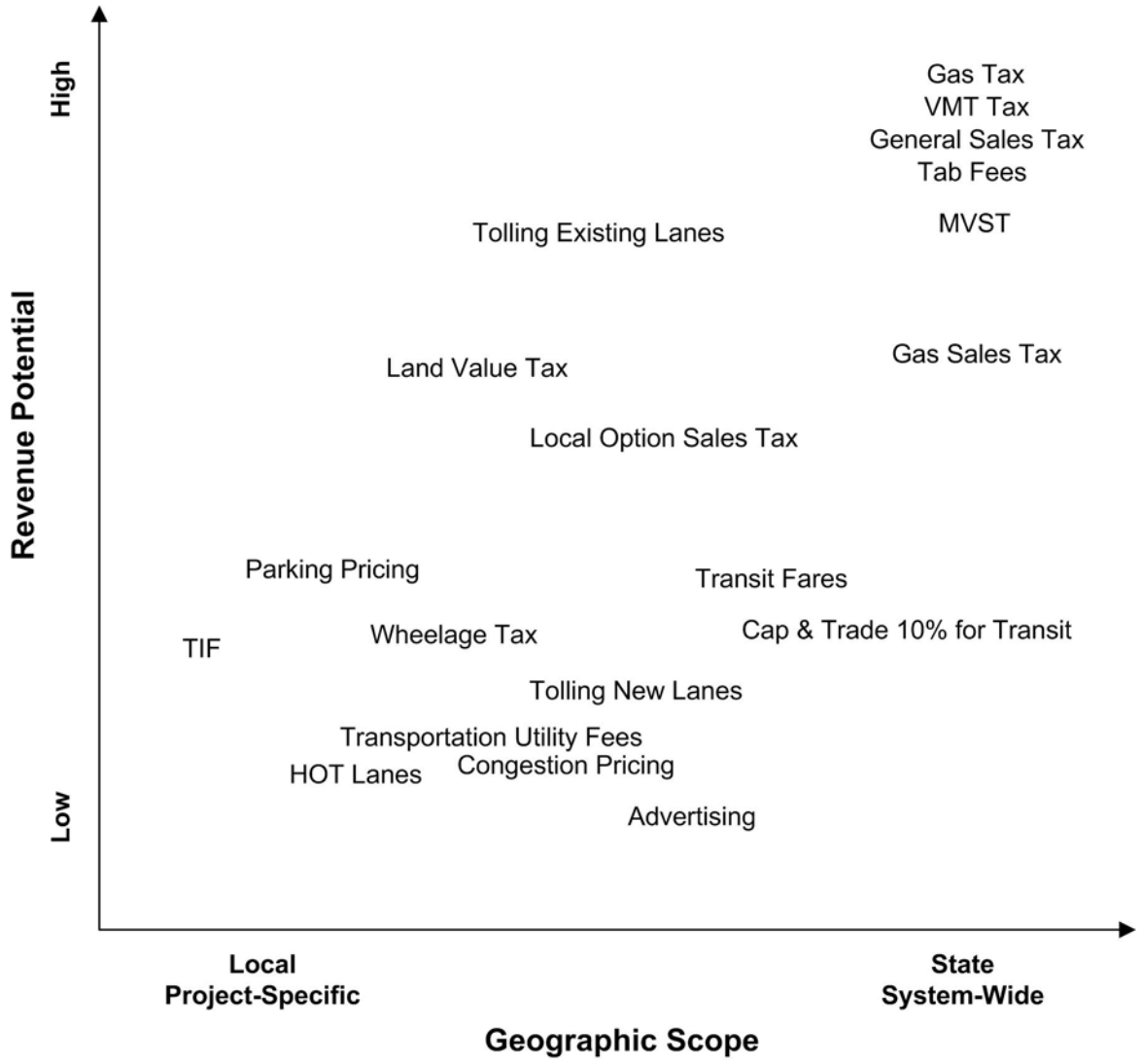


Figure 18. Comparison of revenue potential versus geographic scope.

Source: Mn/DOT Office of Investment Management

Figure 19 locates each option with respect to its potential to reduce congestion and its greenhouse gas emissions reduction potential. Most options either do not impact or only have the potential to reduce congestion or GHG emissions. Pricing mechanisms, such as HOT Lanes and congestion pricing, show the greatest potential to reduce both congestion and GHG emissions.

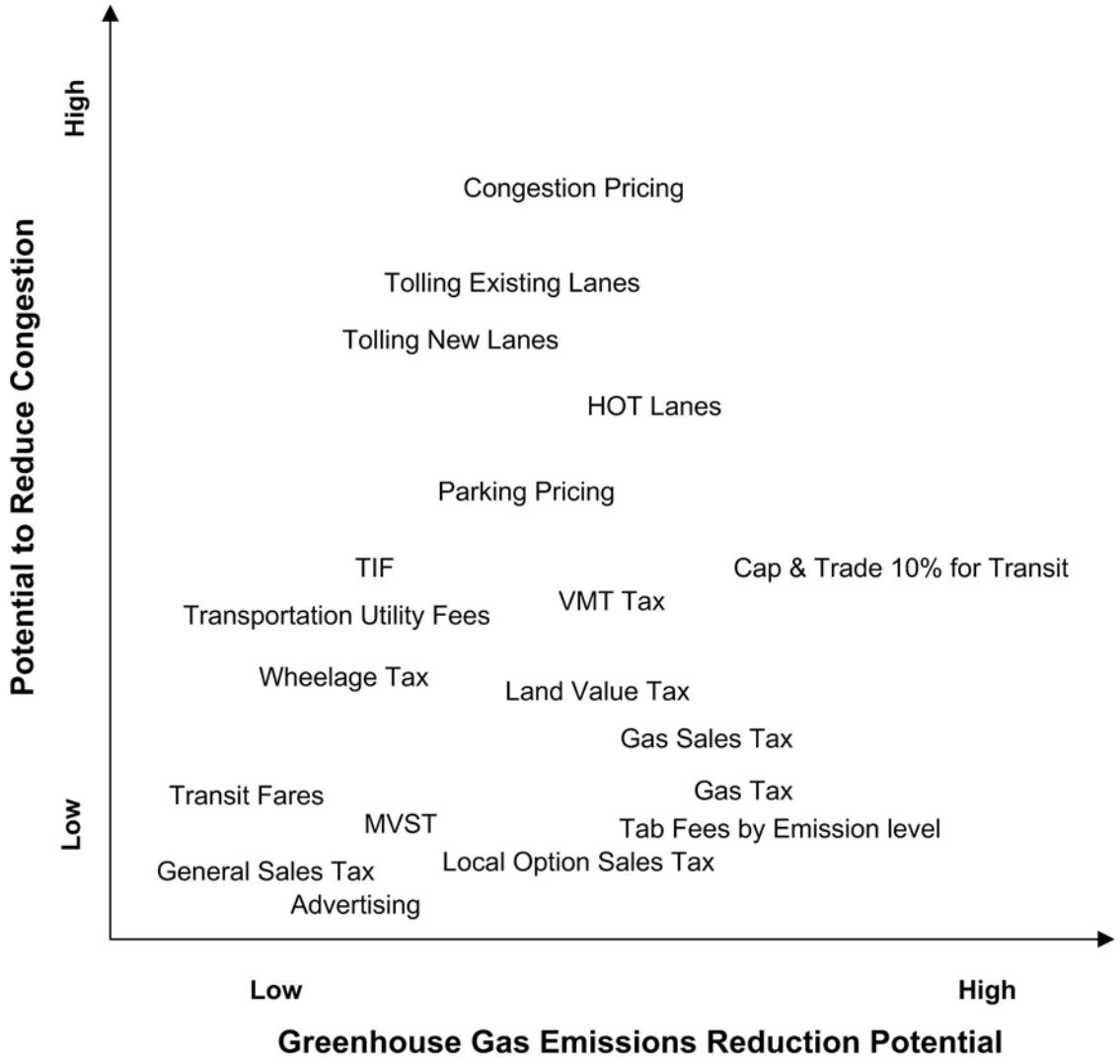


Figure 19. Comparison of potential to reduce congestion versus GHG emissions reduction potential.
Source: Mn/DOT Office of Investment Management

Public-Private Partnerships

Public-Private Partnerships (P3s) can take many different forms and offer a variety of approaches to fund and finance transportation improvements. P3s have been used extensively in Europe, Australia and Canada, but have only gained momentum in the Untied States over the past several years. P3s may involve private contributions, private financing or joint development, and have the potential to accelerate project delivery or achieve other savings.

P3 private contributions could include direct funding or the contribution of right-of-way by a private corporation or developer to accelerate a project that mutually benefits the public and private partners. An example of a P3 involving a private contribution is the planned reconstruction of the interchange at Highway 169 and Bren Road in Minnetonka, which includes funding from United Health Group. Mn/DOT is currently working to develop a new transportation economic development program to facilitate more private contributions. The goals of this program are to create and preserve jobs, improve economic competitiveness, increase the tax base, capture increased property value and leverage new revenue for transportation.

P3 private financing and investment may help accelerate project delivery. Although private financing can take many forms, many of the national and international examples to date have required a revenue stream such as tolls to retire the private debt. Private financing can result in cost savings for the public sector if certain factors are present, including long term contracts that make the private partner responsible for operations and maintenance, new risk sharing approaches that more efficiently allocate risk and result in cost savings, innovations in project delivery and technology that result in savings, and provisions that enable the private sector to depreciate the asset resulting in tax savings that can be shared among the partners.

In some forms, P3s can generate short-term revenue from the lease of a property. For example, in 2006 Indiana signed a concession agreement with Statewide Mobility Partners (a private consortium led by Macquarie Infrastructure Group and Cintra) to lease the Indiana Toll Road for 75 years in exchange for a payment of $3.8 billion.

Other types of P3 approaches involve joint transit development agreements where private developers partner with transit agencies to build on land around or above transit stations. In Minnesota, private corporations have developed publicly-owned land adjacent to park-and-ride transit facilities. P3 approaches can also be used to improve freight and port facilities. Air rights leases offer other P3 opportunities to raise revenue for improvements above highways and parking facilities.

Overall, P3s have the potential to accelerate project delivery, supplement public revenue with private contributions, and reduce the cost of improving and maintaining public infrastructure.

Strategies

Minnesota has many options to generate revenue for transportation. The options discussed in this study fall into five broad strategies briefly discussed below in Table 4. These strategies are intended to be representative of the range of options available and do not represent all available options; they are not mutually exclusive.

Table 4. Future Revenue Strategies

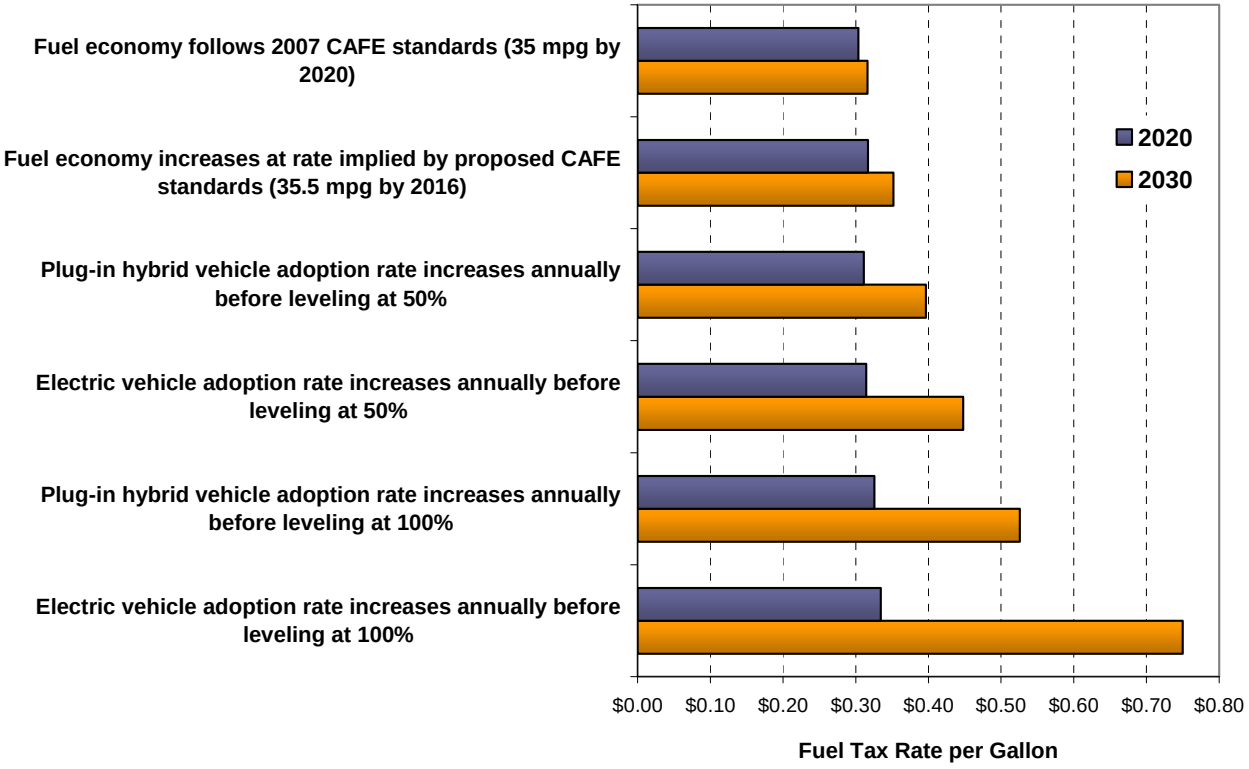
Strategy	Comments
Keep Existing Structure and Rates	Revenues would decline forcing difficult decisions between preserving the existing system and expanding or improving the system. The implications of keeping the existing rates and mechanisms would be deteriorating roads and scaled back improvement programs. The relative importance of fuel taxes would decline and Minnesota would become increasingly dependent on vehicle sales and registration fees.
Keep Existing Structure, but Raise Rates	Raising the current tax rates would increase revenue in the near term and avoid the need to create new administrative and collection systems. Increased fuel taxes in particular would also help achieve environmental policy objectives. Without indexing, the gas tax would not keep pace with inflation.
Modify Existing Sources	The existing sources could be modified, through indexing or other means, to promote lower emissions and protect purchasing power from inflation. This would strengthen the sustainability of existing sources, but other options may still need to be considered in the long term.
Adopt User Fee System	On the principle that users should pay relative to their use of the system, Minnesota could significantly expand its user fee structure. This could involve mileage-based fees, tolling, congestion pricing, and transportation utility fees. This strategy would involve the creation of new administrative structures and represent a significant change for the public, but it would help to reduce congestion and GHG emissions.
Supplement Revenue Sources and Stretch Funds	Use of value capture could be expanded to supplement the primary revenue sources. In addition, partnerships and innovative financing methods could be used to maximize the impact of available funds. This would not change the overall revenue trends, but would help to deliver specific projects.

Transitioning to a New System

Some of the options described above could be implemented with little impact on existing sources. Others are simply modifications of the current sources. However, some options, like mileage-based fees, could replace an existing source, such as the motor fuel excise tax.

Modifying Existing Sources

To avoid the need to create new administrative systems and collection methods, the existing sources could be modified. For example, the sustainability of the motor fuel tax could be improved by increasing the rate or indexing the rate to inflation. Figure 20 shows the fuel tax rate that would be necessary in 2020 and 2030 to maintain the level of revenue projected for 2013 when the current rate increase is fully implemented. Six scenarios are examined to show the impact of plug-in hybrids and electric vehicles on the fuel tax rate necessary to maintain stable nominal revenue.

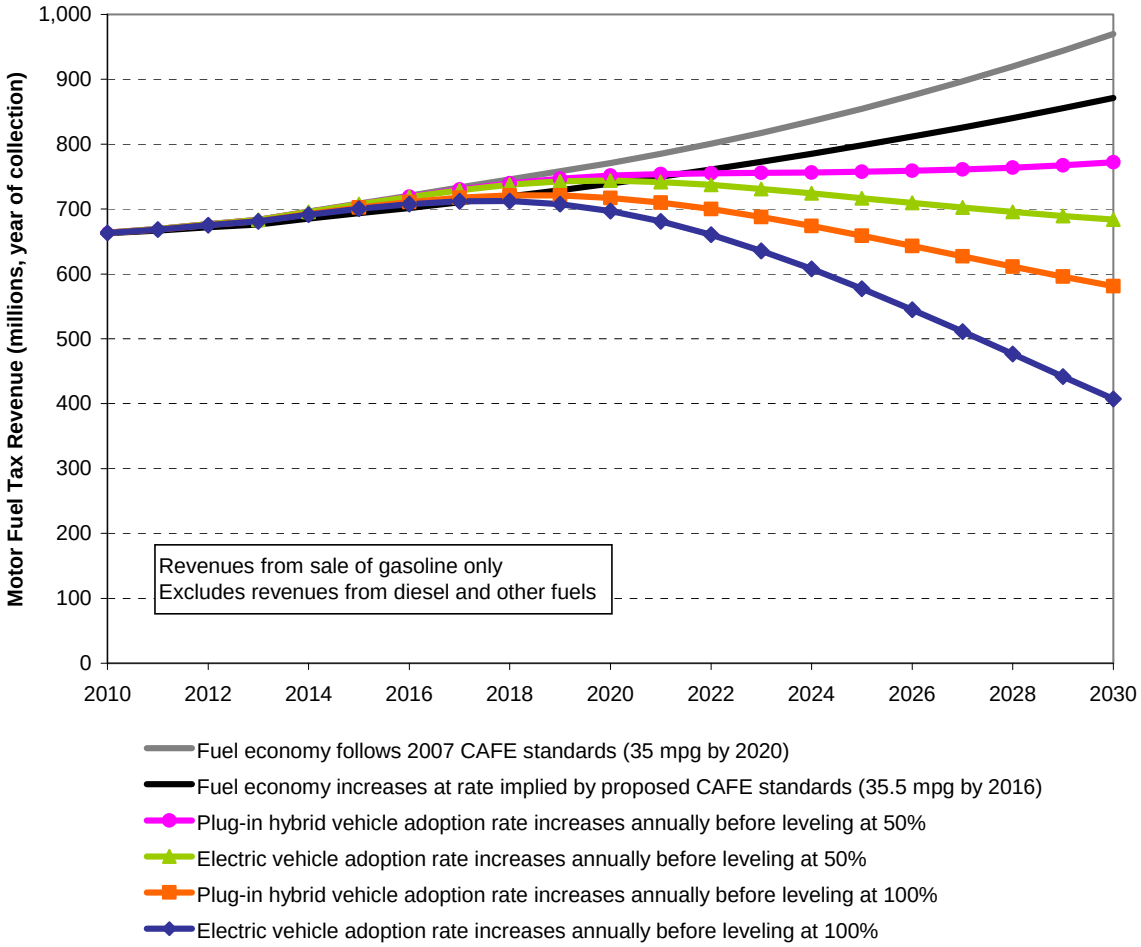


Assumptions:
Average annual VMT per vehicle assumed to be constant
Rate of new vehicle purchases is 5%
Fleet grows at 0.8% annually due to population growth
For plug-in hybrids, an average fuel economy of 100 miles per gallon was assumed

Figure 20. Fuel tax rate in 2020 and 2030 necessary to maintain nominally stable revenue beginning 2013.
Source: Mn/DOT Office of Investment Management

In all scenarios, the rate required to maintain revenue levels is at least $0.30 per gallon by 2020. After 2020, the rate necessary to maintain nominally stable revenue becomes increasingly less certain, as the rate varies widely depending on the fuel economy assumptions. For example, if plug-in hybrid and all electric vehicles increase in popularity to the point that they constitute half of all new vehicle purchases by 2030, the fuel tax rate would require an increase to approximately $0.40 per gallon to maintain the 2013 level of revenue.

Alternatively, the fuel tax could be indexed to some measure of inflation. To examine the potential revenue from an indexed rate, the same six scenarios were used. Figure 21 shows the estimated revenue generated from a fuel tax indexed to an inflation rate of 3 percent.



Assumptions:
Average annual VMT per vehicle assumed to be constant
Revenues exclude taxes on diesel and other fuels
Rate of new vehicle purchases is 5%
Fleet grows at 0.8% annually due to population growth
For plug-in hybrids, an average fuel economy of 100 miles per gallon was assumed
Average annual rate of inflation is 3%
Indexing begins in 2013 after the full implementation of the current rate increase
Index only applied to the non-surcharge portion of the tax rate

Figure 21. Potential revenue from an indexed motor fuel tax.
Source: Mn/DOT Office of Investment Management

With the exception of the most aggressive adoption scenarios for PHEV and electric vehicles, an indexed gas tax would generate nominally stable revenues and could allow for revenue growth over the next 20 years. However, the tax revenue would likely decline in nominal value if PHEV and electric vehicles become very popular.

Mileage-Based Fees

To avoid the confusion and challenges of switching all vehicles to a mileage-based fee system (VMT tax), one potential option is to use a VMT tax for new vehicles and retain the motor fuel excise tax for all other vehicles. Similarly, a VMT tax could be used for electric and plug-in hybrid vehicles, which would otherwise pay little or no motor fuel taxes. A 2009 report by the Center for Transportation Studies at the University of Minnesota showed that a simple VMT tax system could be implemented with technology that has been in place in all passenger vehicles since 1996 and would avoid most privacy concerns.[4]

Two scenarios were selected to illustrate the revenue impact of transitioning to a VMT tax.

Scenario A:

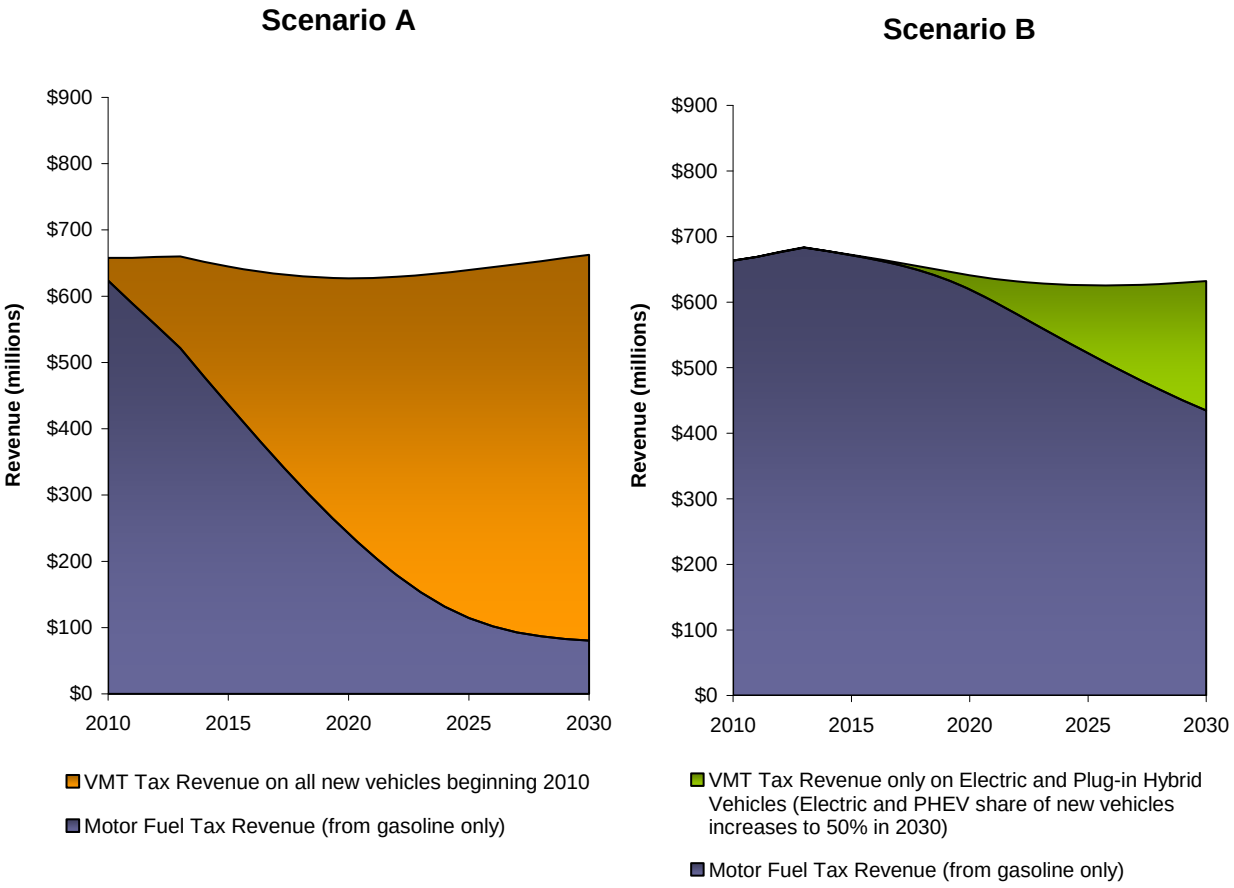
- Beginning in 2010, all new passenger vehicles would pay a VMT tax of $0.01 per mile (approximately the current average state fuel tax paid per mile) instead of the state motor fuel excise tax.
- Existing passenger vehicles purchased prior to 2010 would continue to pay the per gallon gas tax.

Scenario B:

- Electric vehicles and PHEVs would pay a VMT tax of $0.01 per mile (approximately the current average state fuel tax paid per mile) instead of the state motor fuel excise tax.
- All other passenger vehicles would continue to pay the gas tax.

To examine the potential revenue from a VMT tax, a one cent per mile tax was chosen as the approximate equivalent of the current motor fuel tax for average vehicles. Administrative costs are not considered in the scenarios. Figure 22 shows the potential revenue of a VMT tax in both scenarios.

[4] Donath, Max et. al. 2009 *Technology Enabling Near-Term Nationwide Implementation of Distance Based Road User Fees*. CTS Report no. 09-20



Scenario Assumptions:
VMT Tax = $0.01/mile flat rate
Average annual VMT per vehicle assumed to be constant
Fuel Economy follows 2007 legislation of 35 mpg by 2020
Gas Tax remains at $0.285 starting 2013
Revenues exclude taxes on diesel and other fuels
Rate of new vehicle purchases is 5%
Fleet grows at 0.8% annually due to population growth
In Scenario B, adoption of electric and PHEV follows an S-shaped growth curve starting at 1% in 2010 growing to 50% in 2030

Figure 22. Potential revenue from a one cent per mile VMT tax on new vehicles.
Source: Mn/DOT Office of Investment Management

Any changes in the scenario assumptions will affect the projected revenue from a VMT tax. Like the gas tax, a VMT tax would be vulnerable to inflation, and it would likely be politically difficult to raise rates. However, given that fuel tax receipts are likely to decline with increased fuel efficiency and assuming no change in average VMT, switching to a VMT tax for all new vehicles could allow for stable revenue without raising the fuel tax rate as shown in Figure 22. Another option would be to index the VMT tax rate to inflation. Figure 23 shows potential revenue from a VMT tax on only electric vehicles and PHEVs under different VMT scenarios as well as with an indexed rate.

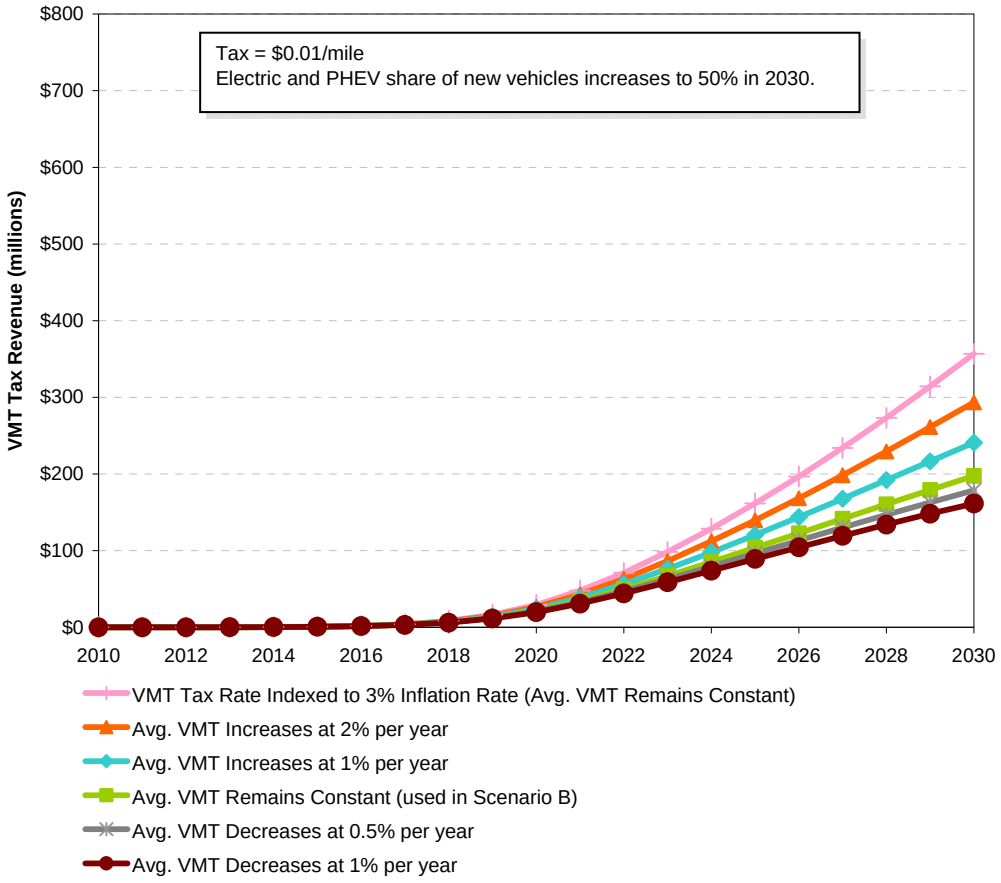


Figure 23. Potential revenue from a one cent per mile VMT tax on electric and plug-in hybrid vehicles.
Source: Mn/DOT Office of Investment Management

Given the potentially high administrative costs of starting and administering a VMT-based tax, revenues might only cover the cost of administering the tax during the first years of the policy. However, a gradual implementation would ensure that any unforeseen challenges affect only a small number of citizens.

Summary

Most of the current revenue sources like the motor fuel excise tax have strong revenue generating potential, but are vulnerable to emerging trends. Other current sources like HOT lanes don't generate significant revenue beyond the cost of operations, but do further policy objectives such as reducing congestion. With the exception of tolling existing lanes and mileage-based fees, few options exist with the potential to generate comparable revenue to the existing major revenue sources. Most potential options are vulnerable to the same challenges the current revenue sources face. However, several of the potential mechanisms would help to achieve the policy objectives of mitigating congestion and reducing GHG emissions. If a new revenue option like a VMT tax is implemented, a phased approach may offer a good option to stabilize revenues without raising rates.

V. Summary of Findings and Conclusions

Based on the assessment of current and future needs, options and input from stakeholders, the following conclusions can be drawn:

1. **Minnesota's primary transportation revenue sources are unlikely to be sustainable in the long term.**

   - The combined effects of increases in fuel economy and alternative fuels, increasing use of alternative modes of transportation, and demographic shifts will begin to erode fuel tax revenue after the full rate increase is implemented in 2012.
   - Federal funds are heavily dependent on the federal motor fuel excise tax, which is susceptible to the same trends affecting Minnesota's motor fuel tax. The effect of the next federal surface transportation authorization bill on funding is unclear.
   - The constitutional dedication of the Motor Vehicle Sales Tax revenue to transportation has increased funding for transportation, but total MVST revenues have been declining. The recent economic recession and increasing consumer preference for smaller, more fuel efficient cars have decreased MVST receipts in the past two years. Cars are lasting longer and the demand for additional vehicles has slowed, so MVST revenues are likely to be slow to recover.
   - Fees from newer vehicles constitute a significant portion of annual vehicle registration fees because of the depreciation schedule for vehicles. As a result, at least in the short-term, the same trends impacting MVST revenues also impact registration fees.
   - New revenues have been dedicated to fund transit capital improvements, but funding transit operations is likely to be an ongoing challenge.

2. **Reliable and predictable funding sources are important for planning purposes.** Transportation investments are planned years in advance of construction, and it is difficult to plan and program investments if revenues fluctuate widely. Therefore, the sustainability and reliability of those revenue sources are important considerations.

3. **Despite the many options available, only a few revenue mechanisms offer the potential to generate significant revenue similar to the current primary revenue sources.** Many revenue options exist, including modifications to existing revenue sources, but they vary in revenue potential, implementation complexity, geographic applicability, public acceptance and impact on other policy objectives. Most of the options considered in this study are unlikely to generate revenue similar to the current primary sources. Other than modifying existing sources, mileage-based fees, tolling existing lanes, and dedicating a portion of the general sales tax are the only three options with the potential to generate revenue comparable to the fuel tax. Innovative financing techniques and partnerships could leverage the impact of available resources. Options like value capture could provide funding for individual projects.

4. **Dependence on a single revenue source exposes transportation funding levels to more risk.** A portfolio of revenue sources reduces the risk of negative trends and is more likely to provide stable revenue to fund the transportation system.

5. **Fuel taxes are still a viable option in the short term.** The fuel tax is inexpensive to administer and provides an incentive to reduce greenhouse gas emissions. Historically, it has taken roughly 20 years for the passenger vehicle fleet to fully turn over, so even with increasing fuel economy a decade may pass before fuel tax revenues are significantly reduced. Nevertheless, under the current CAFE standards (35 miles per gallon by 2020), fuel tax revenues are projected to begin decreasing after the full implementation of the tax rate increase in 2012. If by 2030 all new vehicles were electric or non-gasoline consuming, the fuel tax revenue yield could drop by half, assuming no additional tax increases. Even if the nominal value of tax revenues remained constant through rate increases, the purchasing power of the tax revenue would continue to decline due to inflation.

6. **Mileage-based fees, or VMT fees, have the potential to generate significant revenue, but there are many implementation and public acceptance issues that need to be resolved.** Mileage-based fees may be best implemented at the national level. More directly linking taxes to system use could help achieve other policy goals.

7. **Minnesota transportation revenue mechanisms could better recognize and support multiple established policy goals related to economic development, natural resource preservation, GHG emissions and safety.** These goals can conflict at times and can have unintended revenue consequences. The mix of revenue sources used should generate sufficient and stable revenue, and support diverse goals and objectives for the Minnesota economy, transportation system and natural environment. Some options like congestion pricing may generate less revenue, but may be desirable for their environmental or congestion benefits.

8. **The Minnesota approach to transportation funding could better support and enable the emerging vision of a multi-modal transportation system.** Both the Statewide Transportation Policy Plan and the Metropolitan Council 2030 Transportation Policy Plan envision a more multi-modal transportation system in the future. Mn/DOT and the Metropolitan Council are currently working together to develop strategies to optimize the existing system, provide advantages for transit and find other ways to meet transportation needs. Statewide plans are also being developed for freight, passenger rail and transit. These strategies will be incorporated in future updates to the Statewide Transportation Policy Plan. These efforts offer an opportunity to create a safe, efficient and sustainable transportation system for the future. Minnesota revenue sources could be more consistent with these new approaches to achieving mobility and access objectives for the population of Minnesota.