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Final Report

Minnesota State Road Taxes in 2030:

Will revenues keep pace with inflation?

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16. Abstract (Limit: 200 words)

The future adequacy of Minnesota road funding is evaluated in a 27-year forecast of current law road taxes (motor vehicle registration tax, motor vehicle sales tax, and motor fuels excise tax). Revenue projections are compared with inflation-adjusted base costs in three economic growth scenarios (Trend, Optimistic, and Pessimistic), using two price deflators (core-CPI and state/local government costs). The Trend scenario predicts road tax revenues will lose purchasing power to inflation by 2020, but over the forecast period cumulative revenues and costs nearly balance out. According to this scenario, current tax policy can support 2003 service levels into the future, but not fund system improvements. The Optimistic scenario forecasts a surplus in purchasing power in all 27 years, providing the opportunity for significant new spending without changing current law. Under the Pessimistic scenario, tax revenues fall short of inflationary costs by 2012, with the annual loss in purchasing power reaching $1 billion by 2030. In this scenario, road tax policy changes are needed to avert significant declines in road service.

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Executive Summary

The study objective is to forecast the year 2030 revenues from three statewide road taxes: the motor vehicle registration tax, the motor fuels excise tax, and the road share of motor vehicle sales taxes. In 2003, the three taxes generated $1.3 billion for state and local roads. To forecast potential surplus or deficit in purchasing power, revenues are compared with inflation-adjusted service costs. The projections rely on the Global Insight's 25-year forecast for the U.S. economy, and follow three economic growth paths or scenarios -- Trend, Optimistic, and Pessimistic. The goal is to identify policy trends, strengths and weakness and develop a baseline assessment of future road-funding challenges.

In 2003, Minnesota had a 4.1 million-vehicle fleet. Under the Trend scenario, the fleet will grow to 5.9 million by 2030, an increase of 1.8 million vehicles. The Optimistic scenario adds 2.4 million vehicles, while the Pessimistic forecast adds 1.2 million units. Under the Trend scenario, the motor vehicle registration taxes (MVRT) grow from $492 million in 2003, to $933 million by 2030. In the Optimistic forecast MVRT revenues approach $1.2 billion by 2030, while the Pessimistic scenario projects $875 million in revenues. One policy concern is a shift over time in vehicle registration tax burdens toward new vehicle purchases. In 2003, new light vehicles paid one-quarter of all light vehicle registration taxes; by 2030 new vehicles pay nearly half the revenues. This reliance on new vehicle sales to generate vehicle registration tax revenues could add volatility and uncertainty to future road-funding commitments.

The average 2003 new light vehicle cost $25,100. By 2030, under the Trend forecast, the average price will rise 119% to $51,600. Under the Optimistic scenario, the average 2030 new light vehicle will cost $43,900, reflecting a lower inflation environment. By contrast, under the Pessimistic forecast the average new 2030 light vehicle cost $58,100. In 2003, one-third of motor vehicle sales taxes (MVST) generated $187 million for roads. By 2030, under the Trend scenario, MVST (road) revenues will increase three-fold to $658. Revenues increase five-fold, to $975 million, by 2030, under

the Optimistic scenario. The Pessimistic 2030 forecast is $651 million in vehicle sales taxes for roads.

The motor vehicle registration tax and motor vehicle sales tax generate about the same revenue in the Pessimistic scenario as the Trend forecast. Yet under the Optimistic scenario revenues from both taxes increase significantly. This suggests current road tax policy is resilient during more difficult economic times, but provides a strong revenue response in good economic environment.

In 2003, Minnesota's 20-cent per gallon motor fuels excise tax generated $635 million for state and local roads. Assuming tax rates stay the same, revenues will grow to $1.25 billion by 2030 under the Trend scenario. The Optimistic forecast is $1.36 billion in fuel tax revenues by 2030, while the Pessimistic forecast is $1.14 billion. Revenue increases are directly proportionate to increases on motor fuel consumption, which totaled 3.2 billion gallons statewide in 2003. Under the Trend scenario, fuel use reaches 6.1 billion gallons a year in 2030. Fuel consumption for the Optimistic and Pessimistic scenarios are, respectively, 6.7 billion gallons and 5.3 billion gallons by 2030. Doubling statewide motor fuel use will increase the need for additional refinery, storage, and transportation infrastructure.

Road service costs increase over time with inflation. Using 2003 as baseline service costs, two inflation indexes are applied to $1.3 billion in spending over 27 years. This base cost estimate does not include new spending for system growth, but service levels comparable to 2003. For example, a dollar in 2003 service grows to $1.97 by 2030, assuming Trend core-CPI inflation. By extension, $1.3 billion in 2003 road service inflates to $3.06 billion by 2030. The same $1.3 billion in base costs become $3.26 billion in 2030 using the Trend state and local government cost index. With both inflation measures, 2030 base service costs are lower in the Optimistic scenario and higher in the Pessimistic scenario.

The balance between tax revenues and inflation-adjusted road costs determines the surplus or deficit in purchasing power. Under the Trend scenario, revenues modestly

exceed inflationary costs until 2020, using core-CPI inflation, and 2018, assuming state/local government cost inflation. Yet over the 27-year forecast period, cumulative revenues are nearly equal the cumulative inflation-adjusted base costs. This implies current road tax policy can maintain 2003 service levels without changing current law, but not support new system spending.

Under the Optimistic scenario, revenue growth exceeds road cost inflation throughout the forecast period. By 2030, the three road taxes generate $714 million annually in additional purchasing power, beyond the inflationary cost of service. New money is available to fund old system backlogs and new system growth, without changing current law. The 2030 surplus is smaller ($335 million) when base costs are adjusted for state and local government cost inflation. The cumulative purchasing power surplus over the 27 years is $10.8 billion assuming core-CPI inflation, and $4.7 billion using the state and local government cost index.

The Pessimistic scenario is less favorable, with the purchasing power of state road taxes falling short of base cost inflation as early as 2010, followed by significant annual deficits. By 2030, the purchasing power deficit is $1 billion short of providing service levels comparable to 2003. The cumulative purchasing power deficit over the 27 years is $6.2 billion assuming core-CPI inflation, and $7.9 billion using the state and local government cost inflation.

Overall, inflation outpaces revenue growth in vehicle registration taxes and motor fuel excise taxes. The motor vehicle sales tax, however, grows three times faster than inflation or the other road taxes. A reduction in fuel use or widespread adoption of alternative fuels could pose a threat to fuel tax revenues, if equivalent fuel tax rates are not maintained, or if the proceeds are not dedicated to road purposes.

Chapter 1. Introduction

Steady predictable revenues are a good tax policy goal, irrespective of tax rates. Adequate revenues help policymakers maintain a balanced tax system, and improve the certainty of future funding commitments. Minnesota spent $2.9 billion on state and local roads in 2003, and nearly half ($1.3 billion) came from three state road taxes: the motor fuels excise tax, motor vehicle registration tax, and a share of the motor vehicle sales tax. While it is safe to assume tax revenues will be nominally higher by 2030, the more important question is how well these road taxes will maintain their purchasing power. This study forecasts baseline tax revenue from 2003 to 2030, and compares the revenues with the inflation-adjusted cost of today's (2003) road service. If future revenues exceed base cost inflation, funds will be available for additional system spending. If revenues fail to keep pace, road service, road tax policy, or both will need to change.

Long-range planning can help identify changing trends and policy weaknesses.

Predicting the future is at best informed speculation, so it is reasonable to ask, why even try? Long-range planning is not just about predicting likely fiscal outcomes; it can help define policy goals and identify system strengths and weaknesses. Federal, state, regional, and local governments all use strategic planning in policy development and many have road components. Some have very long forecast horizons, like the Congressional Budget Office 2075 assessment of the socioeconomic forces driving federal budget growth (i). A U.S. Department of Energy analysis of transportation energy needs offers predictions to 2050, identifying alternative energy and transportation policies (ii). Other Energy Department studies are more detailed, such as the potential for technology to change commercial trucking in the 21st century (iii).

The Minnesota Department of Transportation periodically updates the 20-year Statewide Transportation Plan, which documents Minnesota's strategic vision for future road and transit networks (iv). Other non-transportation forecasts, like the State Demographer's 2030 household projections, give a social context to future tax policy (v).

There are a variety of long-range planning exercises at the local and regional level, including the Metropolitan Council's Regional Development Framework, forecasting transportation needs and goals to 2030 (vi). One of many community-planning examples with a transportation component is the 2020 Land Use Plan by the City of Lakeville (vii).

This study forecasts future road tax revenues using data from the (Winter 2004) 25-year economic projections by the consulting firm Global Insight, and although their forecast ends in 2028, we extend the estimates along trend lines two additional years to reach 2030 (viii). The Global Insight model projects various road-related factors, like new vehicle sales and motor fuel consumption, under three economic growth scenarios. The Trend scenario is the middle path, which like the other two (Optimistic and Pessimistic) assumes steady growth without up or down economic cycles. One important difference between the three forecasts is the rate of inflation. The Optimistic forecast assumes lower inflation than the Trend scenario, while the Pessimistic forecast assumes higher than Trend inflation. These three scenarios are designed to capture, with 80 percent confidence, the U.S. economic growth path over the next 25 years. Minnesota is assumed to follow national trends.

The study also incorporates data from other sources, including the U.S. Department of Energy 2004 Energy Outlook, which forecasts to 2025 vehicle characteristics and travel behavior, like VMT, fuel efficiency and fuel consumption (ix). Another important resource is Minnesota Department of Public Safety vehicle registration data (x). These and other data are described in more detail throughout the report.

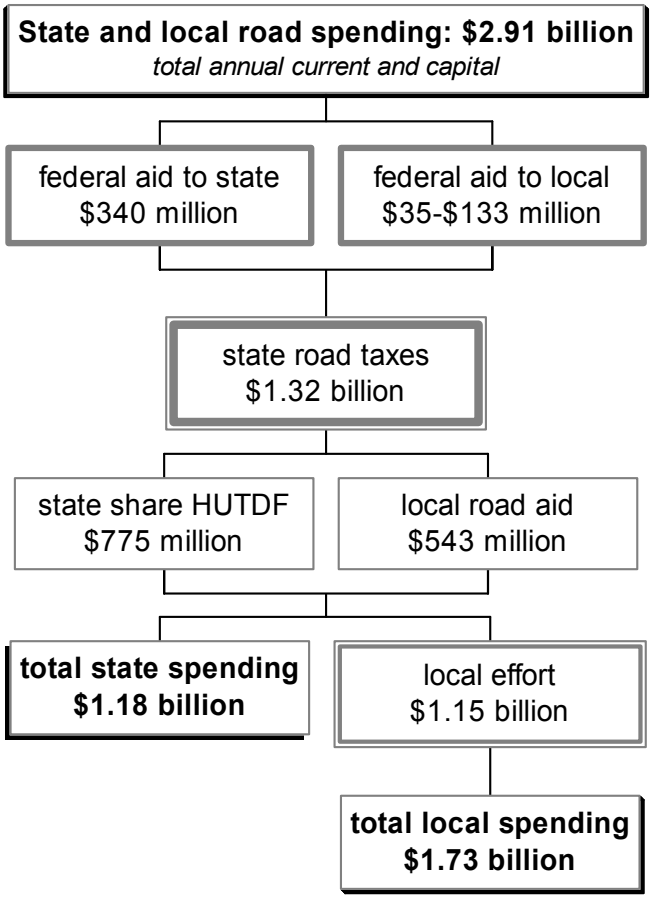
Minnesota forecast is based on Global Insight 25-year U.S. economic projections.

Current law baseline

A useful starting point for discussing features of the three road taxes is where they fit in current Minnesota state and local road funding (xi). Minnesota spent $2.9 billion on state and local roads in 2003 (Figure 1.1). Federal highway planning and construction grants totaled $375 million, with most going to state road projects. Local governments,

with property taxes and other local general funding, support another $1.15 billion. The focus of this report is the $1.32 billion generated by the motor vehicle registration tax, the motor fuels excise tax, and a third of the motor vehicle sales tax.

Figure 1.1 – Minnesota 2003 state and local road funding



Source: Minnesota Department of Finance and Minnesota office of the State Auditor

The motor vehicle registration tax (MVRT) raised $492 million in 2003. The motor vehicle sales tax (MVST) grossed $605 million, with $187 million dedicated for road use. Finally, the motor fuels excise tax (MFET) raised $635 million. Revenues from all three taxes go to the Highway User Tax Distribution Fund (HUTDF), and support two-thirds of state road spending, and a third of local road spending, through state road aid.

Study scope and limits

This study provides a baseline assessment of future road taxes, and assumes current (2003) law is in effect for the 27-year period from 2003 to 2030. While such an assumption may seem unrealistic at first, road tax policies have historically been slow to change. The motor vehicle registration tax had no significant policy changes for 30 years prior to the tax reforms of the 2000 legislative session. The motor vehicle sales tax has been the same (6.5%) rate since 1991. Motor fuels excise tax rates have not changed in 16 years (1988). In this study, road tax revenues are forecast for a 27-year period and compared with inflation-adjusted road service costs. The research question is not whether revenues will support new or better roads, but whether the three taxes will maintain their purchasing power well enough to support road service spending comparable to 2003 levels.

Baseline forecast assumes current road tax policy in effect through 2030.

Chapter 2 examines future fleet characteristics, and forecasts Minnesota motor vehicle registration tax revenues to the year 2030. Motor vehicle sales tax revenues are forecast in chapter 3. Motor fuel consumption and motor fuel tax revenues are estimated in chapter 4. Using two price deflators, chapter 5 calculates the costs of 2003 road service over 27 years. Chapter 6 compares the forecast revenues with inflation adjusted base costs to estimate the future surplus or deficit in purchasing power. Chapter 7 outlines how a reduction in petroleum consumption or alternative fuel use might impact motor fuel tax revenues. Chapter 8 summarizes the key findings and policy implications.

Chapter 2. Motor vehicle registration tax

The motor vehicle registration tax (MVRT) is an access charge on Minnesota-owned vehicles used on public roads. The tax was first introduced in 1911 as a $1.50 per vehicle excise or unit tax (xii). Adjusted for CPI inflation, the same fee would be about $30 today. Starting in 1921, the tax assessment was based on vehicle weight and value. Passenger or light vehicle registration taxes changed to a 2.2% levy on value alone in 1941. Three decades later, in 1973, passenger vehicle registration taxes became a two-part tariff: a $10 fixed fee and a 1.25% ad valorem or value tax. Many registration tax reforms of the early 1970's still apply today to light and heavy vehicle registration taxes. The last significant policy reform was in 2000, when the tax on most light vehicles was capped at $99, in effect returning the registration tax to an excise tax, where it began in 1911.

This chapter describes features of the Minnesota light and heavy vehicle fleet as they relate to vehicle registration taxes, and in many cases to the motor vehicle sale tax (MVST), which is covered in the next chapter. Minnesota Statutes chapter 168 governs vehicle registration tax levies (xiii). The light vehicle registration tax is based on a vehicle's value and age. Taxes on heavy vehicles are based on the vehicle type, weight, and age. Other registration tax categories, like motorcycles or boat trailers, are typically a flat annual fee. Total 2003 vehicle registration tax receipts were $492 million (xiv). Light passenger vehicles paid the largest share (85%), heavy commercial vehicles (12 %) and other vehicle types, from mopeds and motorcycles, to RV's and trailers, paid the rest (3%) (xv). All proceeds from the motor vehicle registration taxes are constitutionally dedicated to the Highway User Tax Distribution Fund for road spending.

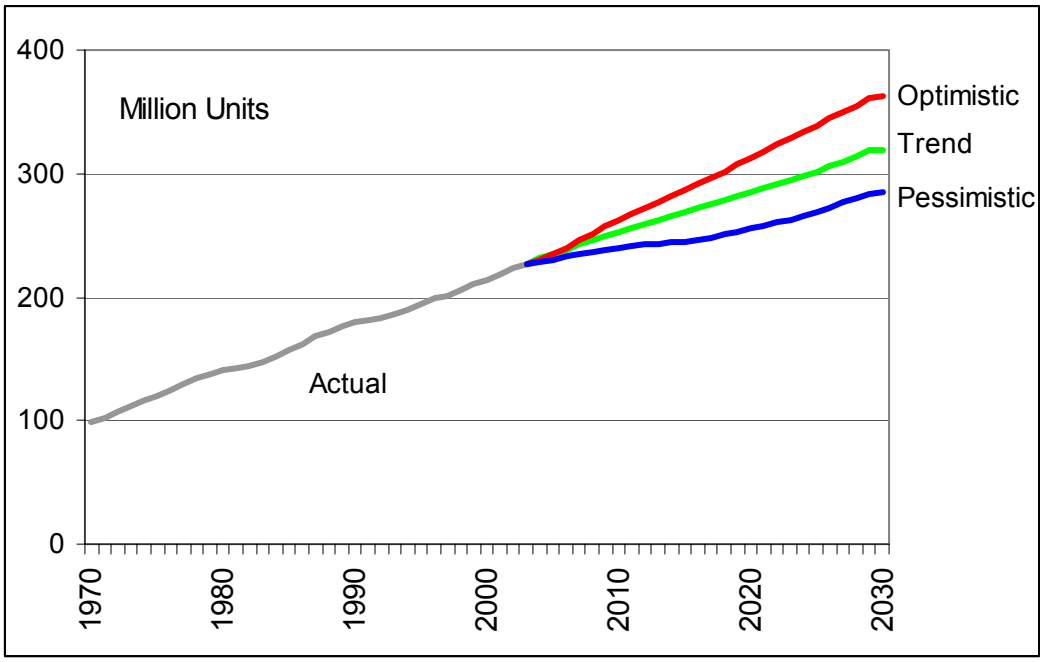
Light vehicle fleet

Fleet Size is the first important factor in estimating future tax revenues, and this section starts with the light vehicle fleet. Light vehicles are passenger cars and light trucks, including pickups, minivans, and sport utility vehicles. The 2003 U.S. light

vehicle fleet totaled 227 million units (Figure 2.1), more than double the 99 million light vehicles in 1970.

Trend: By 2030 U.S. light vehicle fleet will grow 41% to 319 million units.

Figure 2.1 – U.S. light vehicle fleet, 1970-2030



Source: Global Insights, Winter 2004 (see appendix page A-1)

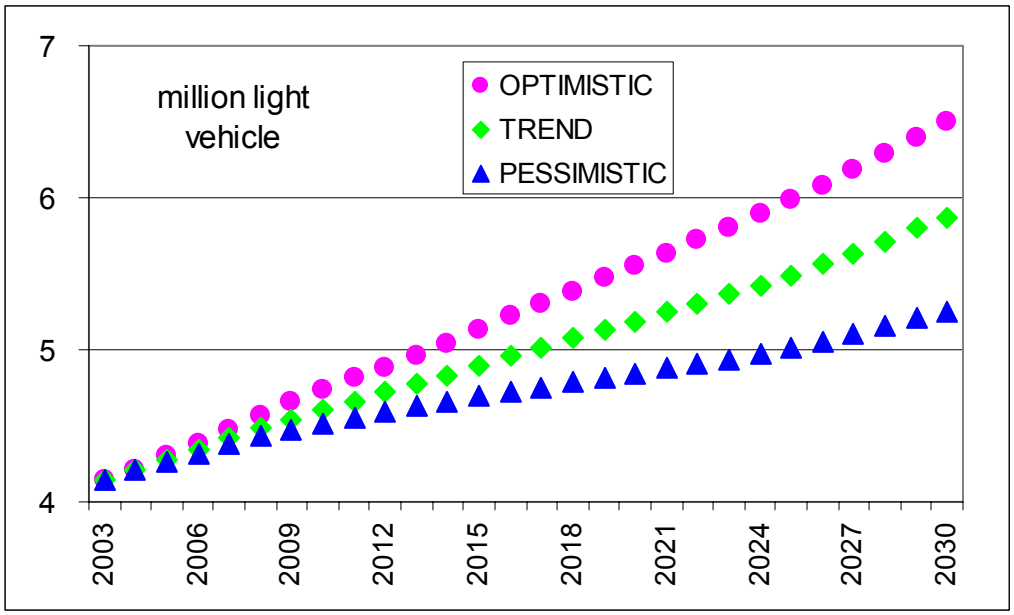
By 2030, under the Trend scenario, the U.S. light vehicle fleet will reach 319 million units. The Optimistic forecast is for 362 million units, and the Pessimistic scenario projects 285 million U.S. light vehicles. In other words, American roads will need to accommodate between 60 million and 135 million more vehicles by 2030. The U.S. light vehicle fleet will grow 41% under the Trend scenario, 60% in the Optimistic forecast, and 26% in the Pessimistic scenario.

Trend: Minnesota's 4.1 million light vehicles grow to 5.9 million by 2030.

Minnesota's fleet of cars and light trucks totaled 4.1 million in 2003 (xvi). Assuming Minnesota's fleet grows at the U.S. rate, the Trend scenario forecasts a 2030

Minnesota light vehicle fleet of 5.9 million units (Figure 2.2). This means an additional 1.8 million vehicles on Minnesota roads by 2030. The Optimistic scenario projects a fleet of 6.5 million units, and the Pessimistic scenario estimates 5.3 million registered vehicles statewide in 2030. Minnesota roads will need to accommodate between 1.2 million and 2.4 million more vehicles by 2030.

Figure 2.2 – Minnesota light vehicle fleet, 2003-2030

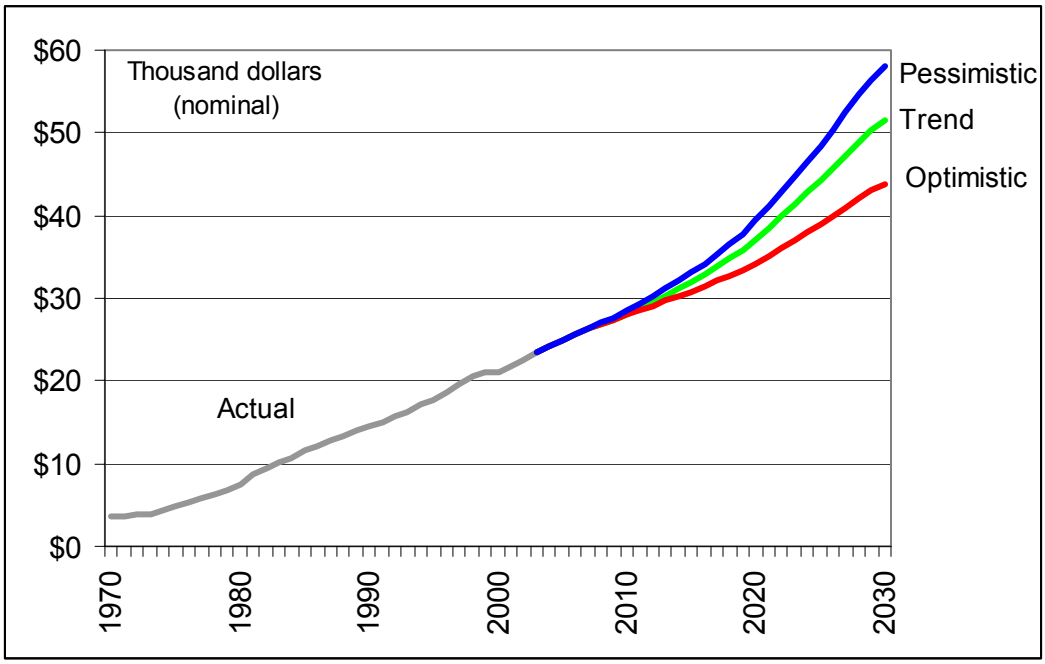


(see appendix page A-2)

Vehicle Prices are a second factor in calculating vehicle registration taxes and motor vehicle sales taxes. According to Global Insight, the average new 2003 light vehicle cost $23,550, a six-fold increase over the nominal $3,645 in 1970 (Figure 2.3). The Trend scenario projects a new 2030 light vehicle will cost $51,600, an increase of 119% over 2003 prices, or little more than a doubling in nominal cost. The Optimistic scenario average new 2030 light vehicle will cost $43,900, an 86% increase over 2003. Under the Pessimistic forecast, the 2030 new light vehicle costs $58,100, or 147% higher than 2003. The fleet size projections and vehicle price estimates illustrate a fundamental difference between the Optimistic and Pessimistic scenarios, as compared with the Trend

scenario. In the Optimistic world, more vehicles are sold, but at a lower price, while the Pessimistic scenario has fewer vehicle sales, but at higher prices.

Figure 2.3 – U.S. average new light vehicle price, 1970-2030



* Manufacturer's suggested retail price in thousands of (nominal or current year) dollars.
Source: Global Insights, Winter 2004 (see appendix page A-3)

Trend: nominal price of 2003 new light vehicle will double to $51,600 by 2030.

When forecasting future revenues the average new light vehicle price is an important starting point, because even small differences in initial values can become big differences over time. The price for a new 2003 light vehicle in this analysis is $25,100, reflecting the average of three price estimates. Edmunds.com estimates the U.S. average manufacturer's suggested retail price (MSRP) for a new 2003 car or light truck was $30,500. However, rebates and incentives reduce the average transaction price 14% below MSRP, to $26,230 (xvii). A second price estimate is from Minnesota's DPS vehicle registration data, where the average new 2003 light vehicle had a taxable value of $25,735. The third price is the previously mentioned Global Insight new 2003 light vehicle cost of $23,550. The average price using these three estimates is $25,100.

Vehicle Age is the third variable in calculating vehicle registration taxes. In 2003, the typical U.S. automobile was 8.6 years old, and the average light truck was 6.5 years old (xviii). Ten years earlier (1993) the median ages was 7.5 years for cars, and 7.2 years for light trucks (xix). The projected median survival or lifespan for vehicles built in 1990 is 16.9 years for automobiles, and 15.5 years for light trucks (xx). Therefore, new 2003 vehicle should last until 2020, more than half way through the 2030-planning horizon. Such slow turnover could make an orderly change in fleet characteristics, like fuel economy, a decade or longer process.

One-third of Minnesota light vehicles in 2003 were more than 10 years old.

The Minnesota (DPS) vehicle registration data is also useful in segmenting the state's light vehicle fleet by age (xxi). Minnesota had 4.07 million light vehicles registered statewide in 2003 (table 2.1). New vehicles, in their first model year, account for 8.1%. Two-year-old vehicles were 6.8% of the total, and vehicles 3-year-olds were 7.3%. While the expectation may be for each successively older model to have fewer vehicles, the 2003 Minnesota fleet had slightly more 6-year-old vehicles, than 2-year-old vehicles, illustrating the lumpy nature of new vehicle sales. Still, most model years represent between 6% and 8% of the fleet. To simplify the analysis we assume each model year, for the first nine years, is 7% of the light vehicle fleet. Vehicles 10 years and older remain at the current 37% share.

Table 2.1 – Minnesota 2003 light vehicle fleet age distribution

Age cohort	Number	Share
1 year old	327,870	8.1%
2 years old	277,341	6.8%
3 years old	295,081	7.3%
4 years old	308,539	7.6%
5 years old	279,819	6.9%
6 years old	279,348	6.9%
7 years old	259,711	6.4%
8 years old	274,008	6.7%
9 years old	249,785	6.1%
>= 10 years	1,515,559	37.3%
	4,067,061	*100%*

Source: Minnesota Department of Transportation, unpublished data

Calculating Minnesota light vehicle registration taxes is a three-step process: the vehicle is assigned a value, a tax rate is applied, and then, subject to maximum levies, the tax is assessed. The registration tax rate is $10 plus 1.25 percent of the vehicle's base value or manufacturers suggested retail price (MSRP). As vehicles age, the MSRP is depreciated according to a formula in state statute:

- Years 1 and 2 - registration tax is based on 100% of MSRP
- Years 3 and 4 - registration tax is based on 90% of MSRP
- Years 5 and 6 - registration tax is based on 75% of MSRP
- Year 7 - registration tax is based on 60 % of MSRP
- Year 8 - registration tax is based on 40% of MSRP
- Year 9 - registration tax is based on 30% of MSRP
- Year 10 - registration tax is based on 10% of MSRP
- Vehicles older than 10 years are flat taxed at $35.

Light vehicle registration tax policy changed significantly in 2000. New vehicles are taxed at the same 1.25% of the purchase (MSRP) price, just as before, but the levy is capped at $189 in year two, and $99 in year three and beyond. No light vehicle, regardless of age or value, pays less than $35. For example, a new $25,000 light vehicle pays a 1.25% value tax, or $323 in year one. In year two, the same vehicle, now two years old, yet still valued (in statute) at 100% of MSRP, is levied the same $323. But year two registration taxes are capped at $189, providing a $134 tax savings. The tax in year three is initially $291, but the $99 cap translates into a $192 savings. In year nine the calculated tax is $104, still above the $99 maximum tax. Finally, in year ten a flat $35 is levied.

Heavy vehicle fleet and other registrations

Unlike the relatively homogeneous light vehicle fleet, heavy vehicle registration taxes are more difficult to estimate. Global Insight does not forecast heavy vehicles as part of the growth scenarios, so the heavy vehicle fleet is assumed to increase at the same

rate as light vehicles. This assertion is supported by the 2004 Energy Outlook projections of 27% truck fleet growth, from 8.75 million units in 2003, to 11.1 million units by 2025. Over the same period, the Global Insight Trend scenario forecast light vehicle growth at 33%. More finely, the 2004 Energy Outlook projects the medium-sized truck fleet will increase (19%) to 4.9 million units, and the heavy truck fleet will grow (33%) to 6.2 million units.

Heavy vehicle registration taxes increase with gross vehicle weight.

Minnesota (DPS) vehicle registration data shows 84,300 heavy vehicles registered statewide in 2003, including (68%) commercial and prorate trucks, (17%) farm trucks, plus buses. But commercial registrations can include vehicles with gross weights less than 10,000 pounds. Another estimate of the Minnesota heavy vehicle fleet is the 2002 U.S Commerce Department Vehicle Inventory and Use (VIU) Survey. It estimates Minnesota's truck fleet, vehicles over 6,000 pounds in gross weights, at 129,200 units, although most exceed 16,000 pounds (Table 2.2). If the 96,700 trucks in the latter group were to grow 33% over the forecast period, the 2030 Minnesota heavy truck fleet would number 128,600 units. Trucks over 50,000 pounds in gross weight would increase from 39,000 units in 2002 to 52,000 units by 2030.

Table 2.2 – Minnesota truck fleet gross weight and average registration tax

Gross Vehicle Wgt.	Number of vehicles*	MVRT rates**
Over 6,000 lbs	129,200	
Less than 10,000 lbs	12,200	$15 to $70
10,000 to 16,000 lbs	20,300	$70 to $145
16,000 to 50,000 lbs	57,700	$145 to $715
More than 50,000 lbs	39,000	$865 to $1,760

* VIU survey 2002, ** Minnesota statute chapter 168.013, subd. 1e.

Heavy vehicle registration taxes increase with vehicle weight, to $1,760 annually on a truck and/or tractor with a gross vehicle weight of 81,000 pounds. Farm trucks

follow the same tax schedule, but with 45 percent lower rates. Buses are taxed by gross weight, with a schedule starting at $125 annually and a maximum tax of $550.

The VIU truck survey estimates Minnesota's heavy truck age distribution (Table 2.3). New heavy truck purchases slowed between 2000 and 2002, but overall each model year represents between 4% and 5% of the fleet. Sixty percent of the Minnesota truck fleet is more than 8 years old, compared to 37% of the light vehicle fleet at 10 years or older. The median lifespan for a 1990 heavy vehicle is 28 years, nearly twice the length of the typical light vehicle (xxii). A new heavy truck purchased today could still be in service at the end of the forecast period.

Table 2.3 – Minnesota 2002 truck fleet age distribution

Minnesota Truck Fleet	129,200	100%
Model year		*% of fleet*
2002 – 1 year old	2,600	2%
2001 – 2 years old	4,700	4%
2000 – 3 years old	10,800	8%
1999 – 4 years old	8,100	6%
1998 – 5 years old	5,400	4%
1997 – 6 years old	6,500	5%
1996 – 7 years old	5,700	4%
1995 – 8 years old	7,500	6%
Pre 1996 – over 8 years old	77,900	60%

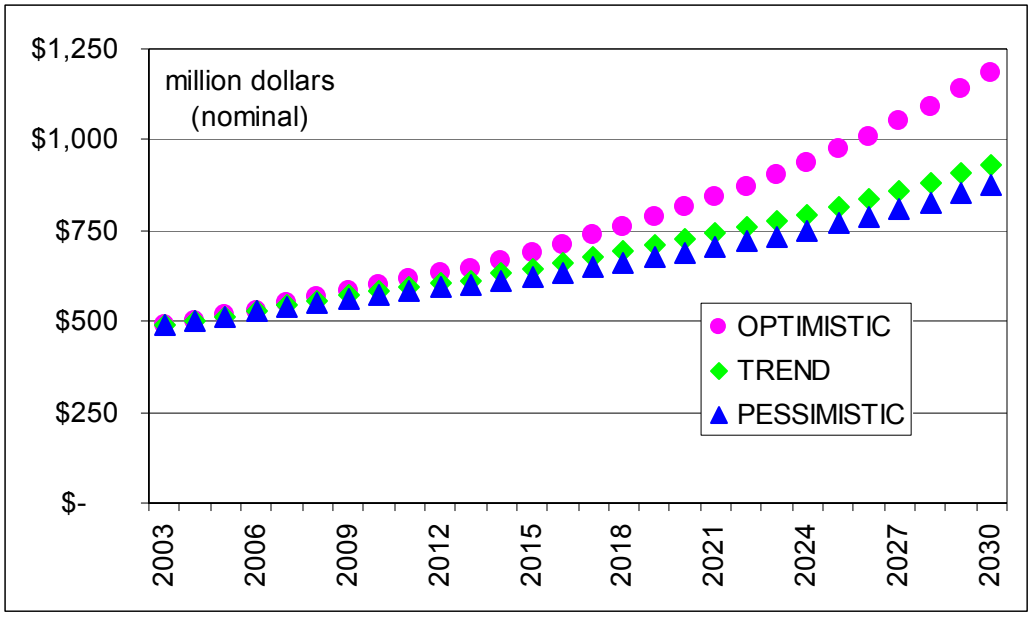
Vehicle Inventory and Use Survey, U.S. Dept. of Commerce, 2004

Heavy vehicles paid $60 million or 12% of the $492 million in 2003 state motor vehicle registration taxes (xxiii). Registration taxes are also levied on a number of other vehicle classes, from utility trailers to motorcycles and mopeds, and generally pay an annual charge of between $10 and $25. Collectively the other registration types generated (3%) $15 million in MVRT revenues.

Motor vehicle registration tax 2030 revenue forecast

Motor vehicle registration tax revenues totaled $492 million in 2003. By 2030, under the Trend scenario, MVRT revenues will increase to $933 million (Figure 2.4). The Optimistic forecast is $1.18 billion, and the Pessimistic forecast for 2030 revenues is $875 million. Between 2003 and 2030, MVRT revenues increase 92%, 143%, and 80%, respectively. By contrast, the Minnesota vehicle fleet grows 41%, 60%, and 26%, in the respective scenarios.

Figure 2.4 – Minnesota MVRT revenue forecast, 2003-2030 ($ million nominal)



(see appendix page A-4)

Trend: registration tax revenues will nearly double by 2030 to $933 million

Cumulative motor vehicle registration tax revenues, the total from 2003 to 2030, are $19.1 billion under the Trend scenario (Table 2.4). The Optimistic forecast has 27-year cumulative revenues of $21.4 billion, and the cumulative Pessimistic forecast is $18.4 billion.

Table 2.4 – Minnesota MVRT revenue forecast, 2030 and 27-year total

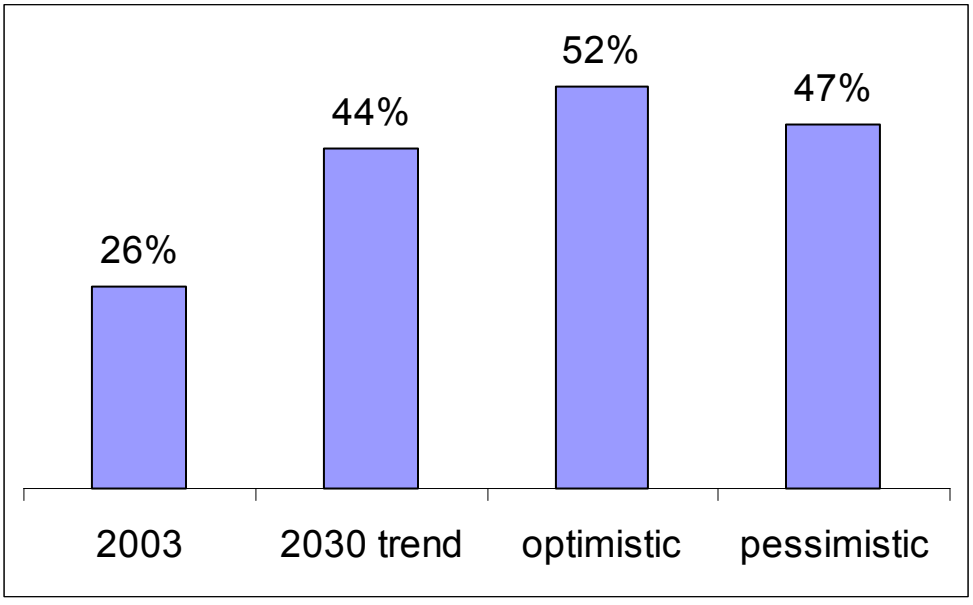
2003 actual revenues $492 million		
	2030	Cumulative 2003-2030
Trend	$933 million	$19.1 billion
Optimistic	$1,185 million	$21.4 billion
Pessimistic	$875 million	$18.4 billion

(see appendix page A-4)

Share of registration tax from new vehicles increases over time.

One long-run consequence of current registration tax policy is a shift in tax burdens toward new light vehicles (Figure 2.5). In 2003, new or first model year light vehicles paid 26% of all light vehicle registration taxes. By 2030, under the Trend scenario, the new vehicle share will grow to 44%.

Figure 2.5 – Share of light vehicle MVRT from first model year



In the Pessimistic scenario, first year registrations will account for 47% of revenues, as fewer light vehicles are sold, but at higher prices. In the Optimistic scenario, more than half of the 2030 light vehicle registration tax will come from new vehicles. This tax shift could increase the volatility of registration tax revenues, and may raise fairness questions. Some might favor higher taxes on new vehicles to compensate for adding another vehicle to already congested networks. To mitigate a growing imbalance, one policy alternative is indexing the maximum registration ($99 and $189) tax levies by inflation or some other factor.

Chapter 3. Motor vehicle sales tax

Minnesota's motor vehicle sales tax (MVST) is a 6.5% levy on vehicle purchases, paid at the time of title transfer. The tax was first enacted at a 3% rate in 1971, and then quickly raised to 4% in a special legislative session that same year (xxiv). The current 6.5% rate is the same as the general sales tax, and has been in effect since 1991. The tax's application has changed little over the years, save the occasional exemption or exclusion. Unlike vehicle registration and motor fuel taxes, which are 100% constitutional dedicated to the Highway User Fund, a third of vehicle sales tax is statutorily dedicated (xxv). Among the 2000 tax reforms was a revenue sharing arrangement between roads, transit, and the state general fund. Gross MVST revenues were $605 million in 2003, and 31% or $187 million went to roads (xxvi). Starting in 2008 current law sets the road share at 32%, where it is assumed to stay throughout the 2030 forecast.

One-third of motor vehicle sales tax revenues are dedicated to roads.

Taxing vehicle title transfers

The motor vehicle sales tax is a vehicle title transfer tax, triggered by a change in vehicle ownership. The Minnesota Department of Public Safety processed 1.4 million title transfers in 2003, drawn from a universe of 5.4 million titled vehicles, including 4.07 million light vehicles, 84,300 heavy vehicles, and 1.2 million other registration types, primarily (900,000) utility trailers. Light vehicles represent three-quarter of all titles, and therefore, proportionately, represent 1.0 million of the 1.4 million transactions. New light vehicle sales average 300,000 units a year, leaving 700,000 title transfers among the remaining light vehicle fleet. This suggests an average ownership period of five to six years on the typical light vehicle (3.8 million/700,000=5.4 yrs). Over 27 years, the typical vehicle owner might purchase four or five vehicles, paying motor vehicle sales taxes each time. Alternatively, the typical vehicle would be traded three times in a useful life, and the new owner would pay sales taxes on the depreciating value each time.

Several factors affect the forecast of motor vehicle sales taxes. The first is vehicle leasing; sales taxes from lease transactions go to the state general fund, not the Highway User Tax Distribution Fund. Another factor is the sales tax exemption on vehicle trade-ins. A third consideration are vehicles 10 years and older, a third of the light vehicle fleet. Their sales tax is a flat $10 fee, instead, for example, $65 on the sale of a $1,000 older vehicle.

The $605 million in MVST revenues for 2003 imply, at a 6.5% tax rate, $9.5 billion in vehicle sales. New light vehicle sales were about $7.0 billion, according to DPS data, suggesting a strong revenue reliance on new vehicle sales. Global Insight estimates 20% of new 2003 vehicle purchases were lease arraignments (xxvii). This 20% share is assumed throughout the forecast period, recognizing that leasing varies significantly from year to year, particularly in the personal use market. Yet overall, the use of leasing has grown (xxviii). If 20% of the $9.5 billion gross light vehicle sales were lease purchases, the MVST sales base is reduced by $1.9 billion. A second reduction comes from the sales tax exemption on vehicle trade-ins values. The 2003 tax cost of this exemption is estimated by Minnesota Department of Revenue at $80 million, which translates into $1.3 billion in lost taxable sales for the MVST (xxix). In this analysis, half the trade-in exemption is associated with new vehicle purchases, and the other half is distributed in declining shares with vehicle age.

Between vehicle leasing and trade-in sales tax exemptions, the initial $7.0 billion in new 2003 vehicle sales would be reduced to $4.9 billion, or half (54%) of the $9.5 billion in sales transactions represented in the $605 million in 2003 MVST revenues. This leaves $4.6 billion in sales transaction for the rest of the light vehicle fleet, which in this analysis is distributed equally across the remaining fleet. The exceptions are vehicles in the fourth model year being slightly overweighed, because of three-year lease expirations leave them more likely to experience a title transfer, and the slight underweight for vehicle's 10 years and older because of the flat $10 transaction tax and scrapage. Heavy vehicle sales are assumed to grow at a comparable rate to light vehicle sales. The 2004 Energy Outlook forecasts truck sales to grow 1.7% annually between 2003 and 2025, about the same rate as light vehicle sales in the Global Insight Trend scenario. Heavy

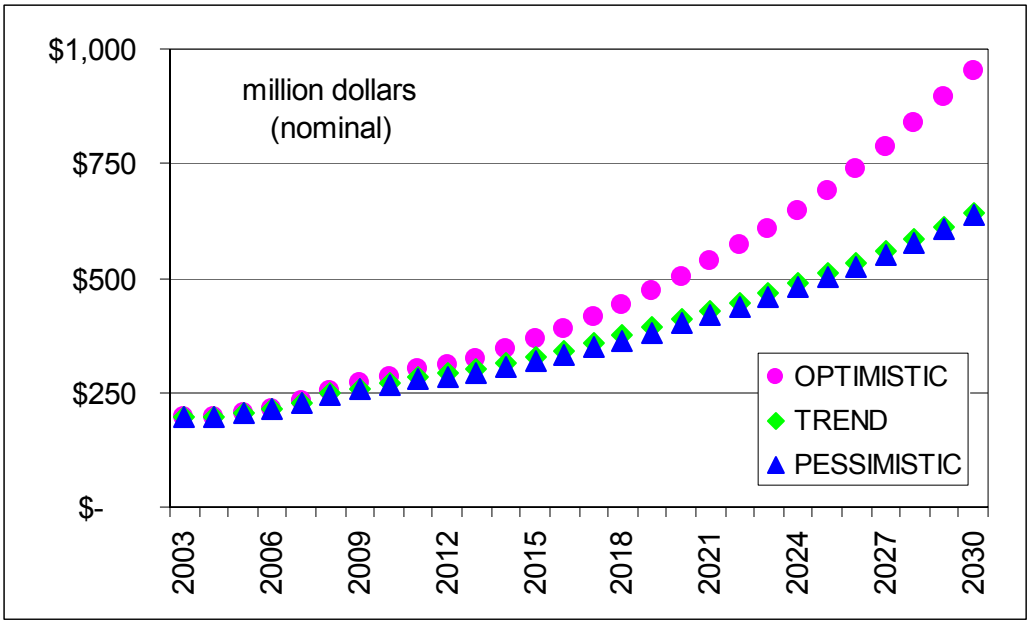
vehicles follow light vehicle relationships for trade-in exemptions, but the 2002 VIU survey finding of 10% lease rates among heavy vehicle purchases.

Trend: motor vehicle sale tax road-revenues will triple by 2030 to a $658 million.

Motor vehicle sales tax 2030 revenue forecast

Gross vehicle sales tax revenues were $605 million in 2003, and $187 million went to the Highway User Tax Distribution Fund for roads. By 2030, gross MVST revenues more than triple, reaching $2.05 billion under the Trend scenario (Table 3.1), with the road share totaling $658 million (Figure 3.1). The Optimistic scenario again delivers revenues nearly 50% higher than the Trend forecast, generating $975 million for roads, on gross MVST revenues of $3.05 billion – a five-fold increase over 2003. Once again, the Pessimistic scenario is on par with the Trend scenario, generating $651 million for roads in 2030.

Figure 3.1 – Minnesota MVST revenue forecast (roads only), 2003-2030



Model: current law (see appendix page A-5)

Trend: road share of the MVST is $658 million in 2030

Under both the Trend and Pessimistic forecasts, cumulative gross revenues from the motor vehicle sales tax top $33 billion, with $10.6 billion dedicated to roads. Under the Optimistic forecast, revenues total $13.3 billion for roads, on cumulative gross MVST revenues of $41.6 billion.

Table 3.1 – Minnesota MVST revenue forecast, 2030 and 27-year total

	MVST 2030 ($605 million 2003)	Cumulative MVST 2003-2030	MVST 2030 *32% to HUTDF* ($187 million 2003)	Cumulative *32% to HUTDF* 2003-2030
Trend	$2.05 billion	$33.6 billion	$658 million	$10.7 billion
Optimistic	$3.05 billion	$41.6 billion	$975 million	$13.3 billion
Pessimistic	$2.03 billion	$33.0 billion	$651 million	$10.5 billion

Model: current law (see appendix page A-5)

This analysis ultimately shows that revenues from the motor vehicle sales tax will grow faster than either the vehicle registration tax or motor fuels excise tax. Current law revenue sharing (starting in 2008) of the motor vehicle sales tax is 32% for roads, 22% for transit, and 46% to the state general fund. Since the motor vehicle sales tax was first introduced, some advocates have argued for revenues to be shared strictly between roads and transit, typically 75% roads and 25% transit. If such a distribution were to occur the difference under the Trend would mean an additional $15 billion for transportation by 2030, or roughly $4 billion more for transit and another $11 billion for roads. The Pessimistic scenario gives a similar outcome. Under the Optimistic scenario, cumulative transportation revenues would increase $19 billion.

Chapter 4. Motor fuels excise tax

The motor fuels excise tax is levied on the unit sale of gasoline, diesel, and other special motor fuels. The tax was first introduced in 1925 at 2 cents a gallon (xxx). The comparable inflation-adjusted rate today would be about 20 cents a gallon – the actual current rate. The tax increased to 3 cents a gallon in 1929, to 4 cents in 1937, and 5 cents in 1949. The tax rate rose to 6 cents in 1963 and 7 cents in 1967. Rates increased by 2 cents a gallon in 1975, 1980, and 1981. Between 1983 and 1984 the tax rose 4 cents more to 17 cents a gallon. The last rate change was in 1988, when a 3-cent increase brought the rate to the current 20-cents per gallon on both gasoline and diesel fuel. In 2003, the motor fuel tax generated $635 million (xxxi). Gasoline represents 80% of 2003 fuel consumption and an equal share of fuel tax revenues (xxxii). Tax revenues are derived from fuel use, which is a function of vehicle travel, fuel economy, and the size of the vehicle fleet. Although Global Insight forecasts fuel use in billions of gallons a year, fuel economy and vehicle travel are worth reviewing.

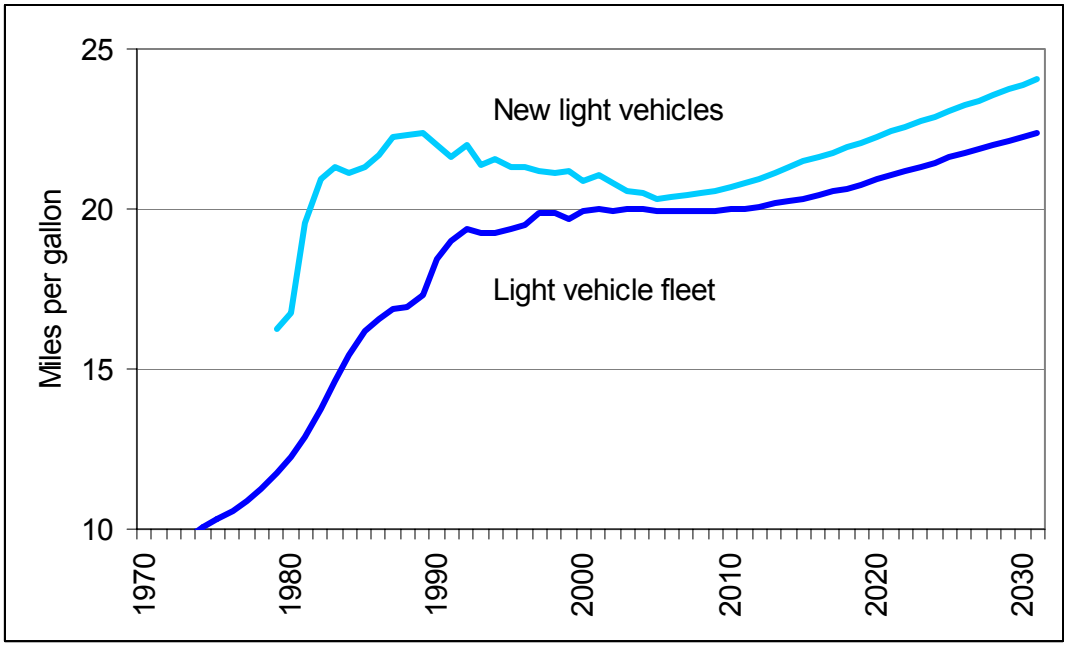
Minnesota 2003 excise tax on gasoline and diesel fuel is 20 cents a gallon.

Fuel economy

Vehicle fuel economy refers to the number of miles a vehicle can travel on a gallon of fuel. In 2003, the U.S. light vehicle fleet averaged 20.0 miles per gallon (mpg), twice the fuel economy of 30 years earlier (Figure 4.1). New 2003 light vehicles average 20.5 mpg, only slightly better than the fleet as a whole, and the lowest since 1980. Light vehicle fuel economy is a constant technology assumption in all three Global Insight scenarios, with the fleet economy forecast to increase 12% to 22.4 mpg by 2030, and new 2030 light vehicles to average 24.1 miles per gallon, or a 17% improvement over 2003 models.

New 2003 light vehicles had lowest average fuel economy since 1980.

Figure 4.1 – Fuel economy of U.S. light vehicle fleet, 1970-2030



Source: Global Insights, Winter 2004 (see appendix page A-6)

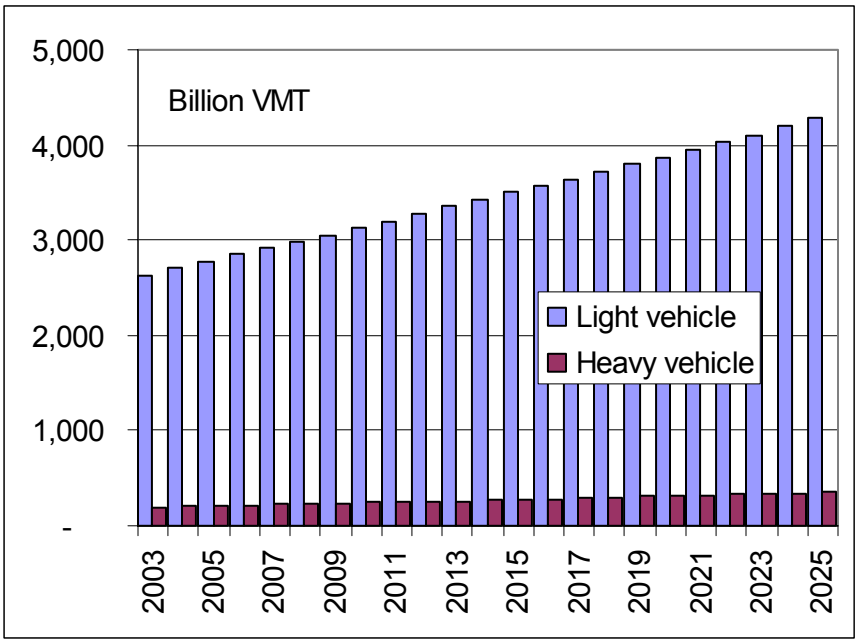
Global Insight does not forecast heavy vehicle fuel economy directly, but the 2004 Energy Outlook does estimate heavy truck (GVW greater than 10,000 pounds) fuel economy through 2025. In 2003, the typical heavy vehicle got 6.0 mpg, and by 2025, fuel economy in the heavy vehicle fleet is expected to improve 8% to 6.5 mpg.

Miles of travel

A second factor influencing fuel consumption is the number of vehicle miles traveled (VMT). The 2004 Energy Outlook projects U.S. VMT will increase from 2.8 trillion in 2003, to 4.6 trillion by 2025, or 2.2% annually (xxxiii). Assuming Minnesota follows the U.S. trend, statewide VMT will increase from 52 billion in 2003, to 86 billion

VMT by 2025. Much like today, light vehicles will account for 92% of future travel miles.

Figure 4.2 – U.S. vehicle miles of travel, 2000-2025 (billion VMT)



Source: 2004 Energy Outlook (see appendix page A-7)

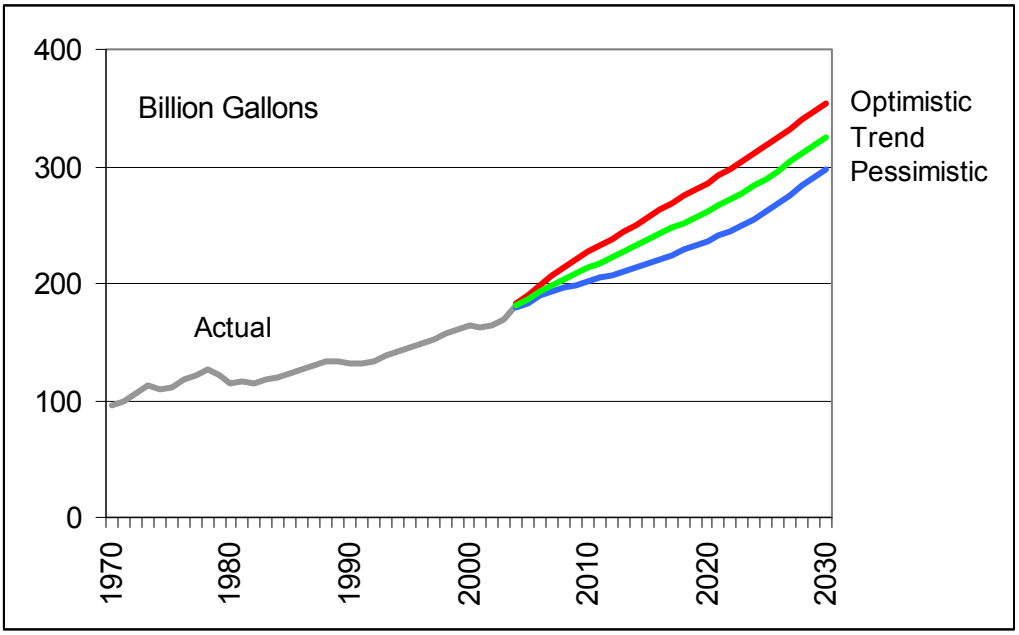
Minnesota VMT grows from 52 billion in 2003 to 85 billion in 2025.

Fuel consumption

Global Insight estimates 2003 U.S. motor fuel consumption (for road use) at 169 billion gallons, up from 112 billion gallons 30 years earlier (Figure 4.3). Under the Trend scenario, motor fuel use increases to 325 billion gallons by 2030. The Optimistic and Pessimistic scenarios forecast fuel use at plus or minus 28 billion gallons, respectively.

Trend: U.S. motor fuel consumption will double by 2030 to 325 billion gallons a year.

Figure 4.3 – U.S. motor fuel consumption, 1970-2030



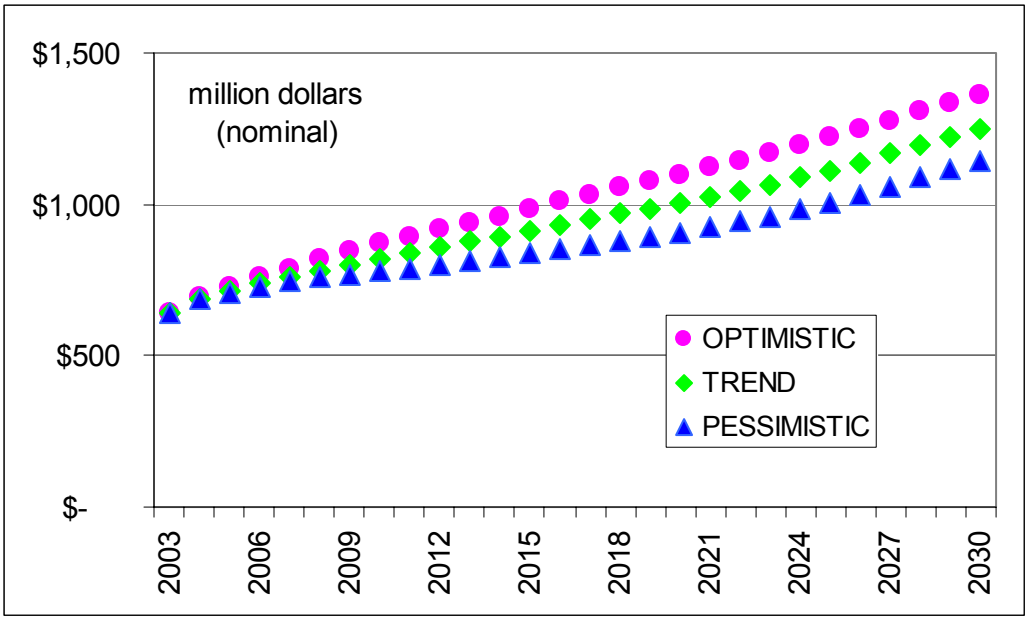
Source: Global Insight, Winter 2004 (see appendix page A-8)

Motor fuels excise tax 2030 revenue forecast

A direct relationship exists between motor fuel consumption and motor fuel tax revenues. The motor fuel tax generated $635 million in 2003, which at 20 cents a gallon, translates into 3.2 billion gallons of motor fuel consumed statewide. Under the Trend scenario by 2030, motor fuel consumption will nearly double (up 97%), and motor fuel tax revenues will grow to $1.25 billion (Table 3.1). The Optimistic scenario forecasts 2030 MFET revenues at $1.36 billion, versus $1.14 billion for the Pessimistic case.

Trend: motor fuel use and motor fuel tax revenues nearly double by 2030.

Figure 4.4 – Minnesota MFET revenue forecast, 2003-2030



(see appendix page A-9)

Cumulative fuel tax revenues total $26.5 billion under the Trend scenario from 2003 to 2030. In both the Optimistic and Pessimistic scenarios cumulative revenues are within $2 billion of the Trend forecast.

Minnesota 2003 motor fuels tax generated $635 million on 3.2 billion gallons of fuel use

Table 4.1 – Minnesota MFET revenue forecast, 2030 and 27-year total

2030 MN fuel use	Growth scenario	2030 revenues	Cumulative 2003-2030
6.1 billion gallons	Trend	$1.25 billion	$26.5 billion
6.7 billion gallons	Optimistic	$1.36 billion	$28.5 billion
5.3 billion gallons	Pessimistic	$1.14 billion	$24.5 billion

Greater fuel use will require more refining, storage, and transport infrastructure.

In the Trend forecast, fuel consumption statewide approaches 6.1 billion gallons by 2030, nearly double 2003 levels. The Optimistic scenarios projects Minnesota 2030 fuel consumption at 6.7 billion gallons a year by 2030. Even the lowest-volume Pessimistic forecast statewide 2030 motor fuel consumption up 2.1 billion gallons a year over current use. This additional demand raises important policy questions beyond road taxes, including the capacity of the Minnesota's refinery, transport, and storage infrastructure to support our future fuel needs.

Chapter 5. Road cost inflation

Maintaining purchasing power

Nearly all goods and services, including roads, cost more over time due to inflation, and many of the same forces that influence prices in the general economy, also lead to high road costs. Inflation is a relative measure of price change, and can be expressed as an index or price deflator.

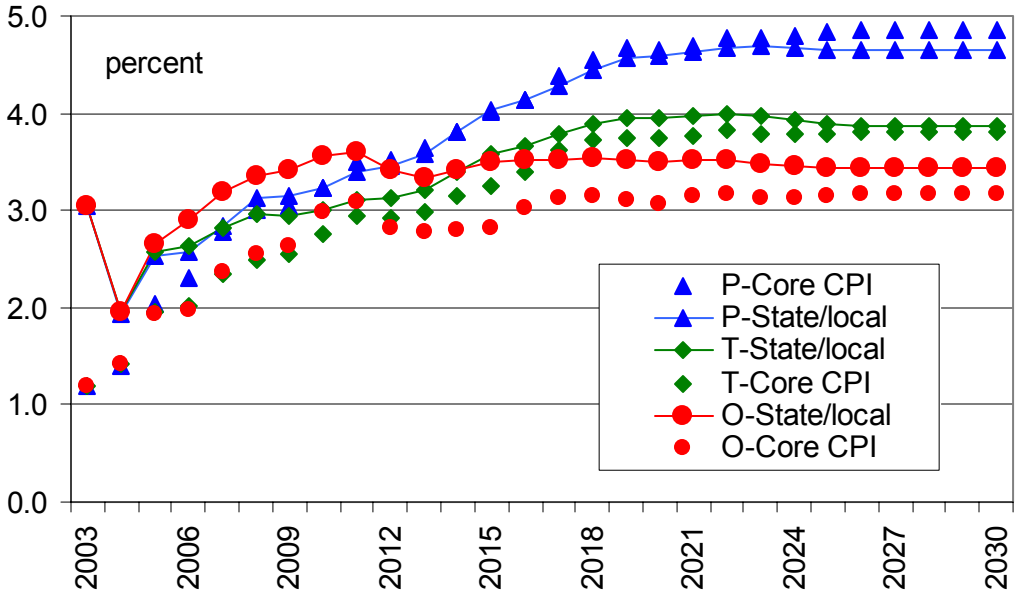
Perhaps the most familiar is the consumer price index (CPI), which measures price changes in a market basket of consumer purchases. The producer price index (PPI) measures prices received by domestic industries at all stages of production, from raw commodities to finished goods. Still another inflation index is the gross domestic product (GDP) price deflator, measuring the price changes in goods and services across the U.S. economy, consumption and production alike.

Each index is comprised of subindexes, reflecting segments of the broader price measure. For example, a variation of the CPI is the core consumer price index (core-CPI), which excludes the more volatile food and energy components. A subindex of the GDP price deflator is the state and local government cost (SLGC) index, and nested within that are deflators for component costs like investment, labor, and equipment. Although Global Insight offers no long run road price index, ideally it would weigh more heavily those factors that impact road service costs, like land acquisition, the salaries of drivers and engineers, or petroleum and concrete prices. Two price deflators, the core consumer price index and the state and local government cost index, are used in this section to inflation-adjust $1.3 billion in 2003 base road service costs.

As figure 5.1 shows, the forecast for core-CPI inflation is not dramatically different than the state and local government cost index. The uncertainty of long-term forecasts can be seen in the somewhat unusual path the projections take in the early years, before developing steadier trends beyond 2015. By the end of the forecast period Trend inflation is just below 4%, but over the 27 years averages between 3.1% and 3.5% (Table

5.1). Inflation in the Pessimistic scenario is closer to 5% by 2030, and averages 3.9% for the forecast period. The Optimistic inflation forecast averages 2.8% using core-CPI inflation, and 3.3% for state and local government cost inflation. The base cost adjustment starts with core-CPI inflation, and then repeats the calculation using the state and local government cost index.

Figure 5.1 – Inflation forecast for core-CPI and SLGC indexes, 2003-2030



Source: Global Insight, Winter 2004 (see appendix page A-10)

Trend: inflation averages less than 3.5% over the 27 year forecast period.

2030 core-CPI base cost inflation

Under the Trend scenario, using core-CPI inflation, $1 in 2003 road service will cost $1.97 in 2030. The same dollar of service costs $1.69 under the Optimistic scenario, where core-CPI inflation is lower. The higher inflation Pessimistic scenario increases a dollar of service to $2.25 in nominal 2030 spending.

Trend: core-CPI inflation raises $1 in 2003 road service to a nominal $1.97 in 2030.

Using the core-CPI as the proxy for road cost inflation, costs increase in the Trend scenario, with the $1.3 billion in 2003 base costs growing to a nominal $3.06 billion in 2030. The cumulative base service cost is $55.2 billion over the 27-years. Cumulative costs are only slightly lower at $53.4 billion with the Optimistic scenario. Higher inflation increases the Pessimistic 2030 estimate to $3.7 billion and the cumulative cost to $60.7 billion over the forecast period.

Table 5.1 – Base costs with core-CPI inflation, 2030 and 27-year total

2003 Base Cost $1.32 billion	2030 Base Cost (nominal)	*Average annual inflation*	Cumulative Base Costs from 2003 to2030
Trend	$3.06 billion	*3.1%*	$ 55.2 billion
Optimistic	$2.78 billion	*2.8%*	$ 53.4 billion
Pessimistic	$3.70 billion	*3.9%*	$ 60.7 billion

2030 state and local government base cost inflation

The same base costs can also be inflated using the state and local government cost index (Table 5.2). Cumulative and 2030 costs are higher in the Trend and Optimistic forecasts, indicating higher inflation with the state and local government inflation index, as compared to the core-CPI index. Under the Pessimistic scenario, the SLGC index estimates are similar to the core-CPI forecast, and the 2030 and cumulative total costs are about the same.

Table 5.2 – Base costs with SLGC inflation, 2030 and 27-year total

2003 Base Cost $1.32 billion	2030 Base Cost Forecast	*Average annual inflation*	Cumulative Base Costs from 2003 to2030
Trend	$3.26 billion	*3.5%*	$ 57.9 billion
Optimistic	$3.16 billion	*3.3%*	$ 58.2 billion
Pessimistic	$3.68 billion	*3.9%*	$ 61.1 billion

The inflation-adjusted future year cost of $1.3 billion in 2003 road service is similar for both the core-CPI and SLGC inflation measures. The final step is to compare the inflation-adjusted cost with the revenue forecasts of the three road taxes.

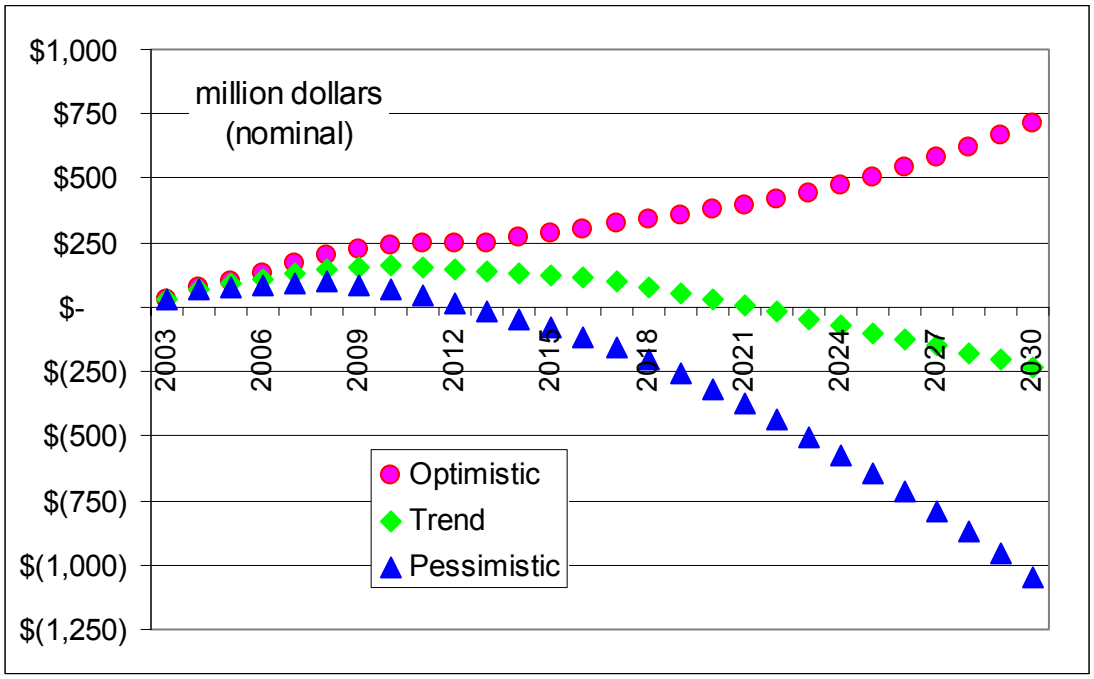
Chapter 6. Deficit or Surplus

This chapter compares projected road tax revenues with inflation-adjusted road costs to determine if current road tax policy generates a surplus or deficit in purchasing power over the next 27 years. Two sets of cost estimates using the core-CPI and SLGC inflation are compared using Trend, Optimistic, and Pessimistic road revenue forecasts. If revenues grow faster than base cost inflation, additional purchasing power will be available for new system spending. If revenues fail to keep pace with base service costs, then current tax policy will need to change, or road services will fall below current levels.

Balancing revenues and CPI-adjusted base costs

The first comparison assumes road costs increased at the core-CPI rate. Under the Trend scenario tax revenues maintain a small annual surplus over cost inflation, until 2020 when revenues begin to fall short (Figure 6.1). By 2030, the nominal deficit in purchasing power reaches $235 million. However, between 2003 and 2030 there is a cumulative surplus of $2.2 billion (Table 6.1).

Figure 6.1 – Purchasing power balance using core-CPI inflation, 2003-2030



(see appendix page A-12)

This implies, under the Trend scenario, revenues from the current tax structure will be sufficient to maintain today's level of road service, and have $2.2 billion in new purchasing power. Additional service improvements will need to come from productivity gains or new road revenues.

The Pessimistic scenario forecasts a small annual surplus until 2012, when road cost inflation exceeds revenue growth and annual deficits develop. Revenues fall short of core-CPI inflation by more than $1 billion in 2030, and the cumulative deficit over the 27 years reaches $6.2 billion. Current law tax revenues will not be sufficient to maintain 2003 road services, much less support new system spending. Under the Optimistic scenario, and core-CPI inflation, the purchasing power of road tax revenues exceeds base cost inflation from the very start, and never goes into deficit. This hopeful outcome provides additional purchasing power without changes to current road tax policy, generating $10.8 billion in new funding between 2003 and 2030.

Table 6.1 – Purchasing power balance: core-CPI inflation, 2030 and 27-year total

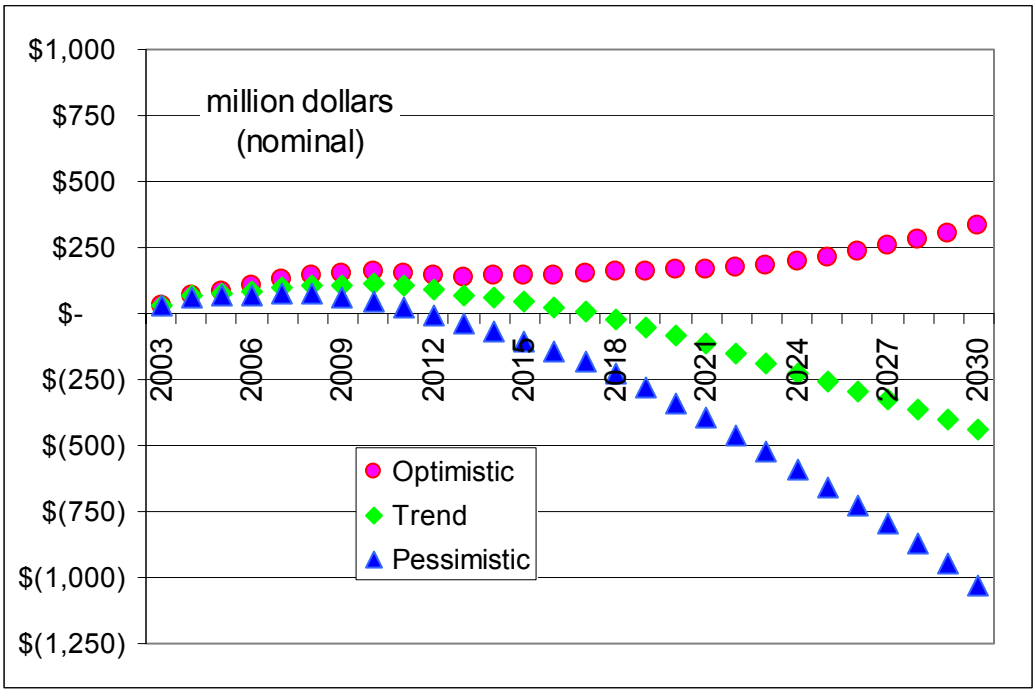
	Tax revenues	**Road cost**	**Balance**
Year	2030	2030	Surplus or deficit
Trend	$2.82 billion	$3.06 billion	($235 million)
Optimistic	$3.50 billion	$2.78 billion	$714 million
Pessimistic	$2.65 billion	$3.70 billion	($1.04 billion)
Cumulative	27-year total	27-year total	Surplus or deficit
Trend	$57.4 billion	$55.2 billion	$2.2 billion
Optimistic	$64.2 billion	$53.4 billion	$10.8 billion
Pessimistic	$54.5 billion	$60.7 billion	($6.2 billion)

Trend: road taxes maintain purchasing power surplus through 2020.

Balancing revenues and SLGC-adjusted base costs

The same tax projections are compared to base costs inflated by the state and local government cost index (Figure 6.2). Again, the Trend scenario starts with a small surplus, but by 2018 falls into deficit, 2-years earlier than under the core-CPI forecast. Revenues fall short of costs by $438 million in 2030, and a cumulative deficit of $1.8 billion is projected for the 27-year period (Table 6.2). This cumulative deficit in the SLGC Trend scenario is significantly different than the $2.2 billion cumulative surplus with core-CPI inflation. Current road tax policy will not generate sufficient revenues to maintain a 2003 level of service through 2030, much less support system improvements.

Figure 6.2 – Purchasing power balance using SLGC inflation, 2003-2030



(see appendix page A-11)

Under the Optimistic scenario the purchasing power surplus with SLGC inflation is $335 million in 2030, less than half the surplus with core-CPI inflation, but still

positive every year of the forecast. The cumulative surplus is $4.7 billion, compared to the $10.8 billion surplus assuming core-CPI inflation.

Table 6.2 – Purchasing power balance: SLGC inflation, 2030 and 27-year total

	Tax revenues	**Road cost**	**Balance**
Year	2030	2030	Surplus or deficit
Trend	$2.82 billion	$3.26 billion	($438 million)
Optimistic	$3.50 billion	$3.16 billion	$335 million
Pessimistic	$2.65 billion	$3.68 billion	($1.03 billion)
Cumulative	27-year total	27-year total	Surplus or deficit
Trend	$57.4 billion	$59.2 billion	($1.83 billion)
Optimistic	$64.2 billion	$59.5 billion	$4.72 billion
Pessimistic	$54.5 billion	$62.4 billion	($7.88 billion)

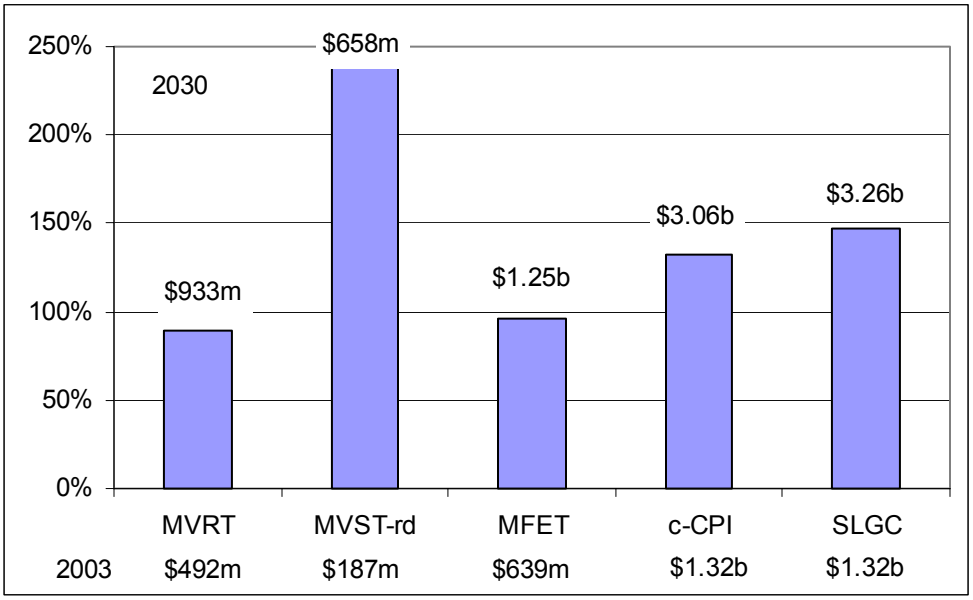
The Pessimistic scenario with SLGC inflation is similar to the core-CPI result. In both cases, the 2030 deficit is just over $1 billion, but the cumulative deficit is higher with SLGC inflation at $7.9 billion, versus $6.2 billion with core-CPI inflation.

Rates of change

Another view of the baseline results is to compare the increase in tax revenues and base cost inflation over the 27 years (Figure 6.3). Under the Trend scenario, between 2003 and 2030, the motor vehicle registration tax increases by 90% from $492 million to $933 million. The motor vehicle sale tax (dedicated to roads) increases 239% from $187 million to $658 million. The motor fuels excise tax increases 97% from $635 million to $1.25 billion. With base cost inflation, the $1.3 billion in 2003 road service increases 135% to $3.06 billion by 2030. The same costs adjusted using the state and local government cost index increases 151% to $3.26 billion. Revenues from the motor vehicle registration tax and the motor fuels excise tax growing more slowly than base cost

inflation, while the motor vehicle sales tax grows much faster than the other taxes, or inflation.

Figure 6.3 – Trend: revenue and cost increases between 2003 and 2030



Chapter 7. Alternative motor fuel tax outcomes

Higher fuel prices are re-igniting interest in energy conservation and alternative fuel sources. Policymakers in Minnesota and elsewhere have called for reduced fuel consumption, and more research into substitute fuels. Developing alternative sources or reducing consumption are good economic and environmental policy goals, but the impact is likely to be negative for motor fuel tax revenues. This chapter considers three alternative outcomes that could reduce fuel tax revenues below the baseline estimates of chapter 4. The first scenario reduces motor fuel consumption by ½% and 1% each year for 27 years. The second outcome is the widespread adoption of biofuels. The third scenario is the widespread adoption of hydrogen-powered vehicles. As unlikely as these examples may seem, they illustrate important road tax relationships. When motor fuel consumption falls -- whether from higher fuel prices, less travel, or better fuel economy -- fuel tax revenues fall. To avoid a disruption in tax revenues, alternative fuels should be taxes at an energy or travel equivalent rate, and the revenues dedicate to roads.

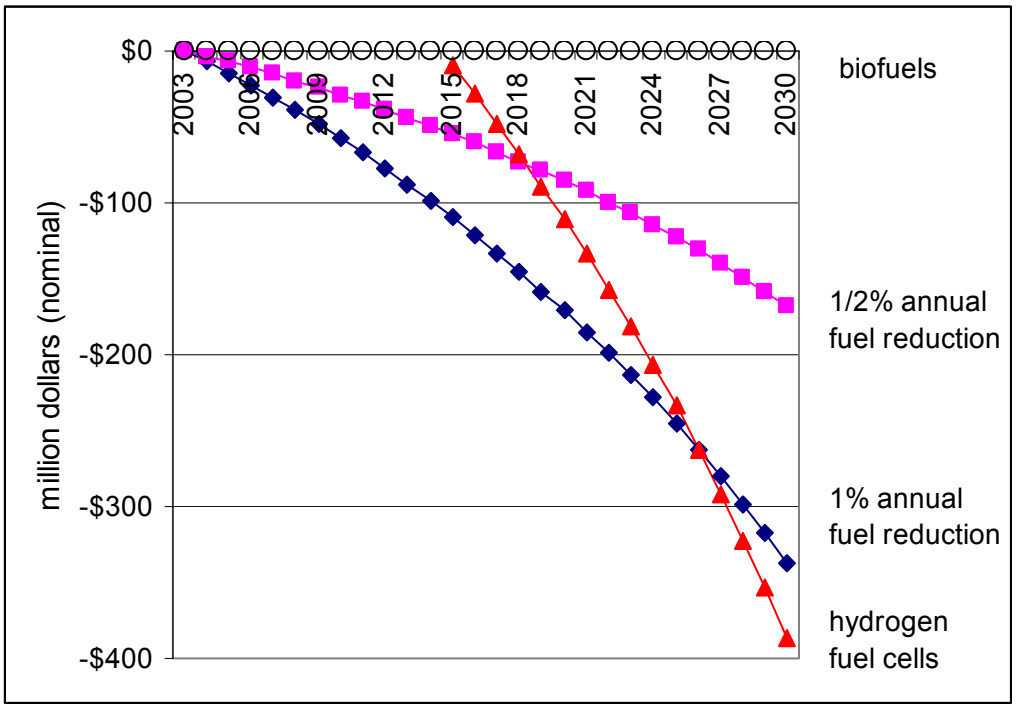
Reduced petroleum demand

Reducing fuel consumption by 1% a year from 2003 to 2030, beyond the earlier baseline forecast, would take significant market adjustments. Still, fuel use and fuel tax revenues would grow. Fuel tax revenue would loss $331 annually million by 2030. The $1.25 billion in fuel tax revenues in the earlier Trend baseline forecast would decline to $919 million (Figure 7.1). If consumption fell ½ % a year for the 27 years, tax revenues in 2030 would fall by $168 million.

Whether market driven or through taxation, higher prices could push fuel use down. First by causing consumers to cut back on vehicle use, and then if higher fuel prices persist, to purchase more energy efficient vehicles. Federal policymakers recognize the environmental and economic importance of reducing petroleum consumption. However, a Congressional Budget Office found significant economic costs from higher federal fuel taxes or mandating improved fuel economy (xxxiv). Automakers contend the

cost of greater fuel economy would raise vehicle prices and reduce vehicle sales (xxxv). In such a scenario, higher sales tax revenues might offset lower registration tax revenues, but greater fuel economy would translate into lower fuel tax revenues.

Figure 7.1 – Trend: revenue shortfall under alternative MFET outcomes, 2003-2030



Concerns about fuel supplies and resource depletion may cause the marketplace to act before policymakers. The U.S. reliance on foreign oil continues to grow, along with attendant national security issues. U.S. oil imports have tripled since 1985, averaging 9.5 million barrels a day in 2003, an amount equal to 56% of U.S. total petroleum needs. By 2025, U.S. oil imports are projected to reach 70% of daily need. Global petroleum demands will grow from 76 million barrels a day in 2003, to 120 million barrels in 2030. By then, more than half the world's oil will come from OPEC countries, versus 38% in 2003.

Resource depletion is another potential threat to petroleum fuel use, and by extension motor fuel tax revenues. U.S. Geologic Survey (USGS) estimates the total global oil endowment at 2.3 trillion barrels -- 710 billion barrels have already been pumped, 891 billion barrels are in reserves, and 688 billion barrels have yet to be discovered. The Energy Information Agency (EIA) estimates the global petroleum supply at 3.9 trillion barrels. Private estimates put the global oil endowment as low as 1.8–2.3 trillion barrels. According to EIA, global peak production, the point of highest annual output, will not occur until 2047. Others forecast global peak production as early as 2010. Which prediction is right will be crucial to the transportation sector, where 95% of energy needs are petroleum based.

Higher prices eventually bring demand for better fuel economy, and gasoline-electric hybrid vehicles may be one market solution. Hybrid technology is new and the fleet is small, but vehicle fuel efficiency can be twice a standard light vehicle. Minnesota's alternative fuel fleet, including hybrids, was estimated at fewer than 5,000 vehicles in 2002 (xxxvi). Auto industry consultants J.D. Powers predict the U.S. hybrid market will total 350,000 vehicles, and hybrid light trucks will pass hybrid car sales by 2008 (xxxvii).

Reduced fuel demand translates into lower fuel tax revenues.

Biofuels adoption

The second alternative fuel tax outcome is the widespread adoption of biofuels. In short, there should be no impact on baseline fuel tax revenues, as shown in Figure 7.1 as an unchanged flat line at the $0 mark. This follows from ethanol and biodiesel being taxed at BTU energy equivalent rates comparable to petroleum fuels, gasoline and diesel. Gasoline is taxed at 20 cents a gallon, and (E-85) ethanol at 14.2 cents (xxxviii). Taxing fuel at a BTU energy equivalent rate, or for comparable travel, is an important principle to apply to any new motor fuel source.

In Minnesota, ethanol is a corn-based product, and biodiesel is made from soybeans. Farm states, like Minnesota, have a real stake in the success of biofuel, which continue to develop the critical mass needed for widespread adoption. Minnesota has the best-developed E85 fueling station infrastructures. Ethanol futures trade on the New York Board of Trade. Companies like Monsanto and Syngenta are researching biotech crops that best fit the fermentation and dry milling. The American Lung Association endorses ethanol because it burns cleaner than fossil fuels.

Minnesota E85 fuel is taxed on BTU energy content equal to gasoline

Even though corn and soybeans are renewable resources, biofuels have limits as a petroleum fuel replacement. The 2003 U.S. corn crop produced 10 billion bushels of grain, and 10% was used to make 2.5 billion gallons of ethanol. If the entire U.S. corn crop were used, ethanol production could reach 25 billion gallons. Recall that U.S motor fuel consumption in 2003 was 176 billion gallons. Assign the entire U.S. soybean crop to biodiesel production, and the two crops combined could provide about a third of U.S. motor fuel needs. Indeed, total biofuel production would not replace current levels of U.S. foreign oil imports.

Hydrogen fuel adoption

Timelines vary on the market introduction or widespread adoption of hydrogen fuel vehicles. The Bush administration sees mass vehicle production by 2030, and is funding the development of prototype vehicles. Automaker General Motors expects to introduction a vehicle by 2010, and by 2020 forecasts production at one million units. Hybrid-pioneer Toyota does not expect hydrogen fuels to be introduced before 2020. Widespread adoption of hydrogen fuel is far off, but there are signs of a developing industry, focused on the same infrastructure issues as other motor fuels. Whether hydrogen technology succeeds or fails, policymakers should consider establishing a tax mechanism that treats hydrogen equally with other motor fuels on an energy or travel potential basis.

The third alternative fuel tax scenario is the adoption of hydrogen as a vehicle fuel source. Figure 7.1 shows the impact on baseline Trend fuel tax revenues if hydrogen fuel were introduced in 2015, and reached a 25% market share by 2027. This follows the National Academy hydrogen fuel prediction of full market penetration by 2050 (xxxix). Without a hydrogen motor fuel tax, particularly one dedicating revenues back to road spending, the impact on fuel tax revenues would be rapid and direct. The displacement of petroleum or biofuels by an untaxed hydrogen source would reduce 2030 Trend baseline fuel tax revenues by $387 million.

Chapter 8. Findings

The future of Minnesota roads is linked to an adequate level of state road tax revenues. Three road taxes generated $1.3 billion in 2003 - the motor fuels excise tax, motor vehicle registration tax, and a third of motor vehicle sales tax. This study examines how well the three taxes maintain their purchasing power against inflation between 2003 and 2030. In the Optimistic scenario, revenues exceed inflation, and new money is available for system improvements. Under the Trend scenario, revenue increases nearly equal cost inflation, meaning current law tax revenues can only fund today's level of road service. The Pessimistic scenario is more challenging, as revenues fall significantly short of cost inflation well before 2030. In this scenario, policymakers face the choice of raising road taxes, shifting funds from other programs, or reducing the level of road service.

We assume 27 years of current law can help identify policy strengths and weaknesses. For example, revenue from the motor vehicle registration tax, and motor vehicle sales tax, maintain nearly as strong revenue flows in the Pessimistic scenario as the Trend forecast. Under the Optimistic scenario, however, tax revenues increase dramatically. This suggests current tax policy provides some revenue protection in poor economic times, but in a good economy can produce strong revenue gains. One potential threat to revenue stability is the shift in motor vehicle registration tax burdens toward new vehicles. Today, new light vehicles pay 26% of all light vehicle registration taxes. By 2030, new vehicle registrations will provide nearly half the total revenue. A doubling in motor fuel consumption by 2030 means an increasing volume of fuel, and the need to plan for additional refinery, storage, and transportation facilities.

2030 FLEET and FUEL FORECAST

More vehicles on the road: Minnesota fleet adds 1.2 to 2.4 million units by 2030.

- Minnesota 2003 vehicle fleet totaled 4.1 million units.
- Trend: 2030 fleet reaches 5.9 million units, up 1.8 million vehicles (41%).
- Optimistic: 2030 fleet reaches 6.5 million units, up 2.4 million vehicles (60%).

- Pessimistic: 2030 fleet reaches 5.3 million units, up 1.2 million vehicles (26%).

Rising vehicle prices: by 2030 nominal cost of new light vehicle doubles

- U.S. average 2003 new light vehicle price $25,100.
- Trend: Nominal price in 2030 -- $51,600 (+119%)
- Optimistic: Nominal price in 2030 -- $43,900 (+86%)
- Pessimistic: Nominal price in 2030 -- $58,100 (+147%)

Modest improvement in mpg: by 2030 U.S. fleet fuel economy increases 12%.

- 2003 vehicle fleet -- 20.0 mpg. 2030 vehicle fleet -- 22.4 mpg (+12%)
- 2003 new light vehicle -- 20.5 mpg. 2030 new light vehicle -- 24.1 mpg (+17%)
- 2003 heavy vehicle fleet -- 6.0 mpg. 2030 heavy vehicle fleet -- 6.5 mpg (+8%)

VMT growth tops 2% annually: by 2025 vehicle miles traveled nearly doubles.

- U.S. vehicle miles of travel 2003 -- 2.8 trillion. 2025 -- 4.6 trillion (+64%).
- Minnesota VMT in 2003 -- 52 billion. 2025 -- 85 billion (+64%).
- Light vehicles account for 92% of vehicle travel.

Fuel consumption doubles: by 2030 motor fuel use is twice current level.

- Minnesota 2003 motor fuel consumption totaled 3.2 billion gallons.
- Trend: 2030 fuel use -- 6.1 billion gallons (+97%)
- Optimistic: 2030 fuel use -- 6.7 billion gallons (+114%)
- Pessimistic: 2030 fuel use -- 5.3 billion gallons (+80%)

2030 ROAD TAX FORECAST

Registration tax revenues double: by 2030 nominal revenue growth is twice the fleet growth.

- 2003 motor vehicle registration tax generated $492 million for roads.
- Trend: 2030 MVRT revenues -- $933 million (+92%).
- Optimistic: 2030 MVRT revenues -- $1.18 billion (+141%).
- Pessimistic: 2030 MVRT revenues -- $875 million (+78%).

Burden shifts toward new vehicles: by 2030 new vehicle share of tax burden nearly doubles.

- 2003 new light vehicles paid 26% of all light vehicle registration taxes
- Trend: by 2030 new light vehicles pay 44%
- Optimistic: by 2030 new light vehicles pay 52%
- Pessimistic: by 2030 new light vehicles pay 47%

Vehicle sales tax grows fastest: by 2030 nominal sales tax growth more than three-fold.

- 2003 motor vehicle sales tax grossed $605 million, $187 million dedicated to roads.
- Trend: 2030 gross vehicle sales taxes $2.05 billion; road share $658 million (+352%).
- Optimistic: 2030 gross vehicle sales taxes $3.05 billion; road share $975 million (+521%).
- Pessimistic: 2030 gross vehicle sales taxes $2.03 billion; road share $651 million (+348%).

Fuel tax revenues double: by 2030 fuel tax revenues double with fuel consumption.

- 2003 Minnesota motor fuels tax revenues totaled $635 million
- Trend: 2030 motor fuels excise tax revenues -- $1.25 billion (+97%).
- Optimistic: 2030 motor fuels excise tax revenues -- $1.36 billion (+114%)
- Pessimistic: 2030 motor fuels excise tax revenues -- $1.14 billion (+80%).

2030 PURCHASING POWER BALANCE

Inflation raises base cost: by 2030 nominal cost of today's service more than doubles.

The 2030 inflation adjusted cost of $1.3 billion in 2003 road spending --

- Trend: using core-CPI inflation $3.06 billion, (+3.1% avg. annual).
  - using SLGC inflation $3.26 billion, (+3.5% avg. annual).
- Optimistic: using core-CPI inflation $2.78 billion (+2.8% avg. annual).
  - using SLGC inflation $3.16 billion (+3.3% avg. annual).

- Pessimistic: using core-CPI inflation $3.70 billion (+3.9% avg. annual).
    - using SLGC inflation $3.68 billion (+3.9% avg. annual).

Trend scenario: purchasing power supports service levels comparable to 2003.

- Purchasing power deficits develop starting in 2018 assuming SLGC inflation, and 2022 assuming core-CPI inflation. Over the 27-year forecast period, however, cumulative revenues slightly exceed inflation-adjusted costs by $2.2 billion in the core-CPI inflation forecast, but fall short by $1.8 billion in the SLGC inflation forecast.

Optimistic scenario: purchasing power surplus, new money for system improvements.

- Road tax revenues provide a purchasing power surplus from the start, which continue to grow through the forecast period. Cumulative tax revenues exceed base cost inflation by $4.7 billion, using SLGC inflation, and $10.8 billion assuming core-CPI inflation.

Pessimistic scenario: purchasing power deficit, policy action needed.

- Road tax revenues fall short of cost inflation by 2012. The higher inflation Pessimistic forecast leads to earlier and larger deficits than the Trend scenario. By 2030, the annual loss in purchasing power reaches $1 billion. The cumulative deficit over 27 years is between $6 billion and $8 billion, depending on the inflation measure.

ALTERNATIVE MOTOR FUEL TAX OUTCOMES: threats to fuel tax revenues.

- If fuel consumption falls below the baseline forecast, motor fuel tax revenues would also decline. A 1% annual reduction in fuel use for each of the 27 years would cost the baseline Trend fuel tax forecast $337 million by 2030. A ½ % reduction in annual

fuel consumption would cost the Trend baseline half as much, or $168 million a year by 2030.

Alternatives to traditional motor fuels could negatively impact the baseline forecast of fuel tax revenues. Hydrogen is a potential alternative fuel that is not taxed for road purposes. A rapid and widespread adoption of hydrogen as a motor fuel source could cost the baseline motor fuel tax forecast nearly $400 million a year by 2030. Biofuels, like ethanol, are taxed at BTU-equivalent rates with tradition petroleum fuels, so a widespread adoption of biofuels should not impact the baseline fuel tax forecast.

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Appendix A

U.S. light vehicle fleet, 1970-2030 (million units)

year	actual	year	actual		
1970	99	2001	219		
1971	102	2002	223		
1972	107	2003	227		
1973	112		trend	optimistic	pessimistic
1974	116	2004	231	230	229
1975	121	2005	235	235	231
1976	125	2006	239	240	233
1977	129	2007	242	246	235
1978	134	2008	246	251	237
1979	138	2009	250	257	239
1980	140	2010	253	262	240
1981	142	2011	256	267	241
1982	144	2012	259	272	242
1983	148	2013	262	277	243
1984	153	2014	265	281	244
1985	158	2015	269	286	245
1986	163	2016	272	292	247
1987	168	2017	275	297	248
1988	172	2018	279	302	250
1989	176	2019	282	307	253
1990	180	2020	285	313	255
1991	181	2021	288	318	258
1992	182	2022	291	323	260
1993	187	2023	294	328	263
1994	189	2024	298	334	266
1995	194	2025	301	339	269
1996	199	2026	305	345	272
1997	202	2027	309	350	276
1998	206	2028	314	355	280
1999	210	2029	318	361	284
2000	214	2030	319	362	285

Source: Global Insight, 25-year projections, Winter 2004
(see Figure 2.1)

Minnesota light vehicle fleet, 2003-2030

(million units)

YEAR	TREND	OPTIMISTIC	PESSIMISTIC
2003	4.14	4.14	4.14
2004	4.21	4.22	4.21
2005	4.28	4.30	4.27
2006	4.35	4.39	4.32
2007	4.42	4.48	4.38
2008	4.48	4.56	4.43
2009	4.55	4.65	4.48
2010	4.60	4.73	4.52
2011	4.66	4.81	4.56
2012	4.72	4.89	4.59
2013	4.78	4.96	4.63
2014	4.83	5.04	4.66
2015	4.90	5.13	4.69
2016	4.96	5.22	4.72
2017	5.02	5.30	4.76
2018	5.08	5.39	4.79
2019	5.13	5.47	4.82
2020	5.19	5.55	4.85
2021	5.25	5.64	4.88
2022	5.30	5.72	4.91
2023	5.36	5.81	4.94
2024	5.43	5.90	4.97
2025	5.49	5.99	5.01
2026	5.56	6.08	5.05
2027	5.64	6.18	5.10
2028	5.71	6.29	5.15
2029	5.80	6.40	5.21
2030	5.87	6.50	5.26

Model: Minnesota vehicle fleet increases at U.S. rate (see Figure 2.2)

U.S. average new light vehicle price, 1970-2030

(thousand dollars nominal)

year	actual	year	actual		
1970	3.6	2001	21.7		
1971	3.6	2002	22.6		
1972	3.8	2003	23.5		
1973	3.9		trend	optimistic	pessimistic
1974	4.4	2004	24.3	24.3	24.2
1975	4.8	2005	24.9	25.0	24.9
1976	5.2	2006	25.7	25.7	25.6
1977	5.7	2007	26.3	26.3	26.3
1978	6.2	2008	26.9	26.8	27.0
1979	6.9	2009	27.4	27.4	27.7
1980	7.5	2010	28.1	28.0	28.5
1981	8.8	2011	28.8	28.6	29.3
1982	9.4	2012	29.5	29.1	30.2
1983	10.2	2013	30.3	29.7	31.1
1984	10.8	2014	31.1	30.3	32.1
1985	11.5	2015	32.0	30.8	33.1
1986	12.1	2016	32.9	31.4	34.2
1987	12.7	2017	33.9	32.1	35.3
1988	13.3	2018	34.8	32.7	36.5
1989	14.0	2019	35.9	33.3	37.8
1990	14.6	2020	37.1	34.1	39.3
1991	15.0	2021	38.5	35.1	41.1
1992	15.8	2022	39.9	36.0	42.8
1993	16.2	2023	41.4	37.0	44.6
1994	17.2	2024	42.8	38.0	46.5
1995	17.6	2025	44.2	38.9	48.4
1996	18.6	2026	45.7	39.9	50.4
1997	19.6	2027	47.3	40.9	52.4
1998	20.7	2028	48.9	42.1	54.7
1999	21.0	2029	50.2	43.0	56.3
2000	21.0	2030	51.6	43.9	58.1

Source: Global Insight, 25-year projections, Winter 2004
(see Figure 2.3)

Minnesota motor vehicle registration tax revenues, 2003-2030

(millions dollars nominal)

YEAR	TREND	OPTIMISTIC	PESSIMISTIC
2003	$ 492	$ 492	$ 492
2004	$ 504	$ 504	$ 504
2005	$ 515	$ 516	$ 515
2006	$ 527	$ 531	$ 526
2007	$ 543	$ 549	$ 539
2008	$ 557	$ 567	$ 552
2009	$ 570	$ 584	$ 563
2010	$ 584	$ 602	$ 575
2011	$ 596	$ 619	$ 585
2012	$ 606	$ 633	$ 592
2013	$ 613	$ 643	$ 599
2014	$ 631	$ 668	$ 612
2015	$ 644	$ 689	$ 623
2016	$ 660	$ 711	$ 635
2017	$ 676	$ 735	$ 648
2018	$ 692	$ 760	$ 662
2019	$ 708	$ 787	$ 675
2020	$ 724	$ 814	$ 690
2021	$ 741	$ 842	$ 704
2022	$ 759	$ 873	$ 719
2023	$ 777	$ 904	$ 735
2024	$ 795	$ 937	$ 751
2025	$ 815	$ 972	$ 769
2026	$ 836	$ 1,010	$ 787
2027	$ 858	$ 1,050	$ 807
2028	$ 882	$ 1,093	$ 829
2029	$ 907	$ 1,138	$ 851
2030	$ 932	$ 1,185	$ 875

Model: Minnesota current law (2003) motor vehicle registration tax
(see Figure 2.4)

Minnesota motor vehicle sales tax revenues, 2003-2030

(million dollars nominal)

	Gross MVST receipts			HUTDF share MVST		
YEAR	TREND	OPT.	PESS.	TREND	OPT.	PESS.
2003	$ 605	$ 605	$ 605	$ 187	$ 187	$ 187
2004	$ 645	$ 645	$ 645	$ 200	$ 200	$ 200
2005	$ 676	$ 678	$ 677	$ 208	$ 209	$ 208
2006	$ 707	$ 715	$ 706	$ 218	$ 220	$ 218
2007	$ 753	$ 767	$ 749	$ 232	$ 237	$ 231
2008	$ 792	$ 815	$ 785	$ 253	$ 261	$ 251
2009	$ 829	$ 862	$ 820	$ 265	$ 276	$ 262
2010	$ 871	$ 913	$ 856	$ 279	$ 292	$ 274
2011	$ 906	$ 960	$ 887	$ 290	$ 307	$ 284
2012	$ 929	$ 997	$ 907	$ 297	$ 319	$ 290
2013	$ 963	$ 1,046	$ 938	$ 308	$ 335	$ 300
2014	$ 998	$ 1,100	$ 973	$ 319	$ 352	$ 311
2015	$ 1,044	$ 1,170	$ 1,016	$ 334	$ 374	$ 325
2016	$ 1,093	$ 1,244	$ 1,062	$ 350	$ 398	$ 340
2017	$ 1,144	$ 1,325	$ 1,112	$ 366	$ 424	$ 356
2018	$ 1,198	$ 1,413	$ 1,165	$ 383	$ 452	$ 373
2019	$ 1,252	$ 1,507	$ 1,220	$ 401	$ 482	$ 390
2020	$ 1,308	$ 1,606	$ 1,277	$ 419	$ 514	$ 409
2021	$ 1,368	$ 1,712	$ 1,337	$ 438	$ 548	$ 428
2022	$ 1,430	$ 1,825	$ 1,399	$ 458	$ 584	$ 448
2023	$ 1,494	$ 1,945	$ 1,464	$ 478	$ 622	$ 469
2024	$ 1,561	$ 2,072	$ 1,533	$ 499	$ 663	$ 490
2025	$ 1,632	$ 2,209	$ 1,605	$ 522	$ 707	$ 514
2026	$ 1,707	$ 2,356	$ 1,682	$ 546	$ 754	$ 538
2027	$ 1,787	$ 2,513	$ 1,762	$ 572	$ 804	$ 564
2028	$ 1,872	$ 2,682	$ 1,848	$ 599	$ 858	$ 591
2029	$ 1,961	$ 2,861	$ 1,939	$ 627	$ 916	$ 621
2030	$ 2,053	$ 3,048	$ 2,033	$ 657	$ 975	$ 651

Model: Minnesota current law (2003) vehicle sales tax (MVST)
and Highway User Tax Distribution Fund (HUTDF)
(see Figure 3.1)

U.S. light vehicle average fuel economy 1970-2030

(miles per gallon)

year	fleet	new	year	fleet	new
1970	9.3	-	2001	20.0	20.8
1971	9.5	-	2002	20.0	20.6
1972	9.8	-	2003	20.0	20.5
1973	10.0	-		***forecast***	***forecast***
1974	10.3	-	2004	19.9	20.3
1975	10.6	-	2005	19.9	20.4
1976	10.9	-	2006	19.9	20.4
1977	11.3	-	2007	19.9	20.5
1978	11.7	16.2	2008	20.0	20.6
1979	12.2	16.8	2009	20.0	20.7
1980	12.9	19.6	2010	20.0	20.8
1981	13.7	20.9	2011	20.1	20.9
1982	14.6	21.3	2012	20.2	21.1
1983	15.4	21.1	2013	20.2	21.3
1984	16.2	21.3	2014	20.3	21.5
1985	16.6	21.7	2015	20.4	21.6
1986	16.9	22.2	2016	20.5	21.8
1987	17.0	22.3	2017	20.7	21.9
1988	17.3	22.4	2018	20.8	22.1
1989	18.5	22.0	2019	20.9	22.2
1990	19.0	21.7	2020	21.1	22.4
1991	19.3	22.0	2021	21.2	22.6
1992	19.2	21.4	2022	21.3	22.7
1993	19.2	21.5	2023	21.5	22.9
1994	19.3	21.3	2024	21.6	23.1
1995	19.5	21.3	2025	21.7	23.2
1996	19.9	21.2	2026	21.9	23.4
1997	19.9	21.1	2027	22.0	23.6
1998	19.7	21.2	2028	22.1	23.7
1999	20.0	20.8	2029	22.3	23.9
2000	20.0	21.1	2030	22.4	24.0

Source: Global Insight, 25-year projections, Winter 2004
(see Figure 4.1)

U.S. vehicle miles of travel light and heavy vehicles, 2003-2030

(billion VMT)

Year	Light	Heavy
2003	2,617	197
2004	2,706	205
2005	2,778	213
2006	2,848	219
2007	2,914	225
2008	2,981	230
2009	3,049	236
2010	3,120	242
2011	3,193	249
2012	3,270	255
2013	3,353	263
2014	3,427	269
2015	3,499	276
2016	3,571	283
2017	3,643	291
2018	3,718	298
2019	3,792	305
2020	3,869	313
2021	3,946	319
2022	4,025	327
2023	4,107	336
2024	4,194	345
2025	4,287	354

Source: U.S Department of Energy, 2004 Energy Outlook
(see Figure 4.2)

U.S. motor fuel consumption, 1970-2030

(billion gallons annually)

year	actual	year	actual		
1970	95	2001	162		
1971	100	2002	165		
1972	106	2003	169		
1973	112		*trend*	*optimistic*	*pessimistic*
1974	110	2004	181	183	180
1975	112	2005	186	190	184
1976	118	2006	193	199	190
1977	122	2007	199	206	193
1978	126	2008	204	214	197
1979	122	2009	208	220	199
1980	115	2010	214	227	202
1981	116	2011	218	233	204
1982	115	2012	223	238	207
1983	117	2013	228	245	211
1984	120	2014	233	250	214
1985	122	2015	237	256	217
1986	126	2016	242	263	221
1987	129	2017	247	269	225
1988	133	2018	252	274	228
1989	134	2019	257	280	232
1990	132	2020	262	286	236
1991	131	2021	267	292	240
1992	133	2022	272	298	245
1993	138	2023	277	304	250
1994	142	2024	283	311	255
1995	146	2025	289	318	261
1996	148	2026	296	325	268
1997	152	2027	304	332	276
1998	157	2028	311	340	283
1999	161	2029	318	347	291
2000	163	2030	325	354	298

Source: Global Insight, 25-year projections, Winter 2004
(see Figure 4.3)

Minnesota motor fuels excise tax revenues, 2003-2030

(million dollars nominal)

YEAR	TREND	OPTIMISTIC	PESSIMISTIC
2003	$ 635	$ 635	$ 635
2004	$ 690	$ 692	$ 689
2005	$ 714	$ 724	$ 705
2006	$ 739	$ 758	$ 726
2007	$ 762	$ 789	$ 744
2008	$ 781	$ 817	$ 757
2009	$ 800	$ 843	$ 768
2010	$ 820	$ 870	$ 777
2011	$ 837	$ 892	$ 788
2012	$ 857	$ 915	$ 799
2013	$ 877	$ 939	$ 812
2014	$ 895	$ 961	$ 825
2015	$ 913	$ 985	$ 838
2016	$ 932	$ 1,008	$ 852
2017	$ 951	$ 1,033	$ 866
2018	$ 970	$ 1,055	$ 880
2019	$ 988	$ 1,077	$ 895
2020	$ 1,007	$ 1,100	$ 909
2021	$ 1,026	$ 1,123	$ 926
2022	$ 1,046	$ 1,146	$ 943
2023	$ 1,066	$ 1,170	$ 961
2024	$ 1,089	$ 1,196	$ 982
2025	$ 1,113	$ 1,222	$ 1,004
2026	$ 1,139	$ 1,250	$ 1,031
2027	$ 1,167	$ 1,278	$ 1,059
2028	$ 1,194	$ 1,306	$ 1,088
2029	$ 1,220	$ 1,333	$ 1,115
2030	$ 1,248	$ 1,361	$ 1,144

Model: Minnesota current law motor fuel excise tax
(see Figure 4.4)

Inflation rates: core-CPI and SLGC indexes, 2003-2030

(annual percent change)

	Core consumer price index (c-CPI)			State and local government cost index (SLGC)		
YEAR	Trend	Optimistic	Pessimistic	Trend	Optimistic	Pessimistic
2003	1.2	1.2	1.2	3.1	3.1	3.1
2004	1.4	1.4	1.4	1.9	1.9	1.9
2005	2.0	1.9	2.0	2.6	2.7	2.5
2006	2.0	2.0	2.3	2.6	2.9	2.6
2007	2.3	2.4	2.8	2.8	3.2	2.8
2008	2.5	2.5	3.0	3.0	3.4	3.1
2009	2.5	2.6	3.0	2.9	3.4	3.1
2010	2.8	3.0	3.2	3.0	3.6	3.2
2011	2.9	3.1	3.5	3.1	3.6	3.4
2012	2.9	2.8	3.5	3.1	3.4	3.5
2013	3.0	2.8	3.6	3.2	3.3	3.6
2014	3.2	2.8	3.8	3.4	3.4	3.8
2015	3.3	2.8	4.0	3.6	3.5	4.0
2016	3.4	3.0	4.1	3.7	3.5	4.1
2017	3.6	3.1	4.4	3.8	3.5	4.3
2018	3.7	3.1	4.6	3.9	3.5	4.4
2019	3.7	3.1	4.7	3.9	3.5	4.6
2020	3.7	3.1	4.6	3.9	3.5	4.6
2021	3.8	3.2	4.7	4.0	3.5	4.6
2022	3.8	3.2	4.8	4.0	3.5	4.7
2023	3.8	3.1	4.8	4.0	3.5	4.7
2024	3.8	3.1	4.8	3.9	3.5	4.7
2025	3.8	3.1	4.8	3.9	3.4	4.7
2026	3.8	3.2	4.9	3.9	3.4	4.7
2027	3.8	3.2	4.9	3.9	3.4	4.7
2028	3.8	3.2	4.9	3.9	3.4	4.7
2029	3.8	3.2	4.9	3.9	3.4	4.7
2030	3.8	3.2	4.9	3.9	3.4	4.7

Source: Global Insight, 25-year projections, Winter 2004
(see Figure 5.1)

Purchasing power balance, nominal surplus or deficit, 2003-2030

(million dollars nominal)

	Using core consumer price index:			**Using state and local government cost index:**		
YEAR	Trend	Optimistic	Pessimistic	Trend	Optimistic	Pessimistic
2003	$ 28	$ 28	$ 28	$ 28	$ 28	$ 28
2004	$ 72	$ 74	$ 70	$ 65	$ 67	$ 63
2005	$ 89	$ 101	$ 79	$ 73	$ 84	$ 65
2006	$ 108	$ 133	$ 88	$ 83	$ 104	$ 71
2007	$ 128	$ 167	$ 95	$ 97	$ 125	$ 76
2008	$ 148	$ 200	$ 98	$ 109	$ 146	$ 77
2009	$ 155	$ 221	$ 87	$ 109	$ 153	$ 63
2010	$ 162	$ 237	$ 71	$ 111	$ 159	$ 47
2011	$ 157	$ 244	$ 47	$ 103	$ 155	$ 23
2012	$ 148	$ 249	$ 15	$ 89	$ 148	$ (8)
2013	$ 136	$ 250	$ (17)	$ 71	$ 137	$ (40)
2014	$ 132	$ 270	$ (45)	$ 61	$ 142	$ (69)
2015	$ 123	$ 288	$ (79)	$ 44	$ 145	$ (104)
2016	$ 113	$ 304	$ (116)	$ 26	$ 147	$ (142)
2017	$ 98	$ 322	$ (158)	$ 4	$ 152	$ (183)
2018	$ 79	$ 339	$ (205)	$ (21)	$ 155	$ (229)
2019	$ 57	$ 357	$ (259)	$ (51)	$ 159	$ (282)
2020	$ 34	$ 377	$ (315)	$ (83)	$ 164	$ (339)
2021	$ 10	$ 396	$ (374)	$ (116)	$ 169	$ (396)
2022	$ (17)	$ 418	$ (437)	$ (152)	$ 176	$ (459)
2023	$ (46)	$ 443	$ (505)	$ (189)	$ 184	$ (525)
2024	$ (72)	$ 473	$ (573)	$ (224)	$ 198	$ (592)
2025	$ (99)	$ 504	$ (645)	$ (260)	$ 213	$ (660)
2026	$ (124)	$ 539	$ (718)	$ (292)	$ 232	$ (727)
2027	$ (149)	$ 578	$ (794)	$ (326)	$ 254	$ (796)
2028	$ (176)	$ 621	$ (873)	$ (361)	$ 280	$ (869)
2029	$ (205)	$ 666	$ (959)	$ (399)	$ 306	$ (947)
2030	$ (235)	$ 714	$ (1,049)	$ (438)	$ 335	$ (1,029)

(see Figures 6.1 and 6.2)

Trend: MFET baseline revenue reduction alternatives, 2003-2030

(million dollars, nominal)

Year	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	1% annual reduction	½% annual reduction	hydrogen fuels	biofuels
2003	0	0	0	0
2004	-7	-3	0	0
2005	-14	-7	0	0
2006	-22	-11	0	0
2007	-30	-15	0	0
2008	-39	-20	0	0
2009	-48	-24	0	0
2010	-57	-29	0	0
2011	-67	-33	0	0
2012	-77	-39	0	0
2013	-88	-44	0	0
2014	-98	-49	0	0
2015	-110	-55	-9	0
2016	-121	-61	-28	0
2017	-133	-67	-48	0
2018	-145	-73	-68	0
2019	-158	-79	-89	0
2020	-171	-86	-111	0
2021	-185	-92	-133	0
2022	-199	-99	-157	0
2023	-213	-107	-181	0
2024	-229	-114	-207	0
2025	-245	-122	-234	0
2026	-262	-131	-262	0
2027	-280	-140	-292	0
2028	-299	-149	-322	0
2029	-317	-159	-354	0
2030	-337	-168	-387	0

(see Figure 7.1)