



## 20-Year State Highway Investment Plan

# Appendix E

## MNSHIP FINANCIAL SUMMARY

# FINANCIAL SUMMARY

## Revenue Forecast

---

Unlike many other public sector budget priorities, transportation holds an advantage in securing reliable funding because the great majority of transportation investment is enabled by dedicated sources at the state and federal levels, supported by taxes assessed on drivers. However, this freedom from having to directly compete for funding with other government areas is no guarantee for the availability of sufficient money to pay for the preservation of current highway system infrastructure, much less progress toward improved conditions. Since 2008, nearly \$60 billion<sup>1</sup> has been transferred within the federal budget from the treasury's unrestricted-use general fund to the dedicated highway account of the Highway Trust Fund, and the reauthorization agreed to at the end of 2015 continues this practice with a further \$52 billion transfer.<sup>2</sup> These ad-hoc transfusions failed to restore the long-term balance between tax collections and spending for the highway account, leaving continued viability of the "user-pays" transportation model in question.

This chapter describes the primary sources of public revenues for state highway transportation in Minnesota, along with historical trends in revenues and costs and their projections.

## TRANSPORTATION EXPENDITURES IN MINNESOTA

In 2012, all levels of government combined spent \$4.6 billion on highway services—including capital (roughly half the total), maintenance, and other budget areas—across Minnesota's 139,000 miles of federal, state, county, and local public roads.<sup>3</sup> This represented 1.8 percent of the state Gross Domestic Product—a measure of aggregate economic output.

At the end of the 2015 Legislative session, Minnesota's state operating budget was expected to be \$75 billion for the 2016-2017 biennium (July 1, 2015 to June 30, 2017).<sup>4</sup> Appropriated levels may change over the course of the biennium if tax and user fee collections vary from current projections.

State funding for all forms of transportation—including highways, transit, and other modes—accounts for \$7.1 billion (an annual average of \$3.5 billion for the biennium) or 9 percent of this operating budget, and ranks as the third-largest state program after health and human services and E-12 education.

**Figure E-1** shows transportation's share of state expenditures in the context of the overall budget.

1 <http://www.fhwa.dot.gov/highwaytrustfund/index.htm>

2 House-Senate conference report to accompany H.R. 22, the FAST Act: <http://1.usa.gov/1NG9o0K>

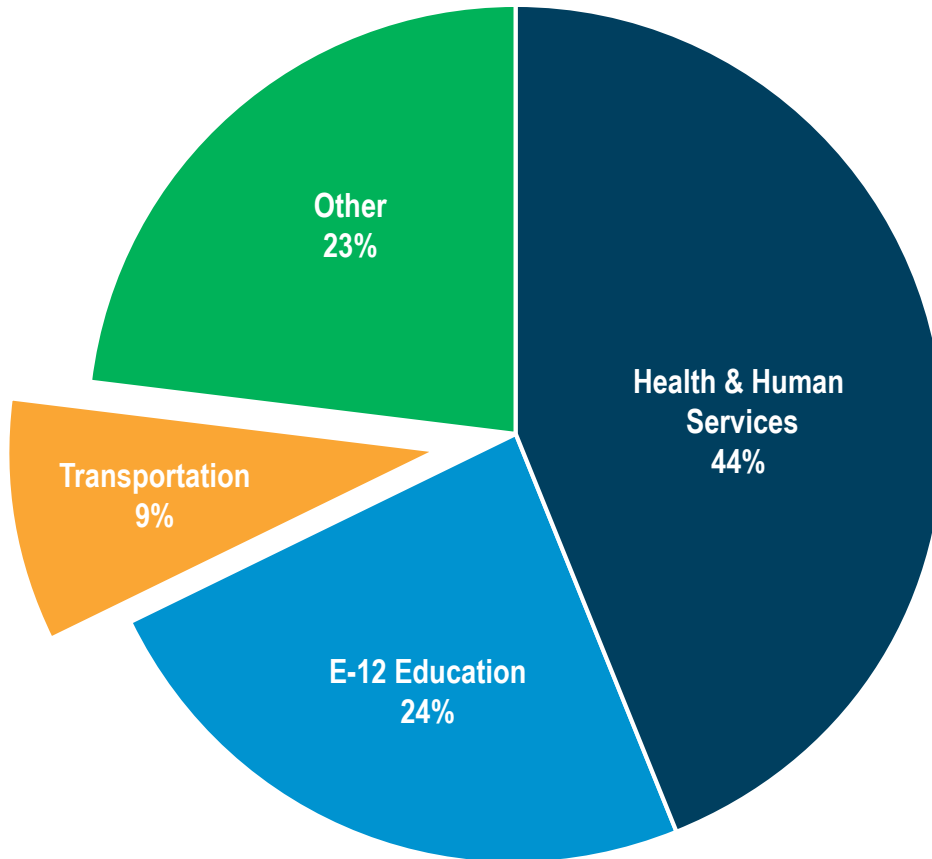
3 <http://www.fhwa.dot.gov/policyinformation/statistics.cfm> Tables LGF-2 (2013) and SF-2 (2012)

4 [https://mn.gov/mmb/assets/where-fund-dollars-go\\_tcm1059-130347.pdf](https://mn.gov/mmb/assets/where-fund-dollars-go_tcm1059-130347.pdf)

While looking at the revenue forecast to determine funding availability for state road construction, it is important at the same time to consider the expected levels of related accounts, including operations & maintenance and debt service, so as to ensure the fiscal and operational integrity of the comprehensive plan.

## MINNESOTA HIGHWAY REVENUE SOURCES

Figure E-1: Minnesota Total Appropriated State Expenditures, All Operating Funds, 2016 to 2017 Biennium (\$75 billion)



Source: Minnesota Management & Budget

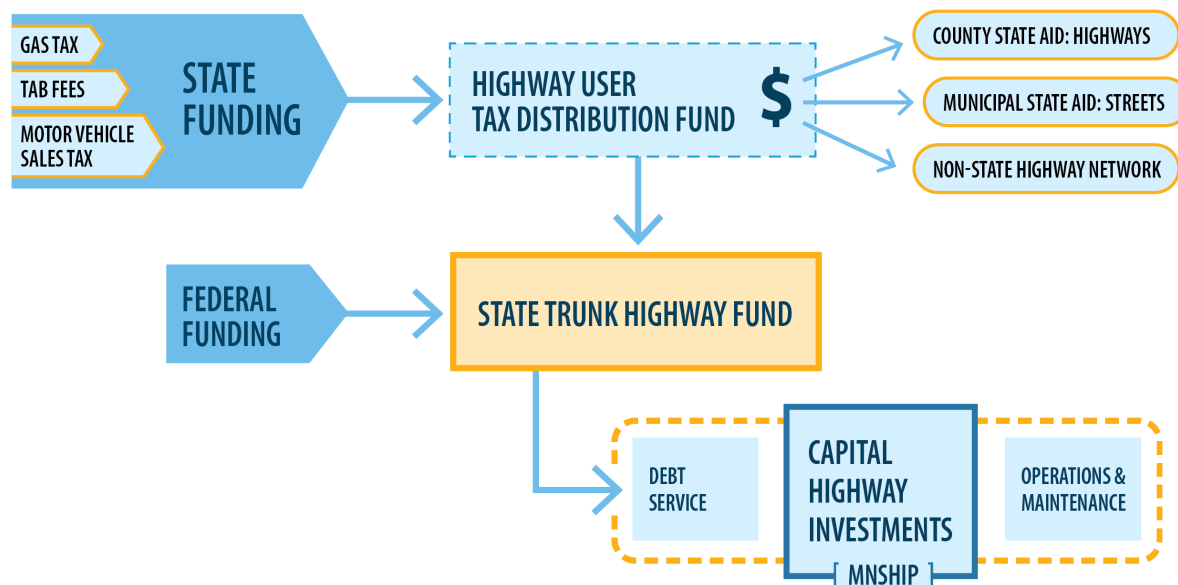
Highways are funded by state and federal revenues that are raised through taxes and user fees. **Figure E-2** illustrates the flow of revenue for state transportation investments.

The four main permanent revenue sources for the State Trunk Highway Fund generated \$1.7 billion in state fiscal year 2014. The net realized amounts (all in millions) and shares of each were:<sup>5</sup>

- Federal-Aid Highway Program \$507 (30%)

<sup>5</sup> Percentages do not sum to 100% due to the presence of other, smaller contributors.

Figure E-2: Minnesota's Primary Transportation Funding Sources for State Highways



Source: MnDOT Office of Transportation System Management

- Motor Fuels Excise Taxes \$501 (30%)
- Motor Vehicle Registration Tax \$382 (23%)
- Motor Vehicle Sales Tax \$225 (13%)

Highway improvements may also be financed by bonding. Bonding, which must be authorized by the Minnesota Legislature, is a financing approach, rather than a primary source of revenue. Bond financing can be used to advance the construction of projects and accelerate the delivery of benefits to the traveling public by effectively borrowing against future revenue. The principal and interest on the bonds are typically repaid over a 20-year period. This type of financing may also help to avoid construction cost increases due to inflation—an advantage that must be weighed against the additional interest expense incurred with bonding. Major bonding programs enacted by the Minnesota Legislature, including *Corridors of Commerce*<sup>6</sup>, modify the short-term distribution of highway investments proposed in the State Highway Investment Plan, generally in favor of additional capacity development projects. The increased debt service obligation that accompanies these bonding initiatives also diverts available funds anticipated throughout the later years of the plan.

State transportation revenues are first deposited in the Highway User Tax Distribution Fund. After withholdings for administrative costs, transfers to the Department of Natural Resources, and a set-aside of 5 percent for the Flexible Highway Account (no part of which is currently directed to state highways), the

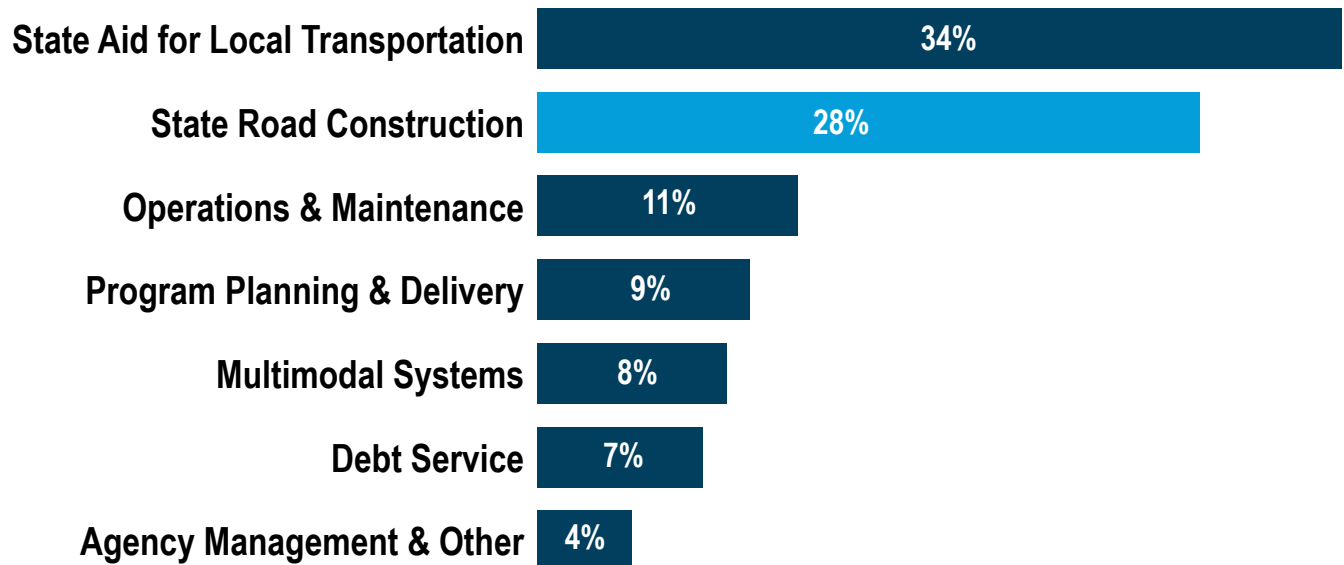
<sup>6</sup> <http://www.dot.state.mn.us/corridorsofcommerce/>

remaining revenue is constitutionally distributed among the Trunk Highway Fund (62 percent), the County State-Aid Highway Fund (29 percent), and the Municipal State-Aid Streets Fund (9 percent) for cities with populations greater than 5,000 (Figure E-3).

MnDOT manages the Trunk Highway Fund to support four broad types of expenditures on the state highway system:

- Debt Service, for bond retirement
- Operations and Maintenance, combining traffic management, snow removal, pavement patching, and similar activities
- Program Planning and Delivery, including design and engineering work
- State Road Construction, representing the capital program for new construction and reconstruction of state highways and bridges

Figure E-3: MnDOT Appropriation Distribution Plan, All Appropriations, 2016 to 2017 Biennium (\$7 billion)



Source: MnDOT Office of Financial Management, Financial Snapshot, State Fiscal Year 2016, November Forecast

Turning to the Federal-Aid Highway Program, tax proceeds from gasoline (and gasohol gasoline/ethanol blends), diesel, and other user fees are collected in the highway account of the Highway Trust Fund. Highway account apportionments to Minnesota and other states, for use on both eligible state and local facilities, are then governed by a formula that takes into account the size and usage of each state's highway network, among other factors.<sup>7</sup>

The subsequent program-level allocation of federal funds within Minnesota follows the FAST Act surface transportation reauthorization enacted in December 2015. A small fraction of federal revenue is directed to local uses

<sup>7</sup> A small fraction—5% on average for the duration of the FAST Act—of federal highway budget authority is outside of the formula program.

across the state, including for bridges not on the Federal-Aid Highway System, Greater Minnesota transit, and railroad-highway crossings. Remaining federal support is distributed among the eight Area Transportation Partnerships through a target formula. This target formula takes into account each ATP's share of statewide infrastructure preservation (60 percent), mobility (30 percent), and safety (10 percent) needs. Each ATP consists of a MnDOT district and various local transportation partners, including Metropolitan Planning Organizations, Regional Development Commissions, transit, other modal, county, city, and tribal government representatives. The ATPs integrate state and local priorities for federal funding within their regions and decide the division of federal funding between MnDOT and local governments. While an average of approximately 2/3 of federal funding is programmed for state highways, this share varies across ATPs and over time.

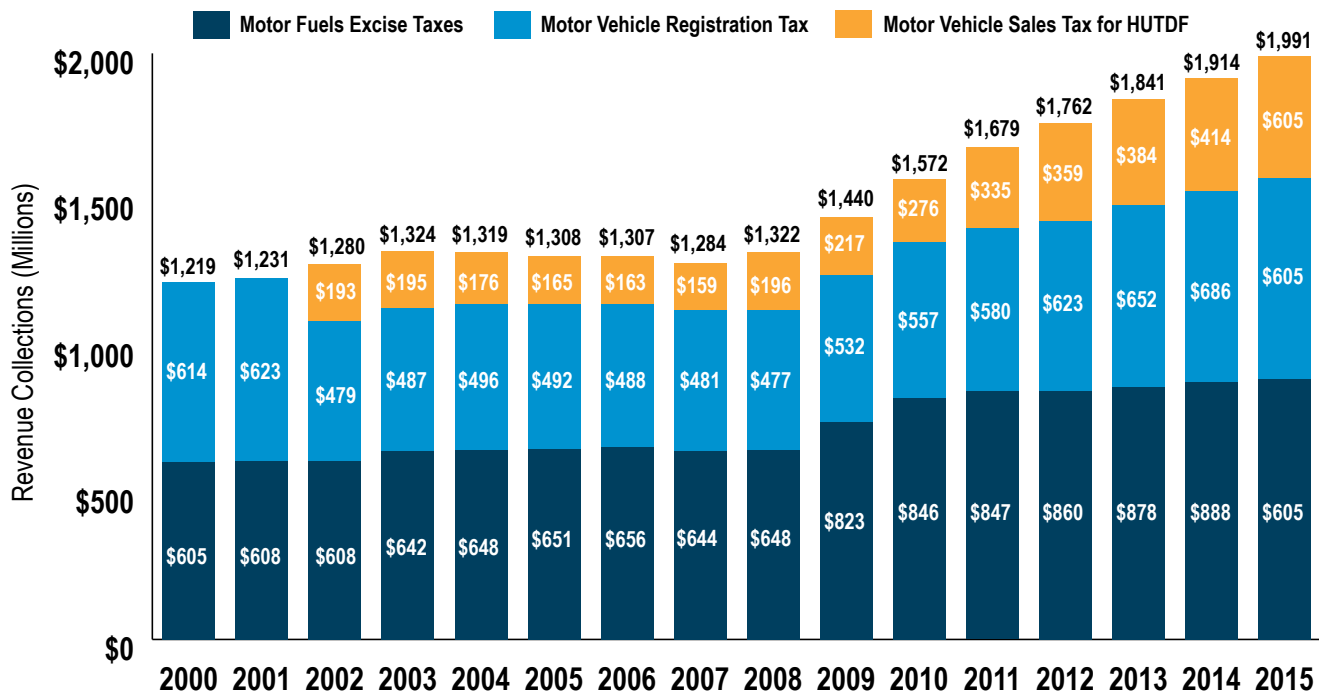
## TRENDS IN MINNESOTA HIGHWAY REVENUES AND COSTS FROM 2000 TO 2015

### State Revenue Trends

State highway revenue collections increased at an annual rate of 3.5 percent between 2000 and 2015. Between 2000 and 2007, however, state transportation revenue edged up at an annual rate below 1 percent, and both 2006 and 2007 saw small declines, as illustrated in [Figure E-4](#).

To revive revenue growth, tax rates and terms were subsequently changed for all state sources, generating additional MnDOT funding:

Figure E-4: Trends in Minnesota's Primary State Transportation Revenue Sources



Source: MnDOT Office of Financial Management

- Incremental fuel tax surcharges for debt service (reaching the final step of 3.5 cents per gallon in the summer of 2012)
- Adjusted depreciation schedule and elimination of maximum registration taxes for newer vehicles
- Rising share of the sales tax devoted to highways (now 60 percent)

## CHAPTER 152 BOND FUNDING

Minnesota Laws 2008, Chapter 152 authorized an additional \$1.8 billion in bonding capacity between 2009 and 2018 to finance state highway-related improvements. At the same time, the base motor fuel tax rate was raised on gasoline and diesel, for the first time since 1988, from 20 to 25 cents per gallon. A further per-gallon surcharge was implemented, starting at 0.5 cents in state fiscal year 2009 and eventually reaching 3.5 cents from SFY 2013. This surcharge will remain in effect while debt service payments continue on the Chapter 152 bonds. Through August 2015, the state had sold 80 percent (\$2.4 billion) of the total \$3.0 billion in trunk highway bonds authorized since 2000.<sup>8</sup>

Chapter 152's increased bonding availability was predominately directed to the Tiers 1 and 2 Bridge Program for repair or replacement of fracture-critical or structurally-deficient bridges. MnDOT expects 120 bridges will be under contract for such work by June 30th, 2018. The total program cost was estimated at \$2.5 billion over the 10-year period, to be funded through \$1.2 billion of bonds and \$1.3 billion of Trunk Highway Fund revenue. (Interchange projects, a specific legislative priority, and accelerated pavement and safety projects consumed the residual Chapter 152 financing.)

## MOTOR FUELS EXCISE TAXES

Beginning in 2001, strengthening demand for oil, particularly from India and China—without comparable supply increases—pressured world oil prices and heightened sensitivity to periodic supply shocks. Between 2003 and 2008, fuel tax proceeds stagnated, and the debt service-related surcharge initiated in 2008 was solely responsible for this source resuming a transitory upward trajectory. In other words, with volume consumption (gallons) essentially flat, the only way to obtain higher revenue is through a per-gallon tax rate increase, or by changing the tax mechanism and replacing/reinforcing the existing simple gallon basis with a percentage of the purchase price. This idea of revamping the motor fuels tax to align with sales taxes on other goods has featured prominently in recent legislative funding debates.

## MOTOR VEHICLE REGISTRATION TAX

Popularly known as “tab fees,” motor vehicle registration tax collections fell sharply after 2001 with the implementation in 2000 of caps that limited the bill

<sup>8</sup> MnDOT Office of Financial Management, Financial Snapshot, State Fiscal Year 2016, November Forecast

for the first renewal period to \$189 and set the maximum fee for subsequent renewals at \$99. The lifting of this restriction in 2008 set a course for sustained growth through 2015 in excess of 5 percent annually.

### MOTOR VEHICLE SALES TAX

Prior to 2000, all MVST revenue was deposited in the state general fund. In 2000, to compensate for the revenue lost by capping the registration tax, the state legislature statutorily directed 30 percent of motor vehicle sales tax revenue to the highway user tax distribution fund. This shift from tab fees to MVST meant transportation revenue would, in the future, be more dependent on new vehicle purchases.

Just as a portion of MVST revenue was transferred for highway purposes, its value as a funding source began to subside from the high growth recorded in the late 1990s. Demand for new vehicles remained depressed in the medium term following the 2001 recession, and MVST collections for HUTD did not surpass their 2003 peak for the next several years.

Late in 2006, voters approved a constitutional amendment that would eventually—over a five-year phase-in period—dedicate 100 percent of MVST revenue to transportation investment. The amendment further specified that up to 60 percent of MVST proceeds would be dedicated to highways (via the HUTD Fund) and at least 40 percent to transit. These ceiling/floor conditions, and the zeroing out of the state general fund share, were attained beginning in SFY 2012 (from July 1st, 2011).

### Federal Revenue Trends

As graphed in **Figure E-5**, from 2000 to 2014, multi-year authorization bills for the Federal-Aid Highway Program enabled revenue received by Minnesota to increase, though with some year-to-year volatility.

A previous federal transportation bill (SAFETEA-LU) passed in 2005 increased highway funding through two policy changes. First, a redistribution between the two sub-accounts of the Highway Trust Fund was made for gasohol (blended gasoline and ethanol) tax collections. Taken as a whole, the Highway Account benefited (offset by Transit Account reductions) from these extra excise tax proceeds. Minnesota's mandated use of gasohol<sup>9</sup> created a preferential gain from the accounting change. Second, Congress supported increased federal funding by drawing on the accumulated Highway Trust Fund balance.

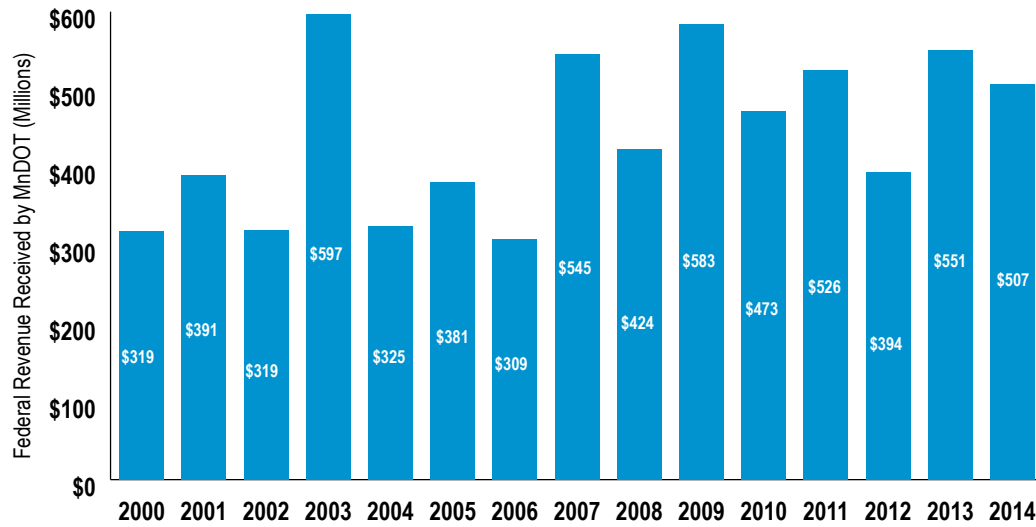
However, as depicted in **Figure E-6**, the balance for the Highway Account of the Highway Trust Fund progressively diminished with the approach of SAFETEA-LU's (original) expiration, as growth in federal fuel tax collections underperformed the authorized spending curve. To continue fulfilling the spending level commitments, a series of transfers from the general fund to the

<sup>9</sup> Minnesota was the first state with such a mandate and in 2005 enacted a requirement to achieve 20% ethanol content in all gasoline sold by 2013.



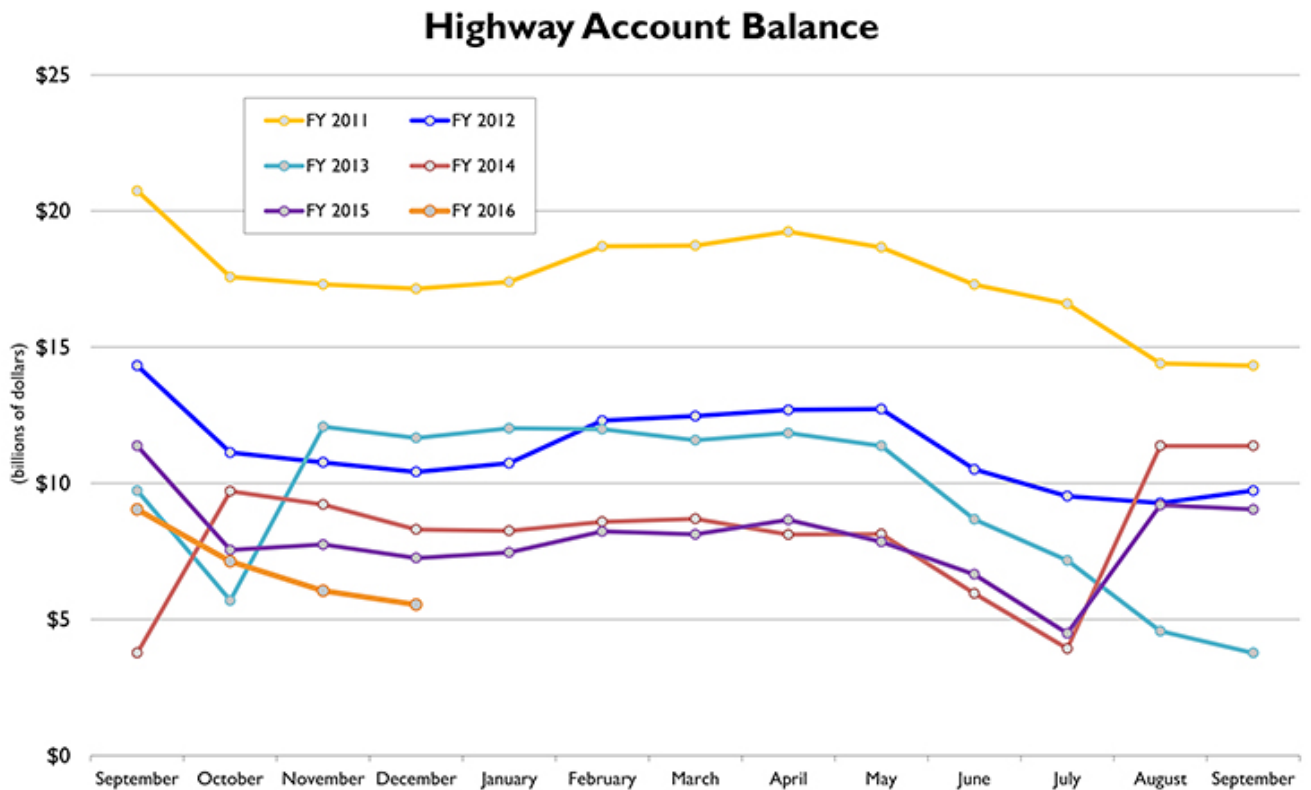
highway account were passed in federal fiscal years 2008, 2009, and 2010.

Figure E-5: Trend in Federal-Aid Highway Program Revenue



Source: MnDOT Office of Financial Management

Figure E-6: Historical Balances for Federal Highway Trust Fund, Highway Account



For FY 2012, includes \$2.4 billion transferred from the Leaking Underground Storage Tank (LUST) Trust Fund in August pursuant to P. L. 112-141  
 For FY 2013, includes \$6.2 billion transferred from the GF in November pursuant to P.L. 112-141, of which \$316.2 million was sequestered in August.  
 For FY 2014, includes \$10.4 billion transferred from the GF in October pursuant to P.L. 112-121 less sequester of \$748.8 million. Also includes \$7.765 billion transferred from the GF and \$1 billion transferred from the LUST Trust Fund in August pursuant to P.L. 113-159.  
 For FY 2015, includes \$6.068 billion transferred from the GF in August pursuant to P.L. 114-41.

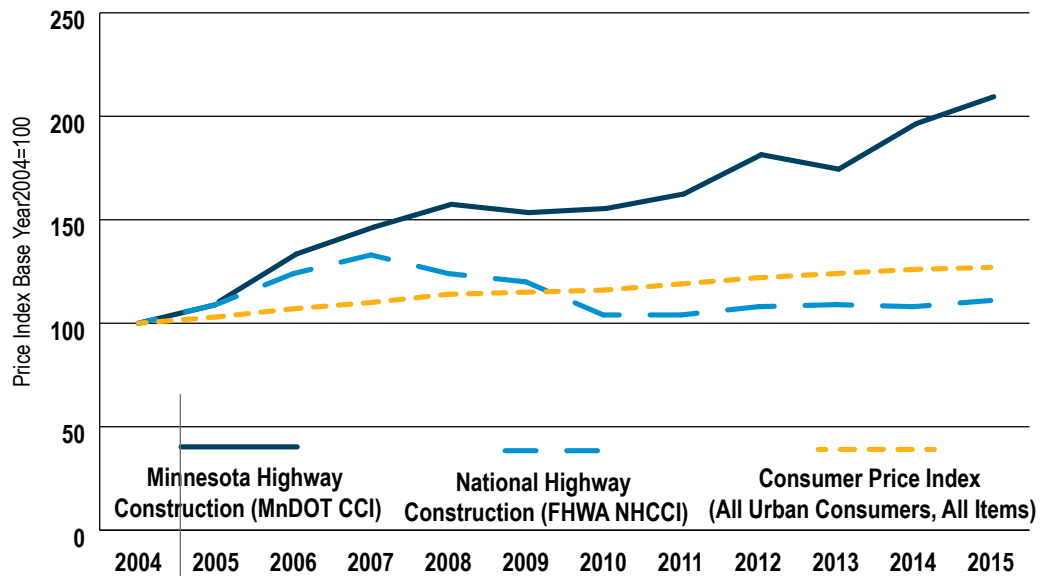
Source: U.S. Dept. of Transportation, Federal Highway Administration

MAP-21, the successor to SAFETEA-LU, acknowledged the ongoing structural gap between fuel tax revenues and desired investment program size by proactively supplementing the Highway Trust Fund with non-transportation-related general fund infusions. The current five-year FAST Act likewise fails to provide a more lasting resolution to the chronic inflow/outgo imbalance.

### Highway Construction Cost Trends

Over the period from 2004 to 2015, highway construction costs, measured by MnDOT's Construction Cost Index increased at an annual rate of 6.9 percent. CCI spikes in the middle of the past decade were largely attributable to the underlying pricing environment for essential commodities such as bituminous, steel, and concrete. The global recession beginning in 2007 reduced demand for these materials and stabilized prices, but a divergence persisted between the inflation for inputs specific to highway infrastructure and that measured by broadly reported general indicators such as the consumer price indexes, designed to track transactions for a wider selection of goods and services. Minnesota highway construction costs have also not shared in the post-recession downturn registered by the National Highway Construction Cost Index computed by the Federal Highway Administration (FHWA NHCCI), for reasons including climate and market conditions for commodities and contractor resources specific to the Midwest. Surveying the cost index increase over the past decade in other states cited by FHWA reveals Minnesota to be in the middle of the range of growth rates (all of which substantially exceed NHCCI). A comparison of the recent development for these two indexes is shown in **Figure E-7**.

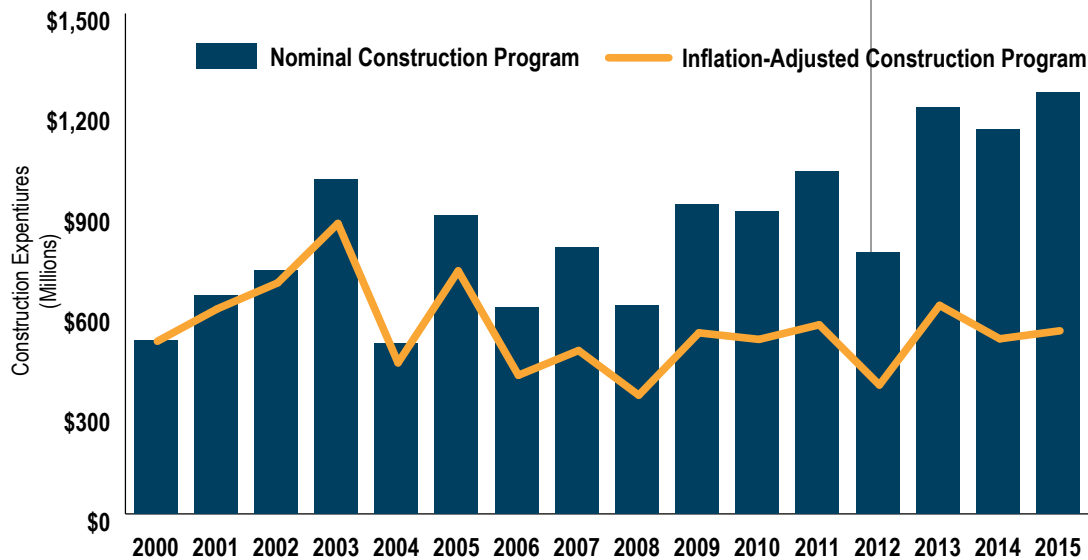
Figure E-7: Recent Trends for Highway Construction (MnDOT CCI), National Highway Construction (FHWA NHCCI) and Consumer Price Indexes



Source: MnDOT Office of Project Management & Technical Support, Cost Data & Estimating Unit; U.S. Dept. of Labor, Bureau of Labor Statistics

The relatively high inflation rate experienced for highway construction decreased the purchasing power of transportation revenues. **Figure E-8** represents actual construction program expenditures, noted using nominal/current/year-of-construction<sup>10</sup> dollar terms, and the same activity expressed in real/constant year 2000 dollars. Adjusting for inflation in this way demonstrates

Figure E-8: Minnesota State Highway Construction Expenditures, Nominal and Real Amounts



Source: MnDOT Office of Transportation System Management

the difficulty of accomplishing a given volume of work output, as measured in units such as paved lane-miles or bridges built by deck length and structural type—when year-to-year growth in the prices of required inputs is outpacing additional funding availability. Although the absolute, nominal construction budget may increase over time, when inflation rises more quickly, MnDOT’s ability to sustain a fixed level of effort or quantity of system improvements will be compromised. This erosion of purchasing power is expected to remain a challenge to investment decision making over the 20-year planning horizon, as detailed later in the chapter.

### State Road Construction Outlook from 2018 to 2037

February 2008 marked the state legislature’s last major act affecting ongoing transportation funding for highways. Subsequent to this legislation, the projections that follow assume current MnDOT budget policies, and state and federal tax laws, remain in effect through 2037. No new one-time funding is included, only the existing dedicated transportation taxes are forecast, and all revenue collected in a certain year is spent within that year, beyond what is already programmed. No scenarios for fund balance accumulation or drawing down are considered.

<sup>10</sup> All of these labels are synonymous and will later be used interchangeably.

While a long-term perspective is necessary for planning purposes, any multi-decade revenue guidance is naturally subject to significant uncertainties and reflects consensus opinions and data, gathered within MnDOT and other state agencies and from national, governmental, and private forecasters—available at this writing (summer of 2015). Such a snapshot of the expected direction for major revenue sources enables the development of fiscally-constrained investment scenarios detailed in **Chapter 4, Development of Investment Direction**. Any material departures from the baseline assumptions affecting future revenues as a result of new or revised policies at the federal or state level will be separately assessed as they emerge.

The outlook additionally relies upon MnDOT requesting, and the legislature approving, future year appropriations to support the indicated investment levels. As a final guiding principle, debt service on trunk highway bonds is assumed to remain a first charge on Trunk Highway Fund tax collections. The forecast specifies the distribution of remaining Trunk Highway Fund revenue between, state road construction, and all other eligible uses.

### **Construction Cost Expectations**

Highway construction cost inflation forecasts are annually updated in the fall for a 10-year horizon, and the latest mid-range projections are assumed to prevail for the following decade as well. Actual year-to-year inflation will naturally fluctuate, but the compound average rate of 4.4 percent assumed from 2018 to 2037 amounts to a tapering off from observations over the past decade and extends the comprehensive historical average since the CCI's inception in 1977 of 4.5 percent. This inflation factor can be interpreted as the bridge between nominal and real representations of future funding amounts, and both perspectives will be considered later in the chapter.

It is worth noting that this level above 4 percent will almost certainly exceed broader inflationary measures, such as the headline consumer price index and other areas of MnDOT's own budget. Specifically, based on long-term performance, operations and maintenance activities, requiring a higher labor input component and lower manufacturing / commodity intensity compared with initial construction, should expect lower average inflation—pegged here at 3.2 percent—owing to more moderate escalation in employee compensation. The division of funding between, state road construction, and operations and maintenance, has been managed while recognizing the distinct inflationary paths projected for each budget category, as described below.

### **Future Revenue-Generation Context**

#### **TRENDS IN LIGHT-DUTY VEHICLES**

An EPA report<sup>11</sup> published in December 2015 highlights trends in new vehicle

<sup>11</sup> Light-Duty Automotive Technology, Carbon Dioxide Emissions, and Fuel Economy Trends: 1975 Through 2015, <http://www.epa.gov/otaq/fetrends.htm>

characteristics that help to explain historical stability in highway-related tax revenues.

All else equal, heavier and more powerful vehicles have higher sticker prices (boosting sales tax receipts) and enduring valuations (raising recurring registration payments). Since 1987, average light duty vehicle weights and horsepower ratings climbed 26 percent and 95 percent, respectively. Neither attribute has fluctuated materially over the past decade.

Bearing this out, IHS Global Insight analysis shows the typical price for a new light duty vehicles has grown at an annual rate of 3.1 percent since 1990, outperforming inflation across all CPI items for the period (2.4 percent). Forecasts call for future vehicle price increases to keep up their historical pace to average 3.2 percent annually through 2037.

Table E-1: Light-Duty Vehicle Characteristics Trends

VEHICLE CHARACTERISTIC	1975	1987	2004	2008	2014
Adjusted Fuel Economy (MPG)	13.1	22.0	19.3	21.0	24.3
Weight	4,060	3,221	4,111	4,085	4,060
Horsepower	137	118	211	219	230
Truck Production	19%	27%	48%	41%	41%
Hybrid Powertrain	-	-	0.5%	2.5%	2.6%

The truck share of the LDV fleet has subsided somewhat from its 2004 peak, yet remains 15 times the gas-electric hybrid fraction. (Pure-electric plug-in car adoption has fallen short of even the industry’s conservative business plans, and this segment is an inconsequential part of today’s fleet composition.) Trucks and SUVs are also disproportionately favored in Minnesota, making up nearly seven in 10 new vehicle sales in 2014, according to the Minnesota Automobile Dealers Association.

Multiple approaches may be pursued to achieve future gains in average fuel economy. Besides a tilt of the fleet mix in favor of smaller, lighter vehicles, implemented changes to the composition of vehicle frames—notably by raising the aluminum-to-steel ratio in pickup trucks—also hold promise to incrementally lift aggregate MPG. The federal Energy Information Administration 2015 Annual Energy Outlook projects that in 2037, the average light-duty stock vehicle will achieve 36 MPG and a new “on-the-road” LDV will test at 39 MPG. The same source suggests motor gasoline prices will hold constant on an inflation-adjusted basis, only rising from \$3.55 per gallon in 2013 to \$3.66 per gallon by 2037, while pumps in the year 2037 will read a nominal \$5.59 per gallon.<sup>12</sup>

#### TRENDS IN DRIVER BEHAVIOR

As summarized in a November 2015 report written by MnDOT’s Office of

<sup>12</sup> [http://www.eia.gov/forecasts/aeo/excel/aeotab\\_12.xlsx](http://www.eia.gov/forecasts/aeo/excel/aeotab_12.xlsx)

Transportation System Management<sup>13</sup>,

*In previous decades, Minnesota had seen steady growth in VMT [vehicle miles traveled]. However, since 2004 VMT growth in Minnesota has been virtually flat, and from 2010 to 2013 it declined by 0.2%. In 2014 [latest data available] VMT increased by 1.0% to 57.4 billion to a new high, just slightly higher than 2006. Nationally, VMT increased 1.7% [in 2014] and appears to be increasing for 2015.*

Spanning the 2004 inflection point, annual growth rates for the 1992-2014 period averaged 1.5 percent within Minnesota and 1.4 percent nationally. However, by controlling for population growth, the Office of Transportation System Management found that per capita metro-area VMT in 2014 fell below the 1998 level.

Even after factoring in some degree of post-recession recovery—reinforced by response to current and forecast subdued fuel prices—the Energy Information Administration forecasts national LDV VMT will increase at an annual rate of 1.1 percent from 2018 through 2037. The comparable per capita (population age 16 and older) annual statistic is minimal growth of 0.4 percent.

Combining these future trajectories for MPG and VMT, EIA modeling indicates West North Central (including Minnesota) regional motor fuel consumption will decline by 0.7 percent a year between 2018 and 2037. IHS Economics expects a net result marginally closer to neutral from offsetting MPG and VMT developments, leading total consumption of gasoline and special fuels (e.g. diesel) to fall 0.4 percent annually over the 20 years. A blend of EIA and IHS Economics scenarios is adopted for the revenue plan here, in line with the procedures of the Office of Financial Management in their nearer-term forecasts. (No attempt was made to supplement these third-party projections with independent forecasts of the direction and/or magnitude for the potential impacts of either autonomous/self-driving vehicle adoption or car-sharing service expansion.)

The 17.5 million LDV sales for calendar year 2015 broke the old all-time record set in 2000, signaling the recovery from the recession that shrank the industry to 10.4 million units sold in 2009. Despite an unprecedented six-year streak of growth in new car purchases, average LDV age nevertheless also set a record as of mid-2015 at 11.5 years old, endorsing continued elevated production in the interim to the 20-year planning period. Starting from such a strong baseline, over the long run LDV unit sales will grow at an average annual rate of just 0.2 percent from 2018 through 2037, according to IHS Economics.

---

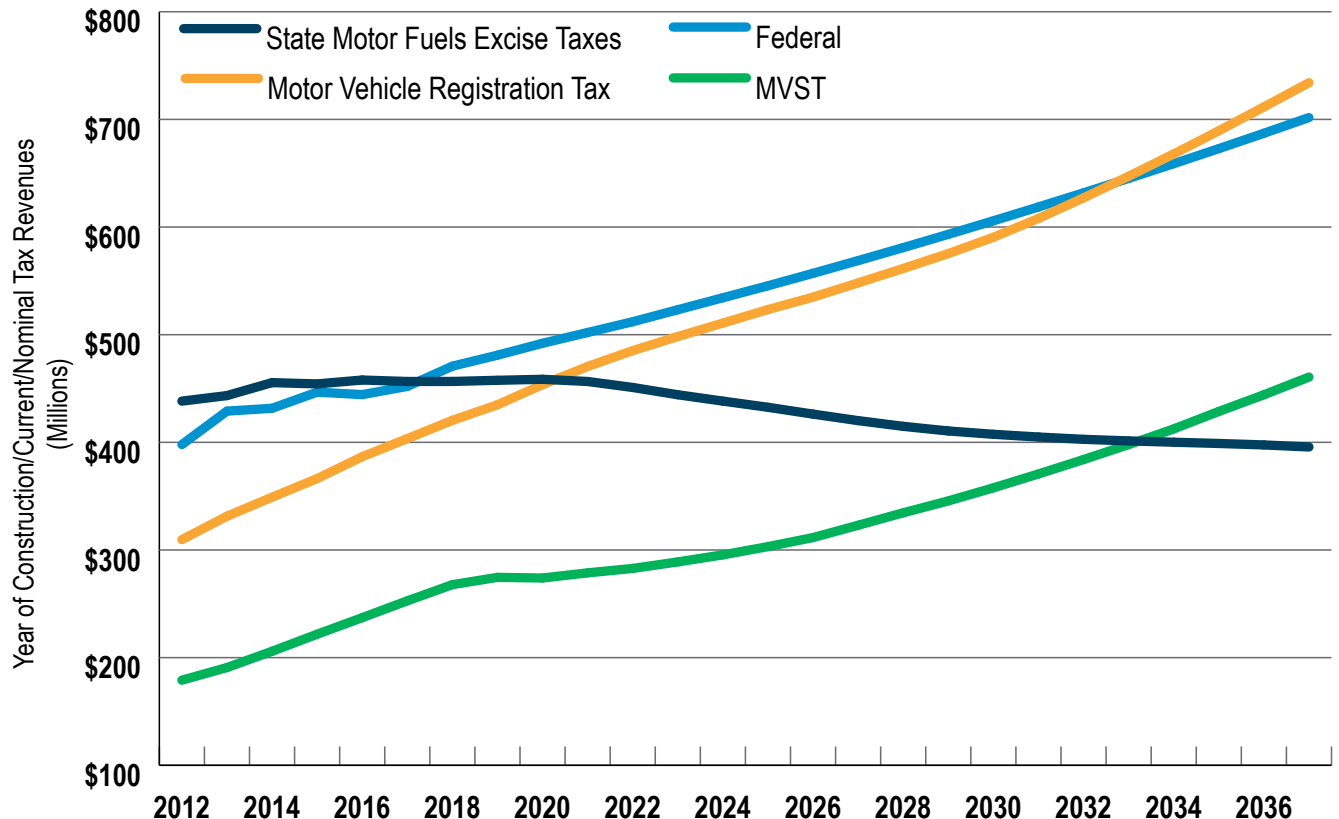
<sup>13</sup> Vehicle Miles of Travel Trends in Minnesota: 1992-2014, [http://www.dot.state.mn.us/traffic/data/reports/traffic%20volume/2014\\_VMT\\_Report.pdf](http://www.dot.state.mn.us/traffic/data/reports/traffic%20volume/2014_VMT_Report.pdf)

## REVENUE FORECAST

Looking first at the aggregate level of the four major permanent revenue stream of the Trunk Highway Fund, **Figure E-9** illustrates the projected evolution—viewed from a nominal-dollar perspective—of state and federal sources over the next 20 years.<sup>14</sup>

Although currently the largest contributor to the total, the state motor fuels excise taxes are due to be overtaken as the largest contributor early in the planning window, and will most likely experience a “first-to-worst” relative

Figure E-9: Long-Term Trends for Revenue Sources, Flows into Trunk Highway Fund



Source: MnDOT Office of Transportation System Management

descent, trailing all others by 2037. As observed previously, offsetting growth in VMT and fuel economy should generate slightly declining net gasoline consumption. Absent the passage of any per-gallon or percentage-of-value rate increase, tax collections will proportionately mirror this volume trend plateau.

Conversely, the three other transportation revenue pillars are forecast to grow in nominal dollars. Higher LDV initial pricing and recurring assessed values will propel motor vehicle registration tax and MVST to annual increases in the neighborhood of 3 percent. Weighted down by negligible changes to collections in motor fuels excise taxes, the collective state revenue pool is projected to

<sup>14</sup> Values for state sources shown here are prorated after removal of non-MnDOT/highway allocations.

expand at a 1.9 percent annual rate.

Federal dollars are modeled as growing 2.2 percent per year. The key assumption behind this factor is that authorized spending post-FAST Act (SFY 2021 and beyond) will not be constrained by federal fuel tax proceeds as currently scheduled. This is consistent with the general fund support integrated into the FAST Act. Spending levels specified by the FAST Act comprise the initial years of the projection, through SFY 2020, extending the two-biennium budget horizon by a year. Subsequently, the plan follows Congressional Budget Office forecasting for federal obligation limitation amounts.<sup>15</sup>

While the great majority of the Federal-Aid Highway Program is restricted to state road construction use, more discretion is permitted for revenues collected at the state level. Consequently four alternative scenarios were evaluated for the division of state-sourced Trunk Highway Fund revenues that remain after forecast debt service payments are set aside. These strategies are listed in ascending order of the share each would award for state road construction:

- Fund operations and maintenance at an annual growth rate equal to its expected 3.2 percent inflationary increases (remainder to state road construction)
- Continue allocation for state road construction as budgeted since SFY 2009 (\$290 million annually) (remainder to operations and maintenance)
- Choose growth rates for state road construction and, operations and maintenance so that the expected future purchasing power change (loss)—defined as the gap between funding and inflationary increases—is the same for both categories
- Fund state road construction at an annual growth rate equal to its expected 4.4 percent inflationary increases (remainder to operations and maintenance)

Weighing enterprise obligations and risks/uncertainties, option (c) was considered to be preferred and serves as the basis for **Figure E-10**, presenting a consolidated picture of Trunk Highway Fund accounting projected over the next 20 years.

Appearing as a negative quantity, below the horizontal axis, is each year's estimated debt service payment, shaded red. This commitment is expected to reach approximately \$240 million in SFY 2018 before gradually declining from its crest into the 2020s. This is equivalent to 17 percent of total state-sourced Trunk Highway Fund revenues. To comply with established debt policy guidelines, annual payments should not exceed the 20 percent threshold on

<sup>15</sup> CBO projects Highway Trust Fund balances through 2025; 2026 and later extrapolates this trend. <https://www.enotrans.org/wp-content/uploads/2015/09/CBO-Aug-15-Baseline-HTF-spending.pdf>



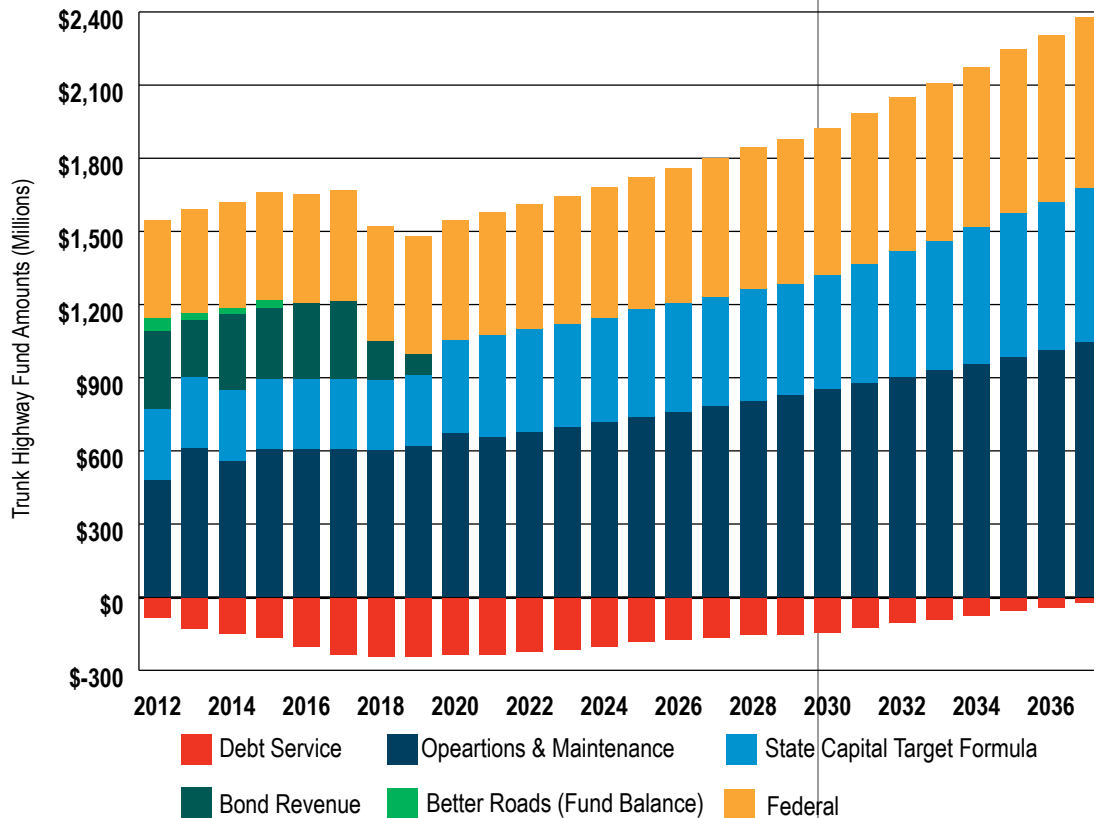
this measure, indicating a restricted capacity for further bond issuance. In SFY 2037, the final year of this plan, debt service will have been almost entirely discharged, with only a residual \$20 million predicted.

The first two positive column segments illustrate the agreed-upon division between operations and Maintenance and, state road construction (capital investment funding distributed through a target formula), colored blue and green, respectively. The allocation for operations and maintenance rises at an annual rate just less than 3 percent, compared with growth for state road construction of 4 percent. Placed against their corresponding inflation targets, both uses experience annual purchasing power erosion of close to half a percent. The 20-year funding total for operations and maintenance is \$16.1 billion and capital target formula for state road construction rises to \$9.3 billion.

Continuing to climb the column, a temporary addition to the revenue buildup is quantified: the revenue received from newly-issued Trunk Highway bonds (in yellow). The current bond sale schedule anticipates approximately \$160 million in SFY 2018 and a small final issue of about half that size in SFY 2019. The top of each stack measures the Federal-Aid Highway Program contribution to state road construction, shown in navy.

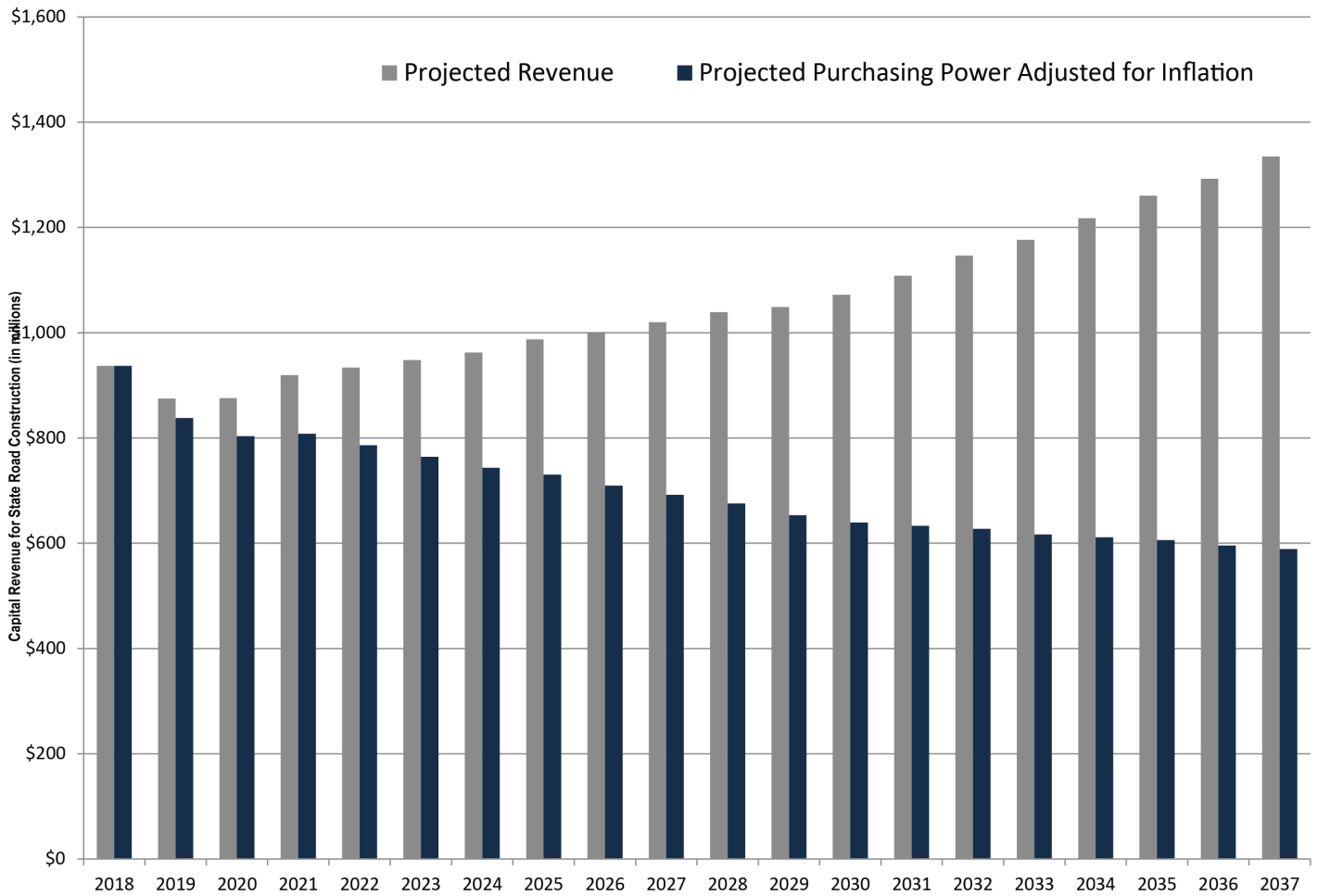
To summarize, adding together all segments appearing above operations and maintenance—namely, State Capital Target Formula, Bond Revenue (when

Figure E-10: Trunk Highway Fund Components and Budgeted Uses



Source: MnDOT Office of Transportation System Management

Figure E-11: Anticipated Construction Revenue by Year Including Adjustments for Inflation



Source: MnDOT Office of Transportation System Management

applicable), and Federal—yields the nominal-dollar state road construction 20-year grand total of \$21 billion.

It should be remembered, however, that there are two complementary ways to think about the long-range funding outlook. As compared in **Figure E-11**, the nominal approach, reflecting traditional budgetary accounting practice, tells a story of mostly-increasing available resources. The notable exception is the drop from SFY 2018 to 2019, when projected bond revenues contract by \$70 million. These annual amounts are indicated with the combined heights of the solid and gray column halves. Alternatively, after adjusting for the loss of purchasing power caused by 4.4 percent annual construction cost inflation, the emerging trend in real-dollar terms (solid section) is one of markedly diminishing investment capacity. This interpretation acknowledges the persistent challenge of funding capital improvements when cost growth is projected to outstrip revenue expansion. This systemic fiscal constraint shapes the next step of the planning process: consideration of investment priorities to optimize system performance for Minnesota drivers.

## Project Selection Process Summary

---

### 10-YEAR CAPITAL HIGHWAY INVESTMENT PLAN

The **10-Year Capital Highway Investment Plan** is updated each year to communicate MnDOT's proposed capital investments for the next 10 years and, it serves as an annual check-in between the 4-year MnSHIP plan update cycles. The are three primary objectives of the CHIP including:

- Detail MnDOT capital investments over the next 10 years on the state highway network
- Compare planned and programmed projects with the investment priorities established in MnSHIP, and explain any change in direction or outcomes
- Allow districts to coordinate with local units of government on future investment.

The CHIP includes projects in two time periods:

- Years 5-10 represent MnDOT's planned projects.
- Years 1-4 called the **Statewide Transportation Improvement Program** which represents projects MnDOT is committed to delivering.

The CHIP allows MnDOT to be transparent with its proposed capital investment and decision-making process. In addition, it provides the opportunity to track investments compared to the investment guidance established in MnSHIP, ensuring accountability.

Each year MnDOT districts receive investment guidance based on the current MnSHIP and the districts develop their CHIP in accordance with that guidance. The District CHIPs are included in this document to form MnDOT's 10-Year Capital Highway Investment Plan. Districts fund projects through two programs: the **Statewide Performance Program** and **District Risk Management Program**.

Selecting projects on the state highway system is a yearly process for MnDOT. MnDOT starts identifying potential projects 10 years in advance. MnDOT district staff works together with MnDOT central office and specialty office staff to complete a 10-year list of projects for each district. MnDOT then combines the project lists into the 10-year Capital Highway Investment Plan. The CHIP's main purpose is to communicate potential projects 10 years in advance providing early coordination of projects between MnDOT and local and regional transportation partners.

## STATE TRANSPORTATION IMPROVEMENT PROGRAM

The 10-Year CHIP is updated annually to include new projects identified in year 10 and adjust any projects from the previous CHIP based on new information. Projects listed in year 5-10 do not officially have funding attached and may fluctuate as MnDOT looks at the needs of those projects and collaborates with regional and local transportation partners to identify local needs or concerns. By the time projects reach Year 4 of the CHIP, the projects become part of the State Transportation Improvement Program. Projects listed in the four years of the STIP represent the projects MnDOT is committed to constructing over the next four years. Until Year 4, projects do not have funding committed to them.

MnDOT districts work closely with a broad range of stakeholders through **Area Transportation Partnerships**. These partnerships provide a collaborative decision-making process for the selection of projects that are recommended to receive federal funds. In addition, ATPs provide a local perspective on potential state-funded projects. ATPs sign off on the district's list of programmed projects in the STIP.

With funding committed, MnDOT begins designing the project to prepare to enter construction by the time the project reaches Year 1 of the STIP. Just like the 10-Year CHIP, the STIP is updated annually. Once a project reaches Year 1, it becomes part of MnDOT construction program for that fiscal year.

### TYPICAL PROJECT DEVELOPMENT TIMELINE

#### Year 10: Project Identification

MnDOT identifies potential state highway projects 10 years in advance. In coordination with the District, MnDOT central office, and specialty offices, the projects are identified using guidance developed from the MnSHIP investment direction. State Transportation Improvement Program and District Risk Management Program projects are included. Districts also provide initial estimates of how projects costs will break out into the MnSHIP investment categories. Year by year these projects move forward towards construction in Year 1.

#### Years 6-9: Refining Project Concepts

As projects progress towards construction in Year 1, districts work with ATPs, MPOs, and other key partners making recommended adjustments to needs the project is addressing and the timing of the project. Districts also make changes to the project based on additional studies, MnDOT planning and policy recommendations, new condition information, MPO policy direction, or new legislative special funding programs.

#### Year 5: Initial Project Scoping

During year 5, projects begin initial project scoping and scheduling begins. Districts identify specific project needs related to areas such as planning, hydraulics, or traffic. The goal is to have the projects incorporated into the STIP the following year. Not all projects move into the STIP. There may not be enough funding available to commit to the project. A project may be held in Year 5 for a few years before being listed in the STIP due to funding availability.

### **Year 2-4: Commitment to Delivery**

In Years 2-4, districts update a project's scope, schedule and cost estimate annually based on designing and engineering for the project. Projects listed in Years 2-4 represent a commitment to deliver the project. If necessary, MnDOT works to complete any studies and identifies any impacts a project may have on the surrounding environment.

### **Year 1: Annual Construction Program**

When a project reaches Year 1 it becomes part of MnDOT's annual construction program and begins construction.

## Funding Program Overview

---

MnDOT invests in state highway projects through two programs: the Statewide Performance Program and the District Risk Management Program. The purpose of establishing these two programs is to ensure the agency efficiently and effectively works toward common statewide goals—in particular, meeting identified outcomes of the MnSHIP investment direction—while maintaining some flexibility to address unique risks and circumstances at the district level.

### WHAT IS THE STATEWIDE PERFORMANCE PROGRAM?

MnDOT created the Statewide Performance Program in 2013 to respond to changes in federal requirements. Federal legislation, places greater emphasis on National Highway System performance and requires MnDOT to make progress toward national performance goal areas, including those related to condition, safety, and travel time reliability on the NHS. Failure to do so results in the loss of some federal funding flexibility. The SPP manages investment and project selection on the NHS to meet statewide outcomes listed in the MnSHIP investment direction.

### Project Selection through the Statewide Performance Program

The SPP selects projects that continue MnDOT's progress towards meeting the outcomes identified in MnSHIP on the NHS. Staff from MnDOT's central office, district offices, and specialty offices collaborate to develop a list of potential projects and planned investments to address these risks through the SPP. MnDOT adds new SPP projects annually in year 10 of the CHIP. Existing projects continue year by year through the CHIP. Each MnDOT district coordinates with Area Transportation Partnerships, MPOs, and other key partners to make recommended adjustments to project scope and timing. Upon final selection for inclusion in the STIP, each MnDOT district is responsible for designing and delivering the selected projects. The following types of projects drive the SPP project selection process.

#### INTERSTATE AND REMAINING NHS PAVEMENT PROJECTS

Projects focus on rehabilitation or replacement of existing pavements to bring the segment of the highway into good condition. MnDOT's Office of Materials and Road Research uses a Pavement Management System to predict future pavement conditions and develop a schedule of suggested fixes on the Interstates and remaining NHS. The Office of Materials and Road Research manages its program to meet performance outcomes on the NHS listed in MnSHIP. The districts suggest modifications to the project list based on a number of considerations, including local knowledge of conditions, input from stakeholders, and timing of other scheduled improvements in the area.

## NHS BRIDGE PROJECTS

Bridge projects focus on rehabilitation or replacement of existing bridges to bring the bridges into good condition. As is the case with pavement projects, MnDOT prioritizes bridge projects on high-volume NHS roads. MnDOT's Bridge Office uses the Bridge Replacement and Improvement Management process to recommend future bridge improvements based on condition and risk factors, including length of detour and traffic volume. The bridge office and district offices generate a list of bridge projects for NHS and non-NHS bridges based on the results of the BRIM process. In modifying the BRIM results, districts consider stakeholder input and local expertise to coordinate timing with other planned projects in the region. Districts primarily choose projects with long-term fixes for NHS bridges and focus investment on non-NHS bridges in the greatest need of repair.

## NHS MOBILITY PROJECTS

NHS mobility projects focus on improvements that address performance related to mobility and travel time reliability in the Twin Cities metropolitan area and Greater Minnesota. The 2013 MnSHIP investment guidance only directed investment to improve mobility and travel time reliability in the Twin Cities area. In the Twin Cities Metro area, MnDOT's Metro District worked in collaboration with the Metropolitan Council to develop a list of Twin Cities Mobility cost-constrained projects that align with MnSHIP. A process for selecting projects to address mobility and travel time reliability in Greater Minnesota will be developed as the new investment direction is implemented.

## STATEWIDE SOLICITATIONS

MnDOT selects projects through statewide and internal solicitations to partner with stakeholders and local jurisdictions to fund non-performance-based projects managed by MnDOT's central office. These statewide solicitations fund projects that leverage local funds to provide economic, quality of life, and transportation benefits. An example of a statewide solicitation is the Transportation Economic Development program. MnDOT categorizes these projects under the Regional and Community Improvement Priorities investment category.

## SAFETY PROJECTS

MnDOT selects safety projects on the NHS coordinating between the districts and the Office of Traffic, Safety and Technology. The mix of project types varies by district. Districts draw from two main sources to select projects:

- **District Safety Plans.** Each district uses its safety plan to prioritize proactive safety infrastructure projects and determine which strategic improvements to implement. In addition, the 10-Year Capital Highway Investment Plan includes Highway Safety Improvement Program

investments. HSIP is a federal program that emphasizes data driven, strategic approaches to improving highway safety. HSIP projects correct a hazardous road location or address a highway safety problem.

- **Sustained crash locations list.** MnDOT's Office of Traffic, Safety, and Technology identifies areas throughout the state that experience a high crash rate over a five-year period. Districts include high-priority projects at some of these locations.

The districts also estimate the costs associated with installing roadway safety infrastructure as part of other projects, namely pavement improvements.

#### INCLUSION OF OTHER INVESTMENTS ON SPP PROJECTS

While a project in the Statewide Performance Program primarily focuses on one of the five categories above, a portion of SPP project costs may include additional improvements such as roadside infrastructure, bicycle or pedestrian improvements. However, they do not drive the project selection process in the SPP.

### WHAT IS THE DISTRICT RISK MANAGEMENT PROGRAM?

The SPP focuses funding on addressing key performance targets on NHS routes, but the DRMP focuses funding on all other non-NHS highways other non-performance-based needs (RCIPs) on all state highways. The majority of the program supports pavement and bridge rehabilitation or replacement projects. The DRMP project selection process is structured to give districts the flexibility to address their greatest regional and local risks. Districts are also able to make additional investments on the NHS system if the proposed project is in response to a high risk issue. MnDOT distributes different levels of funding to the districts for this program based on a revenue distribution method that accounts for various system factors (**Figure E-12**).

#### Resource Distribution Formula

MnDOT created a resource distribution formula for the purpose of distributing funds for projects in the DRMP program, among the eight districts. The funds each district receives for programming its DRMP projects are determined through this target formula.

The Resource Distribution Formula considers five factors: a district's projected condition for Non-NHS pavement, a districts projected condition for Non-NHS bridges, a district's portion of total trunk highway lane miles, vehicle miles traveled, and heavy commercial VMT. The amount allocated to each district depends on these factors according to the breakdown below.

MnDOT revises the distribution annually with updated data from that year, and



applies the distribution to years 5-10 in the CHIP. DRMP funding in the first four years in the current CHIP will remain unaffected. The process will remain this way to give districts fixed funding in years 1-4 for programming and finalizing the scope of projects. This will also ensure that there is a more accurate reflection of remaining needs in each district as projects get completed and pavement and bridge conditions improve or decline each year. The districts will see less dramatic swings in each subsequent year as the data being used is updated annually and projected conditions do not improve or decline dramatically.

Figure E-12: Resource Distriction Formula Factors

DISTRIBUTION FACTOR	PERCENT OF FORMULA	DATA SOURCE
Non-NHS Pavement Condition	20%	2015 data for 2021-2026 average annual funding needed to reach 60% good, 10% poor from Materials Pavement Model poor
Non-NHS Bridge Condition	20%	2015 data for 2021-26 bridge funding needs based on remaining service life to reach 50% good, 8% poor
TH Lane Miles	30%	2014 lanes miles
Vehicle Miles Traveled (VMT)	24%	2014 VMT on all roads
Heavy Commercial VMT	6%	2013 HCVMT (State highways only)

### Project Selection through District Risk Management Program

In the DRMP, each MnDOT district is responsible for selecting projects that mitigate their highest risks and are not addressed through the SPP in the areas of System Stewardship, Transportation Safety, Critical Connections, and Healthy Communities. Each MnDOT district coordinates with Area Transportation Partnerships, MPOs, and other key partners to recommend adjustments for project scope and timing. The majority of DRMP projects a district selects are pavement, bridge and safety projects on non-NHS routes.

#### NON-NHS PAVEMENT PROJECTS

The Office of Materials & Road Research generates an initial project list for district consideration. However, it is the districts' responsibility to identify and select pavement projects. The districts select projects based on a number of considerations, including local knowledge of conditions, input from stakeholders, and timing of other scheduled improvements in the area.

#### NON-NHS BRIDGE PROJECTS

The MnDOT Bridge Office generates an initial project list for district consideration. However, it is the districts' responsibility to identify and select bridge projects. The districts select projects based on a number of considerations, including local knowledge of conditions, input from

stakeholders, and timing of other scheduled improvements in the area.

#### SAFETY PROJECTS

District select stand-alone safety projects based on location with fatal and serious injury crashes, which are shared with the Office of Traffic, Safety and Technology for approval. Funding for these projects comes from the Highway Safety Improvement Program.

#### OTHER PROJECTS

The majority of projects districts select are pavement, bridge, or safety projects, districts also select projects in other investment categories. Districts may identify a high priority improvement as a stand-alone project because there is not an upcoming pavement, bridge or safety project where the improvement could be included as part of the project. These stand-alone can include roadside infrastructure improvements such as replacing culverts, guardrails, signs or lighting, mobility improvements, bicycle improvements, or pedestrian improvements.