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TESTIMONY

Options for Funding and Financing Highway Spending

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Notes

Unless this testimony indicates otherwise, all years referred to are federal fiscal years, which run from October 1 to September 30 and are designated by the calendar year in which they end.

Dollar amounts are reported in nominal (current-year) dollars unless this testimony specifies otherwise. Where amounts are given in inflation-adjusted dollars, the Congressional Budget Office used the gross domestic product price index from the Bureau of Economic Analysis to convert them.

Numbers in the text may not add up to totals because of rounding.

Chairman Wyden, Ranking Member Crapo, and Members of the Committee, thank you for inviting me to today's hearing. I will discuss the status of the Highway Trust Fund, approaches to paying for highway spending, and federal subsidies for state and local borrowing for highway spending.

Summary

Federal spending on highways (or, synonymously, roads) totaled $47 billion in 2019.[1] Most of those outlays were for grants to state and local governments to support their spending on capital projects. (Those governments typically spend roughly three times as much of their own funds on highways each year, not only on capital projects but also to operate and maintain roads.) That $47 billion also included spending for federal programs that subsidize state and local governments' borrowing for highway projects; other subsidies for state and local borrowing are provided through the tax code.

Most federal spending for highways is paid for by revenues credited to the highway account of the Highway Trust Fund, largely from excise taxes on gasoline, diesel fuel, and other motor fuels. For more than a decade, those revenues have fallen short of federal spending on highways, prompting transfers from the Treasury's general fund to the trust fund to make up the difference.

The Congressional Budget Office projects that balances in both the highway and transit accounts of the Highway Trust Fund will be exhausted in 2022. If the taxes that are currently credited to the trust fund remained in place and if funding for highway and transit programs increased annually at the rate of inflation, the shortfalls accumulated in the Highway Trust Fund's highway and mass transit accounts from 2022 to 2031 would total $195 billion, according to CBO's baseline budget projections as of February 2021.[2]

The current authorization for federal highway programs expires on September 30, 2021. As they consider reauthorization, policymakers have many decisions to make about how much to spend on highway programs, how to pay for them, and the extent to which they want to provide additional federal subsidies for state and local borrowing for highway spending.

Revenues Credited to the Highway Trust Fund

The Highway Trust Fund has two accounts—one for highways and the other for mass transit—to which certain fuel and other vehicle-related excise tax collections are credited. In CBO's February 2021 baseline projections, revenues credited to the Highway Trust Fund in 2022 total $43 billion, and outlays from the fund exceed revenues by about $13 billion.

Currently, users of highways impose many costs that they do not fully pay for, including wear and tear on roads and bridges; delays caused by traffic congestion; injuries, fatalities, and property damage from accidents; and harmful effects from exhaust emissions. A combination of taxes on fuel and mileage that made users pay for more of those costs would make use of the system more efficient.

Policymakers have a number of options to increase the resources available in the Highway Trust Fund:

- Policymakers could increase the existing fuel taxes. The tax on gasoline has been 18.4 cents per gallon, and the tax on diesel fuel 24.4 cents per gallon, since October 1993. Increasing those taxes would boost the trust fund's revenues. For example, increasing them by 15 cents per gallon in October 2022 and adjusting them for inflation thereafter would raise an estimated $291 billion more in revenues for the Highway Trust Fund from 2023 to 2031 than projected in CBO's February baseline. Increases of that amount would eliminate the fund's shortfall and provide $95 billion for additional spending by 2031. However, those increases in fuel taxes would reduce taxable business and individual income, resulting in reductions in income and payroll tax receipts that would offset about one-quarter of the increase in fuel tax receipts.
- Policymakers could institute new taxes or fees, such as taxes on vehicle miles traveled (VMT) or a tax or fee on electric vehicles (EVs). One option would be to impose a VMT tax on commercial trucks. CBO has estimated, using data from 2017, that if such a per-mile tax was applied to all commercial trucks

1. That is the latest year for which detailed data are available about different types of spending for highways by the federal government.

2. See Congressional Budget Office, "Details About Baseline Projections for Selected Programs: Highway Trust Fund Accounts" (February 2021), www.cbo.gov/publication/51300. CBO's baseline budget projections incorporate the assumption that current laws generally do not change. Some of the taxes that are credited to the Highway Trust Fund are scheduled to expire on September 30, 2022, including the taxes on tires and all but 4.3 cents of the federal tax on motor fuels. However, under the rules governing baseline projections, these estimates reflect the assumption that all of the expiring taxes credited to the fund will continue to be collected after fiscal year 2022.

on all roads and all of the practical steps necessary to implement it were in place, each cent of tax would generate $2.6 billion per year. The federal government's costs of implementing such a tax and ensuring compliance could, however, be substantial. Another option, an annual tax on EVs, would not have a substantial effect on the trust fund's shortfall over the next 10 years because the number of such vehicles is small.

- Alternatively, policymakers could transfer money from the Treasury's general fund. Under that option, the federal government would, in effect, pay for a portion of highway spending in the same way that it funds other programs and activities.

Among the considerations for policymakers is that implementing new taxes would probably be more costly for the government than increasing current taxes. And some approaches would raise concerns about privacy, especially if applied to personal vehicles.

New approaches to taxing highway use, such as a VMT tax, could be assessed through demonstration projects. Those projects could take different approaches to key components of a tax, allowing lawmakers to assess which approaches were most effective. For example, the projects might tax different vehicles and roads, apply different taxes at different times of day, and assess or collect tax in different ways.

Federal Support for State and Local Borrowing for Highway Spending

In addition to providing grants from the Highway Trust Fund, the federal government supports investment in highways by state and local governments through several financing programs that subsidize the cost that those governments incur when borrowing to pay for that spending. From 2007 to 2016, the federal government subsidized an average of $20 billion (in 2019 dollars) per year of new financing for highways that state and local governments obtained through tax-preferred bonds, direct loan and loan guarantee programs, and funds used to capitalize state infrastructure banks (SIBs). Tax-exempt bonds accounted for about three-quarters of that borrowing.

Federal policymakers could offer new programs or expand current programs to subsidize state and local governments' borrowing to build more roads:

- Policymakers could authorize state and local governments to issue more tax-exempt bonds to fund projects undertaken primarily by private entities.
- They could introduce a federal tax credit bond program. Depending on its design, such a program could subsidize the same amount of borrowing by state and local governments that tax-exempt bonds do, but at a lower cost to the federal government, by effectively eliminating some of the benefits of tax-exempt bonds that go to higher-income bondholders.
- Or they could extend more federal loans to state and local governments to finance transportation projects.

In addition, policymakers could allow states to collect tolls on Interstate highways, which would constitute an additional revenue stream to borrow against.

Status of the Highway Trust Fund

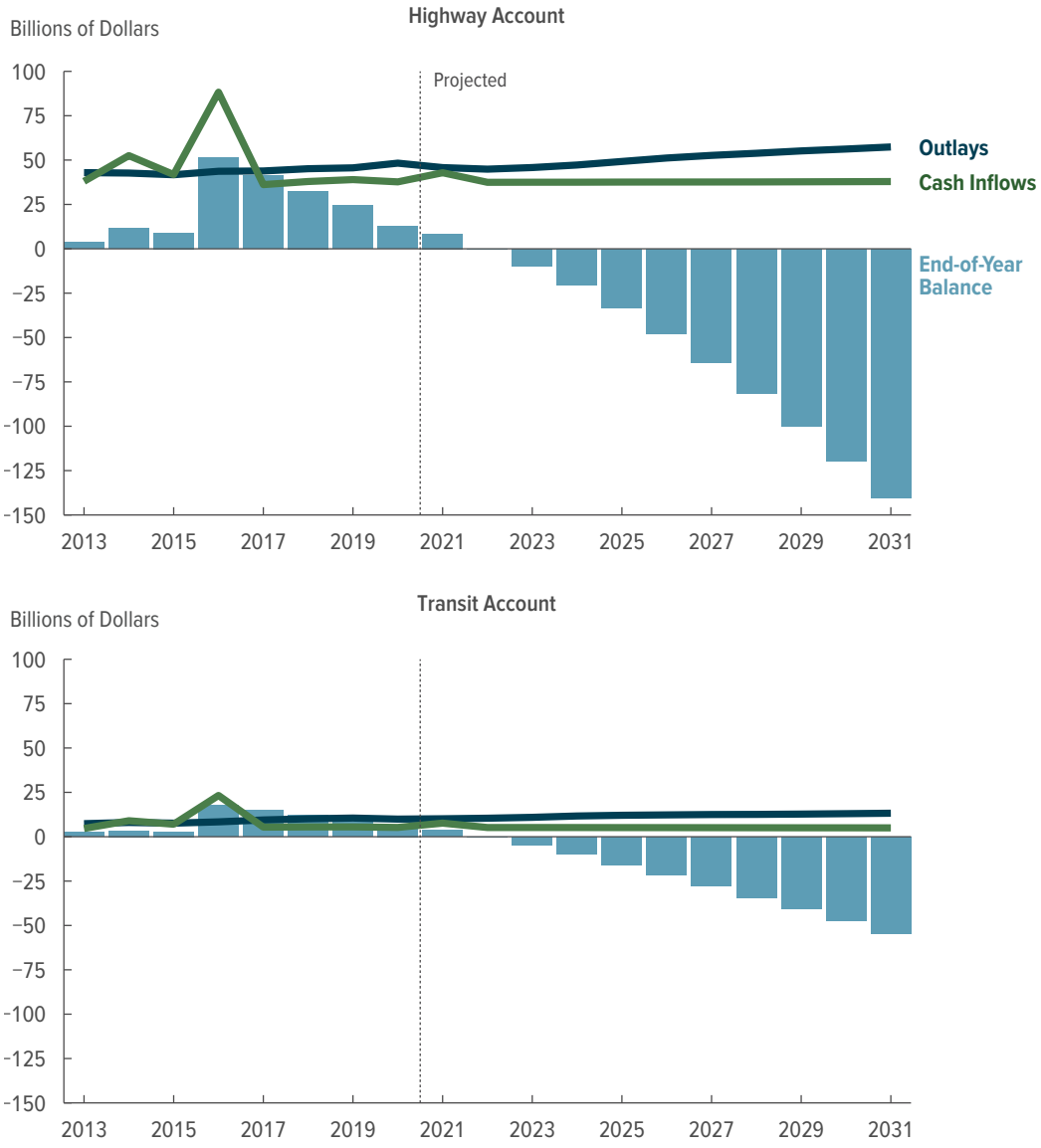
The federal government's surface transportation programs are financed mostly through the Highway Trust Fund, an accounting mechanism in the federal budget that comprises two separate accounts, one for highways and one for mass transit. The trust fund records specific cash inflows from revenues collected through excise taxes on the sale of motor fuels, trucks and trailers, and truck tires; taxes on the use of certain kinds of vehicles; and interest credited to the fund. The Highway Trust Fund also records cash outflows for spending on designated highway and mass transit programs, mostly in the form of grants to states and local governments.

In 2019, $45 billion in revenues and interest were credited to the Highway Trust Fund—$39 billion to the highway account and $6 billion to the transit account. Most of those revenues came from taxes on gasoline and other motor fuels.

According to CBO's February baseline projections, if the excise taxes are continued at their current rates and current funding for highway and transit programs increases annually at the rate of inflation, the revenues and accumulated balances of the Highway Trust Fund will be insufficient to cover spending from either the highway account or the transit account, starting in 2022 (see Figure 1). In those projections, revenues and interest credited to the Highway Trust Fund in 2022 total $43 billion, and outlays exceed revenues and interest earnings by about $13 billion.

Figure 1.

Annual Revenues, Outlays, and Balance of the Highway Trust Fund in CBO's February 2021 Baseline Projections



Outlays from the Highway Trust Fund have long exceeded the revenues credited to it from taxes, but intragovernmental transfers have ensured that the fund's two accounts maintained a positive balance. In CBO's projections, the balances of both the highway account and the transit account are exhausted in 2022.

Data source: Congressional Budget Office. See www.cbo.gov/publication/57206#data.

See Congressional Budget Office, "Details About Baseline Projections for Selected Programs: Highway Trust Fund Accounts" (February 2021), www.cbo.gov/publication/51300.

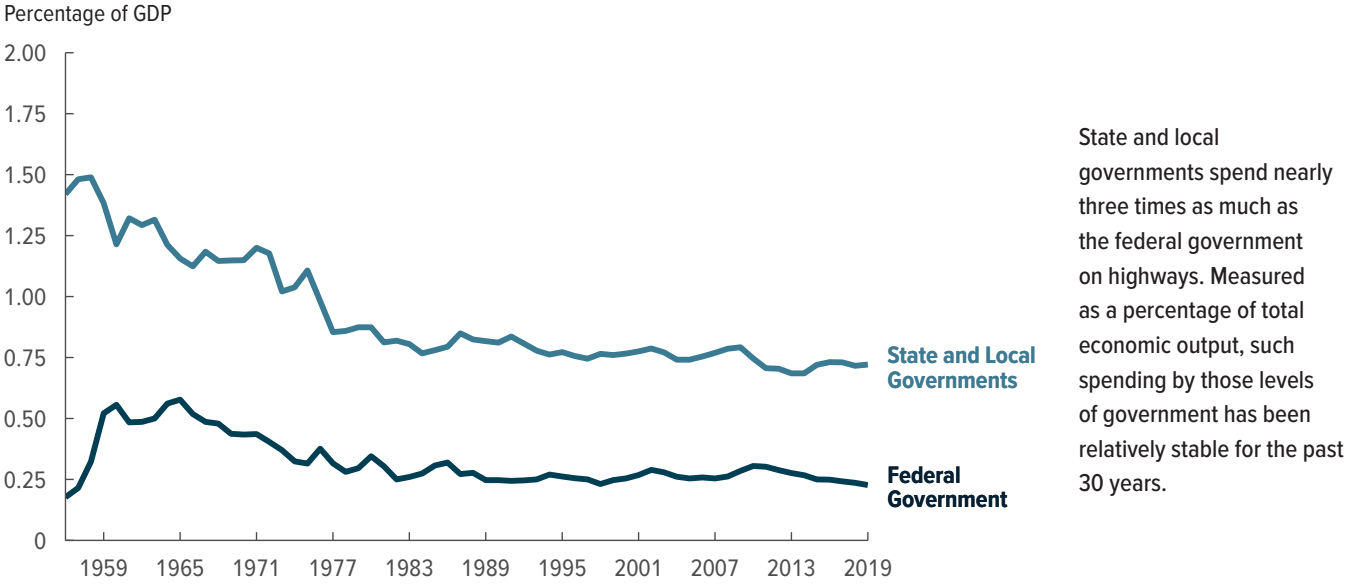
Cash inflows credited to the Highway Trust Fund include tax receipts, interest, and intragovernmental transfers.

Some of the taxes that are credited to the Highway Trust Fund are scheduled to expire on September 30, 2022, including the excise taxes on tires for heavy trucks and all but 4.3 cents of the per-gallon federal tax on motor fuels (currently 24.4 cents per gallon on diesel fuel and 18.4 cents per gallon on gasoline and other fuels). However, in accordance with the rules governing baseline projections specified in the Balanced Budget and Emergency Deficit Control Act of 1985, the estimates shown here reflect the assumption that all the expiring taxes credited to the fund will continue to be collected after fiscal year 2022.

Under current law, the Highway Trust Fund cannot incur negative balances. However, to accord with the rules governing such projections, CBO's baseline projections for surface transportation spending reflect the assumption that obligations incurred by programs funded by the Highway Trust Fund will be paid in full.

Figure 2.

Public Spending for Highways as a Share of GDP



Data source: Congressional Budget Office, using data from the Bureau of Economic Analysis, the Census Bureau, and the Office of Management and Budget. See www.cbo.gov/publication/57206#data.

GDP = gross domestic product.

To cover the shortfalls recorded in the fund's accounts, lawmakers have enacted legislation that since 2008 has transferred more than $150 billion—mostly from the Treasury's general fund—to the Highway Trust Fund. This year, lawmakers transferred $14 billion from the general fund—more than $10 billion to the highway account and $3 billion to the transit account. Such intragovernmental transfers have allowed the fund to maintain a positive balance, but they have not changed the amount of receipts collected by the government.

Spending for Highways

Almost all spending on highway infrastructure and transit projects in the United States is funded publicly. Although the private sector participates in building, operating, and maintaining projects, the federal government and state and local governments typically determine which projects to undertake and how much to spend on them.

In 2019, the most recent year for which data about highway spending by all levels of government are available, the federal government spent $47 billion on highways—an amount equal to 0.23 percent of gross domestic product (GDP). Such spending's share of total economic output has, in general, been stable over the past 30 years, though it is only half as large as it was in the 1960s, when construction of the Interstate highway system expanded (see Figure 2).

State and local governments spent more than three times as much as the federal government on highways in 2019—$150 billion, or 0.72 percent of GDP. Like federal spending on highways, state and local governments' spending as a share of GDP peaked in the 1950s and 1960s, when it accounted for about twice the share it has in recent years.

Two characteristics of the ways that the federal government typically spends on highways stand out. First, most federal highway funding takes the form of grants to state and local governments, which own most public roads in the United States and have broad discretion, with some constraints, to spend those federal funds. Second, federal spending on highways is almost entirely dedicated to capital projects that are intended to expand or rehabilitate eligible federal-aid highways (which consist of the Interstate Highway System and most other roads except for local roads).

In 2019, most of the $47 billion that the federal government spent on highways took the form of grants to state

and local governments, which own almost all highways. Federal agencies own less than 1 percent of public roads (typically, those in national parks and forests, on Indian reservations, or on other federally owned land).

In general, state and local governments decide which projects to undertake and, as construction proceeds, receive reimbursements from the federal government for projects that meet federal eligibility criteria for various programs. Most federal highway programs set a cap on the portion of a project's total costs that a federal grant may cover—typically 80 percent. State and local governments must cover the remaining costs with nonfederal funds, such as tax revenues or proceeds from issuing municipal bonds.

Federal highway programs are dedicated almost entirely to capital projects rather than to the operation and maintenance of roads. In 2019, $45 billion (or 96 percent) of federal spending for highways went to capital investment. That spending includes outlays for the purchase of structures (such as new highways and bridges) and equipment as well as expenditures that improve or rehabilitate structures and equipment already in place. Such an allocation between capital and operation and maintenance has been typical of federal spending for highways since the 1950s.

Because the federal government does not generally own highways, the responsibility to operate and maintain them falls to state and local governments. Spending patterns reflect that: Operation and maintenance accounted for 58 percent of state and local governments' spending on highways, net of federal grants, in 2019. Operation and maintenance costs include the costs of providing necessary operating services (such as snow removal) and maintaining and repairing existing capital (such as filling potholes) as well as the costs of funding other highway-related programs (such as education about highway safety).

Unless additional funds are provided to the Highway Trust Fund (either through an increase in revenues credited to the fund or through additional transfers from general revenues), the disparity between the receipts credited to the fund and outlays from the fund will require the Department of Transportation to delay its reimbursements to states for the costs of construction. CBO estimates that, starting in the first half of 2022, balances in the highway account of the trust fund will fall to zero, and the department will be unable to reimburse states in a timely fashion for the bills presented to the fund. The department may choose to more closely manage the timing of reimbursements to states before balances reach zero. For example, measures considered in the past have included partially reimbursing states to align total reimbursements with semimonthly receipts. The possibility of delays in payments from the federal government increases uncertainty among states when they plan transportation projects.

Revenues Credited to the Highway Trust Fund

The federal government collects revenues for the Highway Trust Fund primarily from taxes on motor fuels. Lawmakers could increase revenues by raising those taxes or by instituting new ones.

Sources of Revenues

Of the revenues credited to the Highway Trust Fund in 2019, $36 billion (or 82 percent) stemmed from excise taxes on gasoline, diesel fuel, and other motor fuels (see Figure 3). Receipts from the tax of 18.4 cents per gallon on gasoline and ethanol-blended fuel contributed the largest amount—$26 billion, or nearly 60 percent of the fund's revenues. Receipts from the tax of 24.4 cents per gallon on diesel and other fuels totaled $10 billion, or about one-quarter of the fund's revenues. The taxes on gasoline and diesel fuel have been in place since 1993, and the rates have not been adjusted since then. All but 4.3 cents of the per-gallon federal tax on motor fuels are scheduled to expire on September 30, 2022.[3]

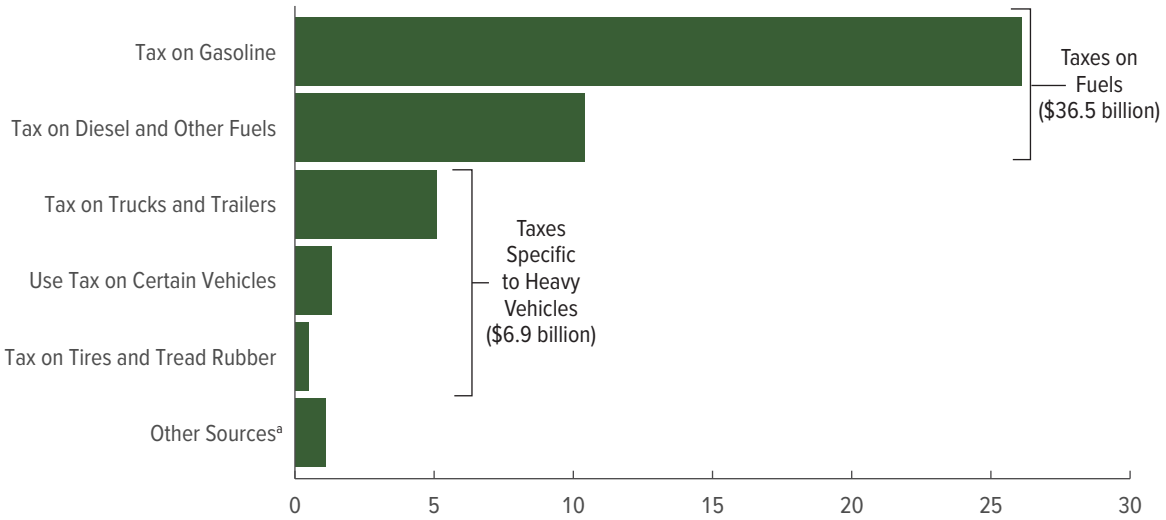
If those taxes were extended at their current rates, revenues from gasoline and diesel-fuel taxes would decline at a rate of less than 1 percent per year through 2031 following an economic recovery after the disruptions caused by the 2020–2021 coronavirus pandemic, CBO projects. Factors contributing to that decline include the rising fuel economy of vehicles and the slow rate of growth of the total number of miles traveled by vehicles.

Not all of the receipts from the excise taxes on motor fuels are dedicated to highway spending. A portion of those receipts—2.86 cents per gallon, which amounted

3. In accordance with the rules governing baseline projections specified in the Balanced Budget and Emergency Deficit Control Act of 1985, CBO's baseline revenue estimates reflect the assumption that all the expiring taxes credited to the fund will continue to be collected after fiscal year 2022.

Figure 3.

Sources of Revenues Credited to the Highway Trust Fund, 2019



Data source: Congressional Budget Office, using data from the Federal Highway Administration and the Internal Revenue Service. See www.cbo.gov/publication/57206#data.

a. Consists of $0.8 billion in interest income, $0.1 billion in civil penalties and fines, and $0.1 billion in other income, primarily intragovernmental transfers—that is, funds transferred from other budgetary accounts to the Highway Trust Fund.

to about $6 billion in 2019—goes to the transit account of the Highway Trust Fund. In addition, 0.1 cent per gallon goes to the Environmental Protection Agency's Leaking Underground Storage Tank Trust Fund, which supports programs run by state and local governments that prevent and clean up leaks from underground petroleum storage tanks.

Revenues from three other taxes, which are specific to heavy vehicles, are also credited to the Highway Trust Fund. The excise tax on trucks and trailers—equal to 12 percent of the sales price of tractors, trucks, and trailers that exceed certain weights—accounted for 12 percent of the trust fund's revenues in 2019. A tax on the use of heavy vehicles (a $100 to $550 annual tax on trucks over 55,000 pounds) and an excise tax on certain tires for heavy trucks contributed smaller amounts to the fund. (That excise tax on tires is scheduled to expire on September 30, 2022.)

In addition to those taxes, various fees and interest on invested balances, totaling about $1 billion per year, are credited to the trust fund.

Options

Lawmakers have several options for increasing resources in the Highway Trust Fund. One option is to increase existing taxes on gasoline and diesel fuel. Alternatively, lawmakers could impose new taxes on vehicle miles traveled, on freight movement, or on electric vehicles. Finally, the Congress could make additional transfers from the Treasury's general fund to the Highway Trust Fund.

Increase Existing Fuel Taxes. CBO analyzed two options that would increase federal excise tax rates on gasoline and diesel fuel by 15 cents or 35 cents per gallon and adjust them to grow with inflation thereafter.

According to estimates by the staff of the Joint Committee on Taxation (JCT), increasing the tax rates on fuel by 15 cents in October 2022 and indexing them to the consumer price index thereafter would increase revenues to the Highway Trust Fund by $26 billion in 2023. Over the 2023–2031 period, cumulative fuel-tax receipts credited to the Highway Trust Fund would exceed the amount in CBO's February baseline projections by $291 billion. An increase of that amount would eliminate the projected cumulative shortfall in the Highway Trust Fund and provide an additional

$95 billion in revenues to the fund by 2031. Interest payments on any accumulated balances would further increase the resources available in the trust fund.

Increasing the tax rates on fuel by 35 cents in October 2022 and indexing them to the consumer price index thereafter would increase revenues to the Highway Trust Fund by $60 billion in 2023. The cumulative fuel-tax receipts credited to the Highway Trust Fund over the 2023–2031 period would total an estimated $627 billion more than the amount in CBO's February baseline projections.

However, those increases in fuel taxes would reduce federal income and payroll tax receipts by decreasing taxable business and individual income. As a result, the net budgetary effects through 2031 would be smaller: deficit reductions of $224 billion and $485 billion, respectively.

Institute New Taxes or Fees. Another option is to impose new taxes or fees that better align what people pay for using roads with the cost of building those roads. The most recent national study of how different types of vehicles contribute to the highway costs that federal programs pay for was published by the Federal Highway Administration (FHWA) in 2000. Passenger vehicles constituted the largest group of vehicles in use and were estimated to account for about 60 percent of federal highway costs in 2000, even though their estimated cost per mile of highway use was the lowest at 0.8 cents.

Costs attributed to trucks accounted for the remaining 40 percent of federal highway costs, but trucks provided about one-third of the Highway Trust Fund's revenues. For each mile they traveled in 2000, combination trucks (that is, tractors pulling one or more trailers) were estimated to impose a cost of 8.4 cents. For all trucks, the estimated cost per mile traveled ranged from 2.2 cents for the trucks carrying the lightest loads to 20.3 cents for those with the heaviest loads.[4]

More recently, some states have calculated cost shares for different types of vehicles that are similar to the estimates in the FHWA study. In 2019, Oregon estimated that light vehicles (mainly cars and other passenger vehicles) would account for about two-thirds of state highway costs in 2020 and heavy vehicles for about one-third.[5] As the Oregon report noted, however, highway spending by state governments includes maintenance costs, such as snow removal and pothole patching, whereas federal spending does not.

In recent years, revenues credited to the Highway Trust Fund have declined. Because of improvements in fuel efficiency, drivers use less fuel and therefore pay less in fuel taxes to travel the same distance. Policymakers would have to make a number of decisions about how to design and implement new taxes in order to reach intended revenue targets and address highway users' equity and privacy concerns in the administration of those taxes.

Impose a VMT Tax. Instituting a tax on vehicle miles traveled would charge all vehicles for their highway use regardless of the vehicle's fuel efficiency or energy source. Such a tax could help allocate resources efficiently by making users pay for the costs they impose. However, it would present several challenges. A VMT tax would be more costly to administer than the current excise taxes on fuels. In addition, such a tax would raise privacy concerns if calculating and collecting the tax required the government to track people's movement and use of vehicles. Apart from those challenges, a VMT tax would have implications for equity that are similar to those of fuel taxes—namely, the burden, relative to income, would be greatest for lower-income households because the money paid in taxes for highway use would constitute a larger share of their total income than of higher-income households' total income.

Limiting a VMT tax to only commercial trucks would raise fewer of those concerns. Because many trucking companies already track their vehicles, implementing a VMT tax on only commercial trucks would require overcoming fewer administrative and privacy hurdles than implementing such a tax on all vehicles would.

To establish a truck VMT tax, lawmakers would have to consider three sets of questions:

- Which types of trucks would be subject to the tax, and travel on which roads would be subject to the tax?

4. See Federal Highway Administration, *Addendum to the 1997 Federal Highway Cost Allocation Study Final Report* (May 2000), Tables 4 and 6, www.fhwa.dot.gov/policy/hcas/addendum.cfm.

5. See Oregon Department of Administrative Services, Office of Economic Analysis, *Highway Cost Allocation Study, 2019–2021 Biennium* (prepared by ECONorthwest, 2019), www.oregon.gov/das/OEA/Pages/hcas.aspx.

Table 1.

Estimated Annual Revenues From a VMT Tax of 5 Cents per Mile If One Had Been in Place in 2017

Billions of 2017 Dollars

	All Trucks	Combination Trucks[a]
All Roads	12.8	8.0
Interstates and Arterial Roads	10.1	7.0
Interstates	5.3	4.2

Data source: Congressional Budget Office. See www.cbo.gov/publication/57206#data.

VMT = vehicle miles traveled.

a. Tractors pulling one or more trailers.

- What would the rates be for different trucks and for different roads?
- How would the tax be assessed, and how would payments be made?

Establishing and operating a program to collect a VMT tax on commercial trucks would entail not only costs to set up the program, including capital costs for new equipment, but also ongoing administrative and enforcement costs that are likely to be higher than the costs to administer fuel taxes. Whereas gasoline and diesel-fuel taxes can be administered at low cost because they are collected from a small number of firms (the taxes are assessed at roughly 1,300 fuel distribution terminals nationwide, and the number of distinct firms is smaller), a VMT tax would be collected from truck owners and thus would have a larger share of its gross revenues offset by implementation costs.[6]

In a 2019 analysis, CBO considered the effects on revenues of several possible formulations of a VMT tax on commercial vehicles.[7] One example suggested that if a 5 cent tax per mile traveled by trucks had been in place in 2017, it would have generated between $4 billion and $13 billion in revenues that year, depending on the types of trucks and roads that the tax applied to. If a per-mile tax was applied to all commercial trucks on all roads, each cent of tax would generate $2.6 billion. Taxing all trucks, including box and large pickup trucks, would raise more revenues than taxing only combination trucks. Similarly, revenues would be greater if the tax applied to travel on all public roads than they would be if it applied only to travel on Interstates or on Interstates and arterial roads (see Table 1).

Those estimated revenues do not include any offset to account for reduced revenues from income and payroll taxes. Such an offset, which CBO and JCT employ when estimating the effects of legislative proposals that would raise excise tax revenues, would vary over time, depending on tax rates and economic projections. In calendar year 2021, the offset is 21 percent.[8]

More recently, JCT has estimated the change in federal revenues that would result from imposing a new excise tax of 30 cents per mile on freight transport by heavy trucks, starting January 1, 2022. Such a tax, applied only to certain heavy trucks while carrying freight, would increase net revenues to the federal government by $33 billion in 2023, the first full year it would be in place. From 2022 through 2031, federal revenues would increase by $337 billion.

Those estimates, which are net of reductions in income and payroll tax receipts that would partially offset the increase in excise taxes, reflect an assumption that an effective administrative framework is in place when the tax goes into effect. That would be challenging, however. Such a framework would require that an electronic device that was either acquired by taxpayers or built into vehicles by manufacturers be used to track miles. Furthermore, the information logged by the device would need to be securely and accurately transmitted to the Internal Revenue Service (IRS), and an independent verification system would be required for successful collection of the tax. If the IRS did not have an effective and automated way to match individual trucks and railcars to particular taxpayers and verify that the miles reported were accurate, some taxpayers might underreport their mileage or fail to report any mileage at all. If effective electronic data matching was not implemented, discrepancies would only be caught by auditing, which

6. Internal Revenue Service, "Terminal Control Number (TCN)/Terminal Locations Directory" (accessed May 12, 2021), https://go.usa.gov/xV5PB.

7. See Congressional Budget Office, *Issues and Options for a Tax on Vehicle Miles Traveled by Commercial Trucks* (October 2019), www.cbo.gov/publication/55688.

8. Joint Committee on Taxation, *Updated Income and Payroll Tax Offsets to Changes in Excise Tax Revenues for 2021–2031*, JCX-11-21 (February 23, 2021), www.jct.gov/publications/2021/jcx-11-21/.

requires significant resources. At present, those systems do not exist, and their development would take both time and government resources.

Furthermore, the number of taxpayers and vehicles subject to the tax would be substantial. Many of those taxpayers would have no prior excise tax filing requirement and no experience with the excise tax system. As a result, the IRS would need to undertake significant outreach to educate them about the new tax and the recordkeeping it would require. The amount of revenues collected from a tax on vehicle miles depends greatly on the extent of compliance, and JCT's estimate should be viewed as entirely conceptual, because it does not take into account those factors.

Institute a Tax or Fee on Electric Vehicles. Under current law, drivers of EVs pay little or no federal or state fuel taxes. (EVs include plug-in hybrid vehicles, which combine a gasoline engine with a battery-powered electric motor that can be recharged by plugging it into an external electricity source, as well as all-electric vehicles, which run solely on battery power.) However, many states have begun charging owners of EVs an annual fee, typically from $50 to $200.

In 2019, total federal gasoline taxes paid for each light-duty vehicle averaged about $100. If the Congress imposed an annual tax of $100, starting in October 2021, on all light-duty electric vehicles, the revenues generated by that tax would average about $0.2 billion per year from fiscal years 2022 through 2026. That amount would equal 1.6 percent of the Highway Trust Fund's cumulative shortfall over that five-year period, according to CBO's baseline budget projections as of February 2021.[9] Such a tax would be similar to the existing annual use tax on heavy vehicles in that it would apply to all vehicles with a certain characteristic—in this case, that they run on electricity.[10] If the tax was not applied to plug-in hybrids, the amount of money collected would be smaller, and operators of those vehicles would not have to pay both that tax and gasoline taxes.

Those estimates rely on the Energy Information Administration's projections of the number of light-duty electric vehicles and on the FHWA's estimates of fuel consumption by light-duty vehicles.[11] CBO's estimate of revenues from a tax on electric vehicles does not account for two factors, however. One is that imposing such a tax would reduce taxable business and individual income, resulting in decreases in income and payroll tax receipts that would not affect the Highway Trust Fund but would, in the overall budget, partially offset the amount of money collected from the new tax. In addition, the estimate does not account for the cost of the administrative and auditing systems that would have to be in place once the tax went into effect. The development of such a framework would take time and funding. Outreach to owners of electric vehicles would be necessary as well.

Establish a Highway Freight Tax. An alternative option for raising highway revenues would be to institute a new tax on freight traveling by highway that was similar to the taxes currently collected on freight transported by plane or by ship. Taxes on freight transportation could raise a substantial amount of money relative to the shortfall in the Highway Trust Fund, but the amount of revenues generated would depend on what was taxed and what rate was set. Implementing a highway freight tax would require policymakers to make decisions about which freight shipments would be taxed and to design and implement a system to collect those taxes. Those choices would determine the capital costs of setting up the system as well as the ongoing costs to administer it and enforce collections.

The taxes on freight transported by plane and by ship provide two different models of how a tax on freight transported by trucks might work. The tax on domestic cargo transported by air is one of several sources of revenues credited to the Airport and Airway Trust Fund—the primary funding source for the Federal Aviation Administration and for federal grants to airports. If policymakers used that tax as a model for designing a freight tax on cargo transported by truck, they would need to decide which shipments to include and which shipping fees to tax. A trucking industry association reported that total revenues for the industry were about $800 billion

9. Congressional Budget Office, "Details About Baseline Projections for Selected Programs: Highway Trust Fund Accounts" (February 2021), www.cbo.gov/publication/51300.

10. See Joint Committee on Taxation, *Overview of Selected Provisions and Options Relating to Funding and Financing Infrastructure Investments*, JCX-2-20 (January 27, 2020), www.jct.gov/publications/2020/jcx-2-20.

11. U.S. Energy Information Administration, *Annual Energy Outlook 2021* (February 2021), Table 39, www.eia.gov/outlooks/aeo/; and Federal Highway Administration, Office of Highway Policy Information, "Highway Statistics 2019" (November 2020), Table VM-1, https://go.usa.gov/xHdwq.

in calendar year 2019, though that includes only primary shipments (that is, the first movement of freight from an origin to a destination), not secondary shipments by truck.[12]

Cargo transported by ship is taxed differently. The freight tax on ship cargo, which through the Harbor Maintenance Trust Fund provides half of the funds for federal spending on harbor maintenance, is assessed on the value of domestic and imported cargo moving through ports on the coasts and Great Lakes. (Exports are not subject to the tax because the Constitution forbids the taxation of exports.) Policymakers seeking to implement a similar tax on freight shipped by trucks over the nation's highways would face decisions about which cargo would be subject to such a tax and about how to value those shipments. In 2017, the value of shipments sent by truck in the United States—including intermediate and finished goods and imported and exported goods—totaled nearly $10.5 trillion.[13]

Transfer General Revenues. Since 2008, lawmakers have transferred more than $150 billion from general revenues to the Highway Trust Fund. Most recently, in October 2020, the Continuing Appropriations Act, 2021 and Other Extensions Act (Public Law 116-159) authorized a transfer of more than $10 billion to the highway account and $3 billion to the transit account. Further transfers could supplement the revenues collected from the excise taxes dedicated to highway and transit programs. In CBO's 10-year baseline projections, which reflect the assumptions that excise taxes are continued at their current rates and that current funding for highway and transit programs increases annually at the rate of inflation, outlays from the highway account exceed accumulated balances and annual cash inflows in 2022, as do outlays from the transit account. In the highway account, the cumulative shortfall over the 2022–2031 period is projected to be $141 billion; the cumulative shortfall in the transit account over the 2022–2031 period is projected to be $55 billion.

Using general revenues to fund federal highway spending on an ongoing basis would have the effect of decoupling spending from the user charges that pay for that spending, but that approach has two advantages. First, if taxes were increased to pay for highway programs, the incremental costs of collection would be negligible because income taxes and other broad-based taxes are already in place. In addition, compared with several of the other options for increasing the amounts credited to the Highway Trust Fund, funding highways through broad-based taxes would have the advantage of not imposing a larger burden, relative to income, on lower-income households.

Funding highway programs with general revenues instead of taxes on highway users would also have some disadvantages. If spending on other programs was reduced to pay for highway programs, the benefits of highway investments would be at least partially offset by a reduction in the benefits that would have been provided by that other spending. If, instead, lawmakers chose to pay for highway programs by taking on additional debt, such a policy would tend to slow the economy in the long term by reducing the amount of money available for private investment.[14] Finally, if highway spending was less connected to highway-use taxes, users would have a reduced incentive to drive less or to conserve fuel, and any gains in fairness and efficiency from a system in which users pay for the benefits they receive would be reduced or eliminated.

Federal Support for State and Local Borrowing for Highway Spending

In addition to providing grants to state and local governments to pay for highway capital projects, the federal government also supports state and local investment in highways through a variety of mechanisms that reduce the cost of their borrowing. In some cases, that federal support comes through forgone federal tax revenues. Other mechanisms appear as spending in the federal budget. The federal cost of each dollar of financing provided to state and local governments varies for the different mechanisms.

To finance investments in highways, state and local governments issue bonds to obtain funds that they repay over time; to a lesser extent, they also borrow from the federal government. Financing allows state and local governments to pay for highways and other infrastructure

12. American Trucking Association, "Economics and Industry Data" (accessed May 10, 2021), www.trucking.org/economics-and-industry-data.

13. Census Bureau, "CFS Preliminary Report: Shipment Characteristics by Mode of Transportation: 2017" (accessed May 10, 2021), https://go.usa.gov/xvuZG.

14. See Congressional Budget Office, *The Macroeconomic and Budgetary Effects of Federal Investment* (June 2016), www.cbo.gov/publication/51628.

over a period that more closely matches the useful life of that infrastructure. Financing can be particularly attractive when a government does not have the resources on hand that are required to fund a desired investment. However, financing is not a source of revenues; it is a means of making future state and local revenues available to pay for projects sooner. Future revenues committed to paying back funds that are borrowed today will not be available to pay for projects in the future.

Of the available federally supported financing mechanisms, tax-preferred bonds are the one that states and localities have used most frequently to finance highway infrastructure. Most of those tax-preferred bonds are tax-exempt bonds, but tax credit bonds, which are no longer authorized to be sold, have been used in the past and still affect the federal budget. Another financing mechanism, direct federal credit programs, offers loans or loan guarantees to state and local governments for highway projects. Finally, states can establish infrastructure banks to finance highway projects, but the use of that financing mechanism for such purposes is not widespread.

From 2007 to 2016, CBO estimates, an average of $20 billion (in 2019 dollars) each year, or about one-fifth of the public sector's total capital spending on highways, involved federally supported financing.[15] That federally supported financing accounted for 37 percent of the $54 billion (in 2019 dollars) that state and local governments spent, on average, each year for highway capital projects from funds other than federal grants over that period.

Tax-Preferred Bonds

State and local governments frequently issue bonds, which they sell to investors, to raise money to pay for capital investments in highways and other infrastructure. Tax-exempt bonds are the most frequently used federally supported financing mechanism. The interest paid on such bonds is generally exempt from federal income tax, so issuers can pay a lower interest rate than private bonds would pay and still attract investors. But to attract enough investors, issuers must pay a higher interest rate than they would need to pay to attract some investors. Some of the federal subsidy goes to those investors who would have purchased the bonds at a lower interest rate and thus does not provide a benefit to the issuer.

Although the federal government does not currently authorize state and local governments to issue tax credit bonds, when such bonds were issued in the past, the federal subsidy was paid either as an annual credit against bondholders' federal income tax liability (instead of, or sometimes in addition to, the interest that typically would be paid) or as a direct payment to the bonds' issuer that was equal to a portion of the interest paid to the bondholder. All of the benefit of the federal subsidy for tax credit bonds could, therefore, go to the state or local government issuing the bond.

Federal subsidies for tax-preferred bonds are paid through reductions in taxes or spending from the general fund, so neither tax-exempt bonds nor tax credit bonds affect outlays from the Highway Trust Fund.

Tax-Exempt Bonds. From 2007 to 2016, state and local governments issued an average of $15 billion (in 2019 dollars) of new tax-exempt bonds for highway projects per year (see Table 2). Such bonds accounted for about three-quarters of the new federally supported highway financing in those years.[16] State and local governments rely on several different sources of funds to repay that borrowing, including general revenues and fuel and vehicle-related taxes. In addition, some highway projects generate revenues to repay bondholders from tolls. State and local governments may also issue grant anticipation revenue vehicle (GARVEE) bonds, which are backed by expected future federal grants. All of those financing options provide state and local governments substantial latitude in choosing which public-purpose projects to finance with bond proceeds.

Another type of tax-exempt bond, qualified private activity bonds (QPABs), may be used to finance projects that are undertaken mainly by private entities. The state or local government issues such bonds on the private entity's behalf after receiving approval from the federal Department of Transportation. The total amount authorized to be issued as highway QPABs nationwide is currently capped at $15 billion.

For every dollar of tax-exempt bonds with a 20-year repayment period issued in 2021, federal tax revenues

15. See Congressional Budget Office, *Federal Support for Financing State and Local Transportation and Water Infrastructure* (October 2018), www.cbo.gov/publication/54549.

16. That amount does not include the issuance of "refunding" bonds, which are used to pay off bonds that have already been issued.

Table 2.

Selected Federally Supported Mechanisms That State and Local Governments Use to Finance Highway Infrastructure

Mechanism	Average Annual Amount of New Financing, 2007 to 2016 (Billions of 2019 dollars)	Estimated Federal Cost of New Financing Provided in Fiscal Year 2021 (Cents per dollar financed)[a]	Type of Federal Support	Examples
Tax-Exempt Bonds	15	23	Forgone tax revenues	Traditional tax-exempt government bonds; grant anticipation bonds; qualified private activity bonds
Tax Credit Bonds	4[b]	28 percent less than tax-exempt bonds providing the same subsidy to issuers[c]	For traditional tax credit bonds, forgone tax revenues; for direct-pay bonds, such as Build America Bonds, mandatory spending	Build America Bonds
Direct Federal Credit Programs	2	1 (FCRA accounting); 24 (Fair-value accounting)[d]	Discretionary appropriations[e]	TIFIA program

Data source: Congressional Budget Office. See www.cbo.gov/publication/57206#data.

FCRA = Federal Credit Reform Act of 1990; TIFIA = Transportation Infrastructure Finance and Innovation Act.

a. The estimate for tax-exempt bonds is based on 20-year financing; the estimate for direct federal credit programs is for loans from the TIFIA program, which commonly have terms of 30 to 35 years. All estimates are discounted present values—that is, they express related current and future cash flows as an equivalent lump sum paid when the financing is provided.

b. The average reflects the Build America Bonds that were issued for highway projects in 2009 and 2010, the only two years in which those bonds were authorized to be sold.

c. No current program allows such bonds to be issued for transportation infrastructure.

d. These estimates are for direct loans from the TIFIA program. The FCRA estimate is from the Office of Management and Budget. CBO's fair-value estimate reflects the market value of the financial risk associated with the program.

e. The largest direct federal credit program for transportation, the TIFIA program, is formally funded by contract authority, which is a form of mandatory budget authority. However, use of that contract authority is controlled by limitations on obligations contained in annual appropriation acts.

would be reduced by 23 cents, CBO estimates, because the interest paid on those bonds would be exempt from federal taxes. If the average annual amount of new bond financing from 2021 to 2025 was the same as it was from 2007 to 2016, the federal revenues forgone for those bonds would be about $3 billion per year.

Much of that federal cost represents benefits to the state and local governments that issue the bonds (by allowing them to offer a lower interest rate on their bonds), but some of that cost goes to benefits that accrue only to certain bondholders. Bondholders with higher marginal tax rates save more than those with lower marginal tax rates. To appeal to some investors whose tax rates are lower or who find the bonds less attractive for other reasons, bond issuers must offer interest rates that are higher than those required to attract investors with higher tax rates. The benefits received by those bondholders who save more in taxes than is necessary to compensate them for the lower interest rates of the tax-exempt bonds represent costs to the federal government that do not benefit the bond issuers.

Tax Credit Bonds. The federal government has also supported the issuance of tax credit bonds by state and local governments at certain times. Most recently, state and local governments were authorized to issue Build America Bonds in 2009 and 2010. Those direct-pay tax credit bonds required the federal government to make cash payments to the bonds' issuer equal to a portion of the interest that the issuer paid to bondholders. That allowed the issuer to offer a higher rate of return on the bonds, which was necessary to offset the tax liability that bondholders would incur on the interest they received. For every $100 in interest paid to holders of Build America Bonds, an issuer would receive $35 from the

federal government, resulting in a credit rate of 35 percent. For tax credit bonds that were authorized in earlier periods, the form of federal support differed: An annual federal income tax credit was provided to bondholders instead of, or in addition to, the interest that would typically be paid on the bonds.

The cost to the federal government of tax credit bonds depends on the amount of subsidy that is authorized. Tax credit bonds could, however, provide the same amount of support to their issuers as tax-exempt bonds at a federal cost that is 28 percent lower than that of tax-exempt bonds, CBO estimates. That difference exists because the entire federal cost of a tax credit bond benefits the issuer, whereas part of the cost of tax-exempt bonds provides a subsidy to bondholders with high marginal tax rates.

Direct Federal Credit Programs

The Transportation Infrastructure Finance and Innovation Act (TIFIA) program provides credit assistance to state and local governments primarily for highway and mass transit infrastructure, although it can be used for a broad range of surface transportation projects. Spending for the TIFIA program comes out of the Highway Trust Fund.

The Department of Transportation must approve a state or local government's application for TIFIA assistance. To qualify, a project generally must cost at least $50 million, though the minimum cost is lower for rural or local projects ($10 million) and for intelligent transportation system projects ($15 million). Projects receiving TIFIA assistance are expected to attract other public and private investment in addition to the federal support. Examples of TIFIA-funded projects include the Central 70 Project in Colorado, which is redesigning, reconstructing, and adding capacity to a section of Interstate 70 in Denver; the Monroe Expressway toll road in North Carolina; and the Portsmouth Bypass in Ohio.

The TIFIA program lends at Treasury bond rates for up to 35 years. In addition, repayment is deferred until 5 years after a project is substantially complete, and TIFIA loans have a subordinated status, meaning that a project's other lenders and equity investors retain rights to be repaid before the federal government (unless the borrower defaults and enters bankruptcy, in which case the TIFIA loan takes a priority equal to that of the project's senior debt). In practice, TIFIA loan amounts have typically been limited to about 33 percent of a project's eligible costs, though borrowers may apply for loans of up to 49 percent of eligible costs.

The budgetary cost of TIFIA loans depends on the riskiness of the loans made and thus varies from year to year. In 2019, TIFIA provided about $1.5 billion in loans; to do so, it used $98 million of its budget authority at an estimated subsidy rate of 6.3 percent, or a federal cost of 6.3 cents per dollar financed.[17] To estimate the subsidy rate for loans made in a given year, the Department of Transportation uses a model that it recently updated in consultation with the Treasury Department and the Office of Management and Budget (OMB). Using that model, OMB estimates that the subsidy rate of loans made in 2021 will be 1 percent.[18]

Those official budgetary estimates do not reflect the cost of market risk—the risk that arises because borrowers are more likely to default on their debt obligations when the economy is performing poorly.[19] Taking that risk into account, CBO estimates that the loans made

17. Budget authority is the authority provided by law to incur financial obligations that will result in immediate or future outlays of federal government funds. The subsidy rate is an estimate of how much a type of credit assistance from a given program costs the federal government per dollar disbursed; it is calculated according to the method specified in the Federal Credit Reform Act of 1990. For budgetary purposes, the subsidy rate is calculated by the Office of Management and Budget and is applied to the amounts appropriated to a federal credit program to determine the volume of loans the program can provide. See Office of Management and Budget, *Budget of the U.S. Government, Fiscal Year 2020: Analytical Perspectives* (March 2019), Table 22-2, www.govinfo.gov/app/details/BUDGET-2020-PER/; and Federal Highway Administration, Center for Innovative Finance Support, "Transportation Infrastructure Finance and Innovation Act (TIFIA)" (accessed May 10, 2021), https://go.usa.gov/xvJxs.

18. Office of Management and Budget, *Budget of the U.S. Government, Fiscal Year 2021: Credit Supplement* (February 2020), Table 1, www.govinfo.gov/app/details/BUDGET-2021-FCS.

19. Market risk is the component of financial risk that remains even after investors have diversified their portfolios as much as possible; it arises from shifts in macroeconomic conditions, such as productivity and employment, and from changes in expectations about future macroeconomic conditions. An approach that takes that risk into account is called a fair-value approach. See Congressional Budget Office, *Measuring the Cost of Government Activities That Involve Financial Risk* (March 2021), www.cbo.gov/publication/56778, and *Estimates of the Cost of Federal Credit Programs in 2021* (April 2020), www.cbo.gov/publication/56285.

under the program in 2021 will have a subsidy rate of 24 percent. Those rates may increase in subsequent years when Treasury interest rates are projected to rise as the economy recovers from the disruptions caused by the pandemic.

State Infrastructure Banks

State infrastructure banks are financial institutions that state governments create and run to lend money to fund infrastructure projects. SIBs established for highway and mass transit projects do not receive designated federal grants each year, but state governments may decide to use some of the federal formula grants that they receive for highways and mass transit to capitalize them. Some banks choose to increase their current lending capacity by issuing tax-exempt bonds, thus receiving a second form of federal support. Most of the financial support that SIBs have provided has gone to highway projects.

Of the 33 states that have established SIBs, only about a dozen have actively used them. From 2007 to 2016, average annual financing for highway infrastructure provided by SIBs amounted to $200 million (in 2019 dollars), or about 1 percent of the total amount of new financing by state and local governments that the federal government subsidized each year. The data necessary to estimate the federal costs of financing SIBs are unavailable.[20]

Options

Changes to federal programs that support the financing of state and local highway capital projects could expand the amount of investment in federal-aid highways by making state and local investments less costly to finance. Policymakers could expand the use of tax-exempt bonds. Or they could establish a new program to provide state and local governments with the opportunity to issue new tax credit bonds. In addition, they could increase the use of TIFIA loans. Another option federal lawmakers could pursue is to allow more tolling on Interstate highways, thereby providing states with a revenue stream they could borrow against. If any of those options were implemented and state and local governments expanded their use of the financing mechanisms, the federal costs would, in most cases, take the form of forgone federal revenues. TIFIA outlays, however, are paid out of the Highway Trust Fund, so expansions of that program would affect the shortfall in the trust fund.

Raise the Cap on Highway QPABs. Of the $15 billion in qualified private activity bonds allowed to be issued for highway and other surface transportation projects, about $13.5 billion in such bonds had been issued as of April 2021, and another $1.2 billion in such bonds had been approved by the Department of Transportation but had not yet been issued. (In the past, some projects that received a QPAB allocation switched to other forms of financing, so some of those bonds that have had funds allocated for them but that have not been issued may never be issued.)[21]

Giving private entities access to the tax-exempt bond market through QPABs lowers the cost of capital for those borrowers and can promote infrastructure projects when state and local governments have self-imposed limits on borrowing. Development of large, complex infrastructure projects often takes years, so the limit on the use of QPABs for funding highway and surface transportation projects reduces the certainty that the bonds would still be available if developers chose to apply for them in the future.

If the availability of QPABs increased and their use became more widespread, federal costs would go up. Like tax-exempt bonds, QPABs result in forgone federal revenues. Private funding might be available to some developers without QPABs (albeit at a higher cost); if so, the projects that would be unable to receive financing without them would be those of marginal value.

Institute a Tax Credit Bond Program. Instituting a new tax credit bond program that was similar to the Build America Bonds program that was active in 2009 and 2010 would provide state and local governments with an additional option for issuing debt to finance capital spending. Tax credit bonds could offer state and local governments the same federal subsidy as tax-exempt bonds at a lower cost to the federal government.

20. In 2018, CBO estimated that the federal cost of direct loans and leveraged loans (those made using the proceeds of bond issues) made in 2023 by the Clean Water State Revolving Funds program and the Drinking Water State Revolving Funds program would be 23 cents and 43 cents per dollar financed, respectively. See Congressional Budget Office, *Federal Support for Financing State and Local Transportation and Water Infrastructure* (October 2018), www.cbo.gov/publication/54549. If those costs were estimated today, they would reflect very different interest rates for Treasury bonds and tax-exempt bonds from those that were anticipated in 2018. How well such estimates would correspond to the costs of loans from transportation SIBs is unclear.

21. See Department of Transportation, "Private Activity Bonds" (April 19, 2021), https://go.usa.gov/xv6NQ.

Whereas CBO estimates that 20-year tax-exempt bonds issued by state and local governments in 2023 would cost the federal government 26 cents for each dollar financed, tax credit bonds issued that same year (with the same maturity and the same federal subsidy of a 22 percent reduction in interest costs) would cost the federal government 19 cents per dollar financed. In other words, for the same federal cost as traditional tax-exempt bonds, the federal government could, by authorizing tax credit bonds, provide state and local governments with a subsidy that was almost 40 percent larger, thereby reducing their financing costs more than tax-exempt bonds would. Ultimately, the federal cost of such a program would depend on the amount of subsidy that lawmakers authorized and the amount of bonds that state and local governments issued.

Tax credit bonds might offer one further advantage over tax-exempt bonds—they might appeal to a broader set of investors, particularly those with little or no tax liability, such as pension funds and other tax-exempt organizations.

Expand the TIFIA Program. From 2015 through 2019, 19 highway and bridge projects received financing through the Transportation Infrastructure Finance and Innovation Act program. The average total cost per project was $1 billion, and each received, on average, $314 million in TIFIA loans. The smallest project to receive assistance had a total cost of $127 million; the TIFIA loan for that project totaled $47 million.

The financing assistance provided through TIFIA is paid for with outlays from the Highway Trust Fund, so expanding the program would increase the trust fund's shortfall if no changes were made to the revenues credited to the fund.

Lawmakers have at least two options for expanding TIFIA financing:

- **Increase the maximum federal share of eligible projects' costs.** By law, the maximum share of costs that can be financed through the program is 49 percent, but in practice, the Department of Transportation has not provided more than about one-third of a project's cost in TIFIA assistance. At the end of 2019, TIFIA assistance accounted for an average of 28 percent of the total cost of each of the active projects funded by the program.
- **Extend TIFIA assistance to a wider variety of projects.** To be eligible for TIFIA assistance, a project's costs must generally exceed $50 million, though lower minimums are set for rural or locally sponsored projects. In practice, however, no projects with estimated costs of less than $50 million have received TIFIA assistance.

Allow States to Collect Tolls on Interstate Highways. With a few exceptions, federal law does not permit states to collect tolls on existing Interstate highways. Allowing them to do so would offer a new source of revenues that state and local governments could use to back bonds for capital projects or to attract private developers that would provide financing for a public-private partnership. If any of the financing mechanisms supported by the federal government were used for such projects, federal costs would increase, either through lending programs, such as TIFIA, or through the federal subsidies provided for financing mechanisms, such as tax-exempt bonds.

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