

NCHRP 19-16

Federal Funding Uncertainty in State, Local, and Regional Departments of Transportation

White Paper: The Evolution of Uncertainty Surrounding Federal Transportation Funding Over the Past 25 Years

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Glossary of Terms

Allocation – an administrative distribution of funds for programs that do not have statutory distribution formulas.

Apportionment – the distribution of funds as prescribed by a statutory formula.

Appropriated – given clearance to spend money.

Appropriated budget authority – a form of budget authority that requires both an authorization act and an appropriations act before any funds can be obligated.

Appropriations act – action of a legislative body that makes funds available for expenditure with specific limitations as to amount, purpose, and duration. In most cases, it permits money previously authorized to be obligated and payments made. The appropriations act specifies amounts of funds that Congress will make available for the fiscal year to liquidate obligations.

Authorization act – basic substantive legislation that establishes or continues Federal programs or agencies over a multiyear period and establishes an upper limit on the amount of funds for the program(s).

Authority/authorized – delegated permission.

Budget authority – empowerment by Congress that allows Federal agencies to incur obligations that will result in the outlay of funds. This empowerment is generally in the form of appropriations. However, for most of the highway programs, it is in the form of contract authority.

Contract authority – a form of *budget authority* that permits obligations to be made in advance of appropriations. Most of the programs under the *Federal-Aid Highway Program* operate under contract authority.

Federal-Aid Highway Program – The Federal-Aid Highway Program supports State highway systems by providing financial assistance for the construction, maintenance and operations of the Nation's 3.9 million-mile highway network, including the Interstate Highway System, primary highways and secondary local roads. The Federal Highway Administration (FHWA) is charged with implementing the Federal-aid Highway Program in cooperation with the States and local government. The Federal-Aid Highway program is distinct from broader federal surface transportation funding.

Highway Trust Fund – an account established by law to hold Federal highway user taxes that are dedicated for highway and transit purposes. The fund has two accounts: the Highway Account and the Mass Transit Account.

Obligation – the Federal Government's legal commitment (promise) to pay or reimburse the States or other entities for the Federal share of a project's eligible costs.

Obligational authority – the total amount of funds that may be obligated in a year. For the Federal-Aid Highway Program, this consists of the obligation limitation amount plus amounts for programs exempt from the limitation.

Source: FHWA: 2009 <https://www.fhwa.dot.gov/publications/publicroads/09mar/01.cfm>

1. Executive Summary

The establishment of the Federal-Aid Highway Program in the second half of the 20th century reflected a national consensus on the need to respond to an evolving economy, regional growth, transportation-dependent industries and the concern for defense logistics.

The Federal-Aid Highway Act of 1956 directed the revenue generated by a new federal motor fuel tax to contribute to the Highway Trust Fund, providing a stable source of funding to be used exclusively for the construction and maintenance of the Interstate System. During the **Interstate era (1956-1985)**, the real dollar value of Federal-Aid increased continuously based on fuel tax increases, growing vehicle miles traveled (VMT) nationwide, and modest improvements in fuel efficiency, providing and maintaining a high level of transportation funding.

After the mid-1980s, federal transportation funding failed to keep pace with growing needs in real dollars. Although demand for federal transportation funding and the VMT tax base were increasing, the federal motor fuel tax—the financial back bone of the Interstate Highway program—was not increased as the Interstate system approached completion.

The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 was developed reflecting a broad consensus among stakeholders on the need to simplify the Federal-Aid Highway Program and, at the same time, introduce new programs that reflected increasing public policy interest in achieving multiple goals including improved safety conditions, environmental outcomes and funding equity. ISTEA rationalized the program, but it did not rationalize apportionments and avoided discussion of needs-related funding. Rather, it simply proportioned state funding according to the share of the previous reauthorization, substantially undercutting the rationale of state-by state allocations. By 1998, **the Transportation Equity Act for the 21st Century (TEA-21)** established new apportionment formulas for the individual Federal-Aid programs.

The Post-ISTEA Era was marked by uncertainty due to political disagreements, delays, and aversion to dedicated fuel tax increases in each successive reauthorization. However, there were certain program features that mitigated the impacts and inconveniences of any delays, including carryover contract authority, categorical program flexibility, guaranteed apportionments, and advance construction funding.

By 2007, it became clear that the Trust Fund could not support transportation obligations through the end of the **Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)** authorization period, from August 2005 to September 2009. However, there was insufficient support for an increase in the federal motor fuel tax increase. Accordingly, states and regions compensated for limited federal funding by tapping into new funding sources of their own and, in some limited cases, reductions in programs. There has been no permanent solution to address growing Trust Fund shortfalls. Instead, the Trust Fund has been kept solvent through periodic draws from the General Fund and other one-time transfers.

States are now facing new risks due to the accelerating impact of decreased fuel consumption on fuel tax revenues. This may require consideration of funding options that have previously been considered for the medium to long term in many states, such as vehicle sales taxes, extensive tolling, and mileage-based user fees, among other options.

2. The 20th Century Federal-Aid Highway Program, Funding and Structure

The establishment of the Federal-Aid Highway Program in the second half of the 20th century reflected a general consensus on the need to respond to an evolving economy, regional growth, transportation-dependent industries and the concern for defense logistics. Together these needs supported the imperative of creating a core national network of “inter-state” highways – and later major metropolitan transit investments – that was backed by an assured, significant, sustainable, and predictable flow of funds generated by federal fuel taxes in an era of ever-growing demand for mobility.

Key characteristics of the Federal-Aid Highway Program have shifted over time in response to economic, political and social forces. While the history of the program is replete with events that appear to represent major uncertainties in the future flow/availability of funds, over time the Federal-Aid Program has developed a series of features that has mitigated the impacts of these uncertainties.

3. The Interstate Era and the Highway Trust Fund: 1956 to 1985

Federal support for the major capital investments was essential before embarking on the construction of the Interstate Highway System. Prior to the Federal-Aid Highway Act of 1956 and the establishment of the Highway Trust Fund, roads were financed directly from the General Fund of the United States Department of the Treasury. From a policy perspective, using general funds to fund the Interstate Highway System was not desirable because the revenue flowing into the fund was not related to highway needs or use. Therefore, the 1956 Act directed the revenue generated by a new federal motor fuel tax to contribute to the Highway Trust Fund, providing a stable source of funding to be used exclusively for the construction and maintenance of the Interstate System and assurance that the program could be carried out in the long-term.

During this period, the maximum federal participation rate for federally funded Interstate highway capital expenditures was 90 percent, reflecting a common national interest in inter-state transportation. The allocation of federal funds was relatively straightforward and was based on a national network map, with common design standards for which the “cost to complete” could be determined. The focus of the Federal-Aid Highway Program was on the efficient completion of the national Interstate highway network, using uniform standards determined by technical studies. The system was expected to be implemented in 15 years, but actually took 36 years to complete. The timely and efficient completion of this long-term system investment was recognized as being dependent on a significant and stable source of funding, with motor fuel taxes ultimately selected as the most reliable and resilient revenue source.

3.1 FORMULA PROGRAMS

In addition to the Interstate program, there were three other programs with funding to be distributed according to formulas dating back as far as 1916:

- Primary System – funds apportioned using the three formula factors: state's share of the national land area, population, and rural post road mileage, with each factor weighted equally.
- Secondary System – funds apportioned based on each state's share of the national land area, rural population, and rural postal route mileage.
- Urban System – funds apportioned based on each state's share of the national population living in urban areas of 5,000 or more residents

3.2 PROGRAM STABILITY AND PREDICTABILITY

At the dawn of the Interstate era in 1956, a set of Congressional authorization funding processes was adopted in law to provide financial support for the program on a long-term basis. This differed from normal appropriation processes in that Congressional authorizations for the Federal-Aid Highway Program constituted legally binding funding commitments to states in the form of contract authority. Federal-Aid funding was provided to states on a pay-as-you-go basis, supported primarily by fuel tax revenues deposited in the Highway Trust Fund. The Trust Fund was required to maintain a positive revenue balance year over year. In order to regulate the flow of Federal-Aid funding, the Eisenhower Administration imposed quarterly limitations on the aggregate amount of contract authority that could be obligated by States. A change in budget law in 1974 abolished these controls, so Congress began enacting annual obligation ceilings in appropriations bills. In addition, from time to time Congress increased the rate of federal fuel taxes as necessary to maintain Trust Fund solvency.

The relative stability of these core features provided needs-based funding levels together with a consistent and reliable framework within which states and local governments could plan, time, fund, construct and maintain their high-priority capital highway and transit projects, with maximum ability to predict the level and timing of federal resource availability. Major projects could be planned with assurance of funding in out years. Risks of interruption or delay in funding were minimal. Clear eligibility rules also reduced the vulnerability of funding uncertainties for lower-priority state projects using Federal-Aid funding. At the same time, expanding federal motor fuel tax revenues limited state incentives to raise their own fuel taxes or use other funding tools.

From the state program funding perspective, this approach provided a high degree of predictability in terms of funding levels and sustainability. Its key features included:

- **Long-term assurance** – Interstate construction funding was provided and guaranteed through 1995 to assure the completion of the Interstate Highway System
- **Funding dedicated to transportation** and shielded from legislative incursions
- **Annual appropriations of limitations on obligations** – the Government's commitment to pay or reimburse States – to control commitments of apportioned funds.
- **Modest earmarking** of funds to support congressional interests, which supported rapid legislative consensus
- **A dominant focus on major capital facilities** arguably of national and regional interest, with federal versus state/local shares reflecting “national” interest
- **Known federal match rates** providing states with clear revenue-raising target

- **Apportionments to states** and programs reflecting some notion of need and fiscal capacity
- **Annual allocations through federal budget obligations**, reflecting the level of commitments made in a fiscal year and levels of Contract Authority that are consistent with formulas in the authorizing statute.

3.3 FUNDING LEVELS AND STABILITY/PREDICTABILITY

During the Interstate era, the real dollar value of Federal-Aid increased continuously due to fuel tax increases, growing vehicle miles traveled (VMT) nationwide, and modest improvements in fuel efficiency. U.S. Energy Information Administration data for all motor vehicles operating in the United States shows that average fuel efficiency increased from 12.7 miles per gallon in 1955 to 14.6 miles per gallon in 1985.¹ As summarized in **Table 1**, during the period from 1955 to 1985 the level of apportionments increased, and real-dollar values also rose, providing and maintaining a high level of transportation funding.

Funding during this period began with the three-cent federal gasoline tax flowing to the Highway Trust Fund in 1956. Tax increases occurred in 1959, with an additional cent, and in 1982, with a five-cent increase, of which one cent was dedicated to mass transit.

4. The Pre-ISTEA Transition: 1985 to 1991

As the Interstate system approached completion, Congress began creating new funding categories for specific program initiatives, allowing it to respond to differing state priorities, accommodate constituent needs, and maintain and justify the dedicated fund-based Federal-Aid program. New programs each with their own apportionment formulas included the National Highway Traffic Safety Administration of 1970; the Highway Bridge Replacement and Rehabilitation Program of 1978, and the Interstate 4R (resurfacing, restoring, rehabilitating and reconstruction) Program of 1981.

After the mid-1980s, real-dollar federal transportation funding failed to keep pace with growing needs. Although demand for federal transportation dollars and the VMT tax base were increasing, the federal motor fuel tax—the financial back bone of the Interstate Highway program—was not increased sufficiently. In 1990, as part of the ongoing discussion of federal budget reconciliation issues, the gasoline tax was increased to 14 cents –with 2.5 cents of the increase going to the Highway Fund and the other 2.5 cents going towards deficit reduction. However, these increases were not indexed to offset inflation, nor were apportionments adjusted to reflect new state-by-state differences. In addition, dramatic increases in fuel efficiency also began to erode the revenue potential of the motor fuel tax. Between 1985 and 2001, the average fuel efficiency for all vehicles increased from 14.6 to 16.9 miles per gallon.² **Table 1** summarizes funding trends during this period.

Table 1: Federal-Aid Highway Apportionments 1955-2018 (in current and nominal dollars)

	APPORTIONMENTS (NOMINAL \$)	POPULATION	APPORTIONMENTS PER CAPITA (NOMINAL \$)	CPI	APPORTIONMENTS (1950 \$)	APPORTIONMENTS PER CAPITA (1950 \$)	APPORTIONMENTS (2018 \$)	APPORTIONMENTS PER CAPITA (2018 \$)
1950	\$473,500,000	152,271,417	\$3.11	24.1	\$473,500,000	\$3.11	\$4,933,575,290	\$32.40
1955	\$897,500,000	165,931,202	\$5.41	26.8	\$807,080,224	\$4.86	\$8,409,273,601	\$50.68
1960	\$2,682,311,000	180,671,158	\$14.85	29.6	\$2,183,908,618	\$12.09	\$22,754,968,523	\$125.95
1965	\$3,792,350,000	194,302,963	\$19.52	31.5	\$2,901,448,730	\$14.93	\$30,231,289,887	\$155.59
1970	\$5,464,930,000	205,052,174	\$26.65	38.8	\$3,394,453,943	\$16.55	\$35,368,097,359	\$172.48
1975	\$6,829,172,000	215,973,199	\$31.62	53.8	\$3,059,164,409	\$14.16	\$31,874,589,097	\$147.59
1980	\$8,562,996,000	227,224,681	\$37.69	82.4	\$2,504,468,490	\$11.02	\$26,095,002,871	\$114.84
1985	\$13,548,072,000	237,923,795	\$56.94	107.6	\$3,034,465,941	\$12.75	\$31,617,246,428	\$132.89
1990	\$12,412,459,000	249,622,800	\$49.72	130.7	\$2,288,754,873	\$9.17	\$23,847,401,240	\$95.53
1995	\$15,803,166,000	266,278,400	\$59.35	152.4	\$2,499,057,091	\$9.39	\$26,038,619,454	\$97.79
2000	\$28,877,066,000	282,171,936	\$102.34	172.2	\$4,041,447,681	\$14.32	\$42,109,369,408	\$149.23
2005	\$31,229,272,000	295,560,549	\$105.66	195.3	\$3,853,688,967	\$13.04	\$40,153,040,472	\$135.85
2010	\$38,361,434,000	309,346,863	\$124.01	218.056	\$4,239,785,007	\$13.71	\$44,175,920,898	\$142.80
2015	\$37,798,000,000	320,742,673	\$117.85	237.017	\$3,843,318,412	\$11.98	\$40,044,985,744	\$124.85
2018	\$41,420,520,075	327,167,434	\$126.60	251.107	\$3,975,335,350	\$12.15	\$41,420,520,075	\$126.60

Source: FHWA, 2019

Passage of the Surface Transportation and Uniform Relocation Assistance Act of 1987 (STURAA), over Presidential veto, indicated a lack of national consensus on the importance of the highway program. Revenue additions since that time have been associated with deficit reduction rather than increased highway funding. Modest increases were made in 1993 and 1998 via transfer of other tax sources to the Highway Trust Fund, such as General Funds offset by the U.S. Department of Veterans Affairs Tobacco Settlement. Thus, Congress was broadening the ways in which Federal-Aid highway dollars could be used, without providing a commensurate increase in funding. This dynamic was compounded by the fact that the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 declared that the Interstate Highway System would be completed in 1995. Without the focus that completion of the Interstate system provided, the consensus on how Federal highway funding should be used diminished.

The years just prior to ISTEA reflected – not just the completion of the Interstate Highway System – but an important transition from an era characterized by a largely stable and single-purpose preoccupation of basic infrastructure network completion (and corresponding major urban rail transit projects) to a new context for public infrastructure and services provision characterized by:

- A broader set of transportation related interests, values, perspectives relating to urban and rural needs
- A focus on urban, rural and interurban transportation
- Recognition of the growing cost of preservation, maintenance, reconstruction and operations
- Consideration of the negative environmental and community externalities of transportation facilities development and operations
- Heightened recognition of mobility and service availability inequities, and an increased sensitivity to cross-subsidies among economic, social and geographic interests

The consequent changes in the context for Federal-Aid transportation programs included increasingly obvious – and competing – differences among states and metropolitan regions regarding their transportation improvement priorities and their fiscal capacity to support them (highway, transit, freight). These contextual changes were reflected in more complicated and fragmented surface transportation programs with an increasing number of modal and program categories, match rates, and levels of flexibility. At the same time, overarching these complexities, there was a failure to provide a sustainable level of Federal-Aid transportation funding that could keep up with the growing demand of highway needs, as defined by highway agencies and stakeholders.

5. ISTEA – Program Reform: 1991 to 1998

The Intermodal Surface Transportation Efficiency Act of 1991 was developed with the intent of simplifying the Federal-Aid Highway Program and, at the same time, introducing new programs that reflected increasing public policy interest in achieving multiple goals. These goals included not only highway and transit capital expansions, but also improved safety conditions, environmental outcomes and funding equity. ISTEA attempted to introduce a new set of balances by providing a smaller set of formula categorical programs – such as the new Surface Transportation Program – and accompanying them with increased program flexibility. This compromise generated support for an increase in Federal-Aid and other funding. As drafted by the House Committee on Transportation and Infrastructure, ISTEA contained a five-cent motor fuel tax increase. However, due to political objections, the tax increase was

pulled before the full House could consider the bill. No further fuel tax increases have been considered by Congress since that time as part of any surface transportation reauthorization act.

While ISTEA rationalized the program, it did not rationalize apportionments and avoided discussion of needs-related funding. Rather, it simply proportioned state funding according to the share of the previous authorization act, substantially undercutting the rationale of state-by-state allocations. Finally, in 1998, the Transportation Equity Act for the 21st Century (TEA-21) established new apportionment formulas for the individual Federal-Aid programs.

The center of the new “national” focus in TEA-21 was the so-called National Highway System Program. This network – unlike the Interstate Highway System – was not based on cost to complete a fixed set of routes, but on an apportionment formula basis. TEA-21 also increased the flexibility for states to transfer funding between programs. “Equity” adjustments – specific allocations begun in ISTEA to provide states with a minimum guarantee that funds received would be at least equal to the states’ contribution to the Trust Fund – increased to almost 20 percent of total funding.

6. Post-ISTEA: An Era of Uncertainty: 1998 to 2007

The temporary political resolution and balance of alternative stakeholder interests provided by ISTEA, as noted above, has been eroding since the early 1990s. From ISTEA on, each successive reauthorization has been characterized by:

- Differences in surface transportation priorities within both the House and Senate
- Aversion to dedicated fuel tax increases and increasing reliance on general funds for real dollar increases in federal funding
- Delays and uncertain time frames – at several levels – for authorization, appropriation, budgeting, and obligation
- Project development and approval delays and uncertainties due to new laws and regulation and overlapping departmental jurisdictions
- Waves of consolidation and fragmentation regarding specific program funding categories
- The addition of transit programs to the eligible funding from the Highway Trust Fund

Together these developments have led to a fragmentation in the national consensus on surface transportation among various interest groups regarding the appropriate focus of Federal-Aid among systems, modes, jurisdictions and geographies. Competing federal priorities in health, education, defense, and social support have also stressed the national budget dialogue. The increasing competition for federal funding has fragmented the long-standing political consensus on providing sustainable funding for a national transportation program.

At the same time, since the passage of ISTEA a succession of non-highway federal legislation has varied the levels of the federal fuel taxes:

- The Omnibus Budget Reconciliation Act of 1993 increased the Federal gasoline tax by 4.3 cents per gallon, but directed the entire amount of the increase to the General Fund

- The Taxpayer Relief Act of 1997 redirected the revenues from the 4.3-cents per gallon levied under the 1993 Budget Reconciliation Act from General Fund to the Highway Trust Fund. Subsequent acts have adjusted the taxation on gasohol

Nonetheless, there were increases in total transportation funding levels, both in nominal and real dollar terms between 1956 and 2008. While these increases were not guaranteed – in the sense that they depended on congressional action – they took place from one reauthorization cycle to the next, such that recipients presumed that it “would work out in the end,” despite delays in legislative action and uncertainty in funding levels. This stance was supported both by ongoing congressional actions to reinforce the importance of the Federal-Aid Highway Program and by the continuing financial support from of the Trust Fund, with fuel tax revenue continuing to expand even without a tax increase thanks to increases in VMT year over year and limited gains in fuel efficiency through the mid-1980s.

6.1 DECOUPLING HIGHWAY SPENDING FROM PREDICTABLE TRUST FUND REVENUE

The risk to state departments of transportation (DOTs) of counting on sustainable/predictable Federal-Aid revenues or the timing of its availability is well-illustrated by the attempts to cope with declining highway Trust Fund balances between the passage of TEA-21 in 1998 and today. These risks have been exacerbated by the uneven treatment of control measures such as the revenue aligned budget authority (RABA), the importance of powerful industry congressional interests, and the uncertainties surrounding budgetary maneuvers used as temporary Trust Fund bailouts.

The concept of RABA was introduced in TEA-21 and was designed to tie actual highway spending to estimated Trust Fund revenues. However, allowing highway spending to increase based on *estimated* future tax receipt levels rather than actual tax receipts created uncertainties regarding the level and timing of Federal-Aid funds. During this period, political pressure resulted in the need to reduce program levels. Furthermore, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) authorization act of 2005 actually increased the transportation program to a level that was not supportable from projected Trust Fund revenues, despite warnings from the Congressional Budget Office. This in effect nullified the negative RABA projection and set spending levels back close to those of TEA-21. In addition, this funding measure was tied to non-transportation emergency legislation associated with the war in Afghanistan, which was another break with the traditional, predictable approach provided by stand-alone transportation authorization acts.

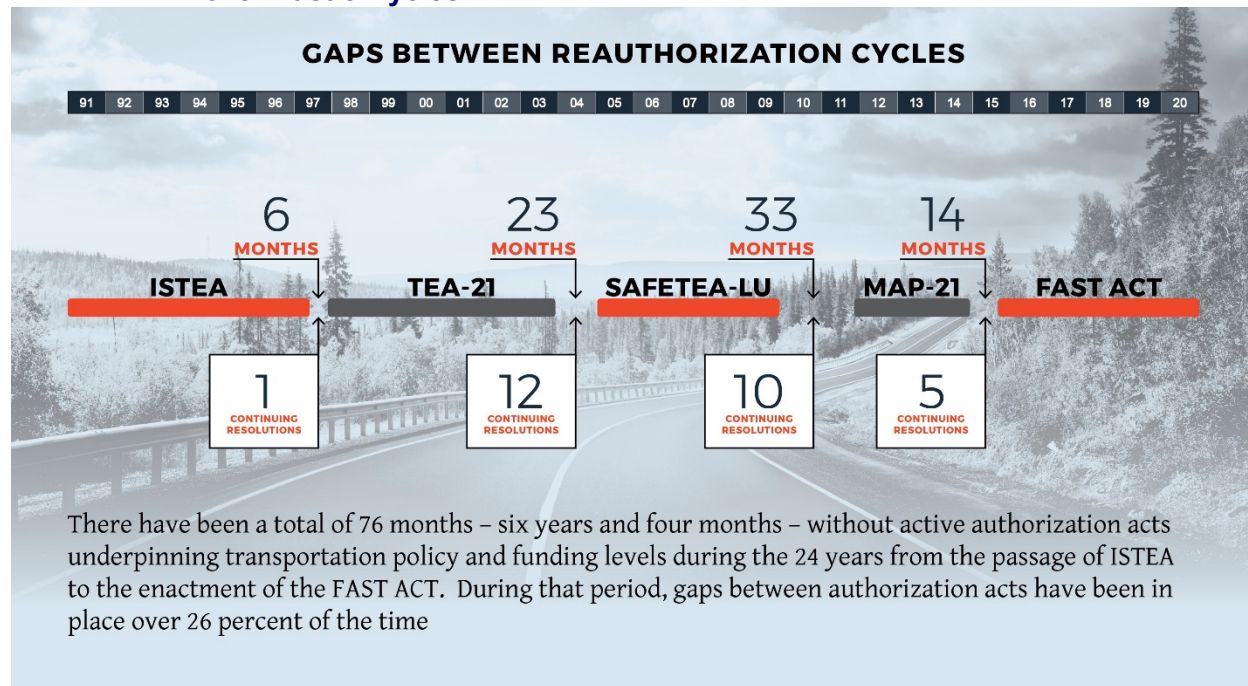
At the same time, authorization acts and appropriations measures alike were tied up in complex congressional politics that delayed actual appropriations and required a series of continuing resolutions to continue the flow of federal transportation funding. In addition, Congress provided up to 20 percent of federal transportation funding for dedicated projects, continuing the earmarking trend that had been growing for a decade.

6.2 EXTENT OF UNCERTAINTIES

As shown in **Figure 1**, funding uncertainties have been significant between the passage of ISTEA in 1991 and the enactment of the Fixing America’s Surface Transportation (FAST) Act in 2015. During that time, there were 76 months – over six years – without an active transportation authorization act. In addition, Congress has relied on General Fund transfers and annual appropriations to keep the Highway Trust Fund

solvent, which has introduced political uncertainty and increased exposure to competing non-transportation political priorities.

Figure 1: Number and Duration of Gaps in Surface Transportation Authorizations over Last 5 Cycles



Source: WSP USA, 2020

Despite initial Congressional efforts to develop support for a six-year program that included a two-cent indexed increase to the gasoline tax following the expiration of TEA-21, there was little support. Instead, Congress resorted to a variety of “creative” accounting mechanisms to direct other funds to the Highway Trust Fund and migrate certain programs from highway to general funding. At the same time, legislation was introduced that effectively neutered the so-called “Byrd test” that required automatic reductions in annual apportionments if they would exceed the latest Treasury projections of Trust Fund receipts.

Despite an initial administration position citing what it called an “unsustainable level of highway funding” that would break dramatically with the traditional linkage of highway spending and Trust Fund revenues, Congress ultimately passed SAFETEA-LU in 2005 after a succession of 12 continuing orders extending over 23 months, providing \$286 billion in transportation funding over six years. However, this level of funding was unsustainable based on the revenues flowing into the Highway Trust Fund, with forecasts indicating that the Trust Fund would be insolvent by 2008.

6.3 IMPACT OF UNCERTAINTIES ON STATE PROGRAMS

With each delay and change in funding structure, individual state DOTs were encouraged by industry associations and lobbyists to provide arguments that could be used to keep pressure on Congress to act and bridge the funding gap. However, it appears that not all DOTs felt seriously threatened. Nevertheless,

there was a litany of state DOT funding crisis discussions that appeared in Congressional testimony and in statehouses around the country from 2008 and beyond.

In addition to the fact that Congress would ultimately come through with extensions and reauthorization measures, there were certain program features that mitigated the impacts and inconveniences of any delays. These included:

- Carryover contract authority (apportionments) from previous years that often mitigated the impact of any specific year obligation/contract authority limitations
- Categorical program flexibility permitting states to move funds among certain program categories to meet their specific project-type priorities e.g. Bridge, Interstate maintenance, and NHS needs.
- Advance funding of major capital projects through Advance Construction using state funds, as well as loans and loan guarantee programs, such as the Transportation Infrastructure Finance and Innovation Act (TIFIA) program and State Infrastructure Banks, and one-time funds such as the Economic Stimulus program enacted in 2009.
- Guaranteed minimum apportionments to address donor state contributions from states that paid more into the Highway Trust Fund than they received in apportionments.

These different features provided flexibility that limited the impacts of funding constraints in most states. States also adopted programs to supplement Federal-Aid funding. Major capital-intensive projects were so disruptive to regular budget cycles that additional resources were needed to minimize impacts on the rest of the state transportation program. In addition, a growing backlog of maintenance and reconstruction needs began to crowd new construction projects. In addition, some high-growth states with rapidly increasing transportation needs found it politically feasible to develop alternative sources of revenue to offset the modest increases in the level of Federal-Aid, enabling them to advance major projects. States pursued several strategies, including:

- Toll road development with Federal-Aid direct and indirect support
- Local option sales taxes and other taxes dedicated all, or in part, to transportation
- Bond financing
- Public-private partnerships including toll concessions, and private activity bonds.

7. The Trust Fund Crisis: 2007 – Present

By 2007, it became clear that the Trust Fund could not support transportation obligations through the end of the SAFETEA-LU authorization period. The Congressional response was to propose a “bailout” from the General Fund, but this proposal ultimately failed. After the lapse of SAFETEA-LU, the House tried to attach an \$8 billion Trust Fund bailout to a short-term extension of funding for the Federal Aviation Administration in 2008. Following initial resistance, this measure ultimately gained the support of the Administration, which was facing the need for a substantial reduction in federal transportation disbursements due to reduced proceeds flowing into the Highway Trust Fund. In the following years, concerns regarding similar rescissions in federal transportation funding led to an additional \$7 billion bailout from the General Fund in late 2009, and another \$19.5 billion bailout in 2010.

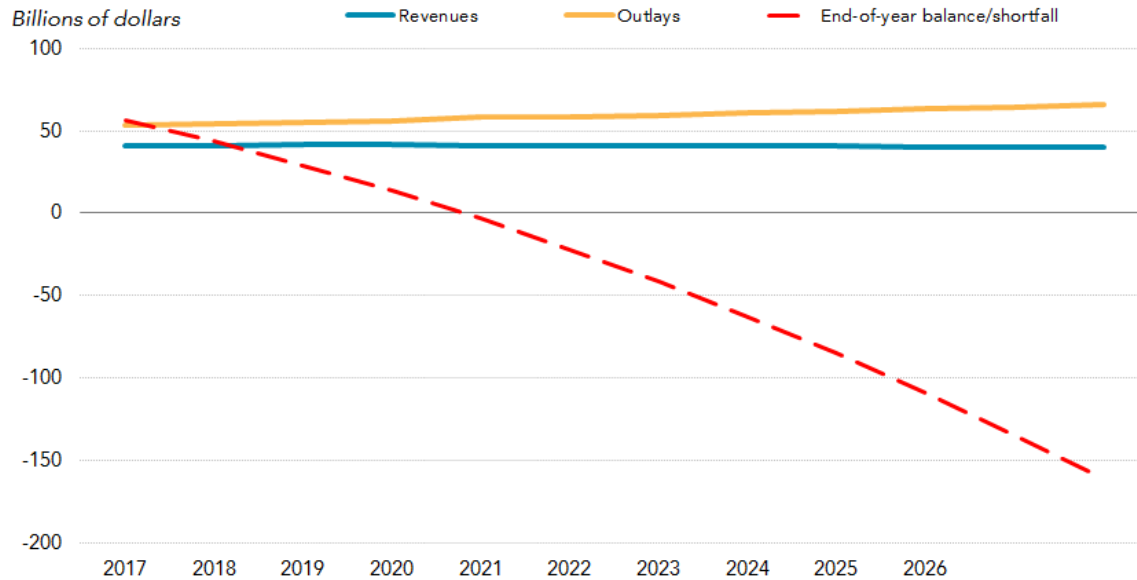
During this period, despite the recommendations of two SAFETEA-LU blue-ribbon panels, the Administration was not willing to consider an increase in the federal motor fuel tax increase, especially as the size of the deficit grew larger. As the recession continued, the two-year Moving Ahead for Progress in the 21st Century (MAP-21) authorization act was passed in 2012, following a gap of 33 months and a total of 10 continuing orders. MAP-21 was funded by more general fund transfers rather than increases in motor fuel taxes.

Since 2008, federal transportation funding levels have been maintained by \$140 billion in injections from other sources. This began with transfers from general funds and then over time from accessing ever-more obscure funding sources bearing no discernable relationship with transportation, several of which were clearly only one-time opportunities. For example, one funding augmentation involved the use of economic development funds and imposed a two-year timeframe for project commitments that required state DOTs to readjust their capital programs and resort to easily “off the shelf” projects in order to capture their state share. This approach coincided with substantial earmarks by key congressional members, as well as the “perpetual” hope that the next Congress or new administration might increase the motor fuel tax.

To the present day, no permanent solution has been adopted to bridge the increasingly significant deficit in the Highway Trust Fund. As shown in **Figure 2**, the Congressional Budget Office projects growing revenue shortfalls moving forward requiring ongoing program reductions to align within future revenues accruing to the Highway Trust Fund.

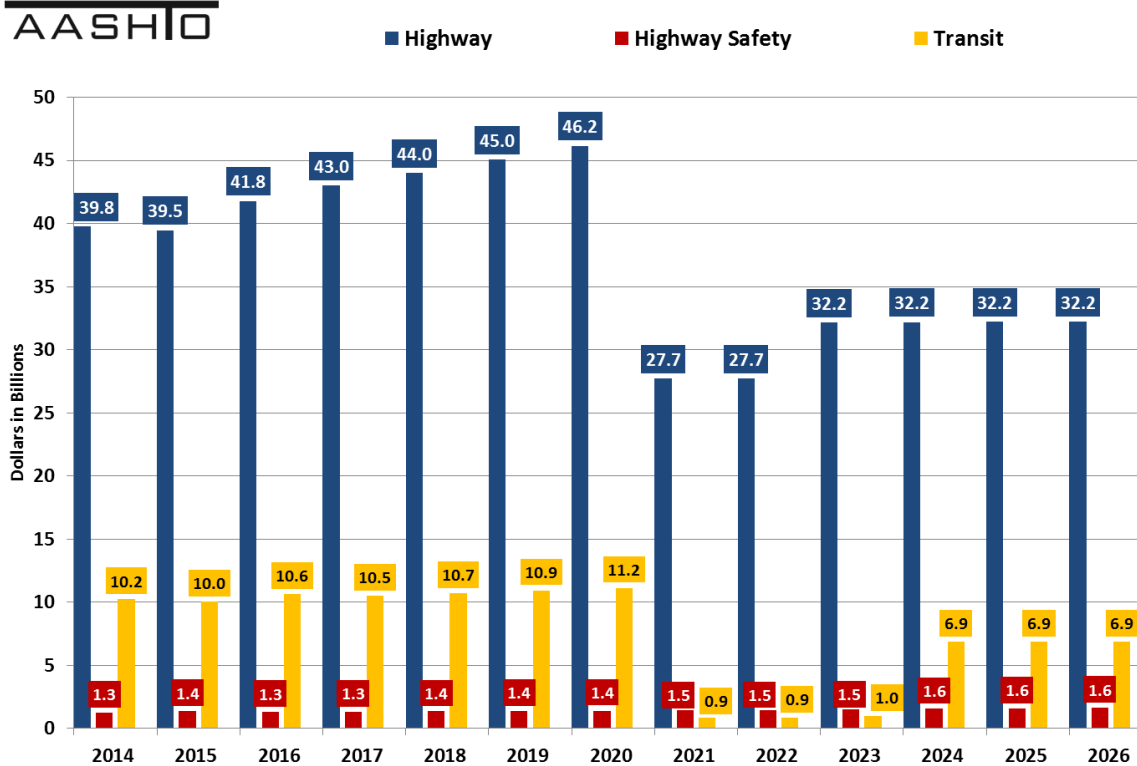
As shown in **Figure 3**, without a solution to this crisis the American Association of State Highway and Transportation Officials (AASHTO) estimates that states will see a drop of roughly 40 percent in federal highway funding following the expiration of the Fast Act from \$42.6 billion in 2020 to \$27.7 billion in 2021. The current political climate within Congress together with the challenge of gaining support for tax increases has not yet led to a viable solution.

Figure 2: Highway Trust Fund Account Projections: 2017-2028



Source: Congressional Budget Office, 2018

Figure 3: Estimated Federal Highway Trust Fund Obligations



Source: American Association of State Highway and Transportation Officials, 2017

As the continuing nature of this uncertainty has become abundantly clear, those states and regions with the means and determination to do so have compensated for limited federal funding by tapping into new funding sources of their own at the state and local levels and, in some limited cases, reductions in programs. The need for new state revenues has been recognized by 33 states that have enacted increases in motor fuel tax rates between 2014 and 2019.

The current extent of the federal deficit and the broad range of looming social and environmental program costs suggests reduced opportunities for resorting to general funding transfers to keep the Highway Trust Fund from defaulting. If the history of highway funding provides any precedent, the resolution of these issues may be expected to take place over a protracted and unpredictable period, if at all.

8. Additional Challenges Facing States Moving Forward

In addition to the Trust Fund crisis discussed above, there is an additional risk that states will need to manage moving forward: the accelerating impact of decreased fuel consumption on fuel tax revenues. The effects of flat per-gallon tax rates and cost escalation will be exacerbated by increasing vehicle fuel efficiency and modest growth in vehicle miles traveled. This increasing delinking of VMT from fuel tax revenues means that federal and state fuel tax revenues will decline due to several forces working in concert:³

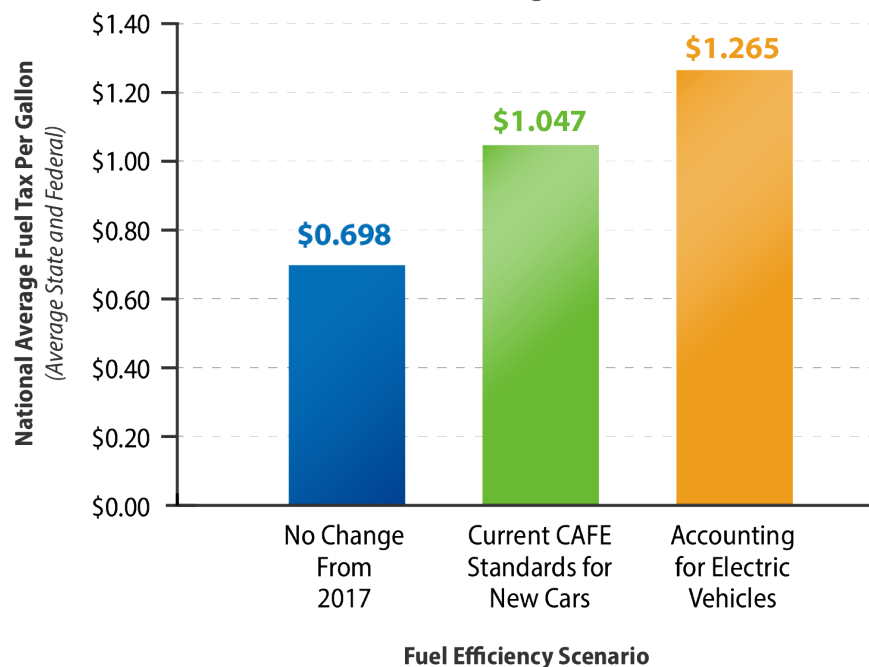
- Mandated Corporate Average Fuel Economy (CAFE) standards on passenger cars
- Improved vehicle aerodynamics and other operational efficiencies
- The ongoing introduction of hybrid and electric vehicles that will eventually displace a substantial portion of internal combustion engine vehicles
- The potential growth of automated vehicles and shared mobility services, which may lead to lower private automobile ownership

Shortfalls in Trust Fund revenues compared with authorized expenditure levels have been “solved” over the last two authorizations by diverting general funds or accessing other one-time funding resources. This strategy may not be viable for another reauthorization cycle due to increasing competition for constrained general funds and a lack of other viable funding sources. Moreover, the delinking of authorization acts with fuel tax revenues coming into the Highway Trust Fund introduces an entirely new scale of funding gap that is unlikely to be bridged through traditional fixes at the federal and state levels.

Assuming a modest increase in VMT of 1.5 percent for light duty vehicles and indexing the motor fuel tax rate to inflation, the traditional relationship between VMT and fuel tax revenue yield at current federal and state tax rates would have been approximately \$14.5 billion. However, the tax revenue erosion by 2050 caused by the fuel efficiencies introduced by CAFE standards and the expanding use of electric vehicles is expected to be between \$80 and \$100 billion – leaving a gap of \$50 to \$65 billion. Based on research by Ed Regan, compensating for this gap would require increasing the total average fuel tax rate from 47 cents per gallon today by \$1.00 to \$1.25 per gallon, as shown in **Figure 4**.⁴ Moreover, this gap does not account for increases in program investment levels, such as the doubling of the investment in the

interstate recommended in the Transportation Research Board’s 2019 study, *Renewing the National Commitment to the Interstate Highway System: A Foundation for the Future*.

Figure 4: Estimated 2040 National Average Total Fuel Tax Rates (dollars per gallon) With Indexing After 2020



Source: Ed Regan, CDM Smith, *The Motor Fuel Tax: A System at Risk*, 2018

States will need to manage federal revenue reductions if the current motor fuel tax rate remains unchanged, particularly if coupled with parallel revenue reductions in state fuel tax receipts. While the erosion of fuel tax revenues will be gradual, it will still be substantial, increasing by approximately \$10 billion per decade. Continued reliance on fuel taxes suggests the need to double or triple current tax rates.

Managing this risk may require consideration of funding options that have previously been considered for the medium to long term in many states, such as vehicle sales taxes, extensive tolling, and mileage-based user charges. While these funding options have been studied in concept, they face significant political and practical challenges before moving into actual implementation.

¹ U.S. Energy Information Administration, *Annual Energy Review*, 2012, <https://www.eia.gov/totalenergy/data/annual/showtext.php?t=pTB0208>

² U.S. Energy Information Administration, *Annual Energy Review*, 2012, <https://www.eia.gov/totalenergy/data/annual/showtext.php?t=pTB0208>

³ Daisy Maugouber & David Doherty, BloombergNEF, *Three Shifts in Road Transport That Threaten to Disrupt Oil Demand*, 2019, <https://about.bnef.com/blog/three-drivers-curbing-oil-demand-road-transport/>

⁴ Ed Regan, CDM Smith, *The Motor Fuel Tax: A Critical System at Risk Framing the Problem for America*, <https://www.cdmsmith.com/-/media/White-Papers/Ed-Regan-Motor-Fuel-Tax-Risks-MBUF-Opportunities-White-Paper.pdf>