

# **Managing Risks Associated with Major Funding Uncertainty**

## **Florida Department of Transportation (FDOT) Case Study**



**Federal Highway Administration**

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## **LIST OF ABBREVIATIONS**

ACSE	American Society of Civil Engineers
ADA	Americans with Disabilities Act
BIL	Bipartisan Infrastructure Law
COVID-19	Novel Coronavirus
CPI	Consumer Price Index
CY	Collection Year
DOT	Department of Transportation
FAST	Fixing America’s Surface Transportation (Act)
FDOT	Florida Department of Transportation
FHWA	Federal Highway Administration
FTE	Florida Turnpike Enterprise
FY	Fiscal Year
NCEI	National Centers for Environmental Information
NOAA	National Oceanic and Atmospheric Administration
SHS	State Highway System
REC	Revenue Estimating Conferences
SOG	State of Good Repair
STTF	State Transportation Trust Fund
TAM	Transportation Asset Management
TAMP	Transportation Asset Management Plan
USDOT	United States Department of Transportation



## BACKGROUND

Florida supports the mobility of its citizens, millions of annual visitors, and consumer goods via a multi-modal transportation system that incorporates surface transportation, air, rail, sea, and spaceports. The Florida Department of Transportation (FDOT) is responsible for maintaining the State Highway System (SHS), comprising approximately 10 percent of the State's total 123,488 centerline highway miles and carrying around 55 percent of its traffic. It also maintains 7,079 bridges, 7,487 miles of bicycle facilities, and the Florida Turnpike (FDOT 2022a). FDOT is decentralized, with seven District Offices, each managed by a District Secretary, Florida's independent and autonomous Florida Turnpike Enterprise (FTE), and a Central Office in Tallahassee, Florida (FDOT 2022b).

The American Society of Civil Engineers (ASCE) reported in the 2021 National Report Card for America's Infrastructure (ASCE 2021) the following surface transportation achievements regarding Florida's asset management results:

- Achieving consistent and above the national average bridge conditions.
- Using improvements in materials and methods, along with maintenance, to extend the service life of State bridges.
- Demonstrating efficient programming of State fuel taxes and appropriations.
- Building resilience and focusing on future transportation needs and innovations.

FDOT's Transportation Asset Management Plan (TAMP) highlights the agency's management strategies, forecasting efforts, and business processes and describes FDOT's overall approach to asset management. This document highlights FDOT's focus on the preservation of assets, its responsible use of funding, and other resources. It also shows how FDOT uses asset management to inform its investment decisions (FDOT 2015a, 2019) and meet Federal asset management requirements (FDOT 2019) found in [23 USC 119\(e\)](#) and [23 CFR part 515](#).

Florida law commits FDOT to maintaining its assets and formalizes various processes related to transportation funding and planning (Florida Senate 2000-2022c). Figure 1 illustrates key processes performed by FDOT and the different documents supporting these, including the 5-Year Florida Transportation Plan (FDOT 2022b) and the TAMP (FDOT 2019).

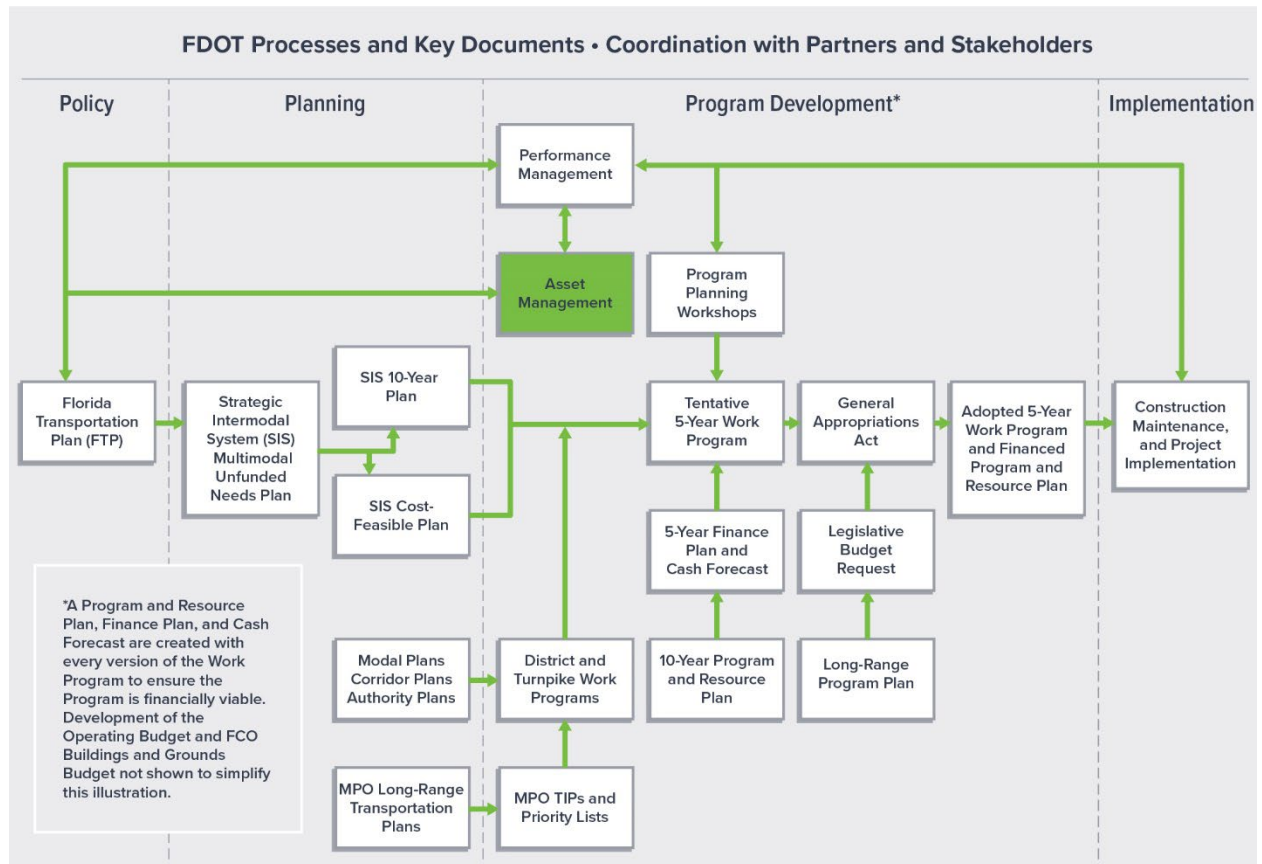


Figure 1. FDOT Processes and Planning Documents (FDOT 2015a).

The three principles of FDOT's financial planning approach, in accordance with the State law<sup>1</sup>, are:

- Performance management principles are in place to ensure accountability.
- Available fund use is linked to FDOT's mission and processes.
- FDOT funds preservation and safety first.

<sup>1</sup> Florida Senate. 2000-2022c. [2022 Florida Statutes. Title XXVI Public Transportation, Chapter 339 Transportation Finance and Planning, Section 155 Transportation planning](#). State of Florida, Tallahassee, FL.



## CASE STUDY FOCUS

This case study details how FDOT has formalized asset preservation as a guiding principle of its approach, while also exploring the agency's commitment to maintaining preservation and safety before other transportation priorities. It demonstrates how the TAMP reinforces and activates Florida's legislative requirement to focus on preservation as an approach to mitigate uncertainty in funding (FDOT 2015a, 2019). Additionally, it describes the role TAM workshops play in shaping and validating FDOT's progress toward its priorities and supporting its decision-making process.

This case study also highlights FDOT's processes for projecting needed and available funding resources, beginning with the Revenue Estimating Conferences (REC). The REC meets three times a year to consider the forecast of revenues flowing into the State Transportation Trust Fund (STTF). It describes how FDOT monitors cost indicators, costs, and supplies along with Trust fund balances and anticipated Federal revenues as part of a comprehensive and sustained forecasting strategy.

This case study covers ways FDOT is addressing recent funding uncertainty resulting from a variety of sources, including:

- COVID-19 recovery.
- Reduced revenues.
- Emergency response and recovery.
- Program-level impacts.
- Unfunded mandates.
- Supply chain disruptions.

## FUNDING CHALLENGES

The largest funding source for FDOT's asset management activities is State-generated revenues from fuel taxes, motor vehicle fees, and other local option taxes and fees (FDOT 2018). The State fuel tax is indexed to the Consumer Price Index (CPI), so it grows with inflation. According to the ASCE report, State fuel taxes and appropriations have increased between 2019 and 2021 from \$9.7 billion to over \$10.3 billion.

The agency operates on a cash flow of commitments basis. Projects included in the Work Program are cash flowed based on the type of work being performed. These projected cash flows (what FDOT expects to have to pay for each project) are matched to projected revenues to ensure the Work Program is financed. The capital budget for FDOT includes operating expenses (e.g., salaries, benefits, costs, budget), legislatively approved expenditures, built-in finance plan reversion rate, debt service payments, and capital budget.

In addition, toll revenues apply to State-owned and operated toll facilities, local expressway and bridge authorities, county toll roads and bridges, and revenue support improvement projects (FDOT 2017).

Federal funds account for about 24 percent of revenues (FDOT 2019) and are tied to Federal law (the Pub. L. No. 114-94 – Fixing America First ([FAST](#)) Act through FY2020). The impact of Pub. L. No. 117-58 – [Bipartisan Infrastructure Law \(BIL\)](#) is still being analyzed by FDOT staff (FDOT 2022c).

Since the publication of the 2019 TAMP, FDOT has faced significant funding uncertainty in part due to revenue losses associated with the Novel Coronavirus (COVID-19) pandemic, with a \$430.6 million revenue reduction in FY2020/21 and \$1.1 billion projected through FY2025/26 (Florida Transportation Commission 2021). Similar to other State DOTs, in 2020/21, the agency had to delay or cancel 77 asset investments due to revised revenue projections resulting from the pandemic. Planned capital (discretionary capacity) projects were deferred or deleted from the Work Program to balance the plan to the lower anticipated revenues, but preservation and maintenance work were not impacted. Like other States in a post-COVID-19 environment, FDOT's ability to efficiently deliver programs is undermined by increasing construction costs and supply chain disruptions (FDOT 2022c).

Extreme weather events also have a significant impact on transportation funding. According to the National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information (NCEI), extreme weather events—primarily severe storms and cyclones—cost the State of Florida between \$50 billion and \$100 billion from 2012 to 2022 (NOAA 2022). Weather poses unpredictable challenges for the transportation sector, and FDOT incurs extensive, short-term operating and maintenance costs after extreme weather events.

## APPROACHES FOR MANAGING FUNDING RISK

### Focus on Asset Preservation

According to FDOT, section 334.046 of the Florida Statutes (Florida Senate 2000-2022b) specifies several prevailing principles that FDOT must consider as it plans and develops a safe statewide transportation system. The highest among these principles is preserving the existing transportation infrastructure.

The State statutes provide quantitative performance measures that must be met concerning pavement, bridge, and maintenance conditions. FDOT must preserve the State's transportation infrastructure to these specific standards. Historically, the agency has exceeded the targets set for pavements and bridges, as indicated below:

- 80 percent of the pavement on the State Highway System (SHS) meet standards for condition.
- 90 percent of FDOT-maintained bridges meet standards.
- 100 percent of the acceptable maintenance standard on the SHS.

FDOT's progress toward agency pavement and bridge standards is shown in figure 2 and figure 3 by collection year (CY) and fiscal year (FY), respectively.

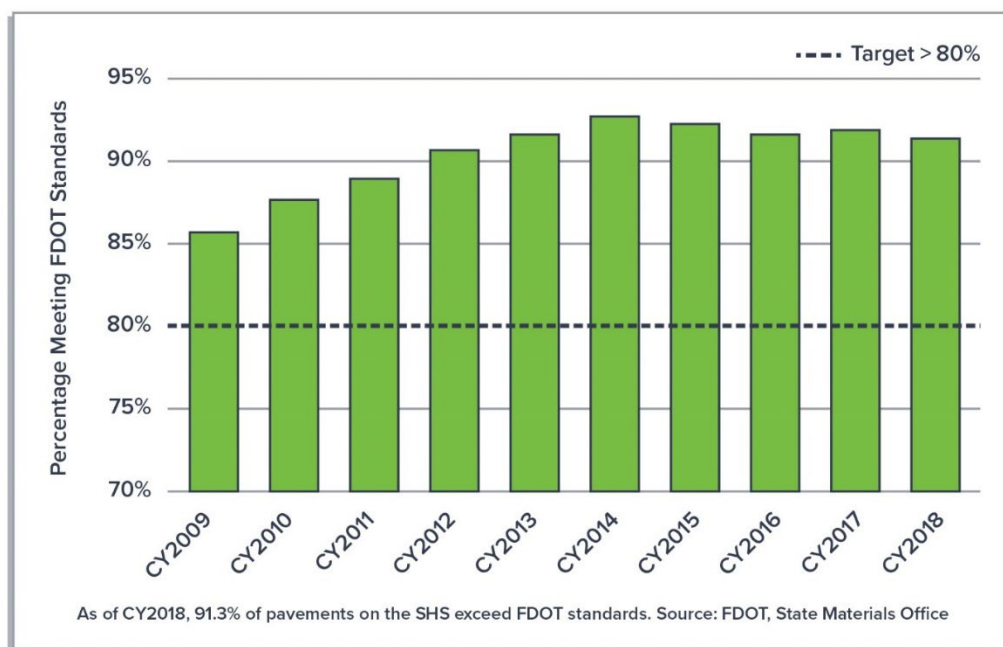


Figure 2. Percent pavement on the SHS meeting FDOT standards (FDOT 2019).

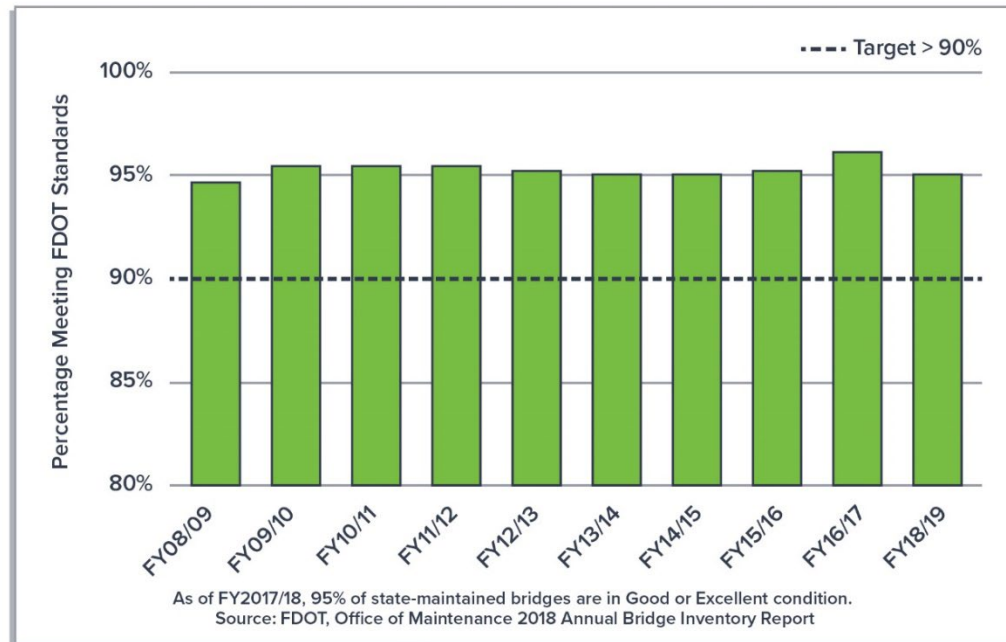


Figure 3. Percent bridges on the SHS meeting FDOT standards (FDOT 2019).

These state of good repair (SOGR) priorities are integral to FDOT’s mission, business processes, and planning documents. As articulated in the TAMP, FDOT uses these measures to assess how well the infrastructure is functioning, provide decision support, assess its project delivery, determine how well it is meeting its customers’ needs, and show accountability to its transportation stakeholders (FDOT 2015a, 2019). Armed with these principles, funding is prioritized first to ensure pavement, bridge, and maintenance targets are met before any capacity projects are undertaken.

FDOT conducts TAM planning workshops each spring to review past performance of maintenance, resurfacing, and bridge projects:

- For maintenance, the process involves evaluating maintenance conditions using maintenance levels of service, reviewing maintenance needs, and estimating the needed budget.
- For pavement, sophisticated monitoring equipment is used to annually survey pavement conditions (e.g., ride quality, cracking, rutting) and quantify the condition. Expected future conditions are projected and used to determine the percent of the system that should be resurfaced (based on lane miles) and the cost to meet the statutory requirement of 80 percent of pavement meeting FDOT standards.
- For bridges, engineers inspect each bridge at least once every 2 years and recommend any needed improvements or replacements. A bridge is programmed for replacement within 6 years of its recommendation for replacement. Planning for replacement costs reduces the financial strain and lowers overall expenses.

In addition to reviewing past performance, the workshops affirm the priorities, beginning with safety, preservation, statutory allocations (e.g., seaports, county programs, public transportation), and then capacity.

### **Processes for Projecting Needed and Available Funds**

The RECs are the primary tool FDOT uses to monitor and respond to funding changes. These conferences occur before, during, and after each legislative session to determine the anticipated impact of pending and enacted State legislation on State revenues. The timing of the REC process varies based on a biennial schedule. The initial REC occurs three months before the initial legislative session to inform the Governor of the current estimate of State revenues and the recommended budget. A second REC refines the forecast once the session begins. During the REC conferences, revenue predictions are typically conservative, and revenue collections are continually used to readjust the forecast.

In addition to the RECs, FDOT monitors trends in construction cost indicators and incorporates these changes into its estimates to allow time to prepare for possible increases or decreases in costs. Construction cost indicators are discussed quarterly at the Executive Performance Review Meetings and used to inform ongoing projections.

Higher project costs sometimes come as a result of price fluctuations of certain materials, coupled with the decreasing certainty of project bids. However, FDOT has processes in place to deal with periodic changes in material costs and their impact on project bids. FDOT overcomes these risks and provides stability by indexing fuel prices and bituminous materials to address material pricing uncertainty.

The STTF (State of Florida 2000-2022a; FDOT 2022d) provides further stability to offset unanticipated shortfalls. Figure 4 shows the State taxes and fees deposited into the trust fund from various sources over financial year (FY) 2021. The STTF, along with a high level of political support for Florida's very significant and growing transportation needs, helps to minimize the overall impact an uncertain State revenue can have on transportation.

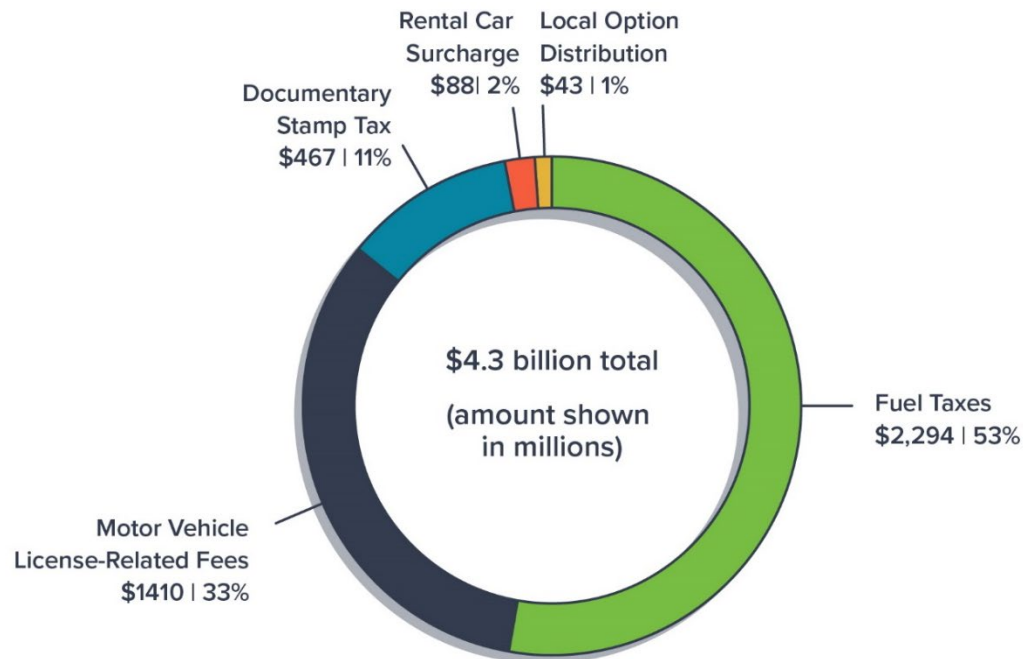


Figure 4. State taxes and fees deposited into the STTF in FY2021 (FDOT 2022d).

FDOT has also established mechanisms for maximizing Federal revenues. As economic conditions began improving after the start of the COVID-19 pandemic, the State of Florida enacted the 2020-21 State Budget (Florida Senate 2020), which provides increased funding for transportation and other infrastructure priorities, leveraging available Federal funds and other revenue sources. Beginning in FY2021, FDOT started to predict the amount of Federal revenue using the amount of funding in the last year of the FAST Act (FY2020) and holding it flat into the future with no inflation factors applied.

### Addressing Recent Funding Uncertainty

FDOT has developed several strategies aligned with the TAMP, specifically addressing recent funding uncertainty resulting from potential social, economic, and political risks. Some uncertainties that have emerged since the TAMP was published include COVID-19 recovery, possible revenue reductions, emergency response and recovery, construction cost increases, and supply chain issues. The strategies to mitigate these uncertainties are guided by TAM-focused approaches presented in the TAMP. This provides a path for FDOT to respond to evolving or quickly emerging needs while ensuring a continued focus on preservation, safety, and other principal objectives described in the TAMP (FDOT 2019).

These approaches include:

- Ensuring the safety and security of transportation customers.
- Minimizing damage to infrastructure from vehicles.
- Achieving and maintaining a SOGR for transportation assets.

- Reducing the vulnerability and increasing the resilience of critical infrastructure to the impacts of extreme weather and events.

The strategies used to mitigate the aforementioned uncertainties are summarized below.

### **COVID-19**

According to FDOT staff, COVID-19 resulted in a 2020-2021 revenue reduction of \$430 million and \$1.5 billion less than the 5-year work program. Since then, FDOT has exceeded pre-COVID-19 projections, although drops during the pandemic have not been made up.

During COVID, there was a risk of having to put a hold on existing construction contracts. The Governor signed Executive Order Number 20-275 (State of Florida 2020) to suspend some of the statutory allocations that went to the county, seaports, public transportation, and strategic and modal systems. Notably, preservation was not included in this list of potential short-term suspensions, and funding appears to have stabilized since then.

### **Reduced Revenues**

If revenues are negatively impacted due to a failure to predict the amount of funding available accurately, capacity projects would be reprioritized and possibly deferred, and other adjustments would be made, as necessary, to keep the existing transportation system safe and in SOGR.

### **Emergency Response and Recovery**

According to NOAA weather and climate statistics, Florida experienced eight (8) billion dollar disasters at a total cost of \$1-2 billion over the period 2018-2022 (NOAA 2022). In the event that available funds are not sufficient to address emergency recovery and response, FDOT would begin deferring capacity-related projects to restore roads and bridges as quickly and safely as possible. Resources would be reallocated to ensure operating and maintenance costs associated with the event are covered.

### **Construction Cost Increases**

If funding is impacted at the program level due to construction cost increases, capacity projects would be deferred and other adjustments made, as necessary, to preserve the existing transportation system.

### **Unfunded Mandates**

If funding is reduced due to unfunded mandates, capacity projects would be deferred. Other adjustments would be made to ensure that the existing transportation system is preserved to standards before addressing the unfunded mandates.

### **Supply Chain Disruptions**

At times, FDOT has explored procuring contracts for the supply and stockpiling of construction materials to ensure the ongoing availability of materials for its projects during supply disruptions. If a need arises, FDOT may contract for the supply and stockpile of materials.

## RESULTS OBTAINED

FDOT's efforts have resulted in several significant enhancements in support of the priorities summarized in figure 5. FDOT built upon the State legislation to establish supporting agency practices. The agency uses its RECs as a mechanism for improving revenue projections and monitoring funding changes as part of a comprehensive forecasting strategy. FDOT is committed to prioritizing preservation and safety. Thus, to the extent that available funds are less than expected or that costs are greater than expected, the agency's approach is to defer capacity expansion projects before shifting funds from planned preservation and safety investments.

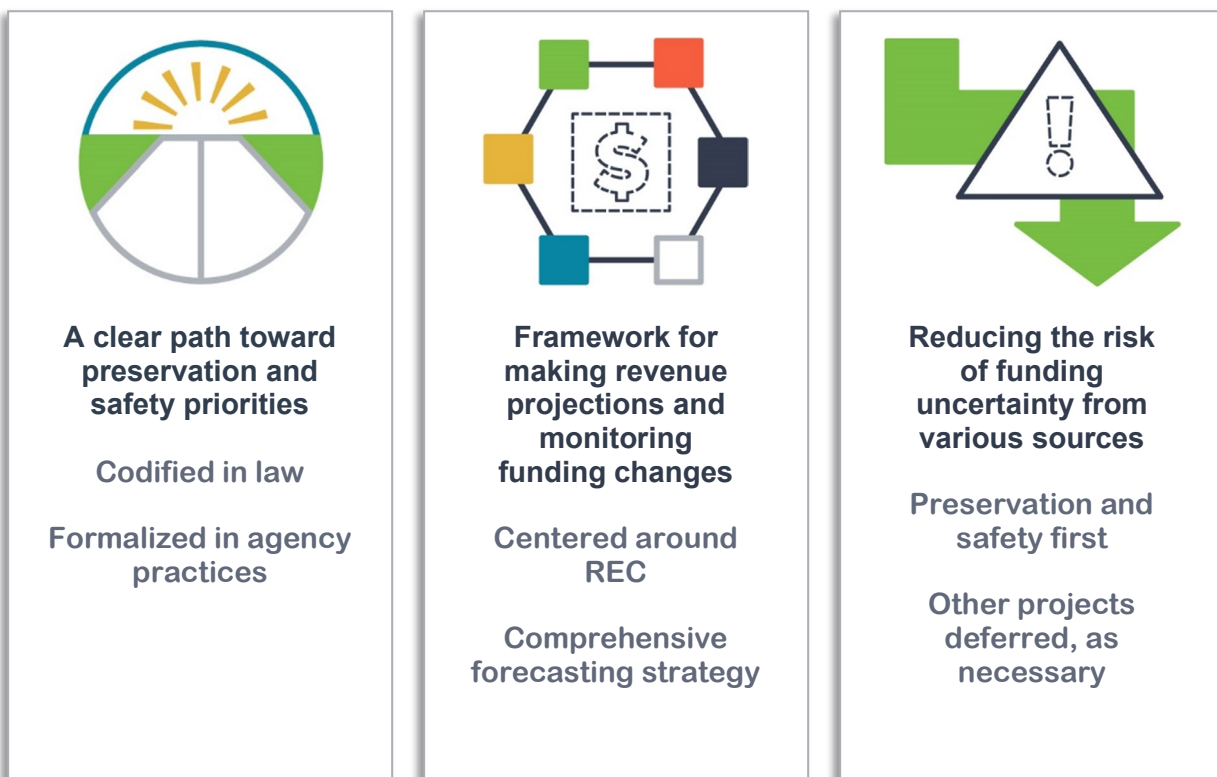


Figure 5. Summary of FDOT Results.



## NEXT STEPS/FUTURE CHALLENGES

FDOT is making plans to mitigate or avoid future challenges related to frontage roads and other physical characteristics that may pose a risk to accurate project cost estimation.

### Frontage Roads

The frontage roads on the SHS have not received a separate designation in urbanized areas and are not included in calculating overall pavement condition. In the future, frontage road conditions will be assessed and included in the pavement condition survey and inventory. When allocations are made, FDOT works with districts to ensure they have enough funds for the frontage roads. FDOT is currently working to find a way to measure frontage road condition and bring those roads into the total inventory.

### Other Physical Characteristics

FDOT is modifying the design manual for resurfacing projects to specify which issues should be addressed when scoping a project, and estimates are included based on these additional costs. An initial allocation is set annually based on targets for lane miles of resurfacing by the district. Subsequently, these additional costs are reconciled with the plan. The agency will need to monitor whether the actual costs align with the original estimates, including the improvements to other physical characteristics.

## REFERENCES

23 CFR Part 515. [\*Asset Management Plans\*](#).

23 USC 119(e). [\*State Performance Management\*](#).

American Society of Civil Engineers (ASCE). 2021. [\*2021 Report Card for America's Infrastructure\*](#). ASCE, Reston, VA.

Florida Department of Transportation (FDOT). 2015a. [\*Transportation Asset Management Plan \(TAMP\): Preserving the State's Infrastructure\*](#). October 2015. FDOT, Tallahassee, FL.

Florida Department of Transportation (FDOT). 2017. [\*Transportation Funding Sources\*](#). Presentation by the FDOT Office of Comptroller – General Accounting Office. FDOT, Tallahassee, FL.

Florida Department of Transportation (FDOT). 2018. [\*Revenue Forecasting Guidebook\*](#). FDOT, Tallahassee, FL.

Florida Department of Transportation (FDOT). 2019. [\*Transportation Asset Management Plan\*](#). FDOT, Tallahassee, FL.

Florida Department of Transportation (FDOT). 2022a. [\*Florida Transportation Fast Facts\*](#). Webpage. Accessed August 2022. FDOT, Tallahassee, FL.

Florida Department of Transportation (FDOT). 2022b. [\*Florida Transportation Plan 2045\*](#). FDOT, Tallahassee, FL.

Florida Department of Transportation (FDOT). 2022c. Interview with FDOT staff, conducted February 28, 2022.

Florida Department of Transportation (FDOT). 2022d. [\*Florida's Transportation Tax Sources: A Primer\*](#). FDOT. Tallahassee, FL.

Florida Senate. 2020. [\*HB 5001: General Appropriations Act\*](#). State of Florida, Tallahassee, FL.

Florida Senate. 2000-2022a. [\*2022 Florida Statutes. Title XXIV Taxation and Finance, Chapter 206, Section 46 State Transportation Trust Fund\*](#). State of Florida, Tallahassee, FL.

Florida Senate. 2000-2022b. [\*2022 Florida Statutes. Title XXVI Public Transportation, Chapter 334 Transportation Administration, Section 046 Department mission, goals, and objectives\*](#). State of Florida, Tallahassee, FL.

Florida Senate. 2000-2022c. [\*2022 Florida Statutes. Title XXVI Public Transportation, Chapter 339 Transportation Finance and Planning, Section 155 Transportation planning\*](#). State of Florida, Tallahassee, FL.

Florida Transportation Commission. 2021. [\*Review of the Florida Department of Transportation Tentative Work Program: Fiscal Years 2021/22 through 2025/26\*](#). Florida Transportation Commission, Tallahassee, FL.

National Oceanic and Atmospheric Administration, National Centers for Environmental Information (NOAA). [\*Billion-Dollar Weather and Climate Disasters, Summary Stats\*](#). Accessed August 2022.

State of Florida. 2020. [\*Office of the Governor Executive Order Number 20-275 \(Florida Department of Transportation - Fund Allocation Relief\)\*](#). State of Florida Office of Governor Ron DeSantis, Tallahassee, FL.

U.S. Congress. 2022. P.L. 117-58 – [\*Bipartisan Infrastructure Law \(BIL\)\*](#). U.S. Congress, Washington, DC.

U.S. Congress. 2015. Public Law 114-94. [\*Fixing America's Surface Transportation Act\*](#). U.S. Congress, Washington, DC.