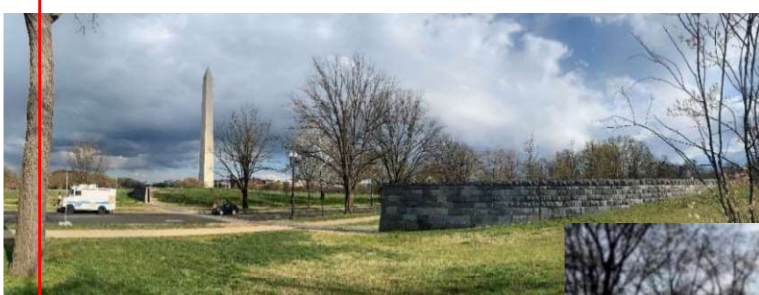
District Department of Transportation

TRANSPORTATION ASSET MANAGEMENT PLAN



October 2022

Executive Summary

Chapter 1. Introduction

TAMP minimum requirements

- ✓ Listing of the pavement and bridge assets on the National Highway System in the State, including a description of the condition of those assets;
- ✓ Asset management objectives and measures;
- ✓ Performance gap identification;
- ✓ Lifecycle cost and risk management analysis;
- ✓ A financial plan; and
- ✓ Investment strategies.

This 2022 **Transportation Asset Management Plan** (TAMP) provides updates to the Transportation Asset Management Plan certified by the Federal Highway Administration (FHWA) in August 2019. The TAMP is a *ten-year* strategic document that enables the District Department of Transportation (DDOT) to achieve asset management objectives while supporting agency-wide strategic goals.

This 2022 TAMP includes NHS pavements and bridges, DDOT-maintained non-NHS pavements (i.e., local roads and federal-aid roads), non-NHS bridges (including pedestrian bridges), tunnels, alleys, and sidewalks. While DDOT has attempted to develop a comprehensive TAMP including other assets, the analysis in this TAMP has been limited to assets which have sufficient data and information. As such, additional assets beyond the NHS pavement and bridges are not to be considered part of the TAMP recertification process.

EXECUTIVE SUMMARY

Chapter 2. TAM at DDOT

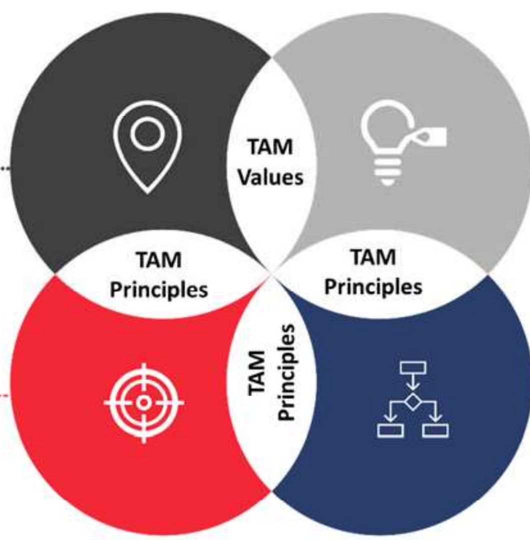
What is TAM?
"A strategic and systematic process of operating, maintaining, and improving physical assets, with a focus on both engineering and economic analysis based upon quality information to identify a structured sequence of maintenance, preservation, repair, rehabilitation, and replacement actions that will achieve and sustain a desired state of good repair (SOGR) over the lifecycle of the assets at minimum practicable cost."

DDOT Mission

To equitably deliver a safe, sustainable and reliable multimodal transportation network for all residents and visitors of the District of Columbia.

DDOT Strategic Objectives

- Maintain and improve core transportation infrastructure to preserve the quality of the transportation network.
- Invest in long-term capital projects to enhance and preserve the infrastructure and assets of the transportation network.
- Create and maintain a highly efficient, transparent, and responsive District government.



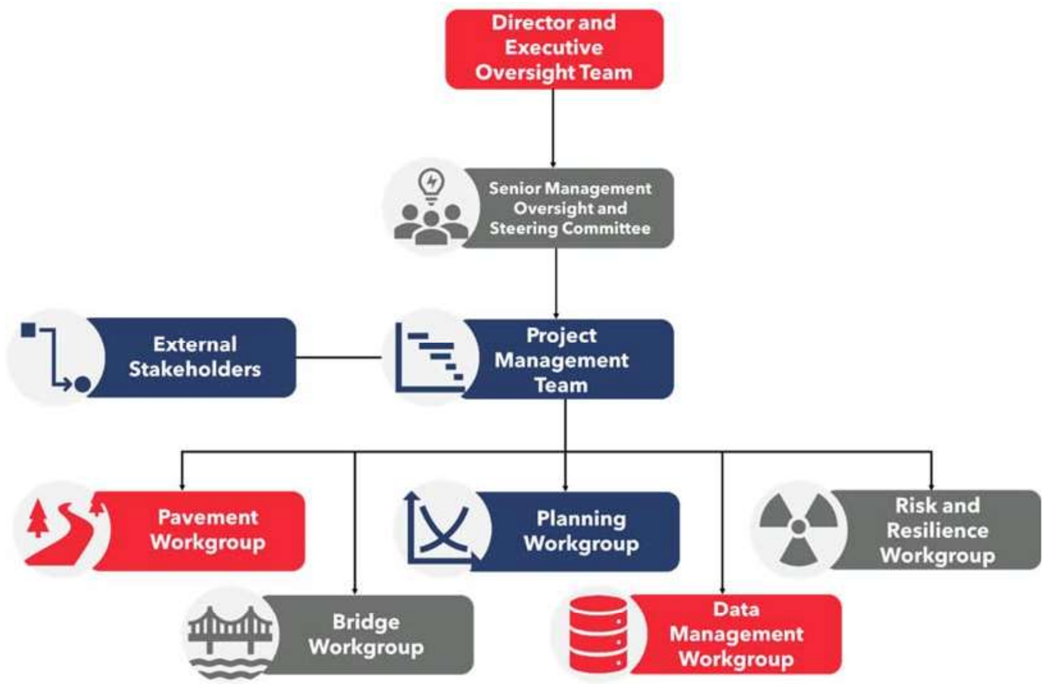
DDOT Vision

Creating safety and mobility solutions for the existing and emerging transportation challenges within our community.

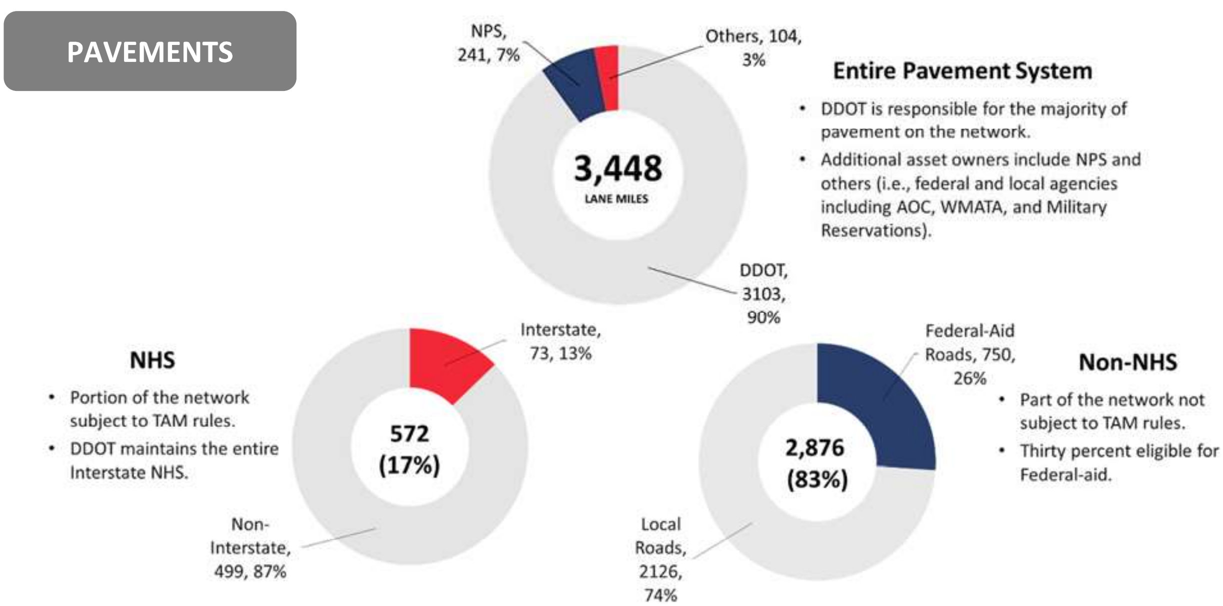
TAM Processes

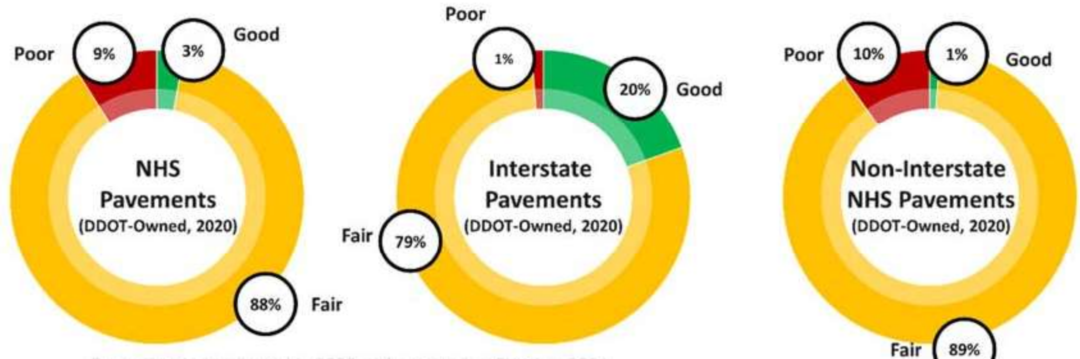
- Performance management
- Life cycle planning
- Financial planning
- Investment planning
- Risk management

The **governance structure** reflects the flow of TAM information across the organization. DDOT regularly updates the governance plan to keep up with the changing roles and turnover of staff. Additionally, DDOT also involves and continuously communicates with key stakeholders of NHS assets such as the National Park Service (NPS) and the Architect of the Capitol (AOC) (pavement only), as well as the Metropolitan Washington Council of Governments (MWCOG).



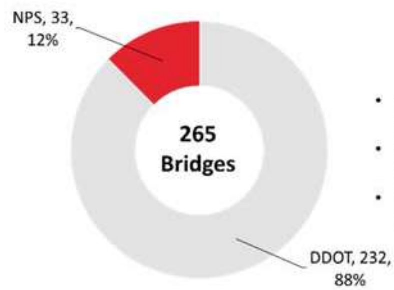
Chapter 3. Asset Inventory and Conditions





Pavement data collected in 2020 and reported to FHWA in 2021

BRIDGES

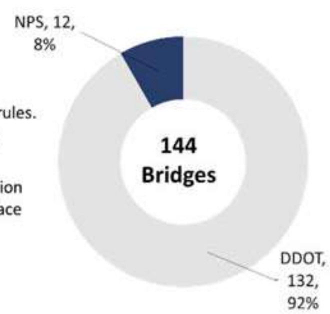


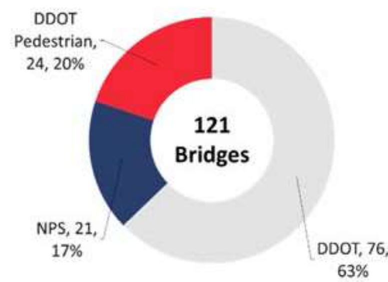
Entire Bridge System

- Total bridge deck area is 6.3 million square feet.
- DDOT maintains 5.9 million square feet.
- NPS maintains 500K square feet of deck surface area.

NHS Bridges

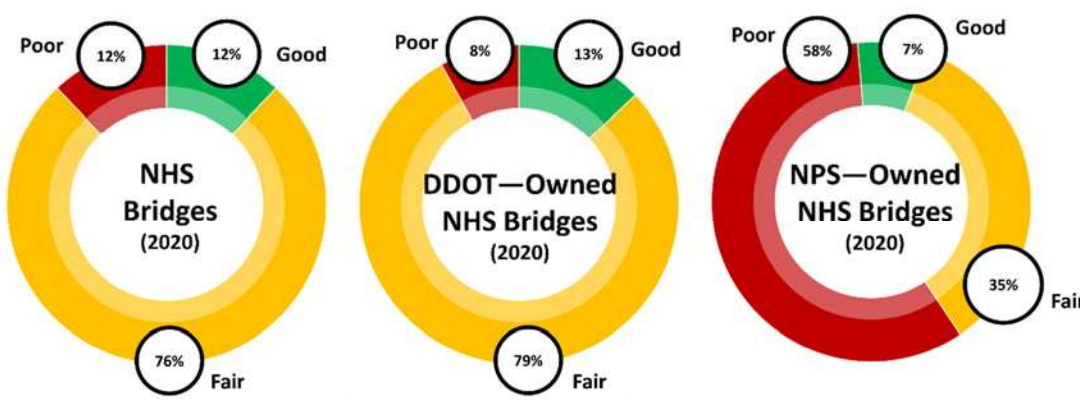
- Bridges subject to TAM rules.
- Deck area of 4.9 million square feet.
- DDOT maintains 4.5 million square feet of deck surface area.





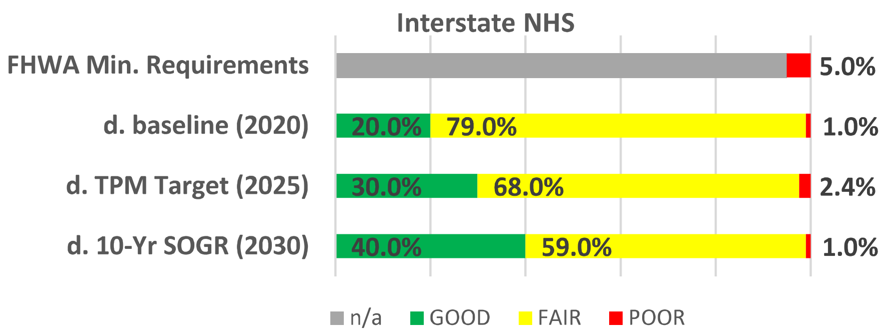
Non-NHS Bridges

- Bridges not subject to TAM rules.
- Includes 24 pedestrian bridges.
- Deck area of 1.4 million square feet.



Bridge data collected in 2020 and reported to FHWA in 2021

Chapter 4. Asset Performance Goals and Targets



Interstate NHS Pavements

2020 Condition
% Good = 20%
% Poor = 1%

2025 Target
% Good ≥ 30%
% Poor ≤ 2.4%

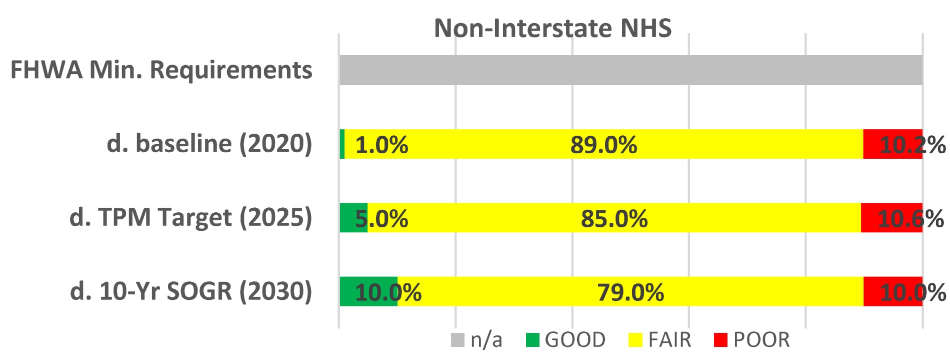
10-Year SOGR
% Good ≥ 39.5%
% Poor ≤ 1%

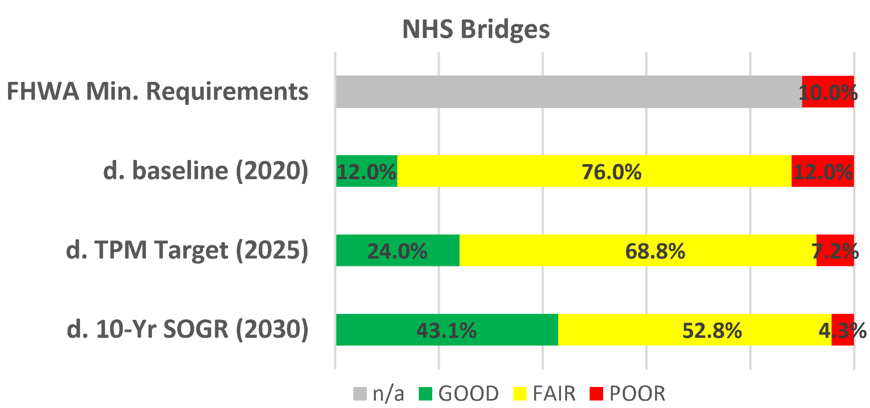
Non-Interstate NHS Pavements

2020 Condition
% Good = 1%
% Poor = 10%

2025 Target
% Good ≥ 5%
% Poor ≤ 10%

10-Year SOGR
% Good ≥ 9.5%
% Poor ≤ 10.6%





NHS Bridges

2020 Condition
% Good = 12%
% Poor = 12%

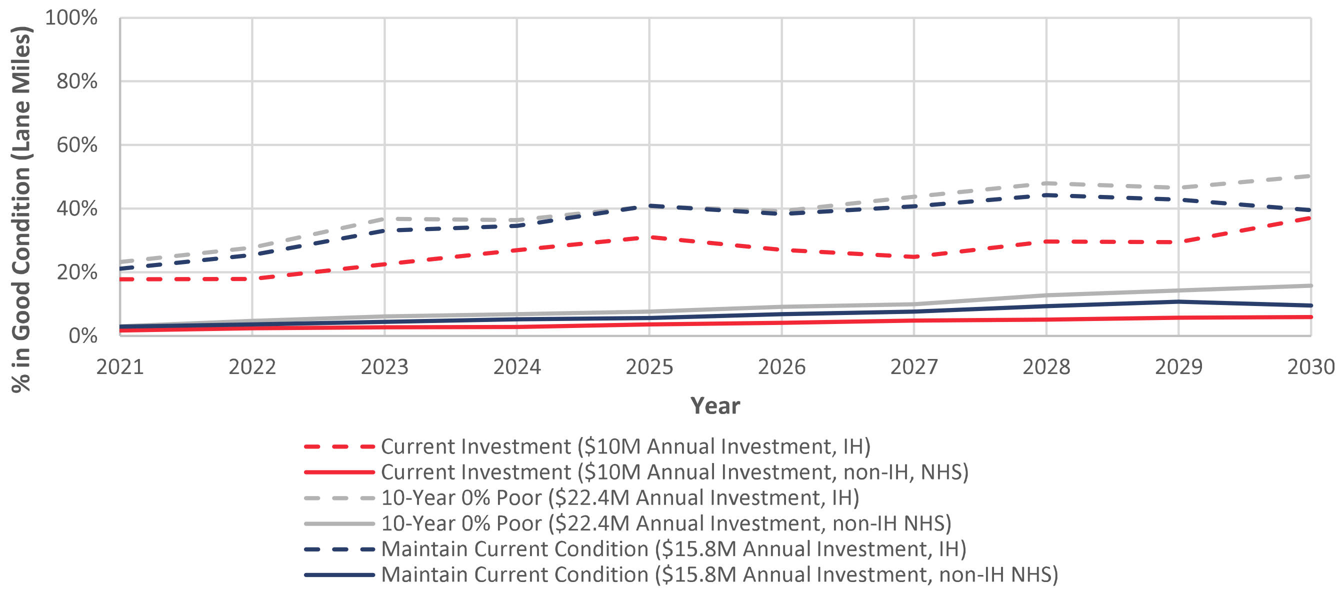
2025 Target
% Good ≥ 24%
% Poor ≤ 7.2%

10-Year SOGR
% Good ≥ 43.1%
% Poor ≤ 4.3%

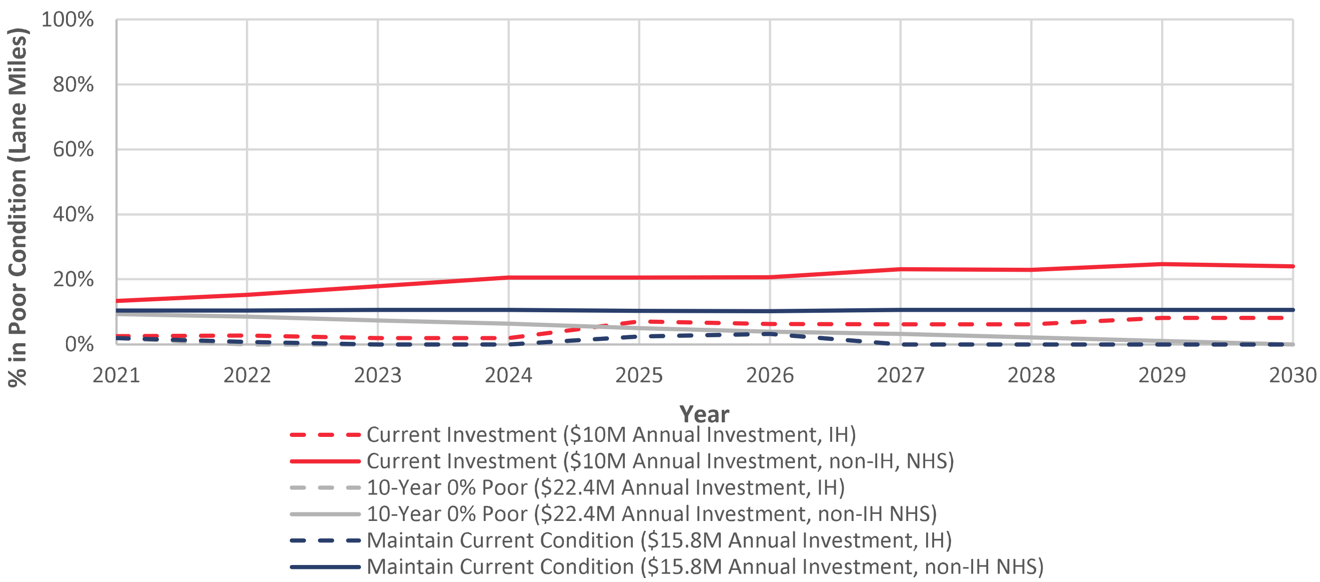
Chapter 5. Life Cycle Planning

Life Cycle Planning (LCP) is a concept of strategically selecting treatments to optimize the performance of the network while minimizing the cost. DDOT utilized three types of life cycle planning scenarios:

- **Maintain Current Conditions:** Assesses the level of investment necessary for DDOT to maintain the asset network at current conditions over the analysis period.
- **Achieve Specified Condition:** Determines the level of investment necessary for DDOT to meet a desired performance for the asset (i.e., 0% of the NHS in Poor condition by Year 10).
- **Specified Investment:** Evaluates the network performance given a specified budget.

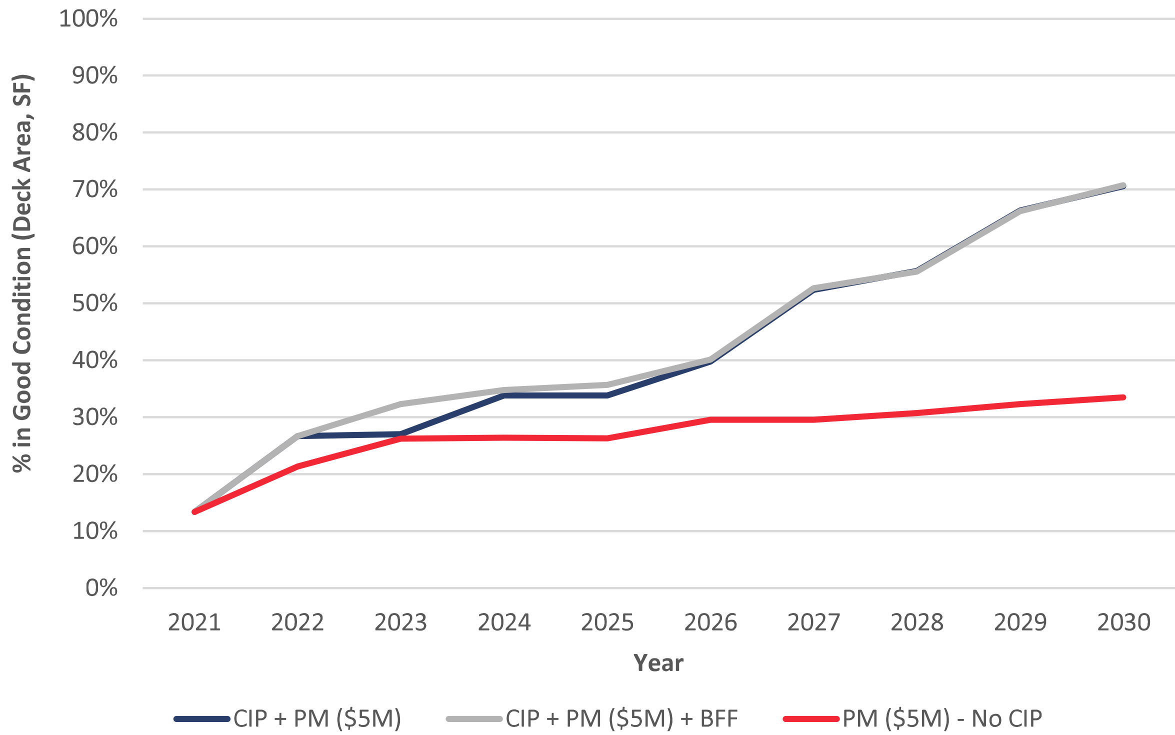


Percent of Pavements in Good Condition for LCP Scenarios

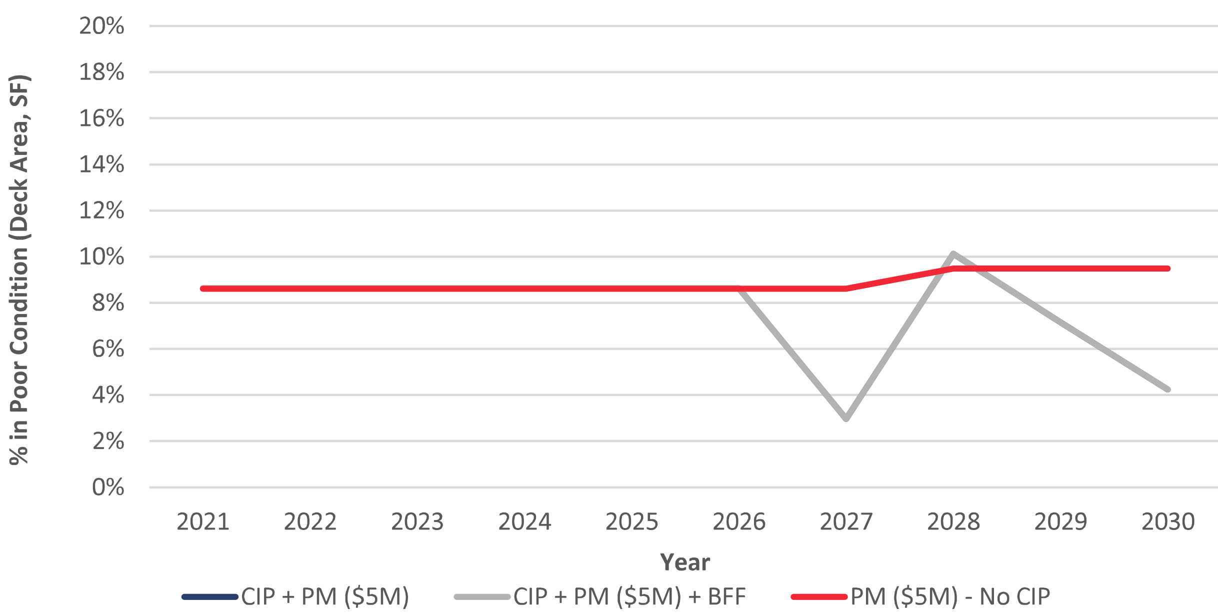


Percent of Pavements in Poor Condition for LCP Scenarios

DDOT's bridge LCP scenarios focused on assessing different funding levels including Capital Improvement Projects (CIP) funding only (CIP Only), $5 million for preventative maintenance (PM) ($5M), and other different combinations of these funding sources and funding available through the Bridge Formula program (BFF).



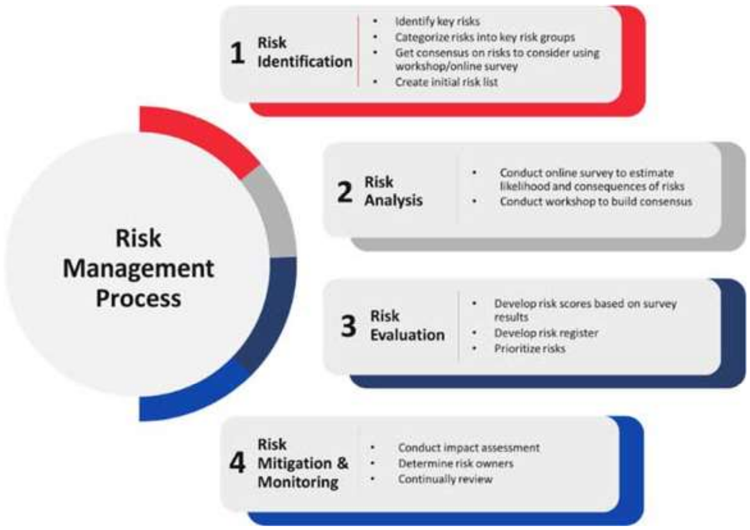
Percent of NHS Bridges in Good Condition for LCP Scenarios



Percent of NHS Bridges in Poor Condition for LCP Scenarios

Chapter 6. Risk Management Analysis

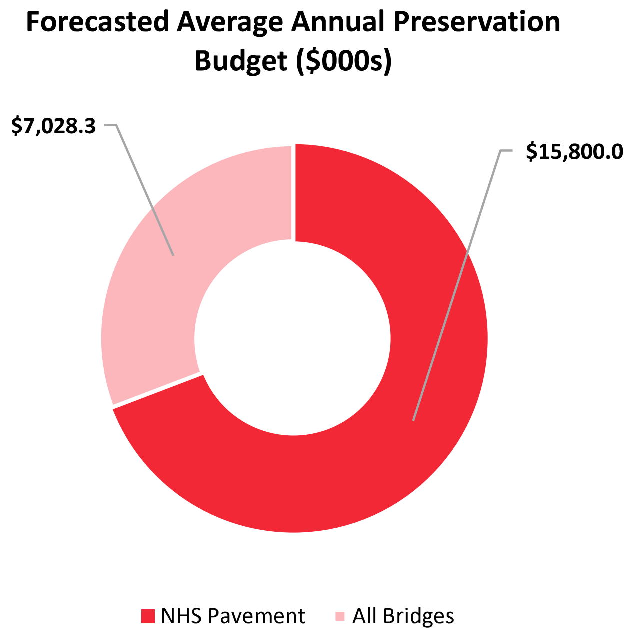
DDOT relies on best practices to analyze and respond to asset management risks. Specifically, the Agency has adopted a four-step risk management process that incorporates federal and international standards of risk management. The process focuses on identifying, analyzing, evaluating, mitigating, and monitoring risk. DDOT used the process to create a risk register that documents and tracks risks events, their likelihood of occurrence and consequences/impacts, the associated actions to alleviate their impact, and the owners of the risks. A summary of DDOT's top-five high priority risks is provided below.

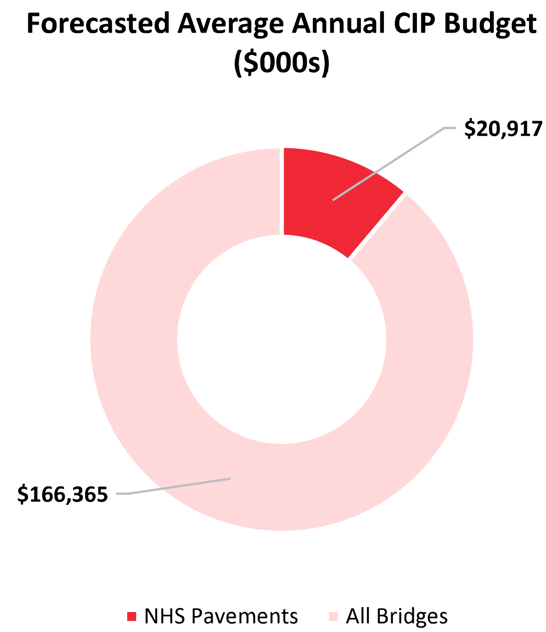


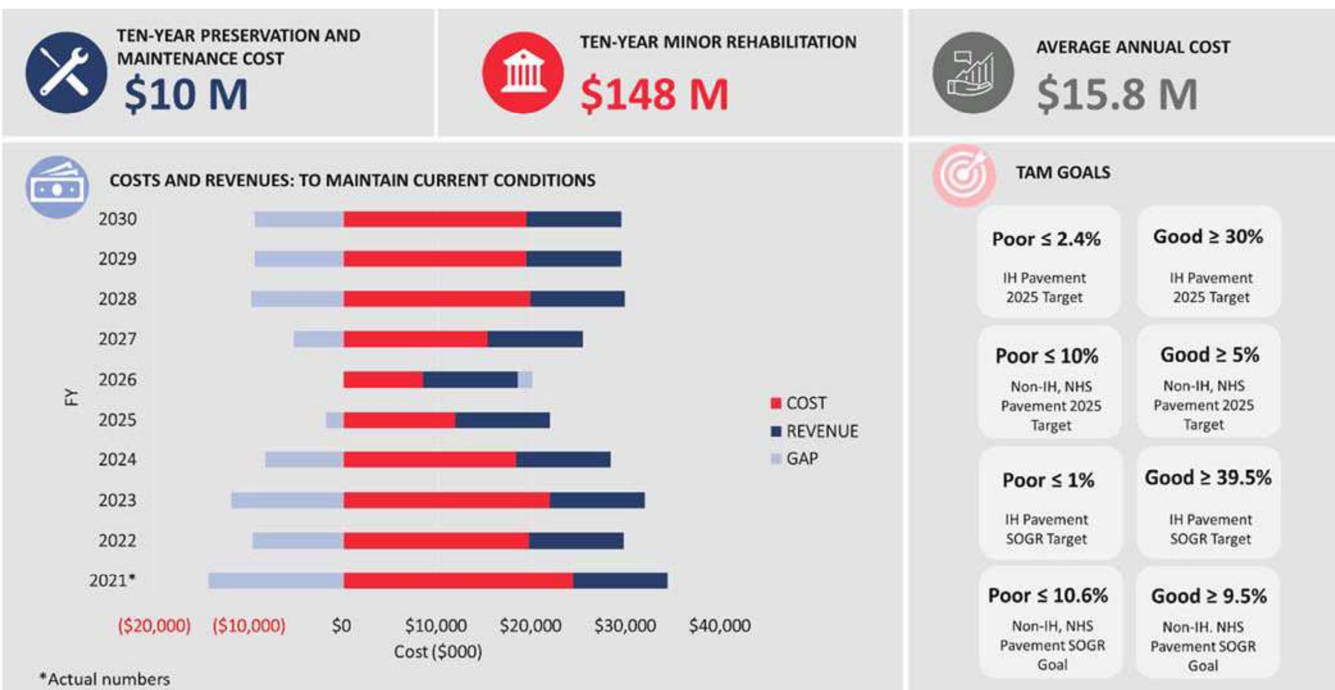
Top-5 High Risks to DDOT Assets

Risk Score	Risk Event	Potential Impact
20	Inability to procure qualified contractors in a reasonable amount of time and at a reasonable cost to support program delivery.	❖ Delays in project delivery. ❖ Unmet program and performance goals. ❖ Increased customer complaints. ❖ Negative impacts on the Department's reputation.
19	Local funding appropriation is impacted by diverse government policies and restrictions.	❖ Unmet department and program goals and performance targets. ❖ Unfunded local projects. ❖ Increased customer complaints.
18	Loss of performance or damage to assets due to the failure of utilities assets or buried pipes.	❖ Premature failure of transportation assets. ❖ Extended roadway closures. ❖ Increased cost due to emergency repairs. ❖ Delayed projects due to the diversion of funds for emergency repairs. ❖ Increased safety and mobility concerns.
18	Use of poor-quality materials and workmanship	❖ Increased construction defects. ❖ A decreased expected service life of assets. ❖ Increased deterioration rate. ❖ Increased cost due to premature failure.
18	Program delivery impacted by multimodal or corridor-related projects.	❖ Delayed projects due to the lack of funding. ❖ Unmet performance targets and goals. ❖ Inefficient use of limited resources.

Chapter 7. Financial Planning







Summary of Financial Needs of DDOT NHS Pavements

TEN-YEAR PRESERVATION AND MAINTENANCE COST

$62 M

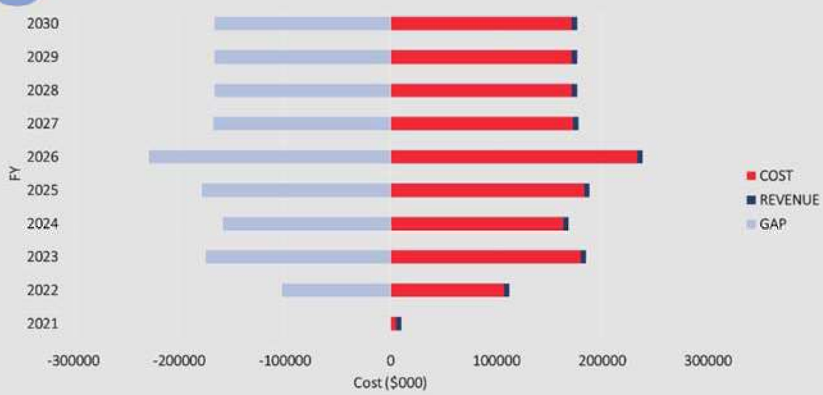
TEN-YEAR REHABILITATION AND RECONSTRUCTION

$1.5 B

AVERAGE ANNUAL COST

$156 M

COSTS AND REVENUES: TO MAINTAIN CURRENT CONDITIONS*



Note: Annual Preservation Revenue Only | 2021 is actual expenditure

TAM GOALS

Poor ≤ 7.2% NHS Bridges 2025 Target	**Good ≥ 24%** NHS Bridges 2025 Target
Poor ≤ 4.3% NHS Bridges SOGR Goal	**Good ≥ 43.1%** NHS Bridges SOGR Goal

Summary of Financial Needs of DDOT-Owned NHS Bridges

NHS ROADS

$604 Million

572 Lane Miles

This includes Interstate and non-Interstate, NHS pavements in the District.

NON-NHS ROADS

$2.5 Billion

2,876 Lane Miles

This includes all non-NHS pavements in the District: Local and Federal-aid pavements.

BRIDGES

$30 Billion

5.9 Million Sq.ft.

This includes all NHS and non-NHS bridges maintained by DDOT. Pedestrian bridges are also included.

ALLEYS

$281 Million

350 Miles

These thoroughfares are used for municipal functions such as garbage collection, deliveries, and parking.

Asset Replacement Cost

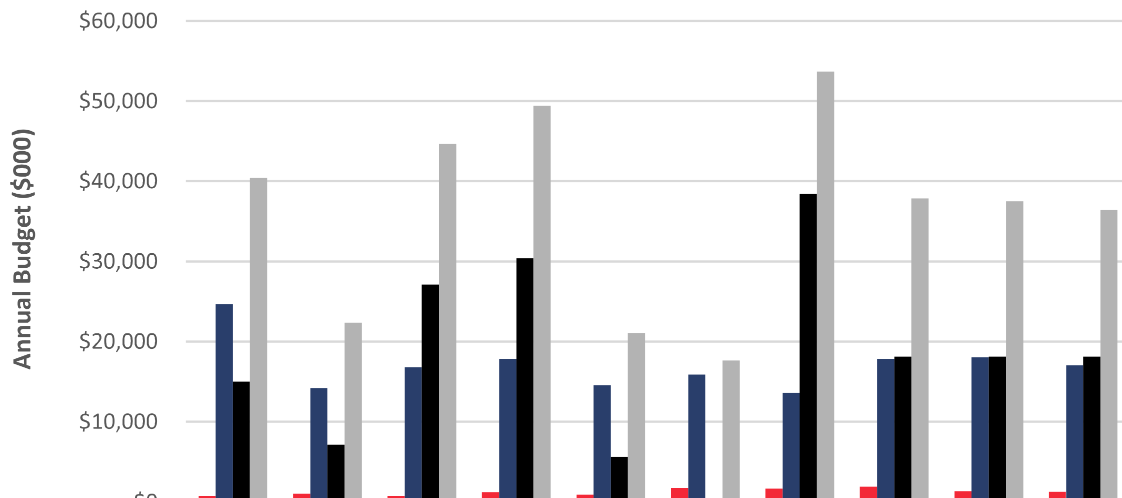
Chapter 8. Investment Strategies

Investment strategies are simply a set of tactics that enable a State to achieve performance targets while also minimizing costs and managing risks. The figures below show the performance gaps, funding needs, and performance of NHS pavements and bridges based on developed investment strategies.

Performance Gap Between Baseline Condition (2020) and 10-Yr DDOT's SOGR Target for NHS Pavements

Performance Gap Between 2030 Projected Performance and 10-Yr SOGR Target for NHS Pavements

Performance Gaps for DDOT's NHS Bridges

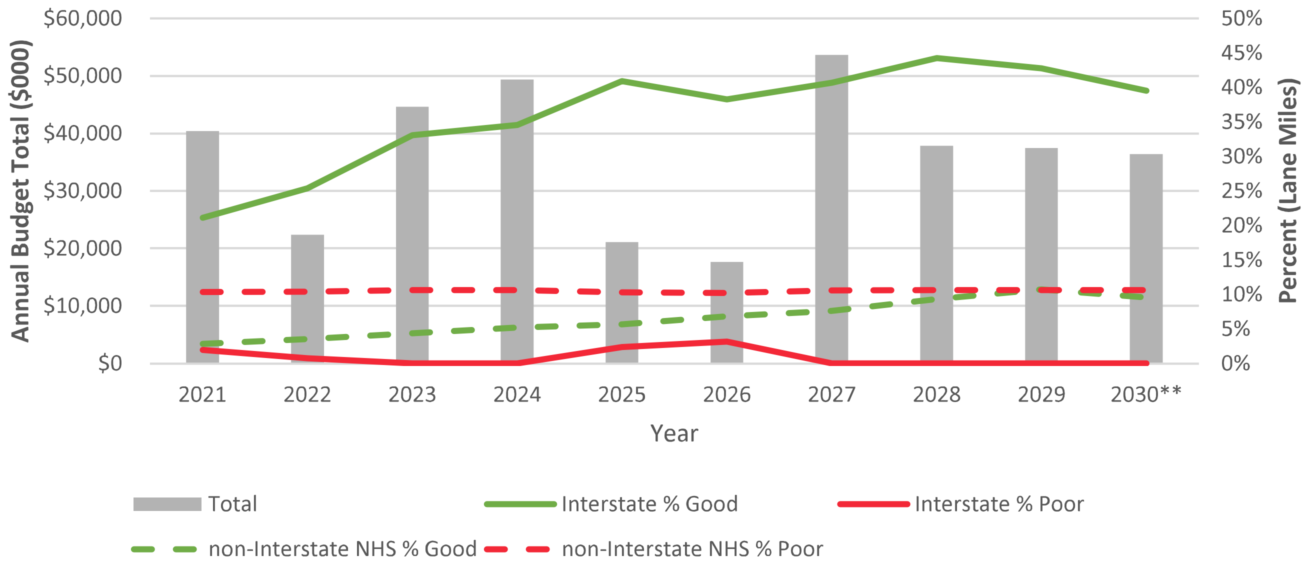


	2021^	2022	2023	2024	2025	2026	2027	2028	2029	2030**
Preservation	$731	$998	$748	$1,200	$883	$1,726	$1,670	$1,913	$1,330	$1,244
Minor Rehab	$24,672	$14,220	$16,800	$17,833	$14,555	$15,893	$13,594	$17,827	$18,035	$17,048
Major Rehab/Reconstruction (CIP)*	$15,000	$7,149	$27,086	$30,368	$5,631	$0	$38,417	$18,108	$18,108	$18,108
Total	$40,403	$22,367	$44,634	$49,401	$21,069	$17,618	$53,681	$37,848	$37,473	$36,400

Annual Investment Trend – NHS Pavement

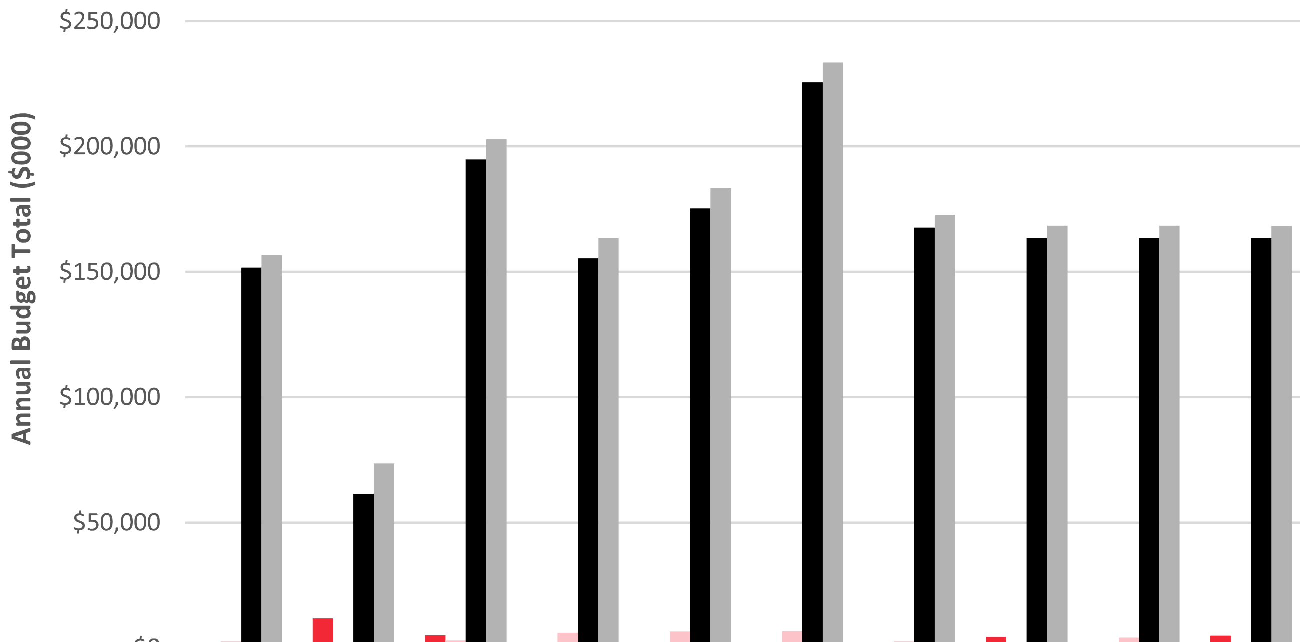
* While CIP funding is included in the above, the CIP projects that will be completed in the next five years will not significantly impact the performance of the NHS pavement network. Additionally, an average value was used to populate the CIP budget for 2028-2030 as the existing financial projections for CIP stop at FY 2027. ^Note: FY2021 data is actual. This was used because the asset baseline data available was 2020 data reported in 2021.

** 2030 Preservation and Minor Rehabilitation values are based on the average spending for each, respectively.



Projected Performance and Funding – NHS Pavements

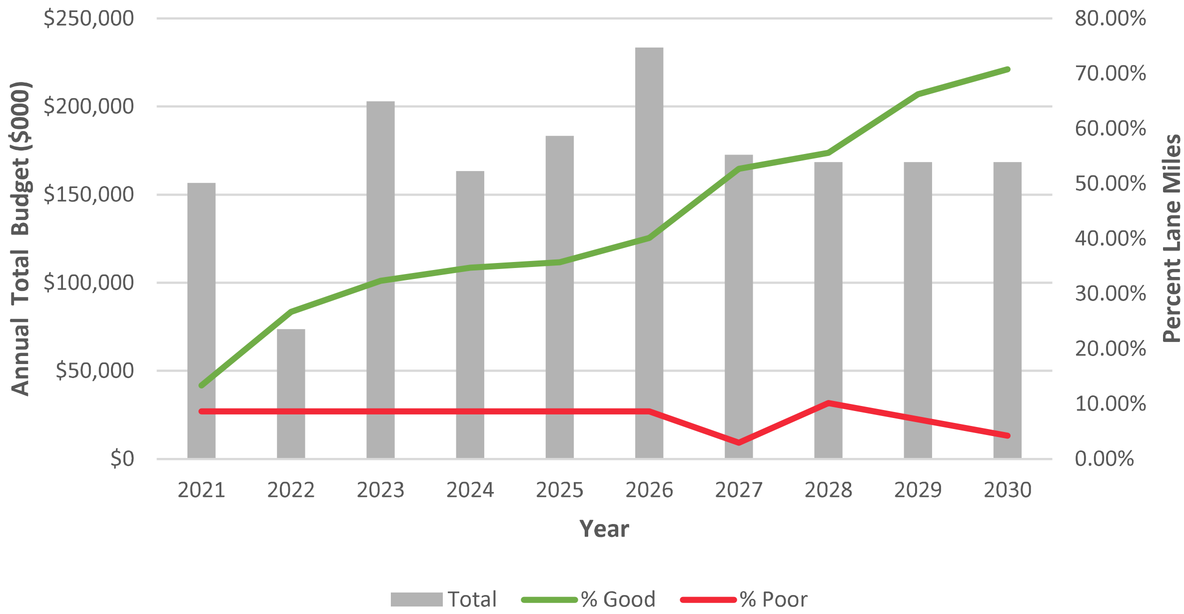
** 2030 Preservation and Minor Rehabilitation values are based on the average spending for each, respectively.



	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Preservation (Repairs)	$2,362	$11,782	$5,039	$1,958	$1,396	$1,247	$2,370	$4,381	$803	$4,858
Preventative (Cyclical)	$2,638	$218	$2,936	$6,039	$6,585	$6,719	$2,620	$616	$4,155	$92
CIP*	$151,628	$61,488	$194,838	$155,388	$175,295	$225,512	$167,672	$163,365	$163,365	$163,365
Total	$156,628	$73,488	$202,813	$163,385	$183,276	$233,478	$172,662	$168,362	$168,324	$168,316

Annual Investment Trend – NHS Bridges

*An average value was used to populate the CIP budget for 2028-2030 as the existing financial projections for CIP stop at FY 2027.



Projected Performance and Funding – NHS Bridges (Scenario: CIP + PM ($5M) + BFF)

Chapter 9. Continuous Process Improvement