metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

2050 Metropolitan Transportation Plan

Appendix P | Transportation Project Cost & Complexity Estimations

August 22, 2025

Draft

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P.1 Purpose and Background

MetroPlan Orlando seeks to establish the project cost estimation methodology for the 2050 Metropolitan Transportation Plan (MTP). The 2050 MTP methodology intends to build off the 2045 MTP methodology while incorporating appropriate best practices for costing. The 2050 MTP cost estimation methodology includes initial cost estimation using a per mile, master plan, or historic cost source. A cost buffer is then applied to the initial cost estimation to account for potential project complexity. The approach to develop the cost estimates for the 2050 MTP is shown in Figure P-1 below.

The sections in this appendix document the methodology for Step 1 (Initial Cost Estimation) and Step 2 (Apply a Cost Buffer for Project Complexity), as well as considerations for future cost estimation efforts.

Figure P-1 | Cost Estimation Methodology Approach - Overview

P.2 Per Mile Cost Estimation Methodology

Per Mile cost estimates were developed for all identified 2050 Needs to develop the Cost Feasible Plan. The 2050 MTP Needs were categorized into the following "Needs Types":

- Active Transportation
- Safety
- TSMO / Operational
- Complete Streets / Urban Corridor Improvement
- Roadway

P.2.1 APPROACH FOR DEVELOPING THE NEEDS TYPES

With nearly 2,000 needs identified in the 2050 MTP, a condensed glossary of Needs Types was developed for cost estimation purposes. The approach followed these guiding principles:

- Strategically match Needs Types to proposed project descriptions.
    - Consider existing 2045 MTP Needs Types, new needs identified through the modal master plans, and new needs identified through local jurisdiction input.
    - Prioritize Needs Types consistent with modal master plans and local jurisdiction input where possible.
- Identify Needs Types with the highest degree of confidence, cost differentiation, and reasonable source data for planning level costing.
    - Select Needs Types broad enough to cover project variations, but limited enough to maintain cost estimation differentiation.
    - Select Needs Types where planning level costs can be developed with reasonable confidence.
- Be concise in the selection of Needs Types and apply a cost complexity factor to account for varied project difficulty.
    - Specific project details will evolve over time and throughout the implementation of the 2050 MTP.
    - For Needs Types within the Complete Streets / Urban Corridor Improvements Needs List, use Needs Types from separate Needs Lists (such as Active Transportation and Safety) in combination with each other.
    - Use detailed project descriptions from the local jurisdictions to best identify the appropriate Needs Type and complexity for costing.
- Align with FDOT cost data.
    - Consider general cost acceptability and ability to replicate and update cost estimation methodology.

P.2.2 PER MILE COST ESTIMATION SOURCES

Four per mile cost sources were applied to the Needs Types:

1. FDOT Cost Per Mile Models
    a. Conceptual estimates in FDOT's Long Range Estimating (LRE) system based on standardized typical sections and recent bid data.
    b. December 2023 was the version available at time of this methodology's development.
2. FDOT 12-Month Historical Averages
    a. Derived from FDOT pay items to create new per-mile estimates for select Needs Types.
    b. Structure like the FDOT Cost Per Mile Model shown in Figure P-2.
3. Modal Master Plan Per Mile costs where available.
    a. Planning level cost estimates included in TSMO Master Plan and Vision Zero Safety Action Plans.
4. Representative projects for less common Needs Types (recent construction/bid costs).
    a. Used for less common or unique Needs Types without standard cost data.
    b. Relies on comparable projects from the TIP or FDOT Work Program. For example, there are nine identified trail bridge/tunnel needs, but there are no trail bridges/tunnels constructed within the last 5 years. Representative projects would be the Seminole-Wekiva Trail tunnels from the Transportation Improvement Plan (TIP) and Little Econ Trail Phase 3 in the FDOT Work Program, a bridge project funded for construction in 2026.

Figure P-2 | FDOT Cost Per Mile Model for Two Directional, 12' Shared Use Path

FDOT Long Range Estimating System - Production					
R4: Project Details Composite Report					
By Version					
Project: SHRUSE-O-01-BB				**Letting Date:** 01/2099	
Description: Two Directional, 12' Shared Use Path					
District: 09	**County:** 99 DISTRICT/STATE WIDE				
Project Manager: Cost-Per-Mile Model					
Version 17 Project Grand Total				**$563,814.79**	
Description: December 2023					
Pay Items					
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount
102-1	MAINTENANCE OF TRAFFIC	6.00			$27,631.21
101-1	MOBILIZATION	10.00			$48,815.13
110-1-1	CLEARING & GRUBBING	3.90	AC	$33,000.00	$128,700.00
160-4	TYPE B STABILIZATION	9,386.67	SY	$8.40	$78,848.03
285-701	OPTIONAL BASE,BASE GROUP 01	7,040.00	SY	$24.00	$168,960.00
334-1-12	SUPERPAVE ASPHALTIC CONC, TRAFFIC B	528.00	TN	$140.00	$73,920.00
570-1-2	PERFORMANCE TURF, SOD	2,347.00	SY	$4.30	$10,092.10
999-25	INITIAL CONTINGENCY AMOUNT (DO NOT BID)	1.00	LS	$26,848.32	$26,848.32
Project Unknowns			0.00	%	$0.00
Design/Build			0.00	%	$0.00
Version 17 Project Grand Total					**$563,814.79**

Source: FDOT, 2023

P.2.3 SUMMARY OF THE PER MILE COST ESTIMATION METHODOLOGY

To estimate baseline project costs in the 2050 MTP, a refined, data-driven approach that builds on and improves the methodology used in the 2045 MTP was applied to provide consistent, reliable cost estimates for each Needs Type based on the best available data. Key improvements over the 2045 MTP include:

- Where FDOT Cost Per Mile Models weren't available, used actual FDOT historical costs to build new cost estimates.
- Using planning level costs included in other recent plans, such as the 2024 Vision Zero Safety Action Plans and the 2024 TSMO Master Plan.
- Considering an automated spreadsheet to update project costs as FDOT Cost Model and Historical Average data is updated.

P.2.4 FUTURE CONSIDERATIONS FOR 2055 MTP

Additional opportunities for improvement of the Per Mile Cost Estimation during the 2055 MTP may include:

- Exploring additional cost estimating tools such as AASHTOWare Project Estimation.
- Continue developing project costs with modal master plans.
- Request available City/County engineer cost estimates during the call for needs.
- Exploring a web-based platform/standard application form to digitize and house all Needs and Costs. This platform could also be used to request project/cost information from local agencies. If a project cost is unknown, questions to inform cost development can be included in the request, such as "how much drainage work is expected – low/medium/high." The Geographic Information System (GIS) database would need to integrate with the web-based platform.
- Explore splitting out maintenance of traffic (MOT) costs for Project Types expected to require Smart Work Zones. Smart Work Zones may increase cost due to the additional mobilization and equipment needed for driver information. Smart Work Zones also allow for permanent TSMO and ITS improvements, and it may be possible to consolidate overlapping projects that include Smart Work Zones with other ITS projects.

P.3 Applying a Cost Buffer for Project Complexity

Initial cost estimates were achieved using the process detailed in the Per Mile Cost Estimation Methodology section. These costs were refined and finalized by applying a "project complexity factor" to account for potential project cost due to unique factors such as geographic area and facility type.

P.3.1 APPROACH FOR DEVELOPING PROJECT COMPLEXITY FACTORS

The purpose of the project complexity factor is to acknowledge that planning-level per mile cost estimates are a starting point and may not account for project complexities. The approach to developing project complexity factors followed these guiding principles:

- More accurately forecast the complete cost of a transportation project.
- Help develop a more confident Cost Feasible Plan and demonstration of fiscal constraint.
- Identify common factors that tend to escalate project costs.
- Consider actual costs from current projects in design or under construction.
- Use past project examples and costs to identify common complexity themes.
- Acknowledge right-of-way and the acquisition of land can be time intensive and costly.
- Develop a planning level methodology that can be easily followed and replicated for future projects amended or modified in the MTP.

- Base the complexity factors on readily available geospatial data (such as environmentally sensitive lands) so it can be efficiently replicated for the 2,000+ MTP Needs.

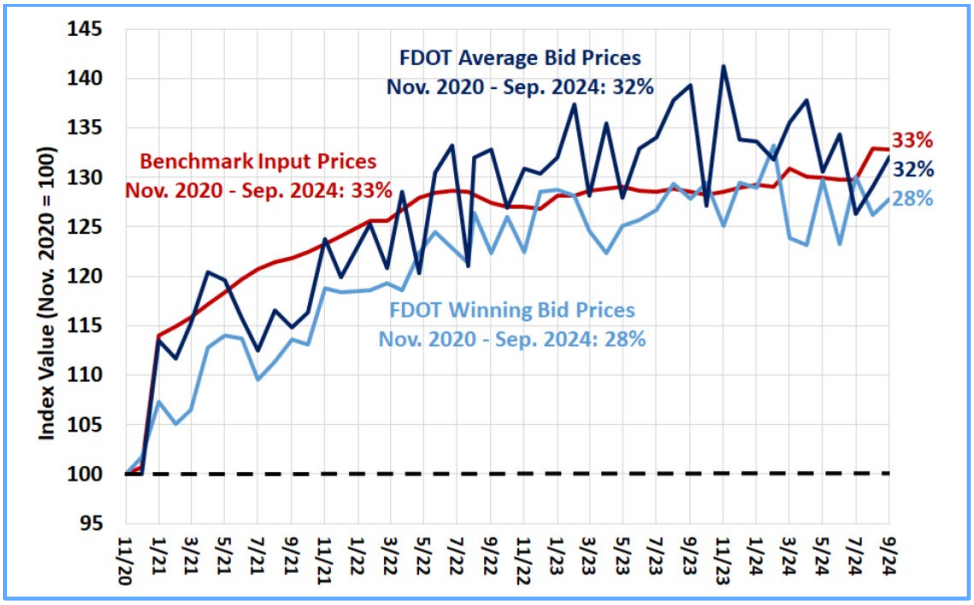
P.3.2 TRANSPORTATION PROJECT COST BACKGROUND

P.3.3.1 FLUCTUATING COST OF CONSTRUCTION

The cost of construction materials has varied significantly since 2020. FDOT has tracked the fluctuating cost of materials, labor, and construction bids, and has identified trends and driving factors for costs like supply chain availability and the geopolitical landscape. This section summarizes key takeaways from the cost data to best inform the MTP's project complexity factor approach.

FDOT's Strategic Resource Evaluation Study Report shows a breakdown of construction bids, seen in Figure P-3. Since 2021, labor has remained between 8% and 11% of the construction contract cost. Average bid prices are 29% higher than in November 2020. Average bid prices have remained higher than official preliminary estimates as well (Figure P-4), until 2024 when the bids began to converge.

Figure P-3 | Monthly Construction Bid Data Monitored by FDOT



Source: TBG calculated from data provided by FDOT Office of the Work Program and Budget, TBG Work Product.

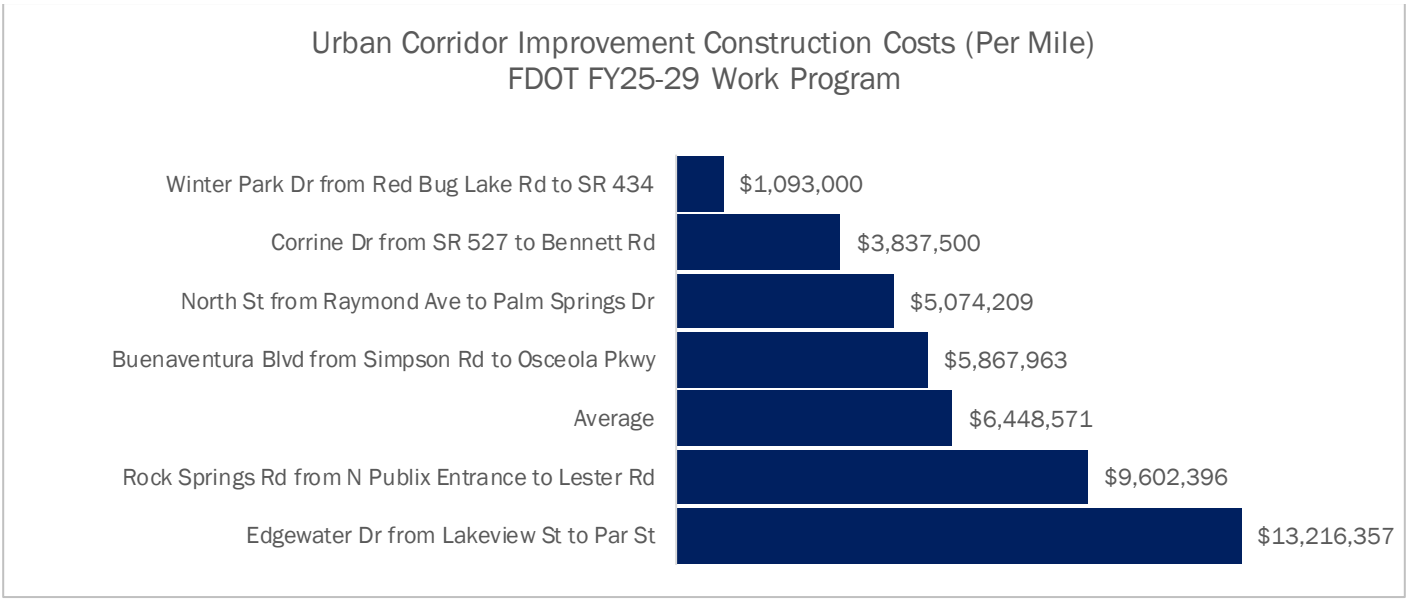
Figure P-4 | Average Bid vs. Official Estimate (3-Month Rolling Average)

Source: FDOT; TBG Work Product

P.3.3.2 VARIATIONS BETWEEN SIMILAR PROJECTS

In addition to varying construction material costs, similar projects show a variation in the total project cost. While no two projects are the same, this highlights the unique characteristics of projects and is the reason for developing a project complexity factor approach for the 2050 MTP. FDOT's Adopted Work Program (AWP) for Fiscal Year 2025 through 2029 was reviewed to highlight some of the variation between similar projects, like the Urban Corridor Improvement projects shown in Figure P-5. These varying project costs help inform the magnitude of adjustment for the complexity factors proposed in Section P.3.3.

Figure P-5 | Urban Corridor Improvement Construction Costs (FDOT 2025-2029 AWP)



Source: FDOT

P.3.3 COMPLEXITY ASSIGNMENT PROCESS

Upon reviewing project phase cost estimates in FDOT's 2025-2029 AWP and recent project costs, the following characteristics were used for calculating a complexity score:

- **Right-Of-Way (ROW)** – Acquiring land for a transportation project is sometimes required to meet the purpose and need; this process can be time intensive and costly.
- **Environmental Sensitivity** – Central Florida is home to natural and environmentally sensitive lands. Part of the project development process includes determining if a project is anticipated to have a significant impact on these resources. This is meant to be a high-level screening prior to any full screening through the Efficient Transportation Decision Making (ETDM) environmental screening tool.
- **Drainage** – This factor is meant to identify the increased costs associated with adjusting drainage in urban areas or when there are significant drainage impacts like a drainage system conversion. Drainage costs tend to increase in urban areas as there are needs for adjustments to the curb line and other existing impervious surfaces.
- **Needs Type** – This factor differentiates between project types. For instance, projects that deploy equipment such as Intelligent Transportation System (ITS) technology have different cost fluctuations than roadway construction projects, which may also see variations due to equipment, materials, or labor costs.
- **Geographic Location** – Projects located within city limits are expected to have higher engagement needs. Community engagement is a key piece of all transportation projects. Projects in established communities, such as transforming main streets or enhancing historic neighborhoods, may require additional engagement to confirm the community character is incorporated into the final design.

P.3.3.3 COMPLEXITY SCORE

A Complexity Factor Matrix (Table P-1) was developed to calculate a complexity score. The score is based on a 10-point system. The matrix includes the following categories for each complexity factor: High Impact, Unknown/Low Impact, and No Impact. For cases where the disposition of a project relative to the complexity factor is unknown, the Unknown/Low Impact point value was assigned.

Once each complexity factor is determined, the total points are added together to assign a complexity score to each project – these scores are No Complexity, Low Complexity, Medium Complexity, High Complexity, and Very High Complexity. The point values and cost percentage increase are summarized in Table P-2. Calculated complexity factors were shared with local jurisdictions for input.

Table P-1 | Complexity Scoring Matrix

Complexity Characteristic	Application	High Impact	Unknown/ Low Impact	No Impact
ROW	*This category considers if ROW is required (or anticipated) to construct the project.*	+4	+2	+0
Environmental Sensitivity	*This category considers if a project is within 500 feet of a 100-year floodplain, wetland, environmental justice area, cultural and historical resources, and/or recreational areas.*	+2		+0

Complexity Characteristic	Application	High Impact	Unknown/ Low Impact	No Impact
Drainage	*This category considers if the project is in an urban area or expects major drainage impacts, such as a drainage system conversion.*	+2	+1	+0
Project Type	*This category considers if the project's Needs Type is a new or widened facility, geometric improvements, or one of the Complete Streets / Urban Corridor Improvement Needs Types.*	+1		+0
Geographic Location	*This category considers if the project lies within city limits.*	+1		+0

Table P-2 | Complexity Factor and Cost Percentage Increases

Complexity Score	Complexity Type	Complexity Factor (Cost Percentage Increase)
0	No Complexity	0%
1-3	Low Complexity	25%
4-6	Medium Complexity	50%
7-9	High Complexity	75%
10	Very High Complexity	100%

P.3.3.4 COMPLEXITY FACTOR BACK TESTING

Three Complete Streets / Urban Corridor Improvement projects with 2024 cost estimates were back tested against the project complexity process: Central Avenue in the City of Kissimmee, Edgewater Drive in the City of Orlando, and Winter Park Drive in the City of Casselberry.

Overall, total project costs (all phases) calculated with the complexity factor are 20-25% higher than the estimated total project cost from funding applications. Without the complexity factor applied, all base calculations are lower than what was requested in funding applications.

P.3.4 LIMITATIONS OF THIS METHODOLOGY

This is a planning level cost estimation methodology. Many identified projects have not yet been through feasibility studies where detailed data and project constraints begin to be revealed. This methodology is meant to be a high-level, conservative screening, to develop the MTP fiscal constraint. Should actual project costs fall below the estimates in this methodology, MTP modifications or amendments may be desired to account for the difference.

P.3.5 SUMMARY OF THE PROJECT COMPLEXITY FACTOR PROCESS

This methodology is meant to identify whether a project includes elements that trigger additional cost, coordination, and ultimately add to the overall project complexity. This project complexity factor methodology was applied to all projects identified through the 2050 MTP Needs Assessment and will also be applied to new

projects that are added through the amendment process between the 2050 MTP and the next MTP update. Local jurisdictions were also asked to provide input on expected project complexity.

P.3.6 FUTURE CONSIDERATIONS FOR 2055 MTP

Additional opportunities for improvement of the Cost Buffer during the 2055 MTP may include:

- Exploring low impact applications for Environmental Sensitivity.
- Developing a GIS tool to calculate existing ROW to estimate need for ROW acquisition on a project-by-project basis.
- Exploring how to integrate a risk assessment model into the project complexity assessment.

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