



# TRANSIT PLAN



# Appendix G

## Capital Cost Methodology & Assumptions

November 2021

# 1. Introduction

This report documents the methodology and assumptions utilized to identify and estimate costs for the Capital Plan element of the ConnectJXN: Transit Plan. Neel-Schaffer, Inc., an engineering and planning firm based in Jackson, MS, developed and executed this methodology. The following sections provide an overview of how capital needs were identified and how cost estimates for these needs were estimated.

The Capital Plan covers the entire 10-year period of ConnectJXN: Transit Plan. It begins with FY2022 and ends in FY2031. The categories and improvement types included in the Capital Plan include those shown in **Table 1**. The specific projects in the Capital Plan are derived from the Jackson Metropolitan Planning Organization’s 2021-2024 Transportation Improvement Plan (TIP) and from the ConnectJXN: Transit Plan planning process.

**Table 1: Capital Plan Categories and Improvement Types**

Category	Improvement Type	Source
Transit Infrastructure	New Bus Stop Signage	New
	Bus Stop Improvement Program	New
	Union Station Upgrades	TIP
	Transfer Center Upgrades	New
Transit Vehicles	Fixed Route Vehicles	Modified TIP
	Paratransit Vehicles	Modified TIP
	Support Vehicles	New
Transit Technology	Automatic Passenger Counter (APC) System	TIP
	Fare Software and Equipment	TIP
	Transit App	New
Other Capital Projects	Preventative Maintenance	TIP
	Security	TIP
	Rebranding	TIP
	Other	TIP

*Note: TIP = Transportation Improvement Program*

# 2. Identifying Needs and Quantities

Capital needs were identified in two ways. First, all line items from JTRAN’s program of projects in the Jackson Metropolitan Planning Organization’s 2021-2024 Transportation Improvement Plan (TIP) were included. Then, new needs identified during the planning process for ConnectJXN: Transit Plan were incorporated and quantified.

## Identifying TIP Projects

All capital (non-operating) projects in the TIP for Fiscal Years 2022-2024 are included in the Capital Plan for ConnectJXN: Transit Plan. The TIP provides brief descriptions and costs by fiscal year for each project. Table 2 shows how these TIP projects were grouped into improvements for the Capital Plan categories.

The number of vehicles and associated costs were modified from the TIP to match the Fleet Management Plan detailed in the ConnectJXN: Transit Plan, which represents the most up-to-date plans.

For years in the Capital Plan beyond the TIP (FY2025-2031), it is assumed that TIP projects in the following categories will have the following types of costs:

- Transit Vehicles – future costs related to fleet management plan
- Transit Technology – recurring annual costs to maintain
- Other Capital Projects – recurring annual costs

These future costs will be discussed further in Section 3.

**Table 2: TIP Projects by Capital Plan Category**

Category	Improvement Type	TIP Project
Transit Infrastructure	Union Station Upgrades	Union Station Rehab/Renovation: parking lot repairs/signage replacement/lighting repair/bench
Transit Vehicles	Fixed Route Vehicles	Acquire Light Duty Accessible Buses and Equipment Hybrid (Diesel/Electric) Buses
	Paratransit Vehicles	Acquire ADA Accessible Vehicles
Transit Technology	Automatic Passenger Counter (APC) System	Automatic Passenger Counters Software and Equipment
	Fare Software and Equipment	Farebox Upgrade (Software & Equipment)
Other Capital Projects	Preventative Maintenance	Preventative Maintenance
	Security	Security Enhancements (Armed Security Guards)
		Surveillance & Monitoring Services
	Rebranding	Rebranding Project
	Other	Associated Transit Enhancements
		Dispatching & Scheduling Software and Equipment
		Fleet Maintenance Software and Equipment
Other Third Party Contractual		
Project Administration Capital Projects		
Telephone System		

Source: 2021-2024 Transportation Improvement Program, CMPDD

## Identifying New Projects

As part of the planning process for the ConnectJXN: Transit Plan, new capital needs were identified and then translated into specific projects. These projects are listed and described in Table 3.

For defining quantities, the following assumptions were utilized:

- Bus Stop Signage
  - All existing stop signs (590) will be removed.
  - All existing stops that are not a part of the New Bus Network (327) will have poles removed.
  - Poles for existing stops that are part of the New Bus Network (263) will be maintained.
  - New stops (433) will require a new pole.
  - New signs with a universal design (usable at any stop) will be required at all proposed stops (696) and 200 spares will be procured. Stop ID can be added on the front or back using stickers or decals.
- Bus Stop Improvement Program
  - 30 existing shelters and 57 existing benches will be removed due to poor condition or the fact that they are no longer being served by a route under the New Bus Network plan.
  - 83 new shelters, benches, and trash cans will be installed at high-priority stops.
- Transfer Center Upgrades
  - Two on-street and two off-street transfer locations will require infrastructure upgrades to safely and effectively accommodate buses and riders. These include Food Depot – Northside, Food Depot – Terry Road, Kroger – I-55 Frontage Road, and Walmart – Wheatley Street.
- Support Vehicles
  - Two new support vehicles every 5 years.
- Transit App
  - One consolidated app or multiple apps with recurring annual maintenance costs.

**Table 3: New Projects by Capital Plan Category**

Category	Improvement Type	Description
Transit Infrastructure	New Bus Stop Signage	Remove existing signs and unneeded poles and replace with new signage and poles, as needed.
	Bus Stop Improvement Program	Remove all existing shelters and benches and replace with new shelters, benches, and trash cans. Expand the number of stops with shelters, benches, and trash cans.
	Transfer Center Upgrades	Enhance pedestrian accommodations and security at four transfer locations and restripe/repave parking lots, as needed, to accommodate buses and pedestrians.
Transit Vehicles	Support Vehicles	Replace support vehicles as needed.
Transit Technology	Transit App	Develop and maintain a transit app to allow riders to plan their trips, track vehicles, and make mobile payments. This may be one single transit app or it may be separate apps for mobile payment and trip planning/vehicle tracking.

### 3. Estimating Costs

Cost estimates were provided for all capital projects from FY2022 to FY2031. The assumptions and methodologies used to estimate these costs are summarized in this section.

#### Estimating TIP Project Costs

##### Transit Infrastructure

The only project for Transit Infrastructure was the Union Station upgrade project and this project was incorporated exactly as it is specified in the TIP. It is not a recurring project and will end in FY2022.

##### Transit Vehicles

Three transit vehicle projects from the TIP were incorporated into the Capital Plan. However, the costs for these projects were adjusted to meet the most up-to-date fleet management plan vehicle requirements (see main report) and the unit costs were assumed to be the following (in 2022 dollars):

- Fixed Route Vehicles – unit cost of \$687,500 (based on recent procurement costs).
- Paratransit Vehicles – unit cost of \$126,000 (based on TIP costs).

For costs in years beyond the TIP (FY2025 to FY2031), an annual inflation rate of three percent was utilized.

##### Transit Technology

Two transit technology projects from the TIP, the APC and Fare System Update projects, were incorporated exactly as specified in the TIP. The TIP costs are assumed to be annual maintenance costs related to these technology systems.

For future years beyond the TIP (FY2025 to FY2031), the recurring annual costs were extended through FY2031 and inflated annually by three percent.

##### Other Capital Projects

All other capital projects in the TIP were incorporated exactly as specified in the TIP. These TIP costs are assumed to be annual costs that will not vary substantially from year to year.

For future years beyond the TIP (FY2025 to FY2031), the recurring annual costs were extended through FY2031 and inflated annually by three percent.

#### Estimating New Project Costs

##### Transit Infrastructure

There are three newly identified projects for Transit Infrastructure. These include New Bus Stop Signage, the Bus Stop Improvement Program, and Transfer Center Upgrades. For all three of these projects, it is assumed that planning, design, and implementation will be contracted out to a third-party, with JTRAN and the City overseeing the projects.

The following unit costs are assumed for these three projects:

- **Bus Stop Signage** – \$100 per bus stop sign (assuming 12x18 aluminum sign) and \$100 per sign pole (assuming 10' U-post). Then, 10% of the resulting subtotal cost for coordination activities; an additional 50% of the resulting subtotal cost for surveying, design, and inspection; and approximately \$350,000 for removal, installation, and bagging/unbagging in coordination with the launch of the New Bus Network. All of these costs are in 2022 dollars and are anticipated to take place in FY2022.

- **Bus Stop Improvement Program** – \$13,000 per shelter, \$1,250 per bench, \$875 per trash can, and \$15,775 for accessibility upgrades for each high-priority stop. Then, 10% of the resulting subtotal cost for coordination activities; an additional 50% of the resulting subtotal cost for surveying, design, and inspection; and approximately \$275,000 for removal and installation. All of these costs are in 2022 dollars and are assumed to be implemented across FYs 2022-2025.
- **Transfer Center Upgrades** - \$750,000 per off-street transfer center and \$250,000 per on-street transfer center in 2022 dollars. These costs are all inclusive and are assumed to be implemented across FYs 2022 and 2023.

## **Transit Vehicles**

The only newly identified project for Transit Vehicles is for the acquisition of support vehicles. It is assumed that two support vehicles will be purchased approximately every five years, beginning in 2025. The unit cost is assumed to be \$50,000 per vehicle in 2022 dollars and the cost is inflated three percent annually after that.

## **Transit Technology**

The only newly identified project for Transit Technology is for the Transit App. The upfront cost for developing and implementing a single transit app for trip planning, vehicle tracking, and mobile payment (or multiple individual transit apps for these purposes) is assumed to be \$275,000 across FYs 2022 and 2023. The annual recurring capital costs for this project are assumed to be \$25,000 and begin in FY2024. Inflation for the annual recurring cost is assumed to be three percent annually after that.

## **Other Capital Projects**

There were no new projects categorized as Other Capital Projects.

## Summary of Capital Plan Costs

Table 4 shows the resulting Capital Plan costs, broken down into Funded (included in the TIP) and Unfunded (not included in the TIP). The Funded category is further broken down into the Near-Term and Long-Term planning periods. The only year of funding in the Long-Term period is FY2024.

Table 4: Capital Improvement Plan, FY2022-2031

Improvement	Funded		Unfunded
	Near-Term FY22-23	Long-Term FY24-31	
<b>Transit Infrastructure</b>			
New Bus Stop Signage	\$0	\$0	\$553,500
Bus Stop Improvement Program	\$0	\$0	\$4,580,620
Union Station Upgrades	\$419,700	\$0	\$0
Transfer Center Upgrades	\$0	\$0	\$2,030,000
<b>Transit Vehicles</b>			
Fixed Route Vehicles	\$3,445,690	\$0	\$2,235,070
Paratransit Vehicles	\$606,000	\$400,000	\$2,522,240
Support Vehicles	\$0	\$0	\$235,950
<b>Transit Technology</b>			
Automatic Passenger Counter (APC) System	\$144,380	\$77,890	\$614,770
Fare Software and Equipment	\$130,000	\$65,000	\$513,000
Transit App	\$0	\$0	\$503,980
<b>Other Capital Projects</b>			
Preventative Maintenance	\$1,250,970	\$653,770	\$5,159,790
Security	\$415,000	\$208,850	\$1,648,310
Rebranding	\$281,250	\$31,250	\$0
Other	\$1,173,190	\$615,850	\$4,860,500
<b>Total Capital Costs</b>			
<b>Total</b>	<b>\$7,866,180</b>	<b>\$2,052,610</b>	<b>\$25,457,730</b>