



EL METRO ASSET MANAGEMENT PLAN

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1 INTRODUCTION AND BACKGROUND

In 2012, the Moving Ahead for Progress in the 21st Century Act (MAP-21) mandated—and in 2015 the Fixing America's Surface Transportation Act (FAST) reauthorized—Federal Transit Agency (FTA) to develop a rule to establish a strategic and systematic process of operating, maintaining and improving public transportation capital assets effectively through their entire life cycle. FTA's national Transit Asset Management (TAM) System Rule:

- Defines "state of good repair" (SGR)
- Requires grantees to develop a TAM plan
- Establishes performance measures
- Establishes annual reporting requirements to the National Transit Database
- Requires FTA to provide technical assistance

TAM requirements in this Final Rule are part of a larger performance management context. MAP-21 created a performance-based and multimodal program to strengthen the U.S. transportation system, which is comprised of a series of nine rules overseen by FTA and the Federal Highway Administration (FHWA). The rule also requires transit providers to coordinate with States and with Metropolitan Planning Organizations (MPOs), to the maximum extent practicable, in the selection of State and MPO performance targets. MPO's should integrate the transit agency plans, performance measures, and targets in their planning process.

Transit Asset Management (TAM) is a strategic and systematic practice of procuring, operating, inspecting, maintaining, rehabilitating, and replacing transit capital assets to manage performance, risks, and costs over their life cycles. This oversight helps to provide safe, cost-effective, and reliable public transportation. TAM uses transit asset condition to guide how to manage capital assets and prioritize funding to improve or maintain a state of good repair.

El Metro is the primary transit provider in the Laredo region, which includes two distinct transit services: El Metro and El Lift. El Metro operates over 44 buses for its 22 fixed bus routes. El Lift operates 18 diesel-powered vans and 3 gasoline MV1 vans for its ADA paratransit service. Since 2003, First Transit has administered the operational duties of El Metro and the El Metro Transit Center. Currently, El Metro employs about 187 people, has an operating budget of \$14.7 million, and an annual ridership of approximately 3 million passengers.

El Metro's Transit Asset Management Plan (TAMP) specifies activities (maintenance, replacement, etc.), resources, and timescales required for a group of assets to achieve the agency's service and asset management objectives. The El Metro TAMP is a living, single source of information to help manage agency's assets to deliver target service. The TAMP consists of asset inventory, condition assessment, a decision support tool, and a prioritization approach.

The asset inventory consisted of all El Metro assets, either owned or leased, used to deliver public transportation services. The condition assessment included performance measures and targets required by the agency's assets to achieve the goal. The decision support tool was used for organizing asset inventory and prioritization. The prioritization approach considered numerous factors to develop a list of projects needed to address needs and help streamline the operations of El Metro.

1.1 VISION AND GOALS

EL Metro TAMP is meant to be a management tool for monitoring the assets owned by El Metro. EL Metro's vision is to effectively and efficiently provide a safe, clean, reliable, and comfortable transportation system for use by its customers and operators.

Goals of El Metro TAMP are:

- Use condition-based approaches, and predictive and preventative maintenance strategies, to reduce overall costs and provide a reliable transportation system.
- Provide a cleaner and safer transportation service by improving the service operations and on-time performance of vehicles through effective asset monitoring.
- Improve efficiency of the system by providing more accurate and timely data to communicate with oversight boards and customers.

1.2 TAMP UPDATE SCHEDULE

The El Metro TAMP will be updated in its entirety every four years at a minimum. The plan should include at least four years, and will be amended when there is a significant change during the horizon period. In addition, the asset inventory of El Metro within the TAMP will be updated annually.

1.3 ROLES & RESPONSIBILITIES

Table 1.1 provides a list of individuals involved in El Metro's Asset Management Plan, along with their roles and responsibilities.

Table 1.1: Roles and Responsibilities

Department/Individual	Role (Title and/or Description)	Agency
Claudia San Miguel	Director of Asset Management	El Metro
Joe Jackson	Assistant General Manager of Maintenance & Asset Mgmt	El Metro
Eduardo Bernal	Planning Manager/Operations Analyst	El Metro
	Maintenance Asset Officer	El Metro

1.4 STATE OF GOOD REPAIR

State of Good Repair (SGR) is a condition in which assets are fit for their intended purpose (full performance). Sufficiently maintained assets are instrumental to an agency's ability to provide reliable service, as well as minimize operating and maintenance costs over the lifecycle of rolling stock, equipment, and facilities.

The following objectives are required by El Metro to be in a SGR:

- EL Metro possesses and maintains a comprehensive list of its capital assets.
- The agency possesses an asset management plan, which is integrated into the management processes and practices of the transit agency.
- A set percentage of El Metro's assets are within their useful life and remaining assets are performing at their designed function.

Useful Life or Useful Life Benchmark (ULB) is the expected lifecycle of a capital asset for a transit provider's operating environment.



2 ASSET INVENTORY

Asset inventory is a listing or database of assets - vehicles, equipment, and facilities owned, operated, and/or maintained by El Metro - that support the delivery of public transportation services. For purposes of the El Metro TAMP, assets are defined as:

1. Rolling Stock (Passenger service vehicles),
2. Facilities (with a replacement value of \$50,000 or greater), and
3. Equipment (with a replacement value of \$50,000 or greater).

El Metro doesn't own any Infrastructure asset class hence it is not included. For asset inventory classification and prioritization of tasks, the TAMP utilizes the Transit Asset Prioritization Tool (TAPT), an FTA tool described in the Transit Cooperative Research Program (TCRP) report 172. El Metro performed this inventory on November, 2016.

2.1 TAPT

The TAPT supports a range of different asset types for inventory. In addition, the tool predicts future conditions and performance, as well as helps prioritize asset rehabilitation and replacement.

The tool includes three basic models:

- A model for vehicle assets that can be modeled based on mileage,
- A model for non-vehicle assets that can be modeled based on age, and
- A model for non-vehicle assets that can be modeled based on condition.

In addition to describing the existing asset inventory, each of these models predict how condition and performance of inventory will vary over time.

2.1.1 ROLLING STOCK

El Metro's fleet includes 44 buses for its 22 fixed bus routes, and 21 diesel-powered vans for demand response service. As of 2016, the average bus fleet age was 6.2 years and the average van fleet age was 6.3 years. El Metro's bus fleet is powered mainly by compressed natural gas (CNG), which is more environmentally friendly and less expensive than regular gasoline or diesel fuel. In addition, all new model buses have bike racks capable of carrying two bicycles.

To assist passengers with mobility impairments, all buses have ramps or lifts that can accommodate wheelchairs. They also feature priority seating areas with an easier-to-reach stop call bell and securement belts for wheelchairs. To accommodate passengers with visual or hearing impairments, El Metro buses are equipped with

larger, lighted destination signs inside and outside, and have lighted stop request signs and announcements at major stops.

Complementing the El Metro service, the El Lift paratransit service focuses on providing door-to-door transit service to people who are unable to use the fixed-route service. The El Lift Paratransit Service provides shared, origin to destination public transportation to people with disabilities who are unable to use El Metro's fixed route buses. Paratransit services are a shared-ride service operated with modern, accessible vehicles. Riders who are unable to access vans using steps may use wheel chair lifts. El Lift services use wheelchair accessible transit vans and ridership is restricted to the city limits of Laredo. Prior to using the service, riders must be verified for eligibility by El Metro.

Using the TAPT, the rolling stock of El Metro was categorized under vehicle-based model. The different vehicle asset classifications under rolling stock are bus, small bus, and van. Under these different asset classes the vehicles were further classified by asset groups. **Table 2.1** shows vehicle asset class and the asset groups that fall under them.

Table 2.1 Asset Class and Asset Group Classification

Asset Category	Asset Class	Asset Group
Rolling Stock	Bus	CNG, Diesel
	Small Bus	CNG SM, Diesel SM
	Van	DR-DV, DR-Unleaded

Table 2.2 shows the vehicle inventory description. The *project code* provides the ability to analyze a group of assets together. The *units of assets* indicate the total number of assets within the sub-fleet. *Accumulated mileage* is the total miles accumulated on all active vehicles in the sub-fleet (since the date of manufacture) divided by the number of active vehicles in the sub-fleet. *Pipeline year* specifies the year when the assets are scheduled for replacement regardless of budget constraints.

Table 2.2: Vehicle Inventory Description

Asset Type/Class	Asset Group	Project Code	Units of assets	Accumulated Mileage	Pipeline Year
Bus	CNG	CNGB01-2015	9	66,607	2031
	Diesel	DB01-2009	11	342,112	2025
		DB01-2011	12	283,279	2026
Small Bus	CNGSM	CNGBSM-01-2003	5	422,256	2020
		CNGBSM-02-2006	5	354,946	2021
	Diesel SM	DBSM-01-2011	2	107,526	2023
Van	DR-DV	DR-01-2009	18	127,173	2018
	DR-Unleaded	DR-01-2014	3	7,360	2021

2.1.2 EQUIPMENT

Equipment of El Metro was categorized under age-based model. All equipment with a replacement value of \$50,000 or greater is included in the inventory. Equipment is classified into two asset classes – building utilities and maintenance. **Table 2.3** shows the asset classes and asset groups of El Metro's equipment.

Table 2.3: Equipment Asset Class and Asset Group Classification

Asset Category	Asset Class	Asset Group
Equipment	Building Utilities – Elevators and Conveying Systems	Elevators TC
	Maintenance Equipment	Mobile Lifts, Wrecker

In **Table 2.4** the *Units of Assets* column denotes the quantity of assets in the sub-group. The *Age of Assets* column provides age of the asset since the first budget year it was acquired or installed. Values for Pipeline Year were provided for assets whose year of replacement is known irrespective of budget constraints.

Table 2.4: Equipment Inventory Description

Asset Type/Class	Asset Group	Project Code	Units of Assets	Age of Assets	Pipeline Year
Building Utilities – Elevators and Conveying Systems	Elevators TC	ELV01-Main RS	1	20	N/A
		ELV02-Main LS	1	20	N/A
		ELV03-SE_Greyhnd	1	20	N/A
Maintenance Equipment	Mobile lifts	ML-01	4	9	2023
		ML-02	4	3	2028
	International Wrecker	WR01	1	3	2033

2.1.3 FACILITIES

All the facilities of El Metro were categorized under the condition-based model. They were classified into three asset classes – Administrative, Maintenance, and Access and Parking - with different asset groups within them. El Metro's major transportation facility is the five-story Laredo Transit Center located in downtown Laredo. The transit center serves as a multimodal transportation terminal for the Laredo region and is the main point of transfer for El Metro routes, El Aguila rural routes, and inter-city services like Valley Transit and Greyhound. It also houses El Metro's administrative offices and a public parking garage for downtown visitors. **Table 2.5** shows the asset classes and asset groups of El Metro's facilities.

Table 2.5: Asset Class and Asset Group Classification

Asset Category	Asset Class	Asset Group
Facilities	Administrative Building	Facility Operations
		HVAC Opt.
		Roof Opt.
		Surveillance System
	Maintenance Building	Facility Maintenance
		HVAC Maintenance
		Roof Maintenance
	Access and Parking	Facility Transit Center
		HVAC TC
Roof TC		

In **Table 2.6**, the Asset Condition column provides the condition of an asset based on a 1-5 TERM scale (see section 3.1.3.1) with 5 being excellent and 1 being poor. A rating of 0 designates asset failure. The Units of Assets column refers to the number of square feet.

Table 2.6: Facilities Inventory Description

Asset Type/Class	Asset Group	Project Code	Units of Assets	Asset Condition	Pipeline Year
Administrative Building	Facility Operations	Opt-01	4,920 Sq. ft.	3-Adequate	2036
	HVAC Opt.	Opt01	4,920 Sq. ft.	5-Excellent	2036
	Roof Opt.	Opt01	4,920 Sq. ft.	5-Excellent	2036
	Surveillance System	SurvSys_TC01	75 units	5-Excellent	2032
		SurvSys_OP01	27 units	4-Good	2022
Maintenance Building	Facility Maintenance	Maint 01_Shop & Adm	17,163 Sq. ft.	2-Marginal	2018
		Maint 01_Svc Island	3,735 Sq. ft.	3-Adequate	2021
		Maint 01_Bus Wash	1,728 Sq. ft.	1-Poor	2020
		Maint 01_V&B Prkg	34,812 Sq. ft.	4-Good	2024
		Maint 01_CNG Plant	884 Sq. ft.	1-Poor	2017
		Maint 01_Bus Pathways	49,618 Sq. ft.	3-Adequate	2019
		Undgrd Fuel Tanks	301 Sq. ft.	3-Adequate	2036
	HVAC Maint.	Maint01-Parts Rm	512 Sq. ft.	5-Excellent	2036
		Maint02-Adm	2,249 Sq. ft.	1-Poor	2017
	Roof Maint.	Maint01	16,268 Sq. ft.	5-Excellent	2036
Access and Parking	Facility Transit Center	TC01	227,081 Sq. ft.	3-Adequate	2038
	HVAC TC	TC-01-West Side	136,249 Sq. ft.	5-Excellent	2034
		TC-01 East Side	90,832 Sq. ft.	1-Poor	2017
	Roof TC	TC01	227,081 Sq. ft.	3-Adequate	2021



3 PERFORMANCE TARGETS AND MEASURES

3.1 CONDITION ASSESSMENT

Condition assessment is a systematic process of inspecting and evaluating the visual and/or measured condition assets. A well-established condition assessment process can help predict failure, identify unacceptable safety risks, initiate evaluation of their root causes, and integrate directly with proactive planning for the investments required to maintain good performance on El Metro's most critical assets. Condition assessment is conducted at the individual asset class level.

A performance measure, or a condition, is chosen for each asset class. A performance target is set and the performance measure is used to assess the asset class against the set target. If a gap exists between the target and the condition of assets, activities and strategies required to bring the assets to targeted condition were identified.

3.1.1 ROLLING STOCK PERFORMANCE MEASURES

ULB is a key element is gauging the performance of rolling stock. ULB can be expressed as mileage, years, or other factors appropriate for the system. The El Metro TAMP uses mileage as the performance measure for assessing vehicles.

3.1.2 EQUIPMENT PERFORMANCE MEASURES

Age is used as a performance measure for assessing equipment of El Metro. All equipment valued \$50,000 or greater is listed under the age-based model and evaluated based on their age.

3.1.3 FACILITIES PERFORMANCE MEASURES

Facilities of El Metro are assessed based on their condition. FTA's Transit Economics Requirements Model (TERM) scale is used by the condition-based model to evaluate the facilities.

3.1.3.1 TERM SCALE

The TERM scale is used in estimating the physical condition of an asset. It consists of a 5-point scale ranging from poor (scored as 1) to excellent (scored as 5). TERM determines the level of investment required to maintain or improve the condition and performance of transit assets. It also assesses the impact of constrained investment and cost effectiveness of an asset on future condition or performance.

Table 3.1 summarizes the performance measures and targets set for each asset class. The target column in the table indicates the required number of assets of an asset class to be present within their ULB or TERM scale rating to maintain El Metro in a SGR.

Table 3.1: Performance Measures and Targets

Asset Class	Performance Measure	Target
Rolling Stock	Mileage	75% of vehicles should be within their ULB
Equipment	Age	75% Equipment should be within their ULB
Facilities	Condition	75% of facilities rated on a FTA TERM scale of 3.0 or above

It should be noted that, even though all the performance measures and targets were established in the TAMP, the TAPT tool has a built-in algorithm which calculates the asset condition and checks for useful life based on the magnitude of its performance measures. Based on parameters entered for an asset, the asset condition summary provided by TAPT will be directly used in the prioritization model to understand the replacement and rehabilitation scenario for an asset, instead of manually calculating it based on ULB.

After the asset inventory was updated, the next step was to understand the condition of assets and their performance. Knowing an asset condition helps to make choices such as to replace or rehabilitate based on remaining useful life and/or the added benefit of keeping the asset rather than replacing. **Table 3.1** summarizes the performance measures of EL Metro's asset classes based on the inventory and condition assessment performed by El Metro. All three asset classes are well above the set performance measure target.

Table 3.2: Performance Measures Summary of El Metro Assets

Asset Class	Performance Measure	EL Metro Asset Condition
Rolling Stock	Mileage	100% of vehicles are within their ULB
Equipment	Age	100% of Equipment are within their ULB
Facilities	Condition	85% of facilities rated on a FTA TERM scale of 3.0 or above



4 ASSET PRIORITIZATION

After the asset conditions was updated, the next step was to identify the immediate needs and the plan to keep the performance measures on target. To keep El Metro under the SGR requires prioritizing assets which need immediate focus to either replace or rehabilitate.

With resource and funding constraints, selected activities or projects should be prioritized. Prioritization of projects in TAMP provides a ranked listing of recommended priorities for asset rehabilitation and replacement. Projects are ranked per a Prioritization Index (PI) which represents the cost savings resulting from performing the project (relative to deferring it) divided by the project cost. Thus, a PI greater than 0 represents a project that, if performed, is expected to reduce lifecycle costs. The ranked listing of proposed projects and activities are ordered by implementation of maintenance and/or capital program. Priorities are identified locally based on policies and critical needs. Items ranked as high priority reflect unacceptable safety risks identified in the condition assessment, as well as needs to meet accessibility requirements. Further, project prioritization also considers estimated funding sources available to implement the proposed projects and can be linked to STIP and/or TIP. The prioritization model within the TAPT tool was used for prioritizing El Metro's assets.

4.1 INVESTMENT SCENARIOS

Using the TAPT to run the prioritization model, scenarios were chosen based on budget/funding levels to evaluate and compare outcomes in certain situations. These comparisons helped in finalizing a prioritized list of asset replacement/rehabilitation needs that more appropriately reflected El Metro's goals.

The prioritization model was run using three different scenarios:

- Unconstrained budget Model Run,
- Do-Nothing budget Model run, and
- Annual Budget Model run.

The unconstrained budget model run was a scenario where the budget would not be a limiting factor for asset replacements. Running a prioritization model with an unconstrained budget allows the agency to better understand the model's recommendations. To run the model in an unconstrained scenario, the budget for asset replacement and rehabilitation was set to \$999,999,999/year for years 2017 through 2026 to cover the 10-year plan in the TAMP.

The Do-Nothing budget model run was a scenario where budget was not provided for asset replacements. Such a scenario helps understand how assets deteriorate if no funding was available. For the Do-Nothing model run, the budget for asset replacement and rehabilitation was set to \$0/year for years 2017 through 2026.

The third scenario involved the constrained annual budget of El Metro for asset replacement and rehabilitation. This model run helps understand the prioritization of project selection based on limited budget over the 10-year span. For the Annual budget model run, the budget for asset replacement and rehabilitation was set to \$1,000,000/year for years 2017 through 2026. This is an assumption suggested by El Metro.

Appendix A and **Appendix B** contain outputs from the unconstrained and the do-nothing model runs, respectively. **Table 4.1** shows the ranked program list for the prioritization run. The table provides a list of projects categorized by year and ranked, as well as replacement costs for each asset group the year they were recommended for replacement.

In Table 4.1, *Asset ID code* column references the project detail in the TAPT tool. *Description* column provide information about the respective asset groups and details of the need. The *Estimated Cost* column shows the replacement, repair or rehabilitation cost for the asset, whichever is economical within the available budget. *Pipelined* column indicates whether a particular asset group being replaced is in its pipeline year or not.

Table 4.2 is a summary table providing information based on yearly needs of the agency. The TAPT tool's built-in algorithm ensures projects which are pipelined are the ones replaced first. In this table, the *Amount* column refers to the total needs of El Metro for a year. This annual total needs are based on an unconstrained budget run and the improvements needed are listed in Appendix A by year. This amount is what the El Metro ideally would like to have as a budget to replace or rehabilitate all the assets. The *Percentage* column represents the percentage of El Metro assets needs rehabilitation or replacement. The *Budget* column represents an annual budget of \$1 million dollars and shows the remaining available every year once the needs from previous year are addressed. The *Expenditures from Budget* column represents the needs that should be planned for any particular year based on the asset performance and condition. The *Remaining Backlog* column represent the unmet needs for any given year. The entire table represents the need for additional funds to meet the annual needs to maintain El Metro's assets in state of good repair.

Table 4.1: Program List for Annual Budget Prioritization Run

Program Year	Asset ID Code	Description	Estimated Cost	Pipe-Lined?
2017	HVAC-Maint. 2	Repair/rehabilitate HVAC system for the administrative building of the Maintenance Center	\$ 22,600	Yes
2017	HVAC-TC 2	Repair/rehabilitate HVAC system for the East side of Transit Center	\$ 1,907,472	Yes
2018	DR-DV 1	Replace 14 Demand Response Diesel Chevy Vans	\$ 1,386,000	Yes
2018	Facility_Maintenance 1	Repair/rehabilitate 17,163 Sq. ft. of Administration building and Repair shop at the Maintenance Center	\$ 308,934	Yes
2019	Facility_Maintenance 6	Repair/rehabilitate 49,618 Sq. ft. of Bus pathway at the Maintenance Center	\$ 893,124	Yes
2020	CNGSM 1	Replace 5 CNG small Blue Bird buses	\$ 2,365,000	Yes
2020	Facility_Maintenance 3	Repair/rehabilitate 1,728 Sq. ft. of Bus wash area at the Maintenance Center	\$ 31,104	Yes
2021	CNGSM 2	Replace 5 CNG small Blue Bird buses	\$ 2,365,000	Yes
2021	DR-Unleaded 1	Replace 3 Demand Response Vans	\$ 116,268	Yes
2021	Facility_Maintenance 2	Repair/rehabilitate 3,735 Sq. ft. of Service island at the Maintenance Center	\$ 67,230	Yes
2021	Roof_TC 1	Repair/rehabilitate the roof at Transit Center	\$ 529,099	Yes
2022	Surveillance System 2	Replace/rehabilitate Video Surveillance Camera System Scott & Farragut Facility	\$ 27,783	Yes
2023	Diesel SM 1	Replace 2 Diesel Champion Buses (2011)	\$ 127,342	Yes
2023	Mobile Lifts 1	Replace/rehabilitate 4 Mobile Lifts	\$ 30,000	Yes
2024	Facility_Maintenance 4	Repair/rehabilitate 34,812 Sq. ft. of Van and Bus Parking Area at Maintenance Center	\$ 626,616	Yes
2025	Diesel 1	Replace 11 Diesel Gillig Buses (2009 & 2011)	\$ 5,455,466	Yes
2026	Diesel 2	Replace Diesel Gillig Buses (2009 & 2011)	\$ 5,951,417	Yes

Table 4.2: Summary of Annual Budget Prioritization

Year	Needs		Budget (\$)	Expenditures from Budget (\$)	Remaining Backlog (\$)
	Amount (\$)	Percent			
2017	\$ 7,299,904	19.39%	\$ 1,000,000	\$ 1,930,052	\$ 5,369,852
2018	\$ 6,755,852	17.94%	\$ 69,948	\$ 1,694,934	\$ 5,060,918
2019	\$ 6,026,690	16.01%	\$ (624,986)	\$ 893,124	\$ 5,133,566
2020	\$ 5,133,566	13.64%	\$ (518,110)	\$ 2,396,104	\$ 2,737,462
2021	\$ 5,777,829	15.35%	\$ (1,914,214)	\$ 3,077,597	\$ 2,700,232
2022	\$ 2,728,015	7.25%	\$ (3,991,811)	\$ 27,783	\$ 2,700,232
2023	\$ 2,700,232	7.17%	\$ (3,019,594)	\$ 157,342	\$ 2,542,890
2024	\$ 3,169,506	8.42%	\$ (2,176,936)	\$ 626,616	\$ 2,542,890
2025	\$ 12,796,577	33.99%	\$ (1,803,552)	\$ 5,455,466	\$ 7,341,112
2026	\$ 14,874,492	39.51%	\$ (6,259,018)	\$ 5,951,417	\$ 8,923,075

It can be seen from Table 4.2 that the need for project capital related to replacement or rehabilitation are exceeding the existing budget. The existing available funding is less than the needs for a fiscal year. This list will serve as a good resource for El Metro to focus on the prioritized tasks ranked by year, helping spend limited capital more efficiently. Prioritized yearly spending of capital on selected projects ensures the agency is under the State of Good Repair .



5 CONCLUSION

The TAMP for 2017-2026 provides El Metro with the ability to understand and utilize its assets efficiently. The investment scenario of Annual Budget reinforces that transportation needs to maintain the system in a SGR are exceeding funds provided. It was also observed that with the existing annual budget of El Metro, the annual capital backlog for asset replacement needs is going to increase. Also noted was the mean distance between vehicle failures among decreasing over the next ten-year period. Due to the constrained budget, capital funds in the prioritized list were only assigned for replacement tasks when assets reached their pipeline years. This process lead to a backlog of replacing or rehabilitating vehicles, thereby decreasing their mean distance between failures.

However, the TAPT tool provided a finalized set of prioritized and ranked list of asset replacement projects for the 10-year period that best reflected El Metro's vision. It helped in achieving the goals associated with the TAMP to maintain the agency provide a safer, cleaner, and efficient transportation system.

The asset inventory of El Metro in this report will be updated annually. Keeping the inventory up-to-date helps to ensure that each vehicle sub-fleet, equipment, and facility were maintained in a SGR and are used efficiently. In complying with FTA's new rule (49 CFR Parts 625 and 630), annual reporting of El Metro's asset information will be conducted through the National Transit Database (NTD). NTD annual reporting includes projected targets for a following year, condition assessment, performance results, and a narrative report on changes in the transit system and progress toward achieving previous performance targets.

APPENDIX A: UNCONSTRAINED BUDGET RUN SUMMARY

Appendix A includes the summary of the unconstrained budget run. As mentioned in section 4.1, the budget was set to \$999,999,999 for each year for the period 2017 to 2026. This unconstrained value eliminated budget constraints to understand the TAPT model's recommendations for El Metro's requirements.

Unconstrained Budget Run

Program Year	Asset ID Code	Description	Estimated Cost	Pipe-Lined?
2017	CNGSM 1	Replace 5 CNG small Blue Bird buses	\$ 2,365,000	
2017	Diesel SM 1	Replace 2 Diesel Champion Buses (2011)	\$ 127,342	
2017	CNGSM 2	Replace 5 CNG small Blue Bird buses	\$ 318,355	
2017	Elevators TC 1	Replace Elevator in Transit Center	\$ 210,000	
2017	Elevators TC 2	Replace Elevator in Transit Center	\$ 210,000	
2017	Elevators TC 3	Replace Elevator in Transit Center	\$ 210,000	
2017	Facility Maintenance 1	Repair/rehabilitate 17,163 Sq. ft of Administration building and Repair shop at the Maintenance Center	\$ 308,934	
2017	Facility Maintenance 3	Repair/rehabilitate 1,728 Sq. ft of Bus wash area at the Maintenance Center	\$ 31,104	
2017	Facility Maintenance 5	Repair/rehabilitate CNG Plant	\$ 1,907,472	Yes
2017	HVAC-Maint. 2	Repair/rehabilitate HVAC system for the administrative building of the Maintenance Center	\$ 22,600	Yes
2018	DR-DV 1	Replace 14 Demand Response Diesel Chevy Vans	\$ 1,386,000	Yes
2018	Facility_Maintenance 1	Repair/rehabilitate 17,163 Sq. ft of Administration building and Repair shop at the Maintenance Center	\$ 308,934	Yes
2019	Facility_Maintenance 2	Repair/rehabilitate 3,735 Sq. ft of Service island at the Maintenance Center	\$ 67,230	
2019	Facility_Maintenance 6	Repair/rehabilitate 49,618 Sq. ft of Bus pathway at the Maintenance Center	\$ 893,124	Yes
2019	Facility_Maintenance 7	Repair/rehabilitate 301 Sq. ft flooring of Underground Fuel Tanks at Maintenance Center	\$ 5,418	
2020	CNGSM 1	Replace 5 CNG small Blue Bird buses	\$ 2,365,500	Yes
2020	Facility_Maintenance 3	Repair/rehabilitate 1,728 Sq. ft of Bus wash area at the Maintenance Center	\$ 318,355	Yes
2021	CNGSM 2	Replace 5 CNG small Blue Bird buses	\$ 2,365,500	Yes
2021	DR-Unleaded 1	Replace 3 Demand Response Vans	\$ 116,268	Yes
2021	Facility_Maintenance 2	Repair/rehabilitate 3,735 Sq. ft of Service island at the Maintenance Center	\$ 67,230	Yes
2021	Mobile Lifts 1	Replace/rehabilitate 4 Mobile Lifts	\$ 30,000	
2021	Roof_TC 1	Repair/rehabilitate the roof at Transit Center	\$ 529,099	Yes
2022	Surveillance System 2	Replace/rehabilitate Video Surveillance Camera System Scott & Farragut Facility	\$ 27,783	Yes
2023	Diesel SM 1	Replace 2 Diesel Champion Buses (2011)	\$ 127,342	Yes
2023	Mobile Lifts 1	Replace/rehabilitate 4 Mobile Lifts	\$ 30,000	Yes
2024	Facility_Maintenance 4	Repair/rehabilitate 34,812 Sq. ft of Van and Bus Parking Area at Maintenance Center	\$ 626,616	Yes
2025	Diesel 1	Replace 11 Diesel Gillig Buses (2009 & 2011)	\$ 5,455,466	Yes

2025	Facility Transit Center 1	Repair/rehabilitate 227,081 Sq.t Transit Center Building at Farragut St	\$ 4,798,222	
2026	DR-DV 1	Replace 14 Demand Response Diesel Chevy Vans	\$ 1,386,000	
2026	Diesel 2	Replace Diesel Gillig Buses (2009 & 2011)	\$ 5,951,417	Yes
2026	Facility-Operations 1	Repair/rehabilitate 4,920 Sq.t of Operations and Paratransit Admin Building at Scott St	\$ 195,964	

Summary of Unconstrained Prioritization Run

Year	Needs		Budget (\$)	Expenditures from Budget (\$)	Remaining Backlog (\$)
	Amount (\$)	Percent			
2017	\$ 7,299,904	19.39%	\$ 999,999,999	\$ 7,299,904	-
2018	\$ 1,694,934	4.50%	\$ 1,992,700,094	\$ 1,694,934	-
2019	\$ 965,772	2.57%	\$ 2,991,005,159	\$ 965,772	-
2020	\$ 2,396,104	6.36%	\$ 3,990,039,386	\$ 2,396,104	-
2021	\$ 3,107,597	8.25%	\$ 4,987,643,281	\$ 3,107,597	-
2022	\$ 27,783	0.07%	\$ 5,984,535,683	\$ 27,783	-
2023	\$ 157,342	0.42%	\$ 6,984,507,899	\$ 157,342	-
2024	\$ 626,616	1.66%	\$ 7,984,350,556	\$ 626,616	-
2025	\$ 10,253,687	27.24%	\$ 8,983,723,939	\$ 10,253,687	-
2026	\$ 7,533,381	20.01%	\$ 9,973,470,251	\$ 7,533,381	-

APPENDIX B: DO-NOTHING MODEL RUN SUMMARY

Appendix B includes the summary of a do-nothing scenario, where no budget was provided for any asset replacement or rehabilitation. A budget of \$0 was provided for the period of 2017 to 2026. This scenario shows the how the need for capital keeps increasing over each year to keep the agency in a SGR when no budget is provided.

Do-Nothing Prioritization Run

Program Year	Asset ID Code	Description	Replacement Costs	Pipe-Lined?
2017	HVAC-Maint. 2	Repair/rehabilitate HVAC system for the administrative building of the Maintenance Center	\$22,600	Yes
2017	HVAC-TC 2	Repair/rehabilitate HVAC system for the East side of Transit Center	\$1,907,472	Yes
2018	DR-DV 1	Replace 14 Demand Response Diesel Chevy Vans	\$1,386,000	Yes
2018	Facility_Maintenance 1	Repair/rehabilitate 17,163 Sq. ft. of Administration building and Repair shop at the Maintenance Center	\$308,934	Yes
2019	Facility_Maintenance 6	Repair/rehabilitate 49,618 Sq. ft. of Bus pathway at the Maintenance Center	\$893,124	Yes
2020	CNGSM 1	Replace 5 CNG small Blue Bird buses	\$2,365,000	Yes
2020	Facility_Maintenance 3	Repair/rehabilitate 1,728 Sq. ft. of Bus wash area at the Maintenance Center	\$31,104	Yes
2021	CNGSM 2	Replace 5 CNG small Blue Bird buses	\$2,365,000	Yes
2021	DR-Unleaded 1	Replace 3 Demand Response Vans	\$116,268	Yes
2021	Facility_Maintenance 2	Repair/rehabilitate 3,735 Sq. ft. of Service island at the Maintenance Center	\$67,230	Yes
2021	Roof_TC 1	Repair/rehabilitate the roof at Transit Center	\$529,099	Yes
2022	Surveillance System 2	Replace/rehabilitate Video Surveillance Camera System Scott & Farragut Facility	\$27,783	Yes
2023	Diesel SM 1	Replace 2 Diesel Champion Buses (2011)	\$127,342	Yes
2023	Mobile Lifts 1	Replace/rehabilitate 4 Mobile Lifts	\$30,000	Yes
2024	Facility_Maintenance 4	Repair/rehabilitate 34,812 Sq. ft. of Van and Bus Parking Area at Maintenance Center	\$626,616	Yes
2025	Diesel 1	Replace 11 Diesel Gillig Buses (2009 & 2011)	\$5,455,466	Yes
2026	Diesel 2	Replace Diesel Gillig Buses (2009 & 2011)	\$5,951,417	Yes

Summary of Do-Nothing Prioritization Run

Year	Needs		Budget (\$)	Expenditures from Budget (\$)	Remaining Backlog (\$)
	Amount (\$)	Percent			
2017	\$ 7,299,903.96	19.39%	\$ -	\$ 1,930,051.96	\$ 5,369,852.00
2018	\$ 6,755,852.00	17.94%	\$ (1,930,051.96)	\$ 1,694,934.00	\$ 5,060,918.00
2019	\$ 6,026,690.00	16.01%	\$ (3,624,985.96)	\$ 893,124.00	\$ 5,133,566.00
2020	\$ 5,133,566.00	13.64%	\$ (4,518,109.96)	\$ 2,396,104.00	\$ 2,737,462.00
2021	\$ 5,777,828.73	15.35%	\$ (6,914,213.96)	\$ 3,077,596.73	\$ 2,700,232.00
2022	\$ 2,728,015.00	7.25%	\$ (9,991,810.69)	\$ 27,783.00	\$ 2,700,232.00
2023	\$ 2,700,232.00	7.17%	\$ (10,019,593.69)	\$ 157,342.00	\$ 2,542,890.00
2024	\$ 3,169,506.00	8.42%	\$ (10,176,935.69)	\$ 626,616.00	\$ 2,542,890.00
2025	\$ 12,796,577.37	33.99%	\$ (10,803,551.69)	\$ 5,455,465.84	\$ 7,341,111.53
2026	\$ 14,874,492.41	39.51%	\$ (16,259,017.53)	\$ 5,951,417.28	\$ 8,923,075.13