Dallas Area Rapid Transit

Transit Asset Management Plan

SEPTEMBER 2018

DART®

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DART

Transit Asset Management Plan

Version 1.0

September 2018.

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Executive Summary

About DART

Dallas Area Rapid Transit (DART) is a sub-regional transportation authority that was created by a voting majority of the citizens on August 13, 1983, to organize and provide public transportation and complementary services to jurisdictions pursuant to Chapter 452 of the Texas Transportation Code (the Act). Its service area comprises 13 North Texas municipalities (Addison, Carrollton, Cockrell Hill, Dallas, Farmers Branch, Garland, Glenn Heights, Highland Park, Irving, Plano, Richardson, Rowlett, and University Park) as shown in Exhibit I.2 (on page 6). Its headquarters is located in downtown Dallas. Under the Act, DART is authorized to collect a 1 percent sale and use tax on certain transactions. DART provides bus, light rail, commuter rail, paratransit, vanpool, and other services to our 13 municipalities across a 700-square-mile service area with a population of 2.4 million in the Dallas, Texas, area. DART has operated bus service since its inception in 1983. The first segment of light rail opened in 1996, and the 20-mile Light Rail Starter System was completed in May 1997. Since then, DART has worked to expand light rail considerably.

DART operates 93 miles of light rail, including an extension to UNT Dallas that opened October 24, 2016. DART operates commuter rail service—Trinity Railway Express, which also opened in 1996—jointly with the Fort Worth Transportation Authority along a 34-mile rail corridor between the cities of Dallas and Fort Worth.

Mission and Vision

Mission Statement – DART's mission statement defines the purpose for which the agency was created:

The mission of Dallas Area Rapid Transit is to build, establish, and operate a safe, efficient, and effective transportation system that, within the DART Service Area, provides mobility, improves the quality of life, and stimulates economic development through the implementation of the DART Service Plan as adopted by the voters on August 13, 1983, and as amended from time to time.

Vision Statement – To help achieve the Board's mission and strategic priorities, the Board has approved a vision statement to address DART's customers and stakeholders.

DART: Your preferred choice of transportation for now and in the future.

Board Strategic Priorities – To achieve this mission and ensure agency alignment, in April 2015 the Board adopted the following six strategic priorities:

1. Continually improve service and safety experiences and perceptions.
2. Optimize and preserve (state of good repair) the existing transit system.
3. Optimize DART's influence in regional transportation planning.
4. Expand DART's transportation system to serve cities inside and outside the current service area.
5. Pursue excellence through employee engagement, development, and well being.
6. Innovate to improve levels of service, business processes, and funding.

DART's Transit Asset Management Plan

DART developed the Transit Asset Management Plan (TAM Plan) to provide safe and reliable transportation services throughout its service area in full compliance with the Federal Transit Administration (FTA) regulations for transit asset management - Regulations (CFR) Title 49 Parts 625 and 630. The purpose of this plan is to provide a clear picture of the assets owned by DART, their condition, and the processes DART follows to ensure it conducts the right work at the right time on these assets to maintain them efficiently in support of the Board Strategic Priority #2 - Optimize and preserve (state of good repair) the existing transit system.

In this TAM Plan you will find all the required elements according to the TAM Final Rule, including DART's TAM and SGR Policy, capital inventory list, condition assessment of defined assets, list of prioritized capital investment projects, and key future activities. DART's vision is to be on par with world-class business practices in both the Enterprise Asset Management and Enterprise Project Management business areas. DART established a formal governance structure to analyze the current asset management, supply chain management, warehouse management, and project management business processes and make a recommendation to re-engineer these business processes, as appropriate. The governance committee determined there are gaps in the current computerized maintenance management system in terms of meeting DART's business needs and prepared system requirements to procure commercial solution(s) to support the re-engineered processes. At the time of this TAM Plan, we are finalizing the procurement and preparing key activities for the transition. The TAM Plan will be updated at a minimum of every four years, or as major adjustments to DART's assets or asset management processes are made.

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Cover Photo Credit: Dallas Area Rapid Transit

1 Introduction

This Transit Asset Management Plan (TAM Plan), in concert with the annually updated DART 20-Year Financial Plan, describes the asset management approach and work plans for maintenance, overhaul and capital programs necessary to meet service, performance, and condition targets for the assets. This TAM Plan is a summarization of the key asset management artifacts and is intended to be used as a guide for all DART staff and to meet Federal Transit Administration (FTA) TAM Plan requirements.

1.1 Federal Transit Administration Transit Asset Management Final Rule Requirements

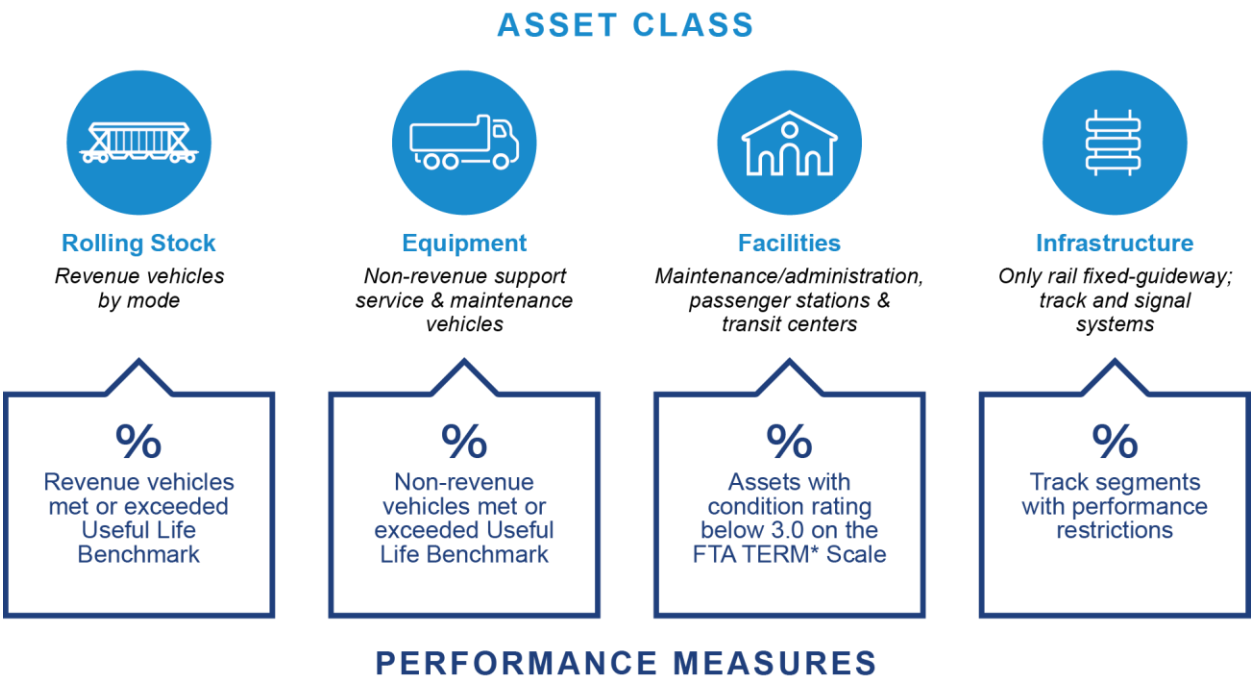
As part of *Moving Ahead for Progress in the 21st Century* (MAP-21) and the subsequent *Fixing America's Surface Transportation* (FAST) Act, the FTA has enacted regulations for TAM, which require transit service providers to establish asset management performance measures and targets and to develop a TAM Plan. The TAM Final Rule was published on July 26, 2016 and went into effect on October 1, 2016. The rule itself amended the United States (U.S.) Code of Federal Regulations (CFR) Title 49 Parts 625 and 630, which relate to TAM and the National Transit Database (NTD), respectively.

The TAM Final Rule distinguishes requirements between larger (Tier I) and smaller or rural (Tier II) transit agencies. DART is a Tier I provider, which is defined by the TAM Final Rule as an agency that "owns, operates, or manages either (1) one hundred and one (101) or more vehicles in revenue service during peak regular service across all fixed route modes of transportation or in one non-fixed route mode of transportation, or (2) rail transit."

1.2 State of Good Repair Performance Measures and Targets

The FTA states that the asset inventory must include all assets used in the provision of public transportation, which includes service vehicles and any other owned equipment over $50,000 in acquisition value that DART has direct capital responsibility. Asset Performance is measured by asset class and subgroup. The state of good repair (SGR) asset classes and performance measurements requirements are listed in Figure 1. They are included in this TAM Plan (Section 4.1 Performance Measures and Targets) and will be reported to the NTD.

Figure 1. SGR Performance Measures and Targets



**TERM stands for Transit Economic Requirements Model, and uses a scale from 1 to 5 to measure asset condition*

1.3 Transit Asset Management Plan

As a Tier I provider, DART must develop its own TAM Plan and, as required by the TAM Final Rule, it must:

1. Include the capital asset inventory.
2. Provide asset condition assessment information.
3. Describe the decision-support tools used to prioritize capital investment needs.
4. Identify project-based prioritization of investments.
5. Define the TAM and SGR policy.
6. Discuss the TAM Plan implementation strategy.
7. Describe the key TAM activities to be undertaken during the plan's four-year horizon period.
8. List resources needed to carry out the TAM Plan.
9. Outline how the TAM Plan will be monitored and updated to support continuous TAM improvement.

A TAM Plan Compliance matrix is included in Appendix B.

1.4 Reporting

In addition to the performance targets and TAM Plan, the TAM Final Rule requires that two other asset management reports be submitted to the NTD annually:

- The Data Report should describe the current condition of the transportation system and the SGR performance targets for the upcoming year.
- The Narrative Report should describe changes in the transportation system condition since the prior year and report progress on meeting the performance targets set during the prior year.

For DART, the first Data Report is due by January 2019 (though only 1/4 of facilities condition assessments are due for this first report). The first Narrative Report is due by January 2020.

1.5 Purpose and Structure

The purpose of the TAM Plan is to provide a clear picture of the assets owned by DART, their condition, and the processes DART follow to ensure it maintains assets efficiently – which forms the core of the asset management principles and practices. The TAM Plan references various documents that DART uses on a regular basis and that implicitly address the TAM principles. These documents include DART's business plan that lists fiscal responsibility as a key guiding principle; DART's Twenty-Year Financial Plan that provides long-term projects of DART's operating revenue, funding, operating expenses, capital expenditures and debt obligations; and the Operation Division Maintenance Plan that guides the work programs of the operations departments to ensure lifecycle planning, maintenance, and TAM is consistent with DART's overall mission and strategy.

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2 Transit Asset Management and State of Good Repair Policy

DART's TAM and SGR policy was developed in 2017 and complements DART's long-standing commitment to SGR and the Board's strategic priorities. This policy defines the whole life principles by which DART delivers public transportation services to ensure assets are managed efficiently and effectively throughout their lifecycle.

Policy: DART is committed to a strategic process for acquiring, operating, maintaining, upgrading and replacing its transit assets to directly support the agency's goal to provide safe, secure, efficient, and effective services to our customers as stated in our Board Strategic Priority #2 – Optimize and Preserve (State of Good Repair) the Existing System.

DART's TAM and SGR policy:

AES.pdf

As mentioned in DART's Accountable Executive Statement

> "The DART governing board adopted financial planning parameters that include the annual adoption of a twenty-year financial plan forecasting revenues and expenses to support operating the myriad of services, systems capital expansion and asset replacement; limitations of operating costs escalation and administrative cost ratio increases; formulas for escalation of future capital programs; establishment of reserve funding for asset maintenance (SGR) and replacement; and, periodic asset condition assessments for validation of funding reserves. These financial planning parameters set forth the foundation for the ongoing balance and recalibration of revenues, capital systems expansion, operating costs, and asset condition/replacement. This process has allowed DART to meet the challenge of both maintaining the current assets in a state adequate to provide existing services and meet its commitments to the community for further expansion of our regional transportation network."


DART Board Financial Planning Parameters.p

As mentioned in DART's Board policies:

> B9. The Twenty-Year Financial Plan shall include funding for asset replacement and expansion projects. Capital projects in excess of $1 million shall be approved by the Board. Timely replacement of assets shall be the highest priority to ensure a safe system. Accordingly, the Twenty-Year Financial Plan shall include replacement reserves by major asset category to ensure adequate future funding. The reserve levels shall be based on an independent assessment of asset condition (to be completed at least once every five years). Expansion projects shall be prioritized based on the project's cost, impact on ridership, return on investment, available funds, and other relevant factors. Capital construction projects shall be increased at annual inflation rates no less than the greater of those: (i) contained in projections developed specifically for DART by an independent economist; or (ii) based on the current available data from construction contract awards. Inflation rates will be reviewed annually and as construction contracts are awarded to determine if the assumptions are reasonable. Non-construction capital projects will be increased at rates no less than general inflation (Consumer Price Index).
>
> B10. DART receives formula and discretionary Federal funding. Formula funding shall be programmed primarily for bus replacement, capital preventive maintenance (if available), state-of-good repair projects, and passenger facility construction. Formula funding for future years shall be forecast at the current year's funding level or at the minimum levels included in Federal authorizations to ensure a conservative forecast. Discretionary funding shall be programmed primarily for major system expansion projects (e.g., LRT or new bus maintenance facilities). Discretionary funding levels shall be estimated by project based on Federal criteria and the likelihood of obtaining congressional appropriations and require Board approval during the Budget/Twenty-Year Financial Plan process.

3 Capital Asset Inventory

DART's capital asset inventory is summarized in Table 1.

SPEAR—DART's current computerized maintenance management system (CMMS)—primarily maintains capital asset inventory for DART's rolling stock and equipment. DART is actively in the process of procuring a new enterprise asset management (EAM) system. A summary of the assets is in DART's condition assessment report, and more detailed information can be obtained from SPEAR. DART also has asset information in Lawson (asset inventory for depreciation and financial tracking purposes). DART utilizes information from SPEAR and Lawson for reporting to the NTD.

DART recently reviewed the level of detail collected for each asset and will implement the new asset hierarchies as a part of its new EAM implementation. The new EAM system will maintain all capital assets, including linear assets. The level of data required for NTD reporting and for the TAM Plan summary is at a higher level than that developed as a part of the asset hierarchies. The asset hierarchies are intended to help with root-cause analysis, warranty management, and other aspects of the maintenance business.

Table 1. DART Capital Inventory List $50k+ (as of 6/30/18)

Asset	Quantity
Rolling Stock	**859**
BU- Bus	528
CU – Cutaway	130
LR- Light Rail	163
RL - Commuter Rail Locomotive	9
RC – commuter Rail Cab Cars	8
RP – Commuter Rail Passenger	17
SR – Streetcar Rail	4
Non-Revenue Vehicles & Equipment	**595**
Automobiles Class 1 & 7	451
Trucks and other rubber tires Class 2 &3	111
Steel Wheel Class 11	10
Motorcycles Class 6	23
Track - Light Rail	**93 miles**
1994 - 2003 Red Line and Blue Line from Ledbetter to Downtown Garland	44 miles
2004 - 2013 Green Line, Orange Line from Bachman to Beltline, and Blue Line from Downtown Garland to Downtown Rowlett	41 miles
2014 - Orange Line from Beltline to DFW Airport and Blue Line from Ledbetter to UNT Dallas	8 miles
Track – Commuter Rail	**34 miles**
1996 – 9.5 Miles Dallas to Irving	9.5 miles
2000 – 16.3 Miles Irving to Richland Hills	16.3 miles
2001 – 8 miles Richland Hills to Down Town Forth Worth	8 miles
Administration and Maintenance Facilities	**17**
Passenger Stations & Parking	**89**
TPSS (substations)	**78**
1994 – 2003	32
2004 - 2013	37
2014 -	9
Signals House - Central Instrument House	**75**
1994 - 2003	32
2004 - 2013	37
2014 -	6
Operation Systems / Networks	**437**
Computers Systems (Network, Surveillance, PA/VMB)	238
Radio Systems/Equipment	7
Revenue Collection Equipment	192
TRE and Madill Systems	**78**
Control Points – DFW	34
At Grade Crossing Warning protection - DFW	27
Communication Base Stations -DFW	3
Control Points - Madill	1
At Grade Crossing Warning Protection – Madill	13
Easements	**11**

4 Performance and Condition

The TAM Plan quantifies each of DART's performance measures with associated targets with progress toward achieving a SGR.

4.1 Performance Targets

DART has identified their TAM performance targets for year-end fiscal year 2018. The 2018 targets are the same as the 2017 targets submitted to NTD. These targets were developed consistent with the regulations and subsequent guidance published by the FTA and in collaboration with FTA staff where further interpretation was necessary.

49 CFR 625.43(b) requires a measure for rolling stock and equipment that is based on the percentage of rolling stock or equipment that have met or exceeded their Useful Life Benchmark (ULB). This performance measure applies to all asset classes of revenue vehicles and non-revenue vehicles. The ULB listed in Table 2 is not the same as FTA Grant Program ULB definition. The ULB for equipment (Non-Revenue Vehicles) varies by DART class type.

DART has years of vehicle data and standing practices regarding the expected useful life of vehicle assets. Based on this information the 2019 Useful Life range have been revised.

Table 2. DART Rolling Stock and Equipment Performance Targets

Asset Class	Asset Sub Class	# of Unit (as of 6/1/18)	2018 Useful Life Benchmark (Yrs.)	2018 Target (% of Asset that exceeded ULB)	Revised 2019 Useful Life (Yrs.)	2019 Target % of Asset that exceeded ULB
Rolling Stock – Revenue Vehicles	BU – Bus	528	14	0%	12	0%
	CU – Cutaway	130	10	0%	5	0%
	LR – Light Rail	163	31	0%	30	0%
	RL – Commuter Rail Locomotive	9	39	41%	30	41%
	RC – Commuter Rail Cab Cars	8	39	28%	30	28%
	RP – Commuter Rail Passenger	17	39	28%	30	28%
	SR – Streetcar Rail	4	31	0%	30	0%
Equipment – Non-Revenue Vehicles (NRV)	Automobiles DART Class 1 & 7	451	8	44%	5	44%
	Trucks and Other Rubber Tire Vehicles DART Class 2 & 3	111	8	47%	5	47%
	Steel Wheel Vehicles DART Class 11	10	25	0%	15	0%

Table 3 identifies the performance targets for infrastructure and facilities. 49 CFR 625.43(c) requires the performance measure for rail fixed guideway, track, signals, and systems is the percentage of track segments with performance restrictions. Rail track segments defined by revenue track miles with restrictions/total revenue track miles; performance data captured monthly at 9:00 a.m. on first Wednesday and reported annually as monthly average in 0.1-mile increments.

49 CFR 625.43(d) requires the performance of facilities to be measured based on the percentage of facilities (within each facility group) rated below a condition of 3 on the Transit Economics Requirement Model (TERM) scale. The TERM scale rates asset condition on a 1 (poor) to 5 (excellent) scale. All facilities included in the asset sub classes noted in Table 3 were included in SGR Target and Performance measures.

Table 3. DART Facility and Infrastructure Performance Targets

Asset Class	Asset Sub Class	Qty	Units	2018 / 2019 Target % below 3 on TERM scale
Facilities	Passenger Stations and Parking	89	each	0%
	Administrative and Maintenance	17	each	0%
Infrastructure	**Asset Sub Class**	**Qty**	**Units**	**% of track with Performance Restrictions**
	CR – Commuter Rail	34	miles	2%
	LR – Light Rail	93	miles	2%

4.2 Asset Condition and Performance Measurements

Recognizing the competing demands for a limited pool of capital, the Board directed DART to perform periodic Capital Asset Condition Assessments to review and document the condition of capital assets. This served a two-fold purpose: to validate the long-term capital improvement plan (CIP) and to ensure that adequate capital reserves exist to support service commitments over the life of the DART 20-Year Financial Plan. The Board mandated in the DART Financial Standards policy (Resolution #970083) that the Capital Asset Condition Assessment be completed on five-year intervals. The previous assessment and report was completed in 2013. Starting in 2018, DART will conduct annual Capital Asset Condition Assessments on 25 percent of its assets, with all assets being evaluated in a four-year period. A copy of the 2018 State of Good Repair Capital Asset Condition Assessment can be found in the DART Operational Document Control Department.

2018 Performance Measurement for Rolling Stock and Equipment

DART maintains its rolling stock and equipment to achieve the required operationally performance requirements while maintaining safe dependable services to meet the 5 Star Service our customers expect. To achieve this, the Engineering, Trinity Railway Express (TRE), Rail Maintenance and Bus

Maintenance Divisions utilize a combination of annual operating expenses and a long-term capital improvement programs to systematically maintain, improve, upgrade, and replace its rolling stock and equipment. DART's operational management plans for rolling stock and equipment align with meeting the Board Strategic Priority #2 – Optimize and Preserve (State of Good Repair) the Existing System and the SGR Performance listed in Table 4.

Table 4. DART Rolling Stock and Equipment Performance Measures

Asset Class	Qty (as of 6/01/18)	ULB (Years)	# > ULB	Performance Target	Performance Measures
Rolling Stock					
BU – Bus	528	14	7	0%	1%
CU – Cutaway	130	10	0	0%	0%
LR – Light Rail	163	31	0	0%	0%
RL – Commuter Rail Locomotive	9	39	0	41%	0%
RC – Commuter Rail Cab Cars	8	39	0	28%	0
RP – Commuter Rail Passenger	17	39	12	28%	71%
SR – Streetcar Rail	4	31	0	0%	0%
Equipment Class					
Automobiles (DART Class 1 & 7)	451	8	171	44%	38%
Trucks and Other Rubber Tire Vehicles (DART Classes 2 & 3)	111	8	56	47%	50%
Steel Wheel Vehicles (DART Class 11)	10	25	0	0%	0%

Significant improvements to DART's bus service are in progress stemming from a Comprehensive Operation Analysis conducted in 2017. In 2017, 111 new cutaways were purchased to replace the existing fleet. In 2018, seven new Proterra electric buses were purchased, and DART's final seven diesel buses will be retired. The new Proterra electric buses will support DART's D-Link service downtown. In 2019, 41 additional 40-foot compressed natural gas buses will go into service to support DART's bus service program. This will bring its total bus/cutaway count to 699, with the oldest bus manufactured in 2013.

DART operates five fleets of light rail vehicles (LRV) with a combined total of 163 vehicles. The oldest fleet (Fleet 50) has 40 vehicles that began revenue service in 1995, and the latest fleet (Fleet 54) added 48 vehicles in 2010. The DART Engineering department is assessing the best way to extend the life of LRV Fleets 50, 51, and 52 through a combination of new acquisitions and vehicle overhaul known as the End of Life Extension Program.

The Trinity Railway Express (TRE) is a commuter rail line providing service between DART and Fort Worth. It is jointly owned by DART and Trinity Metro. The TRE fleet is comprised of 17 Bi-Level Coach, 8 Cab Cars and 9 diesel locomotives. Approximately 40 percent of the total fleet was purchased new, with the remainder purchased used.

- Two (2) of nine (9) Locomotives were purchased as new from EMD. The two (2) F59-PHI locomotives were purchased new in 2001. Three (3) of the seven (7) were originally built in 1988,

with overhauls performed in 2010, and four (4) originally built in 1994, three of which were overhauled in 2010 and 2011.

- Eight (8) of eight (8) Passenger Cab Cars were purchased as new from Bombardier. Two (2) were purchased in 2000, Three (3) purchased in 2003, and three (3) purchased in 2008.
- Five (5) of seventeen (17) Passenger Coach Cars were purchased as new Bombardier in 2008 and 2009, while the other twelve (12) were originally built in 1977-1978. Of these 9 were overhauled in 2000, and one in 2011. Two former cab cars have been converted to coaches and are currently out for overhaul

Currently there are contracts in place to overhaul the two (2) F59PHI locomotives, and two (2) coach cars.

At the time of the bus assessment, DART had 651 compressed natural gas buses/cutaways and seven diesel buses in a mixed fleet of transit and suburban buses. The seven diesel buses, with an in-service date of 2003, were replaced with seven Proterra electric buses in July 2018, which were purchased partially under the Low or No Emission Vehicle (LoNo) Grant.

DART classifies NRVs into groups to allow better management to implement appropriate maintenance procedures suitable for the classification. For the purpose of this assessment, Classes 1 and 7 were included under Automobiles, Classes 2 and 3 were included under Trucks and other rubber tire, and Class 11 vehicles were included under Steel Wheel Vehicles. Each year DART reviews the condition for those non-revenue vehicles that meet or exceed the criteria for miles and/or year in service. Based on the age, miles and overall condition of the vehicle, some vehicles are kept in service beyond their ULB.

The target percentage of each asset class under the ULB may change each year based on the condition and age of each asset class, the service demand for each class, and funding availability to replace or repair the asset.

2018 Performance Measurement for Facilities

49 CFR 625.43(d) requires condition as a performance measure for facilities based on the percentage of facilities with a condition rating of less than 3.0 on the TERM Scale. The TERM Scale rates asset condition on a 1 (poor) to 5 (excellent) scale. This condition-based approach requires a transit provider to conduct periodic condition assessments of its assets using a set of standardized procedures and criteria. The FTA proposed a broad definition of “facility” that encompassed any buildings or structures used in providing public transportation, including passenger facilities, maintenance and administrative facilities.

DART will conduct an annual condition assessment on 25 percent of its facilities. Over a four-year period, each facility will be assessed at least once. DART owns and maintains many facilities throughout its operations areas. The uses and applications range widely from administrative to major equipment repair and rebuild, resulting in an equally broad range of features, rate of wear and tear, and capital requirements. Facilities also vary widely in age, construction type, and capital improvements.

DART will utilize its Engineering department resources to inspect and assess the facility condition and photograph areas to document its condition and support the assessment. Where necessary, DART will utilize subject matter experts to assist with the inspection and to identify capital requirements that, if not met, would have potential safety implications or the potential to cause service interruptions.

Table 5 identifies DART's facility performance measures, as compared against its targets. Generally, the facilities are in good condition and reflect normal wear and tear.

Table 5. DART Facility Performance Measures

Facility Type	Total Units (as of 3/31/18)	No. of Units Assessed	TERM Scale Score (avg)	Performance Target	Performance Measurement
Administrative and Maintenance	17	4	4.0	0%	0%
Passenger Facilities & Parking	89	24	4.0	0%	0%

Note: The succeeding year's targets may be adjusted based on the criticality of each facility and economic factors. A list of the facilities by type and address is included in Appendix C.

2018 Performance Measurement for Infrastructure

49 CFR 625.43(c) requires a measure for infrastructure based on the percentage of guideway track miles with performance restrictions recorded every first Wednesday of the month at 9:00 am, for each month of FY 2018. This performance measure would be applicable to all rail fixed-guideway infrastructure.

In compliance with this federal regulation, DART establishes the number of track miles of guideway summarized in Table 6.

Table 6. DART Infrastructure Performance Measures

Mode of Guide Way	Total Track Mile (12/31/2017)	Track with Slow Zones (miles)	Performance Target	Performance Measurement
Light Rail	93	0.368	2.0%	0.4%
Streetcar Rail	2.6	0	n/a	0 %
Commuter Rail	34	0.04	2.0%	0.1%

DART has historical records of performance restrictions on its fixed guideway. This data is the source for establishing the 2018 target percentage of fixed guideway with performance restrictions. Succeeding years' targets may be adjusted based on condition and age of the fixed-guideway components. Table 7 is a sample of DART's monthly performance restriction data collection from June 06, 2018.

Table 7. Sample Monthly Performance Restriction Data

Performance Restriction		From	To	Track Miles	Full Speed (mph)	Restricted Speed (mph)	Time Data Collected	Data Collected By
Non-DART Construction near ROW; Houston Street Grade Crsg	Tracks 1 and 2; northbound and southbound	Chain Marker 115+16	Chain Marker 117+6	0.038	20	10	9:00 AM	GC
Pedestrian Safety: 2nd Avenue Grade Csg	Tracks 1 and 2; northbound and southbound	Chain Marker 283+05	Chain Marker 300+05	0.33	60	40	9:00 AM	GC

Speed restriction on the TRE DFW and Madill subdivisions (Table 8) are directly related to the load capacity of the bridges at DFW MP 639.75 and Madill MP 707.45. Each bridge is a top priority to be replaced and are currently slated to be replaced with the next 12-18 months.

Table 8. TRE DFW and Madill Subdivisions Sample

Performance Restriction	Track Description	From	To	Track Miles	Design Speed (mph)	Restricted Speed (mph)
Speed Restriction / Bridge Capacity	DFW Main Track	MP 639.7	MP 639.8	0.1	79/60	79/10
Speed Restriction / Bridge Capacity	Madill	MP 707.4	MP 707.5	0.1	30	20

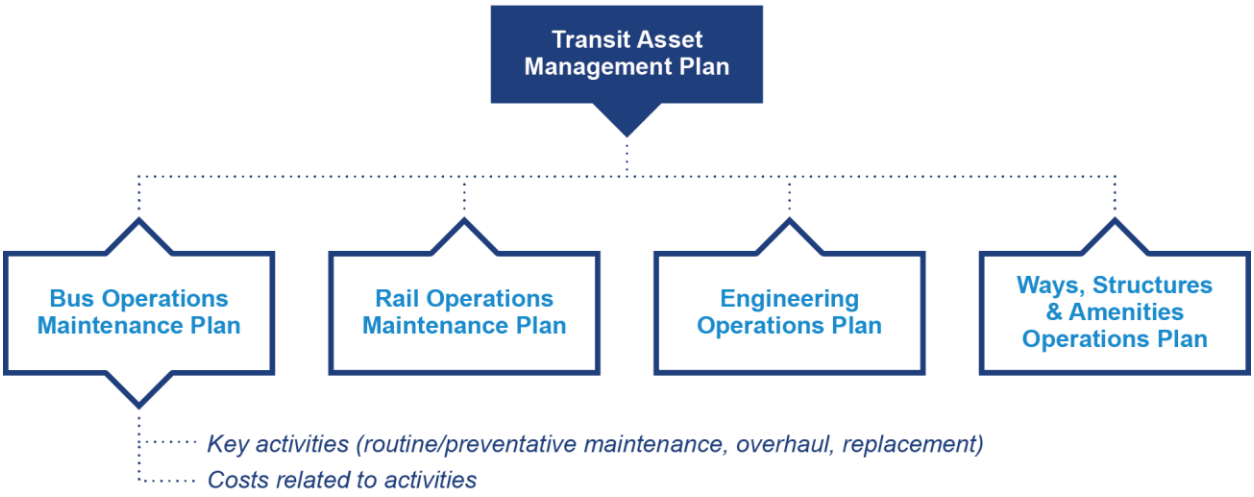
5 Decision Support

DART's Strategic Plan identifies, integrates, and aligns DART's priorities, goals, and tactical objectives. The plan provides a dynamic structure for staying on track with long-term financial, development, and operational commitments within a rapidly changing environment. The Strategic Plan identifies what needs to be accomplished; the Operations Maintenance Plan developed by each division defines how it will be achieved.

5.1 Operations Maintenance Plan

The purpose of the DART Five-Year Operations Maintenance Plan is to guide the annual work program of the divisions and to ensure that its implementation is consistent with DART's overall mission and strategy. Each department in Operations has an operational plan that includes lifecycle planning, maintenance and the overall asset management of DART's rolling stock, equipment, facilities and infrastructure. A copy of the FY 2019 Operations Maintenance Plan can be found in the DART Operational Document Control Department. Figure 2 illustrates the relationship of the TAM Plan with the Operation Maintenance Plans of each department.

Figure 2. TAM Plan Relationship



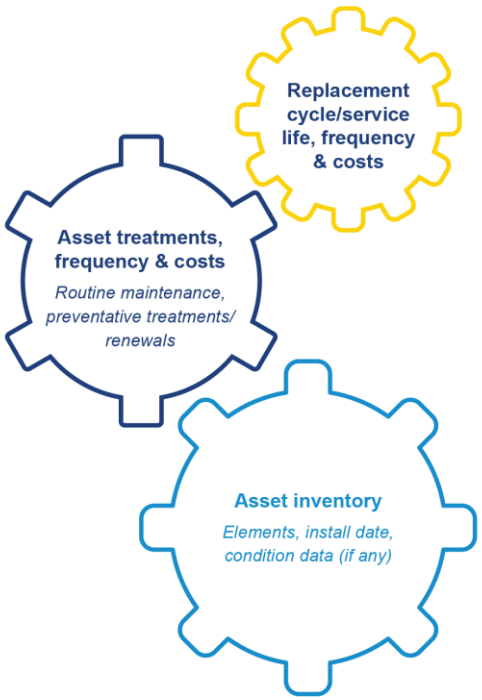
DART's lifecycle planning includes routine and preventive maintenance, overhaul and replacement (Figure 3). Each plan focuses on four established maintenance work-types and provides vision on how to function under each. The work disciplines are:

- Condition Based
- Corrective
- Fixed Scheduled
- Campaigns

Each department tracks its assets in DART CMMS system (SPEAR) and maintains the maintenance records. DART uses this data to estimate capital investment needs and to develop its investment prioritization. The decisions are supported by information extracted from SPEAR and Excel files are used for tracking decisions. DART is planning for the new asset management system to provide additional reports and data, and to allow DART to retire the Excel files

Commuter Rail also utilizes life cycle and condition-based planning to maintain SGR. TRE has developed a rolling 20-year capital program that accounts for original installation/purchase, useful life expectancy, and anticipated year of replacement or overhauls for all elements of track, structures, facilities and fleet. This data base is updated on an annual basis and is the basis of the both short and long-term capital maintenance and capital improvement funding requests of the Commuter Rail Department.

Figure 3. DART Lifecycle Approach



5.2 Decision Process

It is important that DART maintain its rolling stock, equipment, infrastructure, and facilities in such a manner that is can operationally achieve the required schedule performance while maintaining safe, dependable service for its customers and to meet the customers' needs and expectations. To achieve this, DART Operations Department utilizes a combination of annual operating expense and long-term Capital Improvement Plan (CIP) to systematically maintain, improve, upgrade, and replace assets. The CIP addresses short- and long-term capital requirements to ensure capital reserves are planned and available when needed.

DART is in the process of implementing a new Enterprise Project Management (EPM) system. The new EPM system will support capital planning integration and modeling to enhance the capital prioritization process. The current CIP requires each new capital project to complete a Capital Project Request Form (CPRF) that includes project summary, cost analysis, impact statement, risks analysis (financial and safety), and the effect on the customer. Projects are prioritized based on the CPRF information and available funding (Table 9).

Table 9. Priority Definitions

Priority 1	Project is required to operate and maintain a safe, efficient, effective system at the service levels as they currently exist or are budgeted ("Have to do") - Please choose one below.
Priority 1A	Project is required by a) government regulation, b) ILA, c) Board Resolution, or d) to correct or prevent a major, immediate (with the year) operational or safety defect. (This would include all System Plan projects, as they are approved by Board Resolution).
Priority 1B	Project is required to correct or prevent an operational or safety defect that is either not major (but still significant) or not immediate in nature.
Priority 1C	All other projects with a priority of 1 that do not qualify under 1A-1C.
Priority 1D	Project is not required but is smart business decision, provides cost savings, adds ridership and/or substantially improves customer service ("Ought to do")
Priority 2	Project is a good idea and may incorporate some elements contained in priority 2 above, but the project is primarily discretionary ("Want to do")
Priority 3	Project is required to correct or prevent an operational or safety defect that is either not major (but still significant) or not immediate in nature.

Figure 4 shows a flow diagram of the current process. After Board and CEO approval, the project is assigned a project code and tracked in Lawson.

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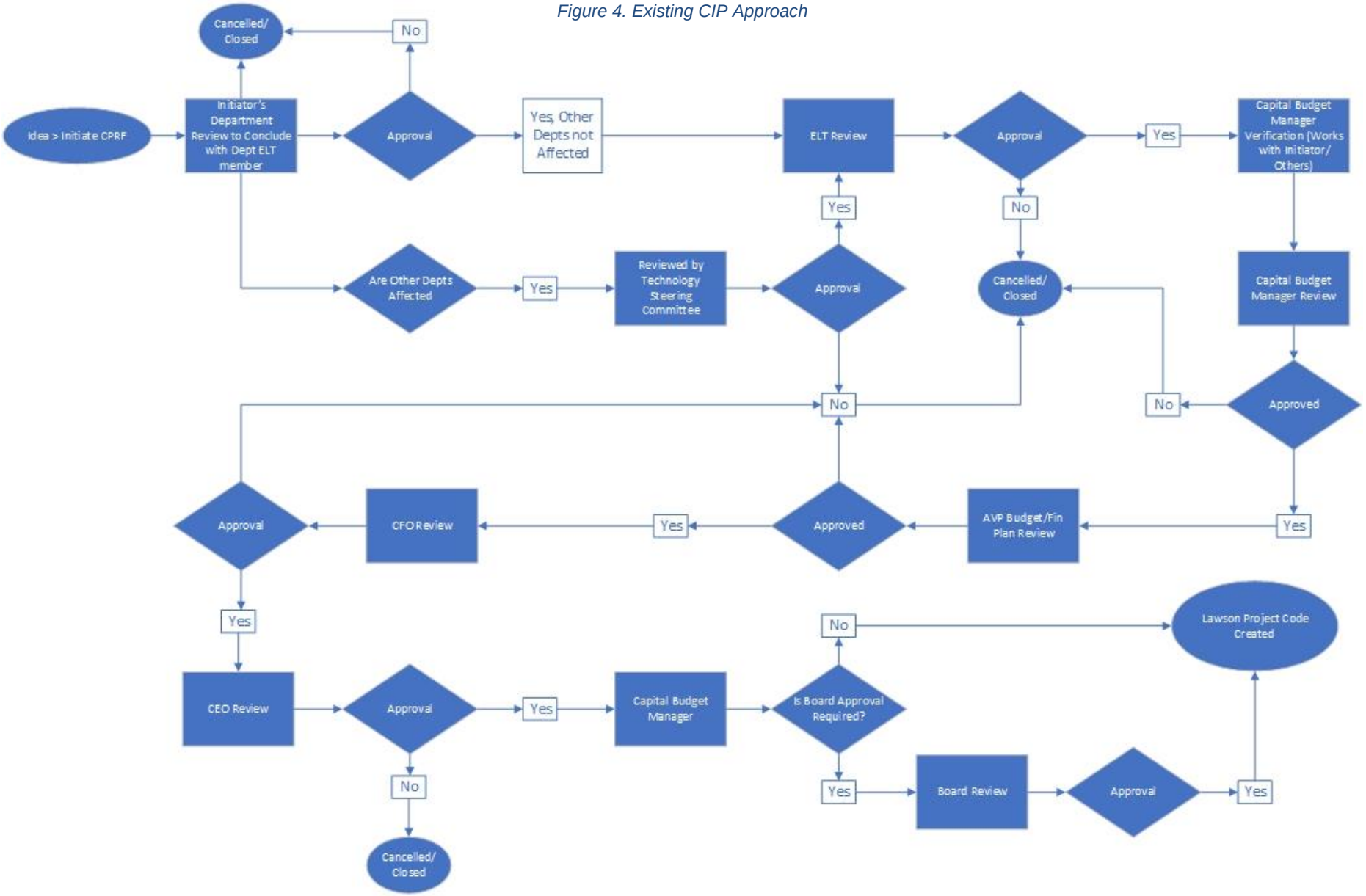
Figure 4. Existing CIP Approach



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6 Investment Prioritization

The SGR capital projects for FY2019 and beyond listed in Table 10 have been through the CIP process discussed in Section 5.2. Projects are not listed by priority, but a priority is assigned based on the information provided in the CPRF and available funding.

Table 10. FY 2019 Capital/Non-Operating Project Budget List (in thousands)

Project Name	5-Year Total ($000)	20-Year Total ($000)
Agency Wide		
State of Good Repair (SGR) Reserve - Infrastructure Technology	18,767	80,753
SGR Reserve - Communications	987	68,608
SGR Reserve - Non-Revenue Vehicle/Equipment Replacement	9,757	63,278
SGR Reserve - Application Technology	2,429	57,846
Total SGR Reserve -Administration	10,207	54,623
SGR Reserve - Administration Headquarters (HQ)	5,372	21,164
SGR Reserve - Intelligent Transportation Systems (ITS)	3,223	20,843
Critical Functions Facility	17,981	17,981
Enterprise Asset Management Software System	12,563	12,563
Total SGR Reserve - DART Police	1,064	5,901
Safety and Security Improvements at Outlying Light Rail Stations	5,000	5,000
Network Upgrade for the Agency	5,000	5,000
SGR Reserve - Oak Cliff NRV Facility	589	4,882
SGR Reserve - Electronic Parts Catalog Reserve	1,093	4,230
DART Police Facility	4,000	4,000
Safety and Security Improvements at Downtown Dallas Stations	3,000	3,000
Enterprise Project Management. System	3,000	3,000
SGR Reserve - Police Motorcycles	458	2,171
SGR Reserve - Admin Police HQ	349	2,119
FY19 Service Vehicles Replacement Program	1,747	1,747
FY18 NRV Replacement Program	1,890	1,890
Total SGR Reserve - Marketing	448	1,805
Upgrade HC Management and Application Systems	1,650	1,650
DARTnet Modernization Phase II	1,400	1,400
FY17 NRV Replacement Program	1,113	1,113
DART Systemwide Pathfinder Signage Improvement	1,000	1,000
Vehicle Business System New Features	1,000	1,000
Pedestrian Barriers at Bush Turnpike Station	987	987

Project Name	5-Year Total ($000)	20-Year Total ($000)
SGR Reserve - Material Management Facility	563	771
PA - Carpet Replacement DART HQ Building	750	750
Total SGR Reserve - Finance	203	726
Escalator Replacement for 1401 Pacific	710	710
Passenger Facility Accessibility Mods FY14	600	600
System to Alert Operators to Ensure Connections	550	550
Enterprise Application Integration Implementation	500	500
Signalized Crossing at Arapaho Station	450	450
Signalized Crossing at Ledbetter Station	450	450
FY16 NRV Replacement Program	429	429
Replace DART Access System	375	375
Mobile Medical Services for DART Employees	350	350
Desktop PC Replacement	330	330
Total SGR Reserve - Legal	74	323
Comm Two Way Radios Purchase	304	304
PA Facility Landscape Replacement/Improvements	300	300
COMMs Radio Server System Hardware Replacement	212	212
Implementation of IBM Cognos TM1	206	206
Web Development Improvement	200	200
Multi-Function Printer Replacement	181	181
Pedestrian Barriers at Fair Park Station	172	172
Equipment Replacement	151	151
Additional 25 Routers for Police Vehicles	75	75
PA Monroe Shops Structural Engineering Assessment	50	50
Relocation of the Fitness Center at SOC Transport	36	36
Rev Vehicle Wash Improvement & Winter Ops Study	30	30
Addition of Equipment at Northwest Maintenance	30	30
Improvements at DART HQ Break Room for Fare Enforcement	25	25
Total for Agency Wide	**124,380**	**458,840**
Bus		
SGR Reserve - Bus Replacement	0	770,424
SGR Reserve - Innovative Services Vans	30,257	165,055
SGR Reserve - Bus Capital Maintenance Program	0	33,363
SGR Reserve - Passenger Amenities - Bus	2,206	23,525
SGR Reserve - East Dallas Bus Ops Facility	2,562	21,706
Bus Repower Program (FY18-FY23)	20,273	20,273
SGR Reserve - Farebox Replacement	0	17,688

Project Name	5-Year Total ($000)	20-Year Total ($000)
SGR Reserve - South Oak Cliff Bus Ops Facility	1,254	16,353
SGR Reserve - Northwest Bus Ops Facility	1,222	8,121
Bus lifts replacement 4127 Elm St.	7,000	7,000
Bus Rapid Transit (BRT) Elm & Commerce Bus Lanes Reconstruction	7,000	7,000
On Street Passenger Facilities - FY2018-FY2022	6,162	6,162
SGR Reserve - Intelligent Transportation Systems (ITS)	306	5,409
Transit Signal Priority - Route 453 and Route 467	747	3,779
SGR Reserve - Planning Equipment Replacement	0	2,644
ARBOC Vans Replacement	2,500	2,500
Equip Bus fleet with APC	1,944	1,944
LRV & Bus Passenger Seat Retrofit	1,300	1,300
Bus Farebox Replacement	1,000	1,000
Bus Operator Crew Rooms	1,000	1,000
Total SGR Reserve - Transportation	257	929
SOC Cooling Tower and Hydronic Boiler Replacement	704	704
PA-LED Lighting Retrofit for DART Bus Facilities	699	699
SOCBOF - Renovate Bus Washer	683	683
SOC Total Roof Replacement	500	500
Replacement of Overhead doors at 4127 Elm St	456	456
Bus Collision Avoidance Countermeasures Project	452	452
Bus Lift Replacements Bays #13 and #14 at 4209 Main	300	300
Replacement of Overhead doors at 4209 Main St.	276	276
PA Bus Facilities Concrete Repair FY 18	273	273
SOCBOF - Bus Lot Sealing and Concrete Replacement	131	131
NWBOF - Remove Inground Lifts in Bays 5 & 6	115	115
NWBOF - Replace Main Electrical Switch Gear	110	110
NWBOF - Bus Lot Concrete Replacement	75	75
NWBOF - Refurbishment of Bus Washer	40	40
NWBOF- Remodel - Upstairs Breakroom and Classroom	20	20
SOCBOF - Renovate Men's Shower for Bus Operators	16	16
NWBOF - Add Lighting to the Bus Parking Lot	16	16
Total for Bus	**91,855**	**1,122,040**
Commuter Rail		
SGR Reserve - Vehicle Maintenance	10,641	165,203
SGR Reserve - DFW ROW & Signals Maintenance	26,721	130,528
SGR Reserve - Madill ROW & Signals Maintenance	10,957	57,415
Cotton Belt Preventive Maintenance	0	35,281

Project Name	5-Year Total ($000)	20-Year Total ($000)
Madill Bridges Replacement	30,000	30,000
SGR Reserve - PTC Refurbish / Replacement	0	19,227
Bi-Level & Cab Car Overhauls	15,603	15,603
FY19 DFW Track Maintenance	11,083	11,083
SGR Reserve - Intelligent Transportation Systems (ITS)	6,898	10,793
Madill Bridge Additional Funding	9,500	9,500
DFW Track MOW	9,478	9,478
SGR Reserve - Facility Maintenance	2,480	8,483
Obsession Bridge	8,207	8,207
Locomotive Overhaul (2) F59PHI	5,302	5,302
Valley View to W. Irving Double Tracking	7,500	7,500
MP 640.4 Inwood Bridge	1,900	1,900
FY18 DFW Bridge Panel Replacement	1,800	1,800
TRE Fleet Cameras for Loco, Cab Cars and Coaches	1,300	1,300
TRE Repaint Existing Fleet	1,050	1,050
Cameras for TRE Station Platforms	550	550
SGR Reserve - TRE Passenger Amenities	0	500
DFW Realign Control Point 217	500	500
FY19 DFW Turnout (TO) Replacement	460	460
FY19 DFW Bridge Panel Replacement	417	417
TRE Maintenance Facility Security	282	282
FY19 DFW Crossing Replacement	256	256
TRE Fleet Camera Installation	250	250
SGR Reserve - Infrastructure Technology	49	184
Raising Union Station Platform Track 4	80	80
Total for Commuter Rail	**163,263**	**533,131**
LRT		
SGR Reserve - LRVs Replacement	0	711,436
SGR Reserve - Right-Of-Way & Track	8,869	82,200
SGR Reserve - LRV Capital Maintenance Program	4,249	61,935
SGR Reserve - TVM Model Replacement	5,066	51,163
SGR Reserve - Intelligent Transportation Systems (ITS)	265	44,349
SGR Reserve - LRT Passenger Amenities	5,970	39,546
WSA-Central Business District (CBD) Rail Replacement	33,000	33,000
SGR Reserve - Uninterrupted Wayside Signal Power Systems	0	31,500
SGR Reserve - Traction Electrification System (TES)	3,522	23,451
SGR Reserve - Communications	572	22,093

Project Name	5-Year Total ($000)	20-Year Total ($000)
SGR Reserve - Central Rail Ops Facility	5,045	15,187
LRV Capital Programs FY18-FY27	15,029	15,029
SGR Reserve - Hi-Rail NRV Replacement	2,227	11,283
LRV HVAC Upgrade Project - 115 Cars	10,256	10,256
Uninterrupted Wayside Signal Power Systems	9,250	9,250
SGR Reserve - North West Rail Ops Facility	1,518	7,833
SGR Reserve - Signals	401	4,550
TES - Starter System TPSS Rectifier Replacement	4,464	4,464
COMMs SONET System Replacement	4,300	4,300
PA-LED Lighting Retrofit for DART LRT Facilities	3,946	3,946
Comm SCADA Control System Upgrade	3,600	3,600
LED Destination Signs on 48 LRVs	3,403	3,403
Fare Barrier Improvements at West End Station	3,000	3,000
TES Overhead Catenary Wire Machine	2,770	2,770
TRK Plasser American Tamper Replacement #6019	2,765	2,765
Interior Electronic Display Message Sign on 48 LRVs	2,747	2,747
Pedestrian Connections at Victory Station	1,600	1,600
SGR Reserve - Infrastructure Technology	0	1,441
SGR Reserve - Anti-Graffiti Window Film, LRVs	0	1,181
COMMs W. Oak Cliff LRT Line Fiber Install	1,054	1,054
US75 LRT Bridge	1,000	1,000
SGR Reserve - Equipment Replacement - Police	20	835
SGR Reserve - Emergency Power Upgrade at CROF	0	724
Trk Presidio Crossover Replacement	633	633
DFW Airport Station Customer Amenities	530	530
2nd Avenue Grade Crossing Safety Improvements	500	500
TES – TPSS Structural, Civil, and Safety Enhancement	457	457
COMMs Luminator UPS Systems Replacement	366	366
East and West End Elevators CROF S&I Building	358	358
Storm Drainage Improvements at G-1 Line Section R	350	350
Track Grade Crossing Rubber Panel Replacement	328	328
PA Rail Facilities Concrete Replacement FY18	281	281
PA Rail Station Rehab (SGR) City Place/Tunnel	261	261
One Set of Portable LRV 15 Ton Lifts for NWROF	259	259
Tunnel Facility Uninterruptible Power Supply	227	227
SIG Uninterrupted Power Supply Unit Replacements	141	141
Track Electrification Systems (TES) Portable Generators	140	140

Project Name	5-Year Total ($000)	20-Year Total ($000)
C-CAR Reconfiguration - Prioritizing for Mobility	104	104
Rail Station Rehab Forest Lane	87	87
SIG - Fiberoptic Test/Troubleshooting Equipment	80	80
TES Truck Mounted Height & Stagger Gauge	69	69
COMMs Exacom Voice Recorder System Upgrade	38	38
COMMs Optical Time Domain Reflectometer (OTDR)	14	14
Total for LRT	**145,133**	**1,218,116**
Streetcar		
Vehicle Maintenance Program SGR - Reserve	148	1,211
Road Improvement		
City of Dallas (PASS Program)	4,000	4,000
City of Garland (PASS Program)	2,000	2,000
TSM Street Repair SGR - Reserve	9,200	9,200
City of Dallas (TSM Program)	4,000	4,000
City of Garland (TSM Program)	1,203	1,203
TSM Street Repair Other Cities	2,480	2,480
Grant for Transit Related Improvement Program (TRIP)	11,446	16,025
Highland Park (TRIP)	4,386	6,330
University Park -TRIP	4,884	7,048
Glenn Heights - TRIP	617	890
Cockrell Hill - TRIP	405	584
Total for Road Improvement	**$44,621**	**$53,761**

7 Transit Asset Management Plan Implementation Strategy and Key Transit Asset Management Activities

DART's vision is to be on par with world-class business practices in both the EAM and EPM business areas. Therefore, DART plans to replace the current SPEAR system that is nearing the end of its useful life with re-engineered business practices to support new asset management, supply chain management, warehouse management and project management processes and systems. Implementation of this new strategy begins with the following sections and is summarized in Figure 5 below.

Figure 5. DART TAM Implementation Strategy

7.1 Asset Information Framework

DART is updating its asset hierarchy for each asset class, which will provide a detailed breakdown and parent-child relationship of all its assets. To date, DART has engaged with an outside consultant to review its current asset hierarchical breakdown and update the asset hierarchy for each of its asset classes. DART has now begun to map its current assets to the new hierarchy. The asset hierarchy follows guidance defined by the FTA capital asset inventory, as defined by the FTA Final Rule. In addition to the updated asset hierarchy, DART plans to implement a linear asset referencing system, which will help DART better track its linear assets including track and communication assets.

A well-established asset hierarchy will allow DART to easily identify and locate assets, allow for robust cost and reliability tracking, and aggregate information for reporting and analysis. A well-defined asset hierarchy will also serve as a building block for other asset improvements identified in this report. The updated asset hierarchies will also help improve the reporting for DART management, NTD, and capital planning.

7.2 Supply Chain Management

The primary goal for DART in managing its supply chain is to have a balanced availability of parts to avoid its assets being out of service for extended periods of time. DART strives to continuously improve its supply chain management processes and has identified several key steps to address in the coming years:

1. Material demand/inventory replenishment – DART is exploring ways to better establish and track required material levels, accounting for long lead times, seasonal changes, safety stock and other factors. This includes forecasting demand based on both historical consumption as well as upcoming demand (e.g., major campaigns, needs for new assets).
2. Material movement and transactions – Through tagging its materials and parts, DART will be better able to track its material movements and transactions across the agency. DART is actively implementing material tracking through its component serialization efforts.
3. Warehouse configuration and design – DART recently reviewed its current warehouse configuration and design as well as other methods to increase storage capacity. DART has implemented a new vertical storage unit that will increase its storage capacity.

7.3 Component Serialization

DART has also begun updating its component serialization processes and validating which components should be serialized based on its updated asset hierarchy. Serializing components will allow DART to better identify and track the cost, usage, and failure of its components. This in turn will improve DART's warranty management, lifecycle cost analysis, and failure/remediation tracking.

DART has engaged with an outside consultant to develop a process and template to help identify which components within the agency will need to be serialized. The template will help DART not only identify which components need to be serialized but also how, when, and where the components will be serialized. DART is also exploring various methods to tag its components for serialization, including but not limited to the use of bar codes, QR codes and RFID tags. DART is in the process of identifying components to serialize by asset class, which will then be configured in DART's new EAM system.

Further, the new EAM system will also allow DART to not only track components better but also simplify the process of requesting and issuing parts and materials from inventory—steps that are not well supported by SPEAR. This includes using various tags (bar codes, etc.) appended to the parts and materials.

7.4 New Enterprise Asset Management System

DART is actively in the process of procuring a new EAM system. The new system will replace its current CMMS—SPEAR—which was implemented in DART in the late 1990s. The current system is drastically outdated and is at the end of its useful life. The new system will result in improved data entry, improved reporting, and improved integration with inventory management functions.

DART has gone through a rigorous process to identify its specific needs for the new EAM system, and to date DART has:

- Reviewed and updated business processes to support EAM implementation.
- Developed detailed system requirements for key system functionality.
- Issued an Request for Proposals to short-listed proposers. (DART is now in negotiations with the preferred proposer/provider.)
- Conducted software demonstrations.

From here, DART plans to obtain Board approval for the project and begin implementation in late 2018.

The implementation is expected to take a little under three years. DART will evaluate further improvements after the system is implemented and stabilized.

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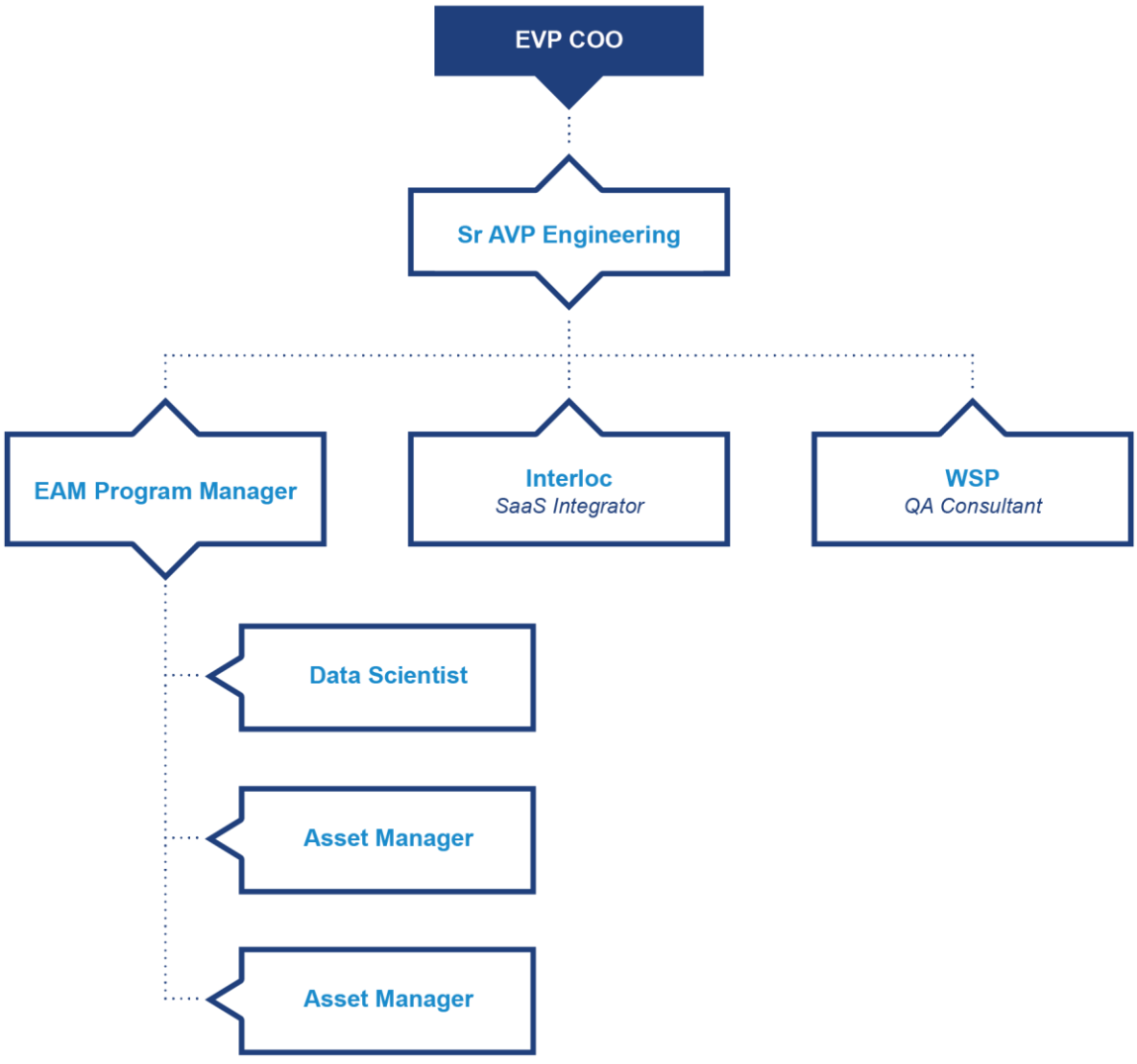
8 Resources

The DART TAM team will consist of four full-time personnel plus support resources from Technology, Engineering, Rail Operations, Bus Operations, Material Management, and TRE (Figure 6). The team will also be responsible for the TAM Plan implementation strategy and key activities listed in Section 7. The first major project of the team will be the EAM implementation, including its training, migration of data from SPEAR, rollout to the divisions and managing the change for DART staff.

Figure 6. DART TAM Team



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9 Continuous Improvement

The Board-approved Strategic Priority 2 – Optimize and Preserve (State of Good Repair) the Existing Transit System, includes initiatives for continuous improvement of DART's systems and infrastructure. DART's commitment to 5 Star Service includes process reengineering and process improvement projects to improve the customer experience and satisfaction.

DART will review this TAM Plan and Operation Maintenance Plan annually and revise them as necessary. DART will review the plans in concert with the other financial and business plans to ensure a comprehensive review.

DART will obtain input from various stakeholders regarding changes to the plan. DART will strive to influence better asset performance, risk reduction, and agency cost savings with each revision of the TAM Plan accordingly.

DART is committed to a strategic process for acquiring, operating, maintaining, upgrading and replacing its transit assets to directly support the agency's goal to provide safe, secure, efficient, and effective services to its customers.

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Appendix A TAM Plan Key Terms and Definitions

Accountable Executive

Defined by 49 U.S.C. Chapter 53 as a "single, identifiable person who has ultimate responsibility for carrying out the safety management systems of a public transportation agency; responsibility for carrying out transit asset management practices; and control or direction over the human and capital resources needed to develop and maintain both the agency's public transportation agency safety plan, in accordance with 49 U.S.C. 5329(d), and the agency's transit asset management plan in accordance with 49 U.S.C. 5326."

Asset

An asset is defined as a tangible entity (or system of entities) that is either owned, leased, or maintained by DART and is:

- Repairable and/or replaceable.
- Has an expected useful life of more than one year.
- Requires intervention/activities to reduce risk of failure.
- One or more of the following apply:
    - Requires a preventive maintenance schedule.
    - Needs to be inspected.
    - Needs to be calibrated.
    - Needs to be tracked.

This definition applies to discrete physical properties that are considered part of and enable the safe operation of transit in the DART service area.

Lifecycle

The time interval that begins with the acquisition of a transit asset or land asset, and ends with the disposal of the transit asset or land asset. Lifecycle phases may include planning, design, procurement, construction, operations, maintenance, rehabilitation, and asset replacement/disposal.

State of Good Repair (SGR)

Defined by 49 U.S.C. Chapter 53 as the "condition in which a [transit asset or] capital asset is able to [safely] operate at a full level of performance." The State of Good Repair is further defined by an asset's Useful Life Benchmark (for rolling stock and equipment) or physical condition (for facilities). Assets are considered in a State of Good Repair when they do not meet or exceed their ULB (revenue vehicles and equipment/non-revenue service vehicles) or physical condition (facilities) threshold. Vehicle and equipment assets, for example, are considered in a State of Good Repair when they meet the ULB

identified for each vehicle type. Facilities are considered in a State of Good Repair when they are rated as a 3 or above on FTA's TERM scale. *Also, see definition for Useful Life Benchmark.*

State of Good Repair (SGR) Backlog

The cumulative dollar value of deferred capital maintenance and replacement needs.

TERM Scale

The five-category rating system used in the FTA's Transit Economic Requirement Model (TERM) to describe the condition of an asset, where 5 is excellent condition and 1 is poor condition.

Tier I Operator

An entity that receives federal financial assistance under 49 U.S.C. Chapter 53, either directly from FTA or as a subrecipient, that owns, operates, or manages either (1) one hundred and one (101) or more vehicles in revenue service during peak regular service across all fixed-route modes or in any one non-fixed route mode, or (2) rail transit.

Transit Asset Management (TAM)

Defined by 49 U.S.C. Chapter 53 as "the strategic and systematic practice of procuring, operating, inspecting, maintaining, rehabilitating, and replacing transit capital assets to manage their performance, risks, and costs over their lifecycles, for the purpose of providing safe, cost-effective, and reliable public transportation."

Transit Asset Management Plan (TAM Plan)

This document describes the capital asset inventory, the condition of inventoried assets, TAM performance measures and targets, the investment prioritization approach, and includes a list of investment priorities.

Useful Life

Defined by 49 U.S.C. Chapter 53 as "either the expected lifecycle of a capital asset or the acceptable period of use in service determined by FTA." It generally defines the minimum eligibility for retirement, replacement, or disposal of an asset.

Useful Life Benchmark (ULB)

Defined by 49 U.S.C. Chapter 53 as "the expected lifecycle or the acceptable period of use in service for a capital asset, as determined by a transit provider, or the default benchmark provided by FTA." The ULB is the realistic expectation for when an asset would be disposed of or replaced based on operating environment and procurement timelines. It is not the same as "Useful Life" in FTA grant programs, is reported by age (in years), and usually pertains only to rolling stock or equipment. It is a single number shared for or within specified asset classes, although the number may vary across different asset classes and providers.

Appendix B TAM Compliance Matrix

TAM Final Rule Ref.	TAM Final Rule Section	Requirement	DART TAM Plan Compliance
TFR 1	49 CFR § 625.25 (b)(5)	Provider's TAM and SGR policy	TAM/SGR Policy is presented in Section 2 of the TAM Plan.
TFR 2	49 CFR § 625.25 (b)(1)	Inventory of the number and type of all capital assets a provider owns, except equipment with an acquisition value under $50,000 that is not a service vehicle	Capital Inventory for all asset classes presented in Section 3 of the TAM Plan. Annual changes will also be reported in Section 3 in future issues of the TAM Plan.
TFR 3	49 CFR § 625.25 (b)(1)	An inventory must also include third-party owned or jointly procured exclusive-use maintenance facilities, passenger station facilities, administrative facilities, rolling stock, and guideway infrastructure used by a provider in the provision of public transportation	Capital Inventory for all asset classes presented in Section 3 of the TAM Plan.
TFR 4	49 CFR § 625.25 (b)(2)	Condition assessment of those inventoried assets for which a provider has direct capital responsibility and to level of detail to monitor, predict performance of assets and inform investment prioritization	Performance targets and condition assessment approach are set out in Section 4 of the TAM Plan. Current performance and condition are set out in Section 4 of the TAM Plan. Performance targets for future years are set out where appropriate in Section 4 of the TAM Plan and reported through NTD.
TFR 5	49 CFR § 625.25 (b)(7)	A description of key TAM activities that a provider intends to engage in over the TAM Plan horizon period	TAM Plan implementation strategy, including how the plan and associated business activities will be monitored, updated, and evaluated is set out in Section 7.
TFR 6	49 CFR § 625.25 (b)(3)	Description of analytical processes or decision-support tools to estimate capital investment needs over time and develop its investment prioritization.	Use of tools, asset lifecycle strategies, and approaches to support decision making is described in Section 5.

TAM Final Rule Ref.	TAM Final Rule Section	Requirement	DART TAM Plan Compliance
TFR 7	49 CFR § 625.25 (b)(4)	Project-based prioritization of investments.	A prioritized list of SGR capital investment projects for which DART has direct capital responsibility is set out in Section 6.
TFR 8	49 CFR § 625.33 (a)	TAM Plan must include an investment prioritization that identifies a provider's program and projects to improve or manage the SGR of capital assets for which the provider has direct capital responsibility over the TAM Plan horizon period.	A prioritized list of SGR capital investment projects for which DART has direct capital responsibility is set out in Section 6.
TFR 9	49 CFR § 625.33 (b)	Provider must rank projects to improve or manage the SGR of capital assets in order of priority and anticipated project year.	A prioritized list of SGR capital investment projects for which DART has direct capital responsibility is set out in Section 6.
TFR 10	49 CFR § 625.33 (c)	Provider's project rankings must be consistent with its TAM policy and strategies.	A prioritized list of SGR capital investment projects for which DART has direct capital responsibility is set out in Section 6.
When developing its investment prioritization, Provider must:			
TFR 11	49 CFR § 625.33 (d)	Give due consideration to those state of good repair projects to improve that pose an identified unacceptable safety risk.	Identification and management of risks are set out in Section 5. A prioritized list of SGR capital investment projects for which DART has direct capital responsibility is set out in Section 6.
TFR 12	49 CFR § 625.33 (e)	Take into consideration its estimation of funding levels from all available sources that it reasonably expects will be available in each fiscal year during the TAM Plan horizon period.	Identification and management of funding are set out in Section 5.
TFR 13	49 CFR § 625.33 (f)	Take into consideration requirements under 49 CFR 37.161 and 37.163 concerning maintenance of accessible features and the requirements under 49 CFR 37.43 concerning alteration of transportation facilities.	Identification and management of risks, safety and funding are set out in Section 5. A prioritized list of SGR capital investment projects for which DART has direct capital responsibility is set out in Section 6.
TAM Plan must also include the following elements:			
TFR 14	49 CFR § 625.25 (b)(8)	A summary or list of the resources, including personnel, that a provider needs to develop and carry out the TAM Plan	Resource and access plan is set out in Section 8.

TAM Final Rule Ref.	TAM Final Rule Section	Requirement	DART TAM Plan Compliance
TFR 15	49 CFR § 625.25 (b)(6)	Provider's TAM Plan implementation strategy	TAM Plan implementation strategy, including how the plan and associated business activities will be monitored, updated, and evaluated, and how continuous improvement will take place is set out in Section 7.
TFR 16	49 CFR § 625.25 (b)(9)	An outline of how a provider will monitor, update, and evaluate, as needed, its TAM Plan and related business practices, to ensure the continuous improvement of its TAM practices	TAM Plan strategy for how continuous improvement will take place is set out in Section 9.

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Appendix C DART Facility Locations

#	Name	Address	2018 TERM Rating
Administrative and Maintenance Facilities			
1	East Dallas - Transportation Office	201 Peak Dallas Texas 75226	
2	East Dallas – Bus Administration & Paratransit Office	101 Peak Dallas Texas 75226	
3	General Head Quarters	1401 Pacific Ave Dallas Texas 75202	
4	Police Head Quarters	2111 S. Corinth Road Dallas Texas 75216	
5	Pioneer Warehouse	2218 E. Pioneer Dr. Irving Texas 75061	4
6	East Dallas Administration	4209 Main Street Dallas Texas 75226	
7	East Dallas Bus Operating Facility	4127 Elm. St. Dallas Texas 75226	
8	East Dallas - WSA Storage	312 N. Peak St. Dallas Texas 75246	
9	Paratransit Operation Division	8998 Senate Street Dallas Texas 75228	
10	NRV Fleet Services Operations	1200 E. Jefferson Blvd. Dallas Texas 75203	4
11	Northwest Bus Operating Facility (NWBOF)	2424 Webb Chapel Extension Dallas Texas 75220	
12	Central Rail Operating Facility (CROF) Service & Inspection	3021 Oak Lane Dallas Texas 75266	4
13	South Oak Bus Operating Facility (SOCBOF)	3422 E. Kiest Blvd. Dallas Texas 75203	
14	TRE Offices	4801 Rock Island Road Irving Texas 75061	
15	Northwest Rail Operating Facility (NWROF) Service & Inspection	9717 Abernathy Ave Dallas Texas 75220	
16	Rowlett WSA Service Facility	4817 Rowlett Road Rowlett Texas 75088	4
17	FA-II - WSA Tracks Department Facility	555 2nd Ave Dallas Texas 75266	
Passenger Stations and Parking			
1	8th & Corinth Station-Grade	1740 East 8th Street Dallas Texas 75203	4
2	Addison Transit Center	4925 Arapaho Rd. Addison Texas 75001	
3	Akard Station-Grade	1405 Pacific Ave Dallas Texas 75202	
4	Arapaho Station-Grade & Transit Center	1051 N. Greenville Ave. Richardson Texas 75081	
5	Bachman Station - Grade	9739 Denton Drive Dallas Texas 75220	
6	Baylor Station-Grade	2900 Junius St. Dallas Texas 75226	
7	Beckley Station	291 E. Colorado Blvd. Dallas Texas 75203	
8	Belt Line Station-Grade	3900 Valley View Lane DFW Texas 75261	

#	Name	Address	2018 TERM Rating
9	Bernal/Singleton Transfer Center	5151 Singleton Blvd. Dallas Texas 75212	4
10	Bishop Station / 6th Street	585 N. Zang Blvd. Dallas Texas 75203	4
11	Buckner Station-Grade	8008 Elam Road Dallas Texas 75217	
12	Burbank/Love Field Station-Grade	8851 Denton Drive Dallas Texas 75220	
13	Camp Wisdom Station-Grade	6712 Patrol Way Dallas Texas 75216	
14	CBD East Transfer Center	330 N. Olive St. Dallas Texas 75202	4
15	CBD West Transfer Center	920 San Jacinto St. Dallas Texas 75202	
16	Cedars Station-Grade	1112 Bellview Street Dallas Texas 75215	
17	Center Point (TRE)		
18	City Line/ Bush Turnpike Station-Grade	1300 E. President George Bush Hwy Plano Texas 75080	
19	City Place Station-Below Grade	2711 N. Haskell Ave. & North Central Expwy, Dallas Texas 75204	
20	Cockrell Hill Transfer Station	4430 W. Jefferson Cockrell Hill Texas 75211	
21	Convention Center Station-Grade	727 S. Lamar Street Dallas Texas 75202	
22	Dallas Zoo Station-Grade	614 S. Ewing Ave Dallas Texas 75203	
23	Deep Ellum Station-Grade	450 N. Good Latimer Expressway Dallas Texas 75204	5
24	DFW North Station-Grade	2049 N. Service Rd, DFW Airport Texas 75261	
25	Downtown Carrollton-Grade	1013 N. Denton Drive Carrollton Texas 75006	
26	Downtown Garland Central Transit Ctr.	530 N. Fifth Street & Walnut Str, Garland Texas 75040	
27	Downtown Irving/Heritage Crossing Station	201 Rock Island Road Irving Texas 75060	
28	Downtown Plano Station-Grade	1001 16th Street Plano Texas 75074	4
29	Fair Park Station-Grade	3710/3823 Parry Ave Dallas Texas 75226	
30	Farmers Branch Station	12800 Denton Drive Farmers Branch Texas 75234	
31	Forest Lane Station-Aerial	8210 Forest Lane Dallas Texas 75243	
32	FW Intermodal Center (TRE)		
33	Galatyn Park Station-Grade	2500 N. Central Expwy Richardson Texas 75080	
34	Glenn Heights Park & Ride	1212 E. Bear Creek Rd. Red Oak Texas 75154	
35	Hampton T.C/Rail Center	2002 S. Hampton Rd. Dallas Texas 75224	4
36	Hatcher Station-Grade	4417/4003 Hatcher Street Dallas Texas 75210	

#	Name	Address	2018 TERM Rating
37	Hurst / Bell (TRE)		
38	Illinois Stations & Transit Center	2111 S. Corinth Street Dallas Texas 75203	
39	Inwood Station-Aerial	2720 Inwood Road Dallas Texas 75235	
40	Irving Convention Center Station - Grade	480 W. Northwest Hwy. Irving Texas 75039	4
41	J.B Jackson Transit Center	1423 J.B. Jackson Blvd. Dallas Texas 75210	
42	Jack Hatchel Transit Center	4040 W. 15th Street Plano Texas 75093	
43	Kiest Station-Grade	1518 E. Kiest Boulevard Dallas Texas 75203	
44	Lake Highlands Station - Grade	9393 Whistle Stop Place Dallas Texas 75231	4
45	Lake Ray Hubbard Transit Center	6151 Duck Creek Drive Garland Texas 75043	
46	Las Colinas Urban Center/Lake Carolyn Station - Grade	890 Lake Carolyn Parkway Irving Texas 75039	
47	Lawnview Station	5900 Scyene Road #B Dallas Texas 75217	
48	LBJ/Central Station-Grade	8902 LBJ Freeway Dallas Texas 75243	4
49	LBJ/Skillman Station-Grade	9939 Adleta Blvd. Dallas Texas 75243	
50	Ledbetter Transit Center	5151 S. Lancaster Rd. Dallas Texas 75241	
51	Los Colinas/Carpenter Ranch Station-Grade	700 Meadow Creek Drive Irving Texas 75038	
52	Lovers Lane Station-Grade	5603 Milton Street Dallas Texas 75206	
53	Malcolm X Transfer Center	4523 Malcolm X Blvd. Dallas Texas 75215	4
54	Market Center Station - Grade	4301 Harry Hines Blvd. Dallas Texas 75219	
55	Medical/ Market Center Station	Medical District Dr. & Southwestern Medical Ave. Dallas Texas 75207	
56	MLK Station-Grade	1412 S Trunk Station Dallas Texas 75210	
57	Mockingbird Station-Below Grade	5465 E. Mockingbird Lane Dallas Texas 75206	4
58	Morrell Station-Grade	800 S. Moore Street Dallas Texas 75203	
59	North Carrollton/Frankford Road Station-Grade	1717 W. Frankford Road Carrollton Texas 75006	
60	North Irving Transit Center	5601 N. O'Connor Blvd. Irving Texas 75039	
61	North Lake College Station-Grade	1770 W. Walnut Hill Lane Irving Texas 75038	4
62	Northwest Plano Park & Ride	6830 Communication Parkway Plano Texas 75024	4
63	Park Lane Station-Aerial	8169 Park Lane Dallas Texas 75231	4
64	Parker Road Transit Center & Station-Grade	805 E. Park Blvd. Plano Texas 75074	
65	Pearl Station-Grade	2200/2300 Bryan Street Dallas Texas 75201	
66	Pleasant Grove/Lake June Transit Center	6410 Lake June Road Dallas Texas 75217	4

#	Name	Address	2018 TERM Rating
67	Redbird Transit Center	5555 Marvin D. Love Freeway Dallas Texas 75232	
68	Richland Hills (TRE)		
69	Rosa Park Plaza	901 Elm Street Dallas Texas 75202	4
70	Rowlett Station - Grade	5000 Martin Drive Rowlett Texas 75088	5
71	Royal Lane Station-Aerial	11310 Denton Drive Dallas Texas 75229	
72	South Garland Transit Center	4541 Leon Rd. Garland Texas 75041	
73	Southwestern Medical District/Parkland Station-Aerial	2101 Medical District Drive Dallas Texas 75235	
74	Spring Valley Station-Aerial	100 W. Spring Valley Richardson Texas 75081	
75	St. Paul Station-Grade	1802 Bryan Street Dallas Texas 75201	
76	T & P (TRE)		
77	Trinity Mills Station-Grade	2525 Blanton Drive Carrollton Texas 75006	
78	Tyler Vernon Station-Grade	1225 S. Tyler Street Dallas Texas 75203	
79	Union Station	400 S. Houston St. Dallas Texas 75201	4
80	University of Dallas Station - Grade	1951 E. John Carpenter Fwy. Irving Texas 75039	4
81	UNT Station-Grade	7300 University Hills Blvd. Dallas Texas 75216	5
82	VA Medical Center Station-Grade	3304 S. Lancaster Rd. Dallas Texas 75216	4
83	Victory Station	2525 Victory Ave. Dallas Texas 75205	
84	Walnut Hill Station-Aerial	8150 Walnut Hill Lane Dallas Texas 75231	4
85	Walnut Hill/Denton Station-Aerial	2815 Walnut Hill Lane/ 11010 Denton Drive Dallas Texas 75229	
86	West End Station - Grade	201 N. Austin St./800 Pacific Ave Dallas Texas 75202	4
87	West Irving Station	4200 Jackson St. Irving Texas 75061	
88	Westmoreland Station-Grade	2646 S. Westmoreland Dallas Texas 75211	
89	White Rock Station-Grade	7333 E. Northwest Hwy. Dallas Texas 75231	