

PUERTO RICO HIGHWAYS AND TRANSPORTATION AUTHORITY

Transit Asset Management Plan
AMA - Autoridad Metropolitana de Autobuses

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1. ABBREVIATIONS

Abbreviation	Expansion
AMA	<i>Autoridad Metropolitana de Autobuses</i> (MBA in English)
ATI	<i>Autoridad de Transporte Integrado</i> (PRITA in English)
ATM	<i>Autoridad de Transporte Marítimo</i> (MTA in English)
DTOP	<i>Departamento de Transporte y Obras Públicas</i> (DTPW in English)
DTPW	Department of Transportation and Public Works (DTOP in Spanish)
NTD	National Transit Database
MBA	Puerto Rico Metropolitan Bus Authority (AMA in Spanish)
MTA	Puerto Rico Maritime Transport Authority (ATM in Spanish)
PRHTA	Puerto Rico Highways and Transportation Authority
PRITA	Puerto Rico Integrated Transit Authority (ATI in Spanish)
SGR	State of Good Repair
SMART	Specific-Measurable-Achievable-Relevant-Timely, acronym for target setting criteria
STIP	Statewide Transportation Improvement Plan
TAM	Transit Asset Management
TAMP	Transit Asset Management Plan
TERM	Transit Economic Requirements Model
ULB	Useful Life Benchmark
UPWP	Unified Planning Work Program
VOMS	Vehicles Operated in Maximum Service

Table 1 - TAMP Abbreviations



Autoridad Metropolitana de Autobuses (AMA)



Background

The Autoridad Metropolitana de Autobuses de Puerto Rico (AMA) or Metropolitan Bus Authority (MBA), is a public bus service operating in the San Juan metropolitan area. AMA manages and operates 23 fixed route bus services in the San Juan Metropolitan area. In addition to the bus services, AMA provides demand-responsive ADA complementary paratransit service. At the present time, AMA has a fleet of buses and paratransit vehicles in service.



178 Rolling Stock Vehicles
Trolley-and Cutaway Buses, Vans and Minivans



23 Routes
Serving the San Juan Metropolitan Area

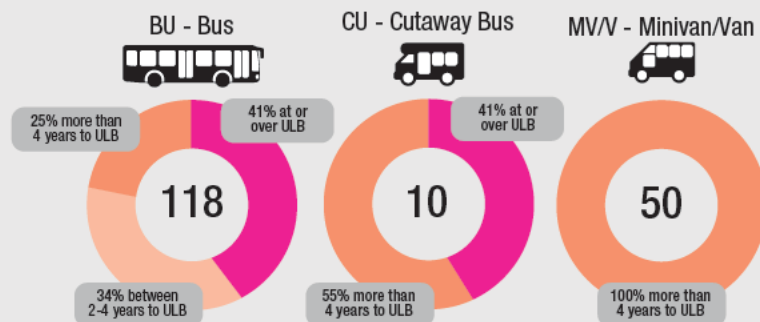


3.2m Riders
In FY 2018



Rolling Stock Performance

Rolling stock performance is measured by the percentage of revenue vehicles that meet or exceed the Useful Life Benchmark (ULB). The ULB for AMA's rolling stock is lower than the federal benchmark because the condition of Puerto Rico's roads leads to faster deterioration.



	Asset Type	No. of Assets	Useful Life Benchmark (ULB)	Average Age (2020)	No. of Assets that Meet or Exceed ULB	FY 2019 Performance (% not SGR)	FY 2020 Performance Target (% not SGR)
Revenue Vehicles	Bus	118	12 (14)	10	49	42%	17%
	Cutaway Bus	10	8	5	4	50%	15%
	Minivan	25	6	4	0	0%	0%
	Van	25	6	3	0	0%	40%
Non-Revenue Vehicles	Automobile	10	8	12	10	100%	24%
	Other Rubber Tire Vehicles	11	14	13	4	45%	62%
	Sports Utility Vehicle	28	8	7	16	57%	24%
	Van	4	8	10	4	100%	24%
Facilities*	Administrative/Maintenance	1	N/A	N/A	1	100%	0%
	Terminal/Parking	3	N/A	N/A	1	33%	0%

*Facilities are rated on the FTA TERM scale 1-5. Good performance is indicated by a Level 2 Facility score for 3 or higher.

3. INTRODUCTION

The Commonwealth of Puerto Rico is an unincorporated territory of the United States located in the northeast Caribbean Sea. The Island is home to 3.2 million constituents making it the 31st most populous U.S. state / territory.



Figure 1 - Map of Puerto Rico

To traverse the Island, Puerto Ricans rely upon a combination of public and private transit options. In the early 2000s, Puerto Rico took steps towards broadening its public transit system. This past decade, however, the provision of public transit has suffered from a persistent debt crisis, declining population, and increasingly severe natural disasters. As a result, the utilization of and investment in public transit has fallen and the Island has become heavily auto and highway dependent, thereby significantly increasing vehicular traffic in the San Juan Urbanized Area.

In addition to increased traffic volumes, the provision of public transit is also an issue of equity. 40% of Puerto Ricans live below the poverty line; a figure three times higher than the national average of 13.5%. Dependable, accessible, and affordable public transportation options is foundational to facilitating economic prosperity on the Island.

This document serves as the formal **Transit Asset Management Plan (TAMP)** for the Puerto Rico Metropolitan Bus Authority (MBA) or Autoridad Metropolitana de Autobuses (AMA), with sponsorship from the Puerto Rico Highways and Transportation Agency (PRHTA), in accordance to the **Final Rule for Transit Asset Management (TAM)**.

Transit asset management is 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 life cycles, for the purpose of providing safe, cost-effective, and reliable public transportation.

1

¹ Transit Asset Management definition 49 CFR Section 625.5

The **Moving Ahead for Progress in the 21st Century (MAP-21) Act** was signed into law on July 6, 2012, which authorized \$105 billion in funding towards surface transportation programs. Through MAP-21, the Federal Transit Administration (FTA), issued the Final Rule for Transit Asset Management; National Transit Database (49 CFR Sections 625 and 630) on July 26, 2016. The Final Rule established the requirement for recipients and sub-recipients of FTA funding to develop a TAMP.

By developing the TAMPs, FTA aims to improve safety and performance of the transportation network, reduce the \$85.9 billion backlog to achieve a State of Good Repair (SGR), and enhance the asset management capabilities of transit providers nationwide. According to the Final Rule, “[a] capital asset is in a state of good repair if it is in a condition sufficient for the asset to operate at a full level of performance”². Performance is measured in different ways depending on the type of asset and will be covered later within this TAMP.

The Final Rule has established criteria to separate larger Tier-I providers and smaller Tier-II providers, as seen in Table 2 below.

Tier	Criteria
Tier-I	Tier I providers are those operators with one hundred and one (101) or more vehicles in revenue service during peak regular service or operators of rail fixed-guideway public transportation systems.
Tier-II	Tier II providers are those transit operators that do not operate rail fixed-guideway public transportation systems and have either one hundred (100) or fewer vehicles in fixed-route revenue service during peak regular service or have one hundred (100) or fewer vehicles in general demand response service during peak regular service hours.

Table 2 - Transit Provider Criteria

The TAMP requirements differ based on the relative size of the transit provider, as seen in Table 3 below.

Tier	Element	Description
	Inventory of Capital Assets	A register of capital assets and information about those assets.
Tier-I and Tier-II	Condition Assessment	A rating of the assets’ physical state; to be completed for assets an agency has direct capital responsibility for; should be at a level of detail sufficient to monitor and predict performance of inventoried assets.
	Decision Support Tools	An analytic process, tool or methodology that assists in capital asset investment prioritization and/or estimates capital needs over time.

² Sec. 625.17 of FTA Final Rule on Transit Asset Management

	Investment Prioritization	A prioritized list of projects or programs to manage or improve the SGR of capital assets.
Tier-I Only	TAM and SGR Policy	The executive-level direction regarding expectations for transit asset management and State of Good Repair of capital assets.
	Implementation Strategy	The actions that a transit provider decides to conduct to achieve its TAM goals and policies.
	List of Key Annual Activities	The actions needed to implement a TAM plan for each year of the plan's horizon.
	Identification of Resources	A summary or list of the resources, including personnel, that a provider needs to develop and carry out the TAM plan.
	Evaluation Plan	An outline of how a provider will monitor, update, and evaluate its TAM plan and related business practices to ensure the continuous improvement.

Table 3 - TAMP Required Elements

All transit providers in this TAMP are Tier-II providers and therefore only contain the following elements:



Figure 2 - Core FTA TAMP Requirements

Through these four elements, transit agencies can assess their current SGR, identify needs to improve SGR, set performance targets and outline their plans to achieve those targets.

The Final Rule also establishes that State Departments of Transportation may sponsor Group TAMPs for Tier-II subrecipients. PRHTA administers FTA grant funding to its subrecipients in-lieu of the Puerto Rico Department of Transportation and Public Works (DTOP), is sponsoring this TAMP in order to assist its subrecipients in compliance with the Final Rule.

As the designated FTA grant funding administrator, the PRHTA has sponsored the development of individual TAMPs for the following transit providers:

- **Puerto Rico Metropolitan Bus Authority (MBA) or Autoridad Metropolitana de Autobuses (AMA)**
- Puerto Rico Integrated Transportation Authority (PRITA) or Autoridad de Tránsito Integrado (ATI) ³
- Puerto Rico Maritime Transport Authority (MTA) or Autoridad de Transporte Marítimo (ATM)
- Seventy-Eight (78) Municipal Transit Services (Group TAMP)

All providers are united in their mission to enhance regional mobility and provide sustainable transit for riders.

TAMPs are required to be updated every four years, though agencies may decide to update their TAMPs intermittently to reflect the most up-to-date information. The transit agencies in Puerto were given a two-year extension (2018 to 2020) to produce their TAMPs due to the extenuating circumstances caused by Hurricanes Irma and Maria in late 2017. Puerto Rico's TAMPs still cover a four-year horizon (FY2020 to FY2023). It is noted, however, that the TAMPs will need to be realigned with their respective agency's capital budget process as well as other regulatory investment and work plans.

³ It is noted that Tren Urbano (TU), the Island's only rail provider, has opted to develop a TAMP without PRHTA's sponsorship.

4. PURPOSE AND SCOPE

TAMPs are a critical part of asset stewardship. They are used to assess the current condition of the assets owned by transit providers, support the long-term capital planning process and provide justification for the use of taxpayer’s dollars and fares. The TAMP aims to demonstrate the optimal use of funds to maintain and improve the service provided. PRHTA’s Agency TAMPs include:

- The inventory of assets owned, operated and maintained by the agencies
- The current condition of the agencies’ asset base
- The processes, tools and measures used to assess agencies’ performance
- How performance and needs assessments go into the decision-making process
- A proposed capital investment plan to achieve defined performance goals
- Actions for improvements in overall asset management capabilities

The TAM Final Rule states that every Tier-II provider must develop their own TAMP or participate in a group TAMP. The FTA defines a Tier-II provider as:

A recipient that owns, operates or manages one hundred (100) or fewer vehicles in revenue service during peak regular service across all non-rail fixed route modes or in any one non-fixed route mode, a subrecipient under the 5311 Rural Area Formula Program, or any American Indian tribe” (49 CFR 625.5).

All sponsored transit providers, including AMA, qualify as Tier II providers, due to having fewer than 100 revenue vehicles in service during peak regular service. The FTA requirements for a Transit Asset Management plan for Tier II providers are as follows:

FTA TIER II TAMP REQUIREMENTS	ASSET INVENTORY	CONDITION ASSESSMENT OF INVENTORIED ASSETS	DESCRIPTION OF DECISION SUPPORT TOOLS	INVESTMENT PRIORITIZATION
REQUIREMENT DESCRIPTION	A register of assets owned, operated and maintained by the agency and information about those assets.	A State of Good Repair (SGR) assessment for all inventoried assets owned by the agency. SGR assessment for rolling stock and non-revenue vehicles are aged-based condition assessments where each asset type has an estimated Useful Life Benchmark (ULB). Facilities are given an overall condition assessment score by averaging building elements scored on a 1-5 scale.	Processes or tools that assist in estimating long term capital needs and capital asset investment prioritization.	A prioritized list of projects, programs or procurements in order to meet SGR performance goals.

Figure 3 - FTA Requirements for Tier II TAMPs

5. AGENCY BACKGROUND INFORMATION

5.1 INTRODUCTION

The *Autoridad Metropolitana de Autobuses de Puerto Rico* (AMA) or *Metropolitan Bus Authority* (MBA), is a public bus service operating in the San Juan metropolitan area. AMA manages and operates 23 fixed route bus services in the San Juan Metropolitan area. During peak demand times, AMA has 87 buses in service and is therefore a Tier II provider. In addition to the bus services, AMA provides demand-responsive ADA⁴ complementary paratransit service called *Llame y Viaje* (Call and Travel).

AMA was created by Public Law No. 5 of March 11, 1959 for the purpose of providing safe, reliable, accessible mass transit services to the San Juan metropolitan area and adjacent municipalities. It is the second oldest public transit authority in the United States, only after New York City’s Metropolitan Transit Authority.

5.2 ORGANIZATIONAL STRUCTURE

As per the below structure, AMA is an entity within PRHTA, governed under the Puerto Rico Department of Transportation and Public Works. The Executive Director of AMA oversees several departments with specific functions.

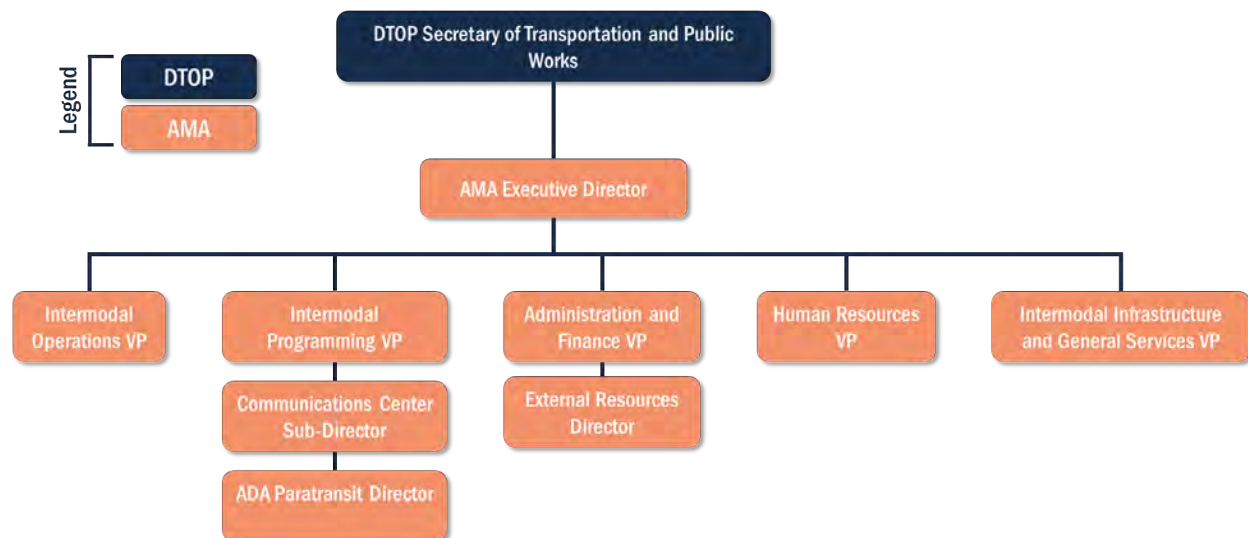


Figure 4 - AMA Organizational Structure

⁴ American with Disabilities Act (<https://www.ada.gov/>)

5.3 SERVICE CONTEXT

5.3.1 ROUTES

AMA provides bus transportation in San Juan, Guaynabo, Bayamón, Cataño, Levittown (Toa Baja), Trujillo Alto, Carolina and Loíza. Service schedules are Monday through Friday 5AM-9PM, Saturday and some holidays, 6AM-8PM. The service routes are divided into four categories:

- Express routes with limited number of stops, headways between 10 to 30 minutes at peak times and routes mostly on exclusive lanes or expressways allowing for higher speeds. These routes have been placed under management of ATI (not listed below).
- Trunk routes, which are primary routes connecting *Tren Urbano* stations and transit terminals with headways between 20 and 30 minutes at peak times.
- Circulation routes, short length routes in high-density areas around *Tren Urbano* stations or transit terminals. These are operating at headways between 20 and 30 minutes at peak times.
- Distribution routes, which serve as connector routes between *Tren Urbano* or transit terminals to sub-urban or rural areas. They operate at frequencies between 30 and 90 minutes in peak periods. Some of these routes were intended to be shared with municipal *Público* services.

Figure 5 provides an overview map of AMA's routes in the Greater San Juan area.

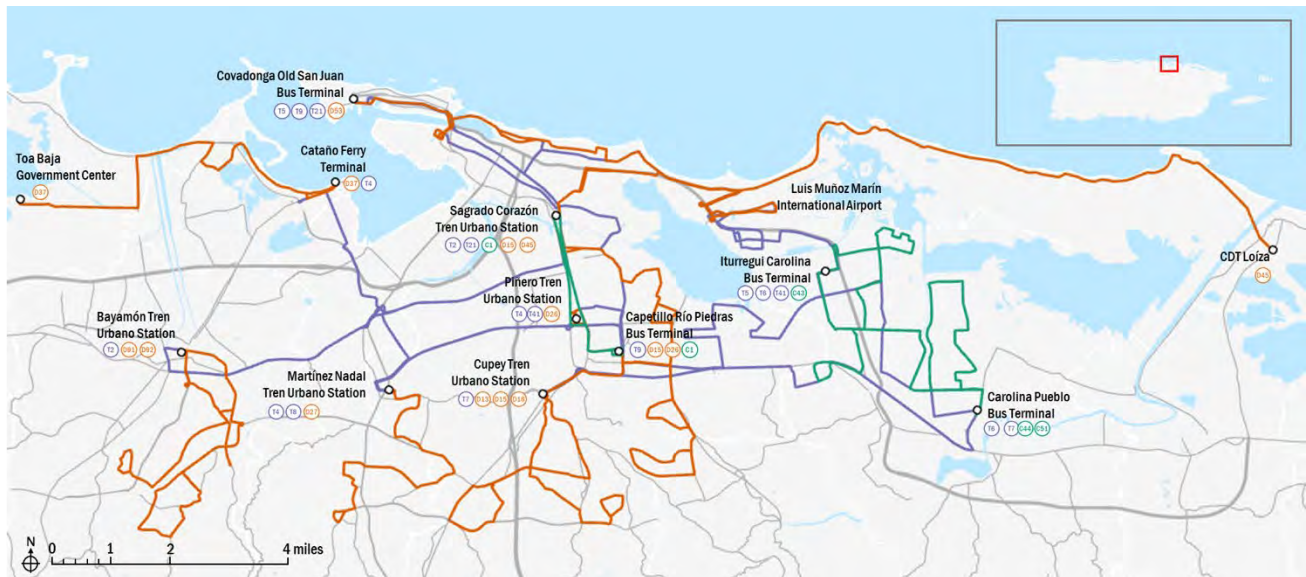


Figure 5 - Overview of AMA routes

Following a recommendation by the FTA in 2015, AMA reduced the number of routes from 37 to 23. This was to address a decrease in ridership, see section 7.3 for detail. Seven routes were abandoned, and seven routes were given to the private operator First Transit and placed under the management of the *Autoridad de Tránsito Integrado* (ATI). The reduction in routes was implemented alongside an increase in frequency for the remaining routes, which led to overall efficiency increases for AMA.

Table 4 provides an overview of the current AMA routes.

Route no	Start – Finish	Operator
Circulation routes		
C-1	Sagrado Corazón	AMA
C-43	Iturregui (Carolina)	AMA
C-44	Carolina	AMA
C-51	Carolina	AMA
Distribution routes		
D-13	Cupey	AMA
D-15	Cupey to Sagrado Corazón (& return)	AMA
D-17	TU Cupey Station to TU Piñero Station	AMA, new in 2015
D-18	Cupey	AMA
D-26	Piñero	AMA
D-27	TU Martínez Nadal to TU Centro Medico Station	AMA, new in 2015
D-37	ATM Cataño	AMA
D-45	Sagrado Corazón	AMA
D-53	San Juan	AMA
D-91	Bayamón	AMA
D92	Bayamón	AMA
Trunk Routes		
T-2	Sagrado Corazón to Bayamón (& return)	AMA
T-4	Martínez Nadal	AMA
T-5	San Juan to Iturregui (Carolina) (& return)	AMA
T-6	Carolina to Iturregui (Carolina) (& return)	AMA

T-7	Carolina to Cupey (& return)	AMA
T-8	Martínez Nadal to Piñero (& return)	AMA
T-9	San Juan to Cupey (& return)	AMA
T-21	San Juan to Sagrado Corazón (& return)	AMA
T-41	Piñero to Iturregui (Carolina) (& return)	AMA

Table 4 - AMA Routes overview

5.3.2 FARES

AMA has defined its fare profile based on ridership and operating cost. The fares are reflective of the mean household income in Puerto Rico and offer discounts to people with reduced incomes. Fares are set out following guidance and instructions from FTA Circular 4702.1B, "Title VI Requirements and Guidelines for Federal Transit Administration Recipients".

Passenger Type	Fare
Regular Fare	\$0.75
Seniors (60 to 74 years old)	\$0.35
Super Seniors (above 74 years)	Free
Disabled	\$0.35
Students	\$0.60
Children (6 years and under)	Free
Transfers within two hours	Free

Table 5 - AMA Fare Profile

5.3.3 FACILITIES

To support the abovementioned bus service routes, AMA maintains and operates several bus terminals and transit centers. These multi-function facilities also serve other purposes: reporting sites for disaster relief operators, service truck road call facilities, and live dispatching of buses in the event of a bus failure en-route.

Bus maintenance and administrative tasks take place at AMA's Central Operations, Maintenance and Administrative facility in Rio Piedras. The structure was built in 1979 with a design capacity for storage, maintenance, and repair of 360 buses.

While AMA buses sustained only minor damage during the 2017 hurricanes, the AMA Central Facility suffered substantial damages. A June 2018 damage assessment report notes severe water damage from intruding rain as well as wind damages to the roof, ceilings, floors, windows and electrical equipment. Total cost of repair was listed as \$8.3m.

Other facilities incurred only minor damages, with the exception of the Marsol radio tower, which needed \$3.5m in repairs.

AMA received funding under the 2018 “Allocation of Public Transportation Emergency Relief Funds in Response to Hurricanes Harvey, Irma, and Maria” program, Discretionary funding ID D2018–EMER–017.⁵

Section 6.4 describes AMA’s facilities in more detail, including a detailed assessment report of the transit centers and central facility. Figure 5 below shows a map of the facilities in AMA’s asset inventory.



Figure 6 - Overview of AMA Facilities

⁵ Total funding awarded: \$13,599,00

<https://www.govinfo.gov/content/pkg/FR-2018-05-31/pdf/2018-11538.pdf>

6. ASSET INVENTORY AND CONDITION ASSESSMENT

6.1 OVERVIEW

FTA requires an inventory of all rolling stock, equipment, infrastructure assets and facilities purchased with federal funds in the TAMP. Figure 7 shows the different types of assets within those categories.

Rolling stock contains all revenue vehicles. This includes active vehicles, standby vehicles and vehicles undergoing maintenance.

The equipment asset category contains all non-revenue service vehicles and equipment valued \$50,000 or more.

The facility asset category contains administrative, maintenance, parking and passenger facilities that are used and/or owned by the agency. It is important to note that bus shelters and other similar structures are not considered within this asset category.

The infrastructure asset category contains all infrastructure used for the operations and maintenance of the rolling stock. This asset category typically pertains to all infrastructure for heavy rail, commuter rail and light rail transit.

The small fleet size and relatively small scale of operations do not constitute a significant need for an Enterprise Asset Management Software, and AMA has opted to direct their resources elsewhere. Even though their asset inventories are small, AMA can continue to improve the management of their asset inventory – see Section 9 for more details regarding improvements.

AMA’s asset inventory per FTA definition consists of revenue vehicles, equipment and facilities, as shown in Table 6 below. This section provides an overview of all AMA assets, as well as presenting the results of an asset inventory assessment.



Figure 7 - FTA Asset Inventory

Type of Asset	Number of Assets
Revenue Vehicles	178
Equipment	53 non-revenue vehicles 12 equipment assets > \$50k
Facilities	5

Table 6 - AMA Asset Base Overview

The condition assessment process varies by asset class. FTA’s mandated State-of-Good-Repair (SGR) performance measure for revenue vehicles is the percentage of vehicles that have met or exceed their Useful Life Benchmark (ULB). Useful Life and ULB are defined in 49 CFR Section 625.5 – Definitions as:

Useful life means either the expected life cycle of a capital asset or the acceptable period of use in service determined by FTA.

Useful life benchmark (ULB) means the expected life cycle 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 age at which a vehicle has reached the end of its economic useful life. This value may be specified in terms of vehicle age, mileage and/or other factors. FTA provides a set of default ULB values by vehicle type, all of which are specified in terms of vehicle age. The FTA ULB values were used as guidance and have been adjusted by AMA to support their operating environment.

FTA Circular 5010.1E states that assets purchased using federal funds are required to meet a minimum useful life. Taking into account the quicker rate of deterioration, AMA has set ULBs for their assets that are two years lower than the FTA suggested ULB, while in compliance with the FTA Circular 5010.1E.

Table 7 shows a comparison between FTA’s ULB and the ULB used for AMA’s rolling stock assets.

Asset Type	FTA Suggested Useful Life Benchmark	FTA Circular 5010.1E Minimum Useful Life	AMA ULB
BU – Bus	14	12	12
CU – Cutaway Bus	10	7	8
MV – Mini Van	8	4	6
V – Van	8	4	6

Table 7 - Comparison FTA to AMA ULB

The ULBs for AMA’s vehicles are lower than the suggested FTA benchmarks reflecting an accelerated rate of deterioration due to Puerto Rico’s island climate and road conditions. For both equipment and for facilities, condition assessment is based on visual field inspections, and evaluation of this collected data against condition rating scales.

AMA uses the Microsoft Dynamics GP Inventory Module software to manage, track and monitor all assets in a comprehensive asset inventory.

6.2 ROLLING STOCK

AMA operates a fleet of rolling stock vehicles on its fixed bus routes, as well as the demand responsive paratransit services. Table 8 shows an overview of AMA's revenue vehicle assets, including the number of vehicles that have met or exceeded ULB.

Type of Asset	Number of AMA Assets	Useful Life Benchmark	Number/% of Vehicles that Meet or Exceed ULB
BU – Bus	118 *	12 (14 for newer vehicles)	49 / 42%
CU – Cutaway Bus	10	7	5 / 50%
MV – Mini Van	25	8	0 / 0%
VN – Van	25	6	0 / 0%
Total	178		54 / 30%

Table 8 - AMA Rolling Stock Overview

* In 2020, AMA is in the process of acquiring and decommissioning large parts of its bus fleet, see section 0 for details. It currently owns 118 buses but operates fewer than 100 buses during peak hours. It therefore remains a Tier-II transit provider per FTA definition.

The following sections detail the revenue vehicle asset base, as well as the results from AMA's asset condition assessment, based on ULB.

6.2.1 BUSES

AMA's bus rolling stock consists of four bus types: Gillig, New Flyer, Nova Bus, and Orion. 52 of AMA's buses are powered by Diesel-hybrid engines, the remaining 66 buses are Diesel only engine powered. Table 9 provides an overview of AMA's bus fleet, faster degradation.

Figure 8, Figure 9 and Figure 10 show examples of AMA buses currently in service.

Model & Year (in-service year)	No Units	End of ULB	Size	Seats/Total Capacity	Average Replacement Cost
Nova Bus, 2002	1	2014	30 feet	36 / 60	\$256,400.00
Orion, 2004	9	2016	35 feet	33 / 63	\$2,917,044.00
Orion, 2005	9	2017	35 feet	33 / 63	\$2,962,404.00
New Flyer Hybrid, 2005	3	2017	35 feet	30 / 57	\$1,559,718.00
New Flyer Hybrid, 2007	9	2019	35 feet	30 / 57	\$4,896,219.69
Orion, 2007	18	2019	35 feet	33 / 63	\$6,607,227.60
Gillig Transit, 2009	7	2021	40 feet	36 / 60	Loaned from PRHTA
Orion Hybrid, 2010	40	2022	40 feet	36 / 60	\$22,033,452.00

Model & Year (in-service year)	No Units	End of ULB	Size	Seats/Total Capacity	Average Replacement Cost
Nova Bus, 2013	16	2025	40 feet	36 / 60	Loaned from PRHTA
Nova Bus, 2019	6	2033	40 feet	36 / 60	\$2,435,268.00
Total	118				

Table 9 - AMA Buses Overview

The ULB for AMA’s bus fleet has been defined as 12 years, or 500,000 miles. This applies to all AMA diesel and hybrid buses. The FTA ULB for this type of asset is set for 14 years. AMA will adopt a 14-year ULB for all newer buses, to be acquired 2020-25.

In November 2019, AMA has issued a Request for Proposals (RFP) to purchase “10 to 83 Heavy Duty Low Floor Buses, 40 Feet, Diesel Propulsion”, RFP number 2019-002. This is part of the acquisition strategy for 2020-25. See section 0 for detail.

It is AMA’s experience that due to extenuating circumstances; asset deterioration happens at a higher rate than in other places in the United States. Consistent exposure to saltwater spray, high temperatures and degraded road surfaces have historically led to more frequent failures, higher maintenance requirements and faster degradation.



Figure 8 - AMA Bus example - 2010 Orion Hybrid⁶

⁶ © 2000-2020 Oren's Transit Page - <https://orenstransitpage.com/transit-photography/caribbean/puerto-rico/autoridad-metropolitana-de-autobuses-de-puerto-rico-ama/>



Figure 9 - AMA Bus example - 2005 Orion Diesel⁷



Figure 10 - AMA Bus example - 2002 Nova Bus⁸

⁷ © 2000-2020 Oren's Transit Page - <https://orenstransitpage.com/transit-photography/caribbean/puerto-rico/autoridad-metropolitana-de-autobuses-de-puerto-rico-ama/>

⁸ © chiquittitamac2003 <https://www.flickr.com/photos/8420926@N07/1357514273>

6.2.2 PARATRANSIT VEHICLES

To provide services to the population with limited mobility and the elderly, AMA operates a fleet of cutaway bus paratransit vehicles. These services are demand responsive and operate upon request by riders. Table 9 provides an overview of AMA’s paratransit vehicles fleet. Figure 11 and Figure 12 show examples of AMA paratransit vehicles currently in service.

Model & Year (in-service year)	Asset Type	No Units	End of ULB	Total Replacement Cost
Guagua Chevrolet Express Blanca 2009	VN	4	2017	\$304,072.00
Chevrolet Express Van 2011 GRIS	VN	1	2017	\$27,773.59
Chevrolet Goshen Coach GCII, 2012	CU	5	2019	\$311,772.00
2012 Ford F550 Super Duty GRIS Claro ⁹	CU	5	2026	Loaned from PRHTA
Dodge Caravan SXT, 2016	MV	25	2024	\$602,801.04
National Van Builders E-350 Transit Van, 2017	VN	10	2023	Loaned from PRHTA
Ford Transit, 2017	VN	10	2023	\$688,860.00
Total		60		

⁹ Not part of *Llame y Viaje* (Call and Travel) fleet



Figure 11 - AMA Paratransit Example - Chevrolet Gosheen Coach¹⁰



Figure 12 - AMA Paratransit Example - National Van Builder E 350 Van¹¹

¹⁰ © propertyroom.com <https://www.propertyroom.com/l/2012-chevrolet-gcii-paratransit-van-hartford-ct-6114/11940573>

¹¹ © National Van Builders <https://nationalvans.com/wp-content/uploads/2016/08/8.jpg>

6.3 EQUIPMENT

Equipment being used by AMA for maintenance and operations of the revenue vehicles and facilities represents a large part of AMA's overall asset base. FTA mandates that all equipment owned and operated by transit agencies is included in their asset management plans. FTA has 2 groupings for the equipment asset category:

- Non-Revenue Service Vehicles
- Equipment over \$50,000 in acquisition value

Non-Revenue Service Vehicles

The condition assessment approach for non-revenue service vehicles follows the same approach as revenue vehicles. Following FTA's guidelines, AMA uses fleet age as an indicator of vehicle condition. A vehicle is deemed to be in good repair if its age is less than the ULB specified for the corresponding vehicle type. Likewise, a vehicle is deemed to no longer be in good repair if its age equals or exceeds the corresponding ULB.

Similar to rolling stock vehicles, AMA adjusted the FTA default ULB values to better suit for their operating environment, see Table 10.

Type of Asset	Number of AMA Assets	ULB	Number/% of Vehicles that Meet or Exceed ULB
Non-Revenue Vehicles			
AO - Automobile	10	8	10 / 100%
ORTV - Other Rubber Tire Vehicles	11	14	5 / 45%
SV - Sports Utility Vehicle	28	8	16 / 57%
VN - Van	4	8	4 / 100%
Total	53	-	35 / 66%

Table 10 - AMA Non-Revenue Vehicles ULB overview

In order to operate and maintain its fleet and facilities, AMA owns and operates 50 non-revenue vehicles. These include construction vehicles, operations vehicles and staff pool vehicles, as listed in Table 11.

Asset Type Model & Year (in-service year)	No Units	In-Service Year	Year ULB reached	Purpose
AO - Automobile	10	ULB = 8 years		
Service Truck F-450 Body	1	2004	2012	Construction & Maintenance
Chevrolet Pick Up 4 x 2	1	2004	2012	Construction & Maintenance
Chevrolet Pick Up 4 x 4	1	2004	2012	Construction & Maintenance
Chevrolet Pick Up Silverado	2	2010	2018	Operations
Chevrolet Pick Up Silverado 2500	1	2010	2018	Operations
Chevrolet Pick Up Silverado 4PTS	1	2011	2019	Construction & Maintenance

Asset Type Model & Year (in-service year)	No Units	In-Service Year	Year ULB reached	Purpose
Chevrolet Pick Up Silverado	2	2010	2018	Construction & Maintenance
Ford Pick Up 150	1	2003	2011	Pool Vehicle
ORTV - Other Rubber Tire Vehicles	11	ULB = 14 years		
Sweeper Isuzu NPR	1	2010	2024	Construction & Maintenance
Service Truck Body-Telescopic Arm	1	2004	2018	Construction & Maintenance
Truck International 4000-1997, Series 4800	1	2016	2030	Construction & Maintenance
Tank Truck CHEV	1	2005	2019	Construction & Maintenance
Flat Bed Crane, FreightLiner M2	1	2010	2024	Operations
Sterling Truck LT-9500	1	2000	2014	Operations
Town Crane FreightLiner M2-112	1	2010	2024	Operations
Chevrolet Pick Up 195	1	1995	2009	Operations
Digger (Cargador Retro Excavadora)	1	2011	2025	Operations & Maintenance
Tow Truck (Tractor de Carga)	1	2011	2025	Operations & Maintenance
Dump Truck 4700	1	1998	2012	Construction & Maintenance
SV - Sports Utility Vehicle	28	ULB = 8 years		
Chevrolet Tahoe	1	2010	2018	Operations
Ford Escape	10	2016	2024	Pool Vehicle
Ford ESCAPE XLT	15	2010	2018	Pool Vehicle
Ford Explorer TAB. ITH634	1	2016	2024	Pool Vehicle
Ford Explorer TAB. ITH633	1	2016	2024	President's Vehicle
VN - Van	4	ULB = 8 years		
Ford Econoline Cargo Van	1	2010	2018	Operations
Ford Econoline E-350 15 Passenger	3	2010	2018	Operations
Total	53			

Table 11 - AMA Non-Revenue Vehicles Overview

Equipment Over \$50,000

AMA relies upon equipment to support its maintenance and operational activities. The following table represents those assets with an acquisition cost greater than \$50,000

Asset Type	No Units	In-Service Year	Purpose
Computer	6		
Laptop Kit (equipo para programar Letreros)	1	2004	Operations & Maintenance
Data Storage (HP STORAGEWORKS ENTERPRISE)	1		Operations & Maintenance
Data Storage (EQUIPO INFORMATICA HP CON HDISK, MEMORY)	1		Operations & Maintenance
Server (SERVIDOR HEWLETT PACKARD)	1		Operations & Maintenance
Mobile Terminal (MOVIL TERMINAL PARA 150 UNIDADES)	1		Operations & Maintenance
Laptop Kit (equipo para programar Letreros)	1		Operations & Maintenance
Machine & Equipment	6		
Disc and Drum turning Machine (MAQUINA P/ TORNEAR TAMBORES Y BANDAS)	1		Operations & Maintenance
Chilled Water System	1		Operations & Maintenance
Chilled Water System	1		Operations & Maintenance
Diesel Filter (MAQUINA DE LIMPIAR FILTROS DPF, Diesel)	1		Operations & Maintenance
Vehicle Wash (EQUIPO DE LAVADO DE VEHICULO)	1		Operations & Maintenance
Vehicle Wash (SISTEMA DE LA VADO DE VEHICULOS)	1		Operations & Maintenance

Table 12 - AMA Equipment (Greater than \$50,000) Overview

6.4 FACILITIES

To support bus and paratransit services, AMA owns and maintains several facilities. These include terminals and a Central Operations, Maintenance and Administrative facility in Rio Piedras.

The condition assessment approach provided herein is based on FTA's guidance detailed in *TAM Facility Performance Measure Reporting Guidebook: Condition Assessment Calculation*¹².

The condition assessment approach for facilities is based on visual inspection to evaluate the condition of primary asset levels (starting with secondary levels, where appropriate) then aggregating the primary level data to obtain an overall facility condition rating for each facility based on the median value of the primary level asset condition scores in that facility. See Appendix C for detailed description of the facilities condition assessment.

For reporting purposes, the results of the facility condition and performance assessment are organized by the following asset classes:

- Administrative and maintenance facilities
- Passenger terminals and parking facilities

Facility	Facility Use	Asset Classification	Location
AMA Central Operations, Maintenance and Administrative Facility	Bus maintenance, fleet dispatch, central operations	Administrative/ Maintenance	Ave. de Diego #36 Final Urb. San Fransisco, San Juan 00936
Terminal Capetillo Rio Piedras	Terminal	Passenger	Calle Robles, San Juan 00925
Terminal Cataño	Terminal	Passenger	PR-165, Cataño 00962
Terminal Iturregui, Carolina	Terminal	Passenger	Ave. Iturregui, / Ave. El Comandante, Carolina 00984
Terminal Pueblo, Carolina	Terminal	Passenger	Calle Quiñones, Carolina 00985
Terminal Las Casas	Former Terminal; no longer operated as bus terminal. Property under lease.	Passenger	Calle Borinquen (PR-36) / Ave. Barbosa (PR-27), San Juan

Table 13 - AMA Facilities Overview

AMA's facility condition assessment approach supports calculation of FTA's mandated SGR performance measure for facilities, which is the percentage of facilities within an asset class rated less than three on a five-point scale used in the FTA Transit Economic Requirements Model (TERM).

Using the condition rating for each facility, the percentage of facilities with a condition rating below 3.0 on the TERM scale (1=Poor to 5=Excellent) is calculated for each facility asset class.

¹² <https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/regulations-and-guidance/asset-management/60361/tam-facility-performance-measure-reporting-guidebook-v1-2.pdf>

An asset is deemed to be in good repair if it has a rating of 3, 4, or 5 on this scale. Likewise, a facility is deemed to not be in good repair if it has a rating of 1 or 2.

Rating	Condition	Description
5	Excellent	No visible defect, new or near new condition, may still be under warranty
4	Good	Good condition, but no longer new, may be slightly defective or deteriorated, but is overall functional
3	Adequate	Moderately deteriorated or defective; but has not exceeded useful life
2	Marginal	Defective or deteriorated in need of replacement; exceeded useful life
1	Poor	Critically damaged or in need of immediate repair; well past useful life

Table 14 - FTA Facility Condition Assessment Scale (TERM)

The results of the described condition assessment of AMA's facilities are detailed in Table 15 below:

Asset Type	Asset Classification	Annual Target Description Weighted Aggregate average rating of asset categories 1 to 5	Target Rating	Actual Rating
Facility	Administration & Maintenance	Average Condition Rating		2.6
		Percentage rated below FTA condition state 3 (FTA 1 or 2)		67%
	Passenger & Parking	Average Condition Rating		2.9
		Percentage rated below FTA condition state 3 (FTA 1 or 2)		20%

Table 15 - AMA Facilities Assessment Scores

See Appendix C for a detailed description of AMA's Facility Condition Assessment Methodology.

7. PERFORMANCE

7.1 PERFORMANCE GOALS AND OBJECTIVES

AMA’s operations and maintenance efforts are driven by the overall objectives of delivering a satisfactory customer service and experience to all AMA riders. Fleet maintenance and state-of-good-repair efforts are driven by customer-facing operational decisions. This includes offering a reliable on-time service to all, while maintaining cost efficient operations and long-term financial stability.

As outlined in AMA’s Bus Fleet Management Plan, the agency will distribute transit service allowing 90% of all residents in the service area to be within a ¼ mile walk of bus service or within a ½ mile walk of a Tren Urbano terminal. Local bus stops shall be distributed 3 blocks or less apart. AMA will maintain the following service standards and frequency of service, as seen in Table 16:

Service Standard	Design Parameters
Service Span	Minimum 12-hour operation for regular routes
Coverage	¼ mile radius covering all principal roads ½ mile radius covering all secondary roads
Frequency of Service	<p>Express routes – routes with a limited number of stops, with frequencies between 10 and 30 minutes during peak periods and with a route path primarily through bus exclusive lanes or expressways thus allowing high travel speeds.</p> <p>Trunk (Main) Routes – routes that provide primary connection between transit stations and terminals, and operating at frequencies between 10 and 25 minutes during peak traffic periods.</p> <p>Circulation routes – short length circulatory routes around Tren Urbano stations or bus terminals and operating at frequencies between 20 and 30 minutes during peak traffic periods.</p> <p>Distribution routes – routes connecting transit stations and terminals with suburban and rural areas. Some of these routes will be operated in conjunction between buses and “Porteadores Públicos”. The frequency of the bus service on these routes varies from 30 to 90 minutes.</p>
On-time Performance	0 minutes early – 5 minutes late
Reliability	2,500 miles between service interruption road calls

Table 16 - AMA Service and Performance Standards

7.2 SGR PERFORMANCE

In order to maintain safe and reliable service to its customers, AMA is continuously upgrading its bus fleet. AMA is committed to maintaining a bus fleet that is in a SGR, meaning that buses are not older than their defined ULB. Table 17 depicts PRHTA’s performance goals, which have been set for AMA, for fiscal year 2020 and the performance recorded in 2019.

Asset Type	Fiscal Year 2020 Goal	Fiscal Year 2019 Actual
BU – Bus	17%	41.5%
CU – Cutaway Bus	15%	50%
MV – Minivan	0%	0%
VN – Van	40%	20%
AO – Automobile (non-revenue)	24%	100%
VN – Van (non-revenue)	24% ¹³	100%
SUV – Sports Utility Vehicle (non-revenue)	24% ¹⁴	57%
ORTV – Other Rubber Tire Vehicles (non-revenue)	62%	66%
Passenger / Parking Facility	0%	20%
Administrative / Maintenance Facility	0%	67%

Table 17 - Performance Targets by Asset Type

In the Bus Fleet Maintenance Plan (BFMP) FY 2019-2025, AMA has defined the means by which the percentage of buses in SGR will be increased, see section 8.2 for detail. Through decommissioning of older buses and acquisition of new buses, AMA will gradually improve SGR performance to below 1% of buses over ULB by 2025.

Fiscal Year	SGR performance (% of Buses at or over ULB)
2019	41.5%
2020	34.3%
2021	21.0%
2022	38.1%
2023	20.0%
2024	0.95%

¹³ Using Automobile SGR target for all AMA’s Van and Sports Utility Vehicles (see Appendix E)

¹⁴ Using Automobile SGR target for all AMA’s Van and Sports Utility Vehicles (see Appendix E)

2025 0.95%

Table 18 - AMA SGR Performance 2019-25

7.3 RIDERSHIP

Over the last 10 years, AMA has noticed a decline in ridership on all routes. The reasons for the decline are diverse and AMA's efforts are driven to counteract by improving service and overall performance.

Personal automobile ownership in Puerto Rico has increased in the last decade and a higher percentage of the population is relying on their personal automobiles for commuting and travel within the Island. This trend has also been observed by other PRHTA agencies.

Following the 2017 hurricanes, the road infrastructure was heavily damaged, which led to severe disruption of the transit services across Puerto Rico. Although most infrastructure has been rebuilt, some parts of the population have not switched back to public transport and continue using their personal automobiles for commuting and travel within the Island.

In the wake of the 2017 hurricanes, Puerto Rico's overall population has decreased sharply, impacting ridership for all public transportation agencies.

In recent years, rideshare services, have gained great popularity. The rideshare company Uber launched in 2016. Inhabitants of Puerto Rico and visitors have increasingly used these services over public transportation. This added to the already trending decline in ridership.

See below Table 19 for ridership figures from 2010-18. The ridership number for 2019 were still being analyzed at the time of writing.

NTD Year	Ridership	Change from previous year
2010	10,349,939	-
2011	9,626,433	-7.0%
2012	10,404,341	8.1%
2013	10,248,789	-1.5%
2014	8,434,588	-17.7%
2015	6,816,889	-19.2%
2016	4,439,140	-34.9%
2017	3,097,626	-30.2%
2018	3,210,200	3.6%

Table 19: AMA Ridership 2010-18

In 2015, AMA introduced an asset monitoring and tracking system, called Cubic, which includes new fare collection systems. AMA riders can use cash or a magnetic card to pay fares when boarding the bus. As the Cubic system is still being implemented, ridership figures in Table 19 do not include magnetic card users from 2015-2018. As part of the continual improvement efforts of AMA, tracking riders using the magnetic card will be implemented in 2020.



7.4 MAINTENANCE PERFORMANCE

Over the past decade, AMA had fallen behind in the level of attention to its operations and maintenance efforts. This is seen as an attributing factor for the loss of ridership, erosion of on-time performance and spiraling costs. Since 2017, however, a significant improvement has been achieved by reshaping the focus to maintenance quality rather than quantity.

As a measure of continual improvement, AMA has introduced a new Integrated Information System (AMA TRACK) that brings together: programs, operations, finance, inventory, right of way, GPS driven mileage-based PM, diesel management, NTD data gathering and a mobile app for customer information.

Since those improvements were implemented, maintenance performance has consistently been satisfactory. Aside from major overhauls, buses are usually returned into service within 48 hours, with minor delays occurring during holiday periods, when staffing is slightly reduced.

As mentioned above, AMA performs all bus maintenance, including repairs and overhauls at the Central Operations, Maintenance and Administrative facility in Rio Piedras. The facility built in 1979 was designed to accommodate a maximum of 360 buses and will be able to meet the service needs well beyond 2024. Recently, 10 lifts have been replaced with new modern equipment. Within the maintenance facility AMA has the following capabilities:

40 service bays with lifts, used as follows:

Preventive Maintenance
 Motor and Transmissions
 Brakes
 Paint and Body Shop
 Electrical
 A/C
 W/C Lifts
 Tires

Additional service bays, used as follows:

4 light vehicle service bays (Motor Pool)
 6 fuel islands
 2 vehicle wash racks
 5 revenue islands
 1 Engine Cleaning Bay
 2 Tire Service Shop

The shops operate the following hours:

- Preventive maintenance and light repairs – 4:00 AM. to 2:00 PM
- Corrective maintenance - 4:00 AM. to 2:00 PM
- Fare collection, re-fuelling, and cleaning – 4:00 AM to 1:00 AM

AMA's Central Maintenance, Operations and Administrative facility includes the following staff:

- 41 Skilled Laborers
- 17 Semi-skilled and Laborers
- 6 Supervisors
- 1 Fleet Manager
- 1 Operational Coordinator
- 1 Administrative Assistant
- 1 Licenses and Permits Management

To ensure a right-sized and skilled workforce, AMA's Human Resources Department will continue to schedule the training for Supervisors and Mechanics with the main focus being quality assurance, up to date information on technology, and supervisor/employee management.

AMA ensures that staff certifications in the following technical areas are up to date:

- Cummins Engines
- Allison Transmissions
- BAE and Allison Hybrid Systems
- Electronic Communications Systems
- A/C Repairs
- Electromechanical Training

The RFP for new buses includes adequate staff training allowances, helping AMA maintenance staff to familiarize and become proficient in all tasks surrounding the new buses.

8. DECISION SUPPORT TOOLS

8.1 PLANNING PROCESS THROUGHOUT ASSET LIFECYCLE

According to the TAM Final Rule, decision support tools are any methodologies, software or processes used to help transit providers make decisions. The decision-making processes used by AMA are largely reactionary to certain needs, and formal decision-making methodologies, processes and software have yet to be developed fully. As AMA strives to improve their asset management capabilities, future iterations of this TAMP will expand on the decision-support tools to be developed.

AMA maintains a needs-based capital planning process for its asset base. Capital needs are documented and proposed to AMA Leadership. The proposals are then assessed and prioritized by their importance, cost and impact on operations. If proposals result in a large-scale project, they will be documented and planned in the STIP.

In 2020, AMA will commission an external consultant with an in-depth demand analysis and long-term projection, to estimate demands up to 2050. This study will include an investigation into the feasibility of taking previously outsourced routes back under the management of AMA.

Under 49 U.S.C. 5304(g), each state is required to produce a Statewide Transportation Improvement Plan (STIP) to document a statewide intermodal program of transportation projects. The STIP covers a timeframe of four years at a minimum, and is produced in collaboration between metropolitan planning organizations, public transit providers and other regional/state level transportation planning organizations.

PRHTA has developed a STIP that covers fiscal years 2019 to 2022 (STIP 2019-2022), in collaboration with the Puerto Rico Municipal Planning Organization (MPO), in compliance with federal requirements. AMA is a member of the MPO and contributes to the planning and capital project evaluation activities of the MPO. The MPO chaired by the Secretary of the Department of Transportation and Public Works and has representatives from the following entities:

- Puerto Rico Department of Transportation and Public Works
- Puerto Rico Highway and Transportation Agency
- Puerto Rico Integrated Transit Authority
- Maritime Transportation Agency
- Metropolitan Bus Authority
- Puerto Rico Port Authority
- Puerto Rico Planning Board
- Public Services Commission
- Permissions Management Office
- Environmental Quality Board
- Department of Environmental and Natural Resources
- Puerto Rico Tourism Company
- Puerto Rico Emergency Management Agency
- Municipality Governments captured in the various Urbanized Areas
- Federal Highway Administration (non-voting member)
- Federal Transit Administration (non-voting member)

The MPO evaluates all transportation-related capital investments, allocates available FTA and FHWA funds and submits the projects to be included in the latest iteration of the STIP. The STIP is then submitted to the FTA, who then awards the grant reimbursements to PRHTA, who then disseminates the funds accordingly.

8.2 INVESTMENT PLANNING

AMA has a defined Vehicles Operated in Maximum Service (VOMS)¹⁵ of 87 buses. VOMS is defined as the “the largest number of vehicles you operated in this mode at any point during the year”, characterizing peak demand of the bus service. In order to satisfy the VOMS demand and maintain an adequate number of spare buses, AMA defines the total required number of bus assets to be 105.

Capital decisions are being driven by SGR performance, the percentage of assets that have reached or surpassed their ULB. AMA has devised long-term plans to gradually reduce the number of buses that are at or above ULB by decommissioning older buses and acquiring newer buses.

As laid out in the Bus Fleet Maintenance Plan (BFMP) FY 2020-2024, AMA has consolidated its operational bus fleet by end of 2019. This includes the following:

- The bus fleet has continuously been normalized, procuring only one type of bus, which will help simplifying maintenance and operations.
- Demand planning for 2020-2025 estimates a requirement for 105 buses to be in service
- In Q4 of 2019, AMA awarded the delivery of six new 35-foot diesel buses to Nova Bus. This investment was supported by \$2.8m of federal funding.
- As part of AMA’s long-term-strategy, a RfP has been issued in November 2019 to procure new buses, along with maintenance training and support from 2020-2024. This steps also supports AMA’s efforts in normalizing its bus fleet.

Figure 13 and the following sections provide an overview of AMA’s strategy for replacing and decommissioning old, buses that have met or exceeded their ULB and acquiring new buses. Buses no longer in service from one year to the next will be decommissioned.

¹⁵ <https://www.transit.dot.gov/ntd/ntd-reporting-frequently-asked-questions#What%20are%20Vehicles%20Operated%20in%20Maximum%20Service?>

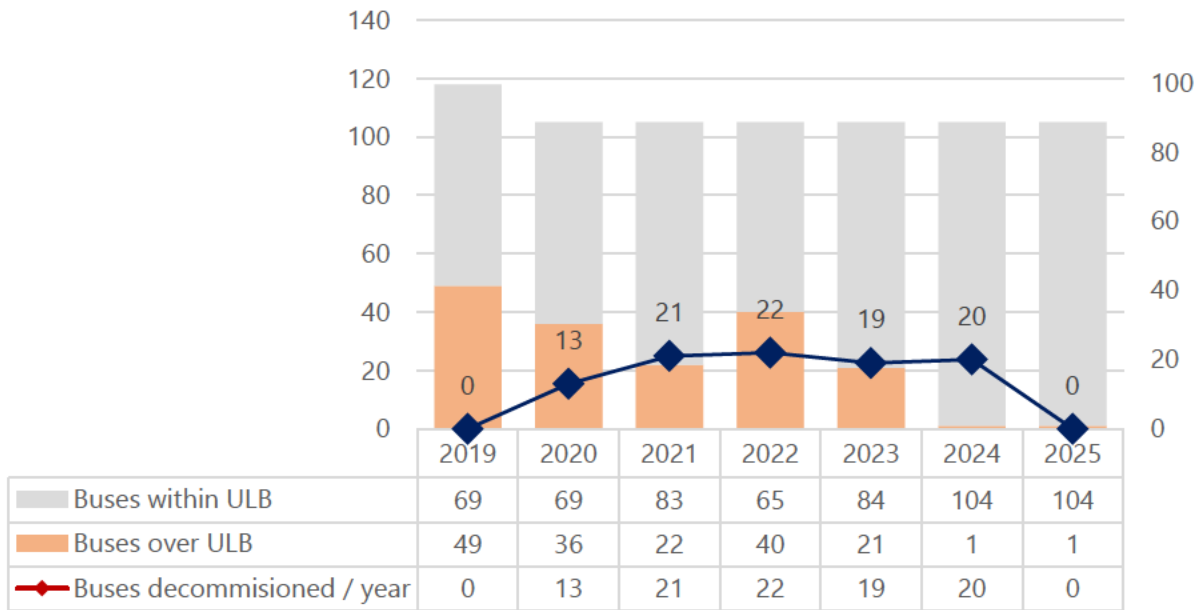


Figure 13 - 2020 to 2025 Bus Strategy

8.2.1 ACQUISITION STRATEGY

AMA's acquisition strategy as outlined in the BFMP, expects procuring new buses to replace old vehicles and introducing them into service, starting in 2020.

AMA assumes the useful life of their current bus fleet to be 12 years. Several buses that are still in service, have met or surpassed their useful life, as they were placed into service between 2002 – 2007. This applies to 49 of the 118 buses, currently in service.

Service year	Bus model	ULB	Year ULB reached	Assets in service
2002	Nova Bus 40'	12	2014	1
2004	Orion 35'	12	2016	9
2005	Orion 35'	12	2017	9
2005	New Flyer 35' Hybrid	12	2019	3
2007	New Flyer 35' Hybrid	12	2019	9
2007	Orion 35'	12	2019	18
2009	Gillig 40'	12	2021	7
2010	Orion 40 Hybrid	12	2022	40
2013	Nova Bus 40'	12	2025	16



2019	Nova Bus 40'	12	2031	6
Total				49

Table 20 - Useful Life Benchmark of AMA Fleet

Starting in 2020, AMA plans to procure new buses to replace old assets which are past useful life. AMA assumes an extended useful life, of 14 years. This is due to improved manufacturing of these assets.

Service year	Bus model	ULB	Year ULB reached	Assets to be purchased
2020	Nova Bus 40' (New procurement)	14	2034	21
2021	Nova Bus 40' (New procurement)	14	2035	22
2022	Nova Bus 40' (New procurement)	14	2036	19
2023	Nova Bus 40' (New procurement)	14	2037	20
Total				82

Table 21 - 2020-25 Bus Acquisition Plan

The replacement strategy will result in the following distribution of buses under/over ULB:

- Starting in 2020, the number of buses meeting or exceeding ULB will decrease gradually
- In 2024, all buses but one will be under ULB
- Throughout 2020-25, the total number of buses in service will remain at 105

8.2.2 MAINTENANCE STRATEGY

A core consideration in the RfP process was the normalization of the bus fleet. This means that only buses of the same make and model should be procured moving forward.

With the contract being awarded to Nova Bus, AMA will be able to utilize much of its maintenance equipment and knowledge on the new buses being delivered from 2020 onwards.

Part of the Nova Bus contract is substantial training for bus maintenance staff, to ensure that AMA staff are familiar and skilled to perform repairs and overhauls in-house.

8.2.3 DISPOSAL STRATEGY

Once a vehicle has reached its ULB, a final assessment will be undertaken by AMA maintenance. The results of the assessment are evaluated by the AMA Property Office and internal committee. In the event that maintaining an asset is cost-prohibitive, FTA will be informed about the asset disposal.

Asset disassembly and disposal will be contracted to a local provider.



According to the Fleet Maintenance Plan, AMA will follow the following vehicle decommissioning plan as laid out in Table 22.

Bus model	Nova Bus 40'	Orion 35'	Orion 35'	New Flyer 35' Hybrid	New Flyer 35' Hybrid	Orion 35'	Gillig 40'	Orion 40' Hybrid
Service year	2002	2004	2005	2005	2007	2007	2009	2010
Buses to be decommissioned	2020	1	9	3		3		
	2021			6	3	9	3	
	2022						15	7
	2023							19
	2024							20

Table 22 - Bus Decommissioning Plan 2020-2024



9. INVESTMENT PRIORITIZATION

9.1 CAPITAL BUDGET NEEDS

According to the TAM Final Rule, TAMPs are to include a prioritized list of proposed projects and programs in order to reach their SGR goals. The following section elaborates on AMA's priorities and the planned capital projects that will lead to reaching AMA's SGR goals.

AMA's capital procurement program for bus replacement is based on the following goals:

1. Maintain an average fleet age of less than 6 years.
2. Maintain a consistent annual replacement cycle to even-out the maintenance requirements to avoid "boom or bust" cycles of maintenance.
3. Provide for evolutionary improvements in bus technology rather than radical changes
4. Continue efforts to ensure maximum compliance with clean air and ADA goals.
5. Minimize extra training requirements, increase operation and maintenance familiarity and minimize excess spare parts requirements thereby reducing costs.
6. Evaluate the effects of any proposed service increases on the fleet size.

9.2 BUS ACQUISITION PLAN 2020-25

As detailed in the sections above, AMA has gone through a procurement process for the acquisition of additional buses, which will serve to replace the older bus fleet with new, more reliable, more comfortable, and more fuel-efficient buses. This will serve riders with better on-time performance, better maintained and more comfortable buses. A vendor has been selected for the bus procurement, and new vehicles will be delivered by the end of 2020.

10. OPPORTUNITIES FOR IMPROVEMENT

With the completion of this TAMP, AMA has identified several opportunities for improvement in its operations, service and investment planning activities.

Further development of Transit Asset Management Plans

As this TAMP is the first for AMA, it is a process of continual improvement.

A best practice Transit Asset Management Plan is based on these elements.

1. Appropriate asset data to support a mature decision process for prioritizing asset interventions
2. Analysis tools in place to exploit this data
3. An integrated longer-term planning process, ideally at least ten years, that provides a consistent approach to investment against the agency objectives, themselves ideally quantified, 'SMART' targets
4. Subject Matter Expert-based asset class and system strategies to support this integrated planning process
5. A systematic move towards risk-based decision making against agency targets, which would include both risk-based replacement and risk-based maintenance, making use of established techniques from other transit agencies globally
6. An articulated 'Asset Management System' that defines the elements of processes and procedures, roles and responsibilities for good Transit Asset Management

This goal is best approached through a coordinated improvement plan over some years, making good use of lessons learned elsewhere.

The aim is to develop a TAMP improvement plan for the next three years:

1. Put in place TAMP awareness training for key asset decisions makers
Wider awareness of good practice will support AMA in exploiting useful approaches that are appropriate to its size and complexity, and focus effort on TAMP improvements
2. Maintain its transit asset inventory through the spreadsheets developed for this TAMP and making good use of the standardized templates for NTD reporting.

It is important to maintain the asset inventories collected for this TAMP as the assets are replaced.

3. Develop early asset class strategies to address any asset class that is at or exceeds its class ULB – that includes some Buses, Non-revenue support vehicles, and Facilities.

These strategies are best done using a working group of internal SMEs facilitated by an AM practitioner. They are very useful to pick up collective experience on how to improve the management of each class.

4. Plan to improve the integrated planning process towards a mature AMP process



This would start by using the asset inventory spreadsheets to capture life cycle renewals requirements for the next five to ten years.

Furthermore, development of a whole life cost profile for the AMA's assets would provide valuable information for use in capital planning and decision-making. Along with initial acquisition costs, current operating and maintenance costs could be aggregated to understand total spending levels. A more accurate level of investment could then be tied to asset age, condition, or performance. Asset profiles of other transit operators, available in the public domain, should be used as a model for AMA.

AMA is also committed to the following actions in order to provide a reliable, safe and accessible bus and paratransit service to all its customers.

Asset Data Improvements:

All buses shall receive GPS tracking units with a constant link to AMA's central facility. The GPS units shall be used to track mileage on all buses, in order to assess their condition based on mileage and program preventative maintenance more effectively. This will help to maintain a more reliable bus fleet, while optimizing operational spending.

The data obtained from the GPS tracking units shall also be fed into AMA's fleet management Systems, Microsoft Dynamics GP.

As mentioned above, riders who pay their fare via a magnetic card are not accounted for by the Cubic system. This reduces the reliability of ridership data and subsequently impacts ridership projection, capital investment planning and maintenance programming. AMA will expand and fully implement the Cubic system to allow full tracking of ridership and aid more reliable long-term planning.

Based on the aforementioned improvements, AMA will also make great effort in strengthening the long and medium-term forecasting capabilities for future service demands. This will improve route and service planning activities, as well as solidifying the capital planning capabilities.

Customer Service Improvements:

Bus location data, extracted from the GPS systems, shall be made available to the public. This will provide customers with more detailed information on the buses and estimated arrival times.

The GPS data shall also be integrated into existing mobile phone applications, to improve the information customers can obtain about their service.

While this has already been started, AMA will complete the installation of automated voice announcements in all buses. This will improve customer experience and ADA compliance.

Bus Maintenance Improvements:

While maintenance performance has overall been satisfactory, AMA sees some opportunities to improve maintenance tasks and become more efficient.

Through the bus acquisition 2020-25, AMA's fleet will primarily consist of the same bus makes. This will simplify maintenance tasks, spares management as well as staff training.

The existing work order management system will be optimized to improve maintenance performance and help AMA to set better performance targets. This will help AMA to maintain low numbers of out-of-service buses and improve AMA's SGR standing.



APPENDICES

Appendix A DETAILED ROLLING STOCK ASSET INVENTORY

Entity Name	Asset Type	Model	Asset ID	Project ID	In-Service Date	ULB (years)	End of Useful Life (Year)
Buses							
AMA	BU - Bus	Nova Bus, 2002	2002-10	PR-90X-027	7/26/2002	12	2014
AMA	BU - Bus	Orion, 2004	2004-03	90-X-187	9/10/2004	12	2016
AMA	BU - Bus	Orion, 2004	2004-05	90-X-187	9/10/2004	12	2016
AMA	BU - Bus	Orion, 2004	2004-08	PR-90-X-187	9/10/2004	12	2016
AMA	BU - Bus	Orion, 2004	2004-09	90-X-187	9/10/2004	12	2016
AMA	BU - Bus	Orion, 2004	2004-15	90-X-187	9/10/2004	12	2016
AMA	BU - Bus	Orion, 2004	2004-18	90-X-187	9/10/2004	12	2016
AMA	BU - Bus	Orion, 2004	2004-19	90-X-187	9/10/2004	12	2016
AMA	BU - Bus	Orion, 2004	2004-25	90-X-187	9/10/2004	12	2016
AMA	BU - Bus	Orion, 2004	2004-30	90-X-187	9/10/2004	12	2016
AMA	BU - Bus	Orion, 2005	2005-02	PR-90-X202	9/1/2005	12	2017
AMA	BU - Bus	Orion, 2005	2005-03	PR-90-X202	9/1/2005	12	2017
AMA	BU - Bus	Orion, 2005	2005-05	PR-90-X202	9/1/2005	12	2017
AMA	BU - Bus	Orion, 2005	2005-07	PR-90-X202	9/1/2005	12	2017
AMA	BU - Bus	Orion, 2005	2005-11	PR-90-X202	9/1/2005	12	2017
AMA	BU - Bus	Orion, 2005	2005-12	PR-90-X202	9/1/2005	12	2017
AMA	BU - Bus	Orion, 2005	2005-21	PR-90-X202	9/1/2005	12	2017
AMA	BU - Bus	Orion, 2005	2005-24	PR-90-X202	9/1/2005	12	2017
AMA	BU - Bus	Orion, 2005	2005-27	PR-90-X202	9/1/2005	12	2017
AMA	BU - Bus	New Flyer Hybrid, 2005	2005-32	90-X-181/90-X-187	12/1/2005	12	2018



Entity Name	Asset Type	Model	Asset ID	Project ID	In-Service Date	ULB (years)	End of Useful Life (Year)
AMA	BU - Bus	New Flyer Hybrid, 2005	2005-33	90-X-181/90-X-187	12/1/2005	12	2018
AMA	BU - Bus	New Flyer Hybrid, 2005	2005-34	90-X-181/90-X-187	12/1/2005	12	2018
AMA	BU - Bus	Orion, 2007	2007-01	PR-90-X-209	3/1/2008	12	2020
AMA	BU - Bus	Orion, 2007	2007-02	90-X-209	3/1/2008	12	2020
AMA	BU - Bus	Orion, 2007	2007-03	90-X-209	3/1/2008	12	2020
AMA	BU - Bus	Orion, 2007	2007-04	90-X-209	3/1/2008	12	2020
AMA	BU - Bus	Orion, 2007	2007-05	90-X-209	3/1/2008	12	2020
AMA	BU - Bus	Orion, 2007	2007-06	90-X-209	3/1/2008	12	2020
AMA	BU - Bus	Orion, 2007	2007-07	90-X-209	3/1/2008	12	2020
AMA	BU - Bus	Orion, 2007	2007-10	PR-90-X-209	3/1/2008	12	2020
AMA	BU - Bus	Orion, 2007	2007-11	90-X-209	3/1/2008	12	2020
AMA	BU - Bus	Orion, 2007	2007-12	90-X-209	3/1/2008	12	2020
AMA	BU - Bus	Orion, 2007	2007-13	90-X-209	3/1/2008	12	2020
AMA	BU - Bus	Orion, 2007	2007-14	90-X-209	3/1/2008	12	2020
AMA	BU - Bus	Orion, 2007	2007-15	90-X-209	3/1/2008	12	2020
AMA	BU - Bus	Orion, 2007	2007-16	90-X-209	3/1/2008	12	2020
AMA	BU - Bus	Orion, 2007	2007-17	90-X-209	3/1/2008	12	2020
AMA	BU - Bus	Orion, 2007	2007-18	PR-90-X-209	3/1/2008	12	2020
AMA	BU - Bus	Orion, 2007	2007-19	90-X-209	3/1/2008	12	2020
AMA	BU - Bus	Orion, 2007	2007-20	90-X-209	3/1/2008	12	2020
AMA	BU - Bus	New Flyer Hybrid, 2007	2007-21	90-X-223	3/1/2008	12	2020
AMA	BU - Bus	New Flyer Hybrid, 2007	2007-22	90-X-223	3/1/2008	12	2020
AMA	BU - Bus	New Flyer Hybrid, 2007	2007-23	90-X-223	3/1/2008	12	2020
AMA	BU - Bus	New Flyer Hybrid, 2007	2007-24	90-X-223	3/1/2008	12	2020
AMA	BU - Bus	New Flyer Hybrid, 2007	2007-26	90-X-223	3/1/2008	12	2020



Entity Name	Asset Type	Model	Asset ID	Project ID	In-Service Date	ULB (years)	End of Useful Life (Year)
AMA	BU - Bus	New Flyer Hybrid, 2007	2007-27	90-X-209	3/1/2008	12	2020
AMA	BU - Bus	New Flyer Hybrid, 2007	2007-28	90-X-209	3/1/2008	12	2020
AMA	BU - Bus	New Flyer Hybrid, 2007	2007-29	90-X-209	3/1/2008	12	2020
AMA	BU - Bus	New Flyer Hybrid, 2007	2007-30	90-X-187/90-X-202-	3/1/2008	12	2020
AMA	BU - Bus	Orion Hybrid, 2010	2010-01	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-02	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-03	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-04	PR-96--X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-05	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-06	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-07	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-08	PR-96-X011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-09	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-10	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-11	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-12	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-13	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-14	PR-90-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-15	PR-90-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-16	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-17	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-18	PR-90-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-19	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-20	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-21	PR-96-X-011	7/1/2010	12	2022



Entity Name	Asset Type	Model	Asset ID	Project ID	In-Service Date	ULB (years)	End of Useful Life (Year)
AMA	BU - Bus	Orion Hybrid, 2010	2010-22	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-24	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-25	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-26	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-27	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-28	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-29	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-30	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-23	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-31	PR-90-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-32	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-33	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-34	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-35	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-36	PR-96-X-229	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-37	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-38	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-39	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Orion Hybrid, 2010	2010-40	PR-96-X-011	7/1/2010	12	2022
AMA	BU - Bus	Nova Bus, 2013	2013-01	PR-96-X030	5/2/2014	12	2026
AMA	BU - Bus	Nova Bus, 2013	2013-02	PR-96-X030	5/2/2014	12	2026
AMA	BU - Bus	Nova Bus, 2013	2013-03	PR-96-X030	5/2/2014	12	2026
AMA	BU - Bus	Nova Bus, 2013	2013-04	PR-96-X030	5/2/2014	12	2026
AMA	BU - Bus	Nova Bus, 2013	2013-05	PR-96-X030	5/2/2014	12	2026
AMA	BU - Bus	Nova Bus, 2013	2013-06	PR-96-X030	5/2/2014	12	2026



Entity Name	Asset Type	Model	Asset ID	Project ID	In-Service Date	ULB (years)	End of Useful Life (Year)
AMA	BU - Bus	Nova Bus, 2013	2013-07	PR-96-X030	5/2/2014	12	2026
AMA	BU - Bus	Nova Bus, 2013	2013-08	PR-96-X030	5/2/2014	12	2026
AMA	BU - Bus	Nova Bus, 2013	2013-09	PR-96-X030	5/5/2014	12	2026
AMA	BU - Bus	Nova Bus, 2013	2013-10	PR-96-X030	5/5/2014	12	2026
AMA	BU - Bus	Nova Bus, 2013	2013-11	PR-96-X030	5/5/2014	12	2026
AMA	BU - Bus	Nova Bus, 2013	2013-12	PR-96-X030	5/5/2014	12	2026
AMA	BU - Bus	Nova Bus, 2013	2013-13	PR-96-X030	5/5/2014	12	2026
AMA	BU - Bus	Nova Bus, 2013	2013-14	PR-96-X030	5/5/2014	12	2026
AMA	BU - Bus	Nova Bus, 2013	2013-15	PR-96-X030	5/5/2014	12	2026
AMA	BU - Bus	Nova Bus, 2013	2013-16	PR-96-X030	5/5/2014	12	2026
AMA	BU - Bus	Gillig Transit, 2009	2009-1		10/3/2018	12	2030
AMA	BU - Bus	Gillig Transit, 2009	2009-02		10/3/2018	12	2030
AMA	BU - Bus	Gillig Transit, 2009	2009-03		10/3/2018	12	2030
AMA	BU - Bus	Gillig Transit, 2009	2009-04		10/3/2018	12	2030
AMA	BU - Bus	Gillig Transit, 2009	2009-05		10/3/2018	12	2030
AMA	BU - Bus	Gillig Transit, 2009	2009-06		10/3/2018	12	2030
AMA	BU - Bus	Gillig Transit, 2009	2009-07		10/3/2018	12	2030
AMA	BU - Bus	Nova Bus, 2019	2019-01		9/25/2019	12	2031
AMA	BU - Bus	Nova Bus, 2019	2019-02		9/25/2019	12	2031
AMA	BU - Bus	Nova Bus, 2019	2019-03		9/25/2019	12	2031
AMA	BU - Bus	Nova Bus, 2019	2019-04	2018-016-01	9/25/2019	12	2031
AMA	BU - Bus	Nova Bus, 2019	2019-05	2018-016-01	9/25/2019	12	2031
AMA	BU - Bus	Nova Bus, 2019	2019-06	2018-016-01	9/25/2019	12	2031
Paratransit vehicles							

Entity Name	Asset Type	Model	Asset ID	Project ID	In-Service Date	ULB (years)	End of Useful Life (Year)
AMA	CU - Cutaway Bus	Chevrolet Gosheen Coach GCII, 2012	2011-02	PR-04-0006	2/17/2012	8	2020
AMA	CU - Cutaway Bus	Chevrolet Gosheen Coach GCII, 2012	2011-03	PR-04-0006	2/17/2012	8	2020
AMA	CU - Cutaway Bus	Chevrolet Goshen Coach GCII, 2012	2011-05	PR-04-0006	2/17/2012	8	2020
AMA	CU - Cutaway Bus	Chevrolet Gosheen Coach GCII, 2012	2011-06	PR-04-0006	2/17/2012	8	2020
AMA	CU - Cutaway Bus	Chevrolet Gosheen Coach GCII, 2012	2011-10	PR-04-0006	2/17/2012	8	2020
AMA	CU - Cutaway Bus	Ford F550 Super Duty, 2012	2012-17		8/17/2018	8	2026
AMA	CU - Cutaway Bus	Ford F550 Super Duty, 2012	2012-24		8/17/2018	8	2026
AMA	CU - Cutaway Bus	Ford F550 Super Duty, 2012	2012-25		8/17/2018	8	2026
AMA	CU - Cutaway Bus	Ford F550 Super Duty, 2012	2012-29		8/17/2018	8	2026
AMA	CU - Cutaway Bus	Ford F550 Super Duty, 2012	2012-34		8/17/2018	8	2026
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-01	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-02	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-03	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-04	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-05	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-06	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-07	PR-90X-348	11/3/2016	8	2025



Entity Name	Asset Type	Model	Asset ID	Project ID	In-Service Date	ULB (years)	End of Useful Life (Year)
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-08	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-09	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-11	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-12	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-13	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-14	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-15	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-16	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-17	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-18	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-19	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-20	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-21	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-22	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-23	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-24	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-25	PR-90X-348	11/3/2016	8	2025
AMA	MV - Minivan	Dodge Caravan SXT, 2016	2017-10	PR-90X-348	11/17/2016	8	2025
AMA	VN - Van	National Van Builders E-350 Transit Van, 2017		PR-90-X370-00	5/23/2017	8	2025
AMA	VN - Van	National Van Builders E-350 Transit Van, 2017		PR-90-X370-00	5/23/2017	8	2025
AMA	VN - Van	National Van Builders E-350 Transit Van, 2017		PR-90-X370-00	5/23/2017	8	2025
AMA	VN - Van	National Van Builders E-350 Transit Van, 2017		PR-90-X370-00	5/23/2017	8	2025



Entity Name	Asset Type	Model	Asset ID	Project ID	In-Service Date	ULB (years)	End of Useful Life (Year)
AMA	VN - Van	National Van Builders E-350 Transit Van, 2017		PR-90-X370-00	5/23/2017	8	2025
AMA	VN - Van	National Van Builders E-350 Transit Van, 2017		PR-90-X370-00	5/23/2017	8	2025
AMA	VN - Van	National Van Builders E-350 Transit Van, 2017		PR-90-X370-00	5/23/2017	8	2025
AMA	VN - Van	National Van Builders E-350 Transit Van, 2017		PR-90-X370-00	5/23/2017	8	2025
AMA	VN - Van	National Van Builders E-350 Transit Van, 2017		PR-90-X370-00	5/23/2017	8	2025
AMA	VN - Van	National Van Builders E-350 Transit Van, 2017		PR-90-X370-00	5/23/2017	8	2025
AMA	VN - Van	Ford Transit, 2017	2017-26	PR-90-X370	5/23/2017	8	2025
AMA	VN - Van	Ford Transit, 2017	2017-27	PR-90-X370	5/23/2017	8	2025
AMA	VN - Van	Ford Transit, 2017	2017-28	PR-90-X370	5/23/2017	8	2025
AMA	VN - Van	Ford Transit, 2017	2017-29	PR-90-X370	5/23/2017	8	2025
AMA	VN - Van	Ford Transit, 2017	2017-30	PR-90-X370	5/23/2017	8	2025
AMA	VN - Van	Ford Transit, 2017	2017-31	PR-90-X370	5/23/2017	8	2025
AMA	VN - Van	Ford Transit, 2017	2017-32	PR-90-X370	5/23/2017	8	2025
AMA	VN - Van	Ford Transit, 2017	2017-33	PR-90-X370	5/23/2017	8	2025
AMA	VN - Van	Ford Transit, 2017	2017-34	PR-90-X370	5/23/2017	8	2025
AMA	VN - Van	Ford Transit, 2017	2017-35	PR-90-X370	5/23/2017	8	2025
AMA	VN - Van	GUAGUA CHEVROLET EXPRESS BLANCA 2009	09-08		11/30/2009	8	2018
AMA	VN - Van	GUAGUA CHEVROLET EXPRESS BLANCA 2009	09-13		11/30/2009	8	2018



Entity Name	Asset Type	Model	Asset ID	Project ID	In-Service Date	ULB (years)	End of Useful Life (Year)
AMA	VN - Van	GUAGUA CHEVROLET EXPRESS BLANCA 2009	09-24		11/30/2009	8	2018
AMA	VN - Van	GUAGUA CHEVROLET EXPRESS BLANCA 2009	09-27		11/30/2009	8	2018
AMA	VN - Van	CHEVROLET EXPRESS VAN 2011 GRIS	11-01	PR-90-X253	12/21/2010	8	2019

Table 23 - Detailed Rolling Stock Asset Inventory



Appendix B DETAILED EQUIPMENT ASSET INVENTORY

Entity Name	Asset Type	Model	Asset ID	Project ID	In-Service Date	ULB (years)	End of Useful Life (Year)
AMA	AO - Automobile	Ford Pick Up F-150	UNIDAD 152	90-X-173	8/29/2003	8	2011
AMA	AO - Automobile	Chevrolet Pick Up 4 x 2	UNIDAD 155	90-X-173	8/9/2004	8	2012
AMA	AO - Automobile	Chevrolet Pick Up 4 x 4	UNIDAD 156	90X-173	8/9/2004	8	2012
AMA	AO - Automobile	Service Truck F-450 Body	UNIDAD 157	90-X-173 / 90- X181	10/11/2004	8	2013
AMA	AO - Automobile	Chevrolet Pick Up Silverado	UNIDAD 162		4/30/2010	8	2018
AMA	AO - Automobile	Chevrolet Pick Up Silverado	UNIDAD 163		4/30/2010	8	2018
AMA	AO - Automobile	Chevrolet Pick Up Silverado 2500	UNIDAD 164		4/30/2010	8	2018
AMA	AO - Automobile	Chevrolet Pick Up Silverado	UNIDAD 197		10/24/2010	8	2019
AMA	AO - Automobile	Chevrolet Pick Up Silverado 4PTS	UNIDAD 195		10/24/2011	8	2020
AMA	AO - Automobile	Chevrolet Pick Up Silverado	UNIDAD 196		10/24/2011	8	2020

Entity Name	Asset Type	Model	Asset ID	Project ID	In-Service Date	ULB (years)	End of Useful Life (Year)
AMA	ORTV - Other Rubber Tire Vehicles	Dump Truck 4700	UNIDAD 129	PR-90-X103	7/10/1998	14	2012
AMA	ORTV - Other Rubber Tire Vehicles	Sterling Truck LT-9500	UNIDAD 138	PR-90-X-141	11/1/2000	14	2015
AMA	ORTV - Other Rubber Tire Vehicles	Service Truck Body-Telescopic Arm	UNIDAD 158	90-X-173 / 90-X- 181	11/9/2004	14	2019
AMA	ORTV - Other Rubber Tire Vehicles	Tank Truck CHEV	UNIDAD 159	90-X-173 / 90-X- 202	2/7/2005	14	2019
AMA	ORTV - Other Rubber Tire Vehicles	Flat Bed Crane, FreightLiner M2	UNIDAD 160	PR-90-X-223	4/22/2010	14	2024
AMA	ORTV - Other Rubber Tire Vehicles	Town Crane FreightLiner M2- 112	UNIDAD 165	PR-90-X-223	6/14/2010	14	2024



Entity Name	Asset Type	Model	Asset ID	Project ID	In-Service Date	ULB (years)	End of Useful Life (Year)
AMA	ORTV - Other Rubber Tire Vehicles	Sweeper Isuzu NPR	UNIDAD 191	PR-90-X-240	7/13/2010	14	2024
AMA	ORTV - Other Rubber Tire Vehicles	Truck International 4000- 1997, Series 4800	UNIDAD 198	N/A	10/21/2016	14	2031
AMA	ORTV - Other Rubber Tire Vehicles	Chevrolet Pick Up 195	UNIDAD 110	N/A	12/1/1995	14	2009
AMA	ORTV - Other Rubber Tire Vehicles	Digger (Cargador Retro Excavadora)	19-2829	PR-90-X253 11.42.11	2/2/2011	14	2025
AMA	ORTV - Other Rubber Tire Vehicles	Tow Truck (Tractor de Carga)	17-001	PP-90-X253	8/1/2011	14	2025

Entity Name	Asset Type	Model	Asset ID	Project ID	In-Service Date	ULB (years)	End of Useful Life (Year)
AMA	SV - Sports Utility Vehicle	Ford ESCAPE XLT	UNIDAD 167	PR-90-X-253	5/25/2010	8	2018
AMA	SV - Sports Utility Vehicle	Ford ESCAPE XLT	UNIDAD 173	PR-90-X-253	5/25/2010	8	2018
AMA	SV - Sports Utility Vehicle	Ford ESCAPE XLT	UNIDAD 174	PR-90-X-253	5/25/2010	8	2018
AMA	SV - Sports Utility Vehicle	Ford ESCAPE XLT	UNIDAD 175	PR-90-X-253	5/25/2010	8	2018
AMA	SV - Sports Utility Vehicle	Ford ESCAPE XLT	UNIDAD 176	PR-90-X-253	5/25/2010	8	2018
AMA	SV - Sports Utility Vehicle	Ford ESCAPE XLT	UNIDAD 177	PR-90-X-253	5/25/2010	8	2018
AMA	SV - Sports Utility Vehicle	Ford ESCAPE XLT	UNIDAD 178	PR-90-X-253	5/25/2010	8	2018
AMA	SV - Sports Utility Vehicle	Ford ESCAPE XLT	UNIDAD 179	PR-90-X-253	5/25/2010	8	2018

Entity Name	Asset Type	Model	Asset ID	Project ID	In-Service Date	ULB (years)	End of Useful Life (Year)
AMA	SV - Sports Utility Vehicle	Ford ESCAPE XLT	UNIDAD 180	PR-90-X-253	5/25/2010	8	2018
AMA	SV - Sports Utility Vehicle	Ford ESCAPE XLT	UNIDAD 181	PR-90-X-253	5/25/2010	8	2018
AMA	SV - Sports Utility Vehicle	Ford ESCAPE XLT	UNIDAD 182	PR-90-X-253	5/25/2010	8	2018
AMA	SV - Sports Utility Vehicle	Ford ESCAPE XLT	UNIDAD 183	PR-90-X-253	5/25/2010	8	2018
AMA	SV - Sports Utility Vehicle	Ford ESCAPE XLT	UNIDAD 185	PR-90X-253	5/25/2010	8	2018
AMA	SV - Sports Utility Vehicle	Ford ESCAPE XLT	UNIDAD 184	PR-90-X-253	5/25/2010	8	2018
AMA	SV - Sports Utility Vehicle	Ford ESCAPE XLT	UNIDAD 186	PR-90-X-253	6/25/2010	8	2018
AMA	SV - Sports Utility Vehicle	Chevrolet Tahoe	UNIDAD 192	PR-90-X253	10/6/2010	8	2019

Entity Name	Asset Type	Model	Asset ID	Project ID	In-Service Date	ULB (years)	End of Useful Life (Year)
AMA	SV - Sports Utility Vehicle	Ford Escape	UNIDAD 201	PR-90X-269; 253	11/30/2016	8	2025
AMA	SV - Sports Utility Vehicle	Ford Escape	UNIDAD 202	PR-90X-269; 253	11/30/2016	8	2025
AMA	SV - Sports Utility Vehicle	Ford Escape	UNIDAD 203	PR-90X-269; 253	11/30/2016	8	2025
AMA	SV - Sports Utility Vehicle	Ford Escape	UNIDAD 204	PR-90X-269; 253	11/30/2016	8	2025
AMA	SV - Sports Utility Vehicle	Ford Escape	UNIDAD 205	PR-90X-269; 253	11/30/2016	8	2025
AMA	SV - Sports Utility Vehicle	Ford Escape	UNIDAD 206	PR-90X-269; 253	11/30/2016	8	2025
AMA	SV - Sports Utility Vehicle	Ford Escape	UNIDAD 207	PR-90X-269; 253	11/30/2016	8	2025
AMA	SV - Sports Utility Vehicle	Ford Escape	UNIDAD 209	PR-90X-269; 253	11/30/2016	8	2025



Entity Name	Asset Type	Model	Asset ID	Project ID	In-Service Date	ULB (years)	End of Useful Life (Year)
AMA	SV - Sports Utility Vehicle	Ford Explorer TAB. ITH634	UNIDAD 199	PR-90X-269; 253	12/2/2016	8	2025
AMA	SV - Sports Utility Vehicle	Ford Explorer TAB. ITH633	UNIDAD 200	PR-90X-269; 253	12/2/2016	8	2025
AMA	SV - Sports Utility Vehicle	Ford Escape	UNIDAD 208	PR-90X-269; 253	12/2/2016	8	2025
AMA	SV - Sports Utility Vehicle	Ford Escape	UNIDAD 210	PR-90X-269; 253	12/2/2016	8	2025
AMA	VN - Van	Ford Econoline Cargo Van	UNIDAD 187	PR90-X253	7/14/2010	8	2018
AMA	VN - Van	Ford Econoline E-350 15 Passenger	UNIDAD 188	PR90-X-253	7/14/2010	8	2018
AMA	VN - Van	Ford Econoline E-350 15 Passenger	UNIDAD 189	PR90-X-253	7/14/2010	8	2018
AMA	VN - Van	Ford Econoline E-350 15 Passenger	UNIDAD 190	PR90-X-253	7/14/2010	8	2018
AMA	Computer	Laptop Kit (equipo para programar Letreros)	65-1107	PR-90-X240	6/9/2008	n/a	n/a



Entity Name	Asset Type	Model	Asset ID	Project ID	In-Service Date	ULB (years)	End of Useful Life (Year)
AMA	Computer	Data Storage (HP STORAGEWEORKS ENTERPRISE)	65-126		9/19/2008	n/a	n/a
AMA	Computer	Data Storage (EQUIPO INFORMATICA HP CON HDISK, MEMORY)	65-1495		9/19/2008	n/a	n/a
AMA	Computer	Server (SERVIDOR HEWLETT PACKARD)	65-1230	PR-90-X202,209, 223	7/6/2009	n/a	n/a
AMA	Computer	Mobile Terminal (MOVIL TERMINAL PARA 150 UNIDADES)	65/2738	PRR90X348	10/9/2019	n/a	n/a
AMA	Computer	Laptop Kit (equipo para programar Letreros)	65-2068	PR-90-X209; 223; 269	1/26/2010	n/a	n/a
AMA	Machine & Equipment	Disc and Drum turning Machine (MAQUINA P/ TORNEAR TAMBORES Y BANDAS)	66-1691		5/16/2008	n/a	n/a

Entity Name	Asset Type	Model	Asset ID	Project ID	In-Service Date	ULB (years)	End of Useful Life (Year)
AMA	Machine & Equipment	Chilled Water System	69-07	PR-90-X209; 223; 269	6/29/2012	n/a	n/a
AMA	Machine & Equipment	Chilled Water System	69-12	PR-90-X209; 223; 269	6/29/2012	n/a	n/a
AMA	Machine & Equipment	Diesel Filter (MAQUINA DE LIMPIAR FILTROS DPF, Diesel)	17-006	PR-90X-348	8/16/2017	n/a	n/a
AMA	Machine & Equipment	Vehicle Wash (EQUIPO DE LAVADO DE VEHICULO)	17/013	pr2016-012-00	2/26/2019	n/a	n/a
AMA	Machine & Equipment	Vehicle Wash (SISTEMA DE LA VADO DE VEHICULOS)	17/011	PR-2016-012-00	2/27/2019	n/a	n/a

Table 24 - Detailed Equipment Asset Inventory



Appendix C FACILITY CONDITION ASSESSMENT METHODOLOGY

The condition assessment approach provided herein is based on FTA's guidance detailed in *TAM Facility Performance Measure Reporting Guidebook: Condition Assessment Calculation*¹⁶.

The facility condition assessments are based on visual inspections of the facilities. The general process of the condition assessments can be seen in Figure 15.

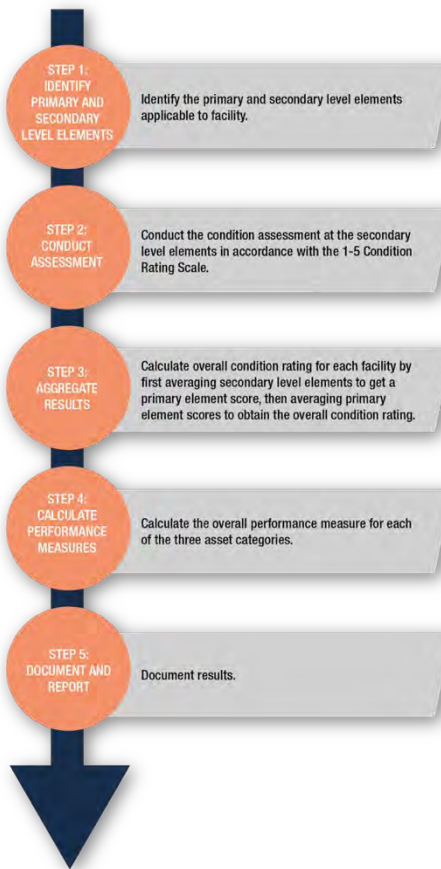


Figure 15 - Facility Condition Assessment Methodology

¹⁶ FTA TAM Facility Performance Measure Reporting Guidebook v1-2

Step 1: Identify Primary and Secondary Level Elements

The primary level elements are broad asset categories that divide a building into individual systems. The first step to the condition assessment is identifying which of the following primary level elements are applicable to the facility being assessed:

- Structure
- Shell
- Interiors
- Conveyance
- Plumbing
- HVAC
- Fire Protection
- Electrical
- Facility Equipment
- Site

The subsequent step is identifying the secondary level elements that are present within the facility. The following list of secondary elements were identified in the facilities that were assessed

Primary Level Element	Secondary Level Element
Structure	<ul style="list-style-type: none"> • Foundations: Walls, columns, pilings, etc. • Basement: Materials, insulation, slab, floor underpinings
Shell	<ul style="list-style-type: none"> • Superstructure / structural frame: Columns, pillars, walls • Roof: Roof surface, gutters, eaves, skylights, chimney surrounds • Exterior: Windows, doors, and all finishes (paint, masonry) • Shell appurtenances: Balconies, fire escapes, gutters, downspouts
Interiors	<ul style="list-style-type: none"> • Partitions: Walls, interior doors, fittings and signage • Stairs: Interior stairs and landings • Finishes: Materials used on walls, floors, and ceilings • Covers all interior spaces, regardless of use. • Passenger areas: Platform and access tunnels / passageways
Conveyance	<ul style="list-style-type: none"> • Elevators • Escalators • Lifts: Any other such fixed apparatuses for the movement of goods or people
Plumbing	<ul style="list-style-type: none"> • Fixtures • Water distribution • Sanitary waste • Rainwater drainage
HVAC	<ul style="list-style-type: none"> • Energy supply • Heat generation and distribution systems • Cooling generation and distribution systems • Testing, balancing, controls, and instrumentation • Chimneys and vents



Primary Level Element	Secondary Level Element
Fire Protection	<ul style="list-style-type: none"> • Sprinklers • Standpipes • Hydrants and other fire protection specialties
Electrical	<ul style="list-style-type: none"> • Electrical service & distribution • Lighting & branch wiring (interior and exterior) • Communications & security • Other electrical system-related pieces such as lightning protection, generators, and emergency lighting
Facility Equipment	<ul style="list-style-type: none"> • Equipment related to the function of the facility, including maintenance or vehicle service equipment – does not include supplies
Site	<ul style="list-style-type: none"> • Roadways/driveways and associated signage, markings, and equipment • Parking lots and associated signage, markings, and equipment • Pedestrian areas and associated signage, markings, and equipment • Site development such as fences, walls, and miscellaneous structures • Landscaping and irrigation • Site utilities

Table 25 - Facility Assessment Methodology Primary & Secondary Levels

Step 2: Conduct Assessment

The secondary elements are visually inspected and scored according to a 1 to 5-point scale used in the FTA Transit Economic Requirements Model (TERM). The rating scale is as follows:

Rating	Condition	Description
5	Excellent	No visible defect, new or near new condition, may still be under warranty
4	Good	Good condition, but no longer new, may be slightly defective or deteriorated, but is overall functional
3	Adequate	Moderately deteriorated or defective; but has not exceeded useful life
2	Marginal	Defective or deteriorated in need of replacement; exceeded useful life
1	Poor	Critically damaged or in need of immediate repair; well past useful life

Table 26 - Facilities Condition Assessment Rating Scale

The inspection tasks that are to be performed on the secondary level elements to derive a score are as follows:



Primary Level Element	Secondary Level Element
Substructure	<ul style="list-style-type: none"> • Foundations: Inspect walls, columns, pilings, other structural elements for signs of decay. • Basement: Inspect non-foundation and structural elements such as facing materials, insulation, slab, floor underpinnings, crawl spaces, etc.
Shell	<ul style="list-style-type: none"> • Inspect superstructure / structural frame, including columns, pillars, and walls. • Inspect façade, curtain wall system, glazing system, exterior sealants, exterior balconies, doors, stairways, parapets, fire escapes, gutters, downspouts. • Inspect windows, doors, and all finishes (paint, masonry). • Inspect roof, including roof surface (tiles, membrane, shingles, gravel etc.), gutters, eaves, skylights, flashing, chimney surrounds, and sealants, hardware and painted or coated surfaces. Note evidence of ponding, or roof leaks, significant age – and other indicators that repair may be necessary. Note age of roof(s) and whether warranty is still in effect.
Interiors	<ul style="list-style-type: none"> • Inspect soundness and finish of drywall, partitions, interior doors, fittings, ceiling tiles, and signage. • Inspect stairs including fire and access issues. • Inspect interior finishes, including materials used on walls, floors, and ceilings, such as tile, paint, and other coatings. Look for roughness and damage.
Conveyance	<ul style="list-style-type: none"> • Inspect condition, function, and code compliance of elevators, escalators, lifts, and any other fixed apparatuses for the movement of goods or people.
Plumbing	<ul style="list-style-type: none"> • Inspect fixtures and pipes for water distribution, sanitary waste, rainwater drainage, and any leaks.
HVAC	<ul style="list-style-type: none"> • Inspect systems and their elements for energy supply, heating and cooling systems, distribution systems, terminal and package units, controls and instrumentation including testing and balancing, and chimneys. Specifically, inspect coils, housing, drains, and wiring and evaluate overall performance of the system. • Note apparent or reported age of the equipment, past material element replacements/ upgrades, and the apparent level of maintenance exercised. If heating equipment is shut down or not operational at the time of the walk-through survey, provide an opinion of the condition to the extent observed. Note refrigerants and fuels used and their suitability or need for improvement / upgrade.

Primary Level Element	Secondary Level Element
Fire Protection	<ul style="list-style-type: none"> Inspect sprinklers, standpipes, hydrants, fire alarms, emergency lighting, smoke evacuation, stairwell pressurization, and any other specialized elements relating to overall protection system and compliance.
Electrical	<ul style="list-style-type: none"> Inspect electrical service & distribution, noting deficiencies or needed / recommended upgrades Inspect lighting and branch wiring (interior and exterior), communications and security, noting deficiencies or needed / recommended upgrades Examine other electrical system-related pieces such as lightning protection, generators, emergency lighting, and elements related to electrical service and distribution such as conduit, boxes, solar panels and mountings for any damage wire chaffing or loose or corroded connections. Evaluate overall performance of the system.
Equipment/ Fare Collection	<ul style="list-style-type: none"> Inspect equipment, noting age, condition, and functional deficiencies. For Maintenance Facilities, this is focused on major pieces of equipment integral to the function of the facility. For Passenger Facilities, this item is focused on the fare collection system and any associated elements.
Site	<ul style="list-style-type: none"> Inspect roadways/driveways and associated signage, markings, and equipment. Look for cracking or settling of the concrete or asphalt. Inspect parking lots and associated signage, markings, and equipment. Look for cracking or settling of the concrete or asphalt Inspect pedestrian areas and associated signage, markings, and equipment. Inspect the curbing and ramps for cracking, settling, holes, uneven surfaces and trip hazards. Pay special attention to wheelchair ramp areas and other ADA / access considerations Site development such as fences, walls, and miscellaneous structures. Look for corrosion, structural integrity and condition of paint. Landscaping, Site Utilities: Look for signs of drainage problems such as flooded areas, eroded soil and water damage to the asphalt and clogged storm drain inlets. Visually inspect the irrigation system, if installed. Look for signs of leaks, such as sagging areas in grass and/or pooling water. Look for dead spots in the grass indicating lack of water possibly caused by a mechanical failure. Inspect passenger huts and benches for corrosion, paint condition, glass condition and damage.

Table 27 - Primary & Secondary Levels Facility Assessment Tasks

Step 3: Aggregate Results



This condition assessment methodology utilizes an equal weight average, meaning that the various elements have equal weight when calculating an overall facility condition rating score. Once the secondary level elements have been assessed, the secondary level element scores are then averaged out by corresponding primary level element to create a single primary level element score. This can be represented as an equation where P is the primary level element score, S is the secondary level element score and n is the number of secondary level elements within the primary level element.

$$P = \sum_{i=1}^n S_i$$

The primary level element scores are then averaged out again to create an overall facility condition rating score. This can be represented as an equation where FCR is the overall facility condition rating score, P is the primary level element score and m is the number of primary level elements in the facility.

$$FCR = \sum_{x=1}^m P_x$$

The facility condition rating scores are rounded to one decimal place, leaving the results ranging between 1.0 to 5.0. The FTA TERM scale uses integer scores in the ratings, but PRHTA has opted for a score with one decimal place to provide more detail in the condition assessment.

Step 4: Calculate Performance Measures

FTA TERM performance measure reporting groups facilities into two groups: administrative and maintenance facilities, and passenger terminals and parking facilities. This TAMP has done the same to be in line with FTA standards.

The FTA TERM defines performance for facilities as the number and percentage of facilities under the TERM score of 3. In line with this, the performance measures for this TAMP are the number and percentage of facilities under the score of 3.0.

Step 5: Document and Report

The findings of this condition assessment effort are then documented and reported in this TAMP.

Appendix D DETAILED FACILITIES ASSET INVENTORY



No.	Facility	Type	Address	Condition Assessment Score	Structure	Shell	Interior	Conveyance	Plumbing	HVAC	Fire Protection	Electrical	Facility Equipment	Site
1	AMA Central Operations, Maintenance and Administrative Facility	Administrative / Maintenance	Avenida de Diego #36, Urb. San Francisco, San Juan, PR 00936	2.69	3.1	2.9	3.5	2.2	3.7	2.5	2.2	1.8	2.4	2.6
1a	▪ Administration offices	Administrative / Maintenance	Avenida de Diego #36, Urb. San Francisco, San Juan, PR 00936	2.66	3.42	2.50	3.36	2.75	4.00	2.42	1.00	1.79	-	-
1b	▪ Maintenance	Administrative / Maintenance	Frente Marítimo Avenida Las Nereidas, Cataño 00962	2.48	3.00	3.04	3.25	1.56	3.85	2.00	2.78	1.25	1.63	-
1c	▪ Vehicle Fueling & Lubrication Facility	Administrative / Maintenance	Frente Marítimo Avenida Las Nereidas, Cataño 00962	3.14	4.00	-	-	-	3.88	2.89	-	2.33	3.26	2.46
1d	▪ Revenue Collecting Facility	Administrative / Maintenance	Frente Marítimo Avenida Las Nereidas, Cataño 00962	3.13	4.00	2.87	3.25	-	3.00	3.33	4.00	2.17	-	2.42
1e	▪ CAMPUS	Administrative / Maintenance	Frente Marítimo Avenida Las Nereidas, Cataño 00962	1.93	-	-	-	-	-	-	2.33	1.38	1.13	2.89
1f	▪ Fuel Storage and Pump Bldg.	Administrative / Maintenance	Avenida de Diego #36, Urb. San Francisco, San Juan, PR 00936	2.39	1.00	3.33	4.00	-	-	2.00	1.00	1.65	3.77	-
2	Terminal Capetillo Rio Piedras	Terminal	Calle Robles, San Juan 00925	1.56	3.00	2.32	1.13	-	1.00	1.00	1.00	1.00	-	2.05
3	Terminal Cataño (retired, no assessment)	Terminal	PR-165, Cataño 00962	-	-	-	-	-	-	-	-	-	-	-
4	Terminal Iturregui, Carolina	Terminal	Ave. Iturregui, / Ave. El Comandante, Carolina 00984	3.44	4.00	3.86	4.00	-	3.96	4.56	1.00	2.25	-	3.86
5	Terminal Pueblo, Carolina	Terminal	Calle Quiñones, Carolina 00985	3.85	4.00	3.96	4.33	-	4.83	4.60	1.00	4.13	-	3.93

6	Terminal Las Casas. No longer operated as bus terminal. Property under lease.	Former Terminal	Calle Borinquen (PR-36) / Ave. Barbosa (PR-27), San Juan	-	-	-	-	-	-	-	-	-	-	-
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Table 28 - Detailed Facilities Asset Inventory



Appendix E NTD PERFORMANCE TARGETS



PRHTA TRANSIT ASSET MANAGEMENT PLAN (TAM)

The Puerto Rico Highway and Transportation Authority (PRHTA) is developing its Transit Asset Management Plan in accordance with 49 CFR Part 625. PRHTA is conducting three (3) TAM plans for its transit providers: 1) ATI- TU (Heavy Rail) 2) Tier 2 Group Plan 3) Maritime Transit Authority. A TAM plan is a systematic way of managing transit capital assets acquired with funds under Chapter 53, Title 49.

How did PRHTA set the targets?

Data from capital assets was collected from transit operators - 34 municipalities and 3 agencies. Each inventory was analyzed and validated to determine the performance measure for each type of asset.

Performance targets

According to 49 CFR part 625.45 and 625.45 a provider must set a performance target for each applicable performance measures. An annual report should be submitted to FTA's National Transit Database (NTD) that reflects the performance targets for the following years in the A- 90 form.

A performance measure describes the State of Good Repair of an asset. There are four (4) measures per each class of asset.

	1	2	3	4	5	
Type of Assets	Poor	Marginal	Adequate	Good	Excellent	Performance Measure
Rolling Stock						% of revenue vehicles that exceeded the Useful life benchmark (ULB)
Equipment						% of revenue vehicles that exceeded the Useful life benchmark (ULB)
Facilities						The percentage of facilities (by group) that are rated less than 3.0 on the Transit Economic Requirements Model (TERM) Scale
Infrastructure						The percentage of track segments (by mode) that have performance restrictions. Track segments are measured to the nearest 0.01 of a mile.

PRHTA Group Plan					
Type of vehicle	Fleet Size	Default ULB	FY18 Base	FY19 Base	FY20 Targets
Trolleybus (TB)	35	13	44%	44%	34%
Cutaway Bus (CU)	104	10	6%	6%	15%
Van (VN)	90	8	39%	27%	40%
Bus (BU)	309	14	10%	10%	17%
Minibus (MB)	73	10	27%	14%	10%
School Bus (SB)	1	14	0%	0%	0%
Automobile (AU)	25	8	0%	0%	0%
Minivan (MV)	0	8	0%	0%	0%
Articulated bus	8	14	0%	0%	0%
Asset-Equipment					
Automobiles (AO)	58	8	53%	53%	24%
Truck and other rubber vehicles	26	14	45%	45%	62%
Maritime Transport Authority					
Vessels	3	42	0%	0%	0%

ATI-TU					
Asset – Rolling Stock	Fleet	FTA Default ULB	FY18 Base	FY19 Base	FY20 Targets
Heavy Rail Passenger Car (HR)	74	31	0%	0%	0%
Asset-Equipment					

Automobile (AO)	32	8	28%	34%	0%
Trucks and other rubber vehicles	14	14	64%	56%	30%
Asset-Facilities	Facilities	TERM Scale (below 3)	FY18 Base	FY19 Targets	FY20 Targets
Passenger/Parking	16	3	0%	0%	0%
Administrative/Maintenance	2	3	0%	0%	0%
Asset-Infrastructure	Track Segments	Performance Restriction	FY18 Base	FY19 Targets	FY20 Targets
Rail Fixed Guideway	53	0.01 of a mile	1.65	5	5%

Appendix F KEY TERMS

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

A tangible entity, or system of entities, that are owned, leased or maintained by the transit provider.

Lifecycle

The time elapsed between an acquisition and disposition of an asset. This can include the planning, design, procurement, construction, operations, maintenance, rehabilitation and disposal phases.

State of Good Repair (SGR)

Defined by 49 U.S.C. Chapter 53 as the condition in which a capital asset is able to operate at a full level of performance. For rolling stock and non-revenue vehicles, assets in a SGR are those with an active life lower than their Useful Life Benchmark. For facilities, assets in a SGR are those scoring 3.0 or higher on the condition assessment rating score.

Statewide Transportation Improvement Plan (STIP)

A multi-year, statewide intermodal program of transportation projects outlining all capital transportation projects in a 4-year period. The STIP is an FTA requirement under 49 U.S.C. 5304(g) and is developed in cooperation with the MPO.

TERM Scale

A one to five rating scale used in FTA’s Transit Economic Requirements Model (TERM) to describe the condition of an asset, where a score of one indicates poor condition and a score of five indicates excellent 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.

Tier-II 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 (1) one hundred (100) or fewer vehicles in revenue service during peak regular service across all non-rail fixed route modes or in any one non-fixed route mode, (2) a subrecipient under the 5311 Rural Area Formula Program, (3) or any American Indian tribe.



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.”

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.” Useful life is essentially the number of years an asset is expected to remain in service before being eligible for replacement, retirement or disposal.

Unified Planning Work Program (UPWP)

Defined by 23 CFR 450.308(b) as an annual or biennial statement of work identifying the planning priorities and activities to be carried out within a metropolitan planning area. Metropolitan planning organizations are required to develop UPWPs to govern work programs for the expenditure of FHWA and FTA planning funds.

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 essentially denotes the expectation of an asset’s life (in years) based upon its operating environment, and usually pertains to rolling stock or non-revenue vehicles only.