

Green Mountain Transit Authority Transit Asset Management Plan (TAMP)



TAM Plan Name: Green Mountain Transit

TAM Plan Type: Tier II

Agency Name: Green Mountain Transit Authority

Executive Name: Jon Moore

Last Modified Date: 09/15/2022

Introduction

Brief Overview

The Green Mountain Transit Authority (“the Authority”) is committed to operating a public transportation system that offers reliable, accessible and convenient service with safe vehicles and facilities. Transit Asset Management (TAM) is an administrative process whose aim is maintaining all of the assets of the agency in a State of Good Repair (SGR). This process includes investment in new assets, rehabilitation and replacement of aging assets, and the use of measures to track performance and enable the agency to avoid failures and breakdowns to the extent possible.

The Authority is currently operating as a FTA-defined Tier II transit operator in compliance with 49 CFR § 625.45 (b)(1). Tier II transit providers are those transit agencies that do not operate rail fixed-guideway public transportation systems and have either 100 or fewer vehicles in fixed-route revenue service during peak regular service, or have 100 or fewer vehicles in general demand response service during peak regular service hours.

This TAM Plan outlines how GMT will assess, monitor, and report the physical condition of assets utilized in the operation of its public transportation system. This document shall cover the period of 10/1/2022 to 9/30/2026. The Authority will amend this TAMP when there is a significant change to staff, assets, and/or operations occurring at the Authority.

Methods for Target Setting

When developing Useful Life Benchmarks (ULB), the Authority recognized and took into account the local operating environment of its assets, historical maintenance records, manufacturer guidelines, and the

default asset ULB developed by the FTA. In its Circular 5010.1E, FTA lists the following ULBs for various rolling stock classes:

a) Buses:

- 1 Large, heavy-duty transit buses including over-the-road buses (approximately 35' – 40' or larger including articulated buses):

At least 12 years of service or an accumulation of at least 500,000 miles.

- 2 Small size, heavy-duty transit buses:

At least 10 years or an accumulation of at least 350,000 miles.

- 3 Medium-size, medium-duty transit buses:

At least seven years or an accumulation of at least 200,000 miles.

- 4 Medium-size, light-duty transit buses:

At least five years or an accumulation of at least 150,000 miles.

b) Light Duty Vehicles:

Other light-duty vehicles used as equipment and to transport passengers (revenue service), such as regular and specialized vans, sedans, and light-duty buses including all bus models exempt from testing in the current 49 CFR part 665:

At least four years or an accumulation of at least 100,000 miles.

However, when fleets are entered into the National Transit Database asset modules, the default ULBs for age are different from the above and consistent with what FTA publishes as its "ULB Cheat Sheet," shown on the next page. The Cheat Sheet does not include mileage benchmarks, and it does not have subclassifications for medium-duty buses or cutaways.

GMT's ULBs are consistent with those from the circular, in that all heavy-duty buses (transit and over-the-road coaches) have an expected useful life of 12 years rather than the 14 years shown on the Cheat Sheet. For its cutaway fleet, which is used exclusively for paratransit in GMT's urban area but for all types of service in the rural area, GMT uses a ULB of 5 years or 150,000 miles, which is consistent with a medium-size light duty bus from the circular, but only half the useful life of a "cutaway" from the Cheat Sheet. The harsh operating environment in northwest and central Vermont justifies the use of the shorter ULB for cutaway buses, as the road salt and poor road conditions make vehicles unsafe to use and uncomfortable for passengers well before the 10 year mark.

GMT has few light duty vehicles in its revenue fleet (and automobiles are being phased out), but for these assets, the guidance from the circular (4 years, 100,000 miles) is used, rather than the 8 years from the Cheat Sheet. This ULB will apply only to minivans and modified vans after the automobiles are disposed of.

All other assets (facilities, equipment, and non-revenue vehicles) use FTA's default ULBs for age from its asset module.

Default Useful Life Benchmark (ULB) Cheat Sheet

Source: 2017 Asset Inventory Module Reporting Manual, Page 53

Transit Agencies will report the age of all vehicles to the National Transit Database. FTA will track the performance of revenue vehicles (Rolling Stock) and service vehicles (Equipment), by asset class, by calculating the percentage of vehicles that have met or exceeded the useful life benchmark (ULB).

FTA has set a default ULB as the expected service years for each vehicle class in the table below. ULB is the average age-based equivalent of a 2.5 rating on the FTA Transit Economic Requirements Model (TERM) scale. Transit agencies can adjust their Useful Life Benchmarks with approval from FTA.

Vehicle Type	Default ULB (in years)
AB Articulated bus	14
AG Automated guideway vehicle	31
AO Automobile	8
BR Over-the-road bus	14
BU Bus	14
CC Cable car	112
CU Cutaway bus	10
DB Double decked bus	14
FB Ferryboat	42
HR Heavy rail passenger car	31
IP Inclined plane vehicle	56
LR Light rail vehicle	31
MB Minibus	10
MO Monorail vehicle	31
MV Minivan	8
Other rubber tire vehicles	14
RL Commuter rail locomotive	39
RP Commuter rail passenger coach	39
RS Commuter rail self-propelled passenger car	39
RT Rubber-tired vintage trolley	14
SB School bus	14
Steel wheel vehicles	25
SR Streetcar	31
SV Sport utility vehicle	8
TB Trolleybus	13
TR Aerial tramway	12
VN Van	8
VT Vintage trolley	58

Methods for Condition Assessment

In the past, GMT's assessment of condition of its rolling stock has been based largely on the age of the vehicles rather than an actual evaluation of the vehicles' condition. Going forward, GMT is setting a policy goal to place more emphasis on direct condition assessments and to incorporate this measure more fully into its asset management and capital investment decisions.

All rolling stock have routine preventive maintenance performed at least every six months. Beginning in FY2023, maintenance personnel will be instructed to incorporate a condition assessment into the maintenance activity. The Capital Projects staff, working with maintenance and IT, will develop a solution to make the recording and tracking of condition assessment as easy as possible for the maintenance staff.

Performance Targets & Measures

Agency Name	Asset Category	Asset Class	2022 Target	2023 Target	2024 Target	2025 Target	2026 Target	2027 Target
GMT	Equipment	Non Revenue/Service Automobile	50%	20%	20%	20%	10%	10%
GMT	Equipment	Other Rubber Tire Vehicles	11%	22%	22%	11%	11%	11%
GMT	Facilities	Administrative / Maintenance Facilities	50%	50%	0%	0%	0%	0%
GMT	Facilities	Passenger Facilities	0%	0%	0%	0%	0%	0%
GMT	Revenue Vehicles	BR - Over-the-road Bus	0%	0%	0%	100%	n/a	n/a
GMT	Revenue Vehicles	BU - Bus	44%	34%	35%	29%	21%	13%
GMT	Revenue Vehicles	CU - Cutaway	31%	17%	9%	28%	38%	24%
GMT	Revenue Vehicles	VA – Vans	0%	0%	0%	0%	50%	50%
GMT	Revenue Vehicles	MV - Minivan	19%	0%	31%	25%	25%	31%

TAM and State of Good Repair (SGR) Policy

A capital asset is in a state of good repair (SGR) when each of the following objective standards is met:

- (1) If the asset is in a condition sufficient for the asset to operate at a full level of performance. An individual capital asset may operate at a full level of performance regardless of whether or not other capital assets within a public transportation system are in a SGR;
- (2) The asset is able to perform its manufactured design function;
- (3) The use of the asset in its current condition does not pose an identified unacceptable safety risk and/or deny accessibility; and
- (4) The asset's life-cycle investment needs have been met or recovered, including all scheduled maintenance, rehabilitation and replacements (ULB).

TAM Vision

GMT's Transit Asset Management System enables the authority to plan and budget for capital investments and maintenance expenditures in order to maximize operational reliability and passenger comfort and safety.

TAM Goals

Goal	Objectives
Increase mean distance between failures by 10% annually.	Monitor vehicle condition more closely, increase preventive maintenance activities, replace vehicles when it is no longer cost effective to repair them
Reduce customer complaints about facilities by 10%	Monitor and proactively repair broken or vandalized shelters
Eliminate failures in accessibility equipment	Test ramps, kneeling features and lifts on a regular basis and repair proactively.
Eliminate systems failures in GMT buildings	Maintain regular inspections of HVAC, sprinklers, alarms, elevators, etc.

TAM Roles and Responsibilities

Department / Individual	Role (Title and/or Description)	Sub-Recipient
Matthew Kimball	Grants and Capital Projects Manager	Green Mountain Transit Authority
Jon Moore	General Manager	Green Mountain Transit Authority
Connie Englert	Director of Transportation	Green Mountain Transit Authority

Capital Asset Inventory

A summary of GMT's assets is provided in the table below. A detailed listing is included in the appendix.

Asset Inventory Summary

Asset Category/Class	Total Number	Avg Age	Avg Mileage	Avg Replacement Cost/Value	Total Replacement Cost/Value
Revenue Vehicles	164	6.3	168,982	\$313,275	\$51,377,163
AO - Automobile	7	8.3	73,923	\$65,100	\$455,700
BR - Over-the-road Bus	7	9.6	278,460	\$744,609	\$5,212,263
BU - Bus	62	9.6	294,722	\$584,758	\$36,255,000
CU - Cutaway Bus	76	3.5	80,900	\$114,118	\$8,673,000
MV - Mini-van	12	3.2	53,498	\$65,100	\$781,200
Equipment	17	7.0	47,330	\$30,507	\$518,625
Non Revenue/Service Automobile	9	6.3	52,216	\$25,955	\$233,595
Other Rubber Tire Vehicles	8	7.8	40,001	\$35,629	\$285,030
Facilities	3	26.7	N/A	\$8,065,904	\$24,197,712
Maintenance	2	37.0	N/A	\$7,054,856	\$14,109,712
Passenger Facilities	1	6.0	N/A	\$10,088,000	\$10,088,000

Condition Assessment

A summary of the condition of GMT's assets is shown in the table below. A detailed listing of age and mileage by asset is included in the appendix.

Asset Condition Summary

Asset Category/Class	Total Number	Avg Age	Avg Mileage	Avg Replacement Cost/Value	Total Replacement Cost/Value	% At or Exceeds ULB	% of Track Miles in Slow Zone	Number of Facilities less than 3 on TERM scale
Revenue Vehicles	164	6.3	168,982	\$313,275	\$51,377,163	41%	N/A	N/A
AO - Automobile	7	8.3	73,923	\$65,100	\$455,700	100%	N/A	N/A
BR - Over-the-road Bus	7	9.6	278,460	\$744,609	\$5,212,263	0%	N/A	N/A
BU - Bus	62	9.6	294,722	\$584,758	\$36,255,000	55%	N/A	N/A
CU - Cutaway Bus	76	3.5	80,900	\$114,118	\$8,673,000	30%	N/A	N/A
MV - Mini-van	12	3.2	53,498	\$65,100	\$781,200	25%	N/A	N/A
Equipment	17	7.0	47,330	\$30,507	\$518,625	29%	N/A	N/A
Non Revenue/Service Automobile	9	6.3	52,216	\$25,955	\$233,595	44%	N/A	N/A
Other Rubber Tire Vehicles	8	7.8	40,001	\$35,629	\$285,030	12%	N/A	N/A
Facilities	3	26.7	N/A	\$8,065,904	\$24,197,712	N/A	N/A	1
Maintenance	2	37.0	N/A	\$7,054,856	\$14,109,712	N/A	N/A	1
Passenger Facilities	1	6.0	N/A	\$10,088,000	\$10,088,000	N/A	N/A	0

Decision Support

Decision Support Tools

The following tools are used in making investment decisions:

Process/Tool	Brief Description
Dossier Fleet Management & Maintenance Software	The Dossier software allows the Authority's Maintenance Department to track, schedule, and record all vehicle related maintenance activities in a single platform. This software program also allows for custom reporting, inventory parts usage and vendor management activities, track pending work, create repair orders, create quotes for parts and equipment for use in procurement activities, track personnel activities, inventory vehicles, track fuel usage, and track asset/component warranty data.
Fleet, Facility & Equipment Maintenance Plan	The GMT Fleet, Facility & Equipment Maintenance Plan details all the policies and procedures related to Authority-owned fleet, facility and equipment. It includes maintenance standards, inspection processes, PM schedules, work order processes, inventory of facility components and inspection checklists.
Vehicle Replacement Schedule Spreadsheets	GMT maintains a spreadsheet, updated twice per year, with all rolling stock and service vehicle assets. The data includes make/model, fuel type, length, seats, mileage, age and ULBs. The spreadsheet allows the authority to plan up to 13 years in advance when each vehicle is eligible for replacement.
Asset Condition Assessments	In support of annual NTD submissions and as part of its regular vehicle maintenance process, GMT evaluates the condition of its assets using the 5-point TERM scale. This condition assessment complements the age and mileage figures in supporting decisions about asset maintenance, rehabilitation and replacement.

Investment Prioritization

The primary management approach to prioritize investments is to maintain a state of good repair through risk mitigation. This management philosophy applies risk mitigation strategies (policies and procedures) throughout the assets' life cycle, both from a maintenance perspective (breakdowns) and a safety & accessibility perspective (accidents/ADA requirements).

Throughout each asset's life cycle, the Authority shall monitor all assets for unsafe and inaccessible conditions. However, identifying an opportunity to improve the safety of an asset does not necessarily indicate an unsafe condition. When the Authority encounters and identifies an unacceptable safety risk associated with an asset, the asset shall be ranked with higher investment prioritization, to the extent practicable. The Authority's risk management philosophy is the proactive approach of identifying future projects and ranking preventative projects with better return on investment higher in the investment prioritization risk.

In the table below, there are no items listed with a "Low" priority. GMT's capital plan does have numerous items with a low priority ranking, but these are mostly lower-cost items or replacement/repair of existing assets that would not qualify them for inclusion on this list.

Project Name	Project Year	Asset Category	Asset Class	Cost	Priority	Updated Date
Six Replacement Cutaway Buses	2023	Revenue Vehicles	CU	\$720,000	High	7/25/22
Two Non-BRT 40' HD Diesel Buses	2023	Revenue Vehicles	BU	\$1,155,000	High	7/25/22
Two Replacement Minivans for CIDER	2023	Revenue Vehicles	MV	\$130,000	Medium	7/25/22
Two Replacement Non-Revenue Vehicles (Hybrid)	2023	Equipment	Service vehicles	\$63,500	Medium	7/25/22
Four Minivans @ \$65,000 each for microtransit	2023	Revenue Vehicles	MV	\$260,000	High	7/25/22
Two Replacement 40' Non-BRT HD Diesel Buses	2023	Revenue Vehicles	BU	\$1,155,000	High	7/25/22
Five Replacement SSTA Cutaway Vehicles	2023	Revenue Vehicles	CU	\$490,000	High	7/25/22
Replace Four In-Ground Bus Lifts	2023	Facilities	Maint.	\$1,000,000	High	7/25/22
Replacement Non-Revenue Vehicle (Hybrid)	2023	Equipment	Service vehicles	\$31,750	Medium	7/25/22
Five Replacement <30' Cutaway Buses	2024	Revenue Vehicles	CU	\$357,500	High	7/25/22
Two Replacement >30' Medium-Duty Cutaway Buses	2024	Revenue Vehicles	CU	\$374,850	High	7/25/22
Replacement 40' Heavy-Duty Bus (Diesel)	2024	Revenue Vehicles	BU	\$606,375	High	7/25/22
Replacement 5310 Cutaway	2024	Revenue Vehicles	CU	\$110,775	High	7/25/22
New Washington County Facility Land Acquisition	2024	Facilities	Maint.	\$1,000,000	High	7/25/22
Two Replacement 40' Heavy-Duty Buses (Electric)	2024	Revenue Vehicles	BU	\$1,837,500	High	7/25/22
Three Replacement 40' Heavy-Duty Buses (Diesel)	2024	Revenue Vehicles	BU	\$1,819,125	High	7/25/22
Four Replacement 5310 Vehicles (Chittenden County ADA/E&D)	2024	Revenue Vehicles	CU	\$410,865	High	7/25/22
Replacement Shop Truck (One Ton)	2024	Equipment	Service vehicles	\$51,250	High	7/25/22
Electric Bus Charging Infrastructure	2024	Equipment	Custom Category	\$37,000	High	7/25/22
101 QCP Building LED Lighting Upgrade	2024	Facilities	Admin.	\$135,000	Medium	7/25/22
Six Replacement <30' Cutaway Buses	2025	Revenue Vehicles	CU	\$1,058,400	High	7/25/22

Project Name	Project Year	Asset Category	Asset Class	Cost	Priority	Updated Date
Three Replacement Minivans	2025	Revenue Vehicles	MV	\$215,318	High	7/25/22
Two Replacement Minivans - (Electric)	2025	Revenue Vehicles	MV	\$181,913	High	7/25/22
Electric Vehicle Charging Infrastructure	2025	Equipment	Custom Category	\$18,500	High	7/25/22
New Washington County Facility Construction	2025	Facilities	Mainte.	\$4,900,000	High	7/25/22
Two Replacement 40' Heavy-Duty Buses (Electric)	2025	Revenue Vehicles	BU	\$1,929,375	High	7/25/22
Three Replacement 40' Heavy-Duty Buses (Diesel)	2025	Revenue Vehicles	BU	\$1,910,081	High	7/25/22
Five Replacement 5310 Vehicles (Chittenden County ADA/E&D)	2025	Revenue Vehicles	CU	\$540,225	High	7/25/22
31 Queen City Park Road Facility Renovation	2025	Facilities	Maint.	\$3,000,000	High	7/25/22
Electric Bus Charging Infrastructure	2025	Equipment	Custom Category	\$38,000	High	7/25/22
Upgrade Garage Doors to Rapid Rise Door System	2025	Facilities	Custom Category	\$137,750	Medium	7/25/22
Two Replacement <30' Cutaway Buses (Electric)	2026	Revenue Vehicles	CU	\$668,528	High	7/25/22
Seven Replacement <30' Cutaway Buses (Gasoline)	2026	Revenue Vehicles	CU	\$972,405	High	7/25/22
Electric Vehicle Charging Infrastructure	2026	Equipment	Custom Category	\$19,000	High	7/25/22
Two Replacement 35' Heavy-Duty Buses (Electric)	2026	Revenue Vehicles	BU	\$2,975,096	High	7/25/22
Replacement 30' Letenda Bus (Electric)	2026	Revenue Vehicles	BU	\$1,018,710	High	7/25/22
Two Replacement 35' Heavy-Duty Buses (Diesel)	2026	Revenue Vehicles	BU	\$1,324,902	High	7/25/22
Seven Replacement 5310 Vehicles (Chittenden County ADA/E&D)	2026	Revenue Vehicles	CU	\$793,320	High	7/25/22
Electric Bus Charging Infrastructure	2026	Equipment	Custom Category	\$159,500	High	7/25/22
Three Replacement <30' Cutaway Buses (Electric)	2027	Revenue Vehicles	CU	\$1,052,932	High	7/25/22
Four Replacement <30' Cutaway Buses (Gasoline)	2027	Revenue Vehicles	CU	\$437,582	High	7/25/22
Replacement 40' Heavy-Duty Bus (Electric)	2027	Revenue Vehicles	BU	\$1,063,568	High	7/25/22
Replacement 5310 Vehicles (CIDER - 2 Cutways + 1 Minivan)	2027	Revenue Vehicles	CU	\$335,601	High	7/25/22
Electric Vehicle Charging Infrastructure	2027	Equipment	Custom Category	\$100,000	High	7/25/22
Replacement Non-Revenue Vehicle (Hybrid)	2027	Equipment	Service vehicles	\$35,750	Medium	7/25/22
Three Replacement 30' Letenda Buses (Electric)	2027	Revenue Vehicles	BU	\$3,208,937	High	7/25/22
Two Replacement 35' Heavy-Duty Buses (Diesel)	2027	Revenue Vehicles	BU	\$1,391,147	High	7/25/22
Replacement 5310 Vehicles (Chittenden County ADA/E&D)	2027	Revenue Vehicles	CU	\$885,010	High	7/25/22
Replacement 5310 Vehicles (Essex)	2027	Revenue Vehicles	CU	\$119,120	High	7/25/22
Electric Bus Charging Infrastructure	2027	Equipment	Custom Category	\$59,500	High	7/25/22
Data Link between 101 QCP and 31 QCP	2027	Equipment	Custom Category	\$150,000	Medium	7/25/22