



TAM 2018 NTD Year 1 Summary: Overview

This series of fact sheets summarizes data that transit agencies reported to the National Transit Database (NTD), providing an inventory and assessment of the condition of assets used to provide transit service

nationally. The data are from 2018, the first year in which transit agencies reported this information on transit assets, in accordance with the requirements of the Transit Asset Management (TAM) rule (49 CFR 625).

BACKGROUND ON TRANSIT ASSET MANAGEMENT REQUIREMENTS AND REPORTING

The Moving Ahead for Progress in the 21st Century Act (MAP-21) required the Secretary to develop rules to establish a system to monitor and manage public transportation assets to improve safety and increase reliability and performance, and to establish performance measures, and the Fixing America's Surface Transportation (FAST) Act reaffirmed this requirement. On July 26, 2016, FTA published the TAM Final Rule.

The purpose of the Final Rule is to help achieve and maintain a state of good repair (SGR) for the nation's public transportation assets. TAM is a business model that uses transit asset condition to guide the optimal prioritization of funding. The 23rd Conditions and Performance Report notes that there is an estimated \$98.8 billion transit SGR backlog.¹

The regulations apply to all transit providers that are recipients or subrecipients of federal financial assistance under 49 U.S.C. Chapter 53 and own, operate, or manage transit capital assets used in the provision of public transportation. The Final Rule groups providers into two categories: Tier I and Tier II.

¹Source: [23rd Conditions and Performance Report](#)

TIER I

Operates rail
OR
≥ 101 vehicles across all fixed route modes
OR
≥ 101 vehicles in one non-fixed route mode

TIER II

Subrecipient of 5311 funds
OR
American Indian Tribe
OR
≤ 100 vehicles across all fixed route modes
OR
≤ 100 vehicles in one non-fixed route mode

STATE OF GOOD REPAIR (SGR)

The SGR is the condition in which a capital asset is able to operate at a full level of performance. A capital asset is in a state of good repair when that asset:

1. Is able to perform its designed function,
2. Does not pose a known unacceptable safety risk, and
3. Its lifecycle investments have been met or recovered.

Each agency subject to the rule is required to develop a compliant TAM Plan (first required in October 2018), submit an annual data report to the NTD

with performance targets and status (inventory and condition assessment), and submit an annual narrative report (beginning in October 2019).

Purpose of this Report

This overview report and the subsequent series of more detailed fact sheets provide the first comprehensive look at transit agencies' reported data of a wide range of the primary assets supporting transit service, including revenue vehicles, equipment (service vehicles), facilities, and infrastructure (guideway and track). The data include information on the scope of assets used to support transit service across the country, including number and age, as well as current

condition and targets, for their ability to maintain them in a state of good repair.

The data are self-reported to the NTD by transit agencies based on the best quality information available to them. This information provides a snapshot of the overall condition of the country's public transportation system.

Evaluating Asset Performance and State of Good Repair

FTA requires transit agencies to measure asset performance by asset class, which means a subgroup of capital assets within an asset category. Table 1 shows assets which must be reported to the NTD and the applicable performance measures. Assets that meet or exceed the thresholds of the associated performance metrics (e.g., vehicles beyond useful life benchmark, track with performance restrictions, and facilities below the 3.0 TERM rating) are considered to be not in SGR. Transit agencies report on asset condition for the current year and set targets for each asset class for the coming year. The targets reflect an agency's expectation of its ability to keep assets in a state of

good repair, based on their internal decision making procedures. For example, an agency that has 60% of cutaway buses in SGR in the current year and sets a target of 65% of cutaway buses in SGR next fiscal year is estimating an SGR improvement of 5 percentage points. There are no rewards for meeting the targets and no penalties for not meeting the targets.

While the raw data is reported to NTD as percentages not in SGR, this report and series of factsheets simplifies the data to present the data as percentages of asset classes within SGR.

TABLE 1: ASSET CATEGORIES AND PERFORMANCE MEASURES

Asset Category	Performance Measure	Key Metric
<p>Equipment: Non-revenue support-service and maintenance vehicles</p>	<p>Percentage of non-revenue vehicles met or exceeded ULB</p>	<p>Useful Life Benchmark (ULB): the expected lifecycle of a capital asset for a particular Transit Provider’s operating environment, or the acceptable period of use in service for a particular Transit Provider’s operating environment</p>
<p>Rolling Stock: Revenue vehicles by mode</p>	<p>Percentage of revenue vehicles met or exceeded ULB</p>	
<p>Infrastructure: Only rail fixed-guideway, track, signals and systems</p>	<p>Percentage of track segments with performance restrictions</p>	<p>Performance restriction: exists on a segment of rail fixed guideway when the maximum permissible speed of transit vehicles is set to a value that is below the guideway’s full service speed. These restrictions are often referred to as “slow zones.”</p>
<p>Facilities: Maintenance and administrative facilities; and passenger stations (buildings) and parking facilities</p>	<p>Percentage of assets with condition rating below 3.0 on FTA TERM Scale</p>	<p>The Transit Economic Requirements Model (TERM) scale for defining asset condition:</p> <ul style="list-style-type: none"> 1 – poor 2 – marginal 3 – adequate 4 – good 5 – excellent

The 2018 reported data provide an opportunity to look comprehensively at SGR across the industry, identifying assets within each category that are beyond their useful lives or in poor condition. However, note that the TAM rule allowed transit agencies to

conduct condition assessments of facilities in a phased approach over four years. FTA anticipates that the backlog estimate may change pending more complete asset condition assessment data.

Initial Results

This section provides highlights of the initial results, with more detailed data analysis and descriptions following. Table 2 provides an initial record of the

overall transit asset inventory, and an estimate of those assets in SGR, using data provided in the NTD.

TABLE 2: TRANSIT ASSET INVENTORY AND ESTIMATED STATE OF GOOD REPAIR

Asset Category	Total # of Assets	% Assets in SGR
Revenue Vehicles	183,686 Vehicles	72%
Equipment (Service Vehicles)	29,501 Vehicles	66%
Facilities	13,857 Facilities	87%
Infrastructure (Track)	14,727 Miles of track	96%

Highlights

- Based on the data reported by transit agencies, an estimated 73% of the nation’s transit capital assets are in SGR.
- Most of the nation’s track and guideway was built after 1980, though a significant portion of commuter rail and heavy rail track were built before the 1930s.
- 3% of facilities (400) in use today were built at the turn of the 20th century
- Tier II agencies (rural and smaller urban providers) have a higher percentage of bus and van assets not in SGR, but a higher percentage of facilities that are in SGR.
- 28% of all revenue vehicles are currently beyond their ULB, and an additional 24% of revenue vehicles will exceed their ULB in the next 4 years.
- 34% of all service vehicles are currently beyond their ULB, and an additional 26% of service vehicles will exceed their ULB in the next 4 years.
- 4% of track miles were reported as under performance restriction for 2018.
- 11% of track miles are currently beyond their expected service life, and an additional 5% will exceed their expected service life in the next 4 years.
- Transit agencies set targets reflecting expectation of their ability to maintain assets in SGR. The targets reflect an expectation to maintain 90% SGR for most assets.
- In general, the 2019 targets for revenue vehicles and for infrastructure expected more assets to be in SGR than targets set for facilities and equipment.
- There were 67 Group TAM Plans, developed by 18 direct recipients and 49 DOTs, with a total of 1,941 rural, tribal, and small urban agencies participating.
- Nationally, approximately 20% of all transit assets were reported in Group Plans; the vast majority of those assets are revenue vehicles.
- More than half of Group Plans have 15 or fewer participants; there were two plans with greater than 100 participants.

The following sections of this document provide additional detail on the highlights for Group Plans, each of the four asset categories, and Performance Targets.

GROUP PLANS

Group plans are designed to reduce the burden on smaller transit providers by consolidating administrative and reporting efforts by the Sponsor. State Departments of Transportation (State DOTs) are the most common sponsors, but Metropolitan Planning Organizations (MPOs) or larger transit agencies may also sponsor group plans. Sponsors are required to include their

Tier II subrecipients that do not have a direct funding relationship with FTA, and have the option of inviting other small urban providers to join the Group Plan. In 2018, there were a total of 67 Group TAM Plan sponsors, developed by 18 direct recipients and 49 DOTs, covering a total of 1,941 participants.

Highlights

- Approximately 85% of subrecipient agencies opted to join a Group Plan, with the remainder developing individual TAM plans.
- Nationally, approximately 20% of all transit assets are included in Group Plans, the majority of which are revenue vehicles.
- Approximately half of Group Plans have 15 or fewer participants; there were two plans with greater than 100.

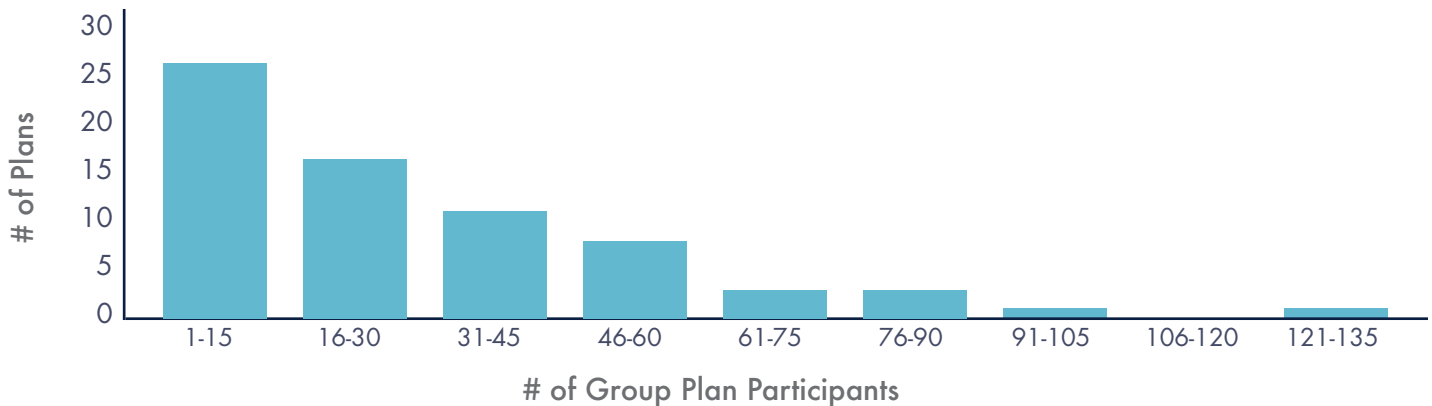
TABLE 3: NUMBER OF TRANSIT ASSETS INCLUDED IN GROUP PLANS

Asset Category	Number of Assets Included in Group Plans	Total # of Assets Nationwide	Percent of Assets Included in Group Plans
Revenue Vehicles	40,289	183,686	22%
Equipment	1,842	29,501	6%
Facilities	2,510	13,857	18%
Total	44,641	227,044	20%

Agencies Participating in Group Plans

Most Group Plans had fewer than 50 participating agencies, with approximately 40% having 15 or fewer participants. Only two plans had over 100 participants. Figure 1 shows the distribution of the number of participants in Group Plans.

FIGURE 1: DISTRIBUTION OF PARTICIPANTS IN GROUP PLANS



REVENUE VEHICLES

Revenue vehicles are the most common type of capital assets used in the provision of public transit, and the most familiar assets to the public. There are 28 classes of revenue vehicles reported to the NTD; for ease of understanding, this factsheet combines them into four asset types: rail vehicles, buses, vans,

and other vehicles. The full breakout of how each asset type reported is below in Table 4. Each asset type has multiple asset classes with detailed age and condition information. Figure 2 shows the total number of revenue vehicles in the U.S., organized by asset type and agency tier.

Highlights

- Overall, a smaller percentage of rail vehicles will require replacement over the next four years compared to other types of revenue vehicles.
- Many of the higher-cost vehicle asset classes (e.g., rail vehicles) are in SGR.
- Twenty-eight percent of all revenue vehicles are beyond their ULB and would cost an estimated \$31 billion to replace. An additional 24% of vehicles will exceed their ULB in the next 4 years, at a cost of an additional \$16 billion.²

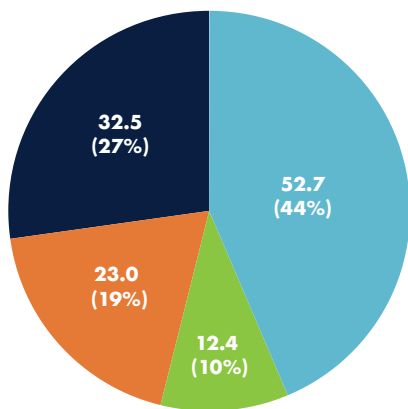
²Cost estimate calculated using cost values for each vehicle class estimated from the TERM model

TABLE 4: CATEGORIZATION OF ASSETS

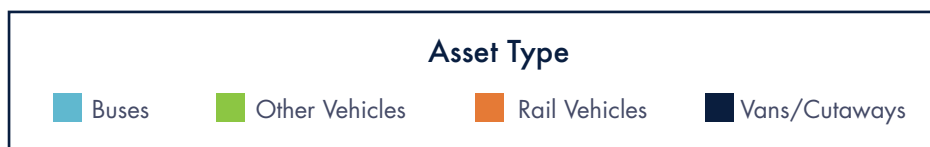
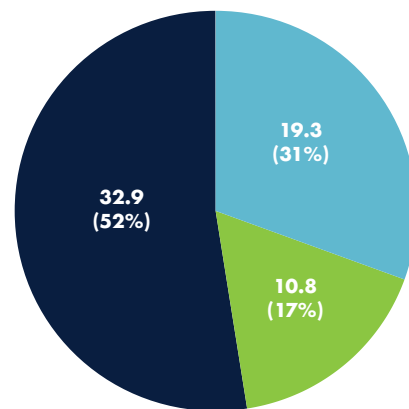
Asset Type	Asset Classes	
Rail Vehicles	Aerial Tramway	Commuter Rail Self-Propelled
	Automated Guideway Vehicle	Passenger Car
	Cable Car	Heavy Rail Passenger Car
	Commuter Rail	Inclined Plane Vehicle
	Locomotive	Light Rail Vehicle
	Commuter Rail	Monorail Vehicle
	Passenger Coach	Streetcar Rail
Buses	Articulated Bus	School Bus
	Bus	Trolleybus
	Double Decker Bus	Vintage Trolley
	Over-the-Road Bus	
Vans/Cutaways	Cutaway	Van
Other Vehicles	Automobile	Other
	Ferry	SUV
	Minivan	

FIGURE 2: NUMBER OF TRANSIT REVENUE VEHICLES IN THE U.S. (THOUSANDS)

**TIER I VEHICLES
TOTAL: 120,502**



**TIER II VEHICLES
TOTAL: 63,184**



How Many Revenue Vehicle Assets Are Beyond Their ULB?

In order to measure the SGR for revenue vehicles, FTA has established default ULBs for each asset class. A ULB is the age at which each asset class will enter the SGR backlog; it can also be interpreted as the estimated replacement cycle for a specific asset class. FTA provided transit agencies with default values based on the federal Transit Economic Replacement Model (TERM). Transit agencies are also allowed to set a customized ULB, if they have reason to believe that FTA defaults do not accurately reflect their operating environment. On average, most agencies reported ULBs close to the default values. When

customized ULBs were reported, the majority were reported as lower than the FTA default, meaning that transit agencies felt their assets would not be in SGR as long as the default ULB.

The average years until replacement vary widely across asset classes on a national scale. Some classes are already beyond their ULB, while many will be approaching replacement in the next 4 years. Figures 3 and 4 indicate the percentage of assets that are beyond their ULB and therefore not in SGR.

FIGURE 3: PERCENTAGE OF TIER I ASSETS NOT IN SGR CURRENTLY AND IN NEXT FOUR YEARS

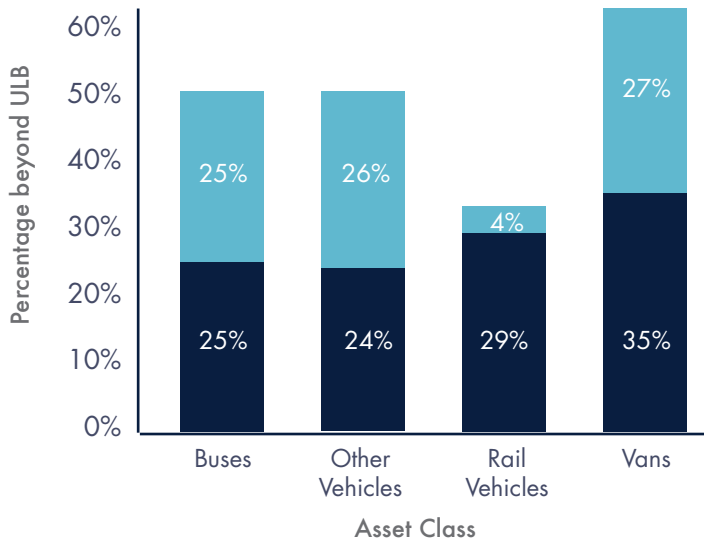
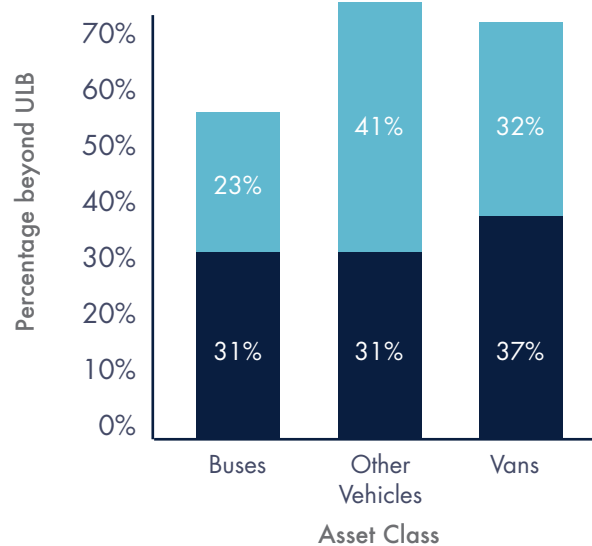


FIGURE 4: PERCENTAGE OF TIER II ASSETS NOT IN SGR CURRENTLY AND IN NEXT FOUR YEARS



SERVICE VEHICLES

Service Vehicles are vehicles used to support transit service, maintain revenue vehicles, and perform transit-oriented administrative activities. Examples include tow

trucks, track de-icing vehicles, and supervisor cars used by the transit agency.

Highlights

- Over 29,000 service vehicles are used by transit agencies to support operations (overall reported value \$3.6 billion).
- Thirty-four percent of all services vehicles are beyond their ULB, and would cost \$1.6 billion to replace. An additional 26% of vehicles will exceed their ULB in the next 4 years, at a cost of \$482 million.³
- The average age and need for replacement vary across asset classes:
 - Bus Service Vehicles are on average 7.6 years old, with 29% beyond their ULB.
 - Automobiles are on average 6.8 years old, with 43% beyond their ULB.
 - Rail Service Vehicles are on average 24 years old, and 53% are beyond their ULB. Overall, rail vehicles are more expensive and much more likely to be beyond their ULB and in need of replacement.

How Many Service Vehicles Do Agencies Own?

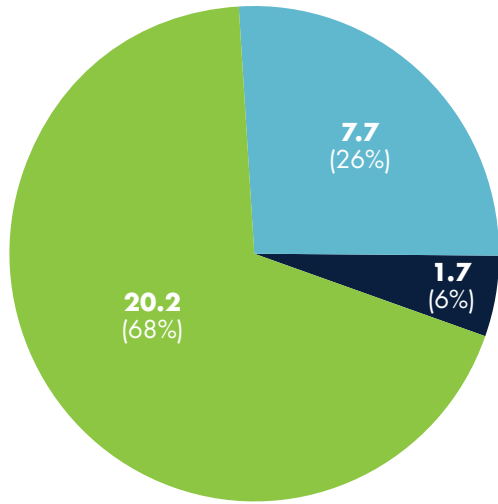
Nationwide, transit providers use nearly 30,000 vehicles to support transit service. These vehicles are used to maintain tracks, provide transportation for workers between sites, and support other crucial functions. The overall value of these vehicles in 2018 was \$3.6 billion (in 2018 dollars). Although rail service vehicles are the smallest group of assets within this category (1,700 vehicles), they make up the largest proportion of asset value (\$2.2 billion). Thirty-four percent of service vehicles are already beyond their expected ULB, meaning many are in need of replacement in the very near future. The total cost to

replace these assets is \$1.6 billion. An additional 26% of service vehicles will exceed their ULB in the next four years. These additional assets will cost \$482 million to replace, bringing the cost of replacing all service vehicles exceeding their ULB within the next four years to over \$2 billion.

Figure 5 shows the number of service vehicles organized by type. Figure 6 shows the replacement value of service vehicles exceeding their ULB within the next four years.

³Cost estimate calculated using service vehicle replacement cost values reported to NTD.

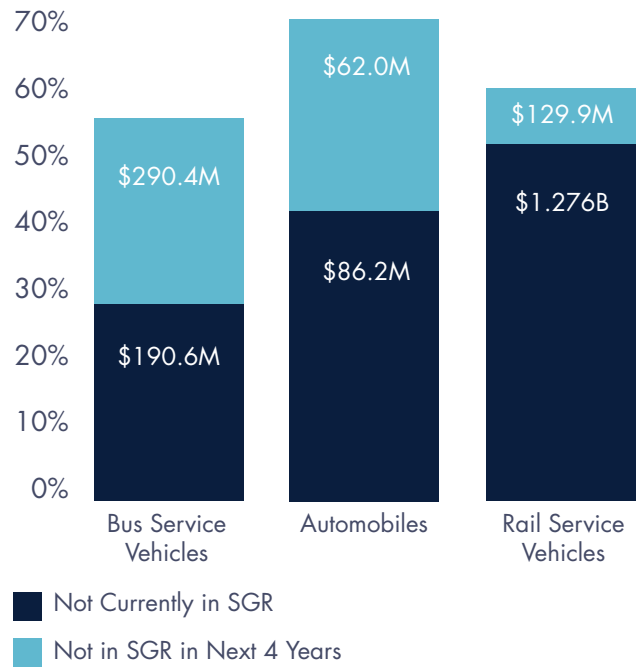
FIGURE 5: NUMBER OF VEHICLES (BY TYPE) (THOUSANDS)



Vehicle Type

- Automobiles
- Rail Service Vehicles
- Bus Service Vehicles

FIGURE 6: PERCENT AND REPLACEMENT VALUE OF SERVICE VEHICLES NOT IN SGR CURRENTLY AND IN THE NEXT FOUR YEARS



TRANSIT FACILITIES

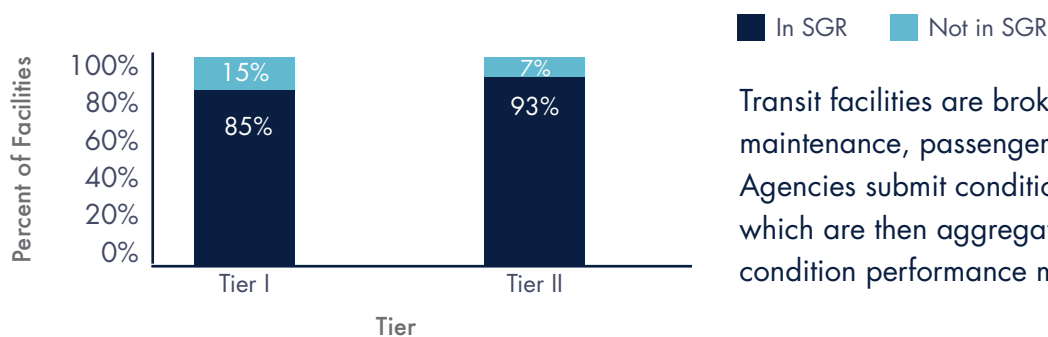
Transit agencies are required to conduct regular condition assessments of their assets, every four years. This process involves inspections that evaluate an asset’s physical and visual conditions, performance characteristics, and potential risks and impacts of failures. FTA requires transit agencies to assess and report facility condition to the NTD based on the

five-point scale used in TERM. An asset is considered in good repair if it has a rating of 3 (adequate), 4 (good), or 5 (excellent) on this scale. Likewise, a facility is deemed to not be in good repair if it has a rating of 1 (poor) or 2 (marginal).

Highlights

- Transit agencies reported information for nearly 14,000 facilities nationwide.
- Eighty-seven percent of transit facilities nationwide are in SGR, with a higher percentage of Tier II agency facilities in SGR than Tier I agency facilities.⁴
- It would cost an estimated \$5 billion to replace the facilities not in SGR.⁵
- The average age of facilities is 28 years, with approximately 400 facilities constructed before 1900. 84% of all facilities built between 1960 and 2019 are in SGR.

FIGURE 7: PERCENT OF FACILITIES IN SGR BY TIER



Transit facilities are broken into four asset classes: maintenance, passenger, administrative, and parking. Agencies submit condition ratings for each facility, which are then aggregated to calculate the facility condition performance measure metric.

TABLE 5: TRANSIT FACILITIES (BY ASSET CLASS)⁶

Asset Class	Average Condition Assessment	Number of Facilities	Total Size (sq. ft.)	Percent of Facilities in SGR
Maintenance	3.4	2,541	67,865,991	84%
Passenger	3.4	4,954	134,014,782	86%
Administrative	3.7	836	13,998,873	92%
Parking	3.4	3,420	52,575,197	91%

⁴Agencies were not required to provide condition assessment for all facilities in the first year; this value is expected to change in the coming years as more complete data is reported to NTD.

⁵Estimated using a calculation of \$162/sq ft. applied to facilities not in SGR. The multiplier represents the higher end of a cost range to construct commercial facilities.

⁶Analysis was only conducted for facilities with data on condition assessment and square footage. This explains the discrepancy between the number of facilities included among different tables.

TRACK AND INFRASTRUCTURE

As reported to the NTD, there are 14,727 miles of track used to provide transit service nationally. This includes track serving commuter rail, heavy rail, light rail, and other types of rail systems (including articulated rail, cable car, inclined plane, monorail/

automated guideway, and streetcar). For further details on the definition of modes, types of service, and calculation of track miles refer to the [NTD Policy Manual](#).

Highlights

- Most of the Nation’s track and guideway⁷ was constructed after 1980, though a significant portion of commuter rail and heavy rail track is older than the 1930s.
- The average reported expected life for track was 42.5 years, with no significant variation by type of rail system.
- Four percent of all track, or 596 track miles, was reported as under performance restriction for 2018.

This represents an estimated replacement cost of \$60 billion.⁸

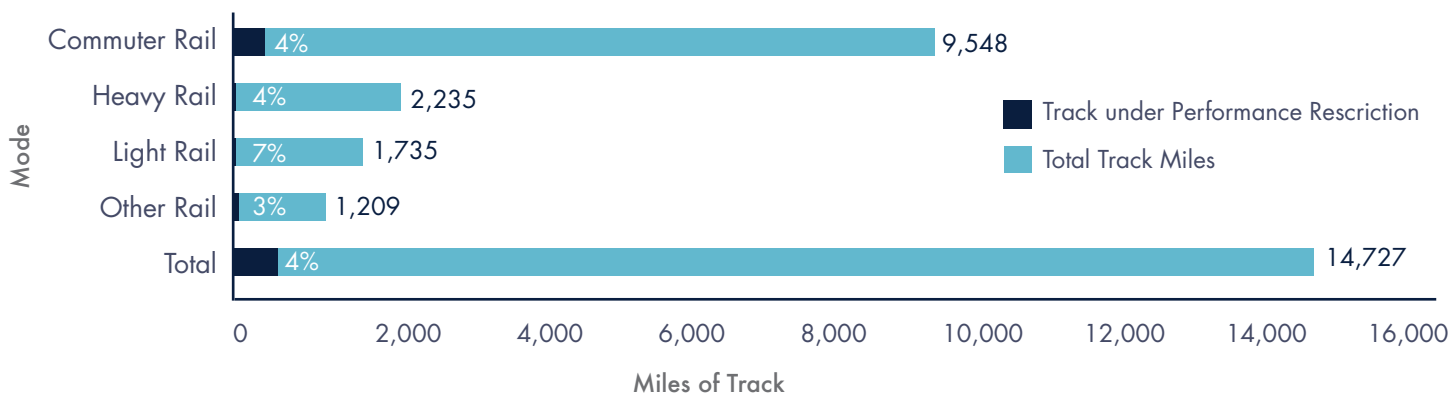
- Eleven percent of all guideway infrastructure in use is beyond its expected service life, and would cost \$156 billion to replace. An additional 5% of guideway infrastructure will exceed its expected service life in the next 4 years, at a cost of \$753 million.

Track under Performance Restriction

Rail providers are required to establish a target for infrastructure, for the percent of track under performance restriction, and to report the performance measure to the NTD. A performance restriction exists on a segment of rail fixed guideway when the

maximum permissible speed of transit vehicles is set to a value that is below the guideway’s full service speed. These restrictions are often referred to as “slow zones.” Figure 8 shows these totals as a percent of total revenue track miles.

FIGURE 8: TOTAL TRACK AND TRACK UNDER PERFORMANCE RESTRICTION (TRACK MILES)



⁷NTD collects data on both track and guideway, with some data elements (e.g., infrastructure age) reported only under guideway. Transit guideway is the full right of way, which includes the track, as well as buildings and structures dedicated for the operation of transit vehicles. It does not include passenger stations or transit facilities. This fact sheet notes whether the calculations are for track only or for track and guideway.

⁸Cost estimated using an industry accepted value of \$100 million per mile.

PERFORMANCE TARGETS

Transit agencies set performance targets for the coming year, reflecting their expectation of their ability to keep assets in SGR. FTA encouraged transit agencies to set realistic targets based on available asset condition data and anticipated resources. For some agencies, the projections reflect aspirational goals; in other cases, they may reflect an expectation based on current condition and funding constraints.

There are no rewards for meeting the targets and no penalties for not meeting the targets. Agencies report performance targets to the NTD aggregated by asset class, rather than individually by each asset. In 2018, transit agencies reported 4,197 targets for 38 transit asset classes, representing their expected SGR in the upcoming 2019 fiscal year.

Highlights

- Transit agencies set targets reflecting an overall expectation of their ability to maintain assets in SGR. The targets reflect an expectation to keep nearly half of asset classes within 90-100% SGR.
- Agencies report high expectations in the ability to avoid slow zones on rail infrastructure; no agencies expected greater than 50% of track miles in slow zone.

- A small number of agencies set expectations to not be able to keep assets in SGR for the coming year. These were mostly from Tier II agencies.

Figure 9 shows the agency reported expectations for future SGR in relationship to the calculated SGR for the current year for each asset type.

FIGURE 9: AVERAGE SGR METRIC (2018) AND TARGET (2019)

