

FTA

FEDERAL TRANSIT ADMINISTRATION

Welcome to Today's Webinar
TAM webinar series

*Condition Assessment Calculation &
Performance Restriction (Slow Zone)
Calculation Guidebooks*
June, 2017



U.S. Department of Transportation
Federal Transit Administration

*The TAM webinar series is sponsored by the Federal Transit Administration,
U.S. Department of Transportation*



FEDERAL TRANSIT ADMINISTRATION

Transit Asset Management (TAM)

Presenters

Mshadoni Smith, TAM Program Manager

AnneMarie Resnick, Region 3 TAM Point of Contact

Maggie Schilling, NTD Program Manager



U.S. Department of Transportation
Federal Transit Administration

Agenda

Webinar Purpose & NTD Data Requirements

TAM Infrastructure Performance Measure Reporting
Guidebook: Performance Restriction (Slow Zone) Calculation

TAM Facility Performance Measure Reporting Guidebook:
Condition Assessment Calculation

Webinar Purpose

- Walk through the Facility Performance Measure Reporting Guidebook: Condition Assessment Calculation and the Infrastructure Performance Measure Reporting Guidebook: Performance Restriction (Slow Zone) Calculation
- Highlight changes from draft to final versions published in the Federal Register

NTD Data Requirements: Facility & Infrastructure Condition

- Moving Ahead for Progress in the 21st Century (MAP-21) amended Federal transit law to require that covered agencies must report facility & infrastructure asset condition and performance data to the National Transit Database (NTD)
- This data will:
 - Support requirements for Transit Asset Management (TAM) plans
 - Calculate State of Good Repair (SGR)-related measures
- Agencies must only conduct & report condition assessments for transit assets for which they have direct capital responsibility

Direct Capital Responsibility

You have direct capital responsibility	You do NOT have direct capital responsibility
You own the asset	You do not own the asset AND you are not responsible for replacing, overhauling, refurbishing, or conducting major repairs on that asset, or the costs of those activities are not itemized as a capital line item in your budget.
You jointly own the asset with another entity	
You are responsible for replacing, overhauling, refurbishing, or conducting major repairs on that asset, or the costs of those activities are itemized as a capital line item in your budget.	

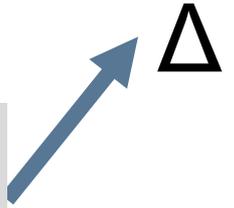
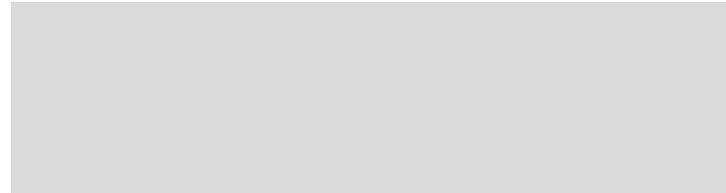
More Details & Considerations (Infrastructure)

- An infrastructure asset itemized as capital line item in budget does not necessarily mean you have direct capital responsibility; you must also have management or oversight responsibilities for that line item project.

More Details & Considerations (Facility)

- You own the facility
- Your budget has a formal capital allocation for the facility.
- You have recently paid for capital projects on the facility from your budget for the transit department or division.

Changes from “Proposed” to “Final”



- Clarified intended audience
- Performance measure calculation guidance
- Steps to conducting and reporting a facility condition assessment
- Facility condition assessment terminology
- Aggregation approach equations

Agenda

Webinar Purpose & NTD Data Requirements

TAM Infrastructure Performance Measure Reporting
Guidebook: Performance Restriction (Slow Zone) Calculation

TAM Facility Performance Measure Reporting Guidebook:
Condition Assessment Calculation



Monthly average percentage of track segments under performance restriction, reported annually

- Applicable only to agencies operating rail fixed guideway
- Submit report to NTD annually

Data Requirements



Fixed Guideway

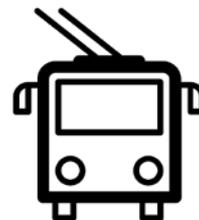
Track Miles

Full Service Speed

Performance Restriction

Fixed Guideway (FG) Definition

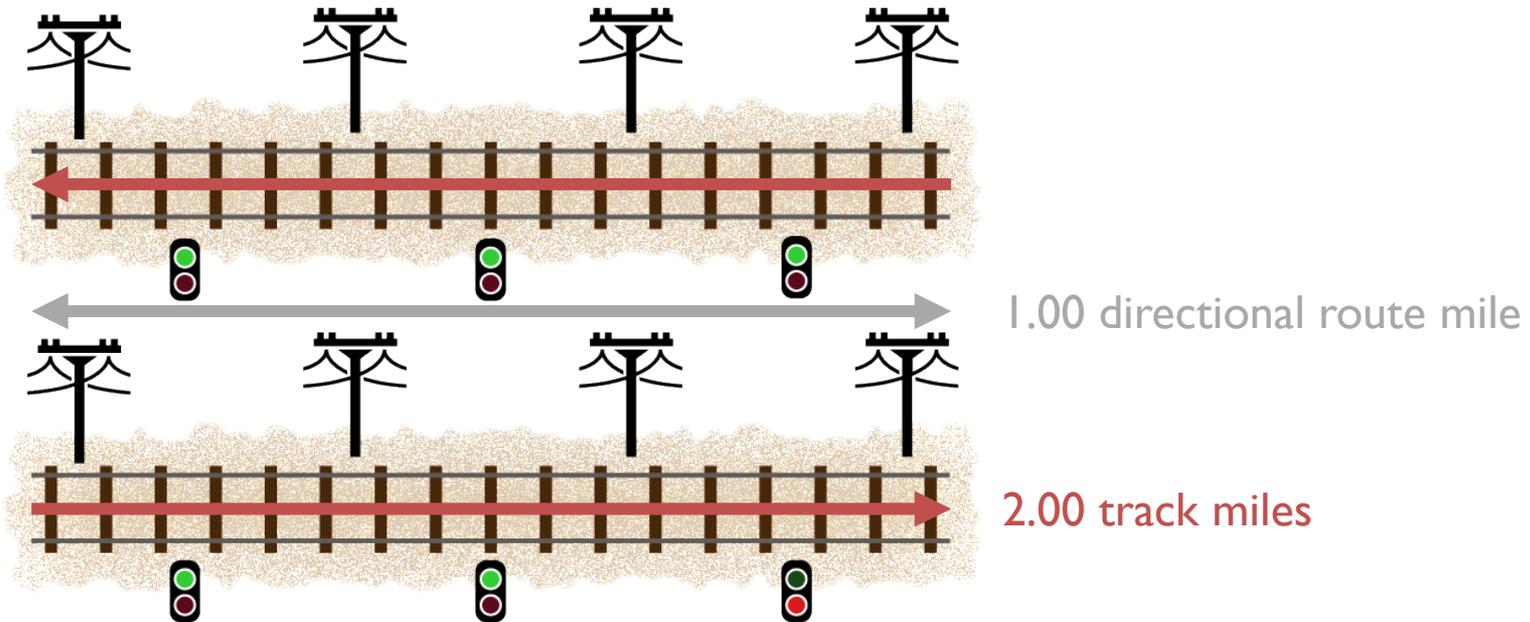
- A facility that uses and occupies separate right-of-way or rail for the exclusive use of public transportation
 - Includes modes other than just rail
 - Does not include shoulder lanes (e.g. for bus-on-shoulder systems)
- Examples:
 - Rail tracks, including signal systems and other auxiliary systems within the right-of-way
 - Separated busway that is reserved 24/7 for public transportation
 - Catenary wire for trolley buses
- Note: Only Rail Fixed Guideway is used to calculate the TAM Infrastructure Performance Measure.





Track Miles Definition

- Total miles of track dedicated 24/7 to the provision of public transportation service



Full Service Speed Definition



- Planned service speed at the time of the installation of the guideway

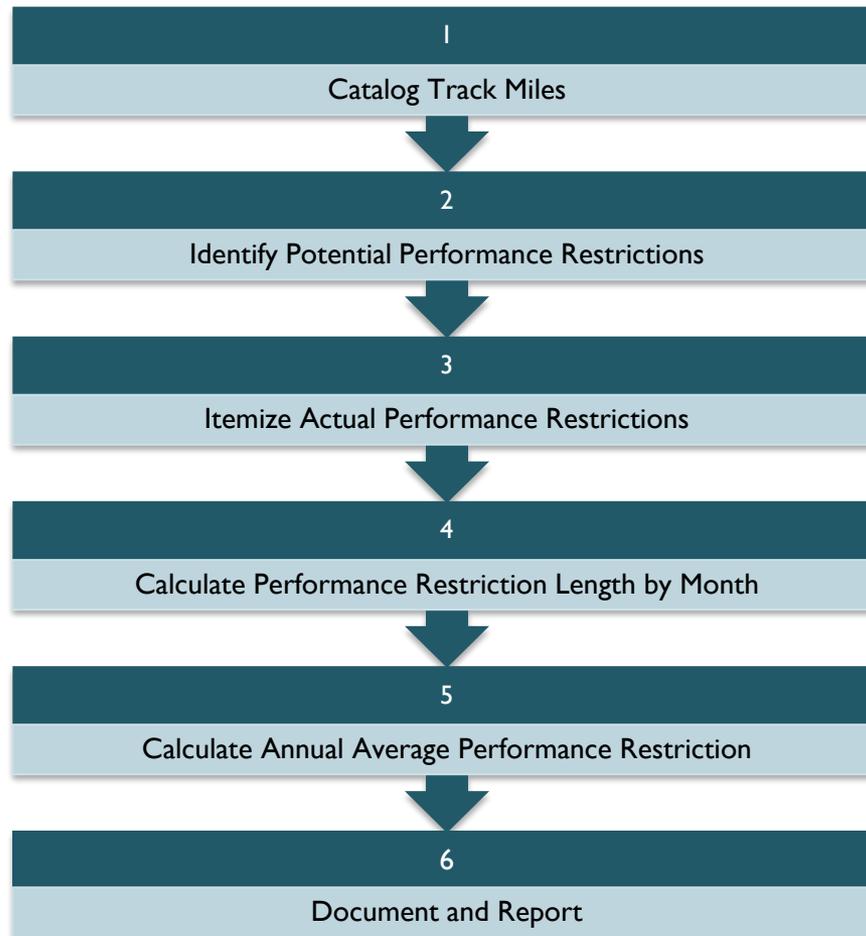
Performance Restriction Definition



- Exists on a track segment when the maximum speed of vehicles is below the full service speed for the segment
- Calculated at 9:00 A.M. * local time on the first Wednesday of each month

*If no service at that time pick another time in peak of the peak on first wed of the month to measure.

Performance Restriction Calculation





I: List Track segments

List track segments for each combination of mode and type of service.

Section ID	Description	From	To	Track Miles	Full Service Speed (MPH)
A	Track 1 West Station	0.00	0.10	0.10	10
B	Track 1 West-Park	0.10	2.90	2.80	40
C	Track 1 Park Station	2.90	3.10	0.20	10
D	Track 1 Park-East Station	3.10	7.90	4.80	40
E	Track 1 East Station	7.90	8.00	0.10	10
F	Track 2 West Station	0.00	0.10	0.10	10
G	Track 2 West-Park	0.10	2.90	2.80	40
H	Track 2 Park Station	2.90	3.10	0.20	10
I	Track 2 Park-East Station	3.10	7.90	4.80	40
J	Track 2 East Station	7.90	8.00	0.10	10

2: Identify **Potential** Restrictions

- List all potential performance restrictions.
- Collection of additional data beyond the minimum requirement, such as cause of performance restriction, is optional.

Tracks	From	To	Max Speed Under Performance Restriction (MPH)	Performance Restriction Cause
1, 2	0.00	0.35	10 mph	Temporary speed restriction due to rail defects
1	2.75	2.90	20 mph	ROW maintenance
2	4.00	5.08	20 mph	Temporary speed restriction due to improper elevation
1, 2	7.67	8.00	10 mph	East Station Improvement Project

3: Itemize **Actual** Restrictions



Segment ID	Description	From	To	Track Miles	Full Service Speed (MPH)	Speed Restriction (MPH)	Performance Restriction (Y/N)	Performance Restriction
A	Track I West Station	0.00	0.10	0.10	10	10	N	Temporary speed restriction due to rail defects
B-1	Track I West-Park A	0.10	0.35	0.25	40	10	Y	Temporary speed restriction due to rail defects
B-2	Track I West-Park B	0.35	2.75	2.40	40	--	N	
B-3	Track I West-Park C	2.75	2.90	0.15	40	20	Y	ROW maintenance
C	Track I Park Station	2.90	3.10	0.20	10	--	N	
D-1	Track I Park-East Station A	3.10	7.67	4.57	40	--	N	
D-2	Track I Park-East Station B	7.67	7.90	0.23	40	10	Y	East Station Improvement Project

4: Calculate Restriction Length by Month



Section ID	Description	From	To	Track Miles	Performance Restriction
B-1	Track 1 West-Park A	0.10	0.35	0.25	Temporary speed restriction due to rail defects
B-3	Track 1 West-Park C	2.75	2.90	0.15	ROW maintenance
D-2	Track 1 Park-East Station B	7.67	7.90	0.23	East Station Improvement Project
G-1	Track 2 West-Park A	0.10	0.35	0.25	Temporary speed restriction due to rail defects
I-2	Track 2 Park-East Station B	4.00	5.08	1.08	Temporary speed restriction due to improper elevation
I-4	Track 2 Park-East Station D	7.67	7.90	0.23	East Station Improvement Project
Total				2.19	

5: Calculate Annual Average Length

Restriction Causes (Examples)	Month												YTD AVG
	1	2	3	4	5	6	7	8	9	10	11	12	
Maintenance	0.15	2.05	2.45	1.78	1.50	0.57	1.50	1.05	1.25	0.40	0.15	0.15	1.08
Rail Defect	0.50	0.15	0.91	0.91	0.91	0.25	0.44	0.25	0.44	0.15	.050	.050	0.49
Signal, Controls Issue	0.00	0.50	0.53	0.53	0.53	0.11	0.11	0.00	0.20	0.20	0.00	0.00	0.23
Bridge Conditions	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.50	0.02	0.10	0.10	0.00	0.14
Track Geometry	1.08	0.25	0.00	0.00	0.00	0.75	0.70	0.75	0.75	0.25	0.08	0.08	0.39
Construction	0.46	0.00	0.00	0.00	0.00	1.20	1.20	3.00	2.00	0.00	0.00	0.46	0.69
Other	0.00	0.31	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
TOTAL Under Performance Restriction (miles)	2.19	3.26	4.20	3.53	2.94	3.38	4.45	5.55	4.66	1.10	0.83	1.19	3.11

Glossary and Sample Forms

- Glossary of terms based on FTA’s NTD Glossary
- Sample Performance Restriction Calculation Form, used in examples throughout the guidebook

Mode:	Type of Service
Date Data Collected:	Time Data Collected:
Completed by:	Date Completed:

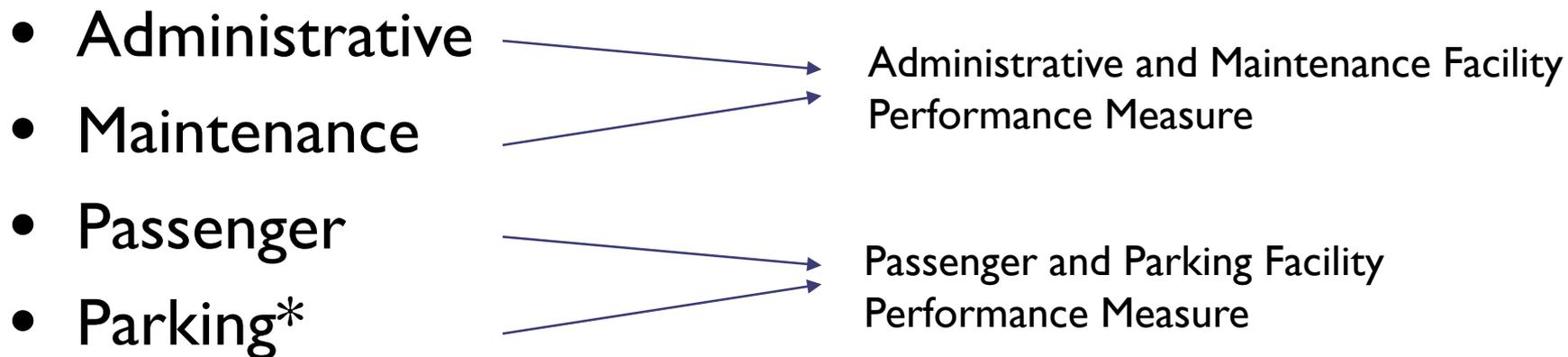
Segment ID	Description	From	To	Track Miles	Full Service Speed (MPH)	Speed Restriction (MPH)	Performance Restriction (Y/N)	Performance Restriction

Agenda

Webinar Purpose & NTD Data Requirements

TAM Facility Performance Measure Reporting Guidebook:
Condition Assessment Calculation

Classes of Facilities



* Immediately adjacent to a passenger facility

Facility Examples

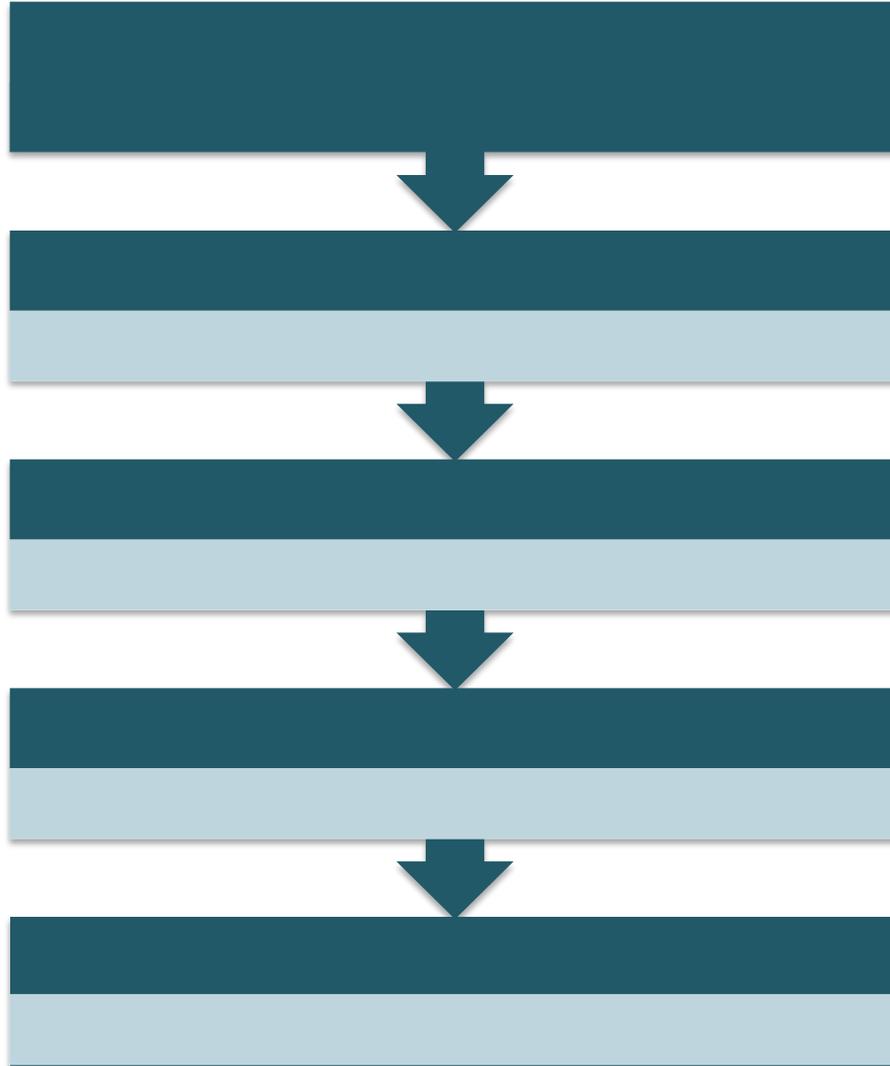
YES

- Park and Ride Lot
- Storage structure where transit work is performed

NO

- Guard Shack
- Stand alone Restroom
- Less than 100 sqft of person space

Steps to Assessing & Reporting Facility Conditions & Performance Measures



Step I: Identify Facility Type and Rating Levels

Primary Rating Levels:

Substructure

Shell

Interiors

Elevators and Escalators

Plumbing

HVAC

Fire Protection

Electrical

Equipment

Site

Passenger and Parking Facilities

Primary Rating Levels:

Substructure

Shell

Interiors

Elevators and Escalators

Plumbing

HVAC

Fire Protection

Electrical

Fare Collection

Site





Secondary Rating Level Examples

Primary: Substructure

- **Secondary:**
 - Foundations: walls, columns, pilings, etc.
 - Basement: materials, insulation, slab, floor underpinnings

Primary: Site

- **Secondary:**
 - Roadways and associated signage, markings, & equipment
 - Site utilities, etc.

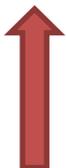
Primary: Equipment

- **Secondary:**
 - Equipment related to the function of the facility, including maintenance or vehicle service equipment
 - Equipment valued between \$10K and \$50K may be rated within a facility. Equipment > \$50K must be rated under the asset type, “Equipment”

FTA Transit Economic Requirements Model (TERM) Condition Assessment Scale

An asset is in **SGR** if it has a rating over 3 on the TERM scale.

Rating	Condition	Description
5	Excellent	No visible defects, new or near new condition, may still be under warranty if applicable
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



Step 2: Conduct Assessment

Examine primary and secondary rating levels and determine and assign corresponding condition ratings on the TERM scale. Area or percentages of area (i.e., building area in square footage) or number of units, can be used to measure secondary level quantities.

Pre-Condition Assessment Data Gathering Recommendations

Inspectors should gather & review the following:

- Agency inspection & maintenance procedures/schedules
- Inspection schedule/alignment with reporting schedule
- Data needs
- Warranty status & age of components
- Other background information

Example Condition Assessment Tasks

Rating Level	Specific Assessment Tasks
Interiors	<ul style="list-style-type: none"><li data-bbox="575 511 1721 625">• Inspect soundness and finish of drywall, partitions, interior doors, fittings, ceiling tiles, and signage.<li data-bbox="575 639 1605 686">• Inspect stairs including fire and access issues.<li data-bbox="575 701 1779 882">• Inspect interior finishes, including materials used on walls, floors, and ceilings, such as tile, paint, and other coatings. Look for roughness and damage.

Example Condition Assessment TERM Ratings

Primary and secondary level asset ratings should be based on condition rating descriptions in the Facility Condition Assessment Guidebook

Rating Level	TERM	Description
F. HVAC <ul style="list-style-type: none"> • Energy supply • Heating / cooling generation and distribution systems • Testing, balancing, controls and instrumentation • Chimneys and vents 	5: Excellent	New construction, no visible defects or damage. Meets efficiency and capacity goals and maintains desired temperature and air quality throughout the facility.
	4: Good	Minor improvements needed, may be slightly outdated and less efficient and consistent. Minor deterioration or defect with no functional impact typically addressed through routine maintenance.
	3: Adequate	Repairs are needed; some deterioration exists, and maintenance needs are significant. With these, the system meets needs. Still within its useful life.
	2: Marginal	System has exceeded its useful life; fails to meet standards or needs. Need extensive repair at a minimum. Currently does not appear to be any safety issue.
	1: Poor	System is well past its useful life and has critical defects affecting function; its issues are beyond repair and warrant detailed review.



Sample Administrative/Maintenance Facility Condition Assessment Form

Inspection Date:
Inspector Name:
Facility Name:
Address/Location:

ID	Rating Level	Asset Quantity	Unit of Measure	Percent of Asset Quantity by Condition				
				5 Excellent	4 Good	3 Adequate	2 Marginal	1 Poor
A.	Roof							
B.	Shell							
C.	Interior							
D.	Conveyance							
E.	Plumbing							
F.	HVAC							
G.	Fire Protection							
H.	Electrical							
I.	Equipment							
J.	Site							

Step 3: Aggregate Results



Once the conditions of individual facility rating levels (primary and secondary) are assessed and aggregated, the next step required to support NTD reporting is to calculate an overall condition rating for the facility. **There are three approaches:**

- Approach #1: Weighted Average Condition
- Approach #2: Median Value
- Approach #3: Alternative Weighting

Weighted Average Approach



Facility Rating = $\frac{\text{Sum of each (primary level TERM Rating * replacement cost)}}{\text{Sum of all replacement costs}}$

Sum of all replacement costs

Facility	Primary Level	Replacement Costs	Aggregated Primary Rating	Aggregated & Rounded Facility Rating
Administrative Facility I	Shell	\$10,000	3.5	3
	HVAC System	\$2,000	2	
	Plumbing	\$1,500	4	

Median Value Approach



Median = middle value in a series of sorted (ascending) numbers

Even-Numbered List	Odd-Numbered List
1 2 2 3 4 5 5 5	2 3 3 4 5 5 5

50%

Facility	Primary Level	Aggregated Primary Rating	Aggregated Facility Rating
Administrative Facility I	Shell	4	4
	HVAC System	2	
	Plumbing	5	

Alternative Weighting Approach

- An agency may use an alternative approach provided the approach is consistent, repeatable, and that it yields a single value for each facility using the five-point TERM condition scale.
- If an agency does choose to use such an alternative approach, the calculation approach and rationale for its use must be documented.

Step 4: Calculate Performance Measures

Agencies must report performance measures by facility class:

- Administrative and Maintenance Facilities
- Passenger and Parking Facilities

The performance measure for facilities is the percentage of facilities under each facility class with a TERM rating below 3.

Example:

2/4 facilities have a TERM rating below 3

Passenger & Parking Facilities

Performance Measure = $2/4 * 100 = 50\%$

Facility	Condition Rating
Passenger #1	4
Passenger #2	4
Parking #3	2
Parking #4	2

Guidebooks and Training

- [TAM Facility Performance Measure Reporting Guidebook: Condition Assessment Calculation](#)
- [TAM Infrastructure Performance Measure Reporting Guidebook: Performance Restriction \(Slow Zone\) Calculation](#)
- **NEW COURSE:** Calculating Performance Measures and Setting Targets (available NOW)
 - [TSI Portal \(www.dot.gov/tsi\)](http://www.dot.gov/tsi)
 - [Registration Instructions](#)



TRANSIT ASSET MANAGEMENT

www.transit.dot.gov/TAM