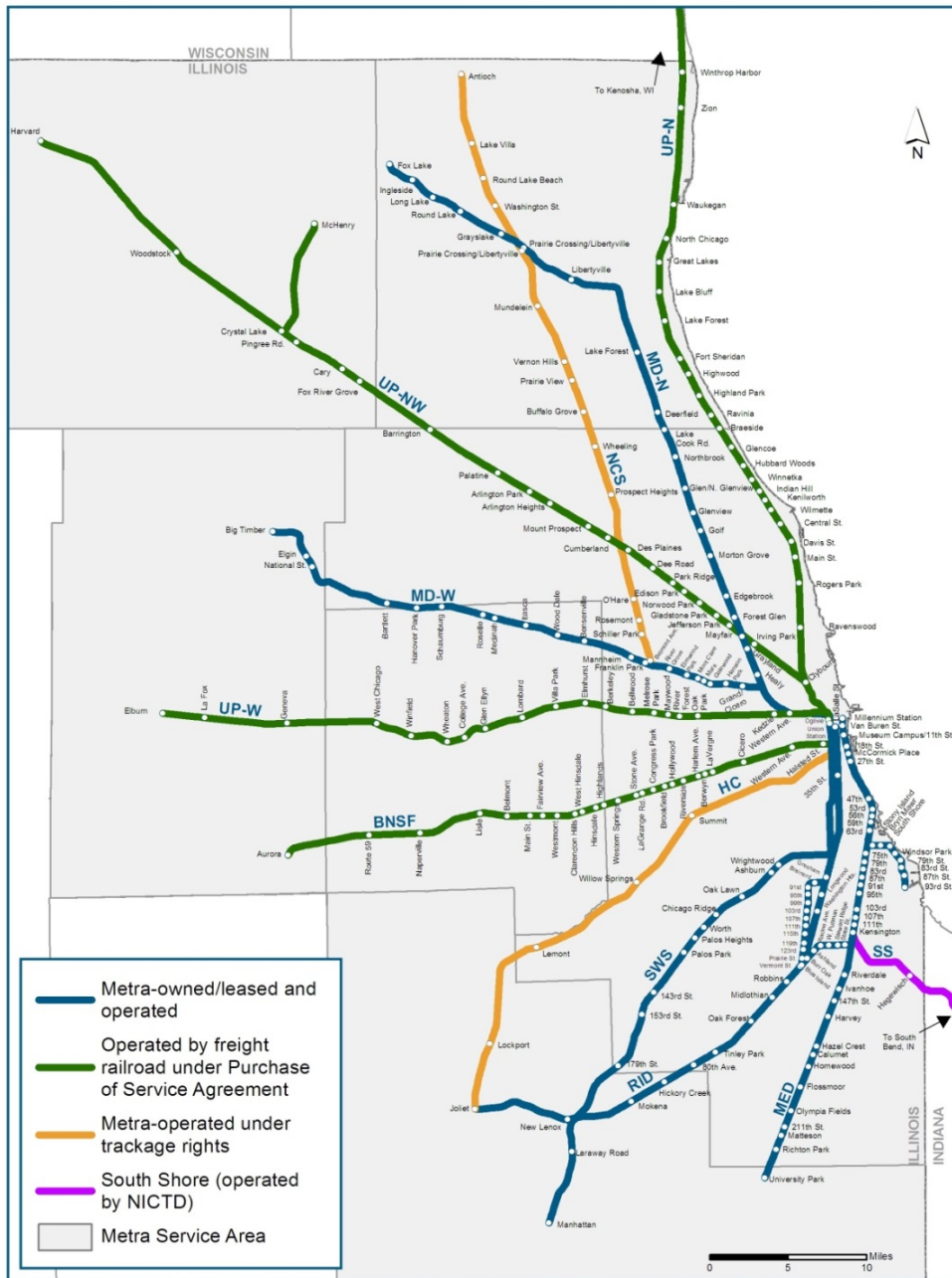# Metra Capital Asset Condition Assessment Project: Implementing Transit Asset Management (TAM) In Anticipation of FTA's TAM Rulemaking

Transportation Research Board
Transportation Asset Management Conference

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Metra System Map and Capital Assets

Commuter rail provider for northeastern Illinois

- 11 routes, 241 stations, 500 route miles, 1,200 track-mi
- 704 weekday trains
- 296 Saturday trains
- 163 Sunday trains
- 81.6 million trips in 2015 (>300,000 trips/weekday)
- 96.2% on-time performance

Legend:
- Metra-owned/leased and operated
- Operated by freight railroad under Purchase of Service Agreement
- Metra-operated under trackage rights
- South Shore (operated by NICTD)
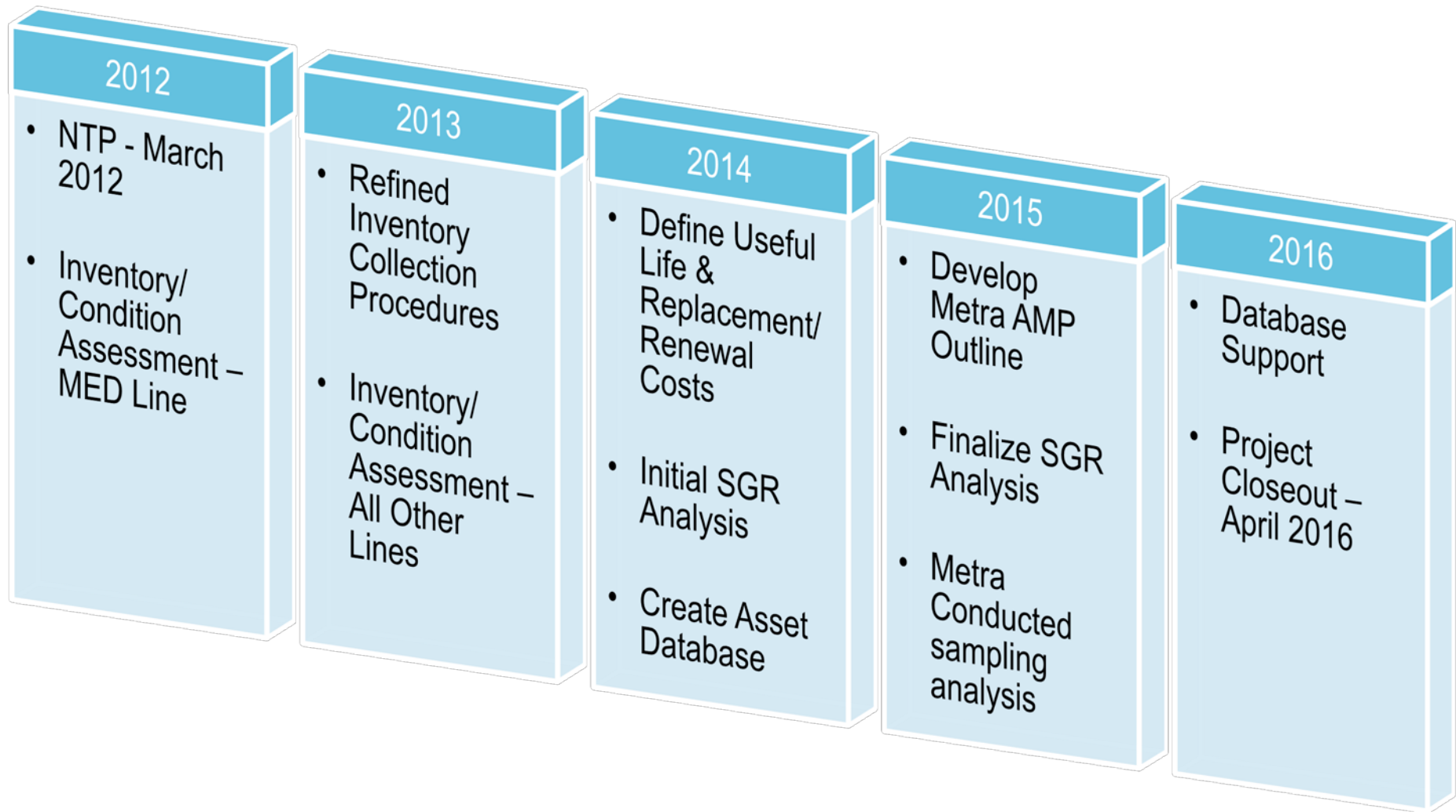- Metra Service Area

Project Background/Scope

Metra contracted AECOM to lead their Capital Asset Condition Assessment Project:

1. Develop an inventory of all assets
2. Perform a condition assessment on all assets
3. Define useful lives and replacement/ renewal costs
4. Assist Metra in developing an internal Asset Management Plan (AMP) Outline
5. Perform an SGR Analysis on asset inventory
6. Create a database of asset information and provide technical support

Project Background/Scope (Cont'd)

- Contract was geared to work with RTA's Transit Asset Management Pilot Program
- RTA developed Decision Support Tool
    - Capital Optimization Support Tool (COST)
    - Analyzes SGR by using age and useful life as driver for condition
- Metra interested in implementing ISO 55000
    - Holistic approach to developing a TAM Plan and asset management system
    - Provides data to evaluate SGR

Project Timeline

2012
- NTP - March 2012
- Inventory/ Condition Assessment – MED Line

2013
- Refined Inventory Collection Procedures
- Inventory/ Condition Assessment – All Other Lines

2014
- Define Useful Life & Replacement/ Renewal Costs
- Initial SGR Analysis
- Create Asset Database

2015
- Develop Metra AMP Outline
- Finalize SGR Analysis
- Metra Conducted sampling analysis

2016
- Database Support
- Project Closeout – April 2016

SGR Data Requirements

- Basic asset information (name, quantity, units, mode, line)
  - Line detail appropriate for capital programming

- Replacements
  - Year built/acquired/installed
  - Service life
  - Replacement cost

- Renewals (if applicable)
  - Year last renewed
  - Renewal life
  - Renewal cost

SGR Data Requirements (Cont.)

Stores information about all Metra asset types:

- Vehicles (Revenue, Non-Revenue)

- Facilities, Yards & Shops

- Stations

- Bridges

- Signals

- Track

- Retaining Walls

- Electrification

- Etc.

SGR Data Requirements (Cont.)

Examples of Appropriate Level of Asset Detail:

- Bridges
  - Substructure
  - Superstructure
  - Deck

- Track
  - Tangent vs. Curve
  - Type of fixation

- Buildings
  - Foundation
  - Structure
  - Roof
  - Exterior
  - Interiors
  - Electrical rough-in
  - Electrical finishes
  - Plumbing rough-in
  - Plumbing fixes
  - HVAC
  - Fire protection/fire suppression
  - Etc.

SGR Data Requirements (Cont.)

Condition Rating System:

Condition	Definition
Excellent 4.8 to 5.0	▸ New asset ▸ No visible defects
Good 4.0 to 4.7	▸ Asset showing minimal signs of wear ▸ Some (slightly) defective or deteriorated component(s)
Adequate 3.0 to 3.9	▸ Asset has reached its mid-life (condition 3.5) ▸ Some moderately defective or deteriorated component(s)
Marginal 2.0 to 2.9	▸ Asset reaching or just past the end of its useful life (typically reached between condition 2.75 and 2.5) ▸ Increasing number of defective or deteriorated component(s) and increasing maintenance needs
Worn 1.0 to 1.9	▸ Asset is past its useful life and should be prioritized for repair or replacement

Source: RTA 2014 Capital Asset Condition Update

Metra Review of Asset Data

- Completeness of Inventory / Any Missed Assets?

- Accuracy of Inventory

- Age Information and Condition of Assets
  - Historic Date Built
  - Condition Rating

- Life Cycle and Replacement Cost by Asset Type

- 42 Review Packages Assembled
  - Distributed to Metra and contract carrier staff
  - Took over 6 months to complete

Station Reports

Metra — The way to really fly. **Station Summary**

Survey Date: October 2012 – September 2013

Station/Inpection Date	Rating	Value ($)	Rating	No. of Platform	Length (LF)	Rating	No. of Structures	Enclosed (SF)	Open (SF)	Rating	Ticket Agent	Stairs	Ramps	Elevator	Tunnel	Aerial Walk
Overall Station			**Platform**			**Structure**				**Pedestrian Access**						
Electric - South Chicago																
Stony Island - 10/03/2012	3.4	$2,695,860	3.6	1	384	3.4	6	630	2,406	4.0	☐	☑	☑	☐	☐	☐
Bryn Mawr - 10/03/2012	3.5	$2,286,890	3.6	1	292	3.6	5	620	2,126	4.0	☐	☑	☑	☐	☐	☐
South Shore - 10/03/2012	2.6	$2,638,870	3.1	1	384	2.9	7	1,044	1,857	2.0	☐	☑	☑	☐	☐	☐
75th St., Windsor Park - 10/03/2012	3.4	$2,613,460	3.6	1	384	3.7	5	630	2,146	3.5	☐	☑	☑	☐	☐	☐
79th St., Cheltenham - 10/03/2012	3.3	$2,398,600	3.6	1	384	3.2	5	496	1,742	3.5	☐	☑	☑	☐	☐	☐
83rd St. (South Chicago) - 10/03/2012	3.3	$2,543,900	2.7	1	383	3.7	5	630	2,146	4.0	☐	☐	☑	☐	☐	☐
87th St. (South Chicago) - 10/02/2012	3.5	$2,558,460	3.6	1	384	3.7	5	630	2,126	4.0	☐	☐	☑	☐	☐	☐
93rd - 10/02/2012	3.6	$4,993,070	4.0	1	505	3.8	10	2,248	5,168	3.0	☐	☑	☑	☐	☐	☐
South Shore Line																
Hegewisch - 09/17/2013	3.9	$11,534,125	5.0	2	1,446	4.0	9	4,818	8,335	3.9	☑	☑	☑	☐	☐	☐
Electric - Blue Island																
State St. - 10/02/2012	2.1	$1,203,105	2.5	1	352	1.9	2	472	45	2.0	☐	☑	☐	☐	☐	☐
Stewart Ridge - 10/02/2012	2.5	$690,555	2.1	1	176	2.4	2	330	45	3.0	☐	☑	☐	☐	☐	☐
West Pullman - 10/01/2012	2.3	$779,145	2.0	1	215	2.2	2	352	45	2.0	☐	☑	☐	☐	☐	☐
Racine Ave. - 10/01/2012	2.8	$676,710	2.1	1	175	2.3	3	296	90	2.0	☐	☑	☐	☐	☐	☐
Ashland Ave. - 10/01/2012	2.7	$845,440	3.0	1	208	2.9	2	495	45	2.0	☐	☑	☐	☐	☐	☐
Burr Oak - 10/01/2012	2.4	$1,240,700	2.6	1	351	2.0	2	540	56	3.0	☐	☑	☐	☐	☐	☐

Station Reports (Cont.)

Metra *The way to really fly.* **Station Structure Detail**

Electric - South Chicago

Stony Island (01091)															Date Inspected: October-2012
No.	Type	Rating	Last Rehab	Size (SF)	Shell	Levels	Platform No.	Roof Type	Cooling Location	Heat	Agent	Vend	Seats	CCTV	Public Restroom
1	Canopy	3.0		280	Steel/ Glass	1	1	Metal	None	-	☐	☐		☐	
2	Shelter	3.0		63	Steel/ Glass	1	1		None	-	☐	☐		☐	
3	Shelter	3.0		63	Steel/ Glass	1	1		None	-	☐	☐		☐	
4	Canopy	3.6		1,720	Steel/ Glass	1	1	Metal	None	-	☐	☐		☐	
5	Head House	3.4		630	Masonry	1	1	Metal	None	Space Heat	☐	☐	4	☑	
6	Canopy	3.6		280	Steel/ Glass	1	1	Metal	None	-	☐	☐		☐	

Photos:

Source of Asset Ratings

- Asset condition
  - Asset-specific, based on asset age
- Ridership impact
  - Based on affected ridership
  - Alternative approach: based on station or segment volumes
- Safety & security / O&M cost impact / reliability
  - Ratings are asset sub-element-specific
  - Rated 1 to 5 by RTA and service boards
  - Ratings mapped to individual assets via the assigned asset sub-element

Snapshot of Metra Asset Inventory
All Asset Categories (2014$) – Final Analysis

- Number of asset records……………………..38,991
- Oldest service date………………..1853 (163 years)
                                                  (Lemont Station)
- Average age of assets (by repl. value)…….36 years
- Average % of useful life remaining
  (by replacement value)………………………..33%

Snapshot of SGR Needs
From RTA Capital Asset Condition Assessment Report (2013$)

- Total SGR Backlog….………….……………..$6.1 billion
- 10-year Normal Reinvestment Need…….$5.6 billion
- Total 10-year Need…..……..………………...$11.7 billion
- Total 20-year Need…………………….....$19.3 billion
- Total Annual Need……….………….………$1.2 billion
- Asset Categories   Guideway Elements
  w/ Largest Needs………..……………………..& Vehicles

Distribution of Asset Conditions and Replacement Value by Asset Category
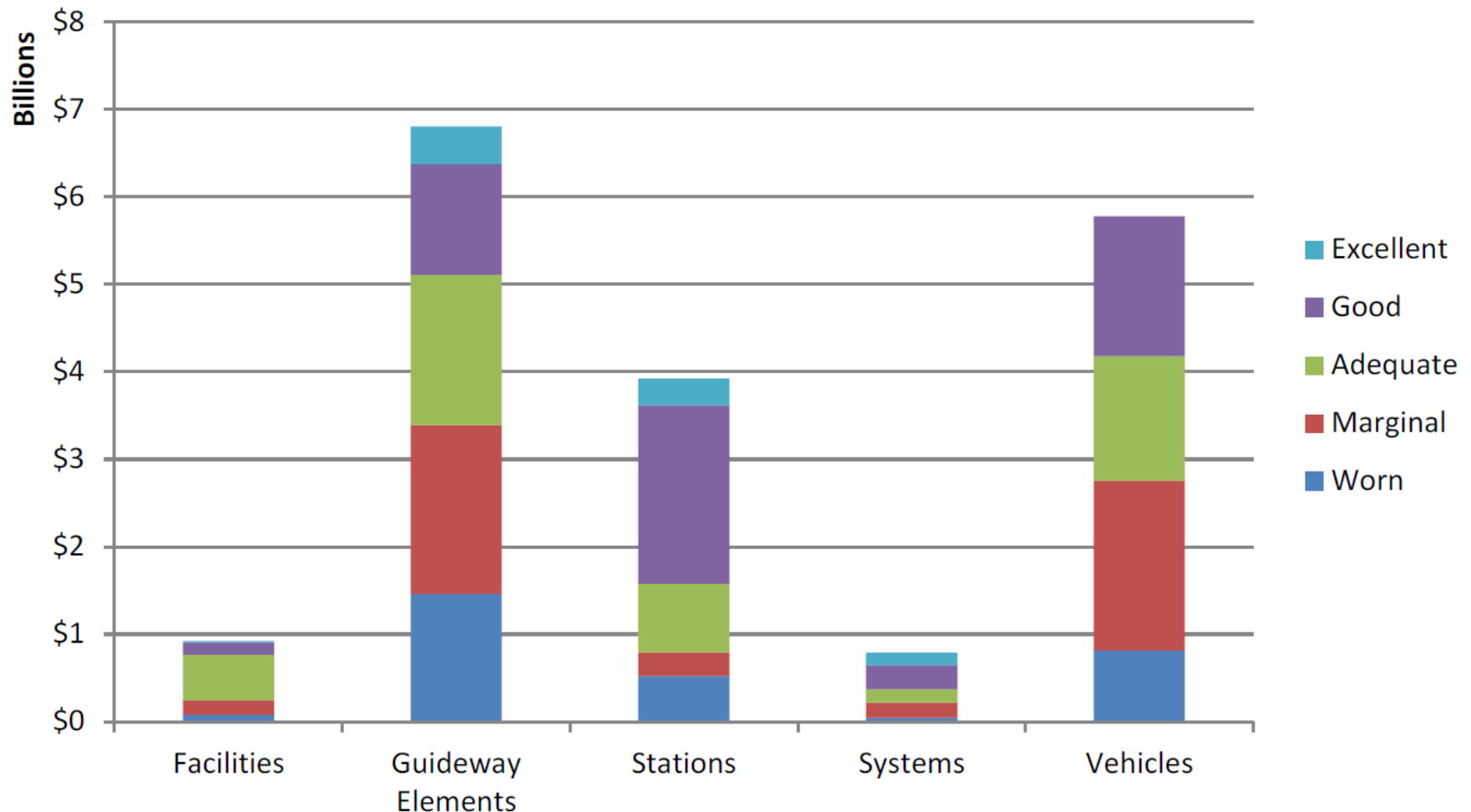
Source: RTA 2014 Capital Asset Condition Update

Age Distribution of Assets
by Category
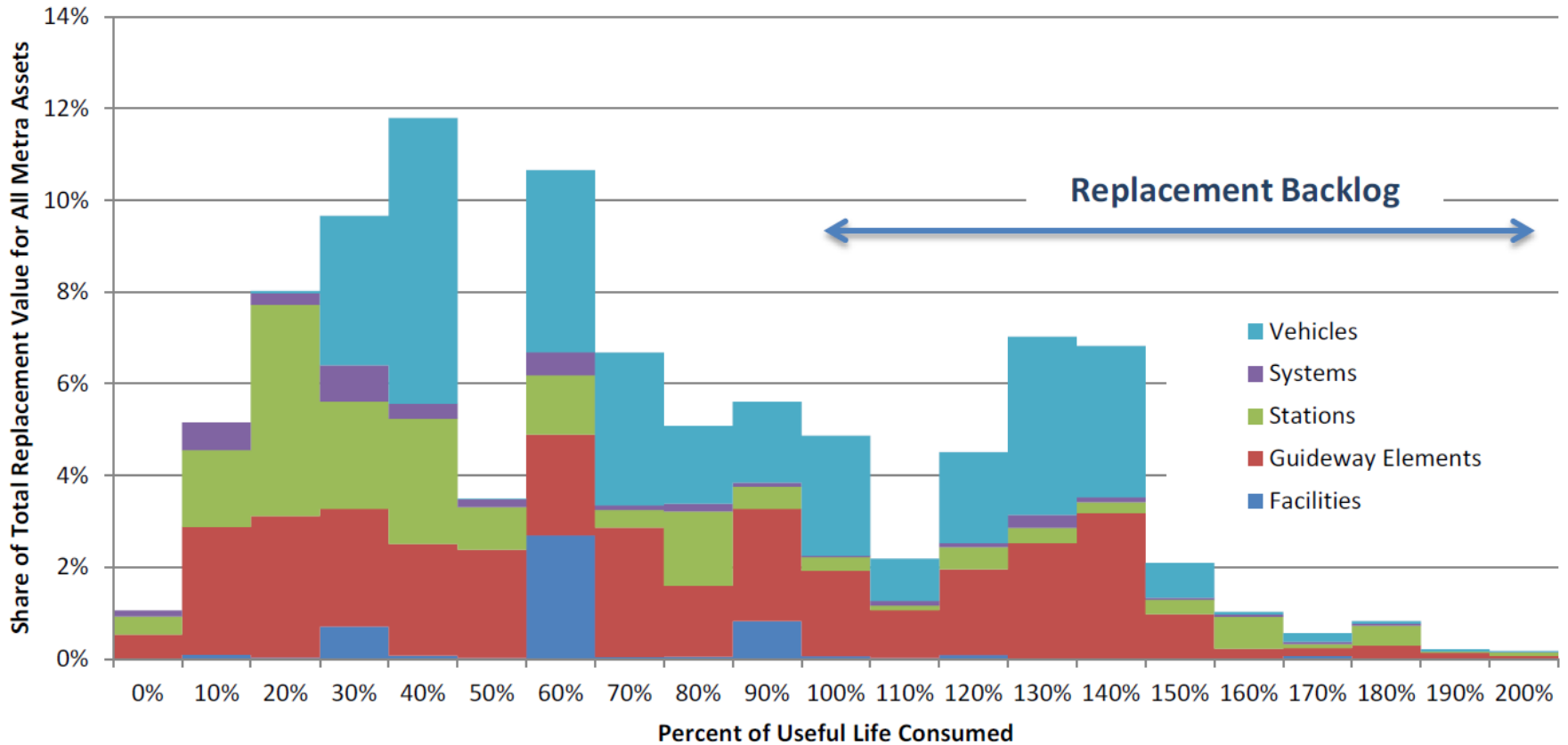
Source: RTA 2014 Capital Asset Condition Update

Summary 10-Year Unconstrained Needs by Year
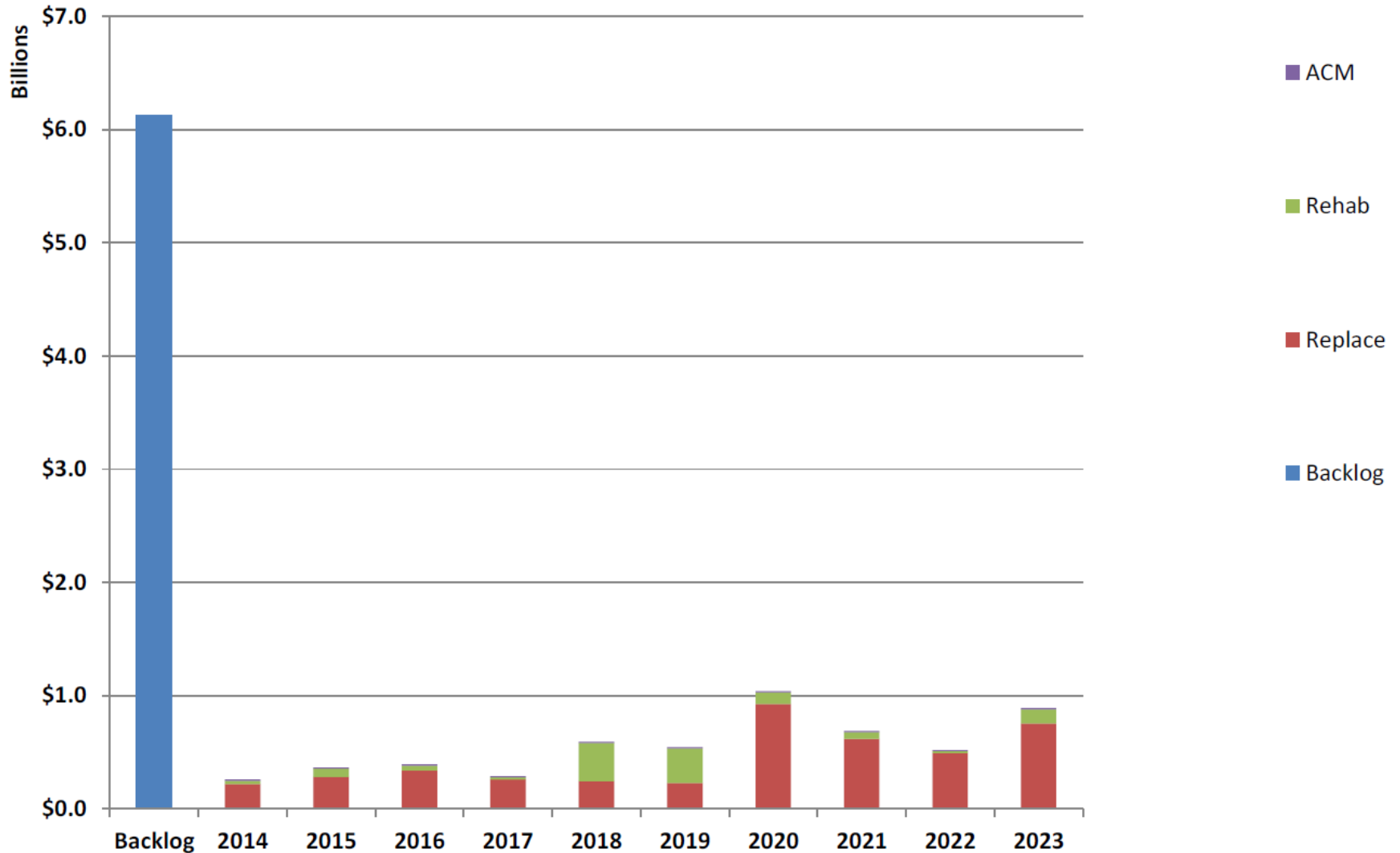
Source: RTA 2014 Capital Asset Condition Update

US Federal Transit Administration Transit Asset Management Plan Requirements

FTA TAM Plan - Proposed Elements

1. Inventory of capital assets
2. Condition assessment
3. Decision support tools
4. Investment prioritization
5. TAM & SGR policy
6. Implementation strategy
7. Key annual activities
8. Identification of resources
9. Evaluation plan

Lessons Learned

- Communication with peer agencies is key.

- Having a good handle on your assets can lead to better decision-making and an improved response to funding fluctuations.

- A good asset management program requires buy-in by managers and staff at all levels and across multiple departments.

- Implementation of a good asset management program will not happen overnight. It is a continuous, incremental process.

Thank You!

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