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TRB Webinar: Successes & Challenges—The First 4 Years of Federal Performance Management

March 30, 2023

1:00 – 2:30 PM

PDH Certification Information

1.5 Professional Development Hours (PDH) – see follow-up email

You must attend the entire webinar.

Questions? Contact Andie Pitchford at TRBwebinar@nas.edu

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Contact AICP, not TRB, with questions

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Purpose Statement

Federal transportation performance management (TPM) requirements were signed into law in the early 2010s. Following robust efforts by transportation agencies nationwide, the first four-year cycle of implementation concluded. While the federal TPM requirements created greater consistency and transparency, challenges remain. This webinar will reflect on lessons learned by state departments of transportation (DOTs), metropolitan planning organizations (MPOs), and transit agencies. Put these lessons to use as you look ahead to the next decade.

Learning Objectives

At the end of this webinar, you will be able to:

- Identify the federal transportation performance requirements benefits, limitations, and challenges
- Set effective performance targets for safety, asset management, and system performance in alignment with federal requirements
- Complement federally required targets with robust performance management practices that address emerging issues like climate, resilience, and equity

Questions and Answers

- Please type your questions into your webinar control panel

- We will read your questions out loud, and answer as many as time allows

Today's presenters

Dr. Mshadoni Smith-Jackson
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Federal Highway Administration

Jordan Holt
jhholt@wmata.com
Washington Metropolitan Area Transit Authority

Deanna Belden
deanna.belden@state.mn.us
Minnesota DOT

Keith Miller
kmiller@njtpa.org
North Jersey Transportation Planning Authority
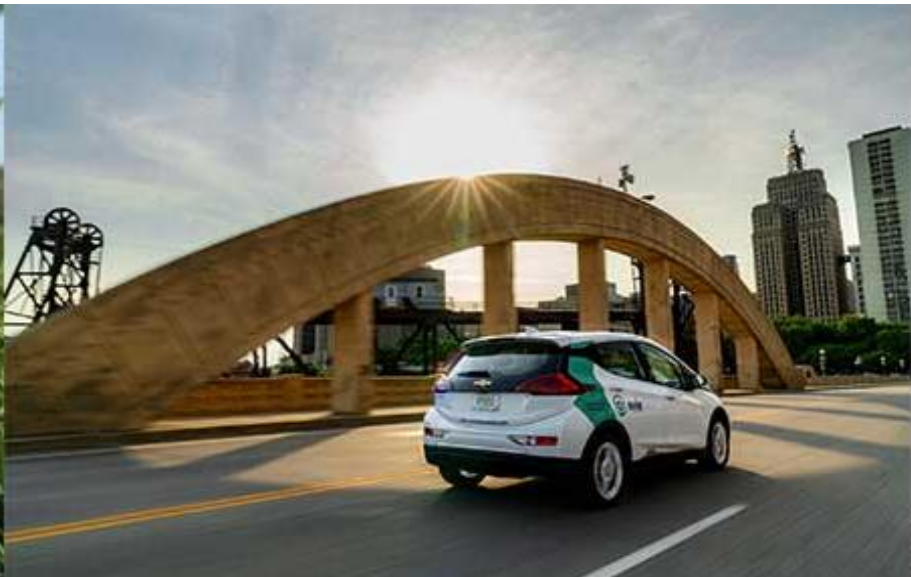
Successes & Challenges
The First 4 Years of Federal Performance Management

Deanna Belden

Minnesota Department of Transportation

TRB Webinar, March 30, 2023

Transportation in Minnesota
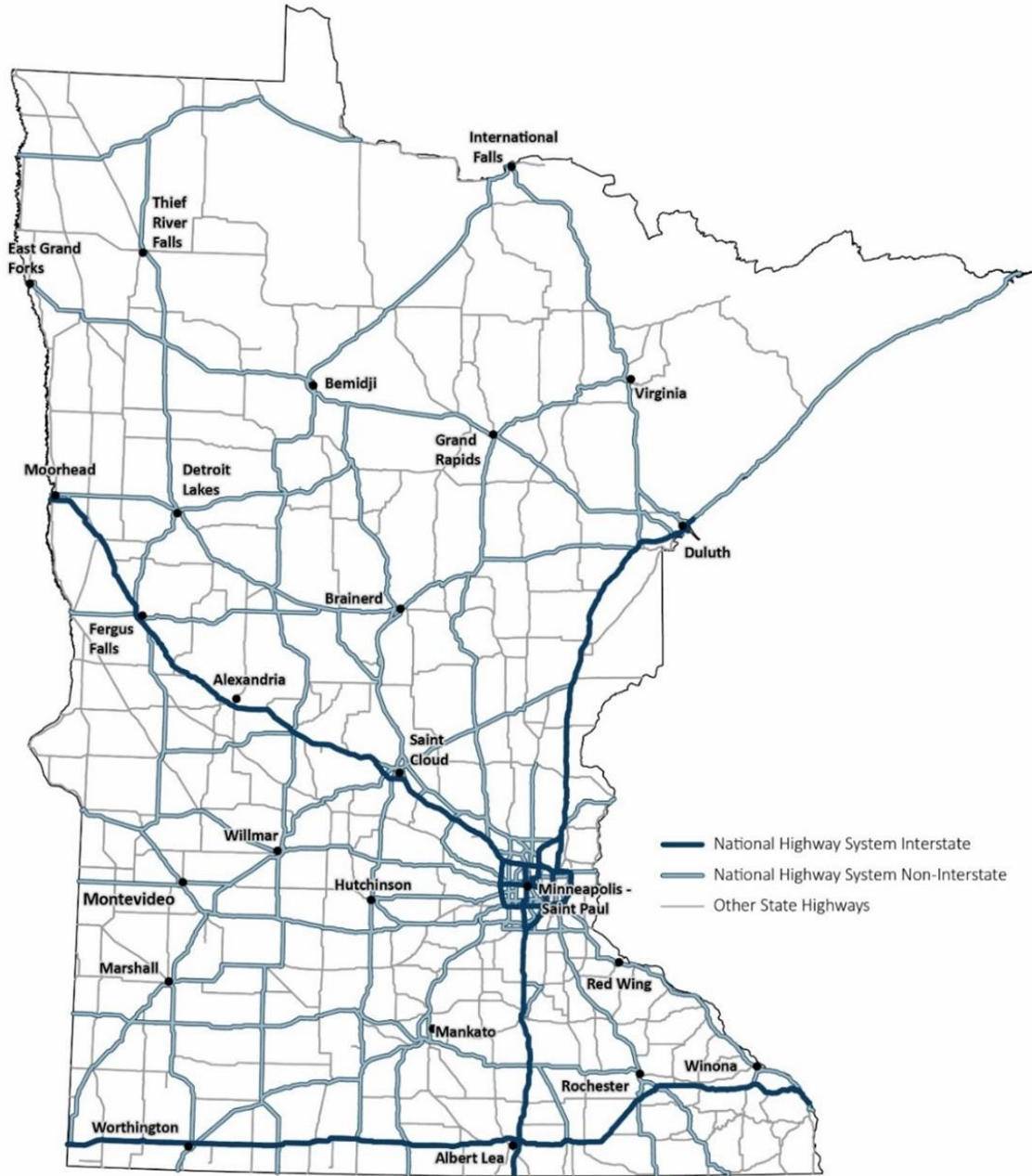
- 142,864 centerline miles of streets, roads and highways (4th largest roadway network)

- 11,703 miles of state highway

- Population 5.7 million (22st most populous state)

- 21,148 Bridges (10 feet span and greater)

- Eight MPOs (four bi-state)

- Seven-county metro area has approximately 56% of the state's population

Legend:
— National Highway System Interstate
— National Highway System Non-Interstate
— Other State Highways

- First performance-based plan adopted in 2003

  - Funding was sufficient to meet targets for asset condition and statewide mobility

- By 2009, asset condition need alone exceeded projected revenue

  - Did not plan to meet all performance targets

- First Annual Transportation Performance Report published in 2009

- 2013 State Highway Investment Plan – adjustment due to passage of MAP-21
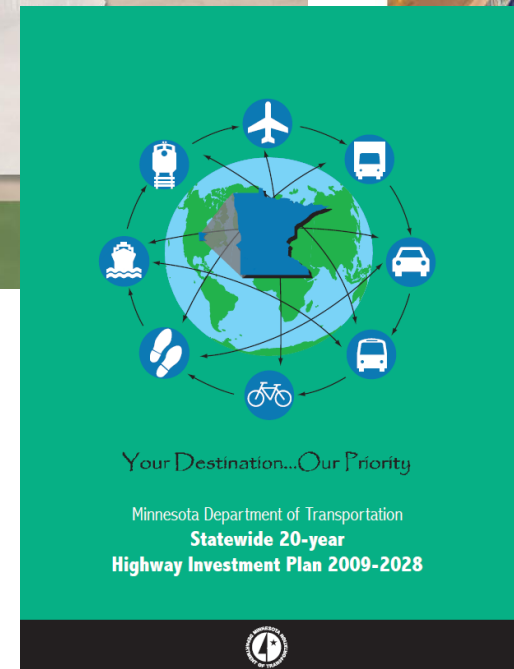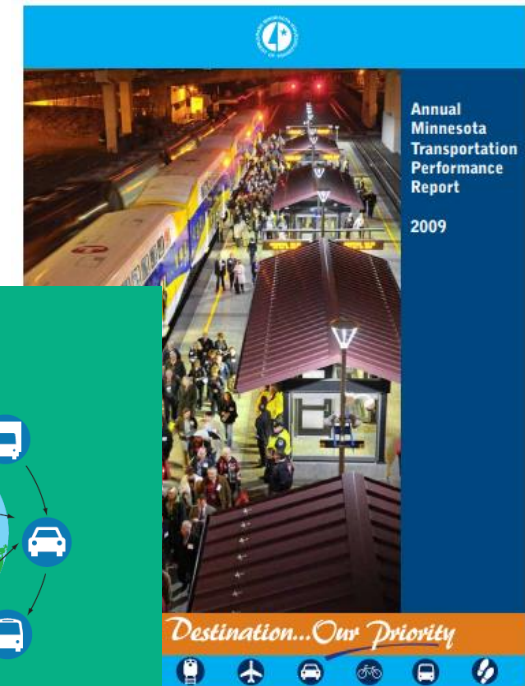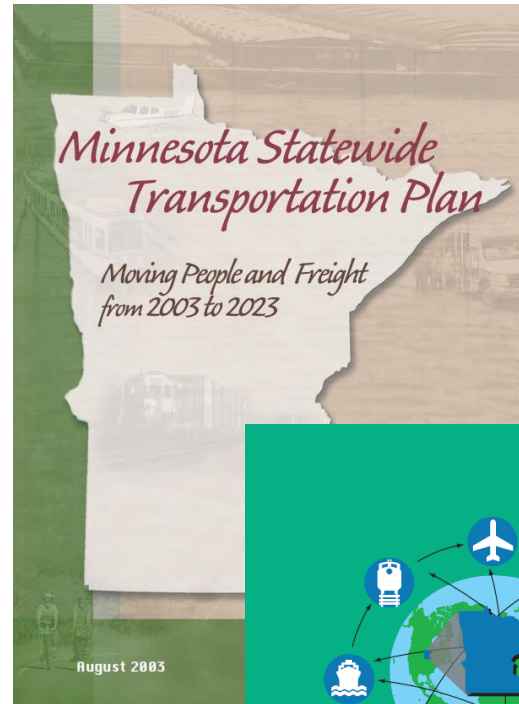
Current performance-based planning

Multimodal Plan

Supports Minnesota GO 50-year vision. Establishes objectives & strategies to guide investment.

Investment Plans

Integrates performance planning & risk assessment to establish priorities for projected funding. Considers impact of investments on performance targets.

Performance Monitoring

Evaluates progress and reports performance to the public.

UNDERSTANDING PERFORMANCE MEASUREMENT

DEPARTMENT OF TRANSPORTATION

Learn more: performance.minnesotago.org

Minnesota's transportation system has a lot of pieces.

Our system is made up of roads, bridges, sidewalks, trails, airports, railroads, waterways and more. The people who build, maintain and use them are also part of the system.

Measuring performance helps us understand if our system is meeting our goals.

The agencies that manage our transportation system set goals for each piece. "Performance measures" are how we track them to make sure the system works how we expect.

Knowing which goals we meet and where we fall short drives how we invest in and operate our system.

Everything we do involves tradeoffs — costs vs. benefits, long-term vs. short-term and more. Performance data helps us make our decisions wisely.

TWO WAYS TO MEASURE

STATE

Initiated: 1990s

Minnesota was one of the first states to establish performance measures and continues to be a leader in using performance to inform decisions.

FEDERAL

Initiated: 2012

Legislation to set national performance measures passed in 2012. States were first required to report on them in 2017.

- Opportunities

  - Conversations about performance

  - Reliability data set

- Challenges

  - Different state vs. federal measures

  - Target Setting

This Photo by Unknown Author is licensed under CC BY

Conversations about performance

TRENDING UP
- Intersections
- Older drivers
- Pedestrians
- Speed
- Unlicensed drivers
- Work zones

STEADY
- Bicyclists
- Commercial vehicles
- Impaired roadway users
- Lane departure (head-on)
- Motorcyclists
- Trains

TRENDING DOWN
- Lane departure (run-off-the-road)
- Unbelted occupants
- Younger drivers

- Target setting requirements has led to good conversations about performance

- Increased engagement and coordination with MPOs

Reliability dataset

Figure 1: Annual Statewide TTTR Index Value
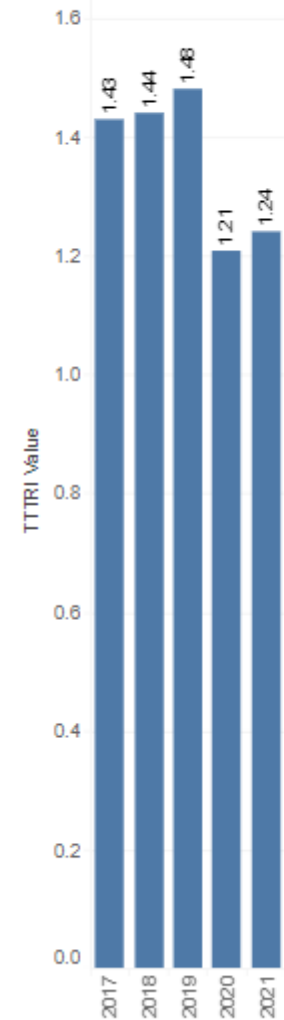
Figure 2: TTTR Index Values for Metropolitan Areas in MN
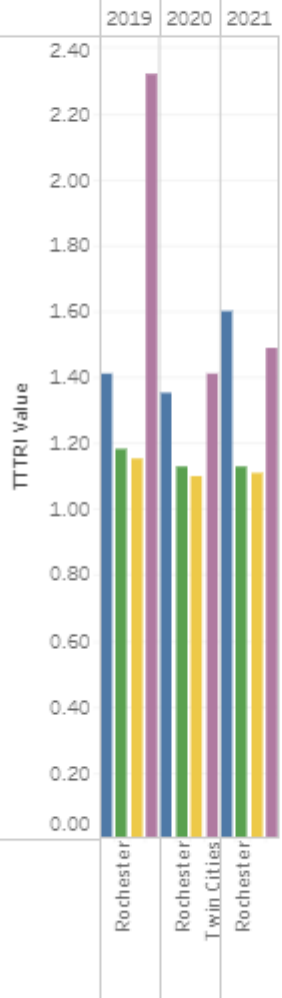
Figure 3: Seasonality and Average TTTR Index Values

- National Performance Management Research Data Set (NPMRDS)

- New use of combined Interstate and Non-Interstate NHS reliability measure

Percent of pavements of the Interstate system in good condition, 2009-2025

Legend: Actual Federal, Actual MnDOT, Projected MnDOT, MnDOT Target, Federal Target

Percent of pavements of the Interstate system in poor condition, 2009-2025

Legend: Actual Federal, Actual MnDOT, Projected MnDOT, Target (MnDOT & Federal)

- Federal pavement measure is substantially different than MnDOT's measure

- Pavement model cannot predict federal measures

- Confusion with federal minimum condition requirements
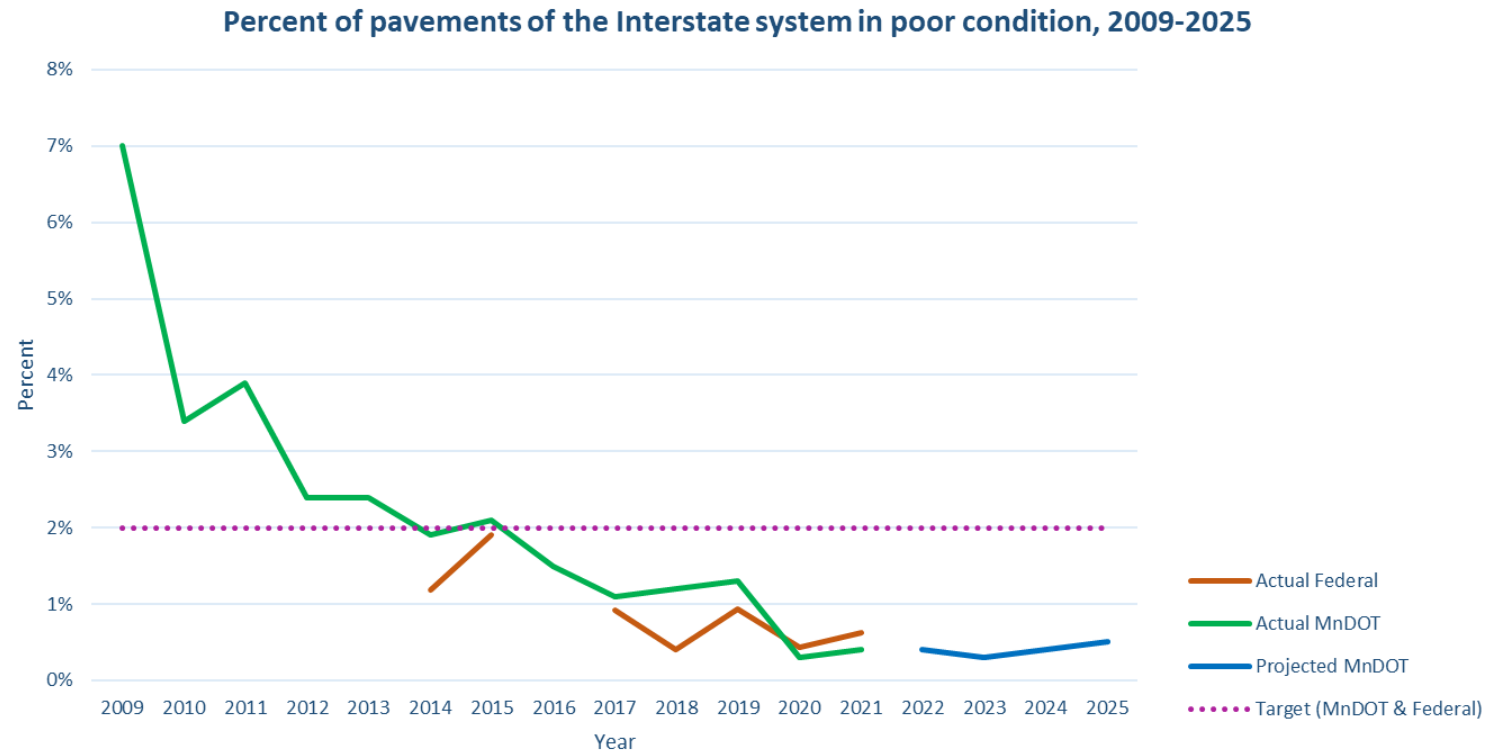
- Timeframe issues
  - Short-term vs long-term
- Reconciling definition and methods
  - Target vs expected outcome
  - Policy or goal based vs trend based
- Use in decision making
- Implications of meeting/not meeting

- Federal TPM requirements
  - Be open to learning
  - Provide constructive feedback when needed

- Use and develop measures within the state to move toward the Minnesota GO vision

MINNESOTA'S MULTIMODAL TRANSPORTATION SYSTEM MAXIMIZES THE HEALTH OF PEOPLE, THE ENVIRONMENT AND OUR ECONOMY.

Quality of Life

Environmental Health

Economic Competitiveness

Thank you!

Deanna Belden

deanna.belden@state.mn.us

NJTPA's TPM Challenges & Opportunities

**TRB Webinar:
Successes and Challenges—
The First 4 Years of Federal
Performance Management**

March 30, 2023

Keith Miller, Data Analysis & Forecasting Manager

NJTPA Region & Board of Trustees

Bergen	Essex	Hudson	Hunterdon	Middlesex
Monmouth	Morris	Ocean	Passaic	Jersey City
Somerset	Sussex	Union	Warren	Newark
NJDOT	Governor Rep.	Citizens' Rep.	Port Authority	NJ TRANSIT
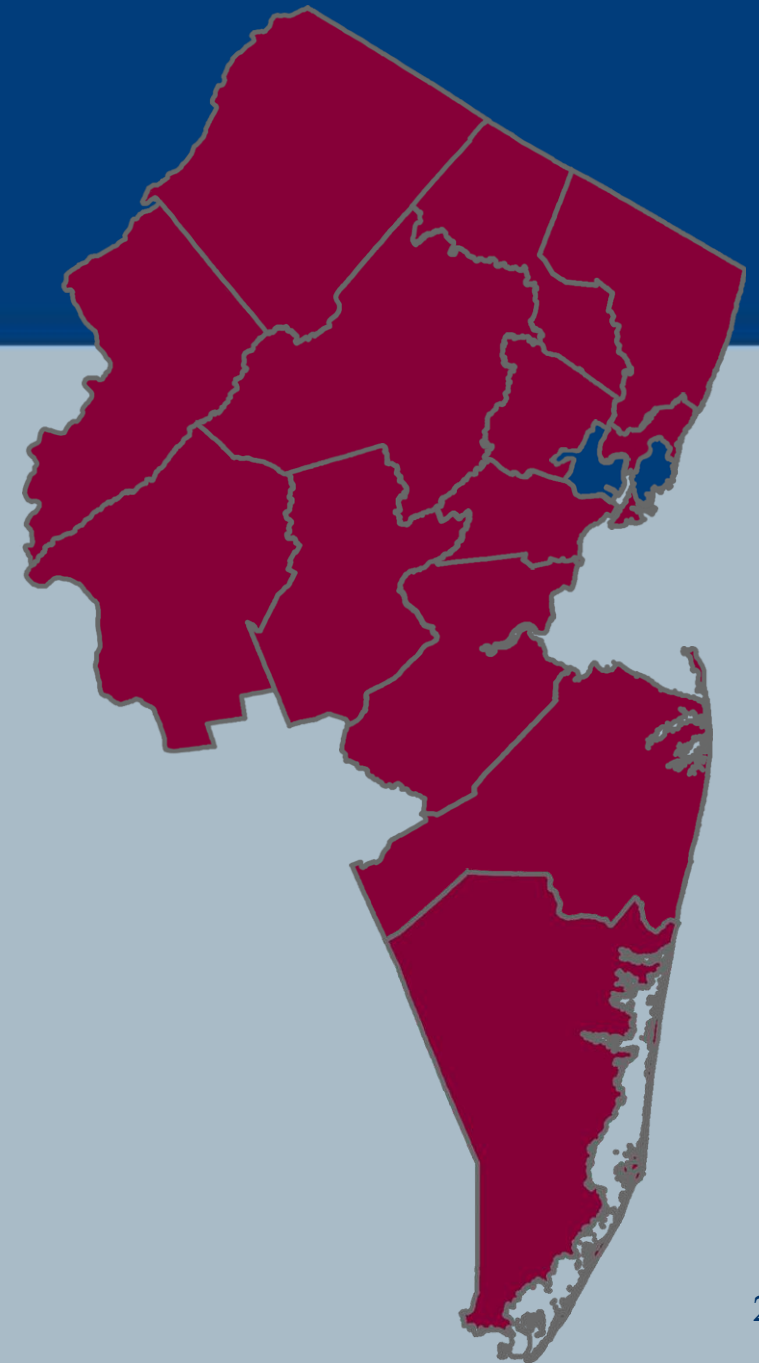
Regional Transportation System

Road Network:

- 147 million vehicle miles each day
- 26,000 miles of roads, including 177 miles of toll roads
- 4,800 bridges

Transit Network (pre-pandemic):

- 732,000 daily trips
- 13 percent of commuters ride transit
- 250 bus routes
- Commuter rail: 390 miles of track, 150 stations

Plan 2050: Transportation. People. Opportunity.

- Long-range plan (adopted September 2021)
- A vision for all transportation investments
- Forecasts demographics and performance
- Identifies needs and improvements

Transportation System Performance

Figure 4-10: Percent Roadway Lane-miles in Good or Fair (i.e., Acceptable) Condition

Figure 4-3: Roadway Travel Time Reliability

2019, AM Peak Period. Level of Travel Time Reliability is the ratio of the 80th percentile to the 50th percentile travel time (a higher LOTTR value represents worse reliability).

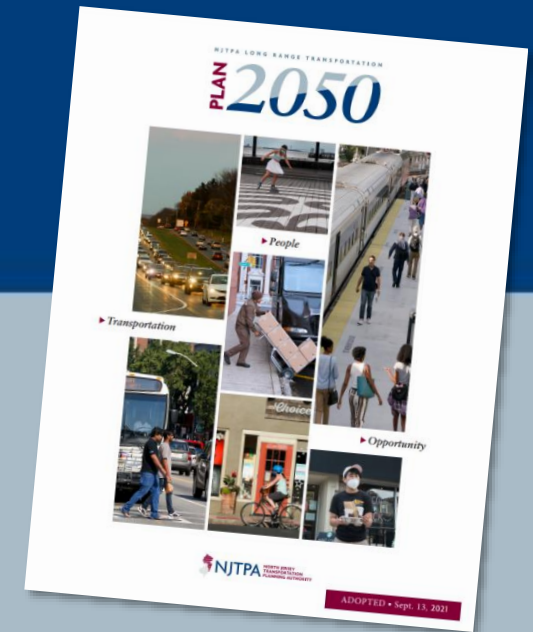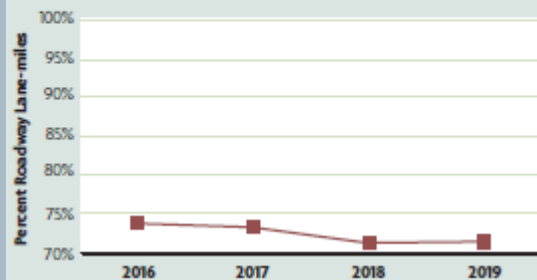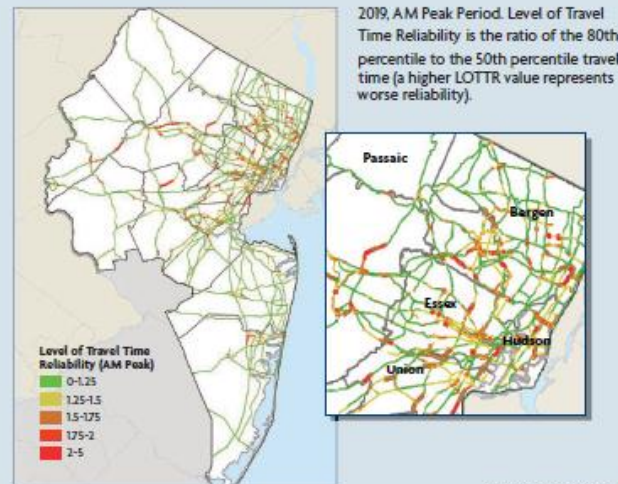**Transit Asset Condition Measures - NJ TRANSIT - 1-year targets**

Measure	Previous target FY2019	Condition FY2019	Previous target met?	Current target FY2020
Rolling Stock: Percent of revenue vehicles that have met or exceeded their ULB[2]				
AB - Articulated Bus	100.00%	100.00%	✓	20.00%
AO - Automobile	28.89%	28.89%	✓	52.76%
BR - Over-the-road Bus	45.00%	52.02%	✗	46.40%
BU - Bus	0.00%	0.16%	✗	0.00%
CU - Cutaway	13.19%	11.67%	✓	1.50%
LR - Light Rail Vehicle	0.00%	0.00%	✓	0.00%[4]
MV - Minivan	4.35%	2.13%	✓	4.35%
RL - Commuter Rail Locomotive	6.41%	7.55%	✗	6.37%
RP - Commuter Rail Passenger Coach	18.26%	17.94%	✓	17.94%
RS - Commuter Rail Self-Propelled Passenger Car	100.00%	100.00%	✓	100.00%
SV - Sports Utility Vehicle	0.00%	0.00%	✓	0.00%

Transportation Improvement Program

- Performance-based Project Prioritization Criteria
- Performance measure discussion (Appendix M): Roadway & transit safety, roadway & transit assets, reliability/freight, traffic congestion, emissions reductions
  - Background
  - Targets and goals
  - Progress toward targets
  - Example projects & programs
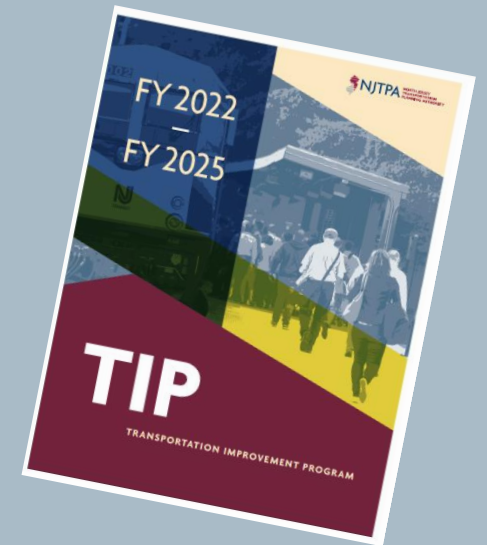
Highlights from Use of National Performance Measures

- Successful multi-agency cooperation
- Highlights important transportation issues:
  - Challenge to preserving aging infrastructure
  - Recent increases in traffic fatalities
  - Importance of travel time reliability for people and goods
  - Prevalence of non-SOV modes
  - Project benefits across programs
- Short-term targets will serve as useful benchmarks
- National measures don't tell the complete story

First Four Years:
Challenges & Opportunities

- Communication and collaboration
  - Intra-agency
  - Interagency
- Evolving data
- Meaningful targets

Communication and Collaboration (Intra-agency)

- Explaining measures, telling stories, getting buy-in

Peak Hour Excessive Delay

Travel Time Reliability

Alicia
drives to work in Princeton

Bill
bikes to Jersey Ave. takes train to Newark

Cole
takes bus to school

Dorie
Mom drives to daycare in Princeton

https://www.youtube.com/watch?v=mXTGteSlVU8

Communication and Collaboration (Intra-agency)
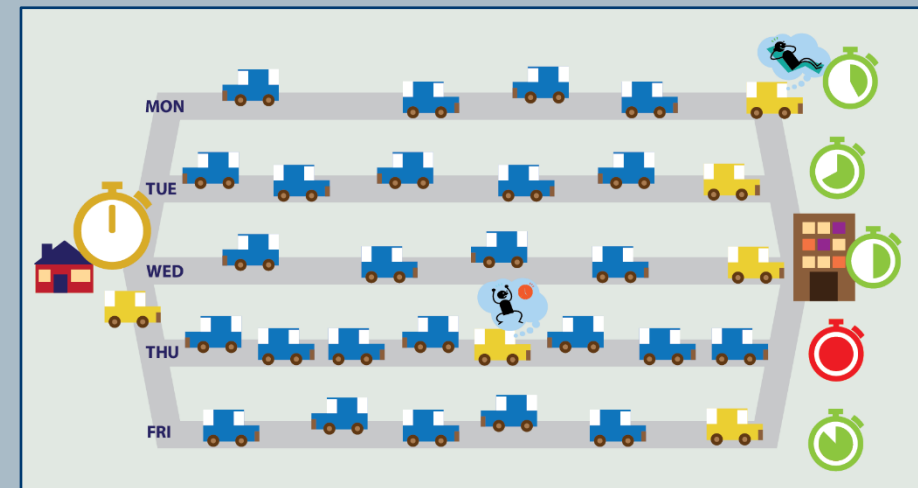
Communication and Collaboration (Interagency)

- Interagency groups

PM Rule	Team
Safety (PM1)	NJ Safety Team
Infrastructure (PM2)	NJ TAMP Team
System Performance (PM3)	NJ Complete Team
	UZA Coord. Groups
	NJ AQ Working Group
Transit Assets	Transit Providers, MPOs, NJDOT
Transit Safety	
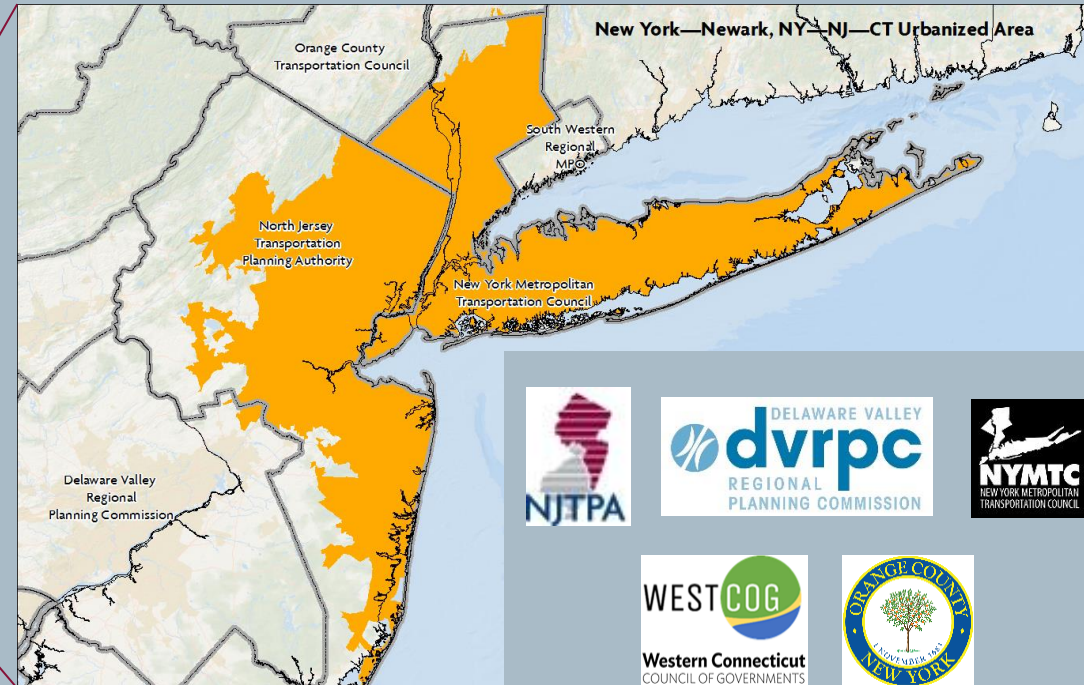
MPO Collaboration Group
MAP Forum

New York/Newark UZA

New York—Newark, NY—NJ—CT Urbanized Area

Evolving Data

PHED Trends, NYC UZA

Decreasing NHS mileage in NPMRDS

CATTLab missing NY PSLs

AVAIL NPMRDS data issue

- Current Target
- CATTLab Tool
- AVAIL Tool
- Updated Hybrid
- HPMS Hybrid
- NHS_Miles
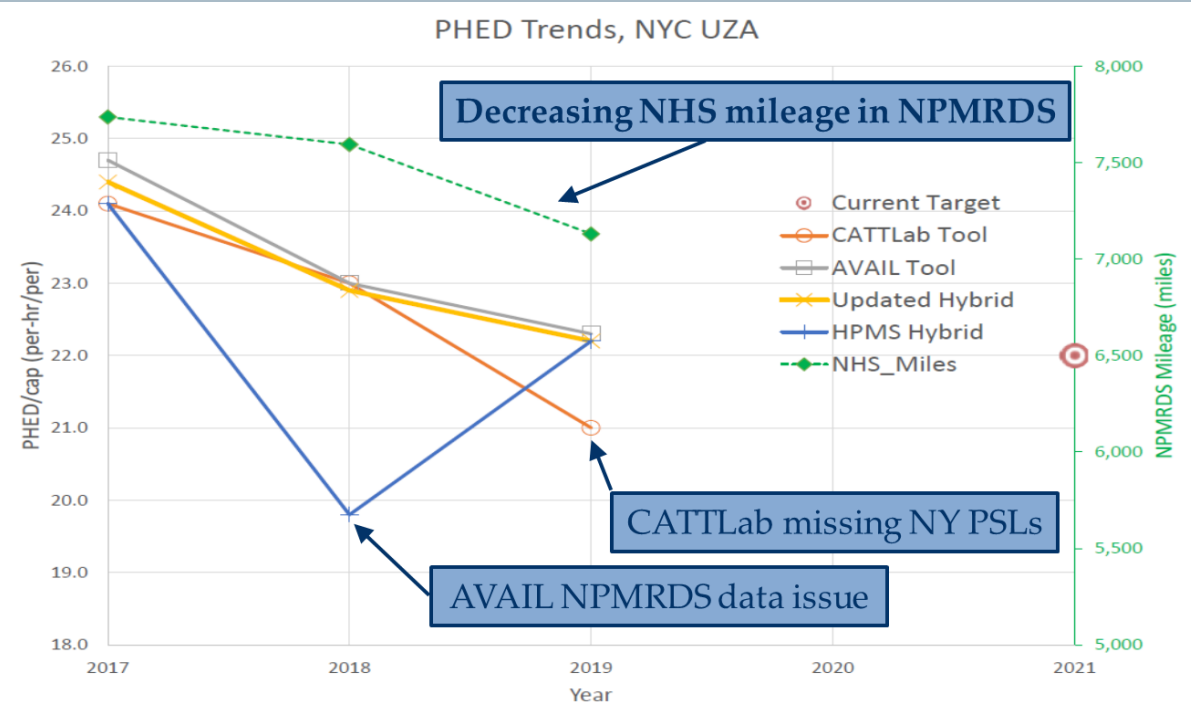
NJTPA — NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY — Defining the Vision. Shaping the Future.

Transportation Performance Measures
Select a topic to begin

Access/Mobility • Safety • Reliability • Competitiveness
Resiliency • Environment • Community • Condition

Other Regional Indicators

Economy & Land Use • Healthy Living

https://tpm.njtpa.org/rpm_dashboard.html

Meaningful Targets

- Going beyond technical requirements
- Evolving the target-setting process:
  - Forum for performance discussions
  - Influence project and program development
  - Less focus on mechanics
  - More focus on performance story

Making Targets Matter
Managing Performance to Enhance Decision-Making
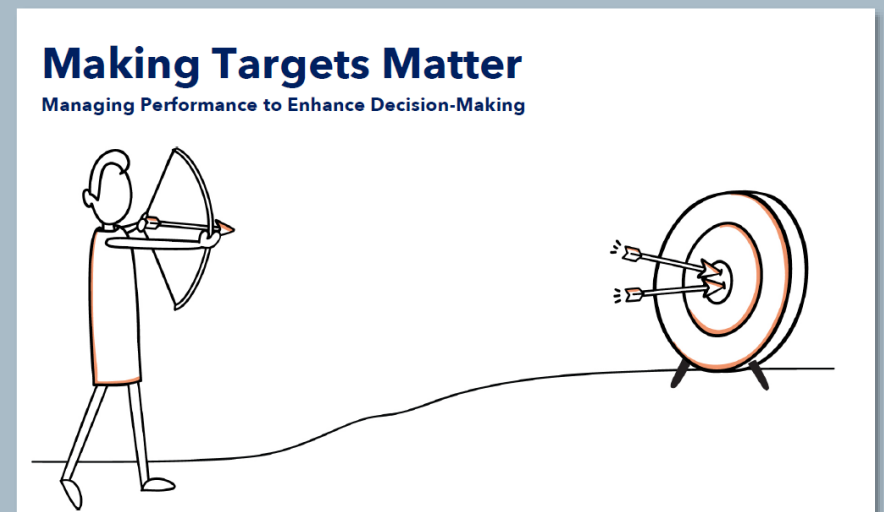
Contact Info

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North Jersey Transportation Planning Authority

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973-639-8444

Four Years of Federal Transportation Performance Management

Jordan Holt
DATE 03/30/2023

Metro at a Glance

$4.8B
TOTAL BUDGET

OPERATING BUDGET
$2.4B

CAPITAL BUDGET
$2.4B

3rd BUSIEST U.S. RAIL TRANSIT SYSTEM

6th BUSIEST U.S. BUS NETWORK
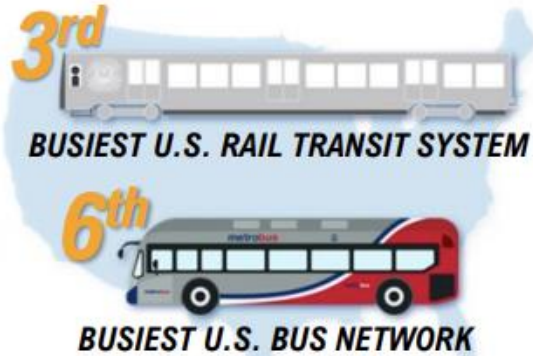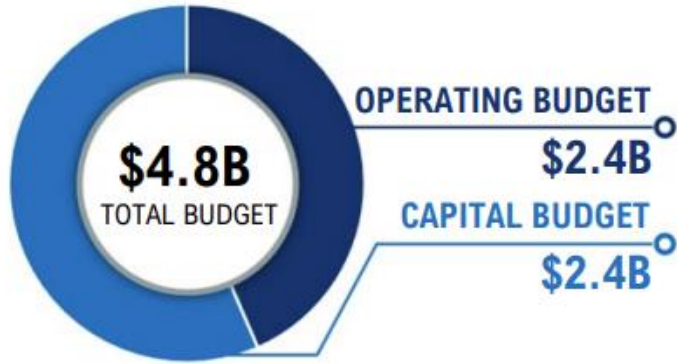
METROBUS		METRORAIL		METROACCESS	
1,571 ACTIVE FLEET	38.4M SCHEDULED REVENUE MILES	1,278 ACTIVE FLEET	132.3M SCHEDULED REVENUE MILES	754 ACTIVE FLEET	28.5K SCHEDULED REVENUE MILES

130 MILES OF RAIL		98 RAIL STATIONS	
AERIAL	19 MILES	DC	40 STATIONS
SURFACE	60 MILES	MD	26 STATIONS
SUBWAY	51 MILES	VA	32 STATIONS

Long History of Performance-Based Management

Report Results → Strategic Goals → Measures → Targets → Business Plans, Actions, Resources → (back to Report Results)

"WMATA has established many of the performance-based planning and programming elements necessary…"
-Federal Highway Administration

Maturing Asset and Safety Management Practices

Asset Management

- 2010: FTA asset management grant
- 2011: First Asset Management Maturity Assessment
- 2013: Asset Management Strategy, Second Maturity Assessment
- 2016: Capital Needs Inventory and Prioritization (CY17-26)

2016 > FTA Publishes TAM Final Rule

- 2018: First Transit Asset Management Plan
- 2018: Jurisdictions provide dedicated capital funding
- 2019: 10-Year Capital Needs Forecast (FY19-28)
- 2022: Second Transit Asset Management Plan
- 2023: Capital Improvement Program and 10-year Plan

Safety Management

- 2016: Began developing a Safety Management System

2018 > FTA Publishes PTASP Final Rule

- 2020: First Agency Safety Plan
- 2021: Second Agency Safety Plan
- 2022: Partnership with MITRE, starting with focus on Safety Culture
- 2022: Third Agency Safety Plan
- 2022-24: Safety Risk Management process

Metro's Suite of Plans

FY2023 Transit Asset Management Targets

Table 3-6. Current Performance Targets

Asset Class	Performance Measure	FY2023 Targets
Rolling Stock (Revenue Vehicles)	Percentage of vehicles that have met or exceeded their ULB	Railcars: 0% Standard Buses: 4% Articulated Buses:0% (MetroAccess) Vans: 7%
Equipment (Non-Revenue Vehicles)	Percentage of vehicles that have met or exceeded their ULB	Automobiles: 51% Truck & Rubber Tired: 33% Steel Wheeled: 29%
Facility	Percentage of facilities rated below three (3) on the FTA TERM scale	Admin & Maintenance: 8% Passenger & Parking: 5%
Infrastructure	Percentage of track segments, signal, and systems with performance restrictions	5.2%

FY2023 Safety Performance Targets

1.4.2.1 Safety Performance Target: Fatalities

No employee or customer should experience a fatality as a result of using Metro.

Metric	Bus Target	Rail Target	MetroAccess Target
Fatalities	0	0	0

1.4.2.2 Safety Performance Target: Injuries

Theoretically, all employees and customers should have a Metro experience that is free from harm. The following targets reflect Metro's commitment to move closer toward making this theory a reality.

Metric	Bus Target	Rail Target	MetroAccess Target
Customer Injury Rate*	56.4	20.6	15.6
Employee Injury Rate*	15.4	8.5	8.1
Overall Injury Rate* Combined	71.8	29.1	23.7
Overall Injury Count	433	104	43
Targeted performance improvement percentage	15%	15%	15%

*per 10 million VRM

1.4.2.3 Safety Performance Target: Safety Events

The key to ensuring zero fatalities and reducing injuries is to continuously improve toward creating an environment that is conducive to consistent outcomes, which equates to experiencing less safety events. Consequently, the safety performance improvement targeted for safety events is consistent with the target for injuries.

Metric	Bus Target	Rail Target	MetroAccess Target
Safety Event Rate*	53.0	3.9	19.5
Safety Event Count	188	23	35
Targeted performance improvement percentage	15%	15%	15%

*per 10 million VRM

1.4.2.4 Safety Performance Target: Assaults

No employee should have to worry about the threat of being assaulted at work. To achieve these targets, MTPD is taking the lead by employing the latest best practices and implementing a strategy composed of three pillars: education, outreach, and enforcement.

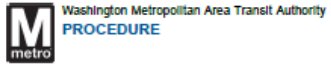| Metric	Bus Target	Rail Target	MetroAccess Target
Assault Rate*	10.0	10.0	0
Assault Count	36	60	0
Targeted performance improvement percentage	5%	17%	N/A

*per 10 million VRM

1.4.2.5 Safety Performance Target: System Reliability

Maintaining the system in a State-Of-Good-Repair (SOGR) is the foundation for Metro to produce produces consistent, repeatable outcomes that create an environment conducive to a safe experience. Historically, rail reliability targets were based on mean time between mechanical failure whereas the bus and MetroAccess modes were based on mean time between delay. Target setting has continuously improved in this area with the calculations based on mean time between delay standardized across all three modes. Additionally, the 7000 series railcars performance is significantly different in terms of the number of miles travelled and reliability compared to the legacy fleet (2000, 3000, and 6000 series), so specific targets have been established as reflected in the table below.

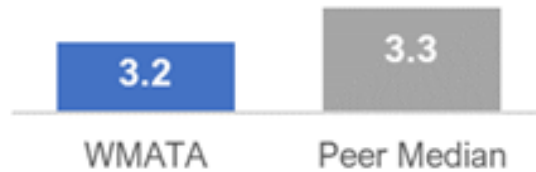| Metric	Bus Target	Rail Target	MetroAccess Target
System Reliability (mileage in terms of Mean Distance Between Delay)	8,200	56,500 (7k Fleet) 14,000 (Legacy Fleet)	22,000
Targeted performance improvement percentage	9%	5% (7k) 4% (Legacy Fleet)	3%

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Successes

Mature Target Setting Process	Unified and Standardized Safety Reporting

- Documentation
- Benchmarking
- Data quality

Challenges/Opportunities

Federal measures don't tell 100% of our story

- Safety measures are retrospective, don't capture culture
- GAO 19-202 "Actions Needed to Strengthen Capital Planning"

> The General Manager of WMATA should develop performance measures to be used for assessing capital investments and the capital planning process to determine if the investments and planning process have achieved their planned goals and objectives. (Recommendation 2)
>
> ● Open ⓘ
>
> create an inventory of performance measures that will be made widely available across the organization, and such measures will be included in project implementation plans and used to track progress and measure project specific outcomes. WMATA

Discomfort setting non-zero safety targets

- Tension between long-term goals and annual targets

Metrorail System Safety Event Rate

● **3.8** Rail safety events per 10 million vehicle revenue miles, meeting target of no more than **3.9**

12 events during first 6 months of FY23:
- 4 maintenance vehicle derailments
- 4 persons struck by trains
- 3 smoke/fire incidents (1 arcing/burning cable)
- 1 gas leak

11 events during same period in FY22

to zero

Sometimes measure results aren't meaningful

- Example: Right-of-way performance restrictions driven by capital work

Driver	FY21	FY22 Actual	FY23 Target
Unplanned SPDR	0.3%	1%	1%
Planned SPDR (Confirmed)	5.3%	3.5%	4.23%
Planned SPDR (Tentative)	-	-	-
Total	5.6%	4.5%	5.23%

Monthly Outlook for Planned SPDR in FY23 [Confirmed] [Tentative]
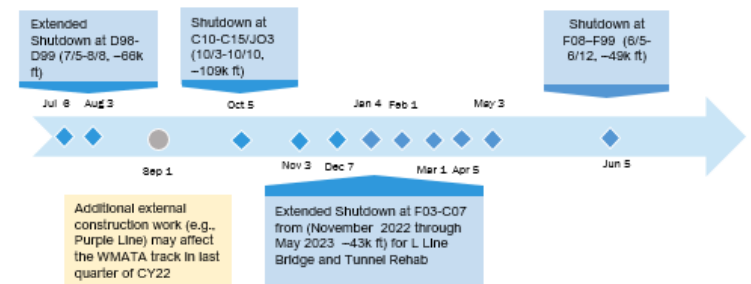
Today's presenters

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Jordan Holt
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Washington Metropolitan Area Transit Authority

Deanna Belden
deanna.belden@state.mn.us
Minnesota DOT

Keith Miller
kmiller@njtpa.org
New Jersey Transportation Planning Authority

Upcoming events for you

July 8, 2023

TRB's National Conference on Transportation Asset Management

https://www.nationalacademies.org/trb/events

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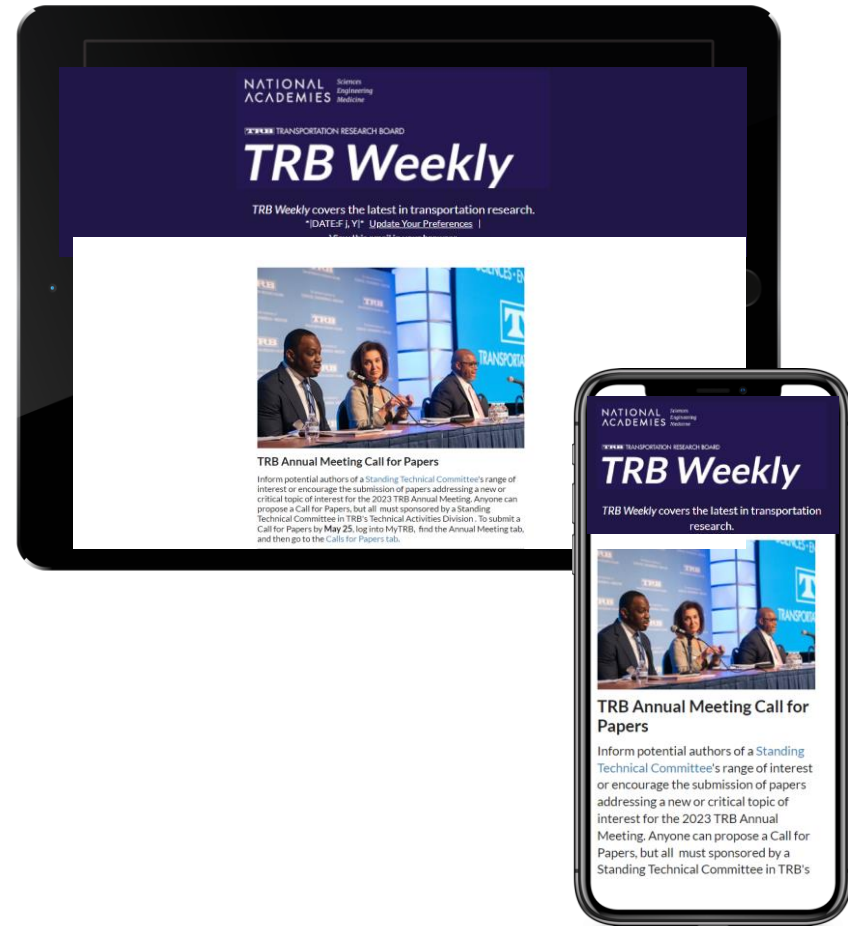
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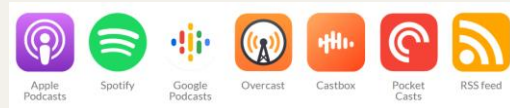
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- **Become a Friend of a Standing Technical Committee**
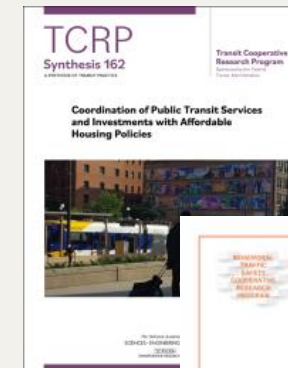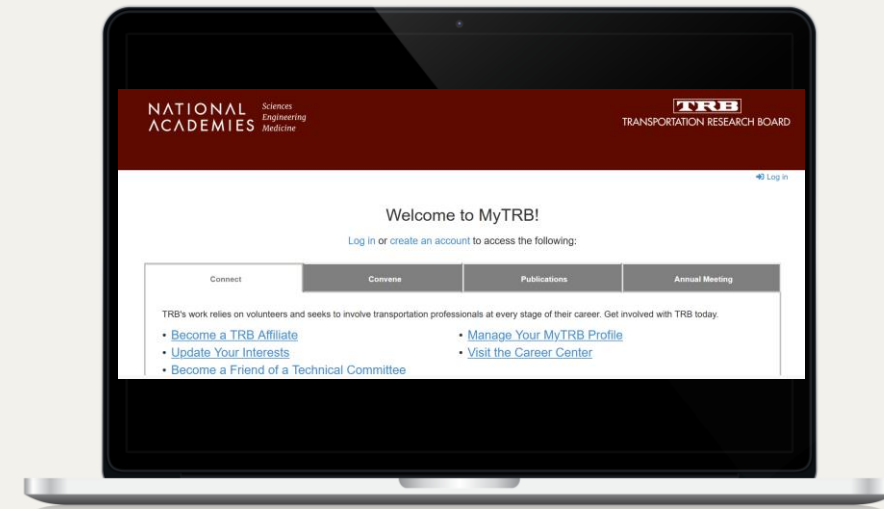 Network and pursue a path to Standing Committee membership

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