

PERFORMANCE BASED PLANNING & PROGRAMMING

2021 Update on Performance Targets

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TPB Technical Committee
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Performance Based Planning and Programming

- Under MAP-21 and reinforced in the FAST Act, federal surface transportation regulations require the implementation of performance based planning and programming (PBPP) by State DOTs, MPOs, and transit agencies

“transition to a performance-driven, outcome-based program that provides for a greater level of transparency and accountability, improved project decision-making, and more efficient investment of federal transportation funds.”
- State DOTs, MPOs, and providers of public transportation must link investment priorities to the achievement of performance targets (included in TIP and long-range plan)



Federal PBPP Performance Areas

- Federal PBPP process requires State DOTs, MPOs and providers of public transportation to set targets (annually or every two/four years) for 26 performance measures
 - Highway Safety – *annual*
 - Highway Assets (Pavement and Bridge Condition) – *4-year*
 - Highway System Performance (Reliability, Freight, CMAQ Program) – *4-year*
 - Transit Assets – *annual / with TIP*
 - Transit Safety – *annual*



TPB Measures and Targets

Performance Area	Measure	Metric	Adopted Targets as of December 16, 2020
Highway Safety	Five-Year Rolling Average	# of Fatalities	253.0
	Five-Year Rolling Average	Rate of Fatalities	0.588
	Five-Year Rolling Average	# of Serious Injuries	2435.8
	Five-Year Rolling Average	Rate of Serious Injuries	5.539
	Five-Year Rolling Average	# of Non-Motorized Fatalities and SI	508.6
Highway Asset Condition	Percent Pavement Lane Miles Interstate / NHS (excl. Interstate)	In Good Condition	52.7% / 31.1%
	Percent Pavement Lane Miles Interstate / NHS (excl. Interstate)	In Poor Condition	1.7% / 7.0%
	Percent Bridge Deck Area	In Good Condition	29.4%
	Percent Bridge Deck Area	In Poor Condition	3.9%
Highway Reliability	Percent Person Miles Traveled Interstate / NHS (excl. Interstate)	Level of Travel Time Reliability	58.5% / 72.7%
Freight	Index	Truck Travel Time Reliability	2.12
Congestion	Annual Hours per Capita	Peak Hour Excessive Delay	26.7
	Percentage	Non-SOV Travel	37.2%
Vehicular Emissions	Total Emissions Reduction (kg/day)	VOCs / NOx	2.195 / 4.703
Transit Asset Management	Percentage	Service Vehicles exceeding Useful Life	5.0% (Bus)
	Percentage	Revenue Vehicles exceeding Useful Life	16.6% (Truck)
	Percentage	Track Segments with Performance Restrictions	3.8% (Heavy Rail)
	Percentage	Facilities rated Marginal or Poor	6.3% (Pass. Facilities)
Transit Safety	Number and Rate (per Revenue Vehicle Mile)	Fatalities by Mode (showing Bus)	0 / 0
	Number and Rate (per Revenue Vehicle Mile)	Reportable Injuries by Mode (showing Bus)	462 / 0.75
	Number and Rate (per Revenue Vehicle Mile)	Reportable Safety Events by Mode (showing Bus)	660 / 1.08
	Mean Distance	Between Major Mechanical Failures by Mode (showing Bus)	20,660



National Highway System & Freight: Overview of Performance Measures

	Performance Measures
National Highway System	Interstate Travel Time Reliability (TTR) - Percent of person-miles traveled on the Interstate System that are reliable
	NHS (Non-Interstate) Travel Time Reliability (TTR) - Percent of person-miles traveled on the non-Interstate National Highway System (NHS) that are reliable

	Performance Measures
Freight Movement	Freight Reliability (TTTR) - Measurement of travel time reliability on the Interstate System using a Truck Travel Time Reliability (TTTR) Index

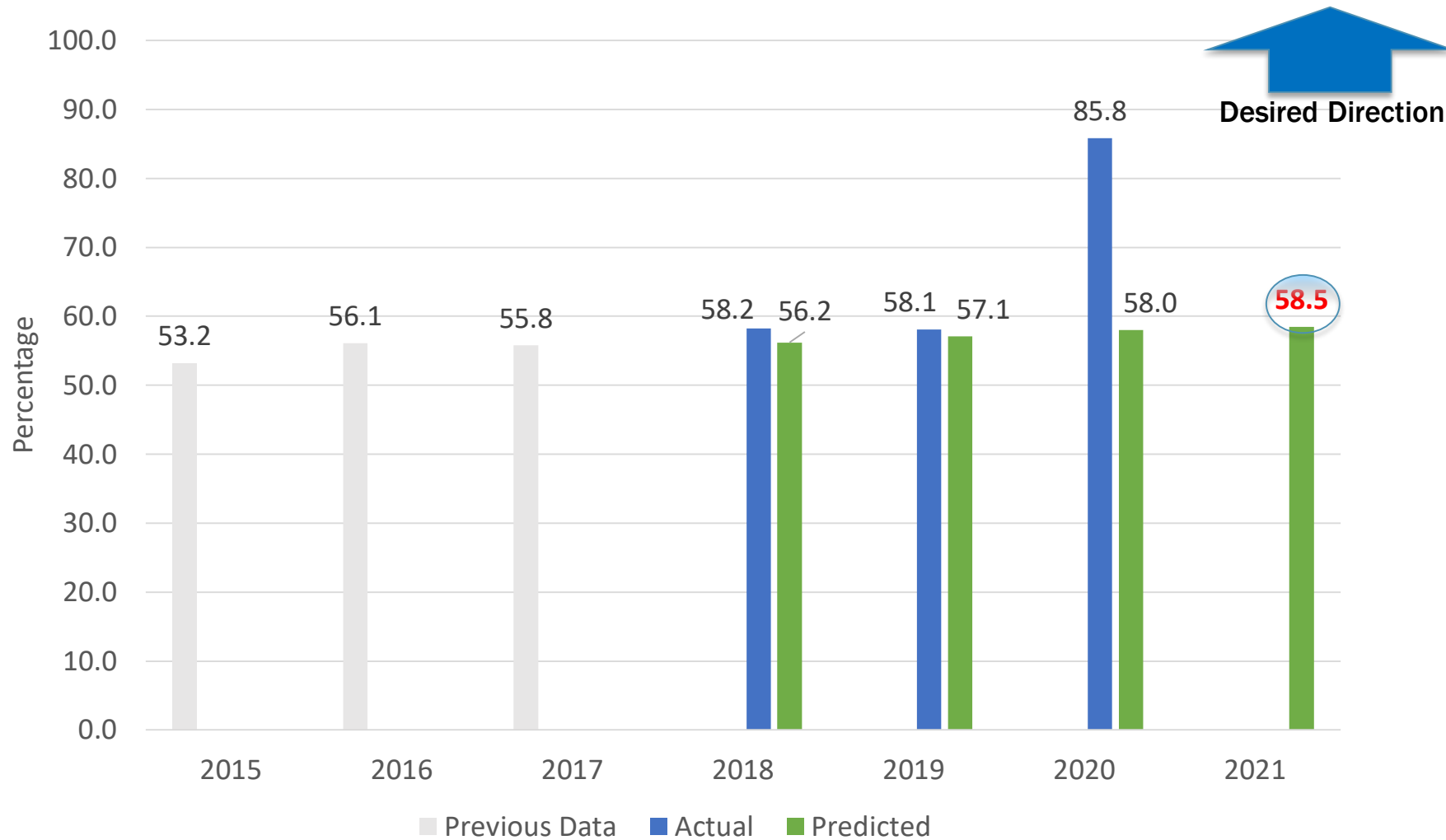


Regional Highway System and Freight – Adopted Targets

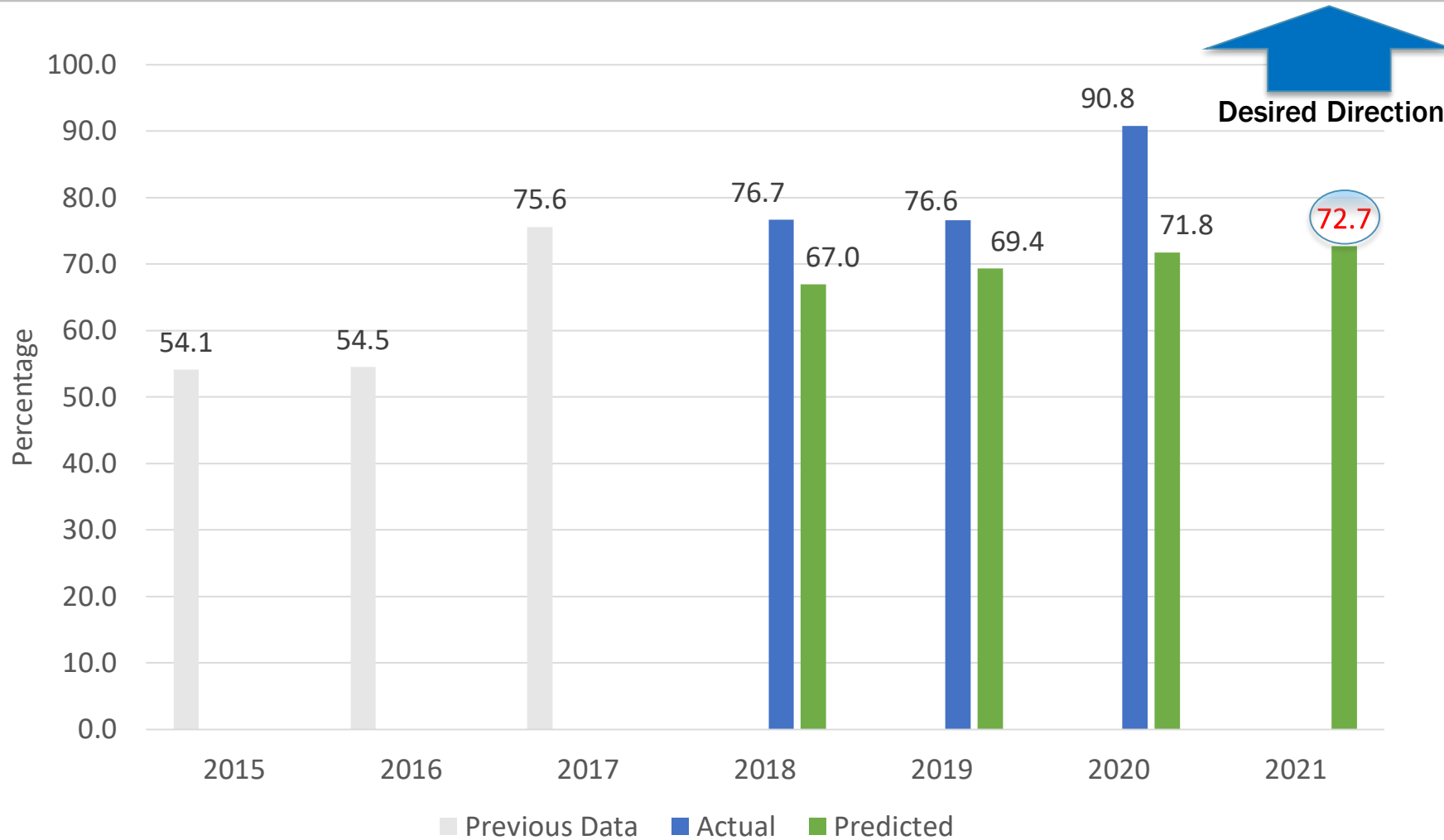
	CY 2018 – 2021 Four Year Target
TTR – Interstate Percent of person-miles traveled on the Interstate System that are reliable	58.5%
TTR – Non-Interstate NHS Percent of person-miles traveled on the non-Interstate NHS that are reliable	72.7%
TTR Index Ratio of the Interstate System Mileage providing for Reliable Truck Travel Times	2.12



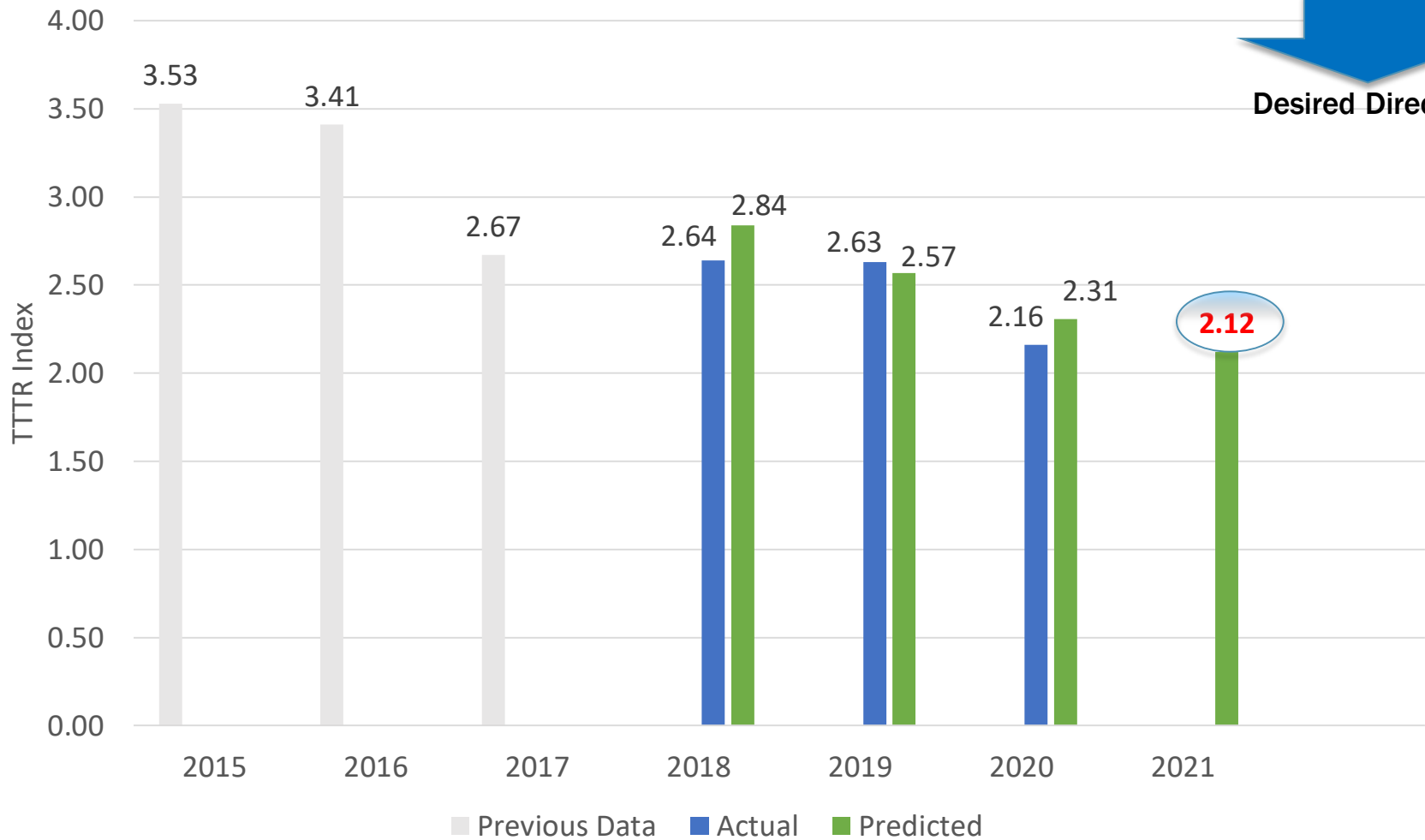
TTR (Interstate): Recent Data and Short Term Forecast and Target



TTR (NHS Non-Interstate): Recent Data and Short Term Forecast and Target



TTTR Index: Recent Data and Short Term Forecast and Target

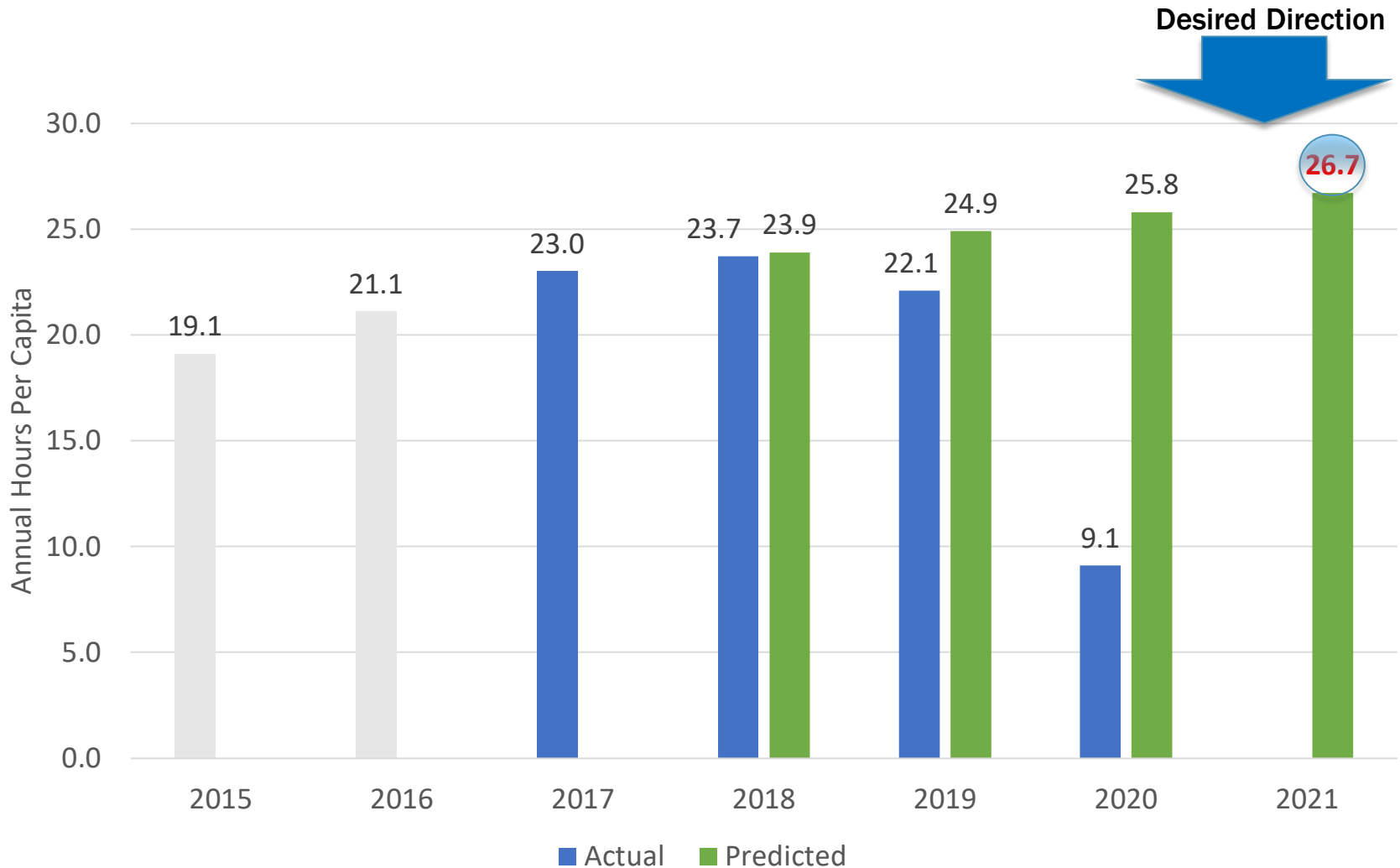


System Performance: CMAQ Program (Congestion Mitigation and Air Quality)

	Performance Measures
CMAQ Program: Traffic Congestion	Peak Hour Excessive Delay (PHED) – Annual hours of peak hour excessive delay per capita
	Mode Share - Percent of Non-SOV Travel on the National Highway System (NHS)

Performance Measures for the Washington DC-MD-VA urbanized area	CY 2018 – 2019 Two Year Target	CY 2018 – 2021 Four Year Target
Peak Hour Excessive Delay (PHED)	Not Required	26.7 Hours**
Mode Share (Non-SOV)	36.9%	37.2%

Traffic Congestion: PHED Recent Data and Short Term Forecast and Target



Impacts of Pandemic

- The impacts of the pandemic on the highway travel performance measures are evident
 - TTR (Interstate), TTR (NHS Non-Interstate) and PHED changed significantly
 - TTTR also changed, though not by as much. Monthly analysis indicates TTTR decreased significantly in April and May 2020 and then rebounded the rest of the year
- The 4-year performance measure targets are set for conditions at the end of the performance period, i.e., through December 31, 2021
 - Not based on averages throughout performance period
 - How travel changes the remainder of this calendar year will determine final performance vs. the targets

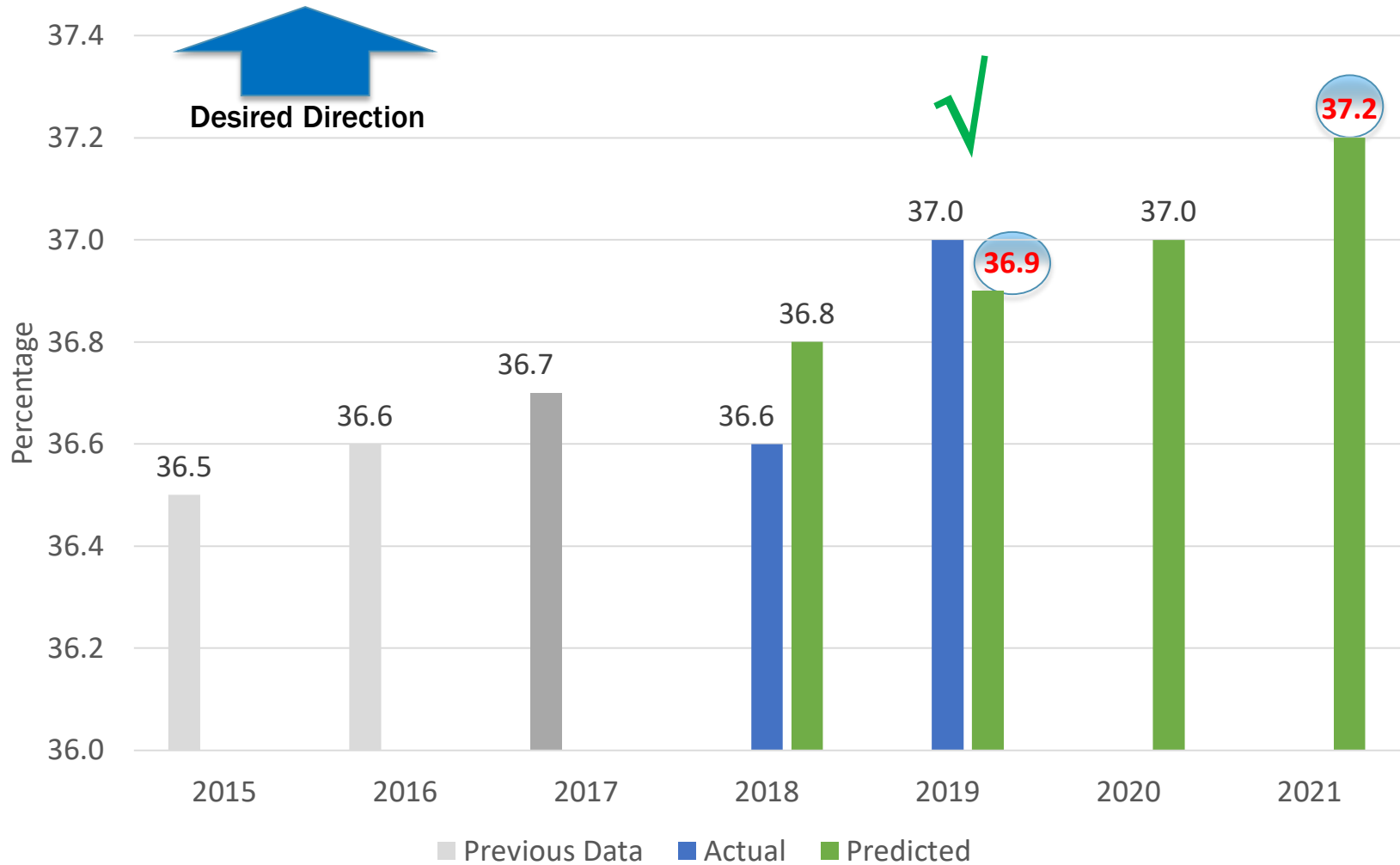


Other Performance Measures

- Highway Safety and Transit Safety targets set annually; will set targets for 2021 at end of the year
- Transit Asset Management data will be collected in October, with new targets set ahead of new TIP
- The Bridge Condition and Pavement Condition performance measure data for 2020 should be available mid-year
- CMAQ Emissions Reduction performance measure data (which follows Federal fiscal year and is cumulative) will be updated after September
 - Have already met and exceeded 4-year targets with 2019 and 2020 performance
- 2019 data for CMAQ Traffic Congestion: Mode Share (Non-SOV) performance measure is now available
 - **Have met 2-year target!**



Traffic Congestion: Mode Share (Non-SOV) Recent Data and Short Term Forecast and Targets



PBPP and Visualize 2045 (2022) and the 2023-2026 TIP

- Visualize 2045 long range transportation plan must include an overall system performance report on *“the condition and performance of the transportation system with respect to the performance targets... including progress achieved in meeting the performance targets”* § 450.324
 - Chapter and Appendix in long range plan document
- The FY 2023-2026 TIP must discuss the impact of projects on performance, to *“include, to the maximum extent practicable, a description of the anticipated effect of the TIP toward achieving the performance targets identified in the metropolitan transportation plan, linking investment priorities to those performance targets.”* § 450.326
 - Sections of TIP document



4-Year Target reporting and setting in 2022

- Next round of 4-year targets for period 2022-2025 must be set by State DOTs by October 1, 2022
 - MPOs have up to 180 days afterwards to set targets
 - CMAQ urbanized area and non-attainment area measures must be identical for the Washington DC-MD-VA UZA and the region's non-attainment area
 - Must complete the MPO CMAQ Performance Plan with MPO targets and submit to State DOTs by September
- Much 2021 data for performance only available mid-year
 - Will likely set new 4-year targets for 2022-2025 in September through November timeframe – ***after the Plan and TIP are scheduled to be approved***
 - Considering option of drafting updated Plan system performance report – ahead of federal certification



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Transportation Planning Board

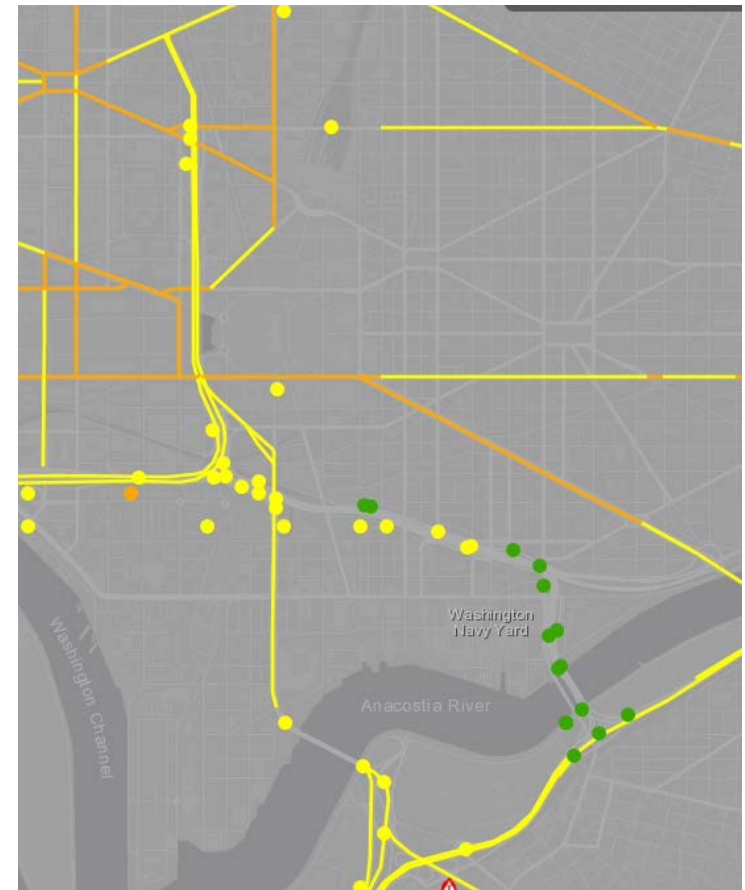
Highway Condition Performance Measures

Performance Measure	Data
(1) Percentage of pavements on the Interstate System in Good condition	<i>four metrics:</i> <ul style="list-style-type: none"> • IRI (International Roughness Index) • Cracking_Percent • Rutting (<i>asphalt only</i>) • Faulting (<i>jointed concrete only</i>) <i>three types of pavements:</i> <ul style="list-style-type: none"> • Asphalt pavements • Continuously Reinforced Concrete Pavement (CRCP) • Jointed Concrete Pavements
(2) Percentage of pavements on the Interstate System in Poor condition	
(3) Percentage of pavements on the NHS (excl. Interstate System) in Good condition	
(4) Percentage of pavements on the NHS (excl. Interstate System) in Poor condition	
(5) Percentage of NHS Bridges Classified as in Good Condition	<i>four condition ratings:</i> <ul style="list-style-type: none"> • Deck • Superstructure • Substructure • Culverts
(6) Percentage of NHS Bridges Classified as in Poor Condition	



Pavement and Bridge Measures – Data

- Pavement: data is reported annually by State DOTs into the Highway Performance Monitoring System (HPMS)
- Bridge: data is reported annually by State DOTs into the National Bridge Inventory (NBI)
- TPB staff accessed this data to determine performance for the region for the pavement and bridge performance measures



- A map site for the pavement and bridge conditions has been developed:
https://gis.mwcog.org/webmaps/tpb/pbpp/pavement_bridge/

Travel Time Reliability (TTR) & Truck Travel Time Reliability (TTTR) Data

- Data is collected through the National Performance Management Research Data Set (NPMRDS)
 - Procured and sponsored by the Federal Highway Administration (FHWA), this is the designated source for TTR/TTTR data
 - It is an archived speed and travel time data set (including associated location data) covering the National Highway System (NHS)
 - Data available at 5 minute intervals for Passenger vehicles, Trucks, and Trucks and Passenger vehicles combined
- Travel Time Reliability (TTR): the percent of person-miles for which the ratio of a longer travel time (80th percentile) to a “normal” travel time (50th percentile) is < 1.5 for the reporting segment
- Truck Travel Time Reliability (TTTR) Index: the ratio of a longer travel times (95th percentile) to a “normal” travel time (50th percentile)



TTR & TTRR Data Collection

- Data was collected using NPRDMS and MAP-21 widgets created by RITIS for the TPB metropolitan planning area
- A set of Dashboard widgets to help set targets, understand baseline conditions, and assess progress toward achieving the goals associated with the measures
- Available currently:
 - Interstate Travel time reliability (TTR)
 - Non-interstate NHS TTR
 - Truck TTR Index
 - Annual Hours of Peak Hour Excessive Delay (PHED) Per Capita



Traffic Congestion: Peak Hour Excessive Delay Overview

The Peak Hour Excessive Delay (PHED) measure is the per capita excessive delay on all reported segments on the National Highway System in the urbanized area

- Excessive delay = when travel speed is less than 20 miles per hour or 60% of the posted speed limit

PHED is calculated by measuring ¹ or forecasting:

- cumulative hours of excessive delay experienced by all people,
- travelling through all reported segments on the NHS in the urbanized area,
- during the peak period ² (*even though titled Peak Hour*),
- for the full calendar year.

1. TPB urbanized area Peak travel hours:

Weekday morning: 6 a.m. to 10 a.m. And Weekday afternoon: 3 p.m. to 7 p.m.

2. Current year data collected using the National Performance Management Research Data Set (NPMRDS)



NPMRDS: RITIS MAP-21 Widget

MAP-21

2. Select measures:

- Percent of the Person-Miles Traveled on the Interstate That Are Reliable (the Interstate Travel Time Reliability measure) (BETA)
Set target to at least
- Percent of the Person-Miles Traveled on the Non-Interstate NHS That Are Reliable (the Non-Interstate NHS Travel Time Reliability measure) (BETA)
Set target to at least
- Truck Travel Time Reliability Index (BETA)
Set target to less than
- Annual Hours of Peak Hour Excessive Delay Per Capita (BETA)
Set target to less than
State DOTs and MPOs may choose from two different evening peak periods. Please choose one.
 3pm - 7pm
 4pm - 8pm

[Provide and use your own volume data here.](#)

3. Select one or more years:

2017

Your selected time periods:

2017

4. Show data as:

- Graph
- Map

5. Name MAP-21 widget(s)

- Annual Hours of Peak Hour Excessive Delay Per Capita for DC - National Capital Region Transportation Planning Board, Washington (TPB)
- Truck Travel Time Reliability Index for DC - National Capital Region Transportation Planning Board, Washington (TPB)
- Non-interstate NHS Travel Time Reliability for DC - National Capital Region Transportation Planning Board, Washington (TPB)
- Interstate Travel Time Reliability for DC - National Capital Region Transportation Planning Board, Washington (TPB)

Interstate
Non-Interstate
Truck
PHED

MAP-21 widget editor interface showing configuration options for traffic reliability metrics. The interface includes a map of the Washington D.C. area with a blue highlighted region around Germantown and Polomac. The configuration panel on the left allows users to select measures, set targets, choose years, and name the widget. Blue arrows point from the configuration options to the corresponding map features: Interstate, Non-Interstate, Truck, and PHED.

