PERFORMANCE BASED PLANNING & PROGRAMMING

Draft 2022-2025 Targets:

- **Highway Assets (Pavement & Bridge Condition)**
- **Highway System Performance: Travel Time Reliability**

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Transportation Planning Board
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National Capital Region
Transportation Planning Board

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    - Methodology
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Performance Based Planning and Programming

- 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 in the TIP and the long-range transportation plan

4-Year Target reporting and setting in 2022

- Next round of 4-year targets for the two areas of Highway Assets and Highway Systems Performance for the period 2022-2025 must be set by State DOTs by **October 1, 2022**
  - o State DOTs must submit information on actual performance vs. targets for years 2018 through 2021 to the FHWA by October 1, 2022 in a *Full Period Performance Progress Report*
  - o State DOTs must develop and formally adopt new targets for years 2022 through 2025, and submit these targets to the FHWA by October 1, 2022 in a *Baseline Period Performance Progress Report*

- Some 2021 data for performance still pending
- Federal evaluation of performance vs. targets is based on latest information available
- MPOs have up to 180 days afterwards to set targets
  - No consequences for MPOs

Action Items – Accomplished / In-Progress

- Coordination on the PBPP requirements with the three DOTs: DDOT, MDOT, VDOT
  - Validation of recent actual performance data
  - Discussed methodology for forecasting future performance and setting targets
- Developed draft MPO regional targets for Highway Asset (Pavement and Bridge Condition) measures and for Highway Systems Performance: Travel Time Reliability measures
  - Adoption of 2022-2025 targets
  - Report on performance vs 2018-2021 targets to DOTs
    - Plan to update Visualize 2045 LRTP System Performance Report (~Dec 2022) ahead of FHWA/FTA certification review of MPO (early 2023)

Highway Asset: Pavement & Bridge Condition Performance Measures

Interstate Pavement	CY 2018 – 2021 Four Year Target	Actual Performance	
(1) Percentage of pavements on the **Interstate** System in **Good** condition	*52.7%*	**49.4%** (2020)	X
(2) Percentage of pavements on the **Interstate** System in **Poor** condition	*1.7%*	**0.2%** (2020)	√
NHS (Non-Interstate) Pavement			
(3) Percentage of pavements on the **NHS** (excl. Interstate) in **Good** condition	*31.1%*	**25.4%** (2020)	X
(4) Percentage of pavements on the **NHS** (excl. Interstate) in **Poor** condition	*7.0%*	**4.0%** (2020)	√
Bridges			
(5) Percentage of **NHS Bridges** Classified as in **Good** Condition	*29.4%*	**39.4%** (2021)	√
(6) Percentage of **NHS Bridges** Classified as in **Poor** Condition	*3.9%*	**1.7%** (2021)	√

Targets set by the TPB on July 18, 2018

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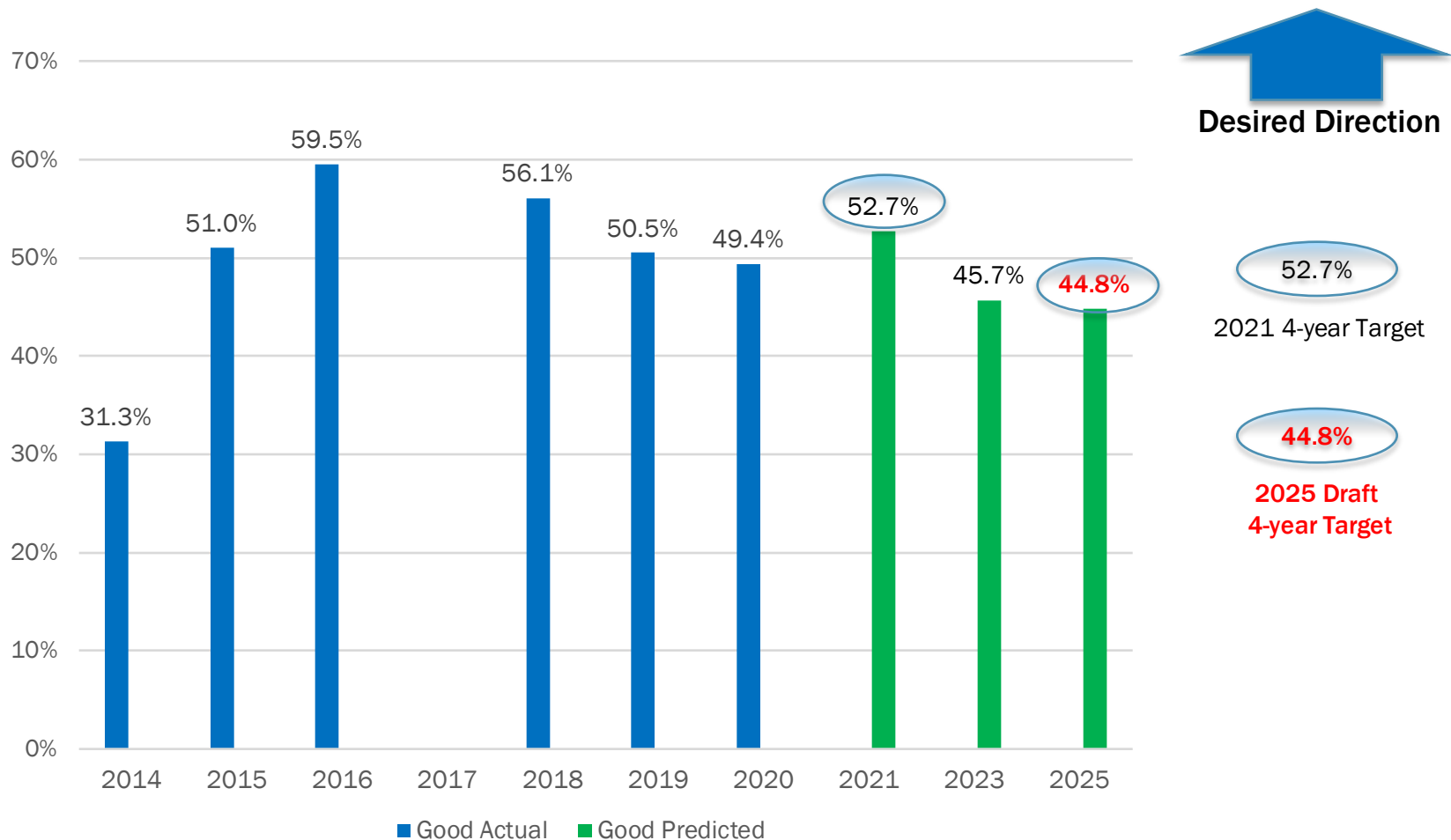**Transportation Planning Board**
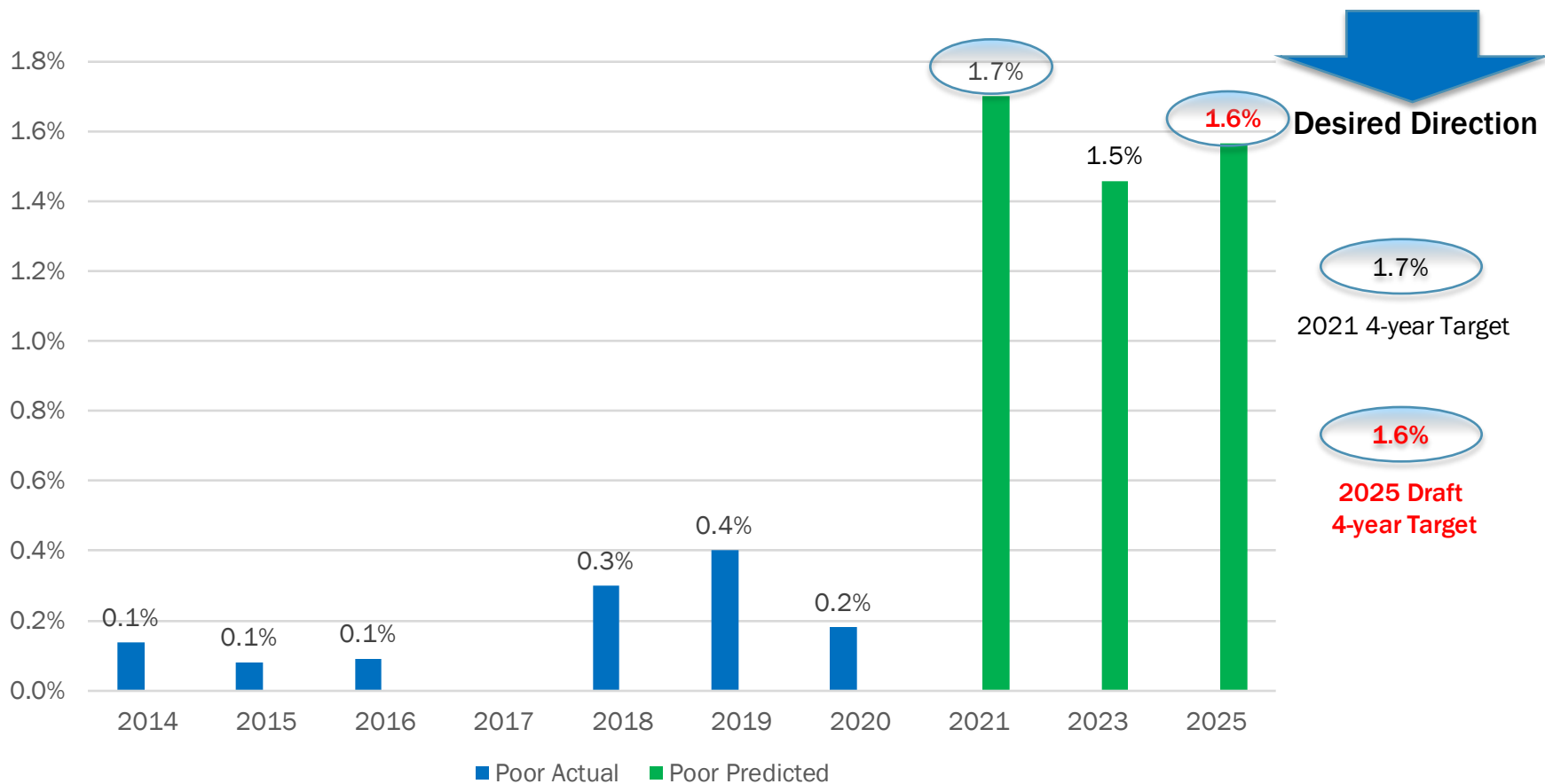
2022-2025 Highway Asset Target Methodology

- TPB staff used same general methodology as used in 2018

➢ Apply DOT forecasts (targets) to respective sub-region

   ➢ Apply DDOT forecasts in entirety

   ➢ Apply MDOT forecast for the four MD counties in the TPB planning area

   ➢ Apply VDOT statewide forecast to conditions in TPB area

❖ In general, DOTs planning for slowly degrading asset condition

   ❖ Decreased focus on Interstate "good" condition

   ❖ Increased focus on other NHS and on other state-maintained roads

   ❖ Constrained budgets vs increasing costs

   ❖ IIJA federal funds have increased but there is uncertainty with discretionary grant awards

Interstate Pavement: Performance vs. Targets (Good Condition)

Desired Direction

52.7%
2021 4-year Target

44.8%
2025 Draft
4-year Target

Year	2014	2015	2016	2017	2018	2019	2020	2021	2023	2025
Value	31.3%	51.0%	59.5%		56.1%	50.5%	49.4%	52.7%	45.7%	44.8%

■ Good Actual ■ Good Predicted

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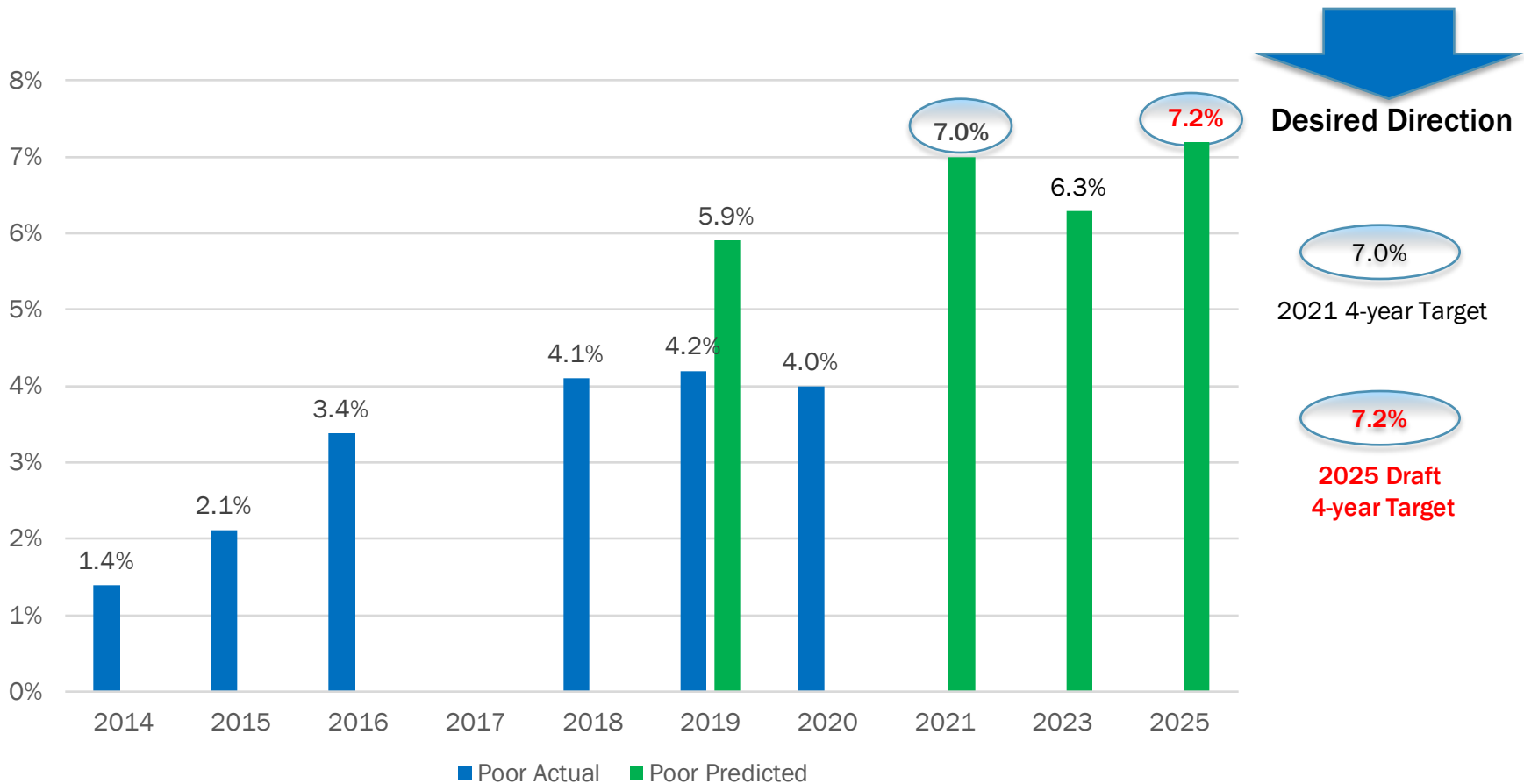**Transportation Planning Board**

Interstate Pavement: Performance vs. Targets (Poor Condition)
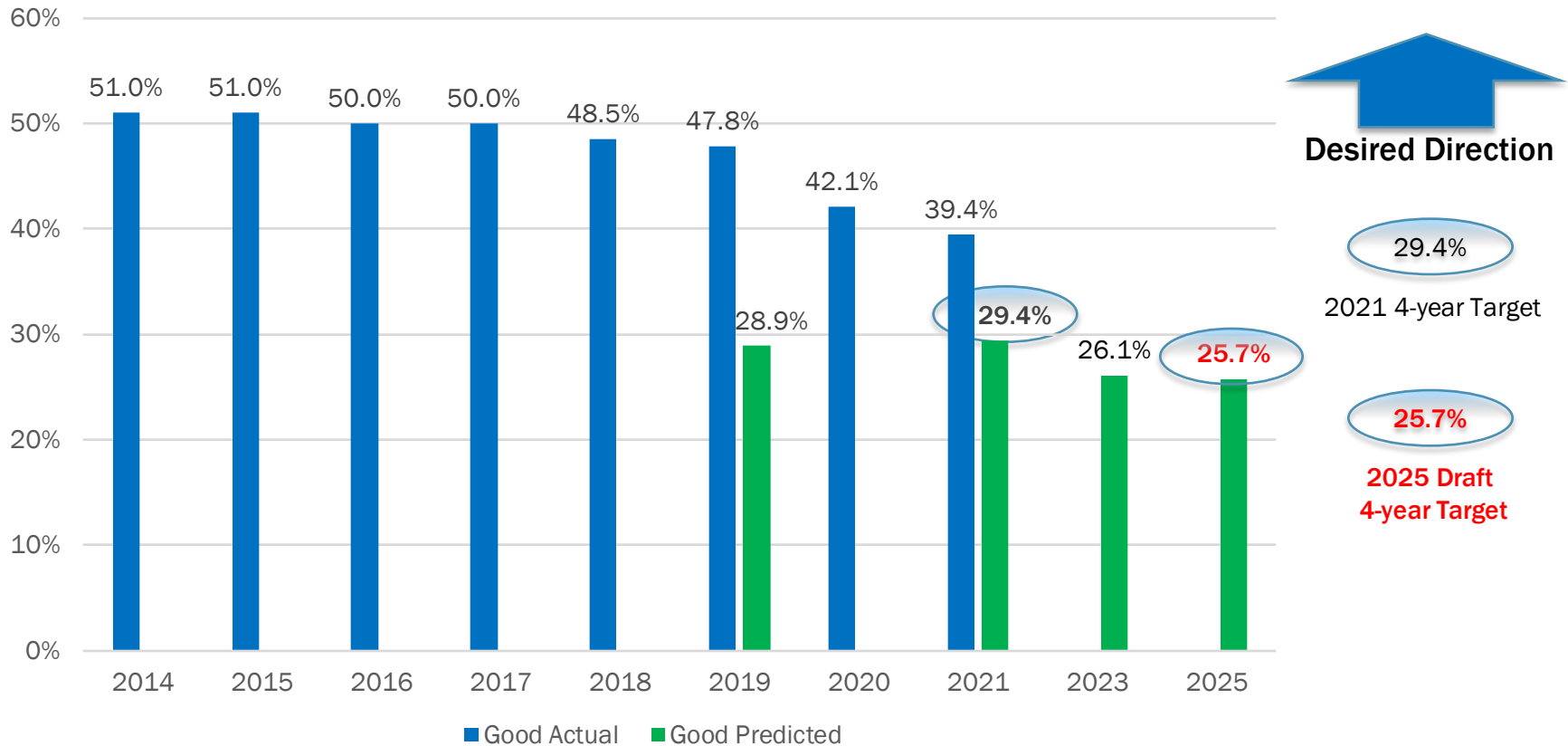
NHS (Non-Interstate) Pavement: Performance vs. Targets (Good)
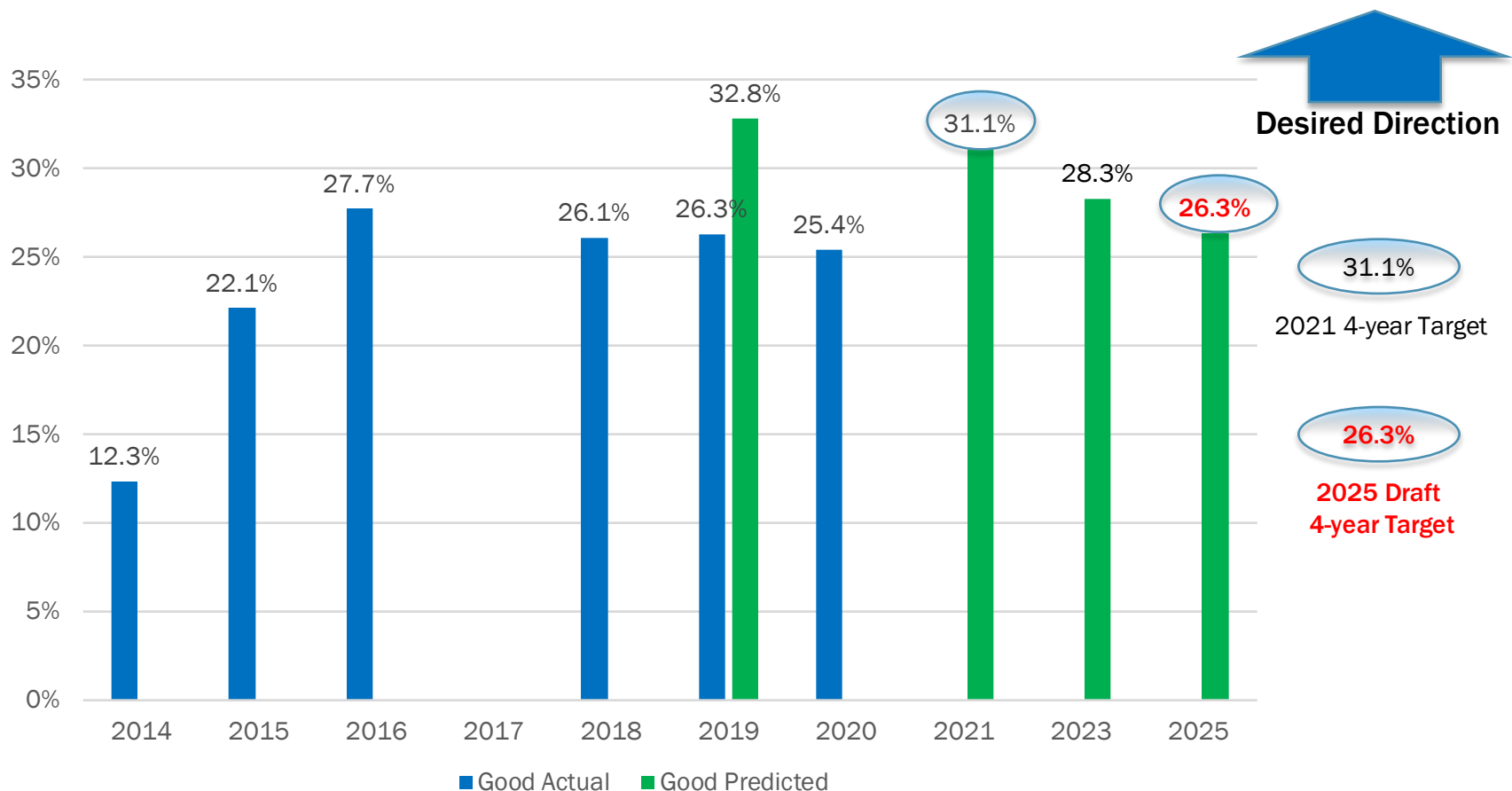
NHS (Non-Interstate) Pavement: Performance vs. Targets (Poor)

Bridges: Performance vs. Target (Good)

Desired Direction

29.4%
2021 4-year Target

25.7%
2025 Draft
4-year Target

- Good Actual
- Good Predicted

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Bridges: Performance vs. Target (Poor)

Desired Direction

3.9%
2021 4-year Target

4.2%
2025 Draft
4-year Target

- Poor Actual
- Poor Predicted

Year	Poor Actual	Poor Predicted
2014	2.0%	
2015	2.0%	
2016	2.0%	
2017	2.1%	
2018	1.9%	
2019	3.1%	3.9%
2020	2.9%	
2021	1.7%	3.9%
2023		3.7%
2025		4.2%
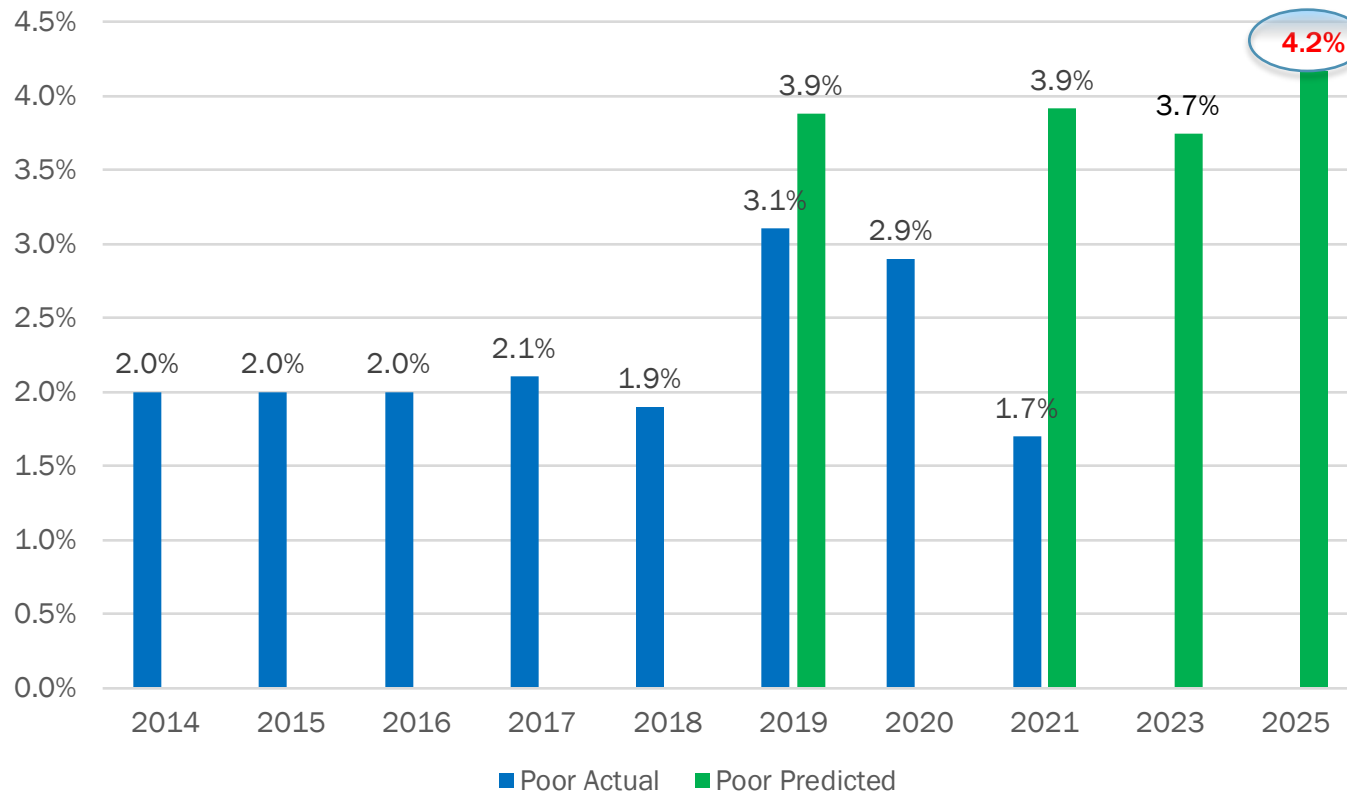
Highway Asset DRAFT 2022-2025 Targets for the NCR

Interstate Pavement	2022 – 2025 Four Year Target
(1) Percentage of pavements on the **Interstate** System in **Good** condition	**44.8%**
(2) Percentage of pavements on the **Interstate** System in **Poor** condition	**1.6%**
NHS (Non-Interstate) Pavement	
(3) Percentage of pavements on the **NHS** (excl. Interstate) in **Good** condition	**26.3%**
(4) Percentage of pavements on the **NHS** (excl. Interstate) in **Poor** condition	**7.3%**
Bridges	
(5) Percentage of **NHS Bridges** Classified as in **Good** Condition	**25.7%**
(6) Percentage of **NHS Bridges** Classified as in **Poor** Condition	**4.2%**

Highway System Performance: Travel Time Reliability Targets

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Highway System Performance: Travel Time Reliability Performance Measures

- Three performance measures:

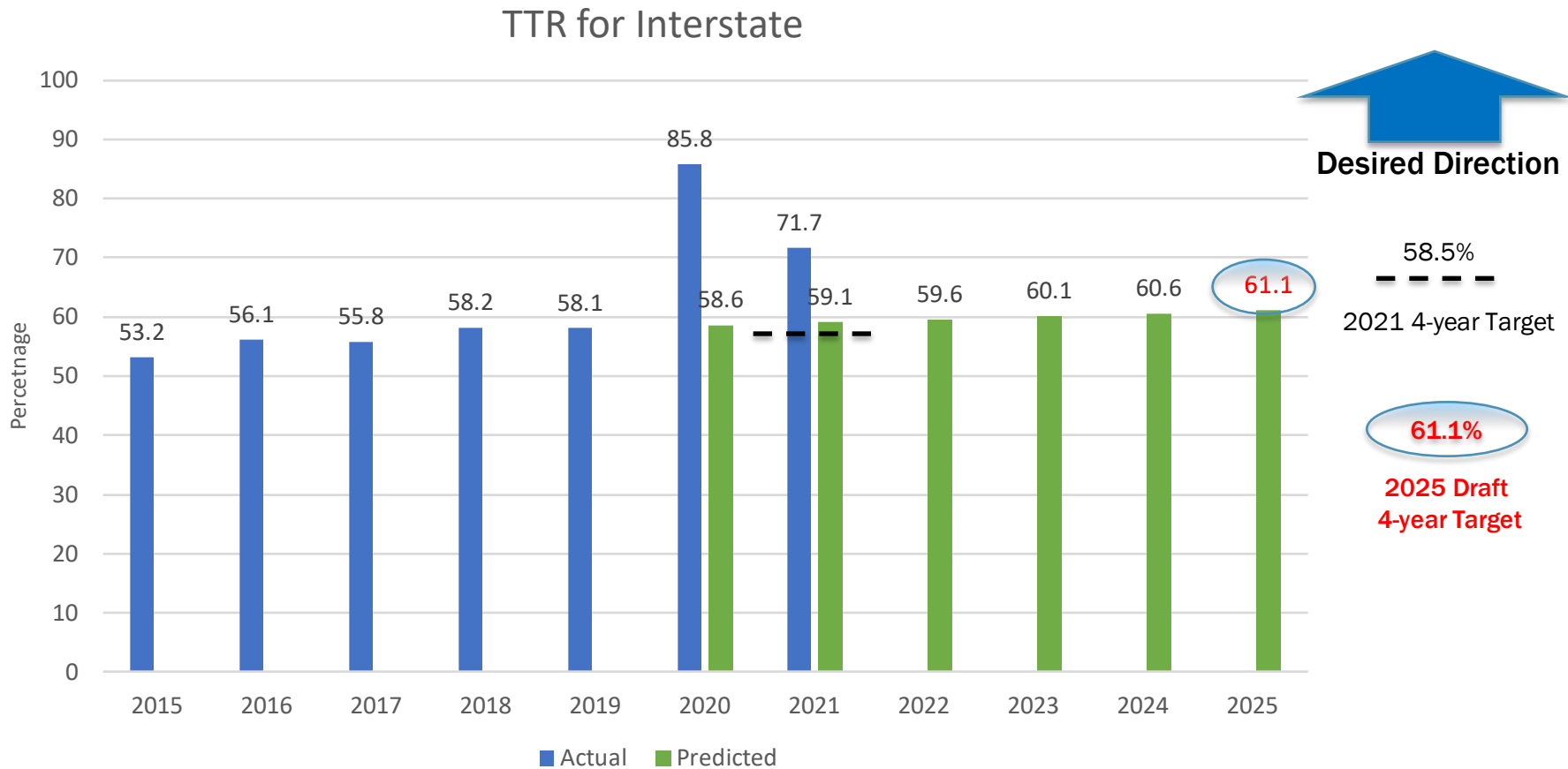|	CY 2018 – 2021 Four Year Target	2021 Actual Performance	
Travel Time Reliability (TTR) – Interstate Percent of person-miles traveled on the Interstate System that are reliable	**58.5%**	**71.7%**	√
Travel Time Reliability (TTR) – Non-Interstate NHS Percent of person-miles traveled on the non-Interstate NHS that are reliable	*72.7%*	**91.2%**	√
Truck Travel Time Reliability (TTTR) Index Ratio of the Interstate System Mileage providing for Reliable Truck Travel Times	*2.12*	2.30	X

Highway System Performance: Travel Reliability 2022-2025 Target Methodology
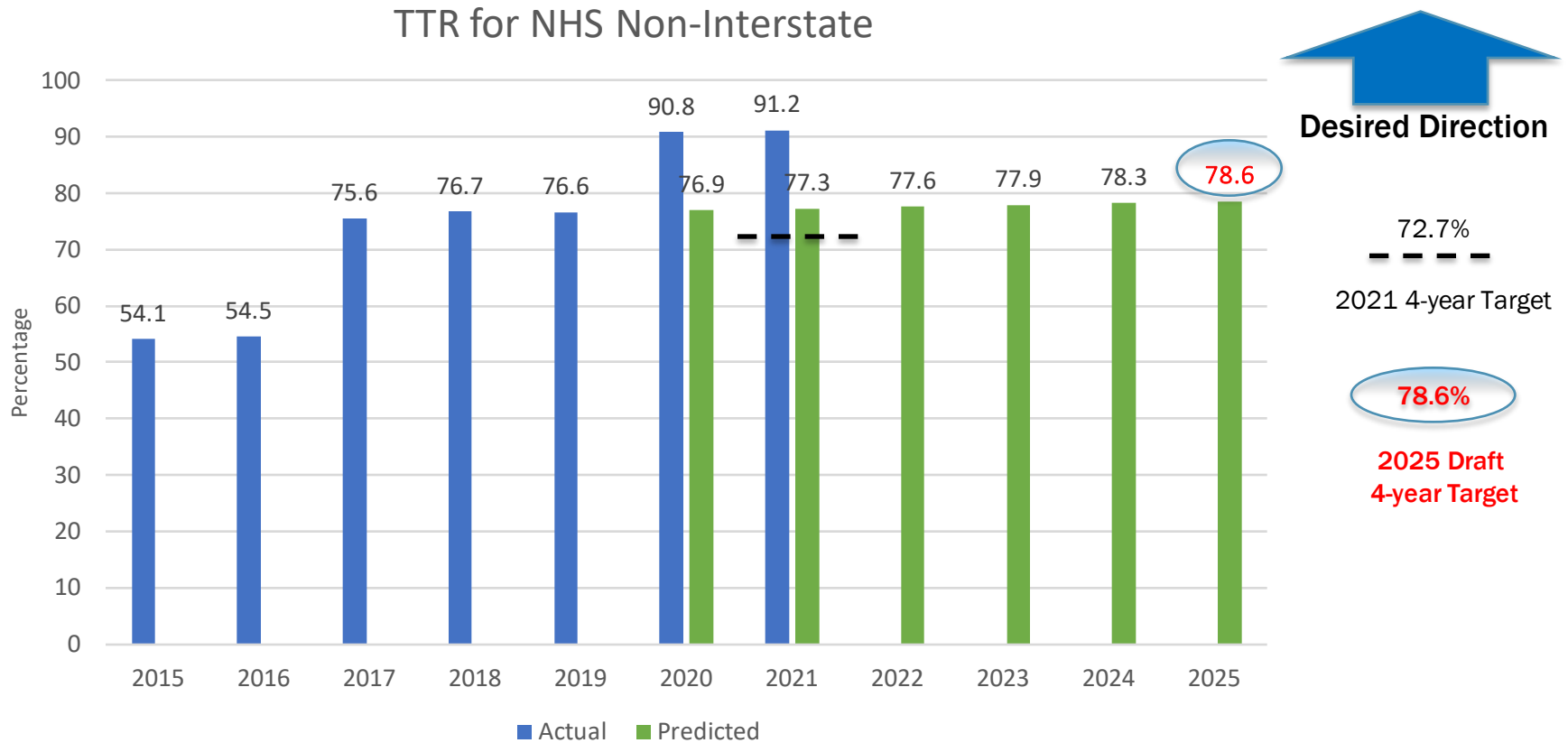
- Use same general methodology as used in 2018
  - Average of observed trends and short-term predictions of TPB travel demand model
    - Observed trends captured recent influences
    - Model captures the impacts of increased population and travel demand vs. road and transit changes
      - ➢ Understandable and defensible methodology
    - Exclude data from pandemic years (2020, 2021)
    - Use trend data leading up through 2019 and extrapolate from 2019
  - ❖ Both trends and model project small reductions in congestion >> slight improvements in travel reliability

2022-2025 Draft TTR (Interstate) Graph and Target

TTR for Interstate

Desired Direction

58.5%
- - - -
2021 4-year Target

61.1%
2025 Draft
4-year Target

Legend: ■ Actual ■ Predicted

Y-axis: Percetnage (0 to 100)

X-axis years: 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025

Data values:
- 2015: 53.2
- 2016: 56.1
- 2017: 55.8
- 2018: 58.2
- 2019: 58.1
- 2020: 85.8 (Actual), 58.6 (Predicted)
- 2021: 71.7 (Actual), 59.1 (Predicted)
- 2022: 59.6
- 2023: 60.1
- 2024: 60.6
- 2025: 61.1

2022-2025 Draft TTR (NHS Non-Interstate) Graph and Target

TTR for NHS Non-Interstate

Desired Direction

72.7%
2021 4-year Target

78.6%
2025 Draft
4-year Target

Actual values: 2015: 54.1, 2016: 54.5, 2017: 75.6, 2018: 76.7, 2019: 76.6, 2020: 90.8, 2021: 91.2

Predicted values: 2020: 76.9, 2021: 77.3, 2022: 77.6, 2023: 77.9, 2024: 78.3, 2025: 78.6

Legend: Actual, Predicted

2022-2025 Draft TTTR Index Graph and Target

TTTR Index

Index values by year:
- 2015: 3.53 (Actual)
- 2016: 3.41 (Actual)
- 2017: 2.67 (Actual)
- 2018: 2.64 (Actual)
- 2019: 2.63 (Actual)
- 2020: 2.16 (Actual), 2.62 (Predicted)
- 2021: 2.30 (Actual), 2.61 (Predicted)
- 2022: 2.59 (Predicted)
- 2023: 2.58 (Predicted)
- 2024: 2.57 (Predicted)
- 2025: 2.56 (Predicted)

Desired Direction

2.12
2021 4-year Target

2.56
2025 Draft 4-year Target

■ Actual   ■ Predicted
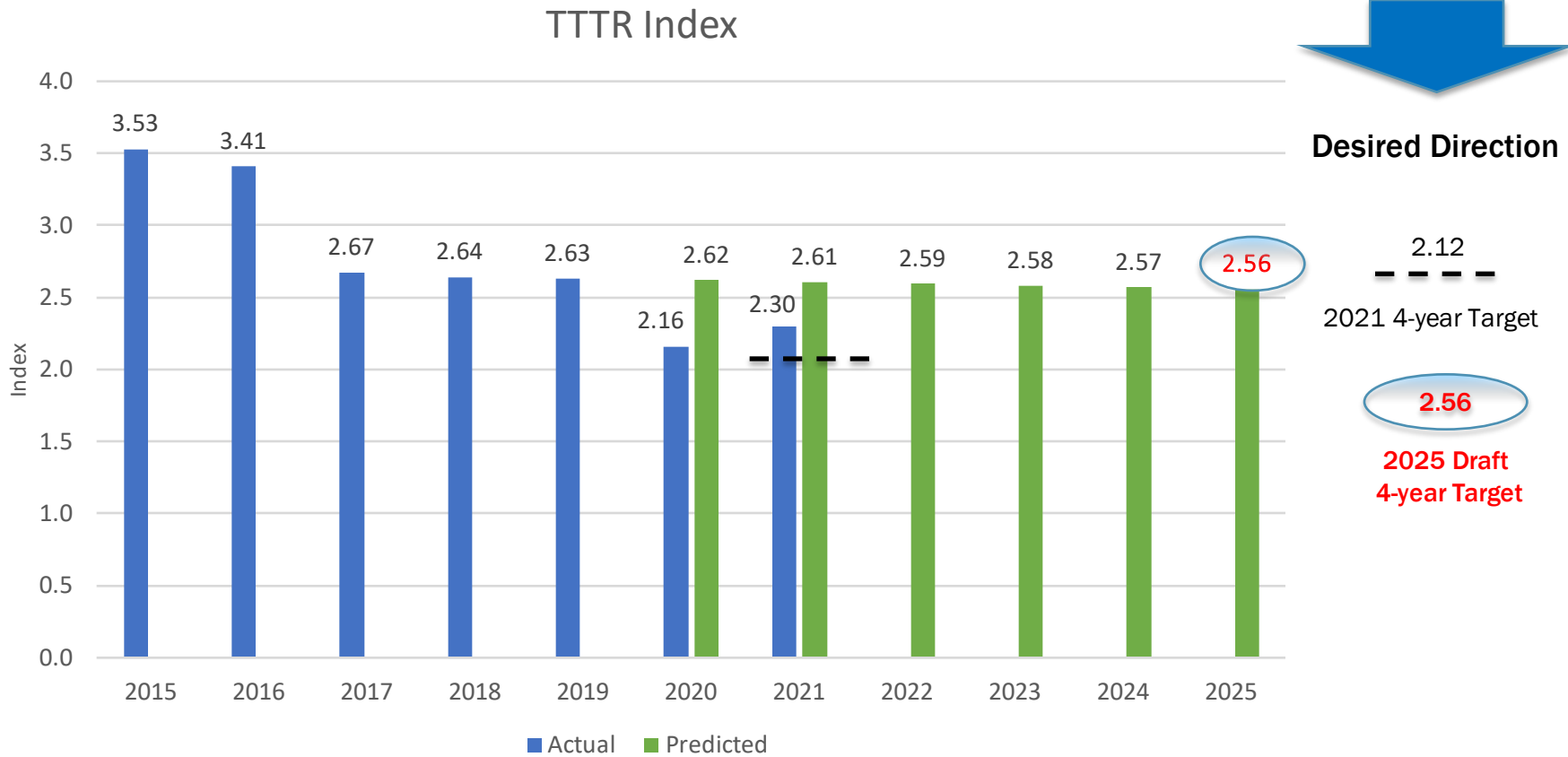
Highway System Performance: Travel Time Reliability DRAFT 2022-2025 Targets for the NCR

Highway System Performance: Travel Time Reliability for the NCR	2022 – 2025 Four Year Target
Travel Time Reliability (TTR) – Interstate	61.1%
Travel Time Reliability (TTR) – Non-Interstate NHS	78.6%
Truck Travel Time Reliability (TTTR) Index	2.56

Next Steps

- Collect comments on the Draft 2022-2025 targets just presented

- Any final data and target updates from the state DOTs, as well as supplemental information, including state Transportation Asset Management Plans

- TPB approval of final targets - October 19

- Prepare revised Visualize 2045 LRTP System Performance Report with performance vs 2018-2021 targets and with the approved 2022-2025 targets ahead of federal certification review

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Highway Condition Performance Measures

Performance Measure	Data
(1) Percentage of pavements on the **Interstate** System in **Good** condition	*four metrics:* • IRI (International Roughness Index) • Cracking Percent • Rutting (*asphalt only*) • Faulting (*jointed concrete only*) *three types of pavements:* • 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	*four condition ratings:* • 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
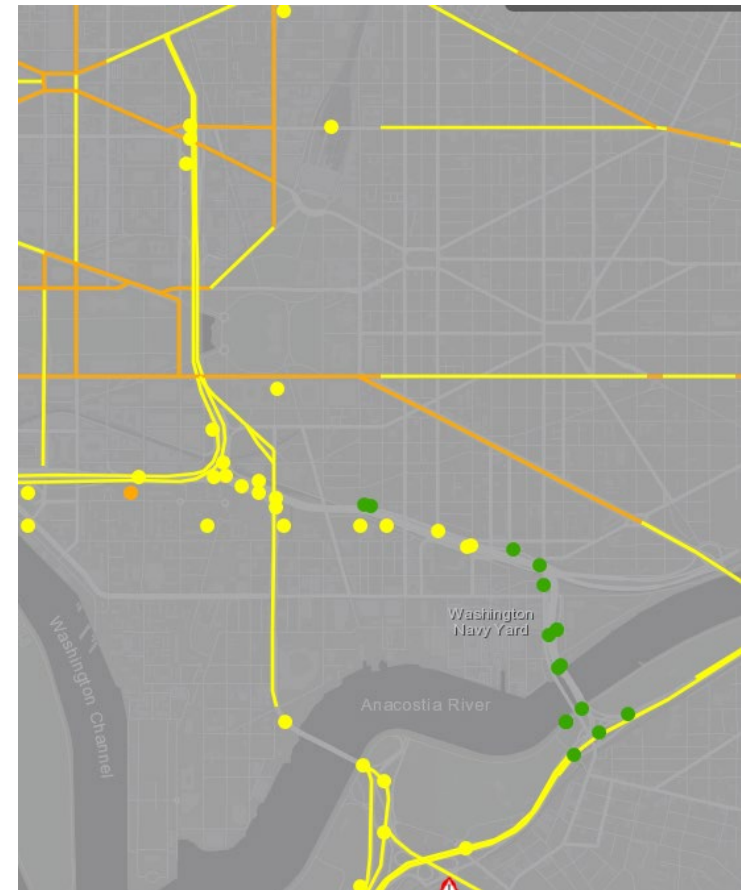
- Map for the 2017 pavement and 2018 bridge conditions: https://gis.mwcog.org/webmaps/tpb/pbpp/pavement_bridge/

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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 & TTTR 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 developed 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