
VDOT
Virginia Department of Transportation

OVERVIEW OF
2019 MAINTENANCE AND OPERATIONS COMPREHENSIVE REVIEW

Stephen C. Brich, P.E., Commissioner of Highways

April 21, 2026

Why are we here today?

2019 Maintenance and Operations Comprehensive Review

- Business focus
- Shift from short term improvements to long-term performance – impact on future generations
- Need to get back to basics

Investment Strategy – Long-Term Sustainable Performance of Assets

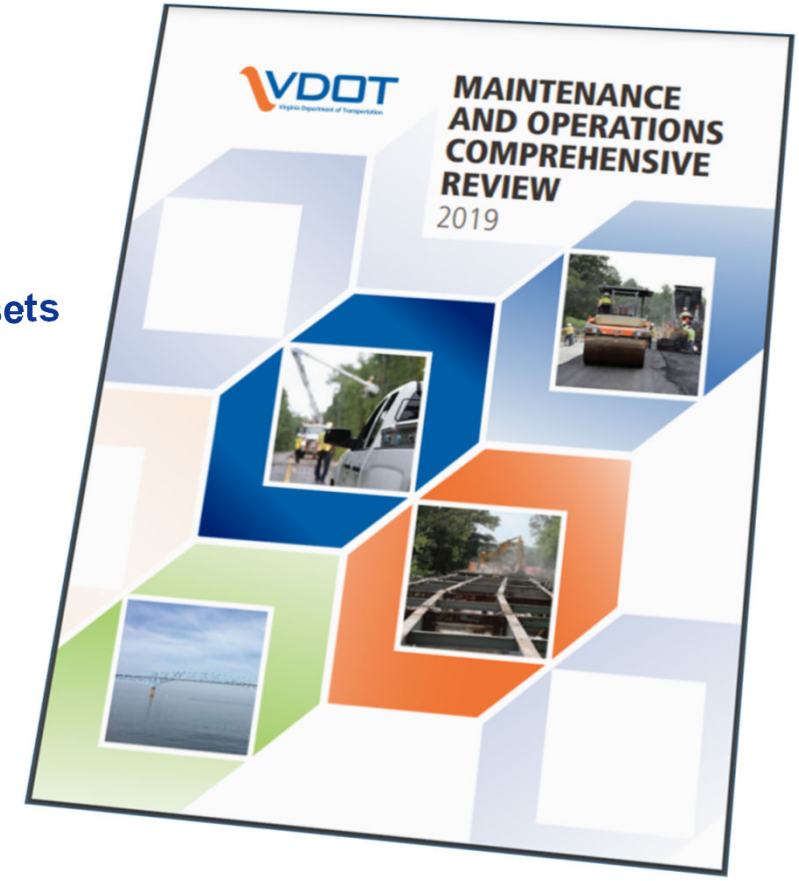
- Pavements (20 Year)
- Bridges (50 Year)
- Routine Maintenance
- Special Structures

Investments

- Maintenance and Operations Program
- State of Good Repair Program

Six Years of Operational Experience

- Reevaluate and Rebaseline



FY 2026 VDOT's Maintenance and Operations Program

Maintenance and Operations
$3.0 Billion Annually less $638 Million Localities

VDOT - $2.4 Billion Annually

MAINTENANCE

$770 *million*
Pavement

$220 *million*
Bridges

$480 *million*
Routine Maintenance

$260 *million*
Roadside

$225 *million*
Emergency Funds

TRAFFIC AND OPERATIONS

$40 *million*
Guardrail

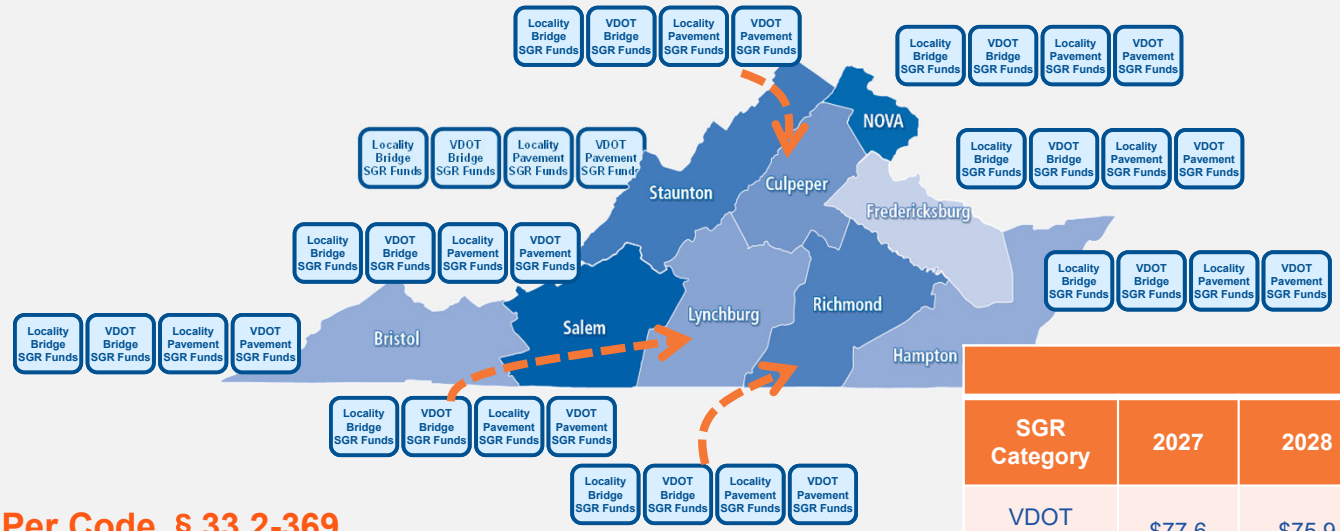
$25 *million*
Ferries

$210 *million*
Traffic Items

$70 *million*
Special Structures
Daily Operations

$100 *million*
Operations Centers/SSP

State of Good Repair Program Overview



Funding Distribution within District is based on needs

Results in 36 funding categories

Min 5.5% and Max 17.5%

Per Code § 33.2-369

- Distribution to each district then to
  - Locality Bridge
  - VDOT Bridge
  - Locality Pavement
  - VDOT Pavement
- Priority ranking system - defined

($ in millions)							
SGR Category	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**TOTAL**
VDOT Pavement	$77.6	$75.9	$79.0	$81.7	$84.5	$87.0	**$485.6**
VDOT Bridge	252.8	247.4	257.4	266.2	275.4	283.7	**1,582.9**
Local Pavement	26.9	26.3	27.4	28.3	29.3	30.2	**168.3**
Local Bridge	56.8	55.6	57.9	59.8	61.9	63.8	**355.8**
Total SGR Allocation	**$414.1**	**$405.2**	**$421.6**	**$436.0**	**$451.0**	**$464.7**	**$2,592.6**

2019 Maintenance and Operations Comprehensive Review

- **Pavements**
- **Structures**
- **Routine Maintenance**
- **Emergencies**

BLUF: 2019 Maintenance and Operations Comprehensive Review – Outcome

Performance Targets:

All Programs Investment Needed:

Pavements (20 Year)

	NEW PERFORMANCE MEASURES AND TARGETS SUFFICIENCY
Interstate	82%
Primary	82% FOR ≥ 3,500 AADT 75% FOR < 3,500 AADT
Secondary	82% FOR ≥ 3,500 AADT 60% FOR < 3,500 AADT

$463M*
per year until 2025
$499M* onwards

Bridges (50 Year)

Preservation Approach

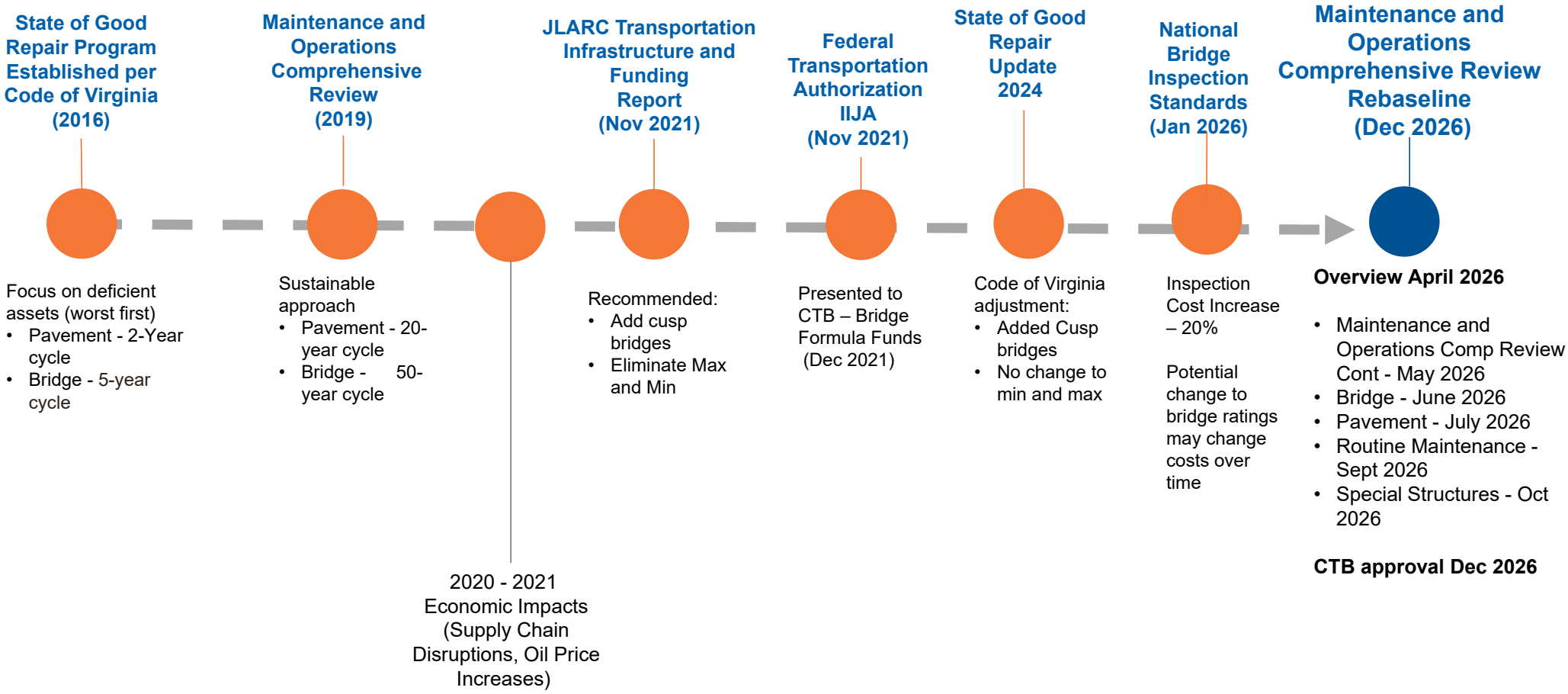
All Systems	NEW PERFORMANCE MEASURES AND TARGETS SUFFICIENCY AVERAGE WEIGHTED GCR≥5.6
Interstate	≥ 97%
Primary	≥ 93%
Secondary	≥ 90%

$384M*
per year

*2019 dollars

GCR is a national (defined by FHWA) rating system (0-9 scale) for bridge components.

Maintenance and Operations Comprehensive Review Timeline



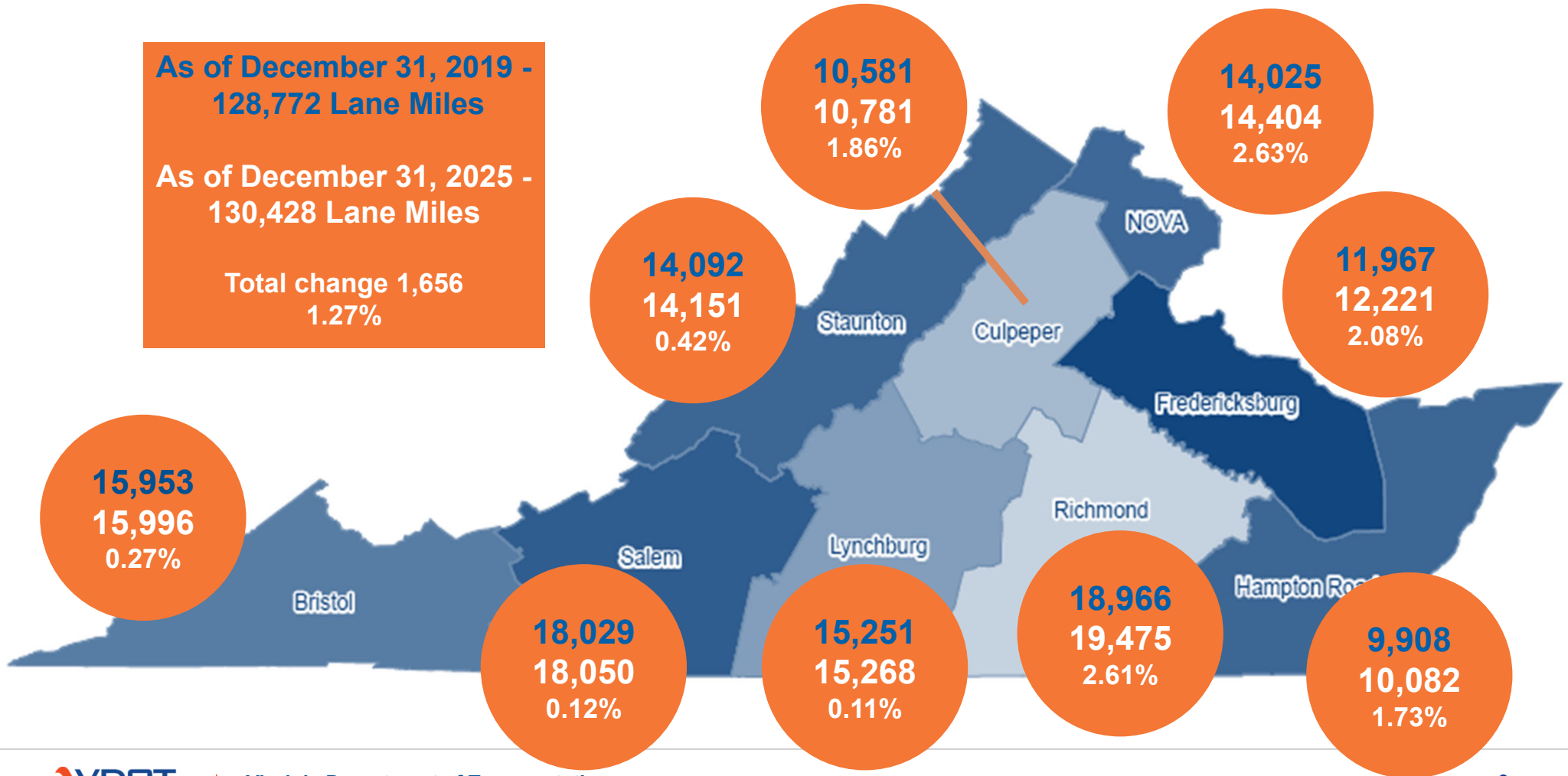
Pavements

2019 and Current - Pavements - Inventory (Lane Miles)

As of December 31, 2019 - 128,772 Lane Miles

As of December 31, 2025 - 130,428 Lane Miles

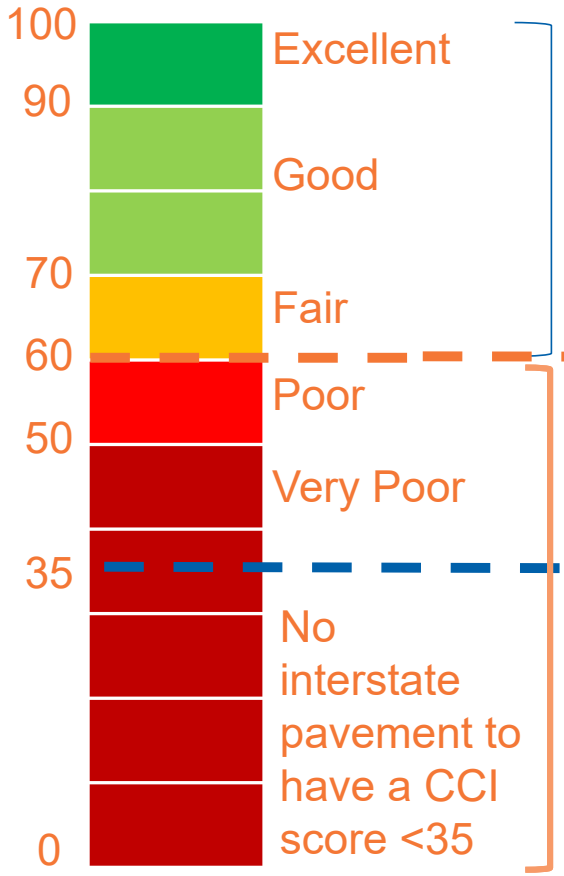
Total change 1,656
1.27%



Pavement Assessment Process

Interstate, Primary, Secondary ≥ 3500 – annual
Secondary < 3500 - 20% annually

Pavement Rating – What is Critical Condition Index (CCI)?



Sufficiency Percentage is the percentage of lane miles with a CCI score ≥ 60

What does CCI look like?

CCI 90-100 (Excellent)

CCI 50-59 (Poor)

Images show approximately CCI 35

Pavement Treatment - Maintenance Activities

Preventive

Typical Range: CCI: 80-90

Surface Layer (covered)
Intermediate Layer
Base Layer
Subbase Layer
Subgrade

- Preserves pavements in good condition at low costs
- Addresses minor distresses on the surface
- Examples: Minor patching, crack sealing, surface treatment, and latex

Corrective

CCI: 55-65

Surface Layer (replaced)
Intermediate Layer
Base Layer
Subbase Layer
Subgrade

- Addresses moderate distresses
- Treatment usually replacement of the surface layer
- Examples: Moderate patching and overlay, Mill and overlay (typically 1.5” to 2”)

4 times more expensive than PM

Restorative

CCI: 45-55

Surface Layer (replaced)
Intermediate Layer (replaced)
Base Layer
Subbase Layer
Subgrade

- Addresses moderate to heavy distresses
- Treatment usually replacement of two or more asphalt layers
- Examples: Full depth patching and overlay, Mill and overlay (4” or more), Cold-in-place recycling

2 times more expensive than CM

Reconstruction

CCI: < 30

Surface Layer (replaced)
Intermediate Layer (replaced)
Base Layer (replaced)
Subbase Layer (replaced)

- Addresses pavements with heavy distresses or in failed condition
- Treatment usually base and/or subbase repair
- Examples: Overlay replacing base layers, Break and seat of underlying concrete, Full depth recycling

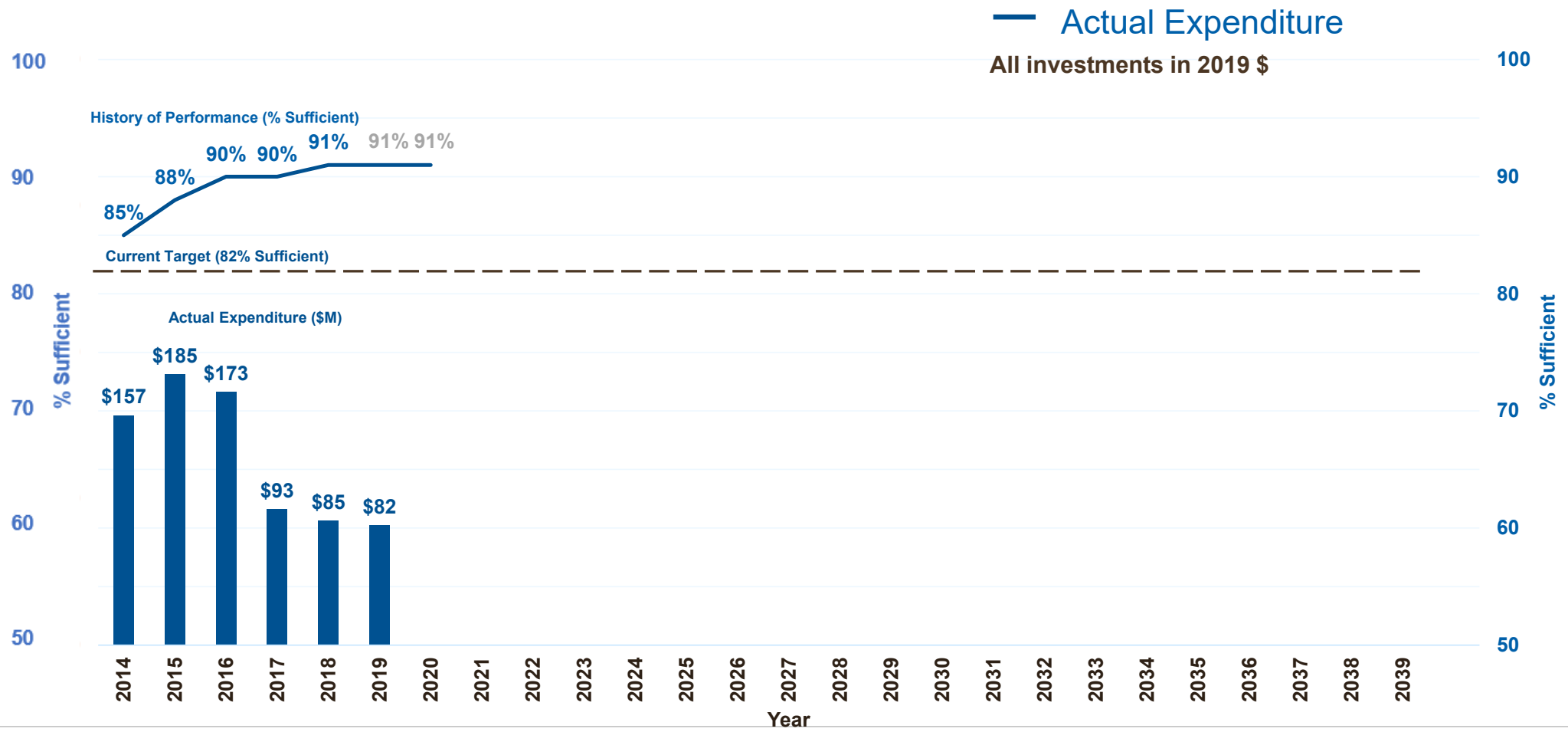
2 times more expensive than RM

2019 Pavements - Long Term Sustainability

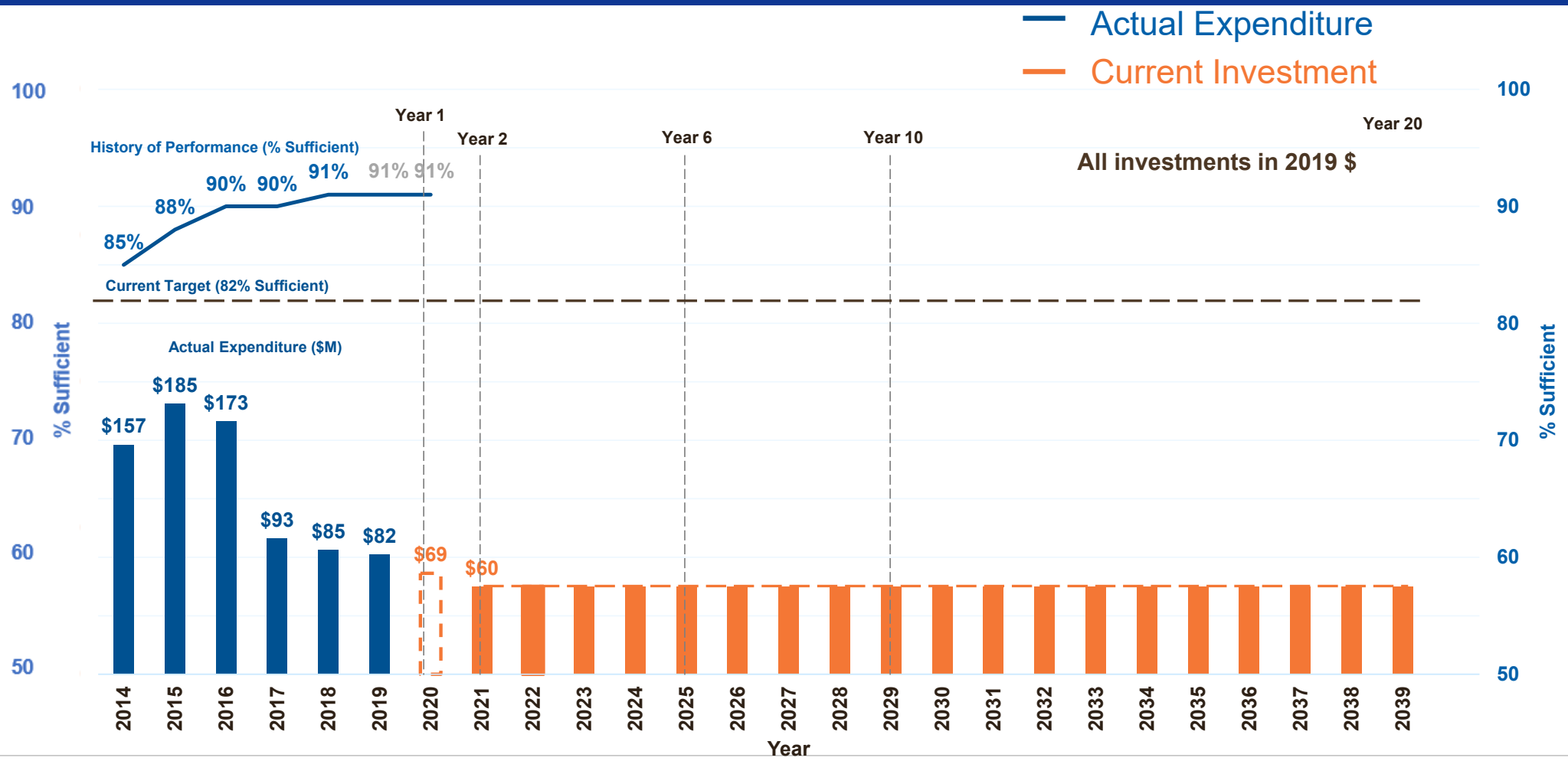
Analysis undertaken to define a sustainable solution

- Reviewed historical performance
- Cost to achieve the current performance targets?
  - Current directive: 82% for Interstate, 82% for Primary, and 65% for Secondary
- Cost to maintain the current performance?
  - Current performance: 90% for Interstate, 85% for Primary, and 60% for Secondary
- What can be achieved with different investment levels?
  - Current investment: $60M Interstate, $165M Primary, $200M Secondary
- What if tiered targets were considered for the Interstate, Primary and Secondary systems?
- Evaluated different analysis time periods
  - Minimum of 20 years
- Assessed employing different maintenance strategies

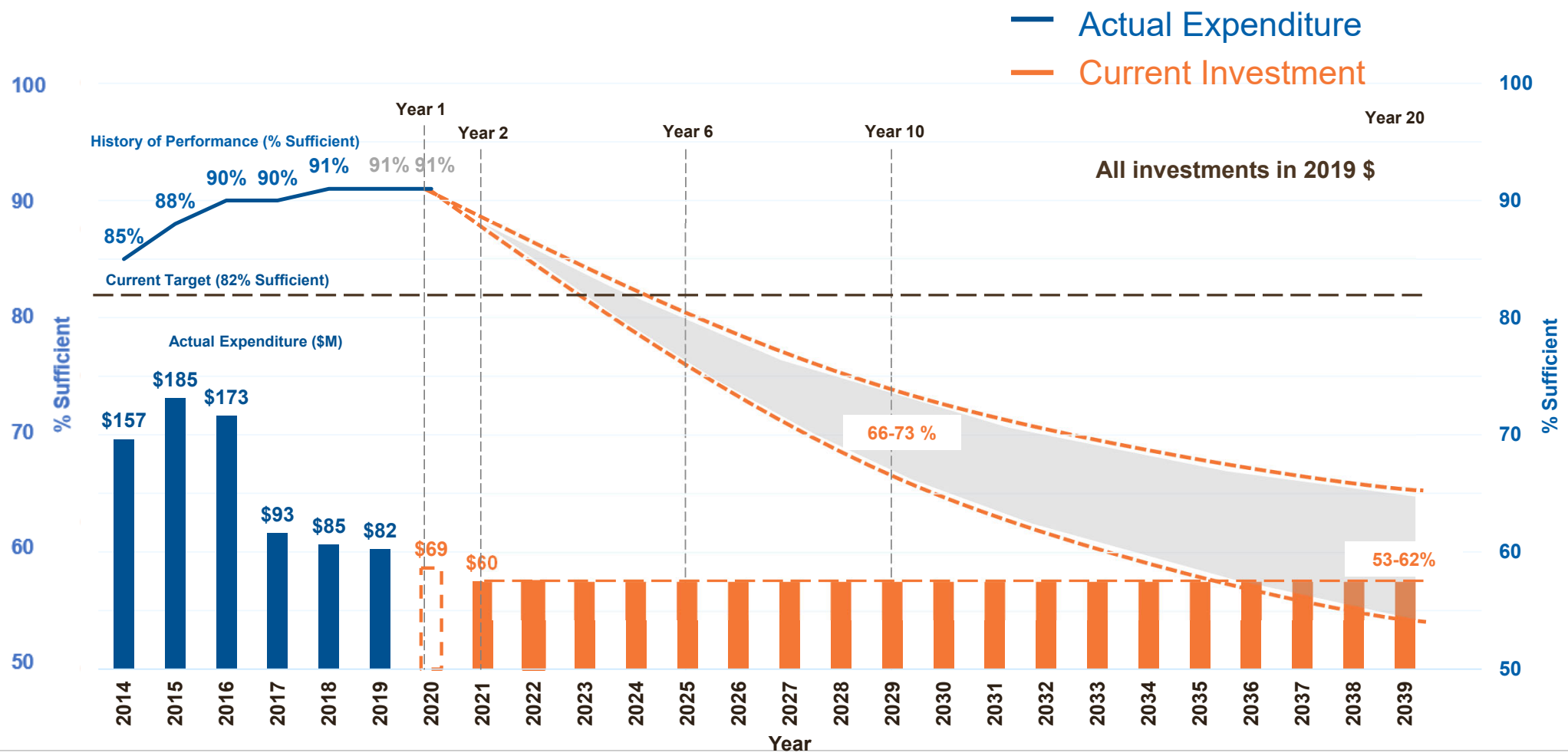
2019 Interstate Network - 20 Year Outlook



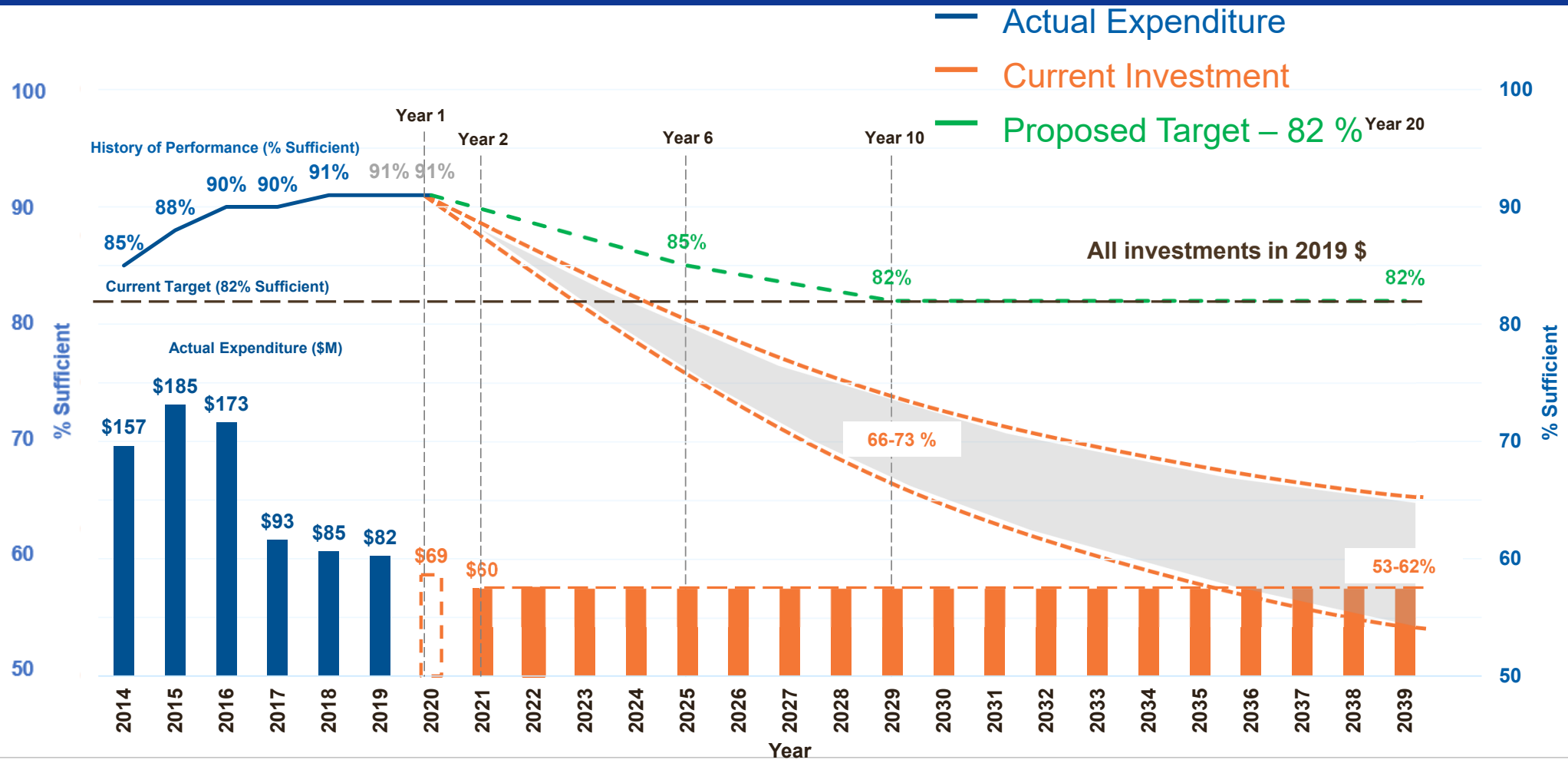
2019 Interstate Network - 20 Year Outlook



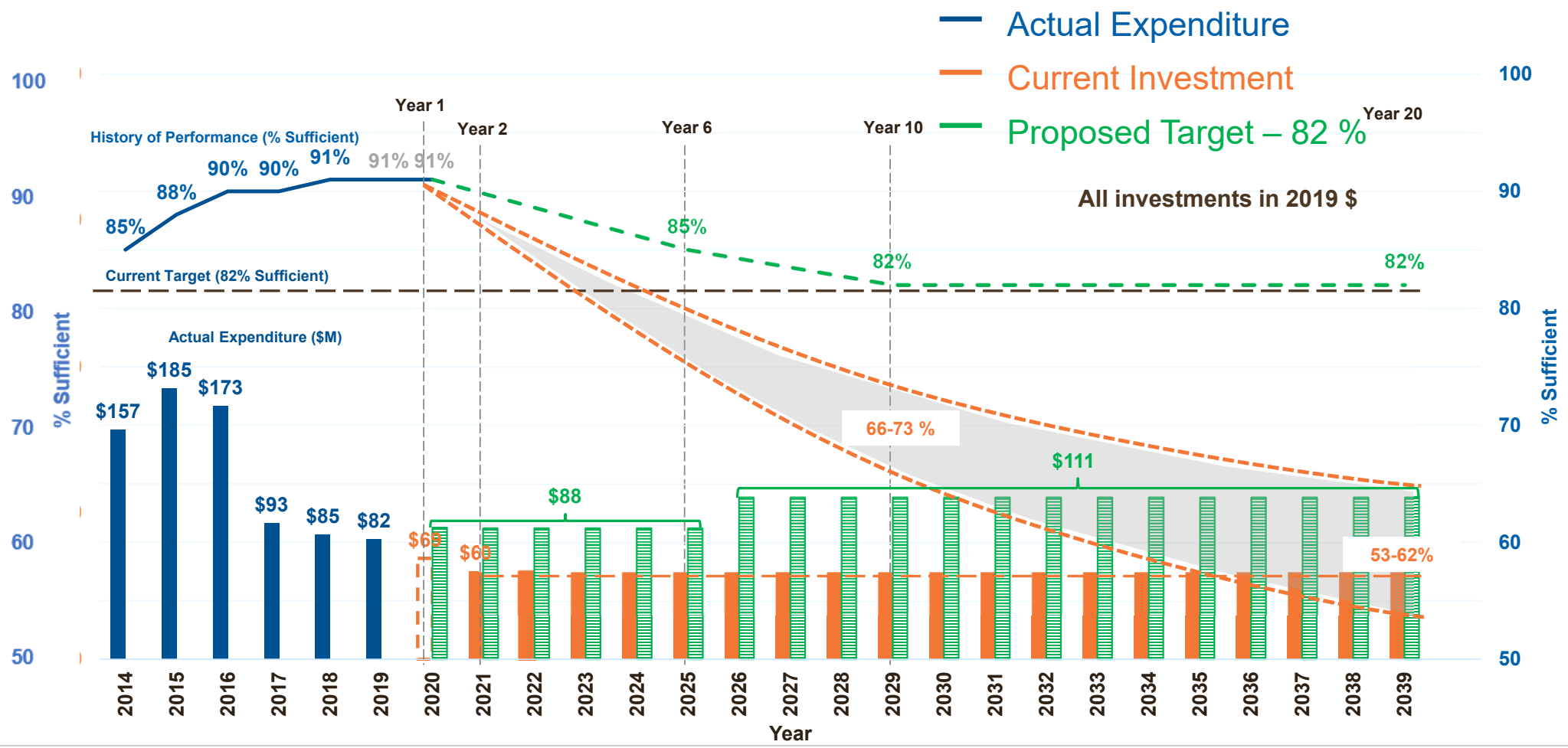
2019 Interstate Network - 20 Year Outlook



2019 Interstate Network - 20 Year Outlook



2019 Interstate Network - 20 Year Outlook



2019 Interstate - Comparison 90% vs. 82% Sufficiency

2019 Interstate Investment: $60M per year, FY 2020

Avg. Cost per Year, Millions				Net Present Value
Interstate System	Years 1-6	Years 7-20	Total, Billions	Total, Billions
90%	$ 113	$ 97	$ 2.04	$ 1.41
82%	$ 88	$ 111	$ 2.08	$ 1.40

*All amounts in 2019 dollars.

2019 Primary and Secondary Network - Tiered Approach

2019 Primary Condition and Traffic

AADT	Current %. Suff.	% Network	% Truck	% VMT
Above 3,500	85.1	68	94	95
Above 5,000	85.1	62	90	91

2019 Secondary Condition and Traffic

AADT	Current %. Suff.	% Network	% Truck	% VMT
Above 3,500	54.8	5	75	59
Above 5,000	55.2	4	70	54

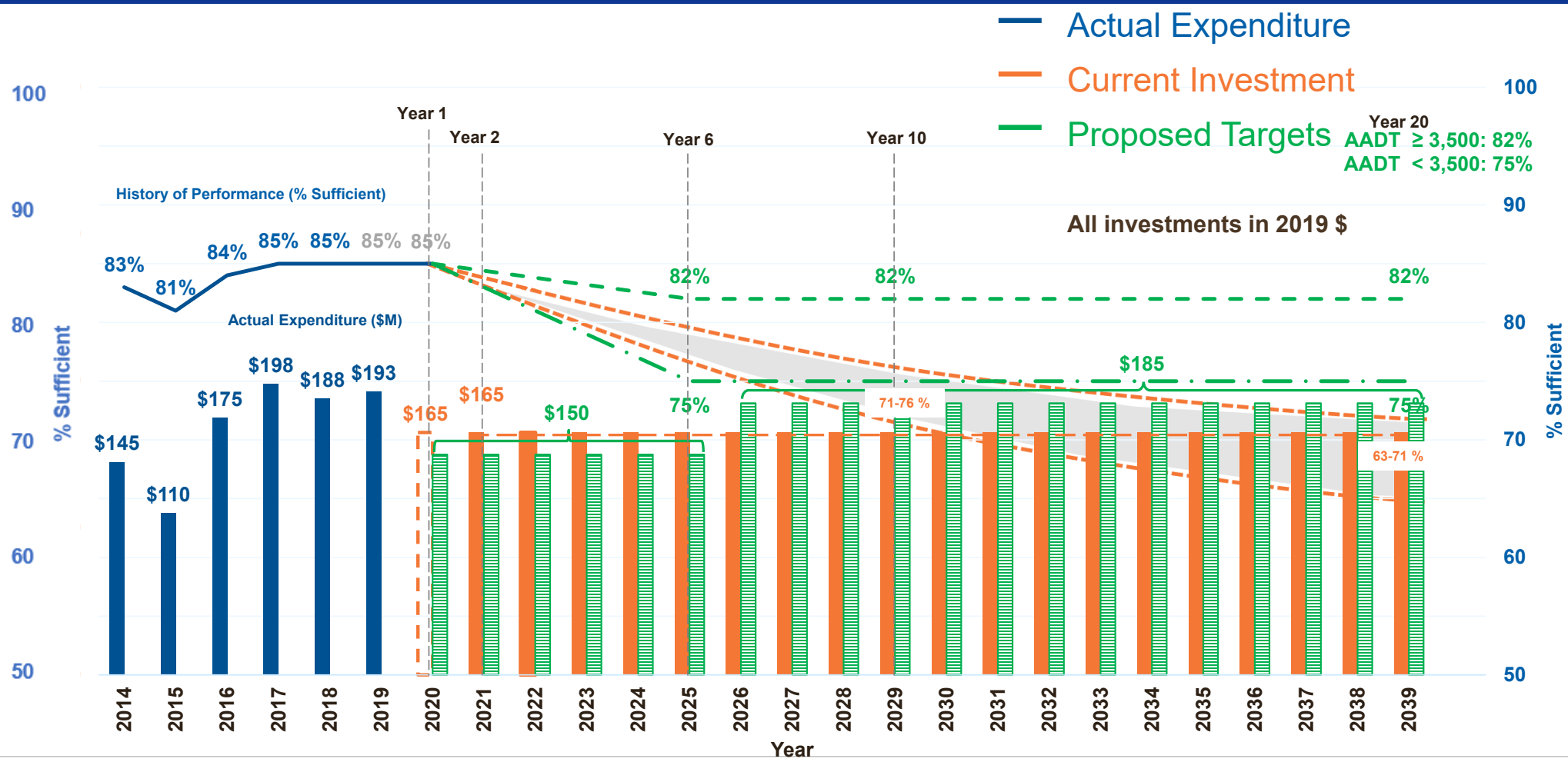
2019 Primary Investment: $165M per year, FY 2020

% Suff. for ≥ 3,500	% Suff. for < 3,500	Avg. Total Cost
82%	75%	$150M

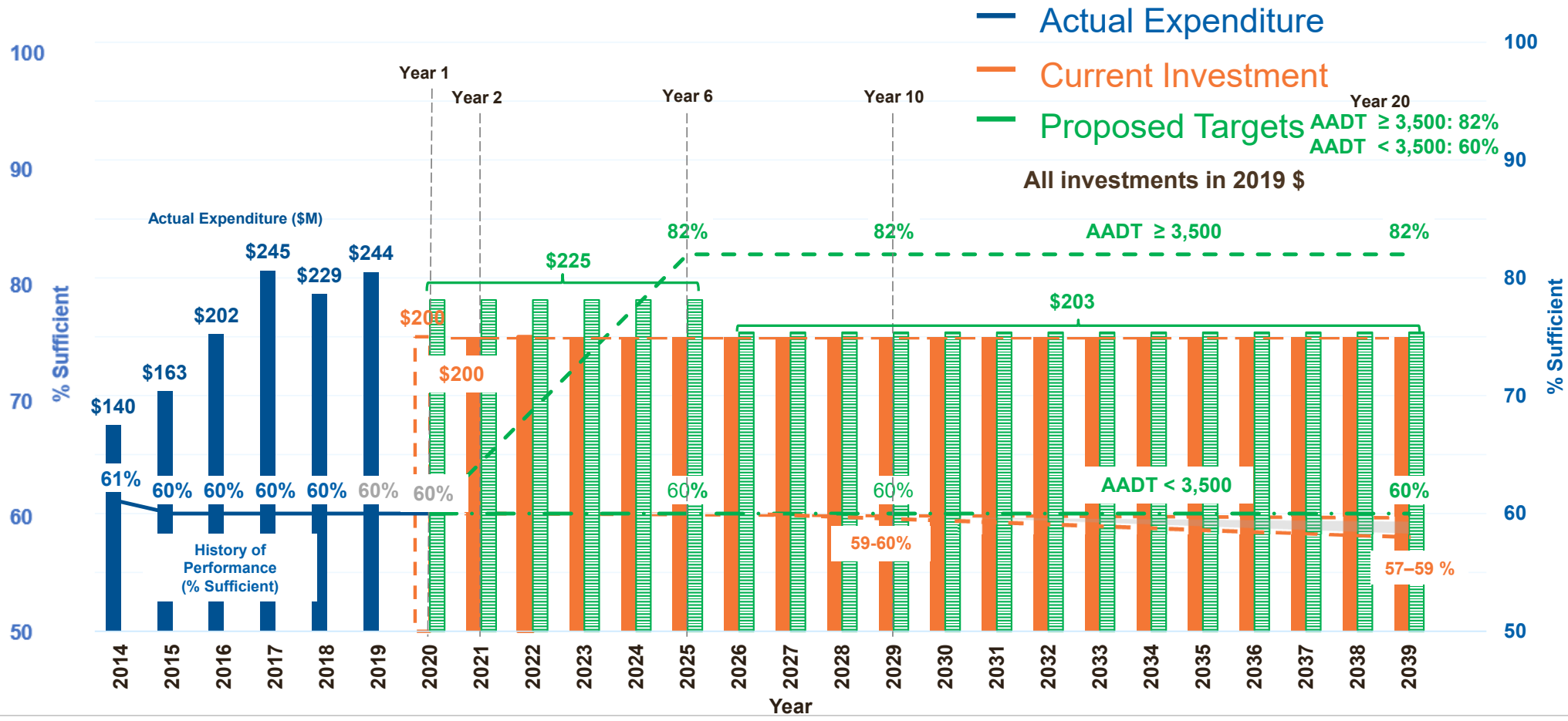
2019 Secondary Investment: $200M per year, FY 2020

AADT ≥ 3,500	AADT < 3,500	Avg. Total Cost
82%	60%	$225M
75%		$221M
70%		$219M
65%		$215M

2019 Primary Network - 20 Year Outlook



2019 Secondary Network - 20 Year Outlook



2019 Summary - Pavement Investment Options

2019 investment: $425M per year, FY 2020

Targets, % Sufficiency			Avg. Total Cost per Year, $ Millions					
			Years 1-6			Years 7-20		
IS	PR	SC	IS	PR	SC	IS	PR	SC
2019 Investment – Current Directive			88	171	227	111	193	203
82%	82%	65%	$486			$507		
			($61)			($82)		
Proposed Investment – Proposed Target			88	150	225	111	185	203
82%	82% for ≥ 3,500 75% for < 3,500	82% for ≥ 3,500 60% for < 3,500	$463			$499		
			($38)			($74)		

Current Directive

Proposed Targets

*All amounts in 2019 dollars

2019 Pavements - Performance Measures

Performance Measure	Current Policy (CTB Approved December 2019) % Sufficiency**
Interstate	82% No Section Critical Condition Index*** less than 35
Primary	82% for ≥ AADT**** 3,500 75% for < AADT 3,500
Secondary	82% for ≥ AADT 3,500 60% for < AADT 3,500

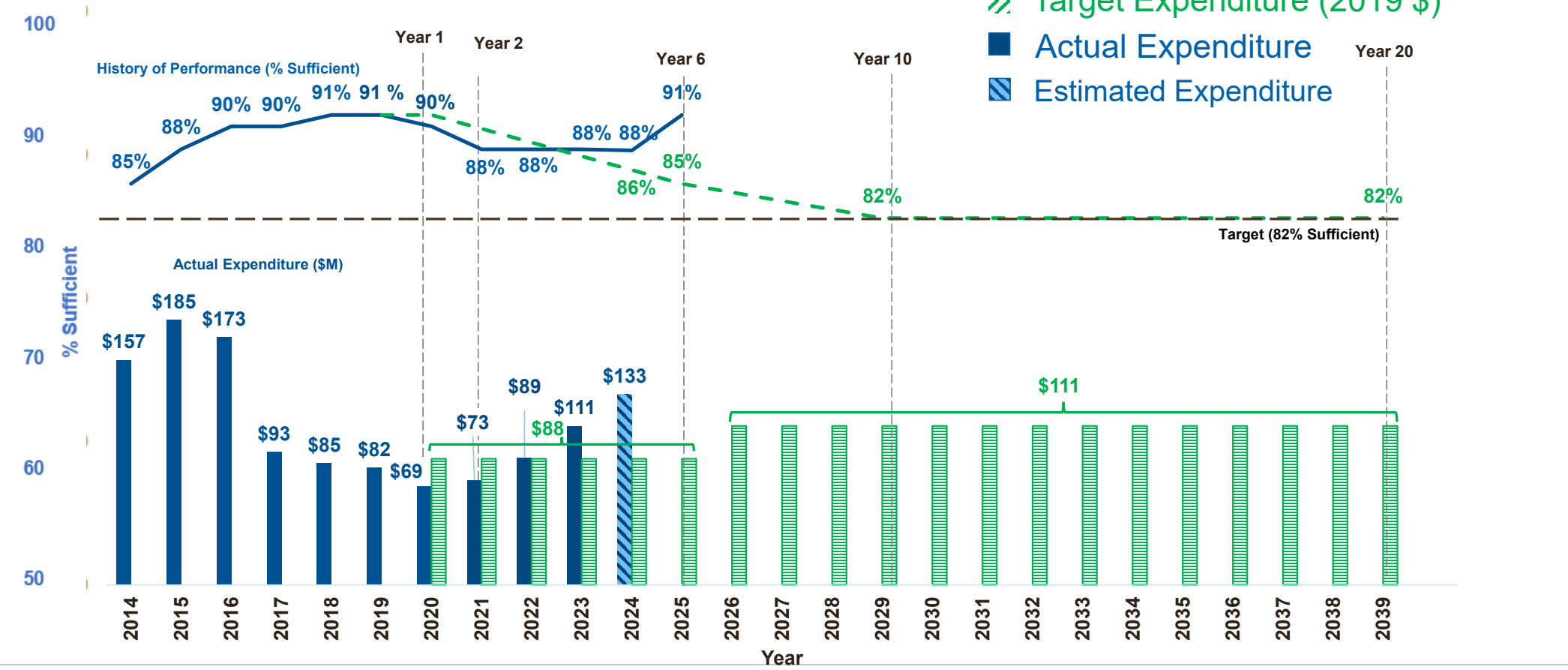
$463M*
per year until 2025
$499M* onwards

*2019 dollars
**% Sufficiency – the percent of the pavement inventory with a CCI of 60 or better
***Critical Condition Index – (CCI) – rating system
****Annual Average Daily Traffic - AADT

Interstate Network – 20 Year Outlook

(*Target* & *Actual* Performance)

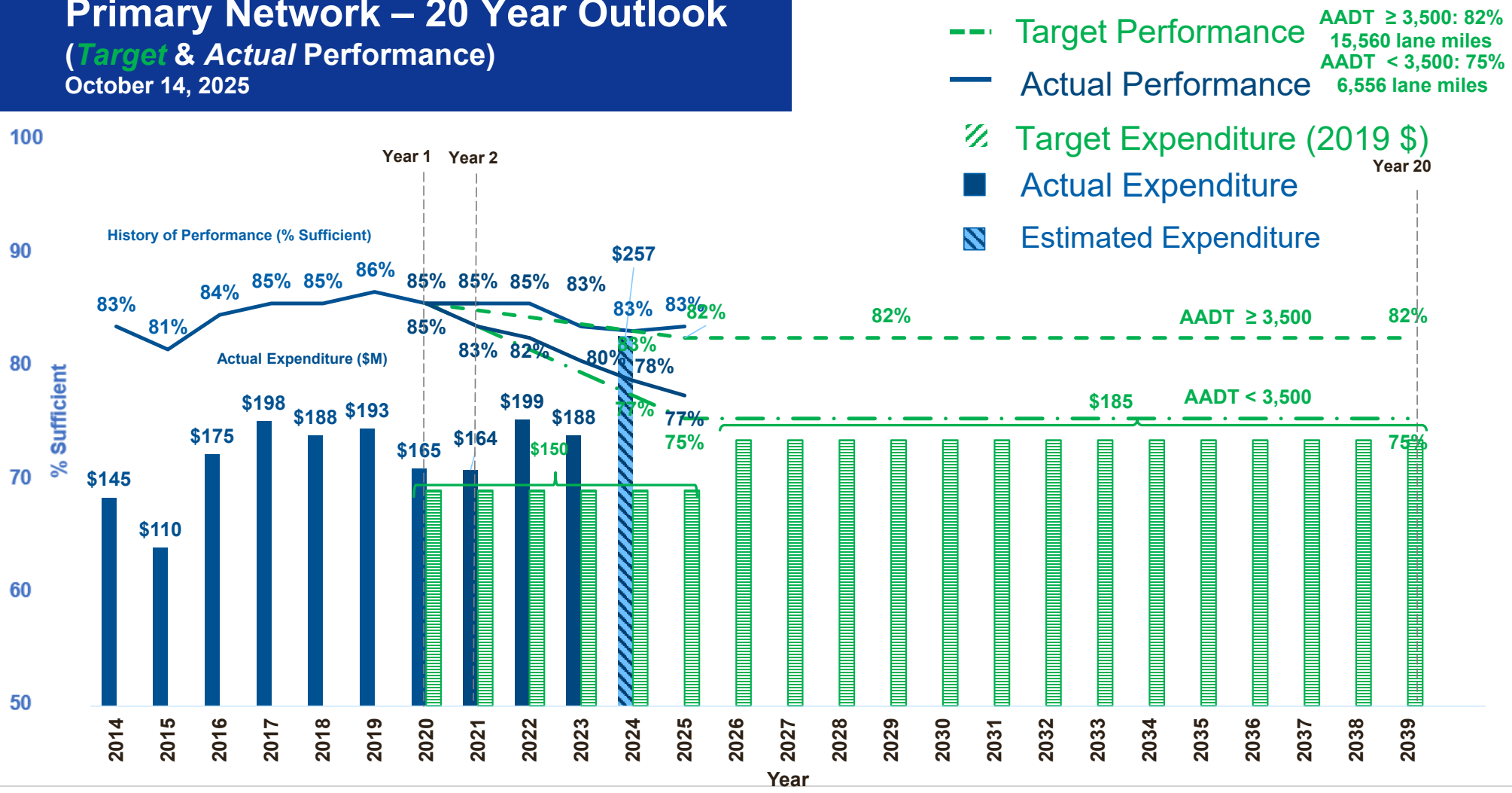
October 14, 2025



Primary Network – 20 Year Outlook

(*Target* & *Actual* Performance)

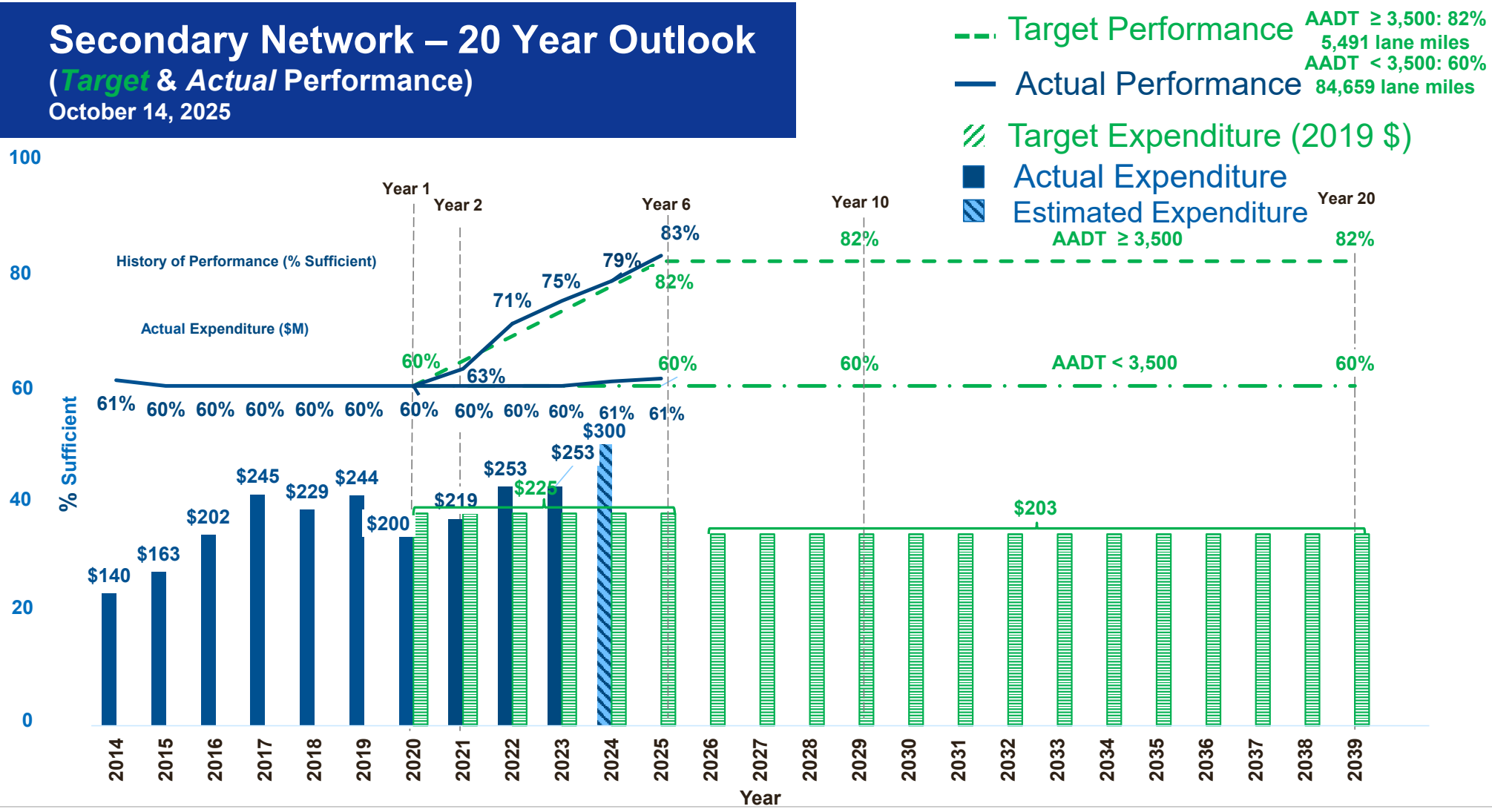
October 14, 2025



Secondary Network – 20 Year Outlook

(*Target* & *Actual* Performance)

October 14, 2025



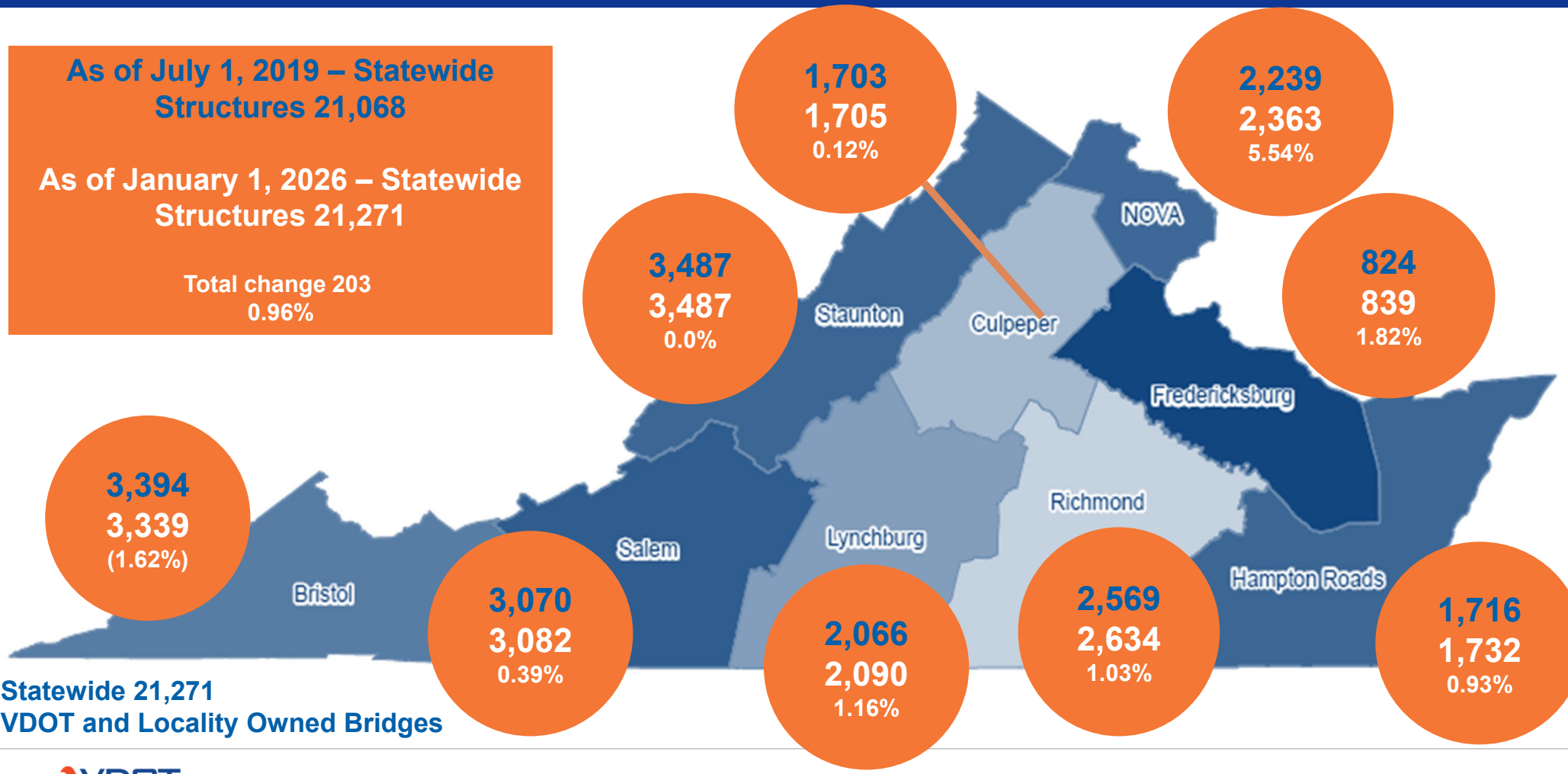
Structures

2019 and Current - Structures – Inventory

As of July 1, 2019 – Statewide Structures 21,068

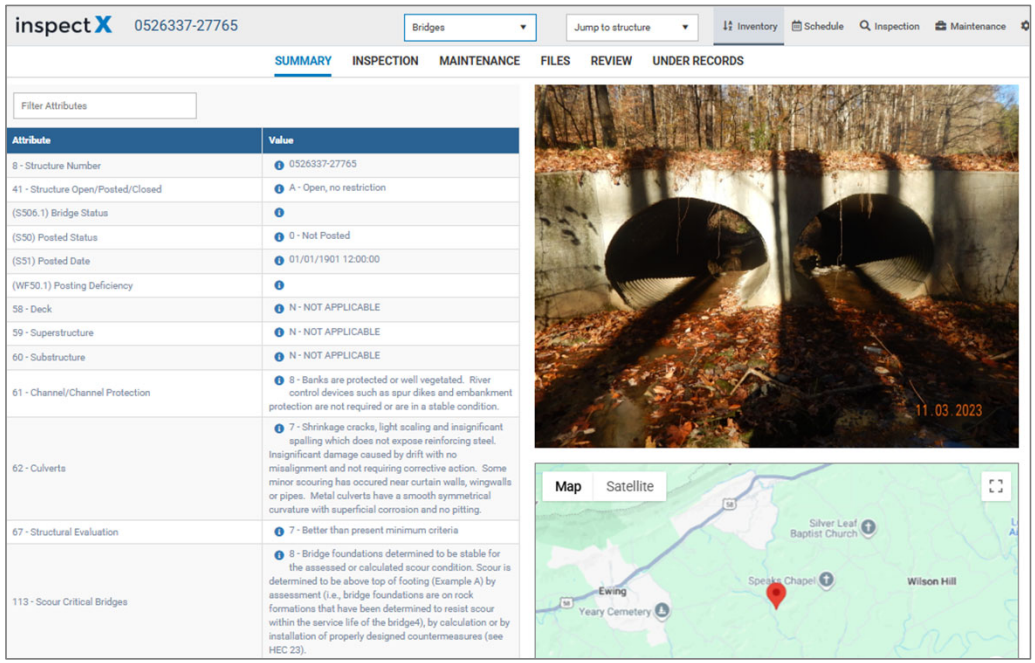
As of January 1, 2026 – Statewide Structures 21,271

Total change 203
0.96%



Statewide 21,271
VDOT and Locality Owned Bridges

Structure Inspection & Assessment Process

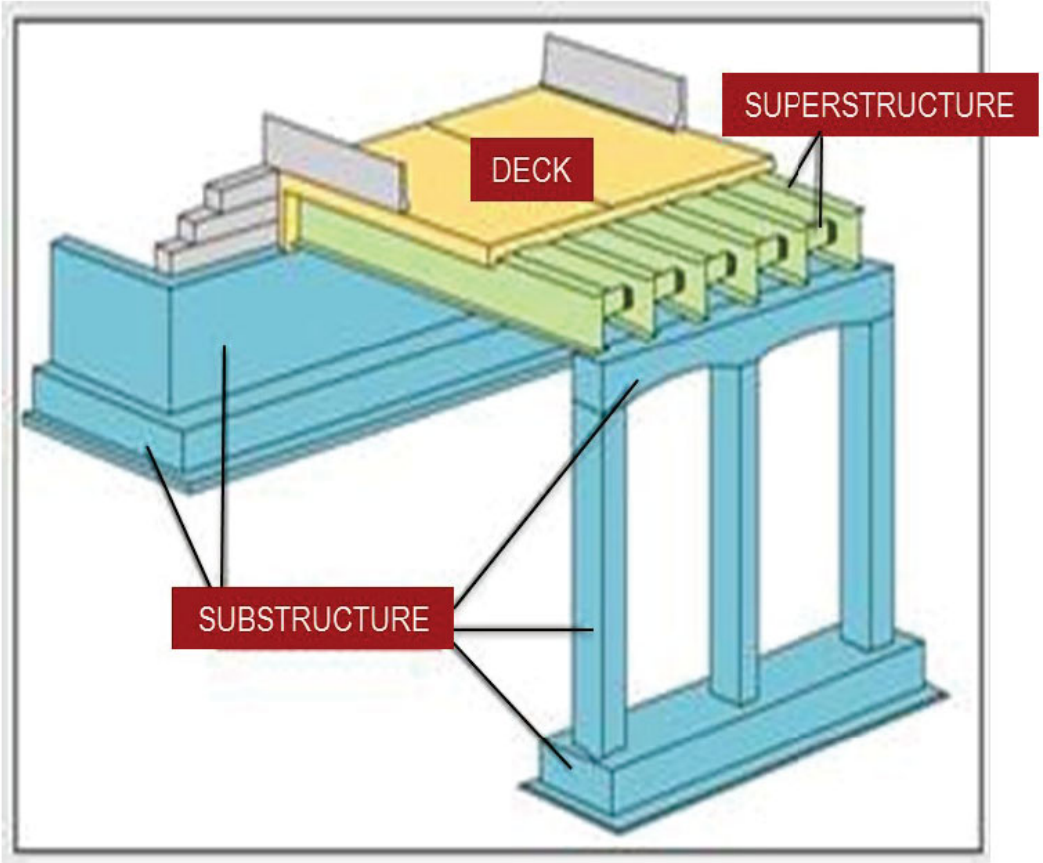


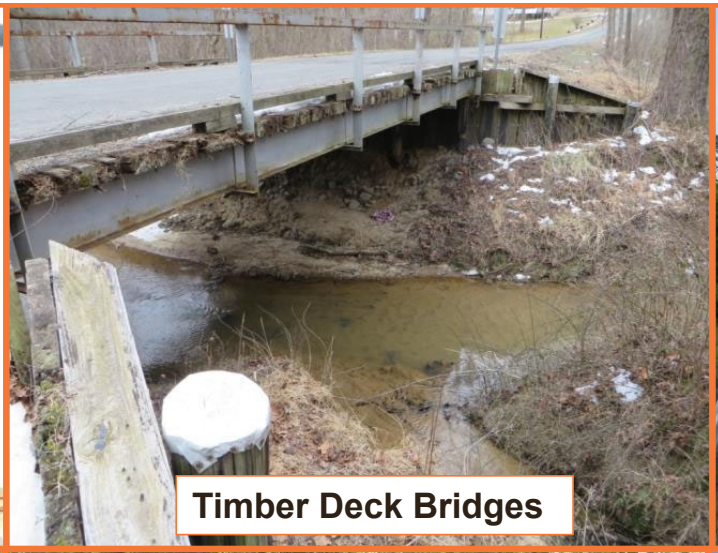
Bridges are generally inspected on a 2-year cycle

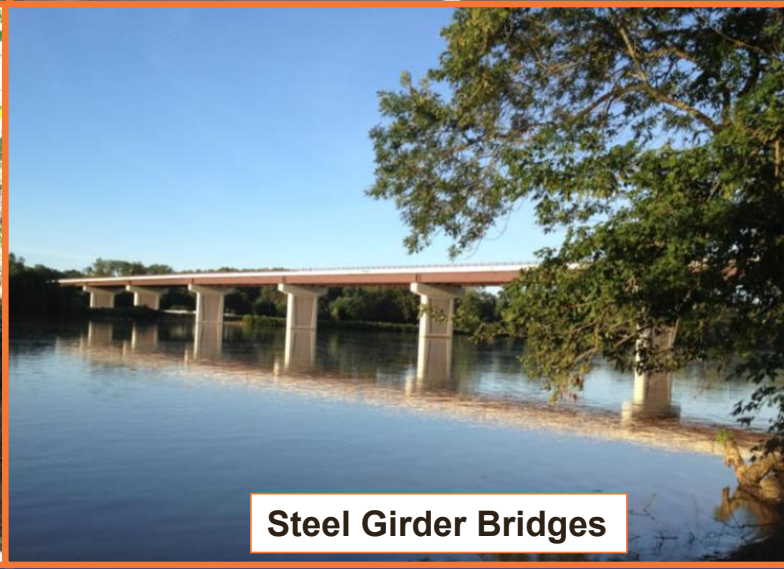
Bridge Rating - What is a GCR (General Condition Rating)?

9	Excellent	Good
8	Very Good	
7	Good	
6	Satisfactory	Fair
5	Fair	
4	Poor	Poor
3	Serious	
2	Critical	
1	Imminent Failure	
0	Failed	

Bridge Components

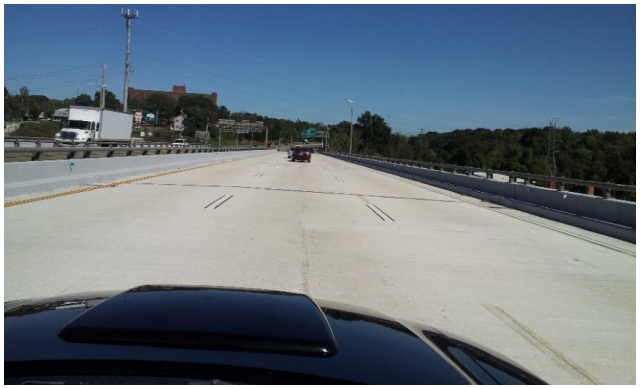






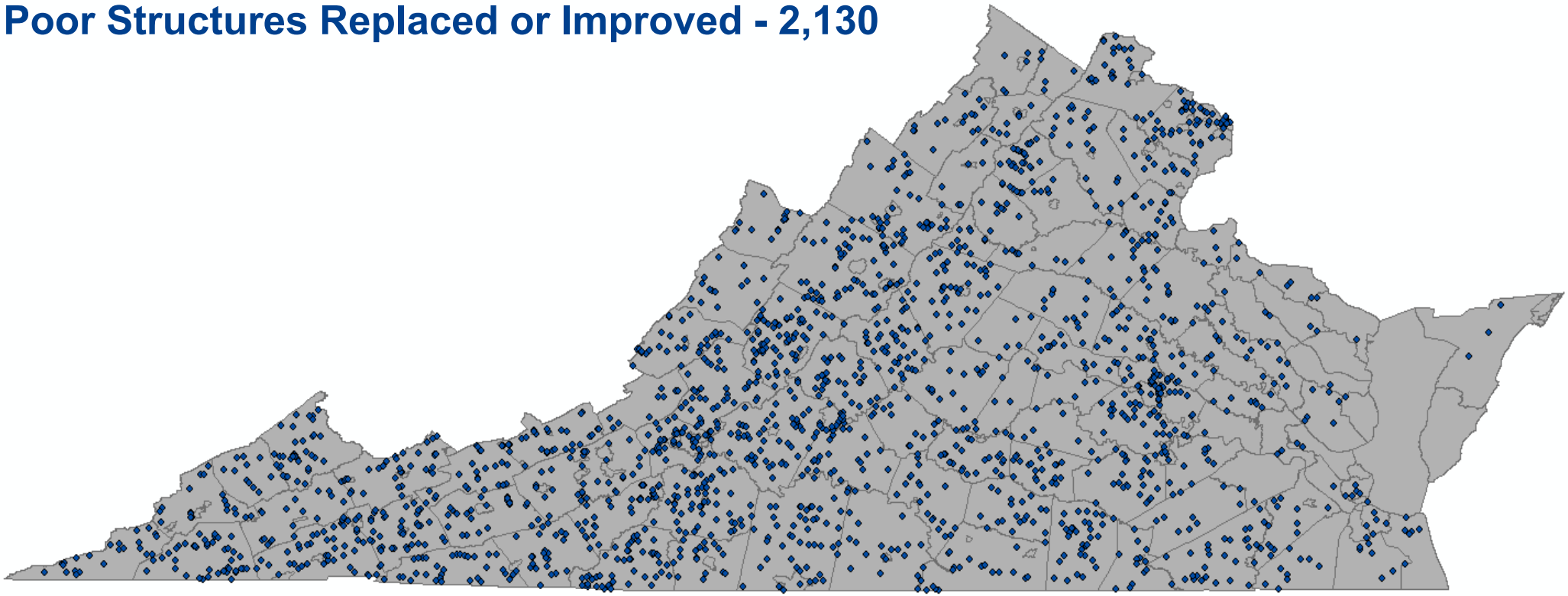
Structures Inventory – by Type

Examples of Good, Fair, and Poor Bridges

Good	Fair: on the Cusp of Poor	Poor
		
		

2010 – 2019 Poor Structures Improved

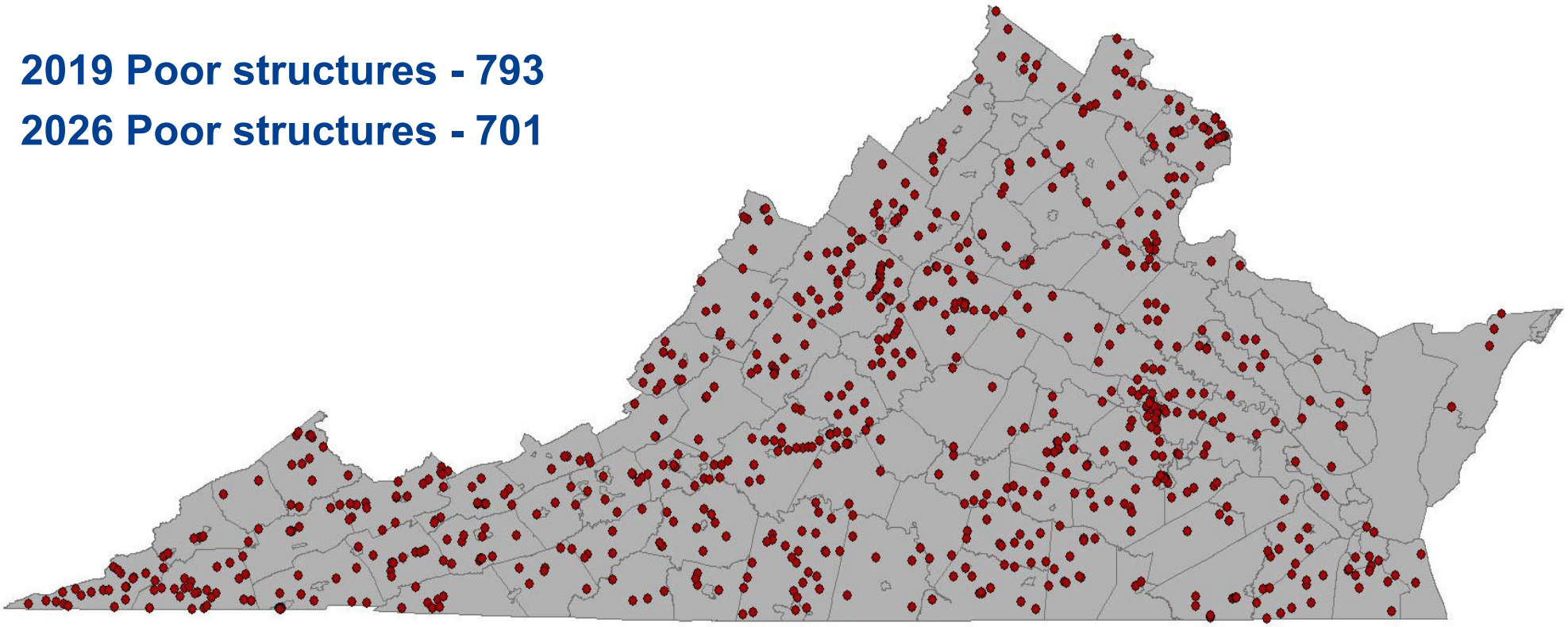
Poor Structures Replaced or Improved - 2,130



Since 2010 Significant Improvement in Poor Structures

2019 Poor structures - 793

2026 Poor structures - 701



2019 Structures – Long Term Sustainability

Analysis undertaken to define a sustainable solution

- Reviewed historical performance
- Cost to maintain the pre-2019 performance targets (percentage of bridges in good or fair condition)
  - 99% Interstates
  - 96% Primary
  - 94% Secondary
- Reviewed overall condition of the inventory
- Evaluated 20-year and 50-year performance using various funding and investment strategy scenarios

2019 Overall Funding Scenario

2019 Investment

Maintenance and Operations	$215M
State of Good Repair	$225M
Total	**$440M**

Fixed Costs

Inspection (Federal Requirement)	$38M
Routine Maintenance	$10M
Emergencies	$8M
Total	**$56M**

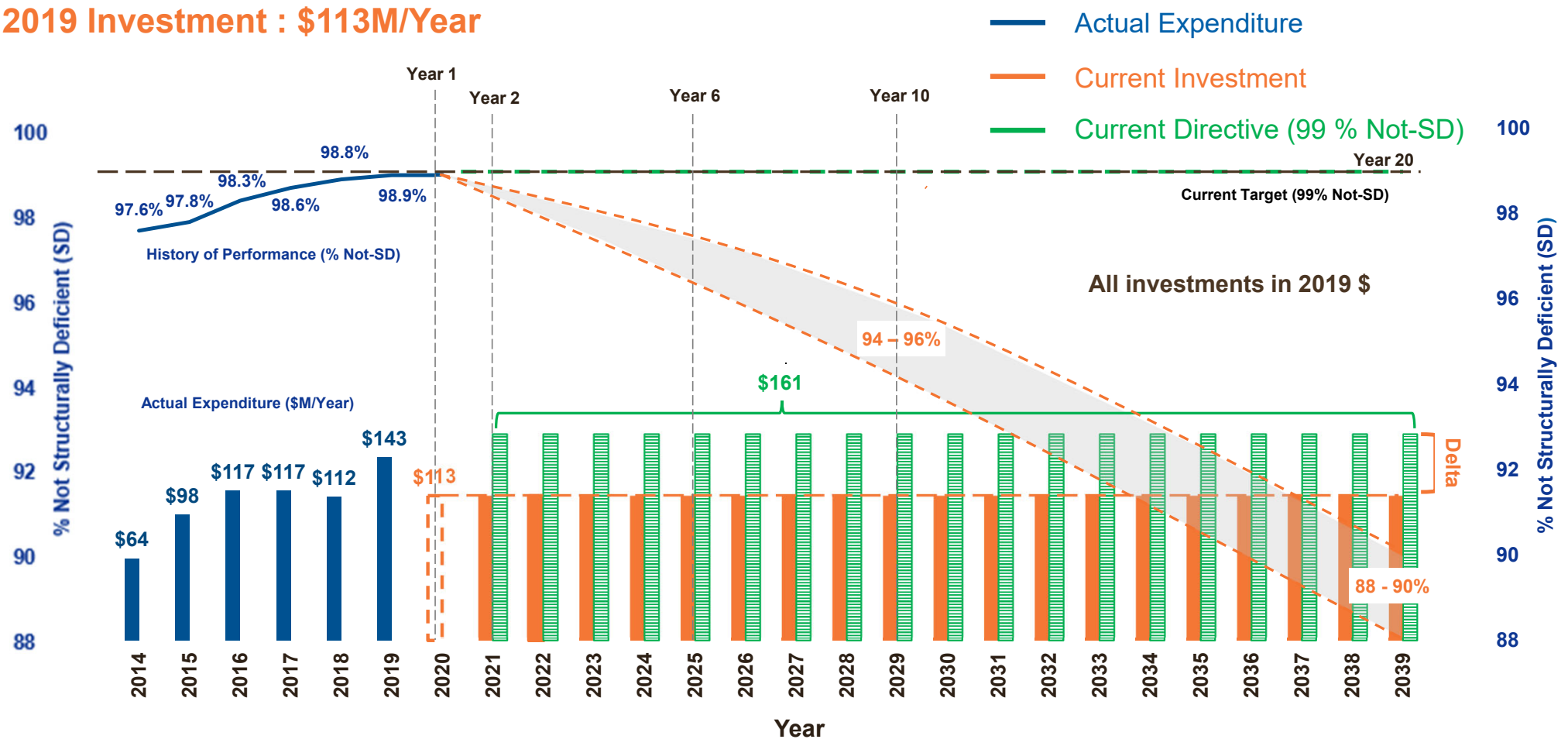
Total Available

*2019 dollars

*$384M

2019 Interstate Network

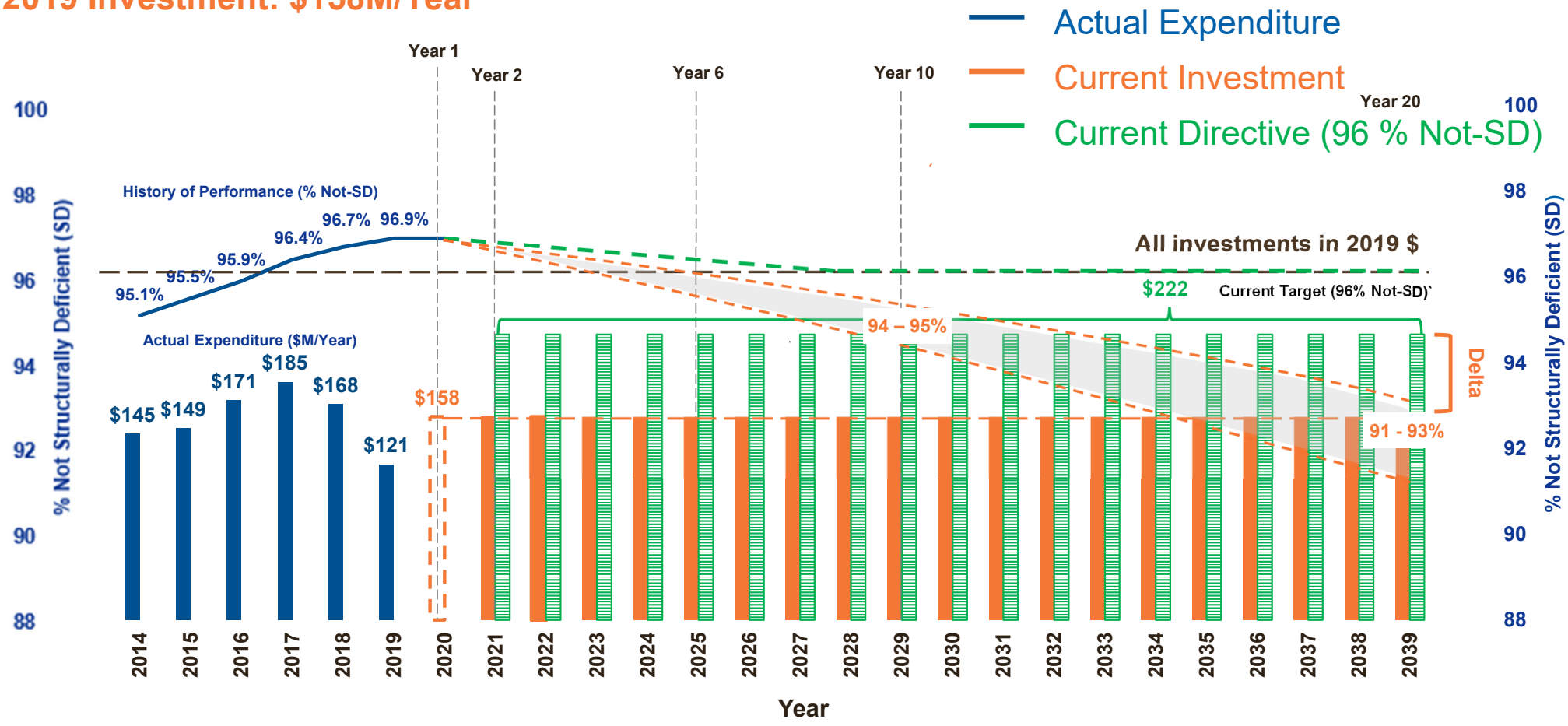
2019 Investment : $113M/Year



- Excludes Special Structures
- Delta = $48M

2019 Primary Network

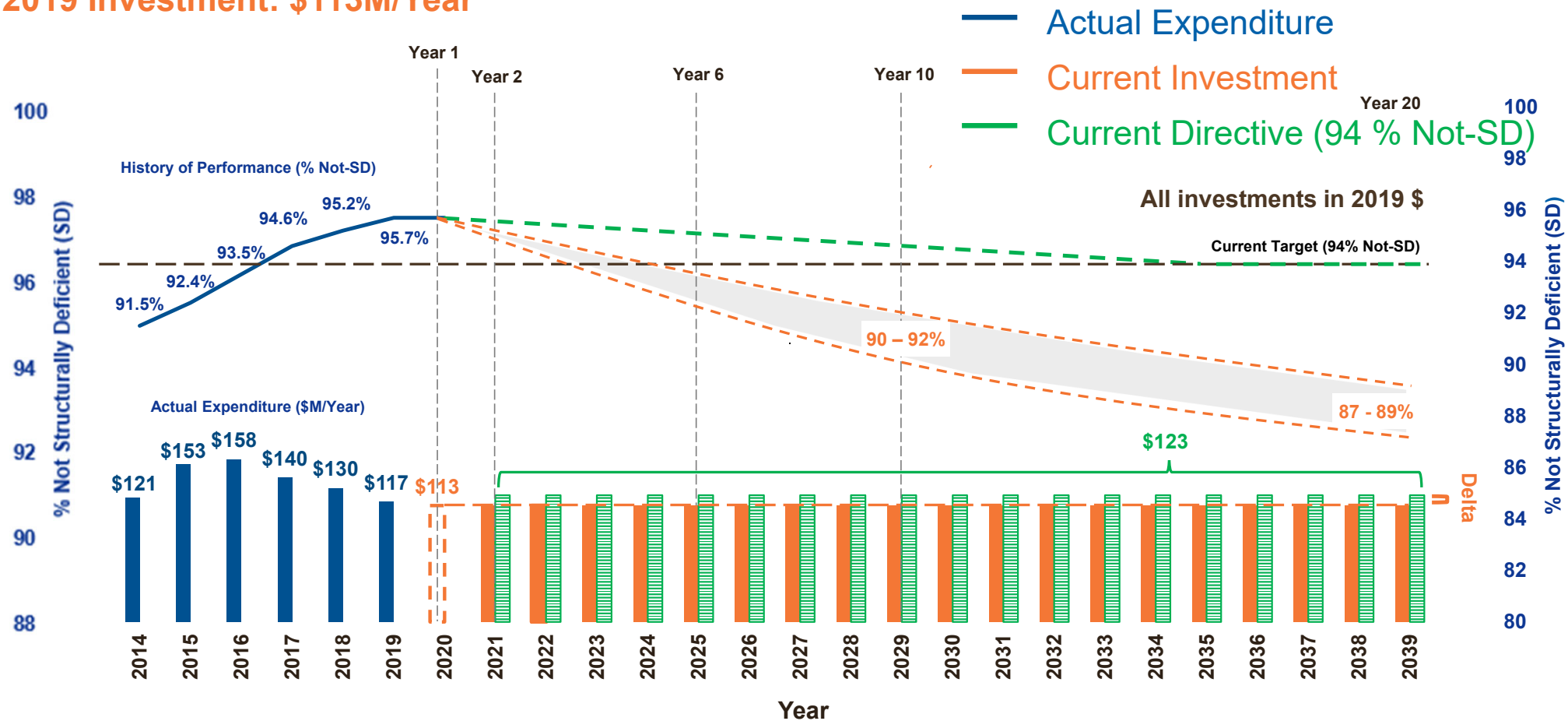
2019 Investment: $158M/Year



- Excludes Special Structures
- Delta = $64M

2019 Secondary Network

2019 Investment: $113M/Year



2019 Long Term Sustainability - Preservation Approach

- Focus on overall inventory condition
  - Not “Worst First”
- “Worst First” cost higher than proactive preservation
- Preservation approach maintains long-term acceptable level of service
  - Consistent with industry best practices - focus on balanced approach
- Remaining poor bridges are safe
  - Will continue to be monitored and programmed appropriately
- State of Good Repair Program – add Cusp bridges

2019 Preservation First Approach

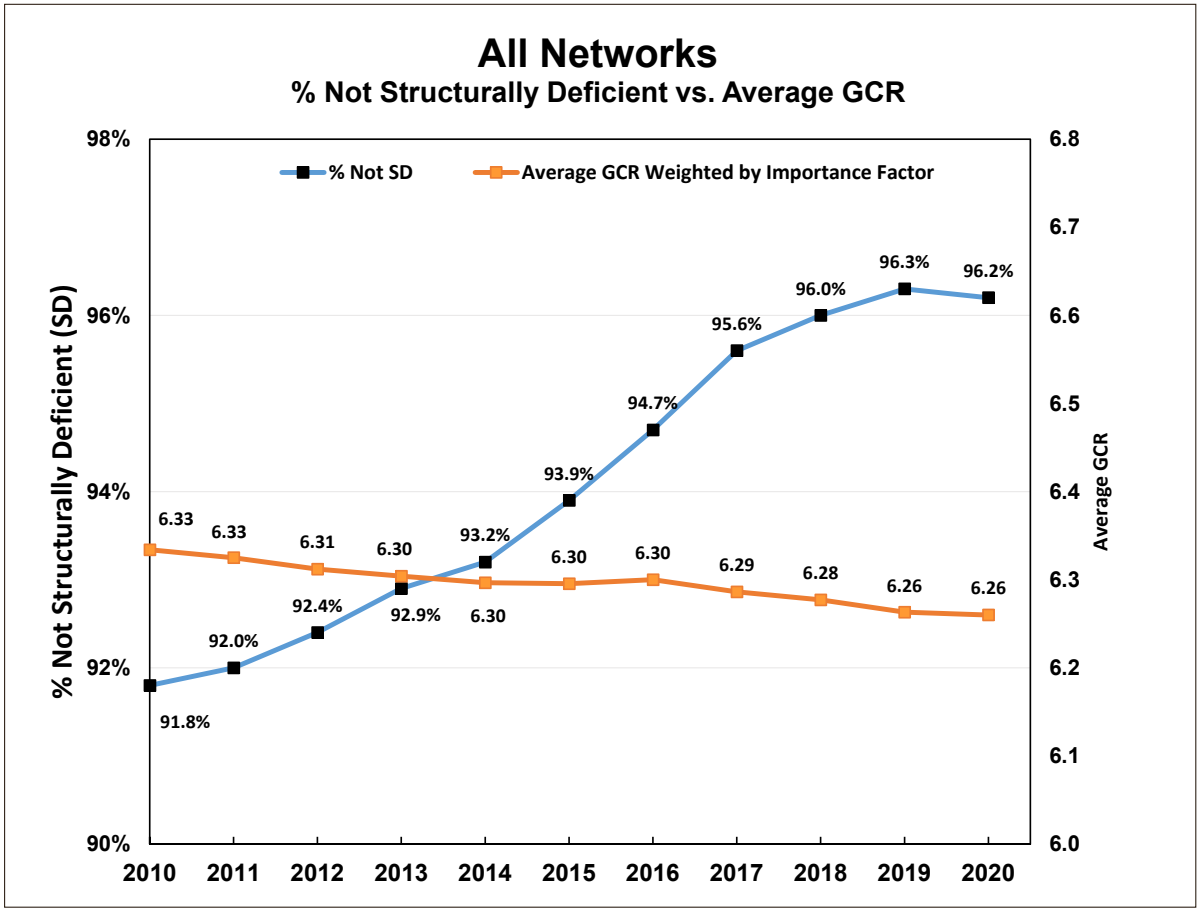
Preservation Activities and Investment Levels Evaluated (75%)

- Deck repair and preservation (overlays & joints)
- Superstructure repair (beam ends) and preservation
- Component or element replacement
- Substructure repair and preservation
- Culvert (liners)

Replacement Activities (25%)

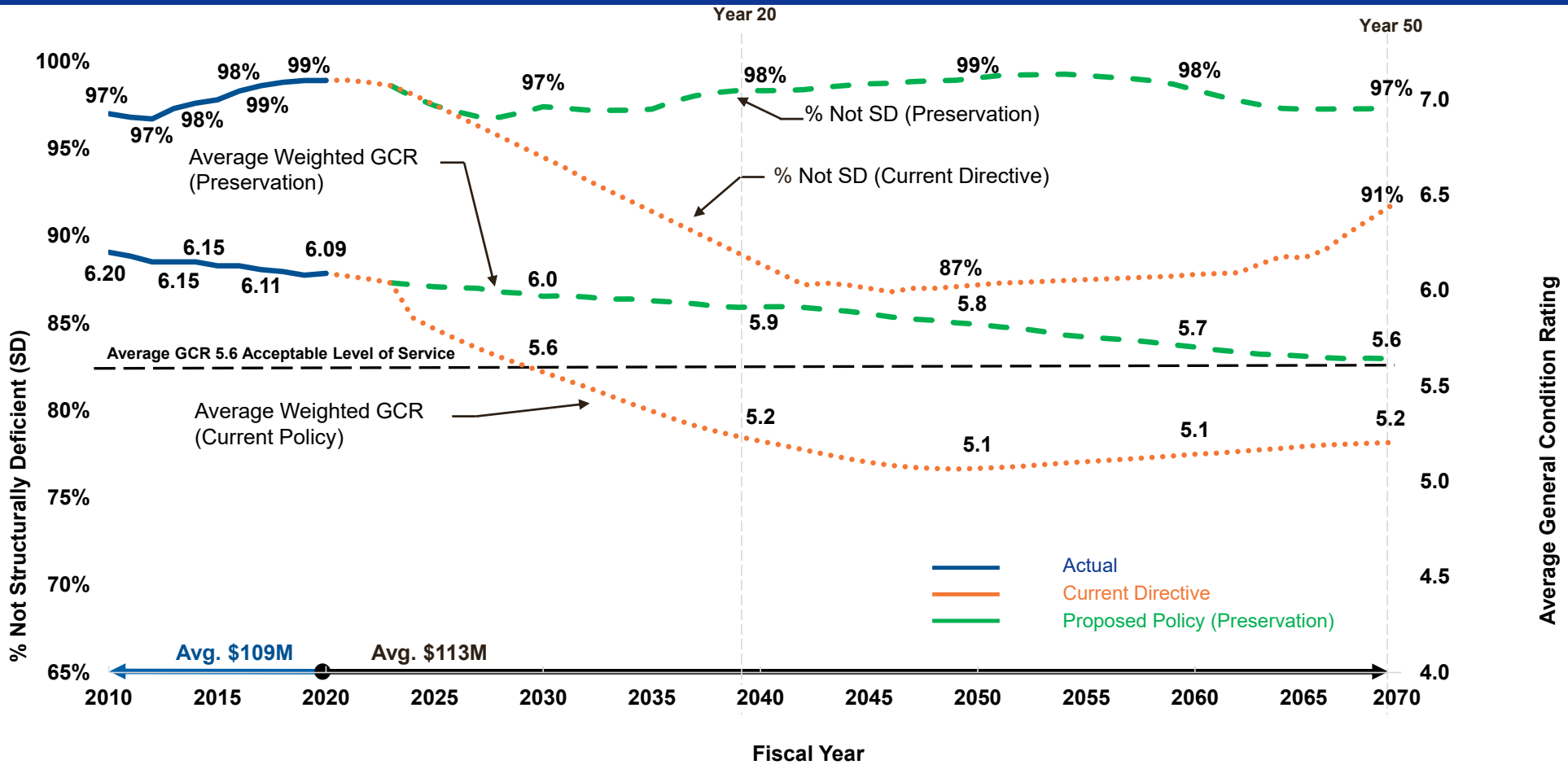
- Replace entire structure

2019 Overall Inventory Condition – Historical



2019 Interstate Network – 50 Year Outlook

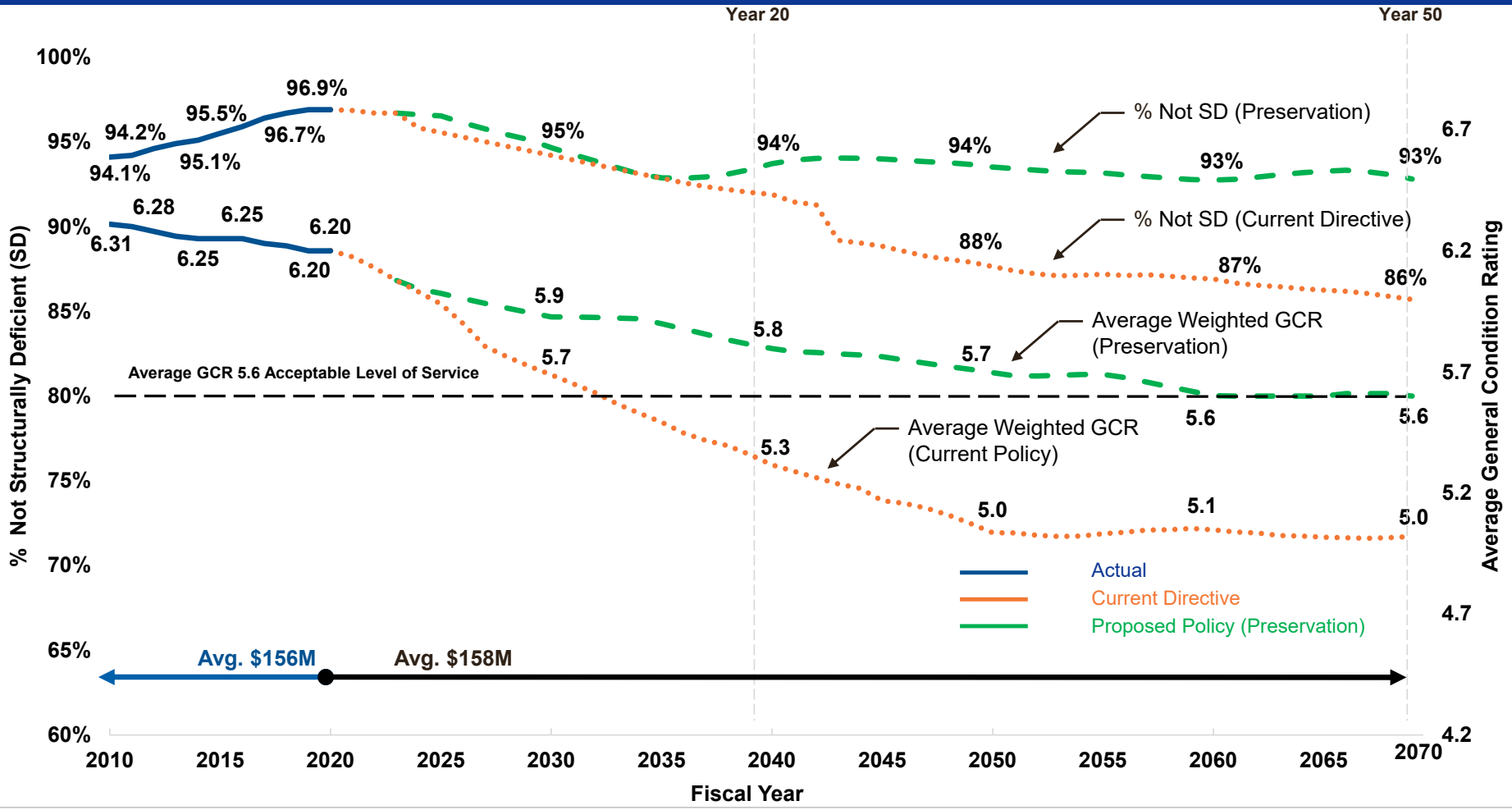
2,404 Structures (12%)
26M SF Deck Area (28%)



- All Future Expenditures are in 2019 Dollars
- Excludes Special Structures

2019 Primary Network – 50 Year Outlook

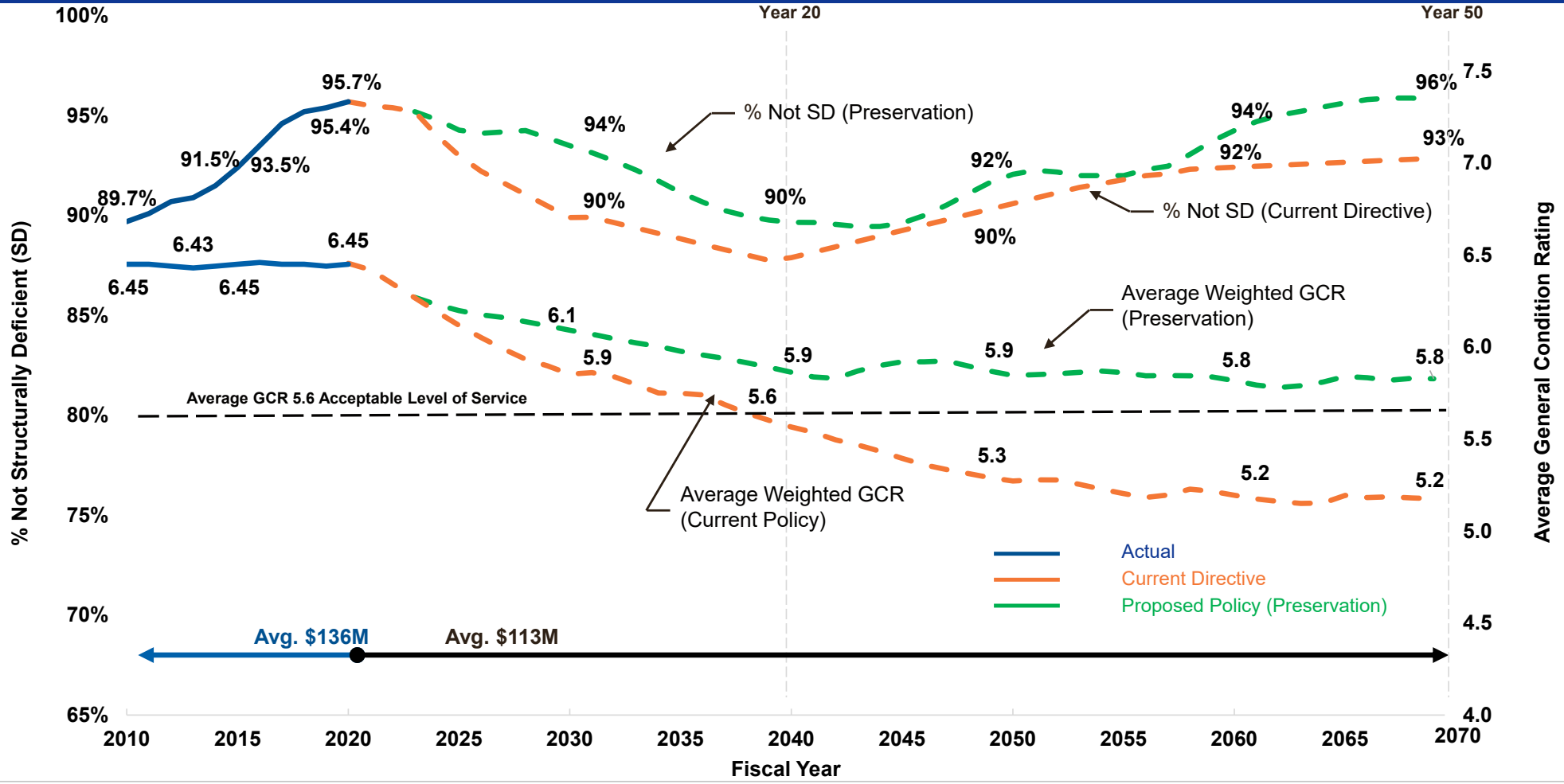
5,808 Structures (27%)
40M SF Deck Area (42%)



- All Future Expenditures are in 2019 Dollars
- Excludes Special Structures

2019 Secondary Network – 50 Year Outlook

12,961 Structures (61%)
29M SF Deck Area (30%)



- All Future Expenditures are in 2019 Dollars
- Excludes Special Structures

2019 Summary - Structures Investment Options

2019 investment: $384M per year, FY 2020

Targets, % Not-SD				Avg. Total Cost per Year, $ Millions		
				Years 1-50		
IS	PR	SC	All Systems Average GCR	IS	PR	SC
2019 Investment – Current Directive				161	222	123
99%	96%	94%	N/A	$506		
				($122)		
Proposed Investment – Proposed Target				113	158	113
97% No Postings	93%	90%	Average GCR ≥ 5.6	$384		
				$0		

Current Directive

Proposed Target

*All amounts in 2019 dollars

2019 Structures - Performance Measures

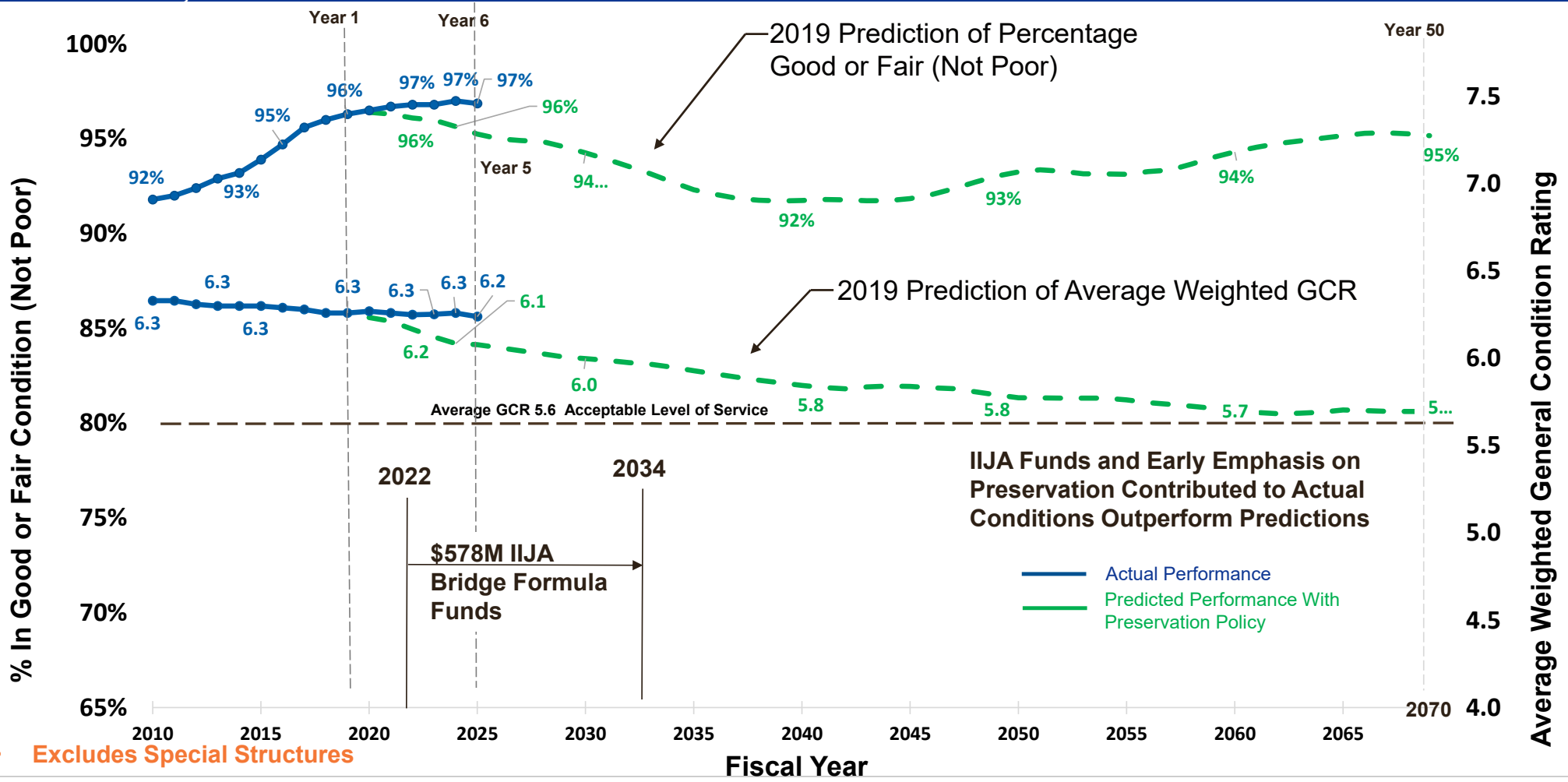
$384M*
per year

Performance Measure Description	Current Policy Preservation (CTB Approved December 2019)	
	Average General Condition Rating (GCR)	**% Not Poor
All Systems	≥ 5.6	N/A
Interstate		97% No Postings
Primary		93%
Secondary		90%

*2019 dollars
**% Not Poor – percentage of structures with a GCR of 5 (Fair) or better

All Networks Combined – 50 Year Outlook - 21,302 Structures

October 14, 2025



- Excludes Special Structures

Interstate Network – 50 Year Outlook - 2,443 Structures

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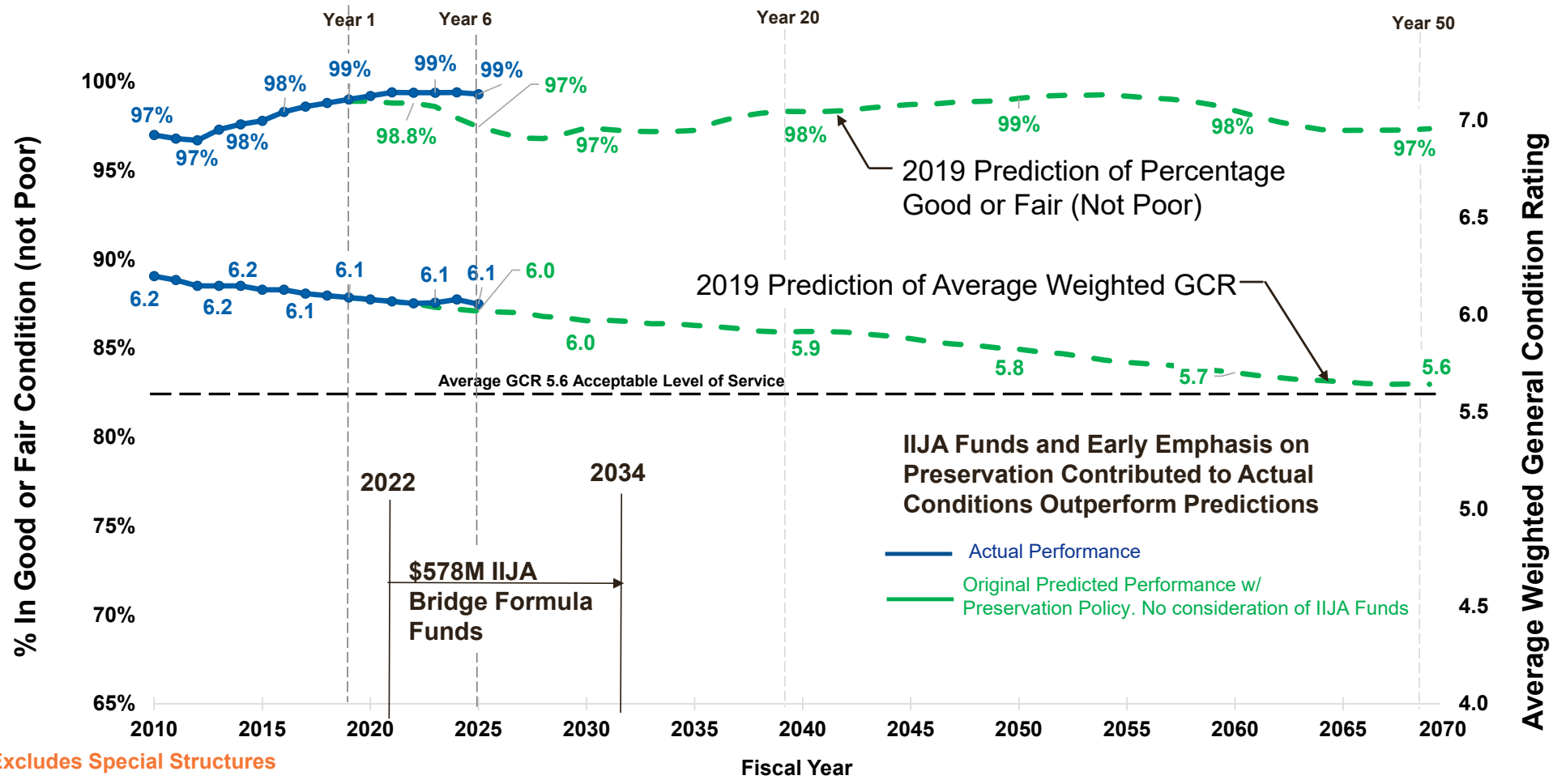
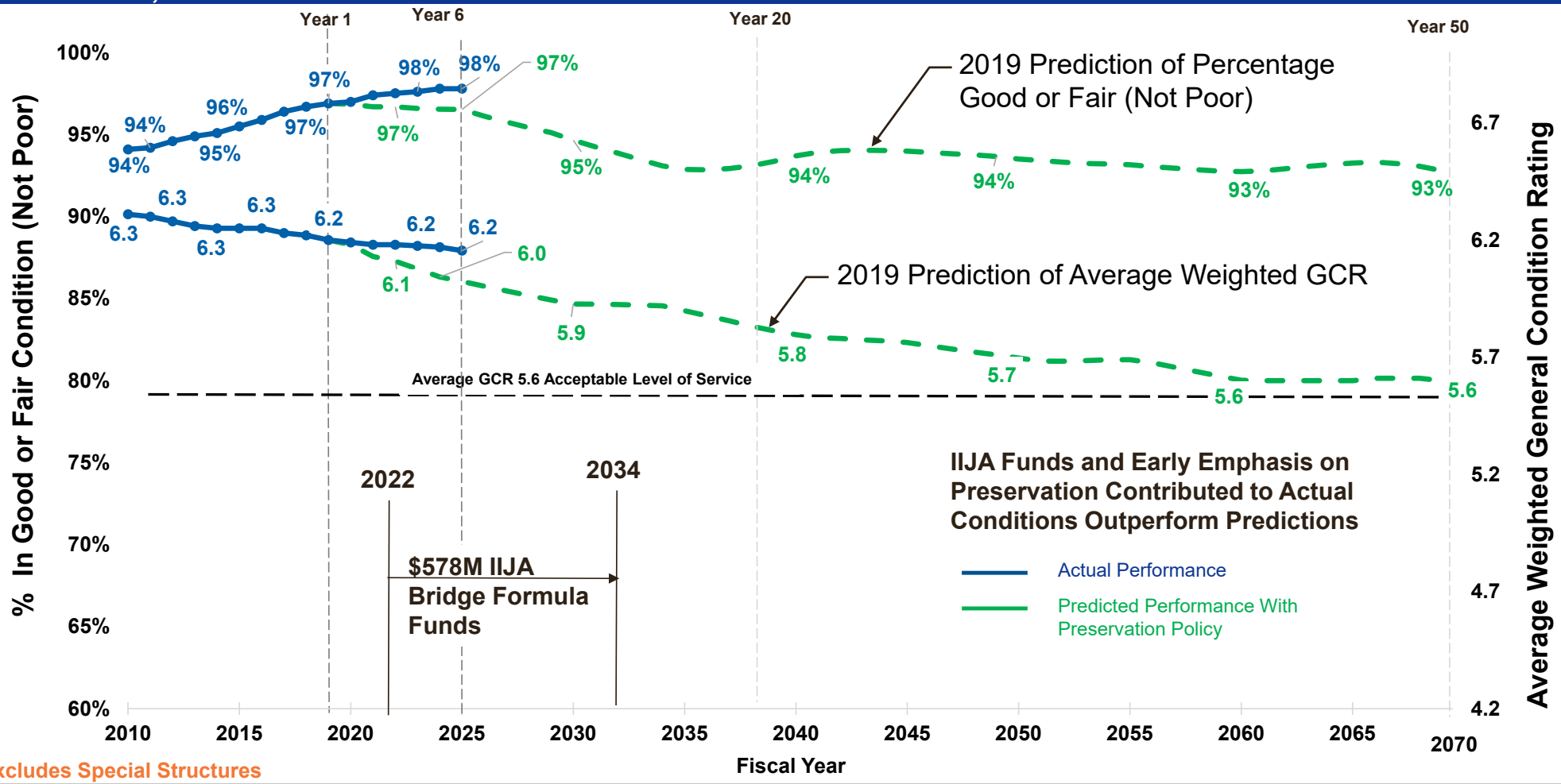


- Excludes Special Structures

Primary Network – 50 Year Outlook - 5,818 Structures

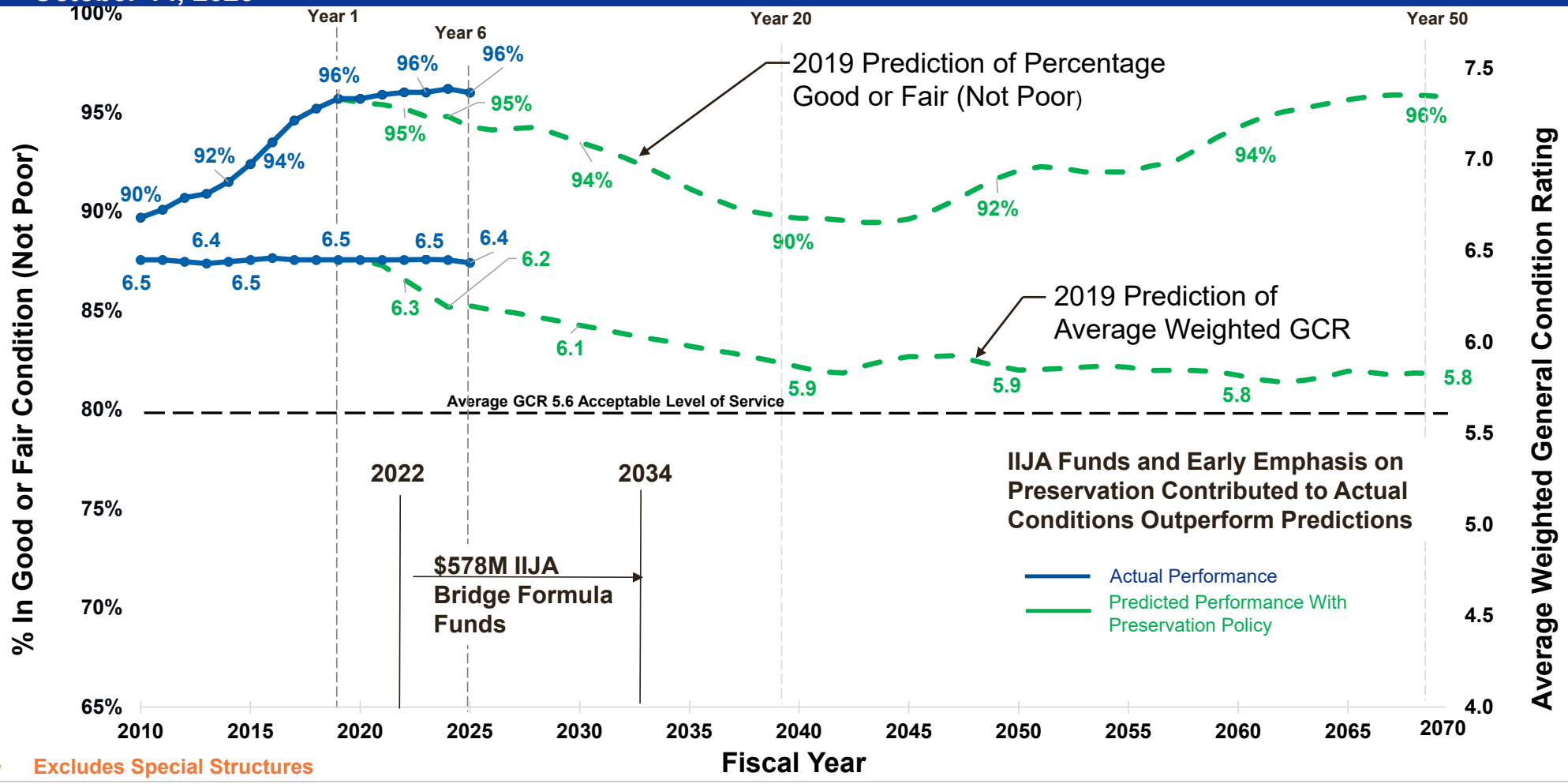
October 14, 2025



- Excludes Special Structures

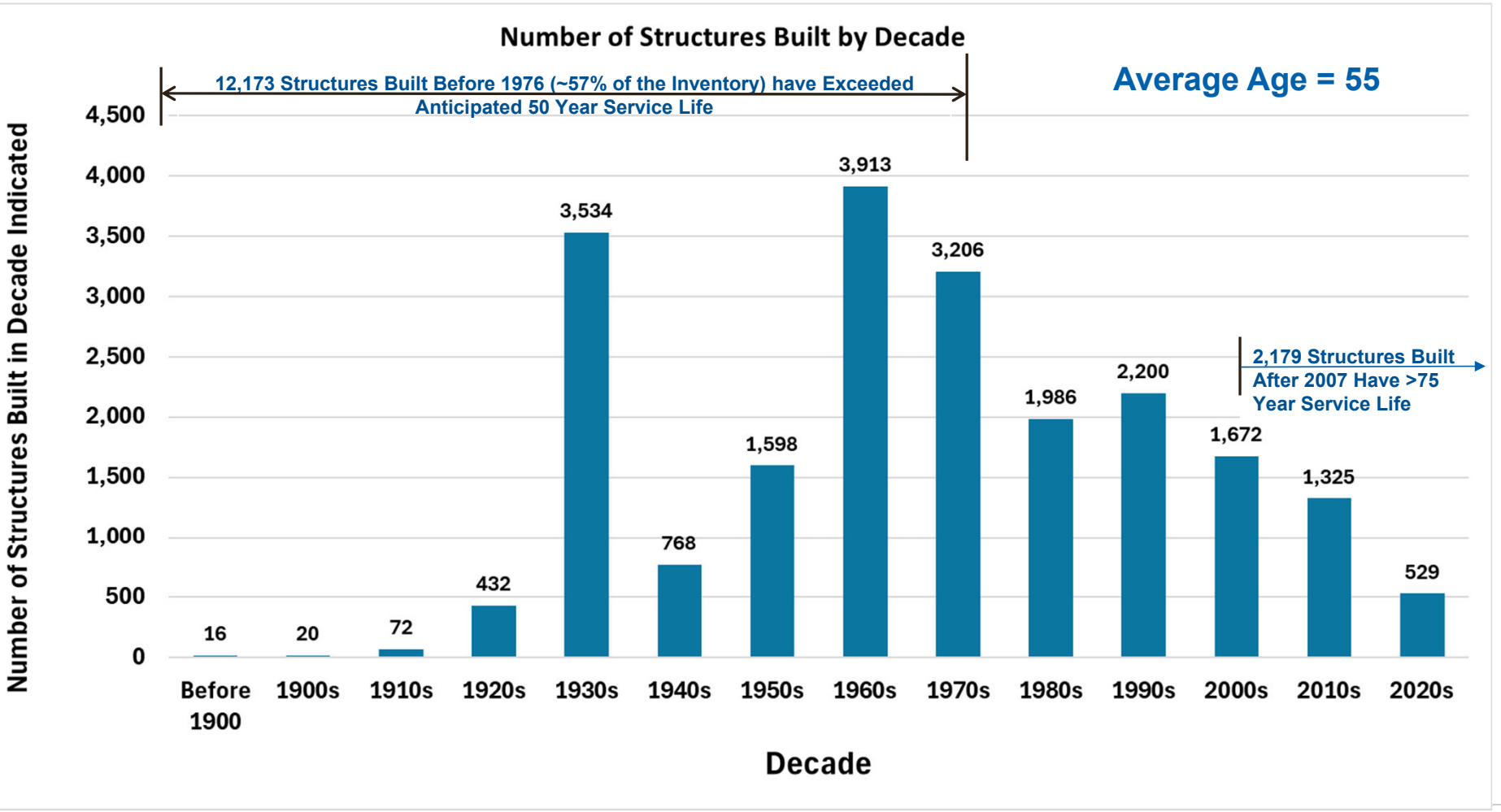
Secondary Network – 50 Year Outlook - 13,041 Structures

October 14, 2025



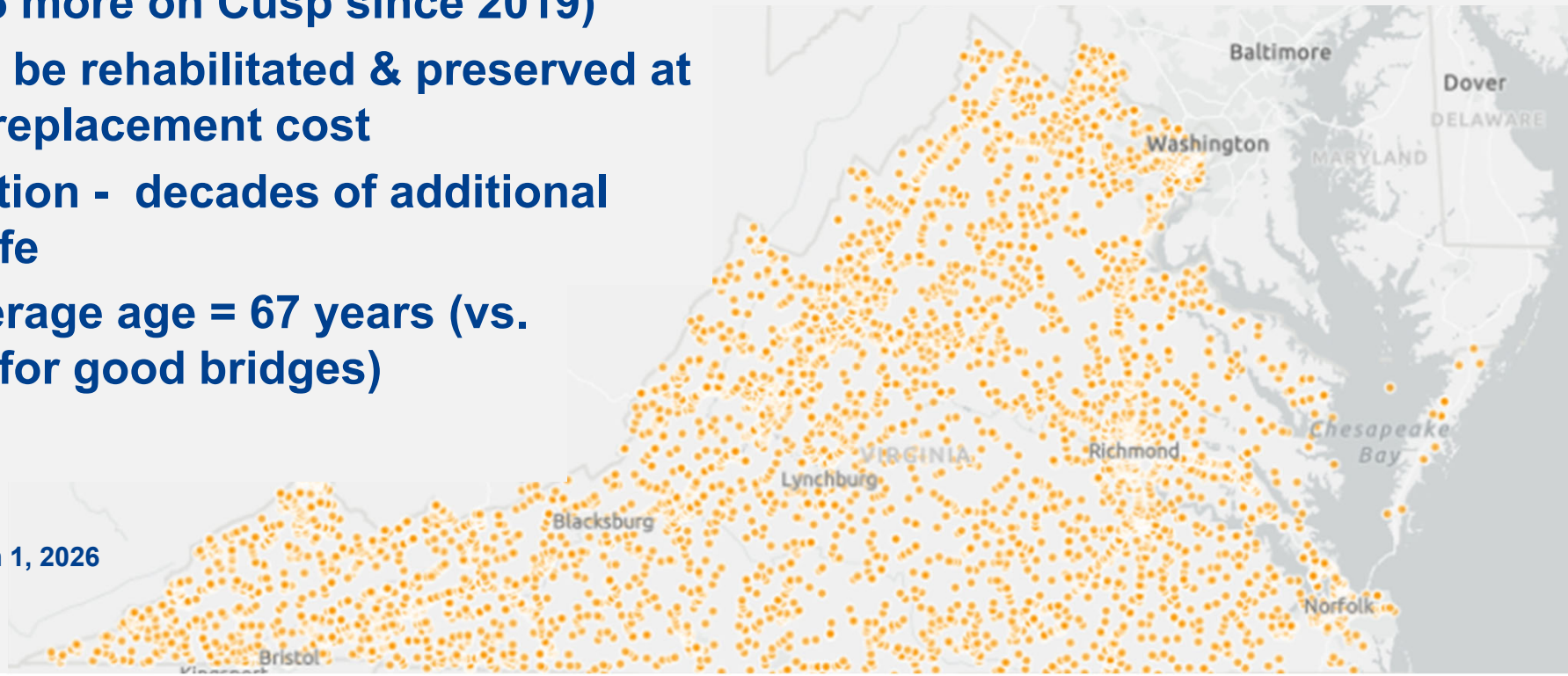
- Excludes Special Structures

Bridge Inventory - Age



2026 Continuing Challenge - 5,166 Structures on the Cusp of Becoming Poor

- One inspection rating from becoming poor (726 more on Cusp since 2019)
- Most can be rehabilitated & preserved at ~15% of replacement cost
- Preservation - decades of additional service life
- Cusp average age = 67 years (vs. 40 years for good bridges)



Data as of March 1, 2026

2026 Update - Current Challenges

- **Update analysis using current conditions and deterioration rates**
  - Average age is now 55 vs 50 in 2019
  - Number of poor bridges increasing as predicted
- **21st Century bridges use better technology and deteriorate slower**
  - There are more modern bridges in the inventory vs 2019
  - Since the 2019 Study, 621 more durable bridges have been added or replaced
- **Significant cost changes since 2019**
  - Material and contracting costs have increased
  - Inspection costs are increasing due to new federal mandates
- **Seek more efficient ways to deliver the program**

NEXT STEPS

Upcoming CTB Meetings

Description	CTB Meeting Date
Overview of 2019 Maintenance and Operations Program Cont	May 19, 2026
Bridge Re-baseline	June 16, 2026
Pavement Re-baseline	July 21,2026
Routine Maintenance Set Targets	September 15, 2026
Special Structures	October 14, 2026
CTB approval	December 9, 2026