Using data as a leading indicator and predictive forecasting for Florida's Pavements

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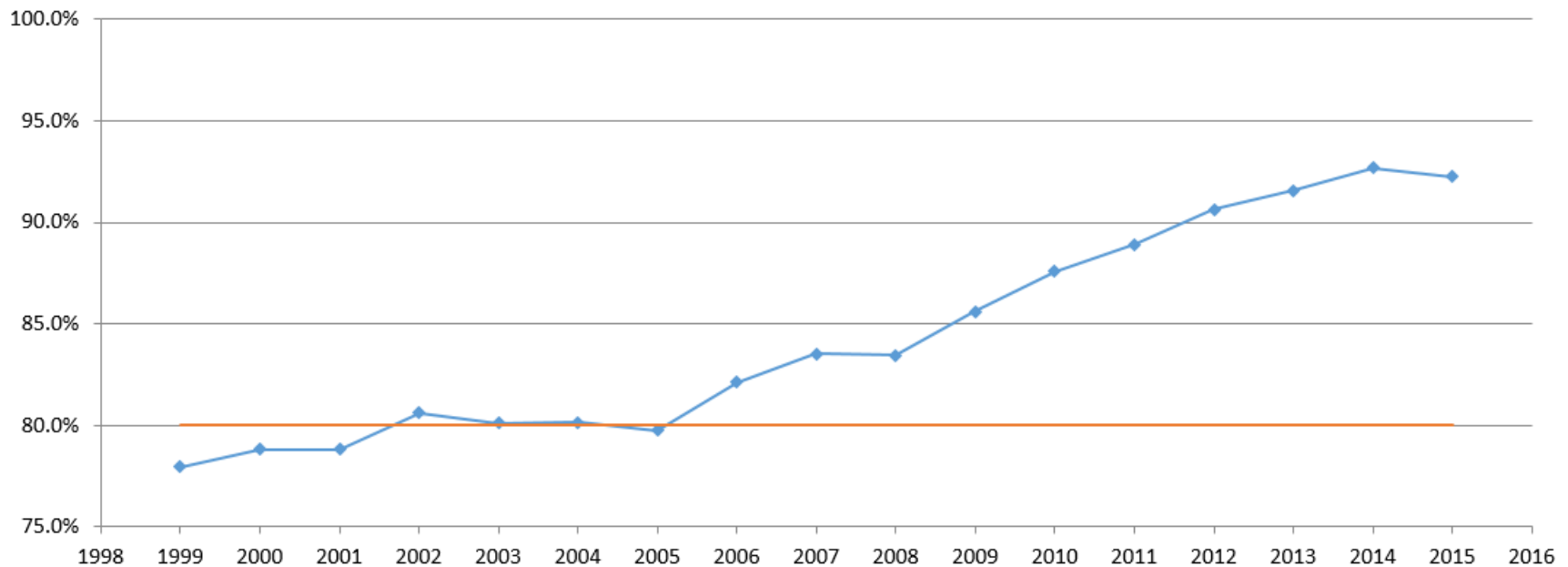
Pavement System Specialist

Florida Department of Transportation

Pavement Condition Survey (PCS)

- PCS data have been collected since 1976.
- Since 2006 we have surpassed the 80 % performance standard per FL Statute.

Percent of State Highway System Meeting Standards

- The PCS rates pavements using three indices.

CRACK   RUT   RIDE

- The rating scale for the PCS is from 0 (worst) to 10 (best).
- A rating under 6.5 in most cases is considered deficient.
- A collective analysis of all pavement segments demonstrates if the Department is meeting standards.

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PCS Collection

- April 1 – December 31 annually.

- State Materials Office gathers the Data.

- 5 Primary Vans and 4 Full Time Raters.
  - High speed profiler.
  - Daily calibrated.
  - Consistent data surveyor per district.

- FDOT PCS COLLECTION HANDBOOK
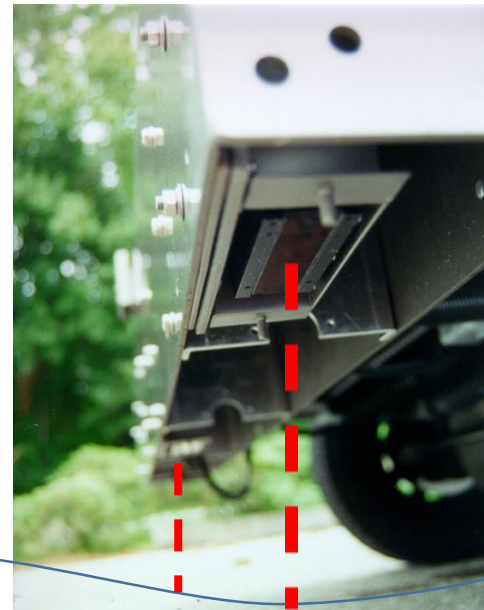
PCS Overview

- Quantity of Data: over 9200 rated pavement historical dynamic sections.

- The PCS Data are incorporated with:
  - Roadway Characteristic Inventory (RCI):
    - Traffic, number of lanes, on/off system, etc.
  - Work Program:
    - Past and future pavement improvement projects.
  - Construction pay items
  - Friction course type
  - Etc.

- Published April 1st every year.

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Pavement Management Data

- Maintain accountability of the department's assets.

- Forecast Segment, District, and Statewide deterioration.

- Develop a Resurfacing Program that meets a pavement performance goal.

- System Behavioral analysis.

2015 PCS Overview

- 43,593 Total Statewide LM
  - 3,373 Deficient LM → 7.7% Deficient

Districts	Arterial		Interstate		Turnpike	
	Lanemiles Deficient	Percent Deficient	Lanemiles Deficient	Percent Deficient	Lanemiles Deficient	Percent Deficient
1	459	9.1%	20	1.8%	0	0.0%
2	545	8.7%	12	0.6%	0	0.0%
3	634	11.1%	70	7.0%	0	0.0%
4	307	7.3%	9	0.6%	0	0.0%
5	377	6.3%	188	12.3%	0	0.0%
6	278	11.0%	88	38.1%	3.53	1.4%
7	368	10.6%	14	1.7%	0	0.0%
Percent Deficient	8.9%		5.0%		0.2%	

Resurfacing Work Program

	Current Year	Programmed Year	New Programmable Year	Possible Future Programmable Scenarios		
2014	**2015**	**2016 2017 2018**	**2019**	**2020**	**2021**	**2022**

- Focuses on the **New Programmable Year.**

- **Florida's Analysis System for Targets (FAST).**
  - Forecast of a total system allows analysis of lane mile target allocation scenarios designed to meet desired goals using the most recent PCS data.
 - District, Section and System Analysis.

FAST

- Improved section level condition forecasts of the SHS.

- The ability to calculate future resurfacing allocations based on forecasted conditions.

- Prioritized list of candidate resurfacing projects.

- Impact analysis for different funding scenarios and policy decisions.

- Predictive equations based on the historical performance of pavements in each District are used to predict the performance of pavements within that District.

What if?

- Answer frequently asked questions from the Executive Level as well as the Districts:
  - What have been the impacts of previous decisions?
  - Were the underlying assumptions valid?
  - If we take a specific action - what is the expected impact?
- Examples:
  - Reducing or increasing percent of resurfacing Statewide.
  - Changes in materials and its overall impacts.
  - Changes of how contracts are administered and its overall impacts.

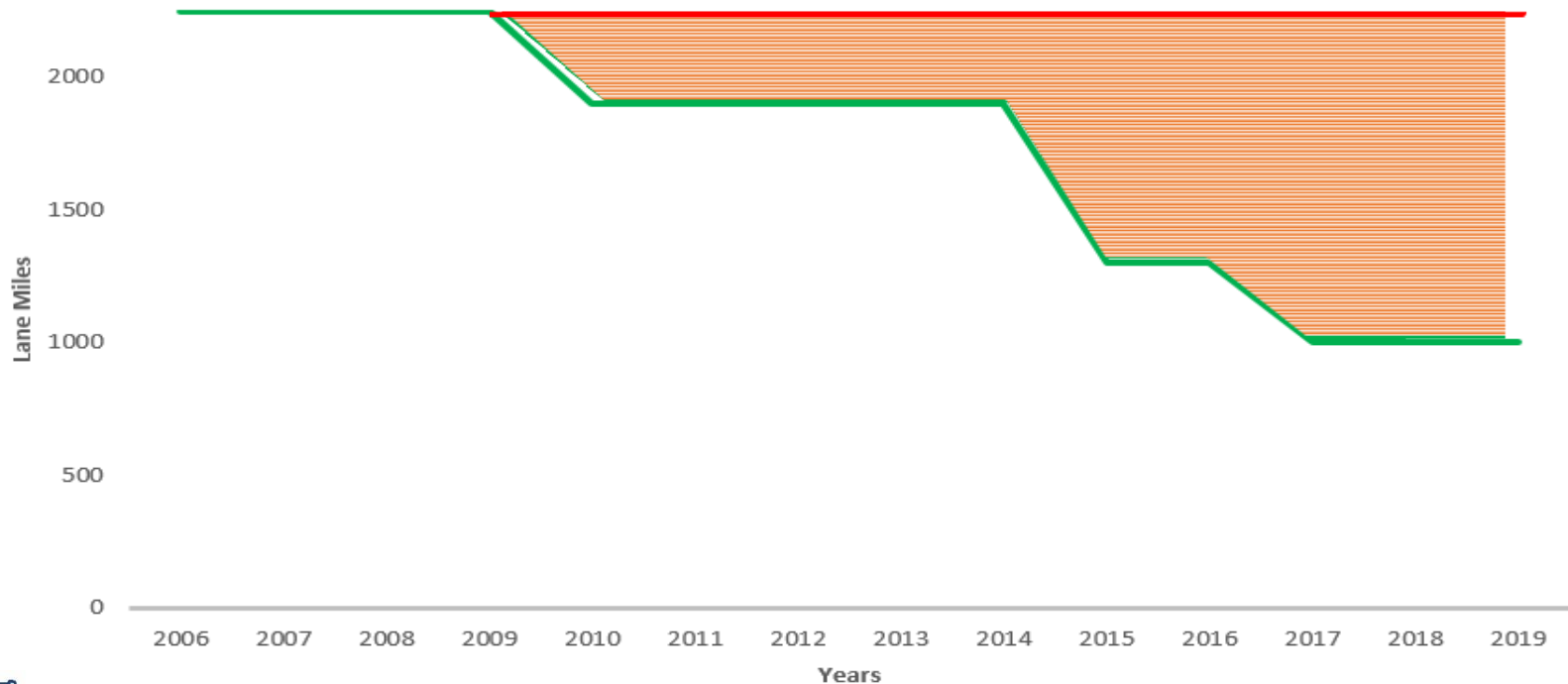# Historical and Predicted Percent of Lane Miles Meeting Standards
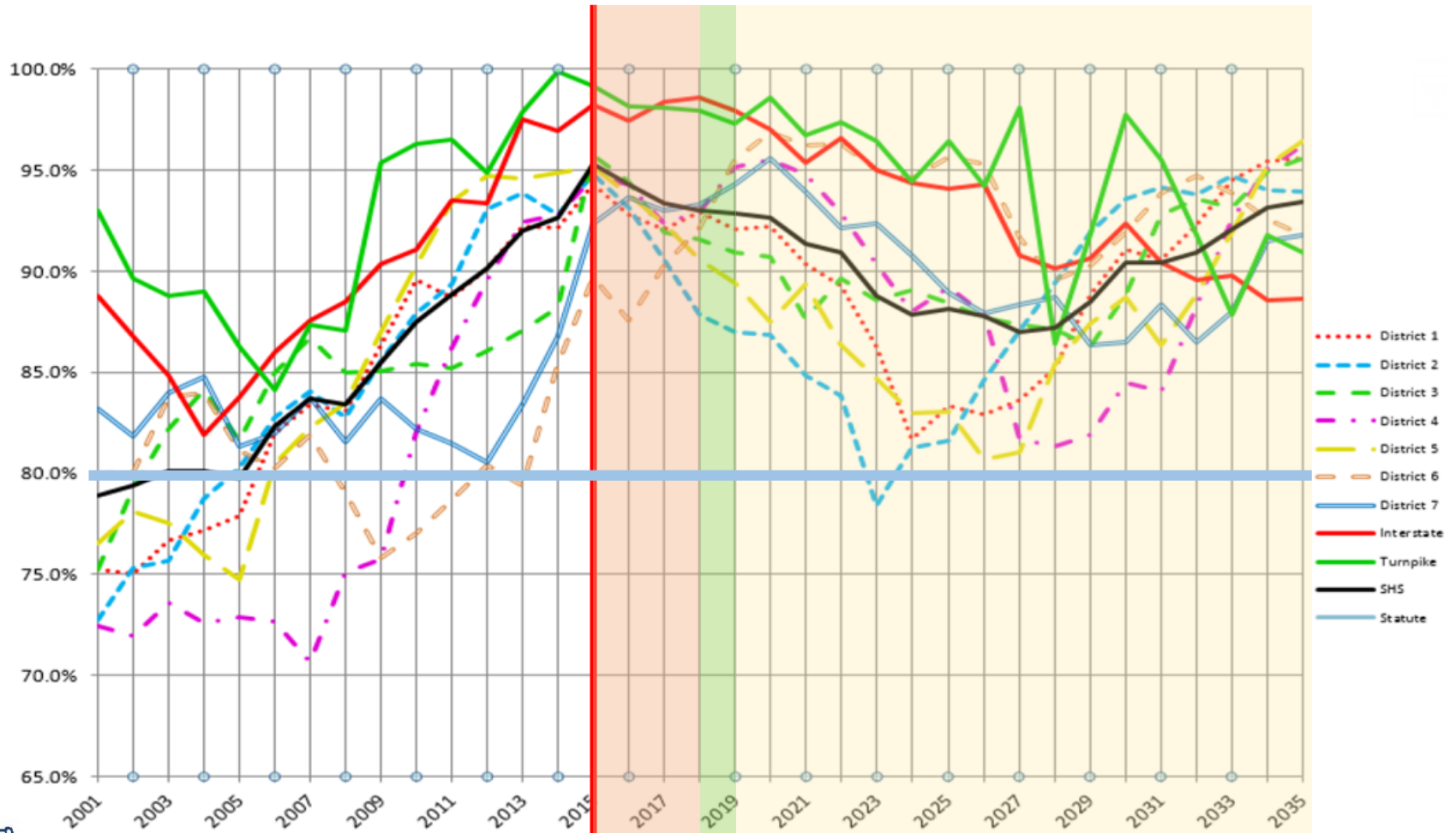
Forecasting from the Master Curve
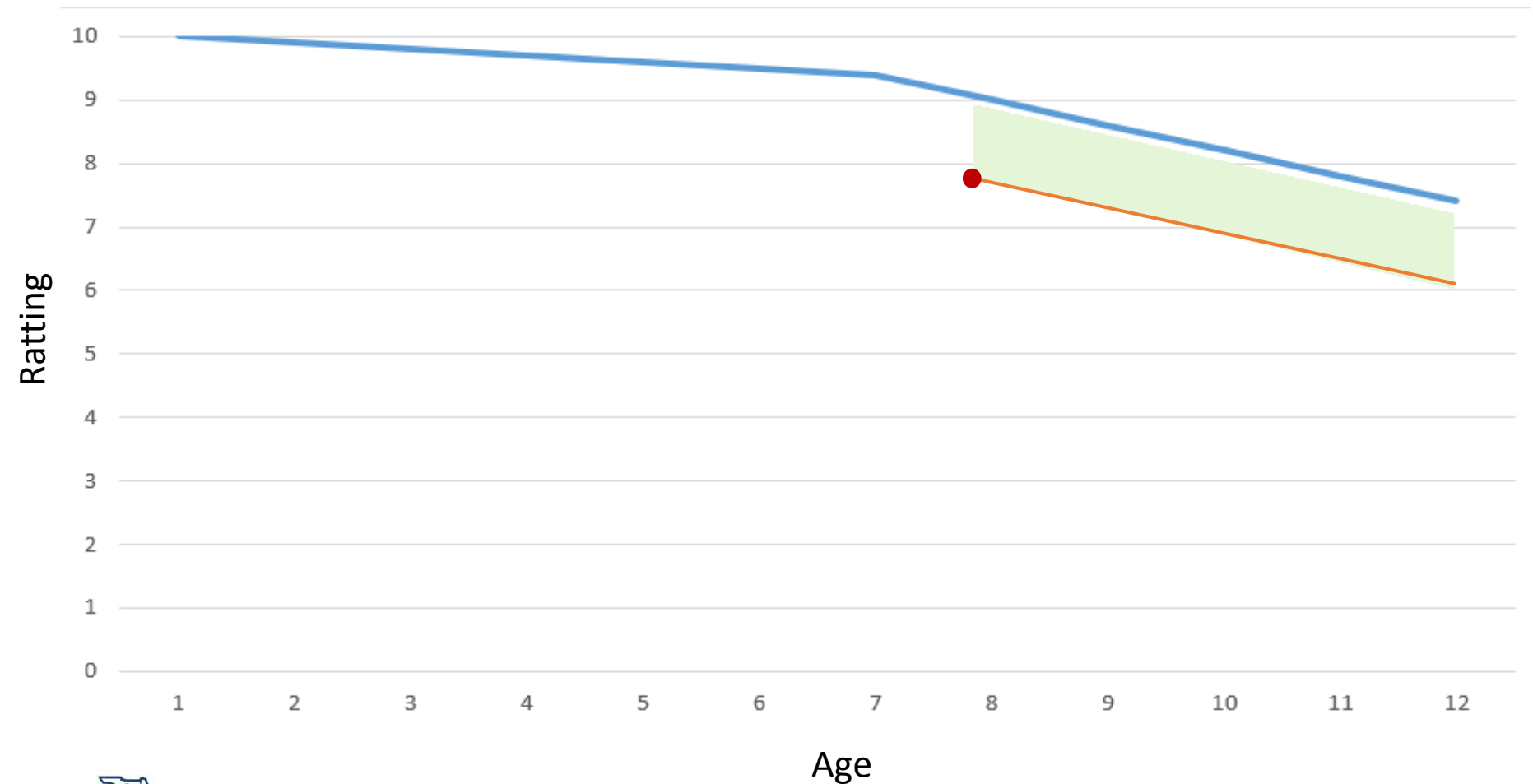
# Impact of accurate Data and Forecasting

- In the past 10 year work program, Florida's Resurfacing program has reallocated roughly 7400 lane miles. ($ 3 Billion)

Benefits of Forecasting with FAST

- The data does not require to have an extensive historical representation for every section.

- Annually calibrated, section level detail provided by FAST allows the effects of research and development initiatives to be directly quantified for the future.

- Analysis of pavement behavior allows for better allocation of funds and resurfacing decision.

2012 Scenario Analysis
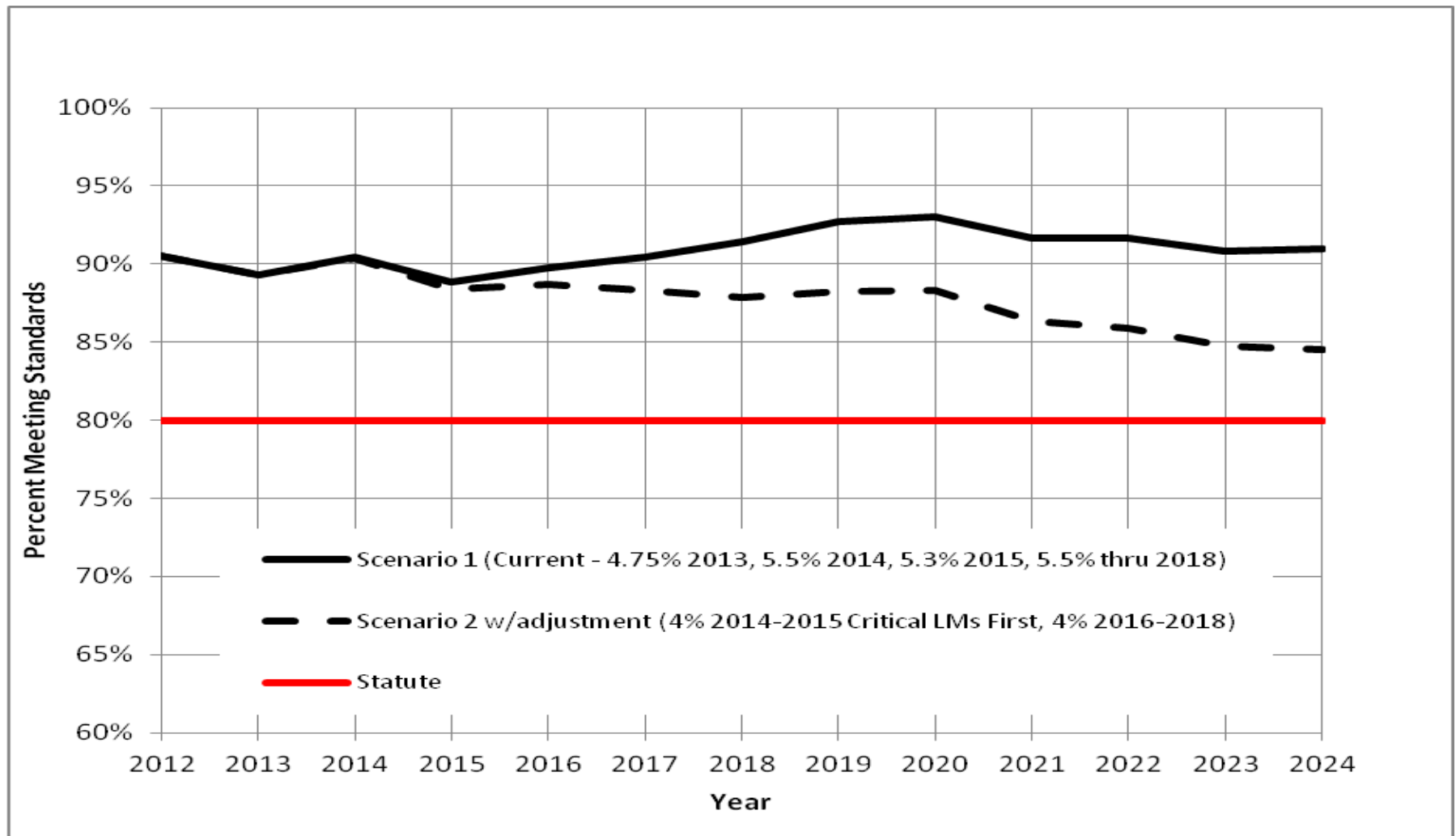
2013 Scenario Analysis
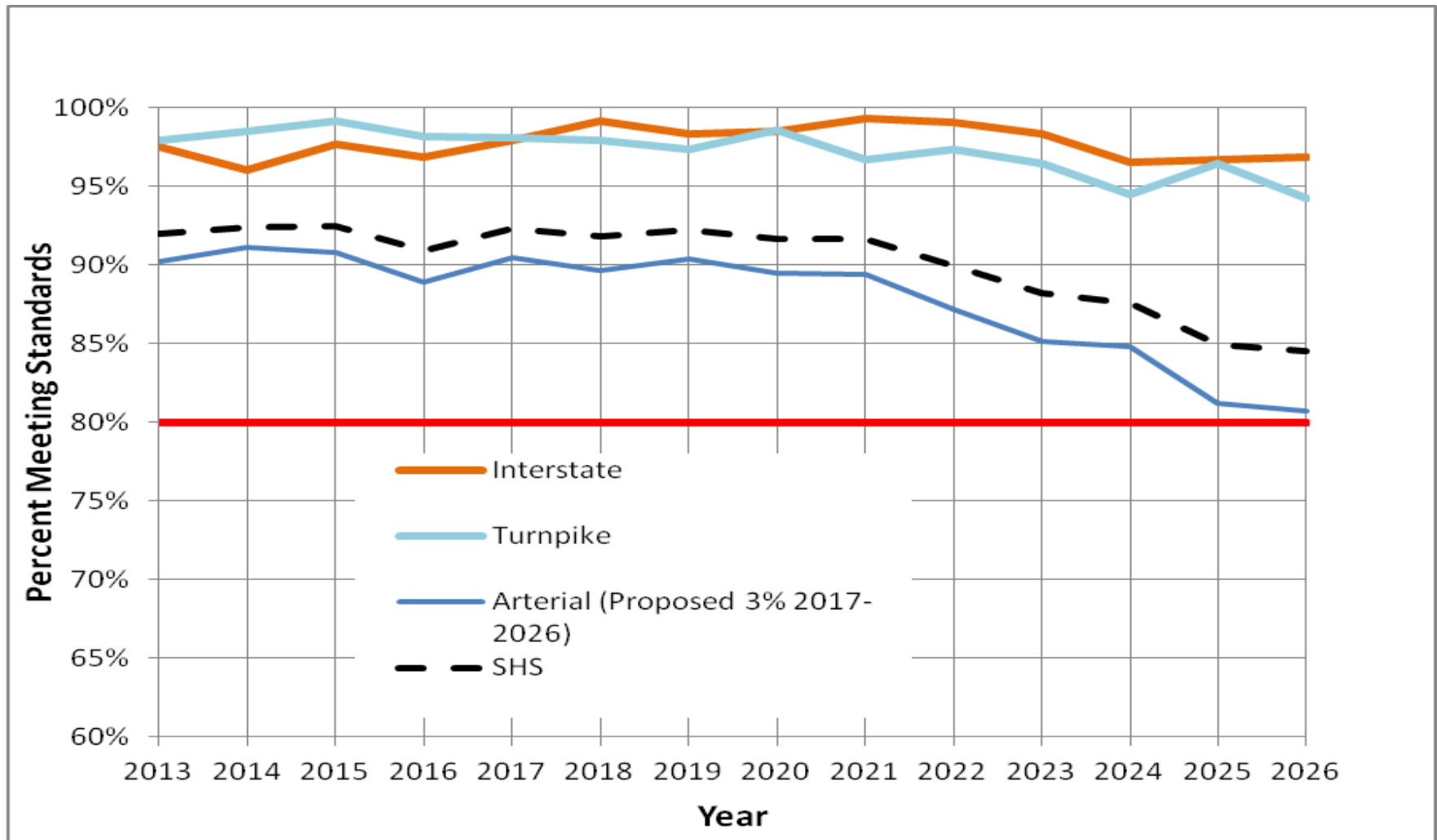
Pavement Management Reports

- Pavement Condition Report

- PCS Cycles

- Mix Designs

- As-Build Reports

- Coring Report

- Surface Types

- Material Information

- Rutting and Ride Reports

- CQR: Lab Report Info

- Bid Tonnage

- Project Overlap

- Quantity and Cost Information

These and many other Reports that aid Pavement Managers in asset management can be viewed in the Pavement Management INFONET Site.

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Questions?

Thank you!

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