Memorandum

To: CHAIR AND COMMISSIONERS

CTC Meeting: December 5-6, 2018

Reference No.: 4.12
Action

Published Date: November 21, 2018

From: SUSAN BRANSEN
Executive Director

Prepared By: Chris Traina
Chief Engineer

Subject: **EVALUATION OF CALTRANS' EFFECTIVENESS IN REDUCING DEFERRED MAINTENANCE AND IMPROVING CONDITIONS ON THE STATE HIGHWAY SYSTEM**

ISSUE:

Should the California Transportation Commission (Commission) approve the Fiscal Year 2017-18 evaluation of the effectiveness of the California Department of Transportation (Caltrans) in making progress towards reducing deferred maintenance and improving road conditions on the state highway system as set forth in Attachment 1?

RECOMMENDATION:

Staff recommends the Commission approve the evaluation set forth in Attachment 1 and find that Caltrans is making progress towards reducing deferred maintenance and improving road conditions on the state highway system. Staff further recommends that the findings of this evaluation be included in the Commission's Annual Report to the Legislature pursuant to Section 14535 of the Government Code.

BACKGROUND:

Senate Bill (SB) 486 (DeSaulnier, Chapter 917, Statutes of 2014) created requirements for Caltrans to develop an asset management plan to guide the selection of State Highway Operation and Protection Program projects and to provide for a transparent means to track and evaluate performance of the program relative to established targets and benchmarks approved by the Commission.

SB 1 (Beall, Chapter 5, Statutes of 2017) enacted ten-year performance targets for the state highway investments and requires Caltrans to incorporate the performance targets into the asset management plan, along with benchmarks to measure the degree to which progress is made towards achieving the overall 2027 targets.

SB 1 also requires Caltrans to report to the Commission on its progress toward meeting the targets and performance measures established for the asset management plan and requires the Commission to evaluate the effectiveness of Caltrans in reducing deferred maintenance and improving road conditions on the state highway system, as demonstrated by the progress made by the goals set forth in SB 1.

Attachments

Attachment 1 - Fiscal Year 2017-18 Evaluation of Caltrans' Effectiveness in Reducing Deferred Maintenance and Improving Conditions on the State Highway System

Attachment 2 - Establishment of Asset Class Performance Benchmarks

Attachment 3 - Transportation Asset Management Plan – Annual Benchmark Performance Update

Attachment 4 - Annual Benchmark Performance Update

California Transportation Commission

Caltrans' Effectiveness in Reducing Deferred Maintenance and Improving Conditions on the State Highway System
Fiscal Year 2017-18 Evaluation

Statutory requirements

Senate Bill (SB) 486 (DeSaulnier, Chapter 917, Statutes of 2014) created requirements for the Department of Transportation (Caltrans) to develop an asset management plan to guide the selection of State Highway Operation and Protection Program (SHOPP) projects and to provide for a transparent means to track and evaluate performance of the program relative to established targets and benchmarks approved by the Commission. SB 486 stated that Caltrans may prepare the asset management plan in phases, with the first phase to be implemented with the 2016 SHOPP, and the complete asset management plan to be prepared no later than the 2020 SHOPP.

Government Code section 14526.7(b) and Streets and Highways Code section 2032.5 require that Caltrans report to the Commission on its progress toward meeting the targets and performance measures established for state highways.

Streets and Highways Code section 2032.5(c) states that annually, the Commission shall evaluate the effectiveness of Caltrans in reducing deferred maintenance and improving road conditions on the state highway system, as demonstrated by the progress made toward achieving the goals set forth in SB 1 (Beall, Chapter 5, Statutes of 2017).

Targets and benchmarks

Referred to variously as goals, outcomes, and targets, SB 1 states that it is the intent of the Legislature that Caltrans meet the following preliminary performance outcomes for additional state highway investments by the end of 2027:

(1) Not less than 98% of pavement on the state highway system in good or fair condition.
(2) Not less than 90% level of service achieved for maintenance of potholes, spalls, and cracks.
(3) Not less than 90% of culverts in good or fair condition.
(4) Not less than 90% of the transportation management system (TMS) units in good condition.
(5) Fix not less than an additional 500 bridges.

Government Code section 14526.7 requires Caltrans to incorporate these performance targets into the asset management plan, along with benchmarks to measure the degree to which progress is made toward achieving the overall 2027 targets. In March 2018, the Commission adopted annual benchmarks for the four SHOPP primary asset classes (pavement, bridges, culverts, and traffic management system elements) to measure progress toward meeting the SB 1 performance targets (Attachment 2).

Basis for evaluation

In October 2018, pursuant to Government Code section 14526.7(b) and Streets and Highways Code section 2032.5, Caltrans reported on its progress toward meeting the targets established for the state highway system (Attachments 3 and 4).

Pursuant to statute, Commission staff utilized Caltrans' assessment of its progress toward achieving the annual benchmarks to evaluate the effectiveness of Caltrans, through 2017-18, in reducing deferred maintenance and improving road conditions on the state highway system.

Evaluation of Caltrans' progress

The complete asset management plan, prepared by Caltrans, was approved by the Commission on March 21, 2018, two years earlier than required by statute. Having an approved asset management plan to guide SHOPP investments was a critical first step toward achieving the SB 1 performance targets and represents important progress toward reducing deferred maintenance and improving road conditions on the state highway system.

The table below summarizes the key information presented to the Commission by Caltrans on its progress toward achieving the benchmarks for 2017-18.

Pavement* - Percent in good or fair condition		
Class 1	98.4%	98.7%
Class 2	98.3%	98.4%
Class 3	97.9%	97.6%
Culverts - Percent in good or fair condition	88.8%	88.9%
TMS units - Percent in good condition	58.1%	70.7%

* Class 1 includes interstates, other principal arterials, and urban freeways and expressways, (52% of the state highway system). Class 2 includes rural freeways and expressways, and minor arterials (34% of the state highway system). Class 3 includes major and minor collector routes (14% of the state highway system).

As reported by Caltrans, it has met the approved benchmarks for Class 1 and 2 pavements, culverts, and traffic management systems units. Achieving these benchmarks is evidence of progress toward reducing deferred maintenance and improving road conditions on the state highway system. Caltrans did not achieve the 2017-18 benchmark for Class 3 pavements. However the level achieved is within the identified range of uncertainty.

An important step in achieving the performance targets for culverts is identifying and developing an inventory of the existing culvert assets. Caltrans is working to develop this inventory and dedicated several dozen staff to this effort.

In the spring of 2019 Caltrans expects to report on the target of achieving not less than 90% level of service for the maintenance of potholes, spalls, and cracks. Caltrans is also developing the framework to assess the target of fixing not less than an additional 500 bridges. This includes defining "fix" and determining the historic baseline number of bridges fixed to calculate the number of additional bridges fixed.

Regarding bridges, the Federal Highway Administration established a performance measure based not on the number of bridges repaired but on the percent of bridge deck area classified as in good condition. Caltrans did not achieve the benchmark for bridges in good condition but indicated that the long-term trend is toward achieving the ten-year target of 83.5%.

Conclusion

Based on the above, the Commission finds that Caltrans has demonstrated it has made progress in 2017-18 toward reducing deferred maintenance and improving road conditions on the state highway system. Further, Caltrans has established effective management tools and procedures that will promote success in meeting the SB 1 performance targets.

State of California
DEPARTMENT OF TRANSPORTATION

California State Transportation Agency

M e m o r a n d u m

To: CHAIR AND COMMISSIONERS
CALIFORNIA TRANSPORTATION COMMISSION

CTC Meeting: March 21-22, 2018

Reference No.: 4.9
Action Item

From: NORMA ORTEGA
Chief Financial Officer

Prepared by: Michael Johnson
State Asset Management Engineer

Subject: **ESTABLISHMENT OF ASSET CLASS PERFORMANCE BENCHMARKS**

RECOMMENDATION:

The California Department of Transportation (Department) recommends the California Transportation Commission (Commission) approve the following benchmarks and update frequency for the State Highway Operation and Protection Program (SHOPP) primary asset classes.

The performance benchmarks (projections), as shown in Attachments 1-6, were developed with certain assumptions as detailed in the background section below. In light of the sensitivity of the projections to these assumptions, the Department recommends that Commission adopt an update frequency for these benchmark projections of every two years, corresponding with the adoption of the SHOPP.

BACKGROUND:

The California Transportation Asset Management Plan (TAMP) and Senate Bill 1 (SB 1) established performance targets for the SHOPP primary asset classes (pavement, bridges, culverts and traffic management system elements). To measure progress toward meeting the defined performance targets, the Commission adopted an addendum to SHOPP Guidelines in October of 2017. The addendum called on the Department to develop annual benchmarks (future condition projections) to measure progress made for each of the four primary asset classes.

The benchmark projections were established using the following general steps:

1. Begin with the most recent inventory and condition information available
2. Reduce the condition by the expected annual deterioration
3. Improve the condition with annual project level accomplishments
4. Incorporate inventory growth

These four steps are repeated for each of the 10 years in the analysis horizon 2017-18 through 2026-27. If the annual project accomplishments exceeds the annual deterioration then the condition of the asset improves by the net difference.

The benchmark projections are presented in graphical form with each stack column representing a fiscal year. The green color represents the projected good condition percentage of the asset, yellow represent the fair condition and red represents the percentage in poor condition. The initial condition is shown in the far left column and the Commission adopted Asset Management targets are shown in the far right column. It is important to note that the combined good and fair condition targets adopted by the Commission for pavement, drainage and TMS elements meets the expected performance outcomes in SB 1.

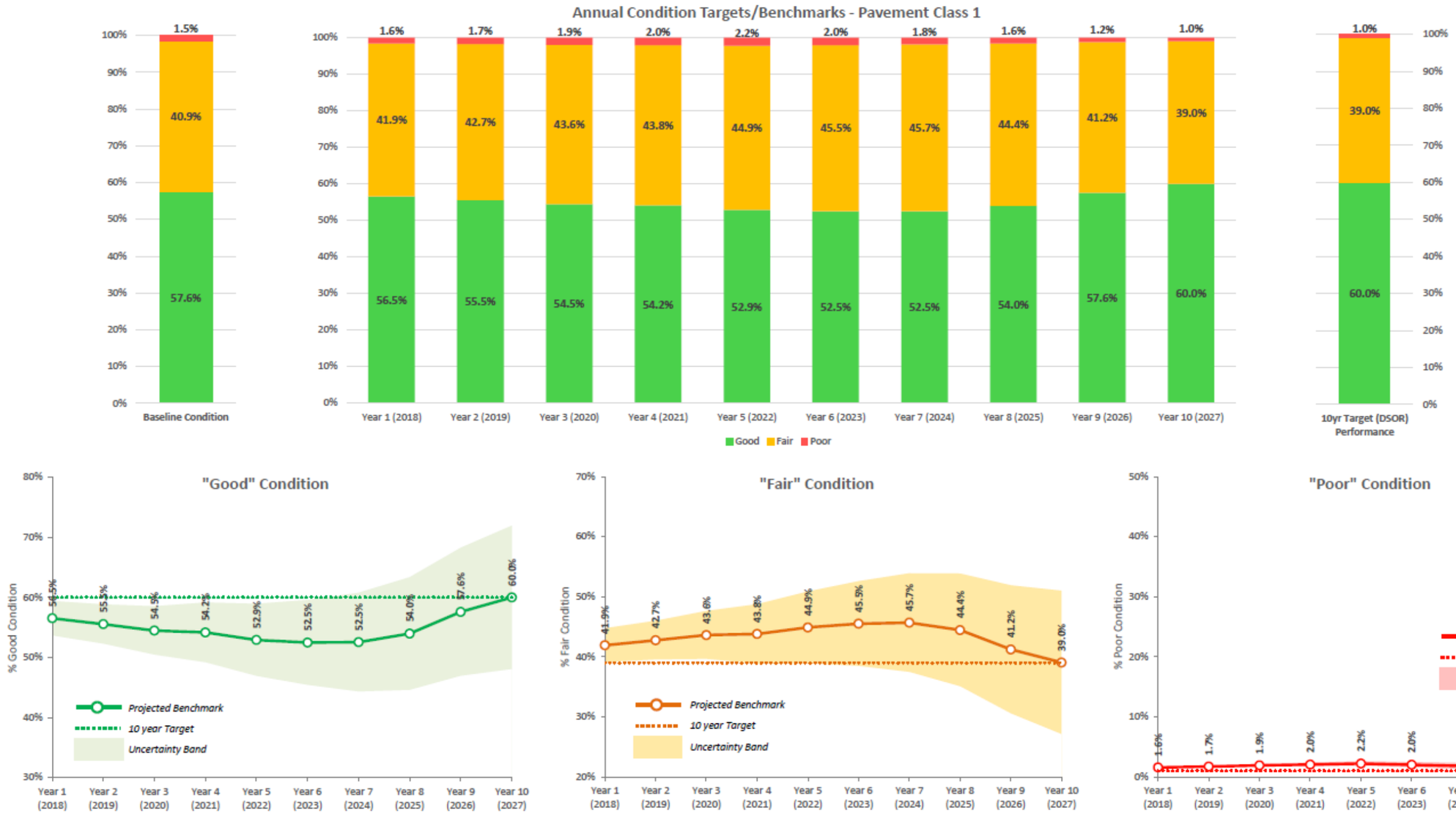
Senate Bill 1 included two addition performance objectives related to pavement and bridges; Level of Service (LOS) for pavement cracking and spalling and a number of bridges fixed. These two metrics will be achieved through the same project accomplishments and maintenance strategies included in the benchmark analysis for the core assets. The Department is committed to reporting progress made toward these specific objectives on an ongoing basis so that the Commission can evaluate progress.

The benchmark projection analysis includes uncertainty factors associated with assumptions made relative to the size of the inventory, condition, deterioration rates and expected project accomplishments. These factors were incorporated into the analysis using a Monte Carlo simulation that develops a range of potential outcomes given these uncertainties. These potential outcomes are represented graphically using a shaded range on each side of projection line shown in the lower trend line set of three charts for each asset. Caltrans will update the benchmark projections every two years to reflect the annual project accomplishments and future uncertainties, and will adjust the work plan where necessary to meet the SB 1 performance outcomes.

Attachment 1 – Pavement Class 1

SENATE BILL 1 TARGET = 98% GOOD OR FAIR PAVEMENT

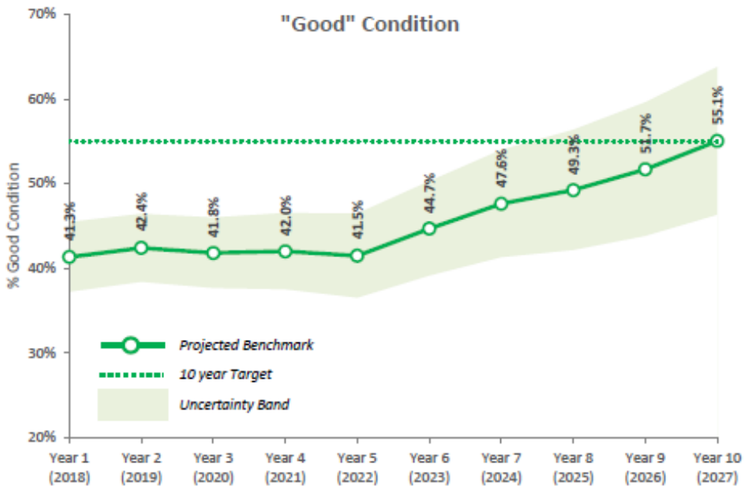
10 Year Analysis – Pavement Class 1

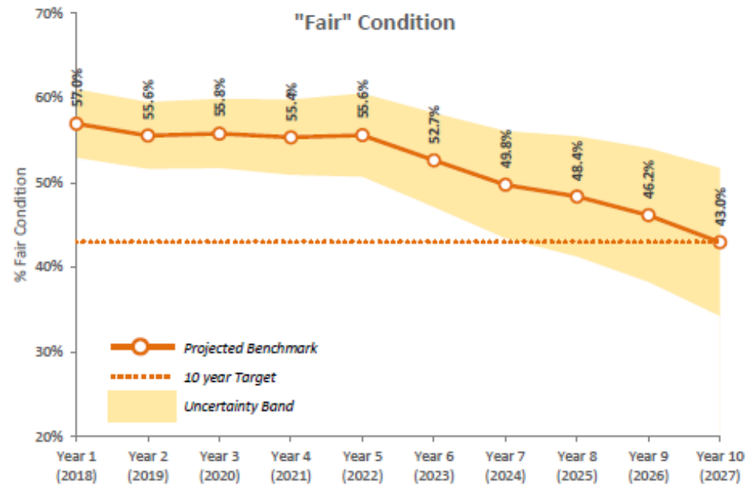


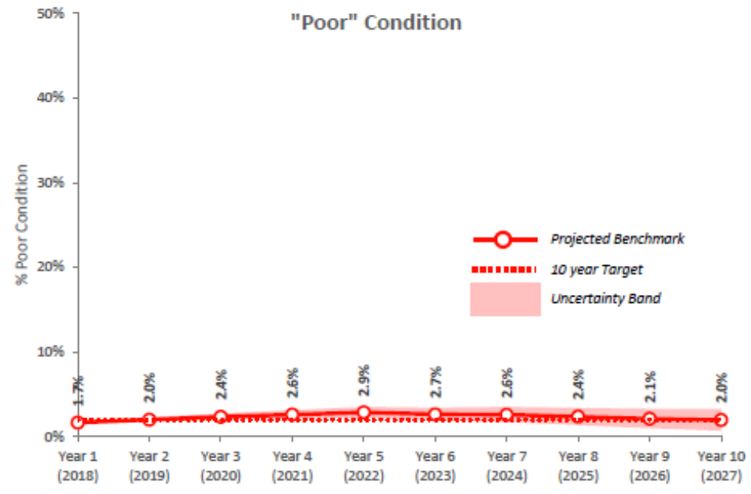
Attachment 2 – Pavement Class 2

SENATE BILL 1 TARGET = 98% GOOD OR FAIR PAVEMENT

10 Year Analysis – Pavement Class 2



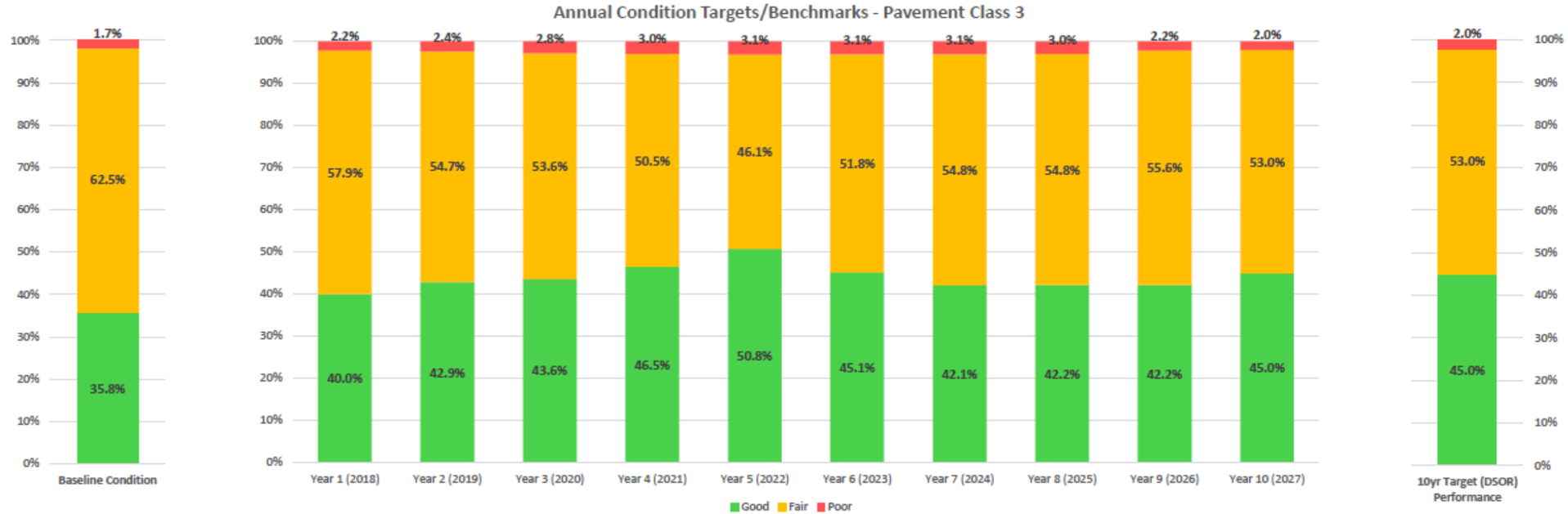


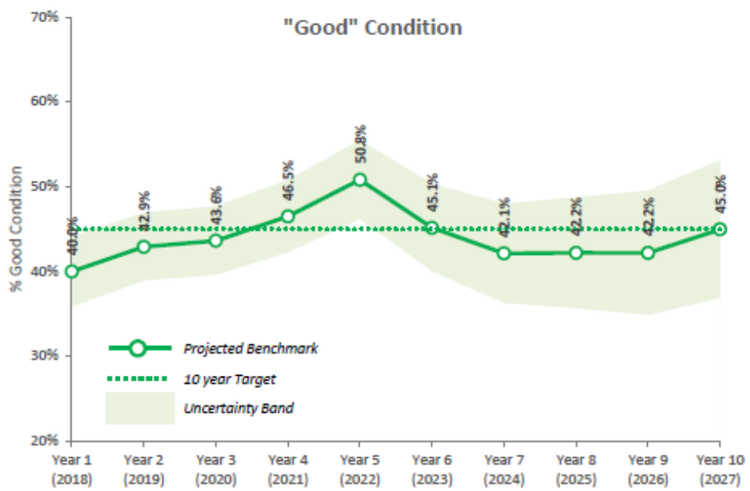


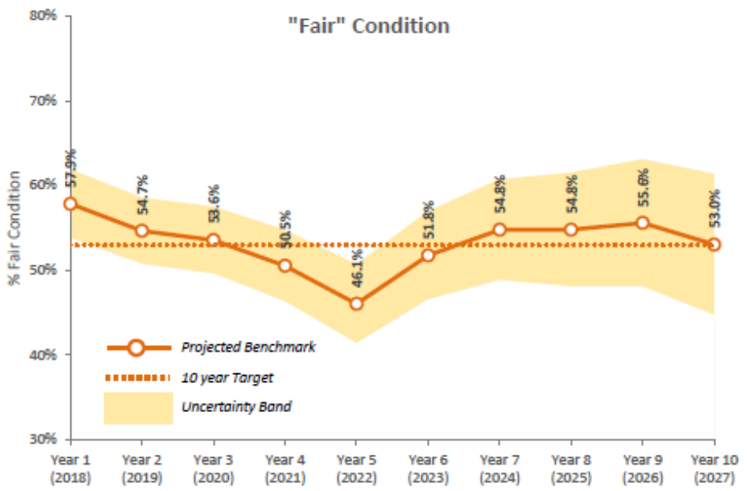
Attachment 3 – Pavement Class 3

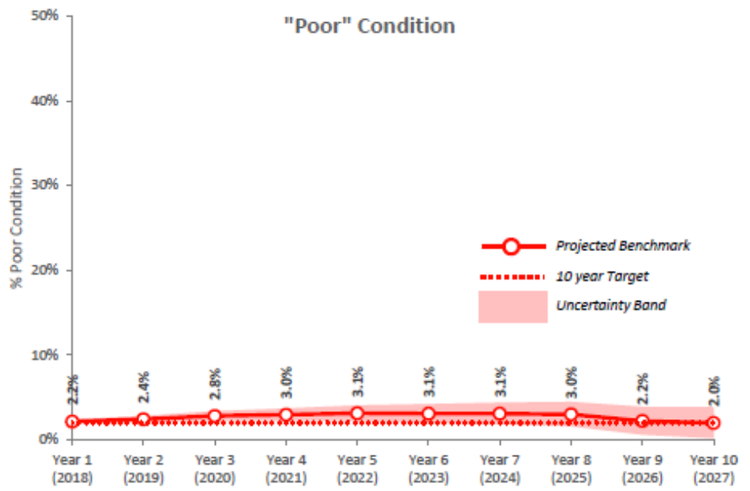
SENATE BILL 1 TARGET = 98% GOOD OR FAIR PAVEMENT

10 Year Analysis – Pavement Class 3









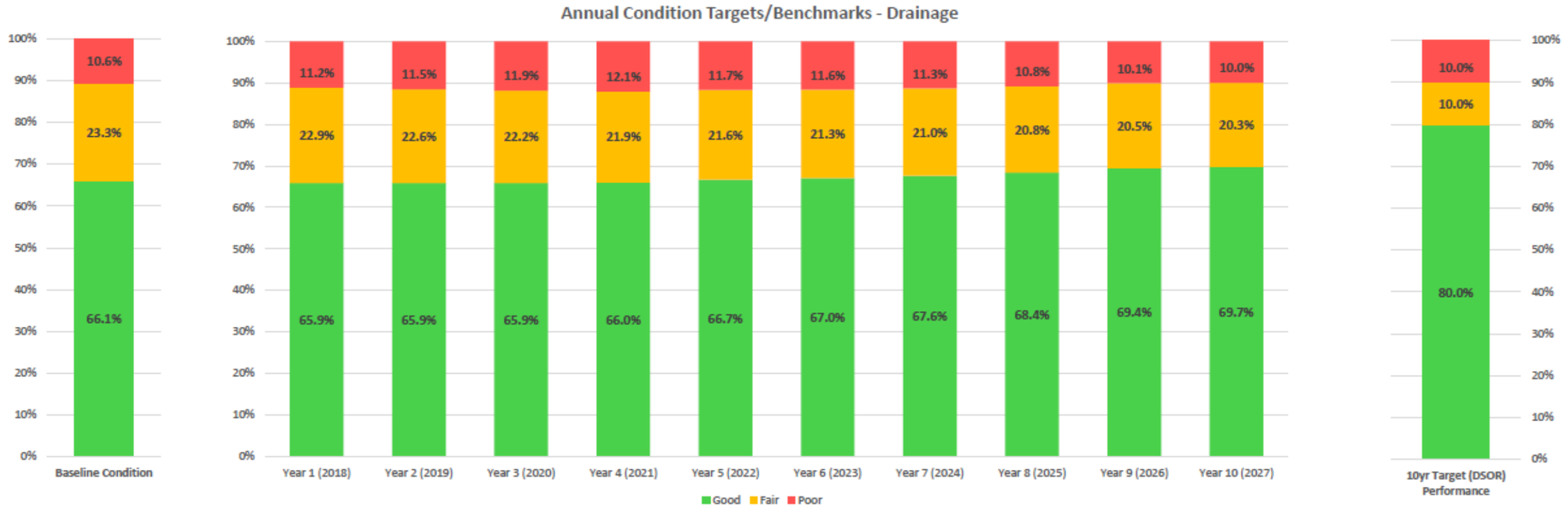
Attachment 4 – Bridge Health

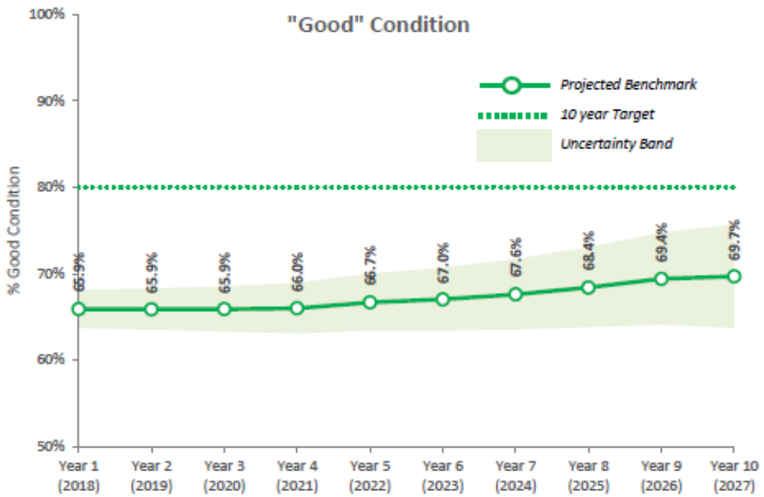
10 Year Analysis – Bridge Health

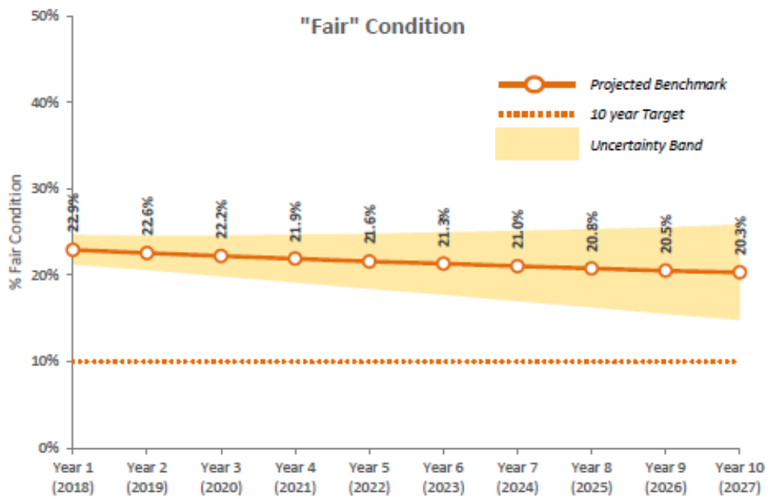
Attachment 5 – Drainage (Culverts)

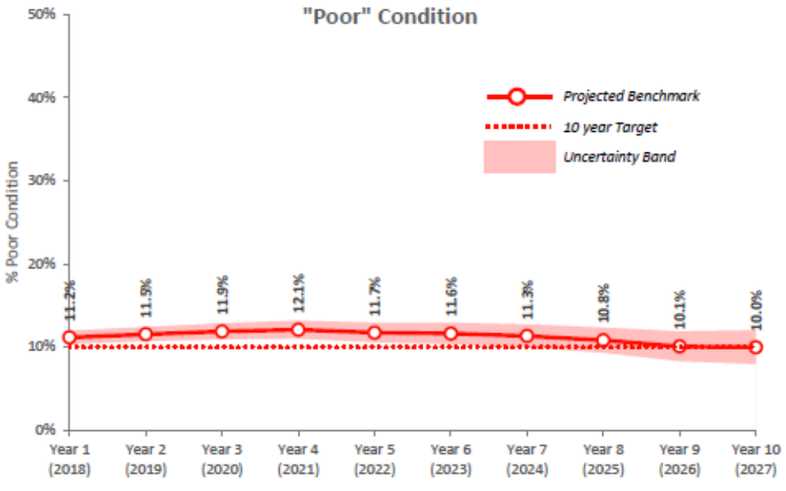
SENATE BILL 1 TARGET = 90% GOOD AND FAIR CULVERTS

10 Year Analysis – Drainage





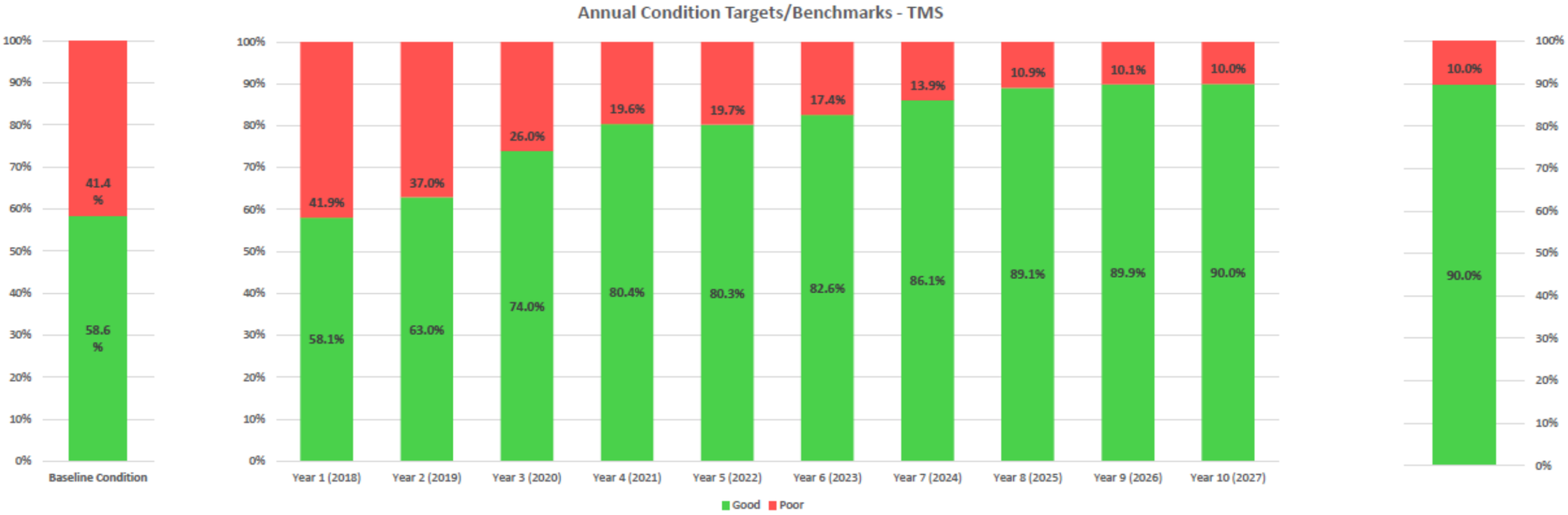


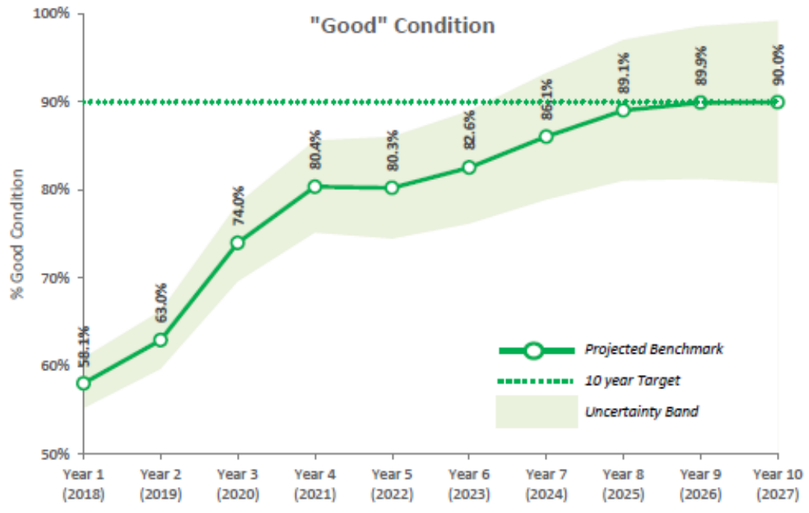


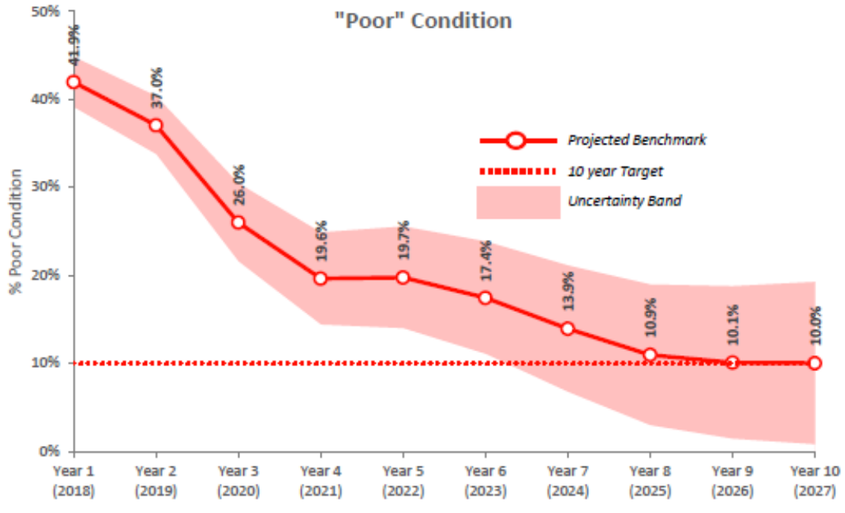
Attachment 6 – Transportation Management System (TMS) Elements

SENATE BILL 1 TARGET = 90% GOOD

10 Year Analysis -- Transportation Management Systems







State of California
DEPARTMENT OF TRANSPORTATION

California State Transportation Agency

M e m o r a n d u m

To: CHAIR AND COMMISSIONERS
CALIFORNIA TRANSPORTATION COMMISSION

CTC Meeting: October 17-18, 2018

Reference No.: 4.26
Informational Item

From: STEVEN KECK
Chief Financial Officer

Prepared by: Michael Johnson
State Asset Management Engineer

Subject: **TRANSPORTATION ASSEMENT MANAGEMENT PLAN – ANNUAL BENCHMARK PERFORMANCE UPDATE**

RECOMMENDATION:

The California Department of Transportation (Department) will present to the California Transportation Commission (Commission) its Annual Performance update for the four core asset classes, established by the Commission, at the October 2018 meeting.

At its March 2018 meeting, the Commission approved benchmarks for the following State Highway Operation and Protection Program (SHOPP) primary asset classes:

- Pavement (Class I)
- Pavement (Class II)
- Pavement (Class III)
- Bridge and Tunnel Health
- Drainage (Culverts)
- Transportation Management System (TMS) Elements.

The accomplishments relative to the benchmarks for 2018 are presented through a series of graphs for the core asset classes and summarized in the table below:

Asset Class	Commission Adopted Asset Management Targets			
	Good	Fair	Poor	SB1 Targets
Pavement Class 1	On Track	On Track	On Track	On Track
Pavement Class 2	On Track	On Track	On Track	
Pavement Class 3	On Track	On Track	On Track	
Bridges	On Track	On Track	On Track	On Track
Culverts	On Track	Action Required	On Track	On Track
TMS Elements	On Track		On Track	On Track

The future year condition projections were developed with certain assumptions as detailed in the background section below.

BACKGROUND:

The California Transportation Asset Management Plan (TAMP) and Senate Bill 1 (SB 1) established performance targets for the SHOPP primary asset classes (pavement, bridges, culverts and traffic management system elements). To measure progress toward meeting the defined performance targets, the Commission adopted an addendum to SHOPP Guidelines in October of 2017. The addendum called on the Department to develop annual benchmarks (future condition projections) to measure progress made for each of the four primary asset classes.

The benchmark projections were established using the following general steps:

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Senate Bill 1 included two addition performance objectives related to pavement and bridges; Level of Service (LOS) for pavement cracking and spalling and a number of bridges fixed. These two metrics will be achieved through the same project accomplishments and maintenance strategies included in the benchmark analysis for the core assets. The Department is committed to reporting progress made toward these specific objectives on an ongoing basis so that the Commission can evaluate progress.

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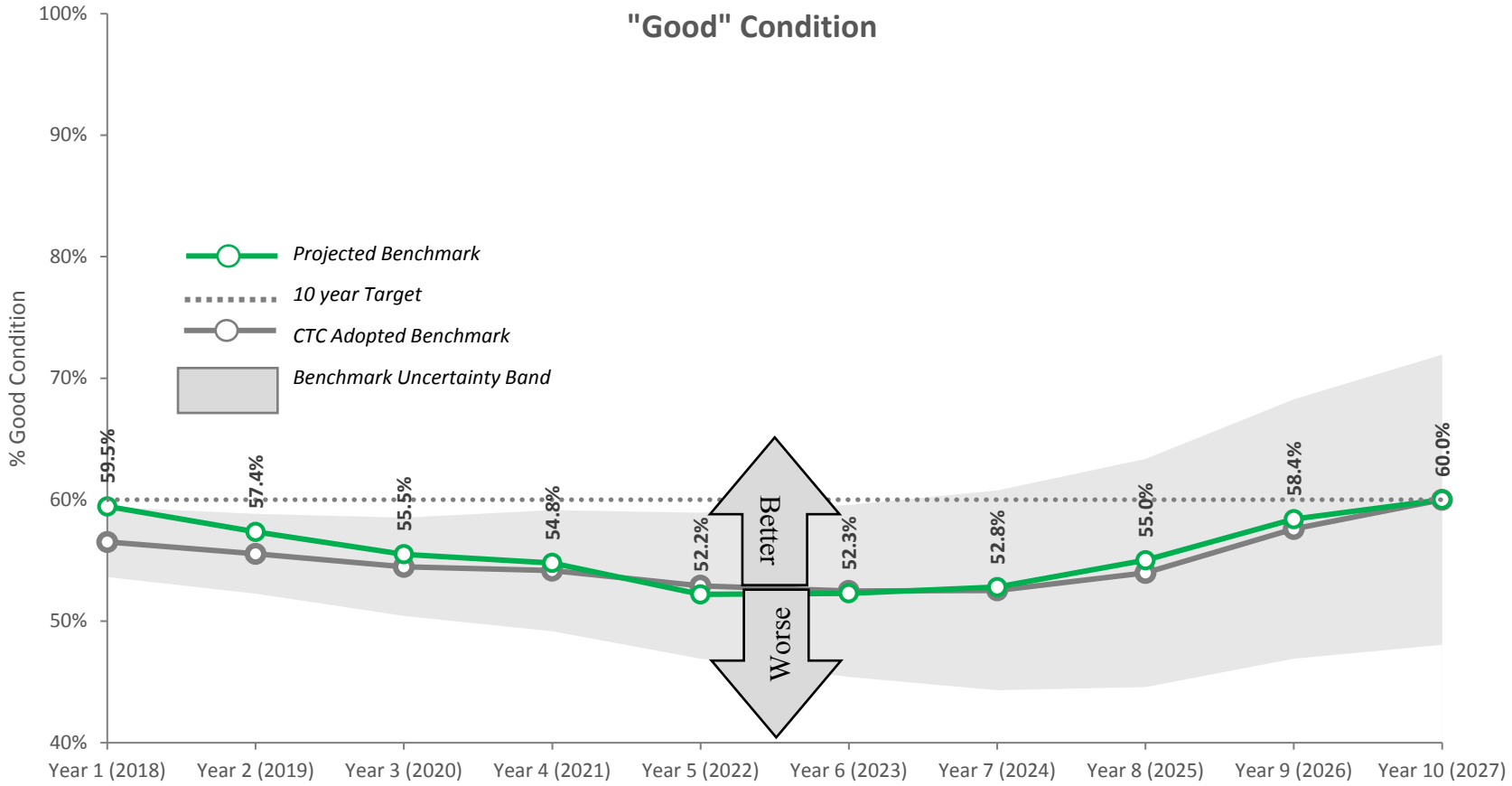
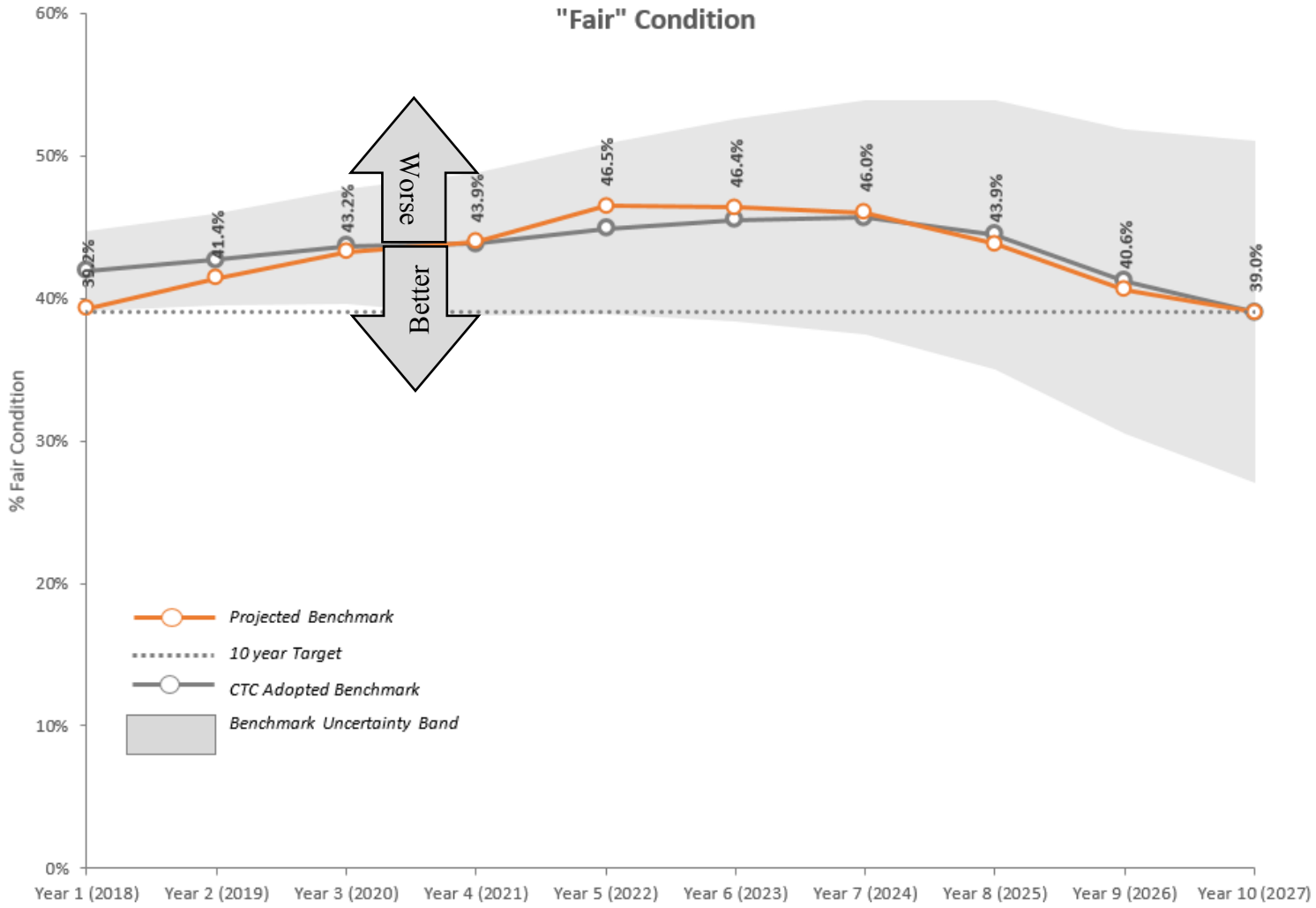
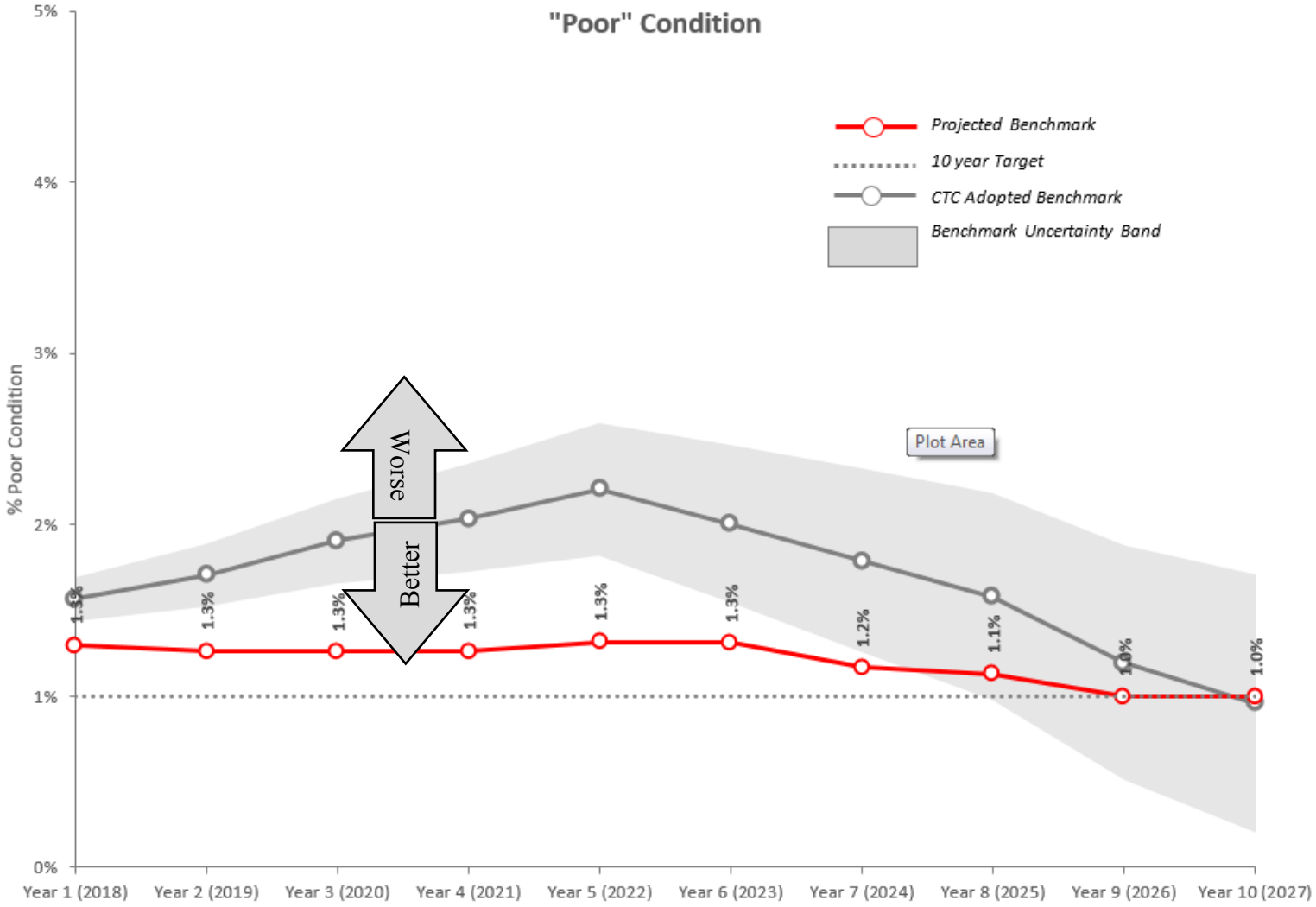
Pavement Condition Projections – Class 1 (Good)



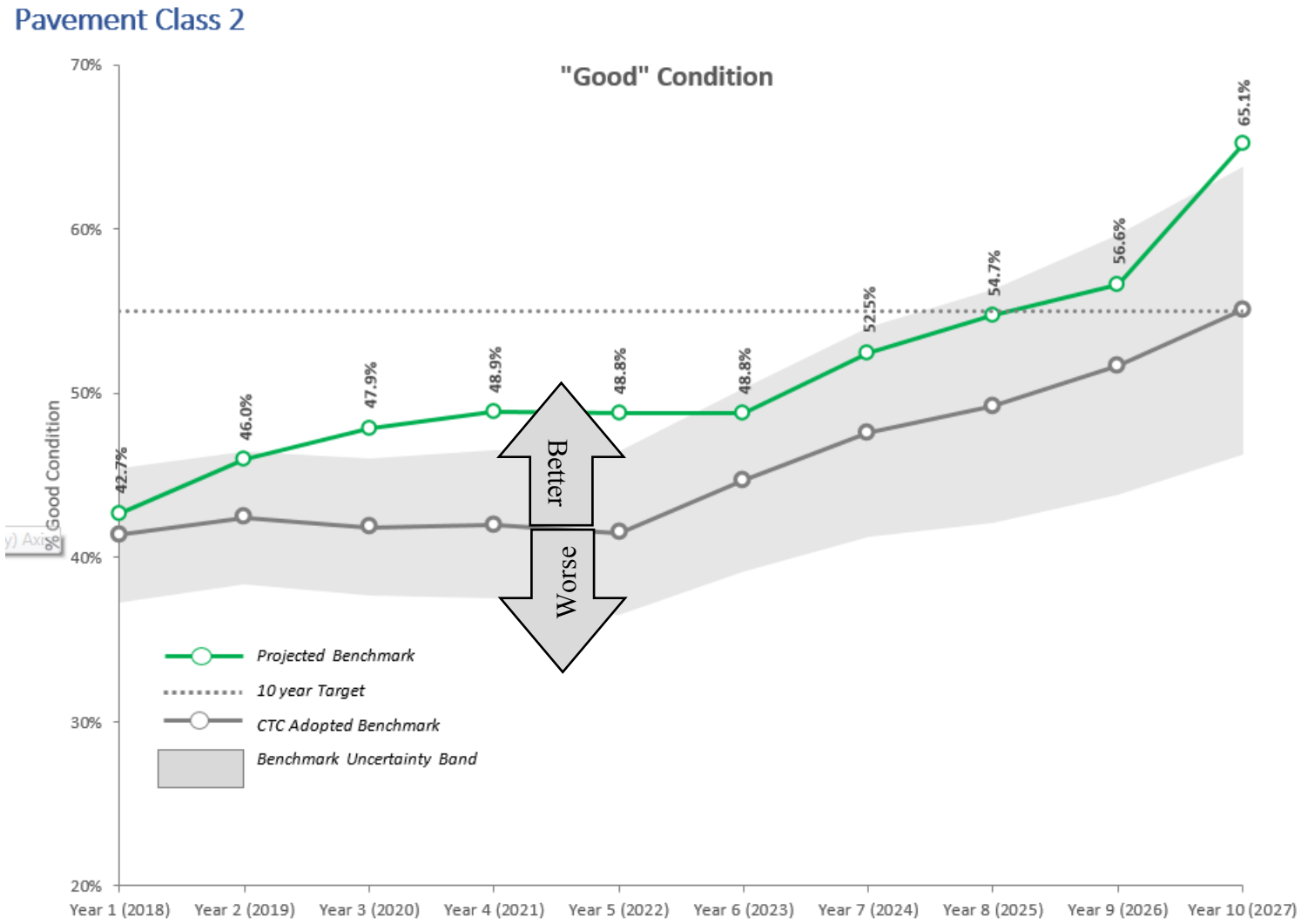
Pavement Condition Projections – Class 1 (Fair)



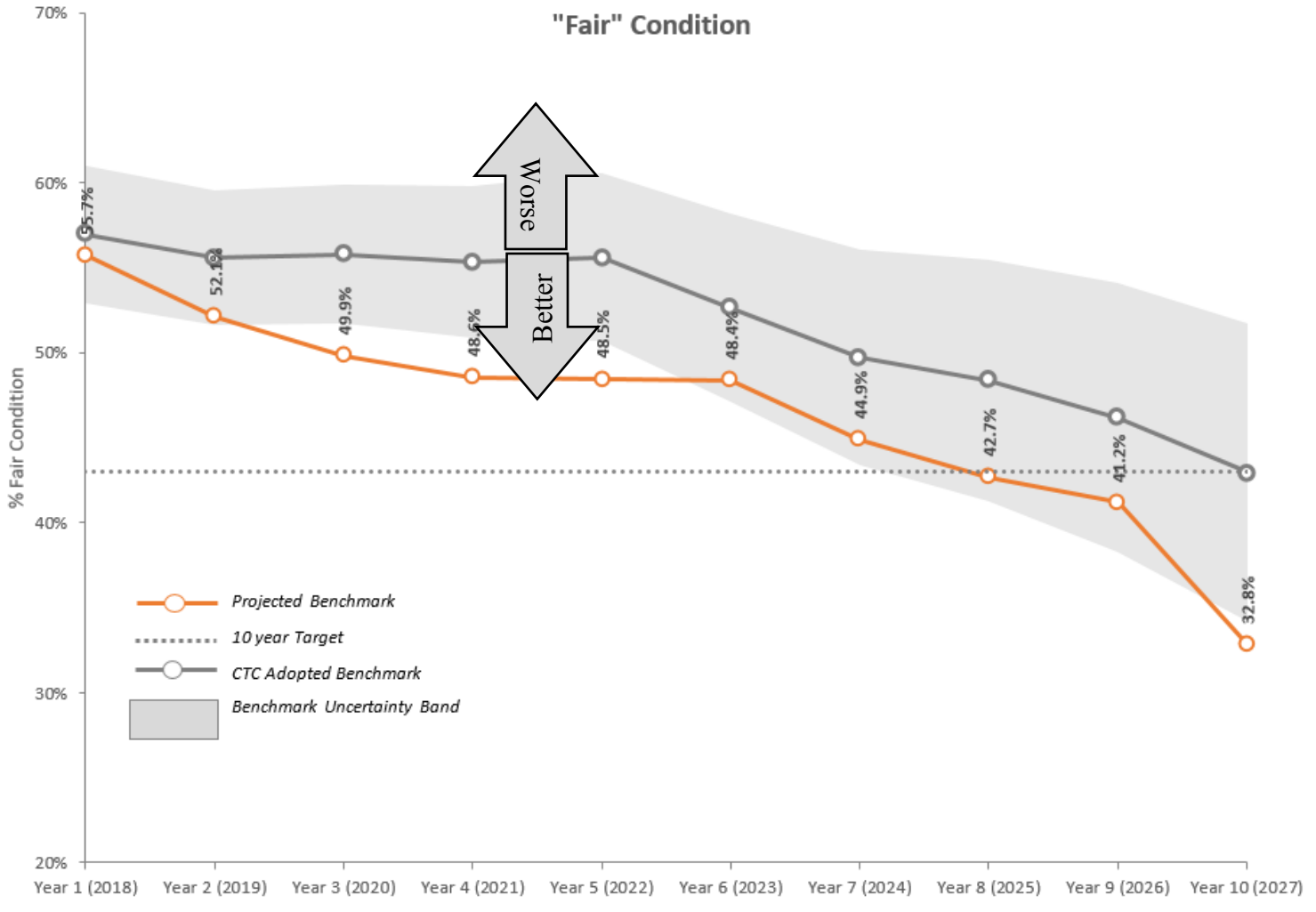
Pavement Condition Projections – Class 1 (Poor)



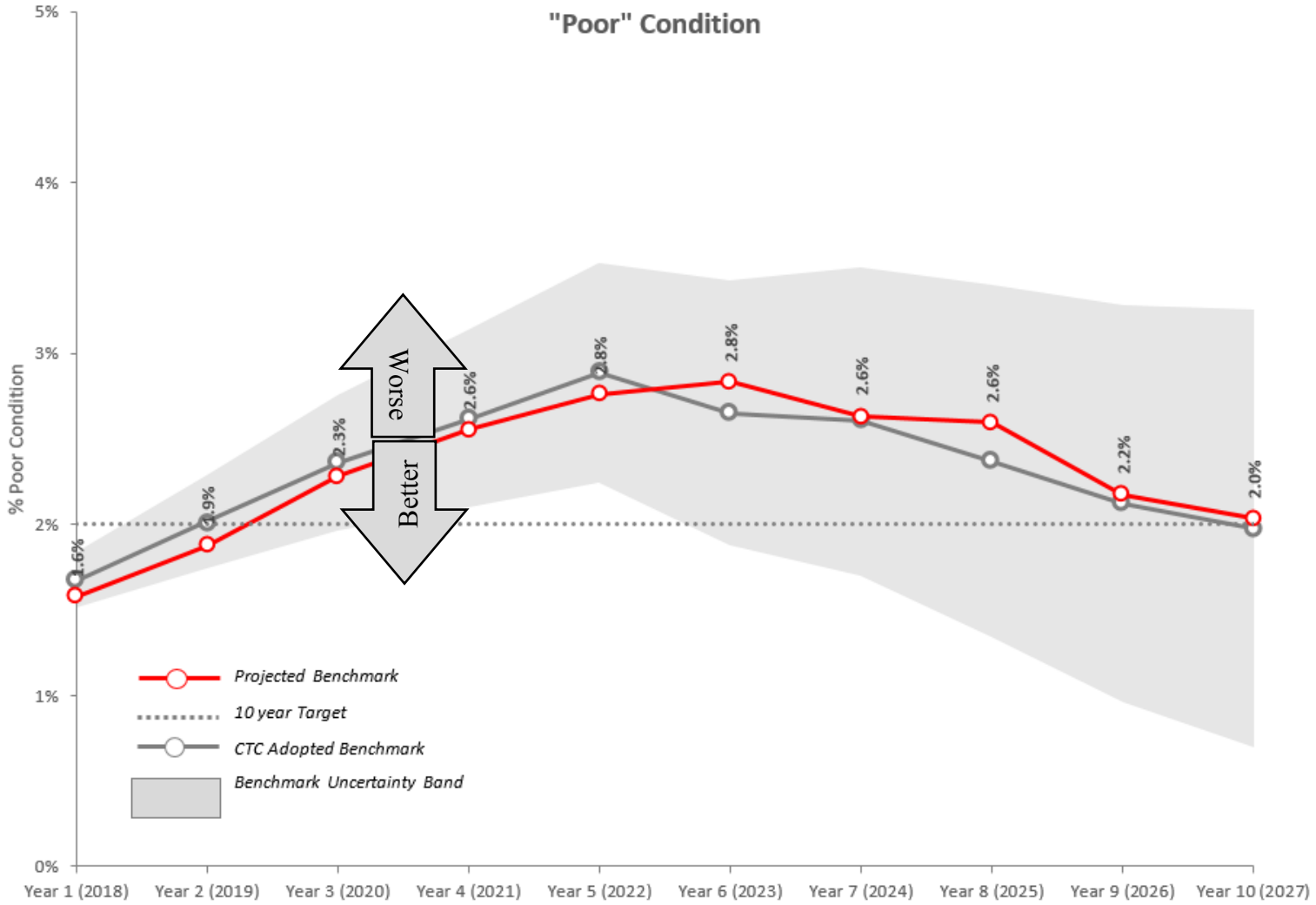
Pavement Condition Projections – Class 2 (Good)



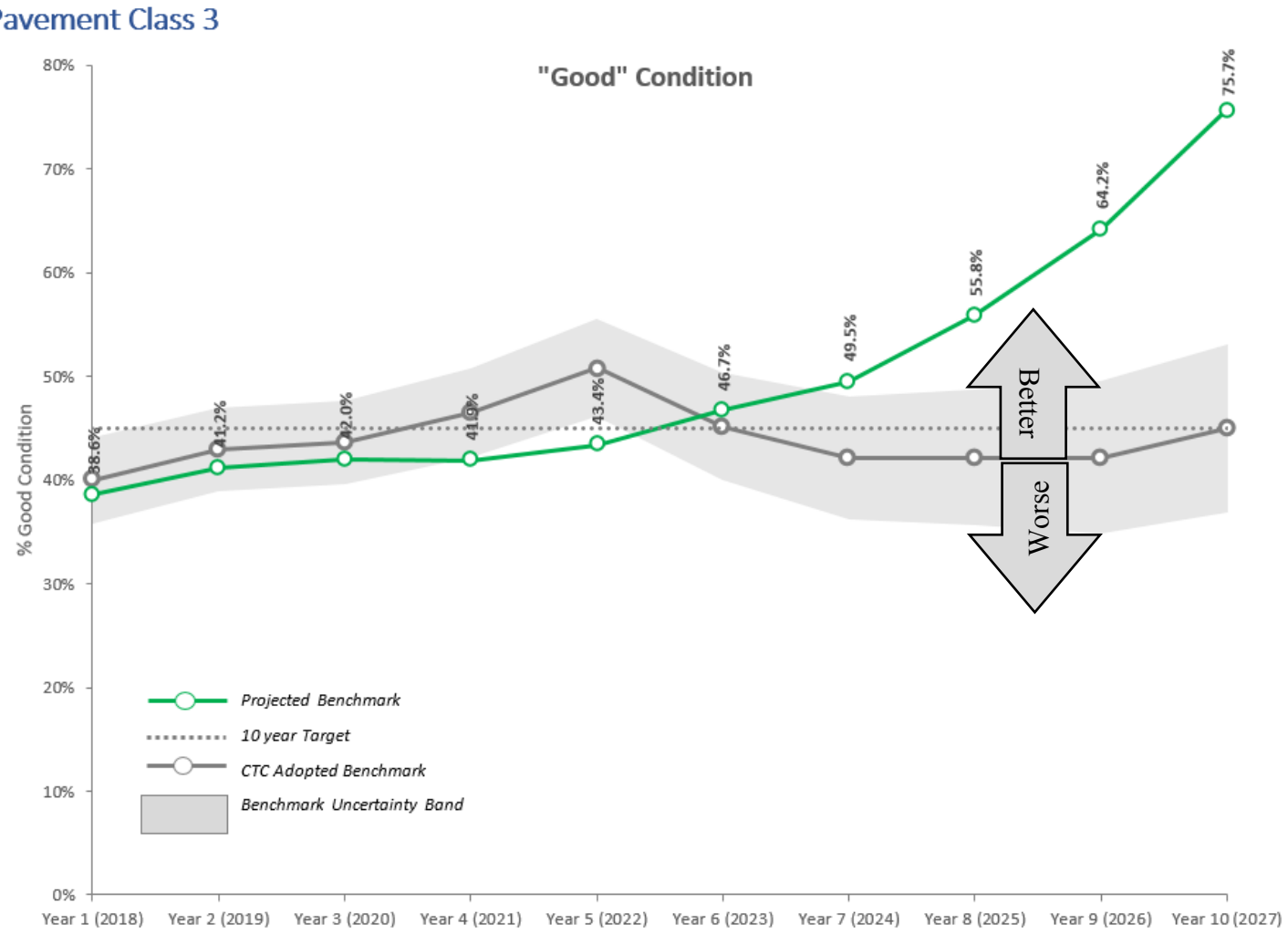
Pavement Condition Projections – Class 2 (Fair)



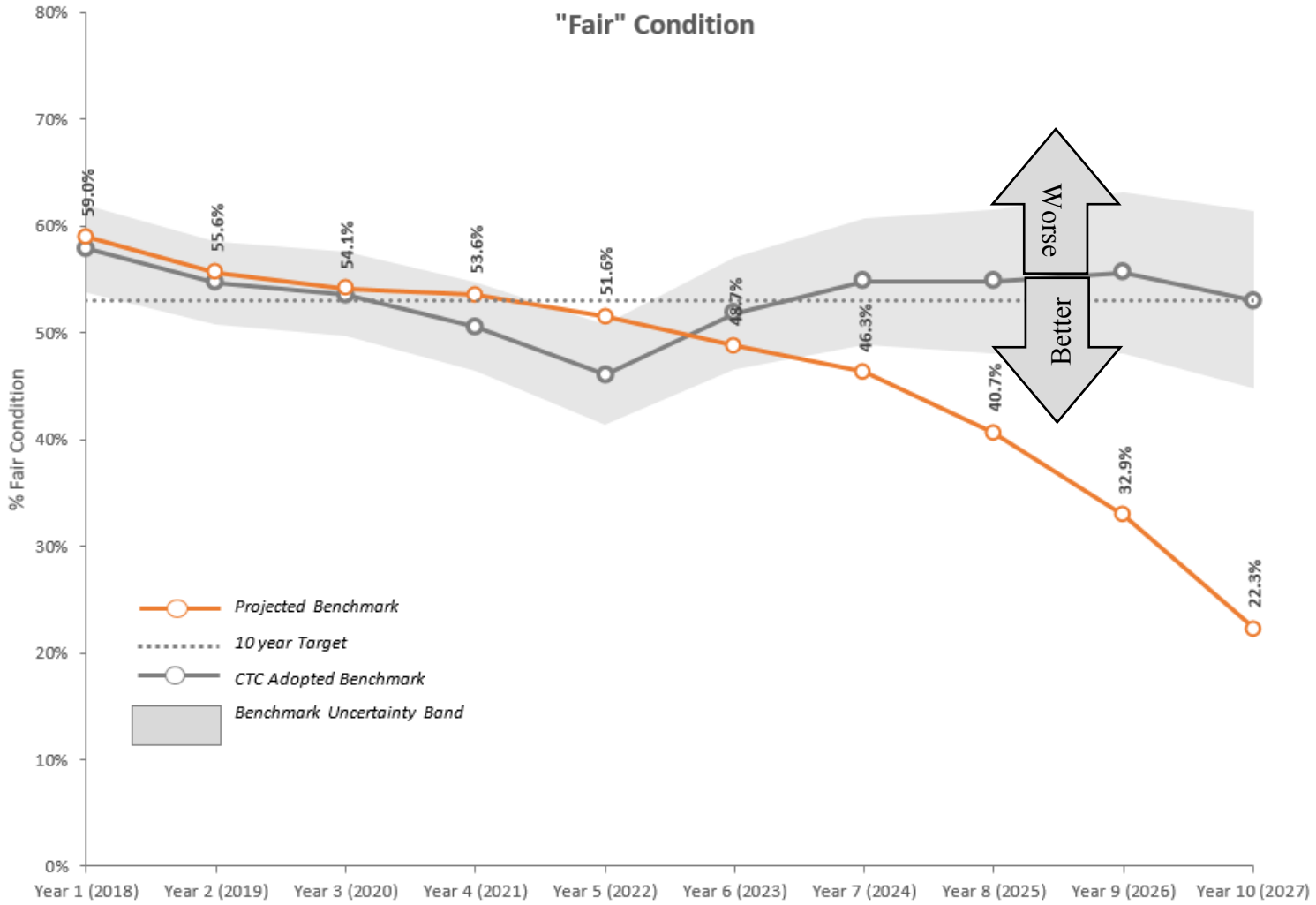
Pavement Condition Projections – Class 2 (Poor)



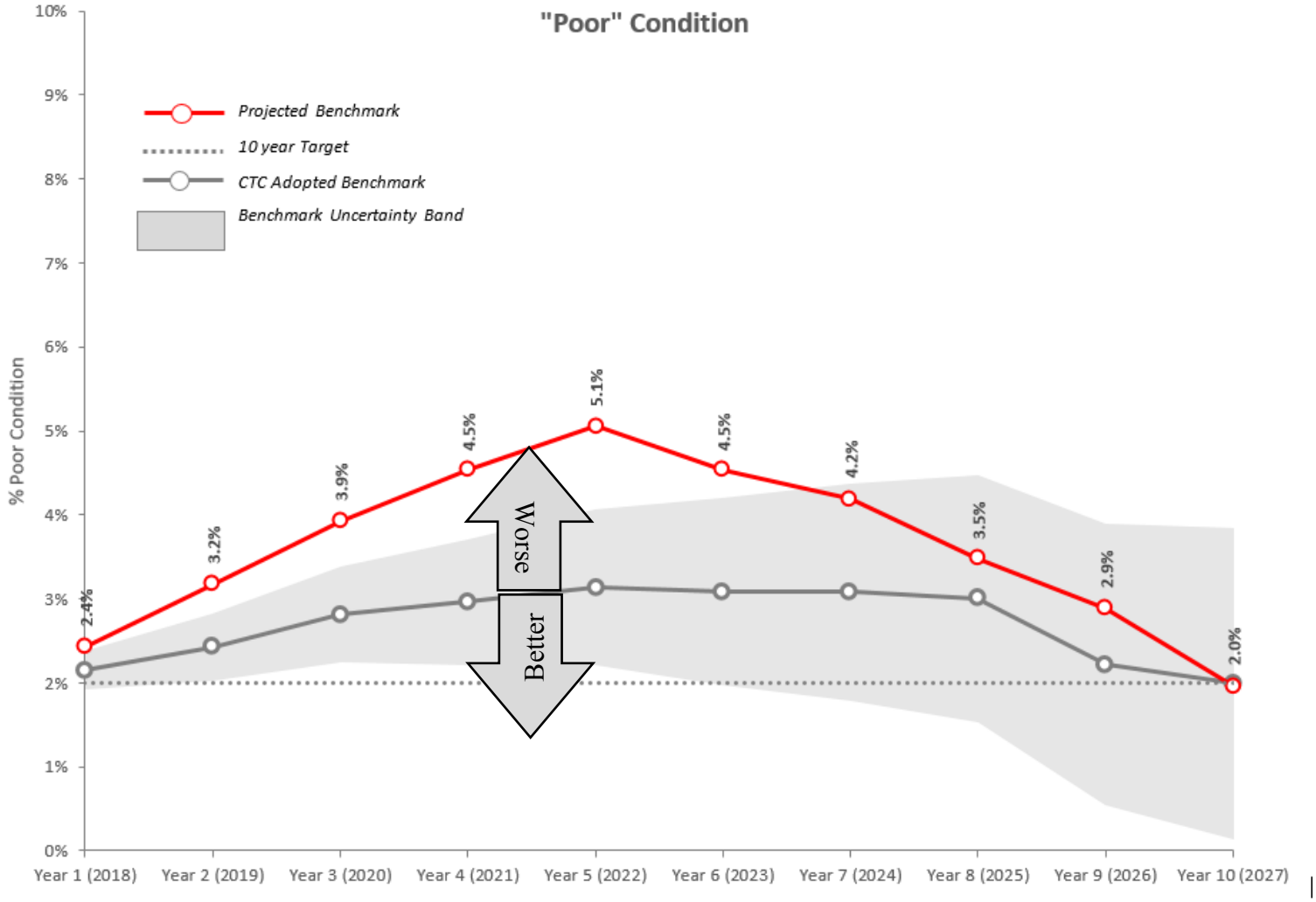
Pavement Condition Projections – Class 3 (Good)



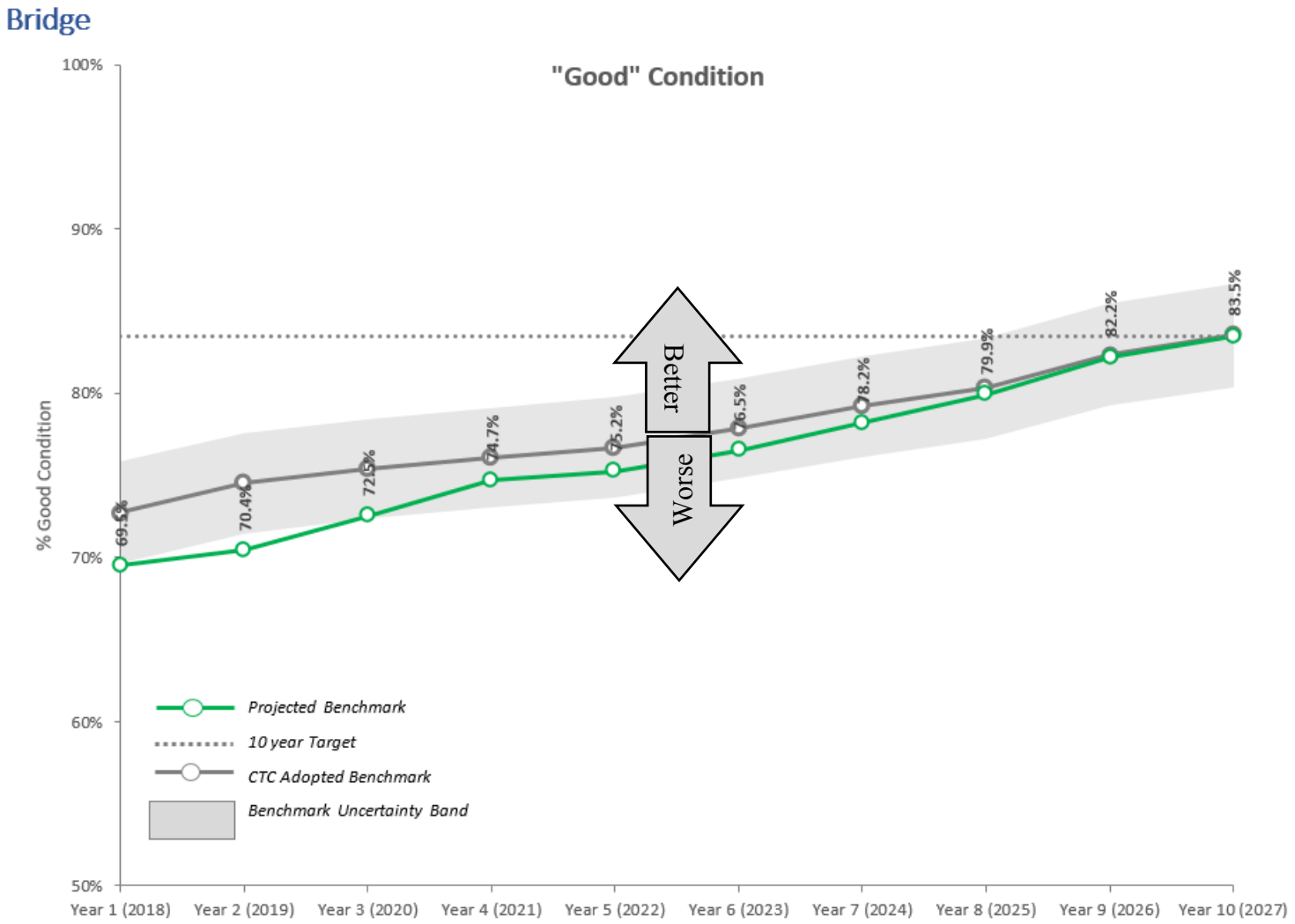
Pavement Condition Projections – Class 3 (Fair)



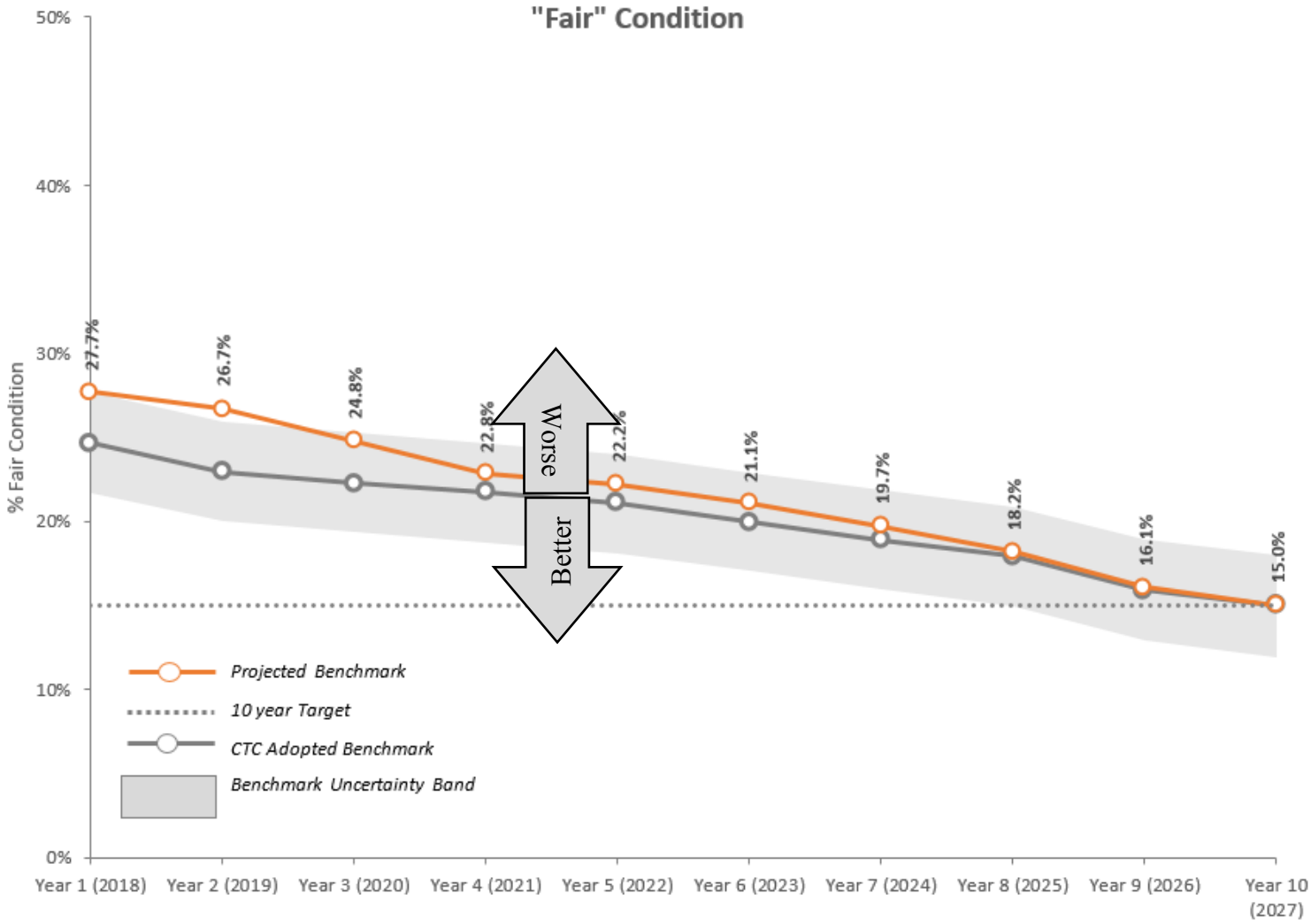
Pavement Condition Projections – Class 3 (Poor)



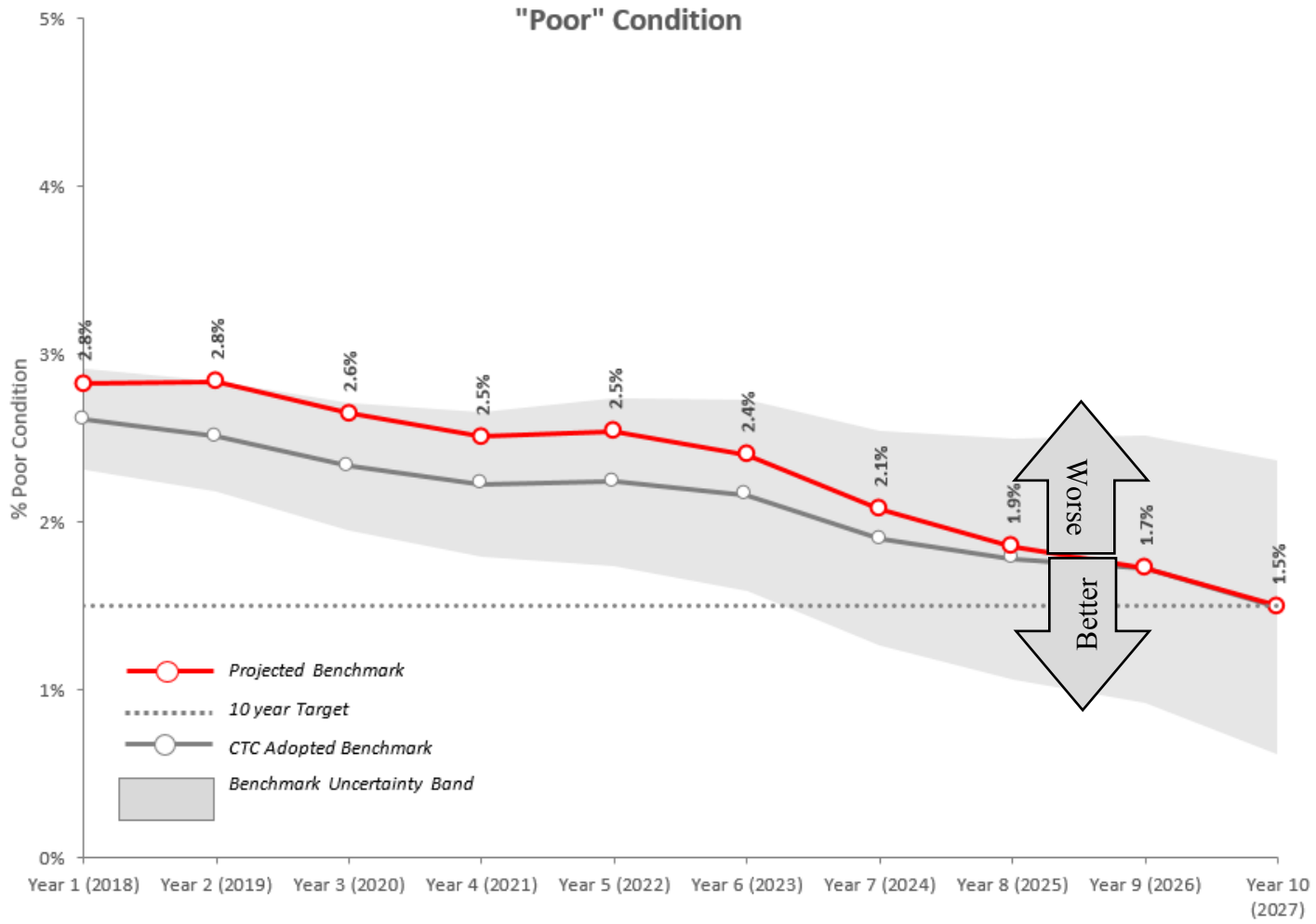
Bridge and Tunnel Condition Projections (Good)



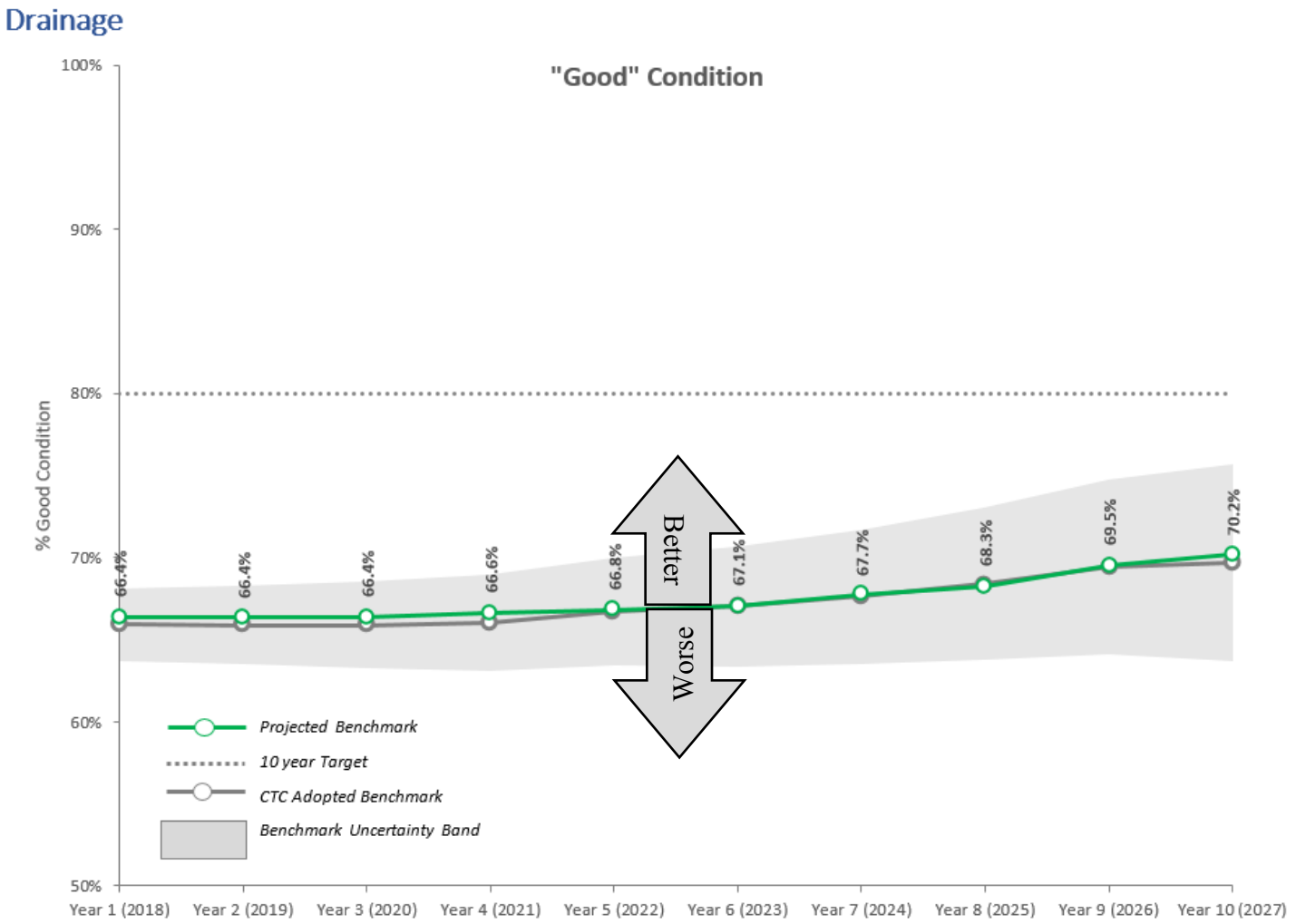
Bridge and Tunnel Condition Projections (Fair)



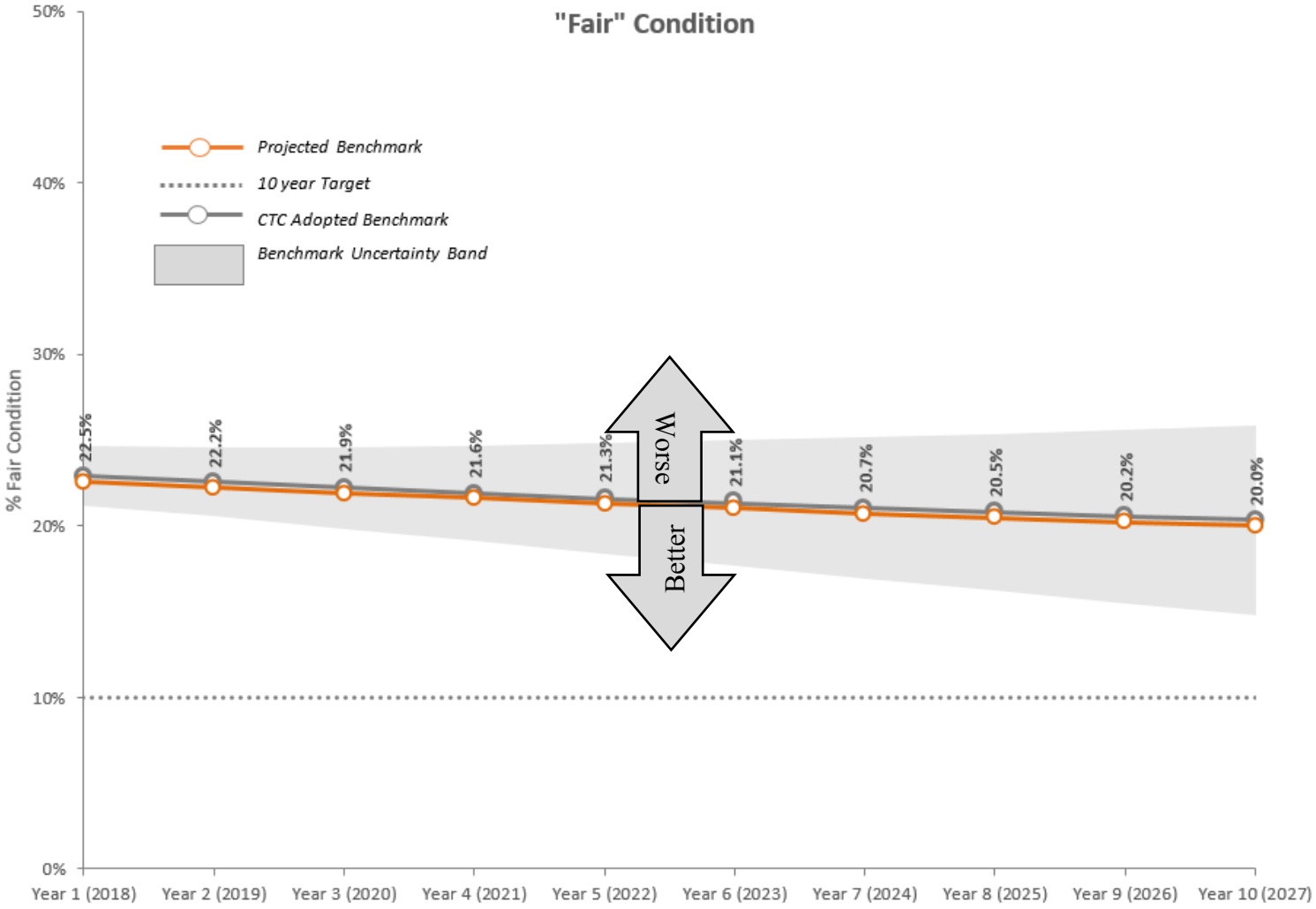
Bridge and Tunnel Condition Projections (Poor)



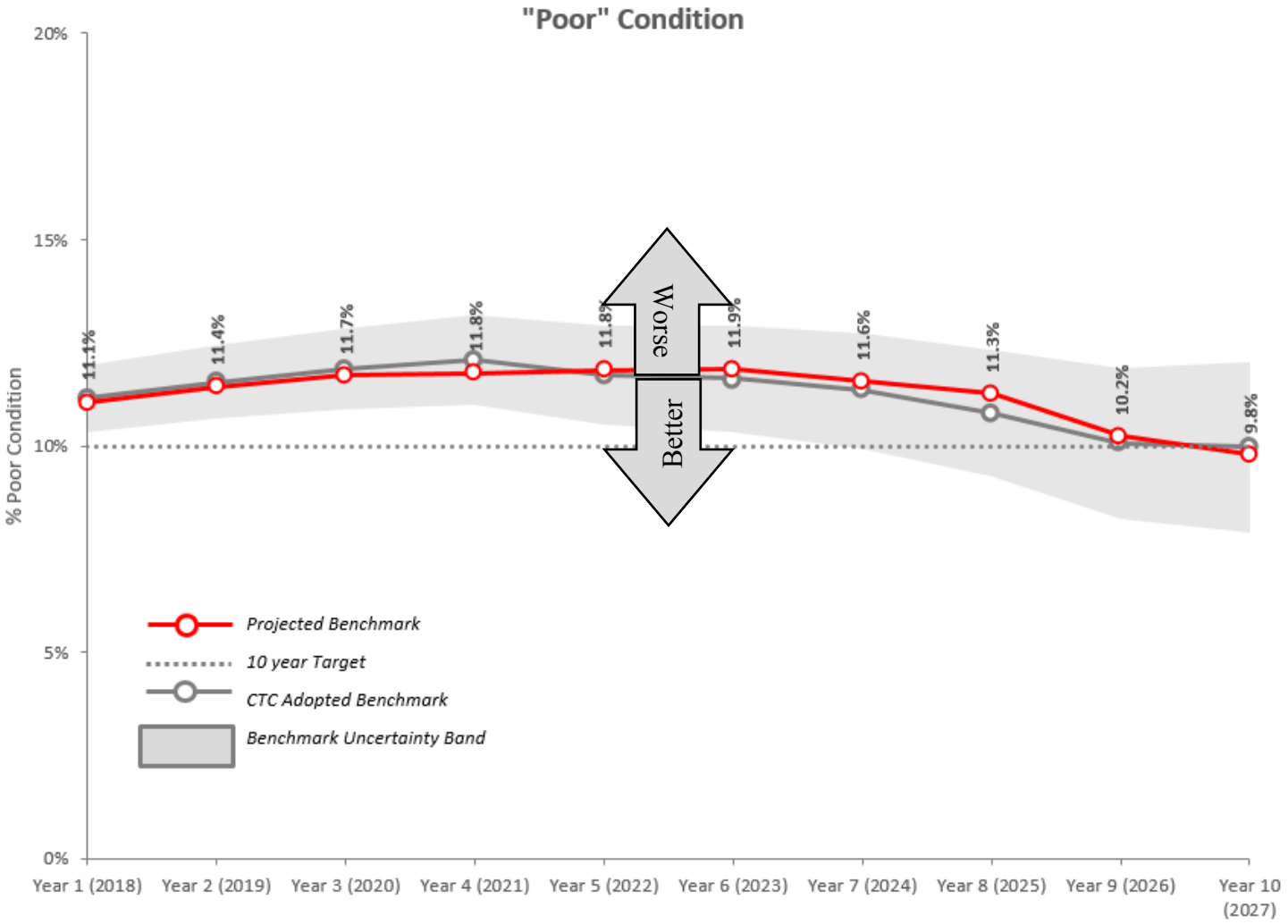
Culverts (Drainage) Condition Projections (Good)



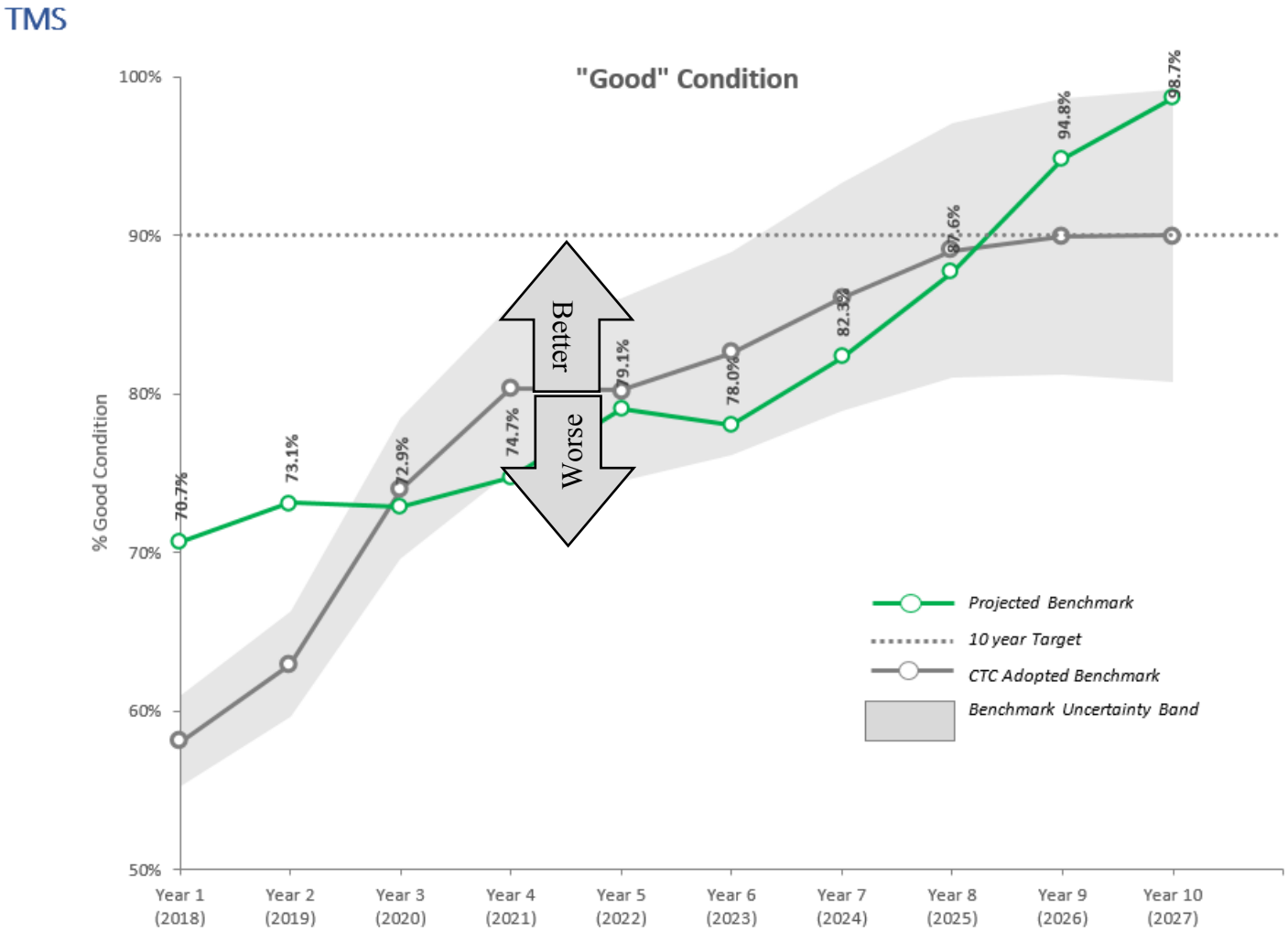
Culverts (Drainage) Condition Projections (Fair)



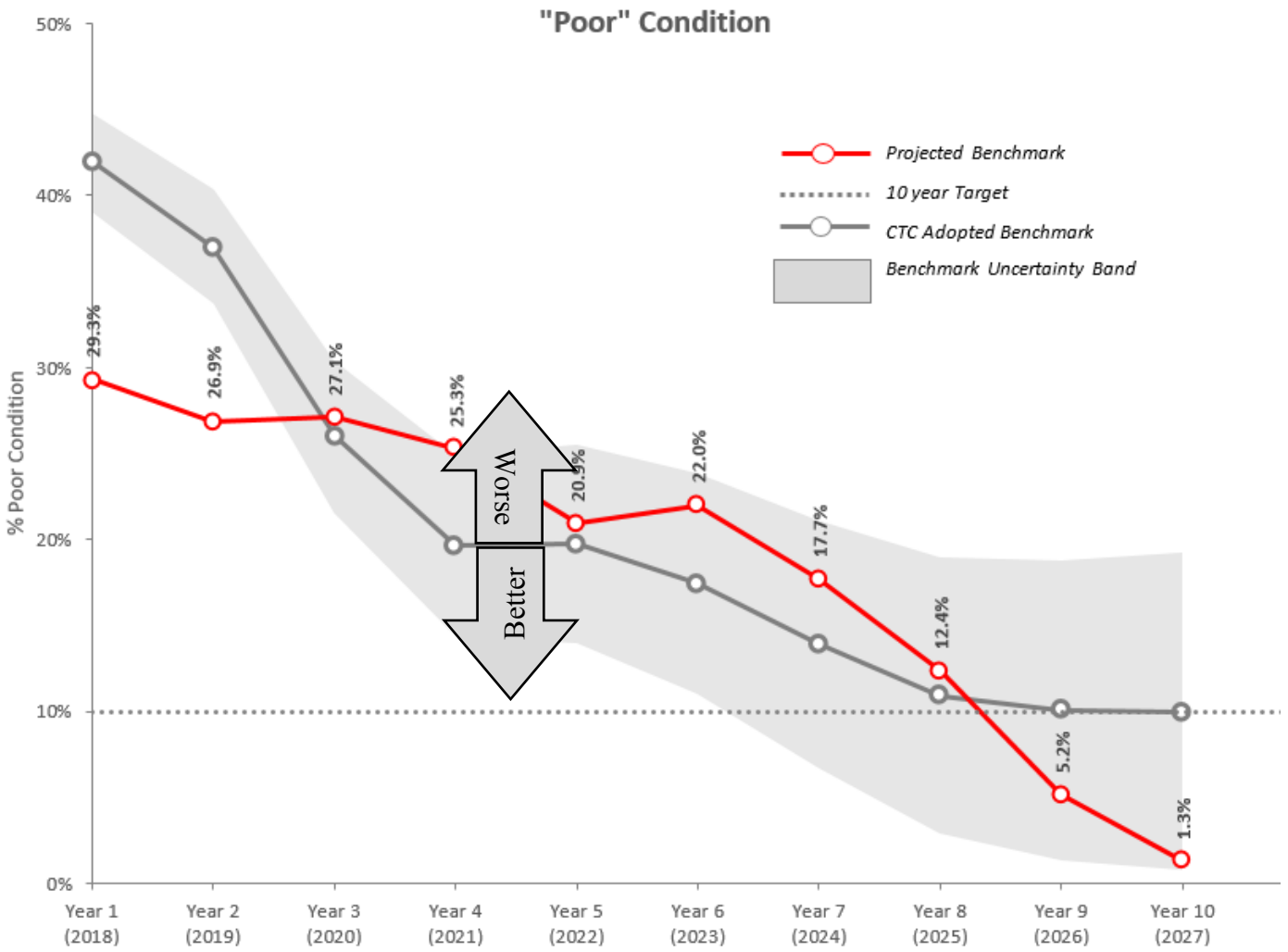
Culverts (Drainage) Condition Projections (Poor)

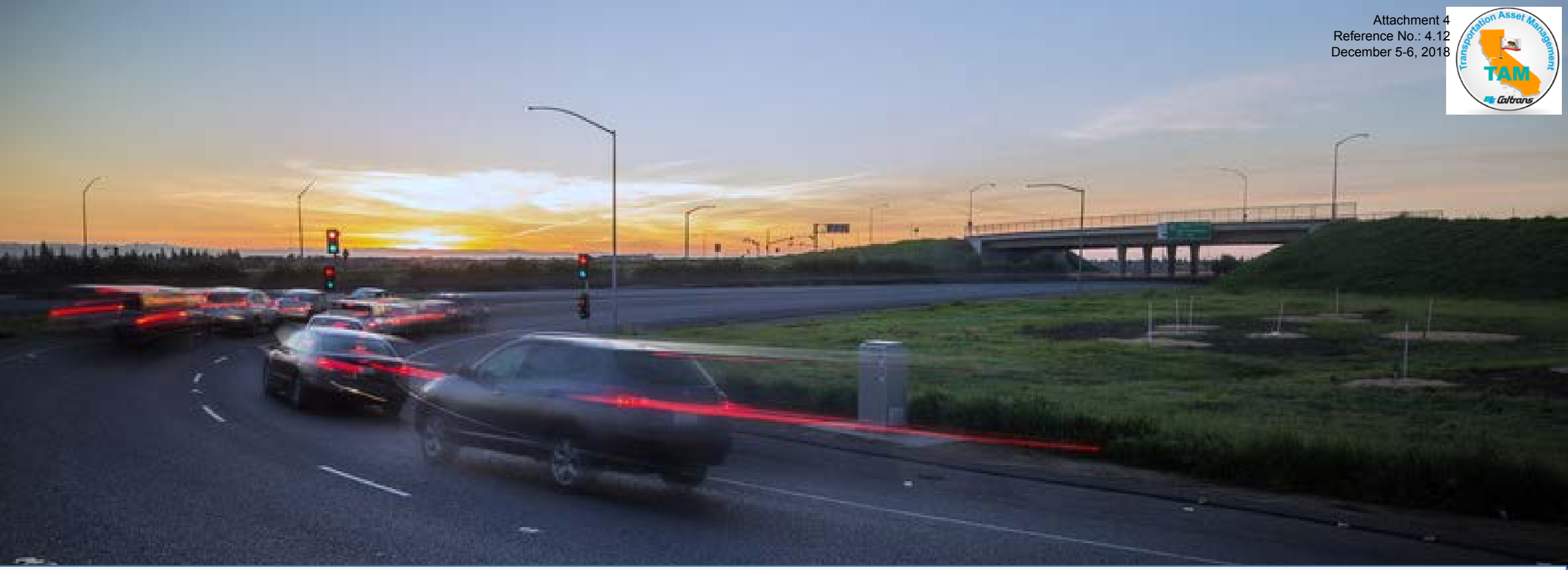


Transportation Management System (TMS) Condition Projections (Good)



Transportation Management System (TMS) Condition Projections (Poor)





Annual Benchmark Performance Update

Michael B. Johnson P.E.

October 2018

Background

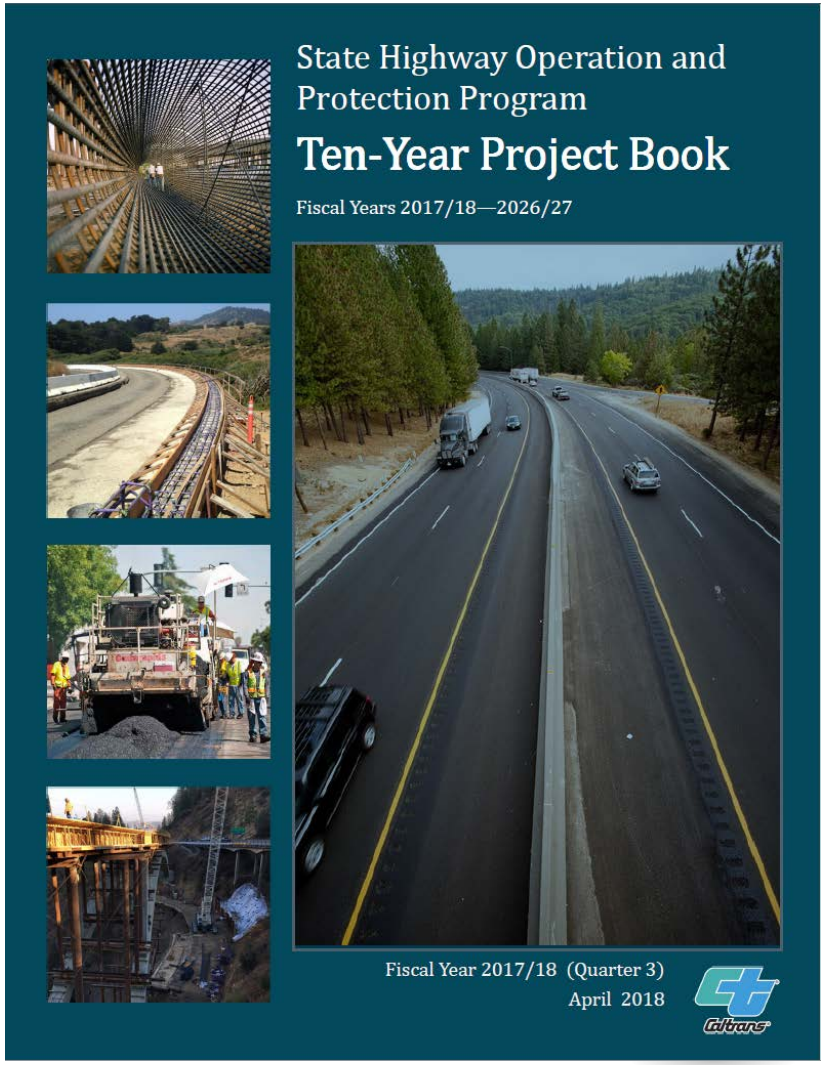
- Commission guidelines require Caltrans to establish baseline performance plans and an annual performance benchmark report.
- The Commission adopted the baseline performance levels in March of 2018.
- This presentation is an update from the March 2018 baselines

Benchmark Development Procedure

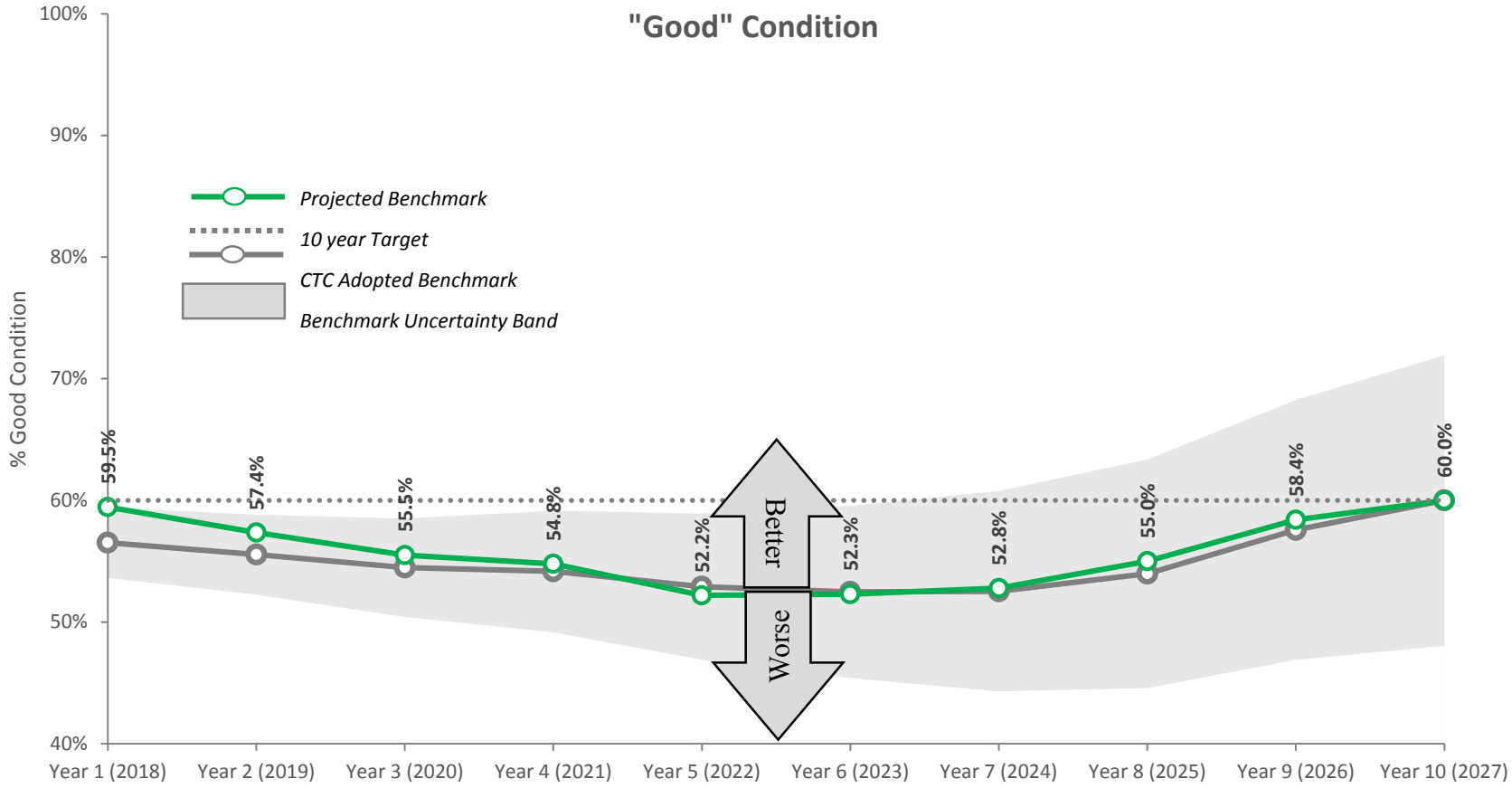
- Pavement, Bridge Data, etc.
- Apply deterioration year by year for 10 years
- SHOPP, HM, other available funding sources
- Many assets classes are growing

What Causes the Benchmarks to Change

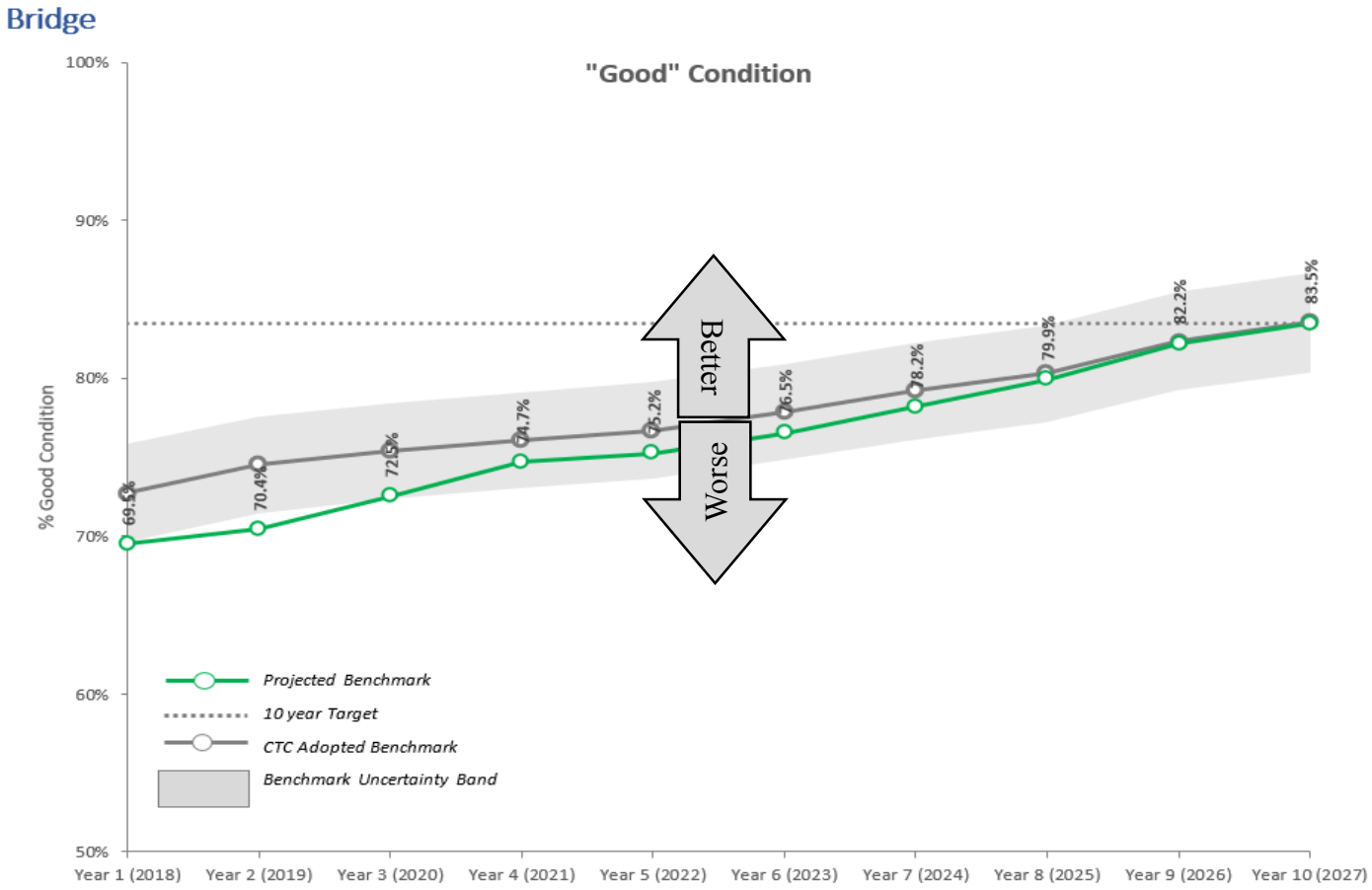
Project Level Accomplishments



Pavement Class 1



Bridge and Tunnel Health



Additional SB1 Performance Metrics

Summary

- On track to achieve SB1 performance targets
- Asset Management framework is keeping the focus on performance
- Caltrans Asset Management is maturing over time.
- Evolution expected as Caltrans manages projects/performance over time
- Benchmark analysis will be updated annually