For Information and Discussion.

Regional Freeway and Highway Program Update

Transportation Review Committee
February 26, 2015

MARICOPA ASSOCIATION of GOVERNMENTS

Mini-Stack Interchange, Phoenix

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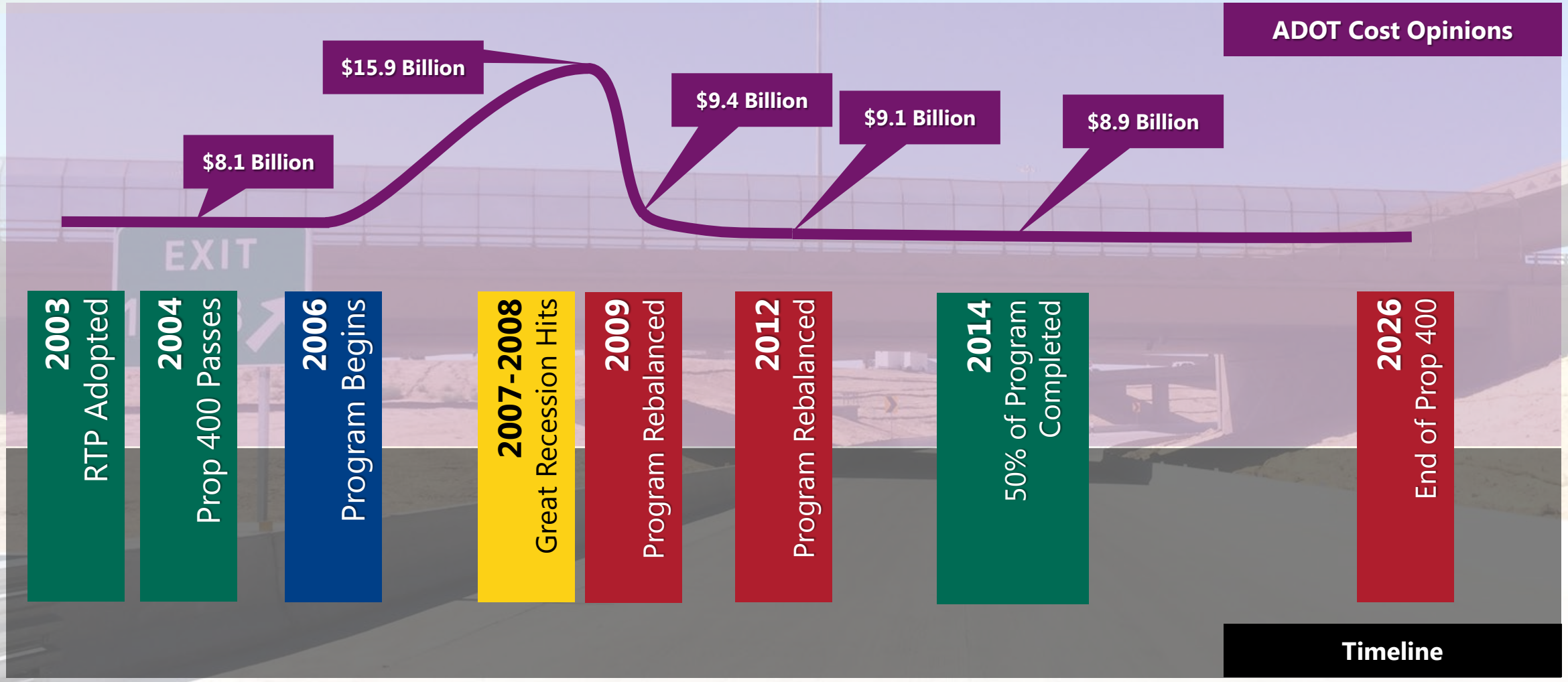
Regional Freeway and Highway Program Timeline



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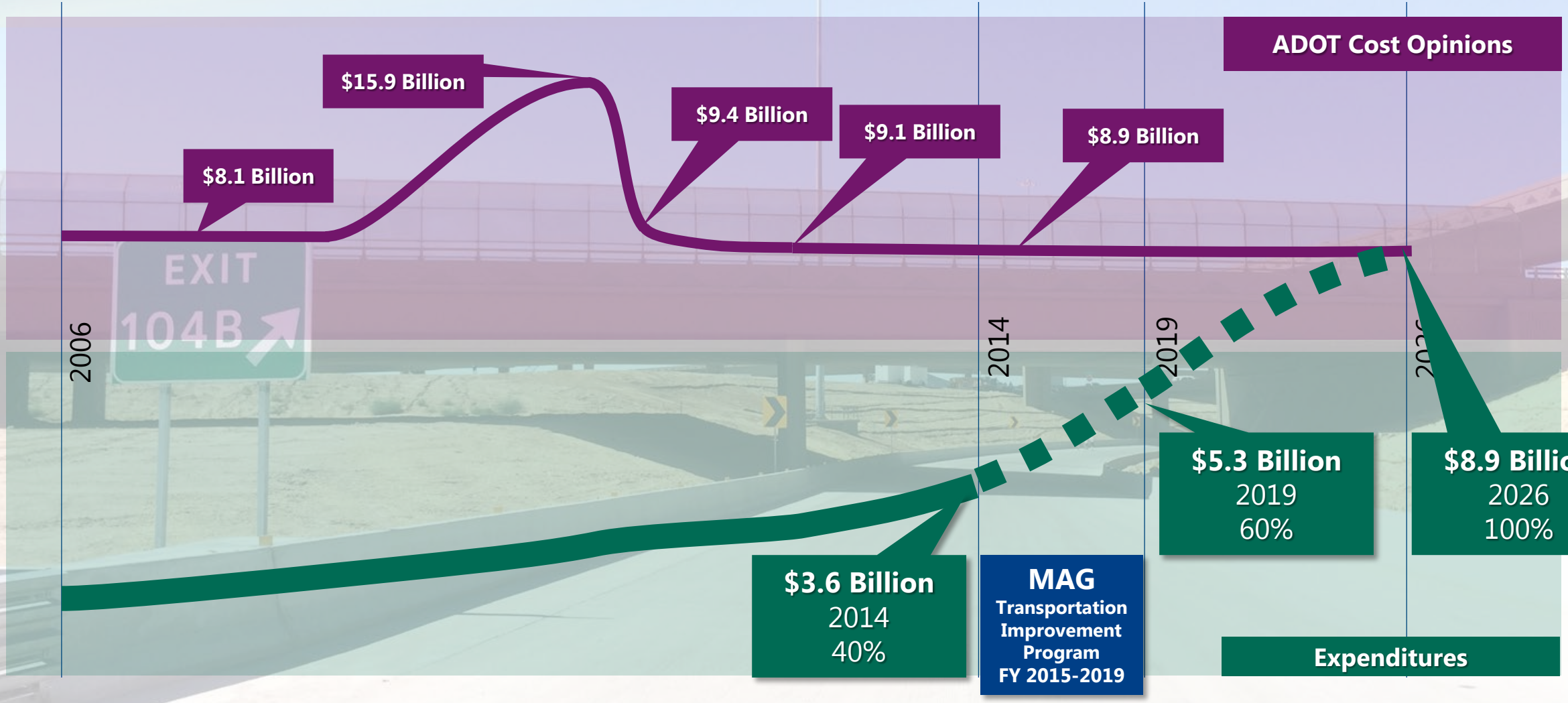
Program Status
SINCE 2006



Source: MAG Estimates from ADOT Data, retrieve September 2014. Expenditure curve is illustrative.

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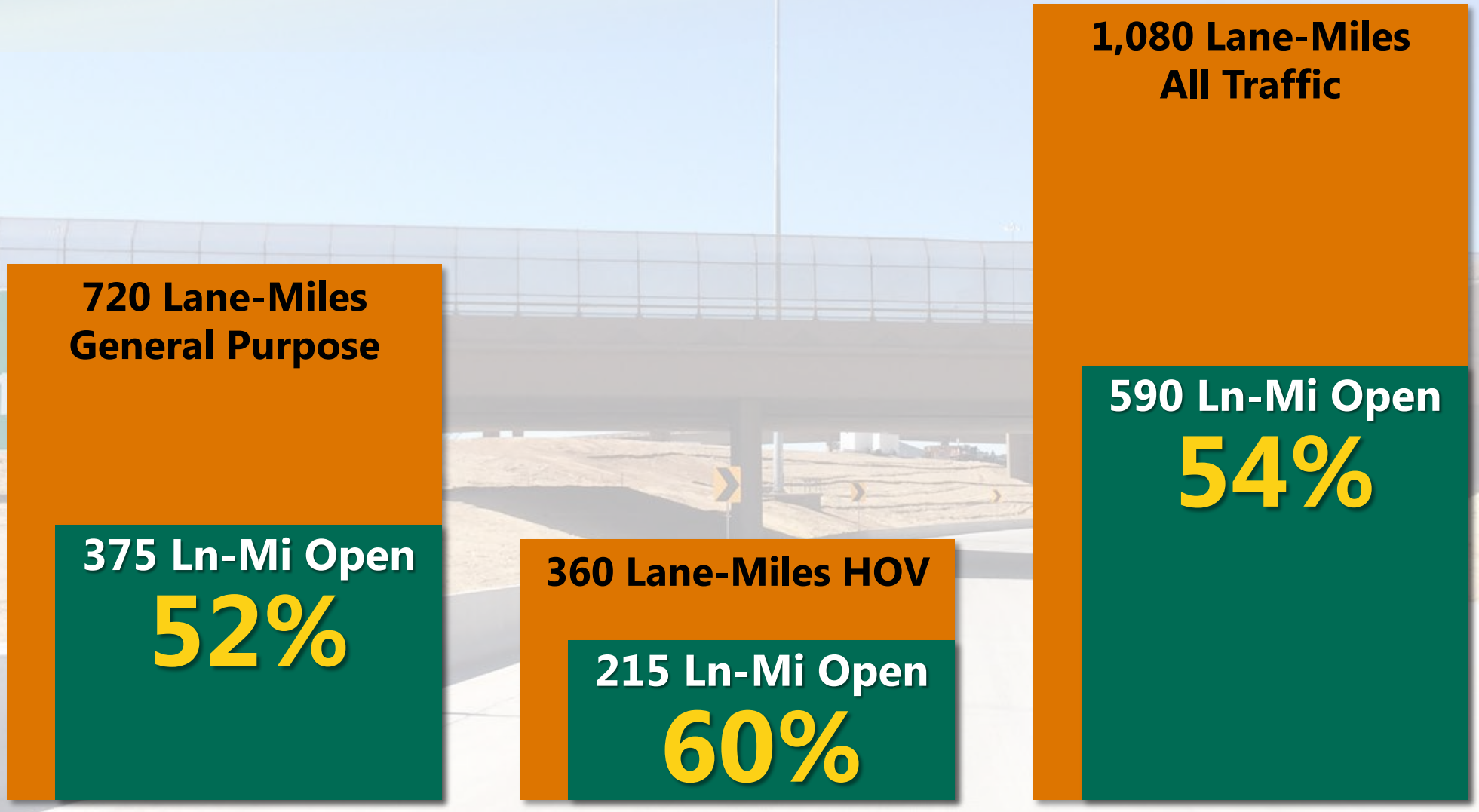
50 Percent Complete!

SINCE INITIATING THE PROGRAM IN 2006



Source: MAG/ADOT Analysis, completed September 2014.

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Continuing Program Review

- Scrutiny:
  - Receipts and Expenditures Ledger.
  - Revenue and Cash-Flow Projections.
- Issues:
  - **Inconsistent data** in both models.
  - Project close-outs still underway; in particular **Loop 303**.
  - Loop 202/South Mountain Freeway **costs and relation to cash-flow**.
  - Future projects versus Regional Council **specified program amounts**.

On Priest Drive Overcrossing,
Looking at Sky Harbor Blvd/SR-143 Traffic Interchange

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Enhancing the Process

- Continuing communications with ADOT at different levels:
  - Urban Project Management.
  - Phoenix Construction District.
  - Phoenix Maintenance District.
  - Financial Management Services.
  - State Engineer's Office.
- Established a **Cost Risk Analysis (CRA)** process to identify and potentially retire project contingencies at the earliest opportunity.

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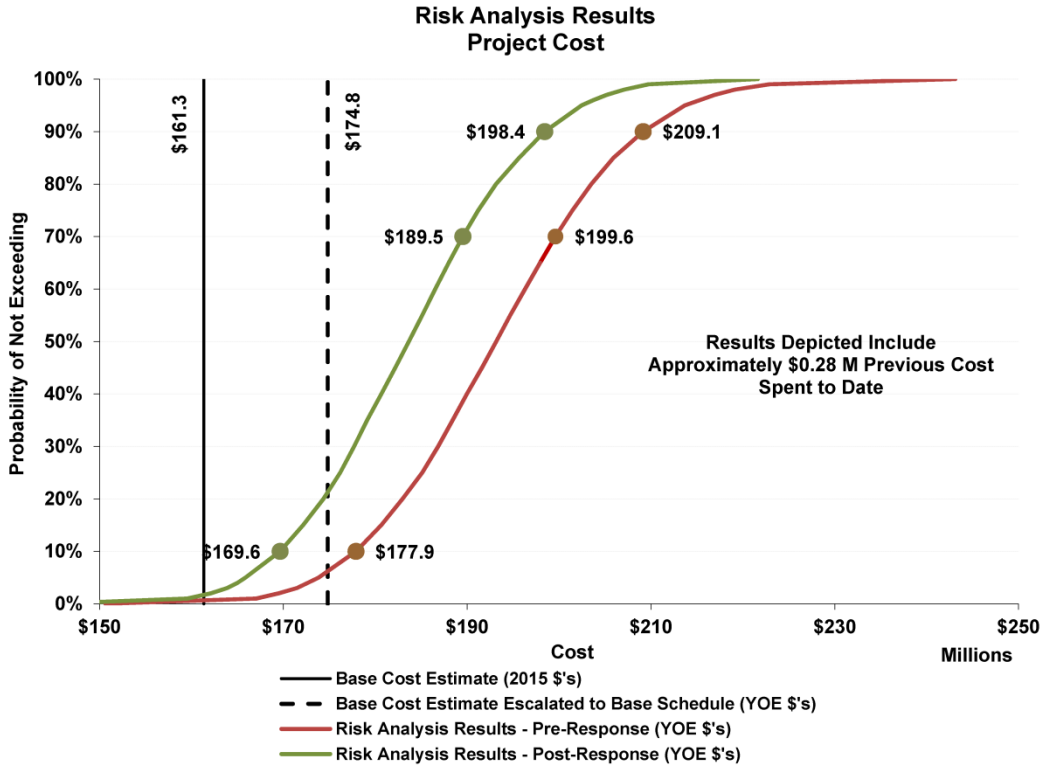
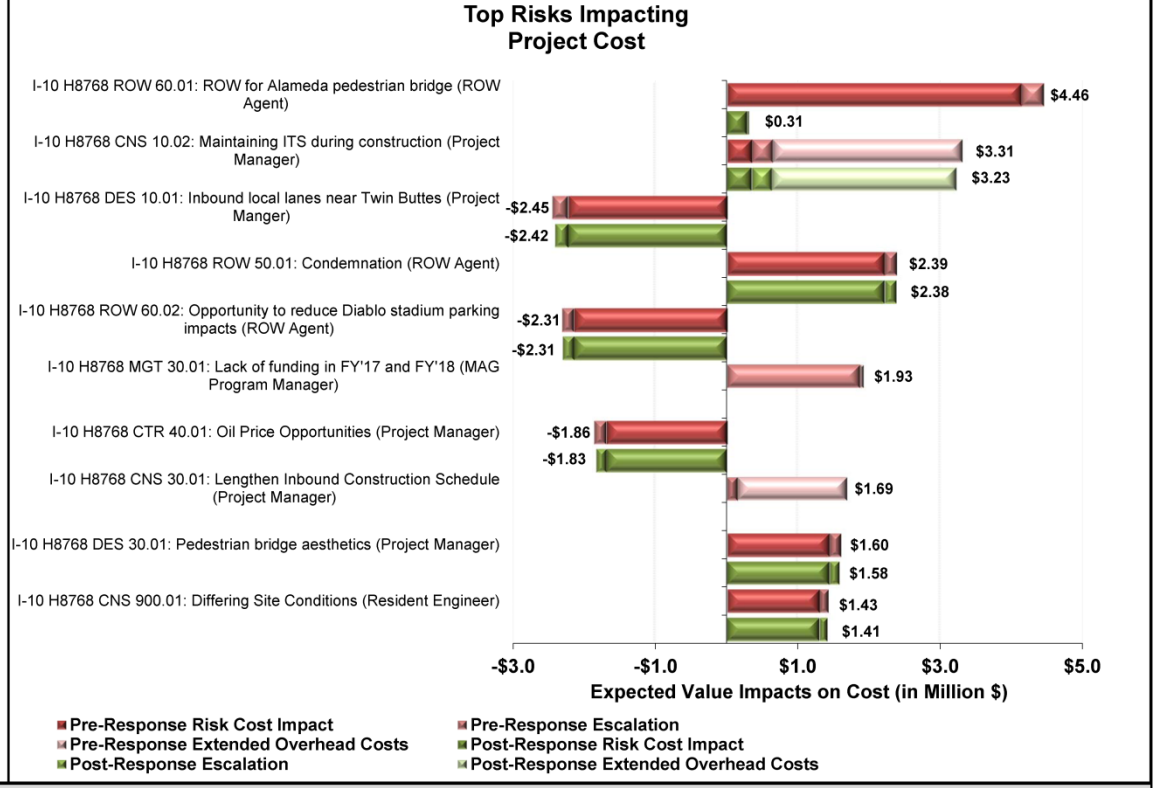
CRA Workshop Cost Summary Sheet	I-10/Maricopa (SR-143 – SR-202L/Santan-South Mountain) Near-Term Improvements TRACS# H8768 Last Updated January 2015	Level of Project Design	Low Medium High

Project Description

A modified collector-distributor roadway system will be developed to eliminate the existing weaving conditions between SR-143, Broadway Road and US-60/Superstition Freeway that is causing significant congestion on I-10 during the morning and evening peak travel periods. All existing system and service interchange freeway access will be retained with the Recommended Alternative. South of Baseline Road, I-10 will be widened to provide additional freeway capacity within that segment of the project.





Cost Results

The S-curves reveal that, prior to risk response, there was a **70 percent** chance of the total project costs being less than **$199.6 million** in year-of-expenditure (YOE).

With the risk response strategies included, project costs now have a **70 percent** chance of being less than **$189.5 million** YOE.

These results indicate that by implementing the risk response strategies developed at the CRA workshop, project costs are expected to be reduced by **$10.1 million**.

Risk-Adjusted Cost Results (in Millions $'s)

Category	Base Cost 2015 $'s	Base Cost YOE $'s	Cost Range YOE $'s		
			10th Percentile	70th Percentile	90th Percentile
Pre-Response Results Total Project	$161.3	$174.8	$177.9	$199.6	$209.1
Post-Response Results Total Project			$169.6	$189.5	$198.4
Post-Response Preliminary Engineering	$13.9	$14.9	$14.5	$15.1	$15.3
Post-Response Right-of-Way	$12.0	$12.8	$10.4	$15.1	$17.2
Post-Response Construction	$135.4	$147.1	$141.8	$160.6	$168.9

Source: MAG Cost Risk Analysis process, developed in cooperation with ADOT Staff, updated January 2015.

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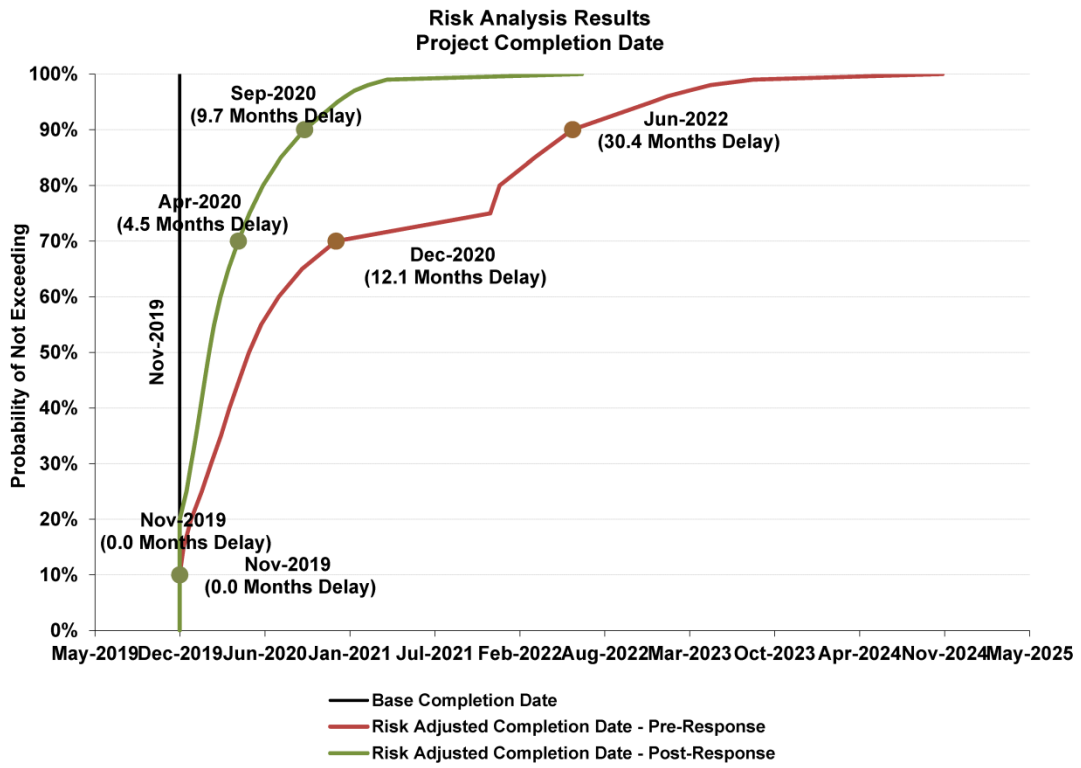
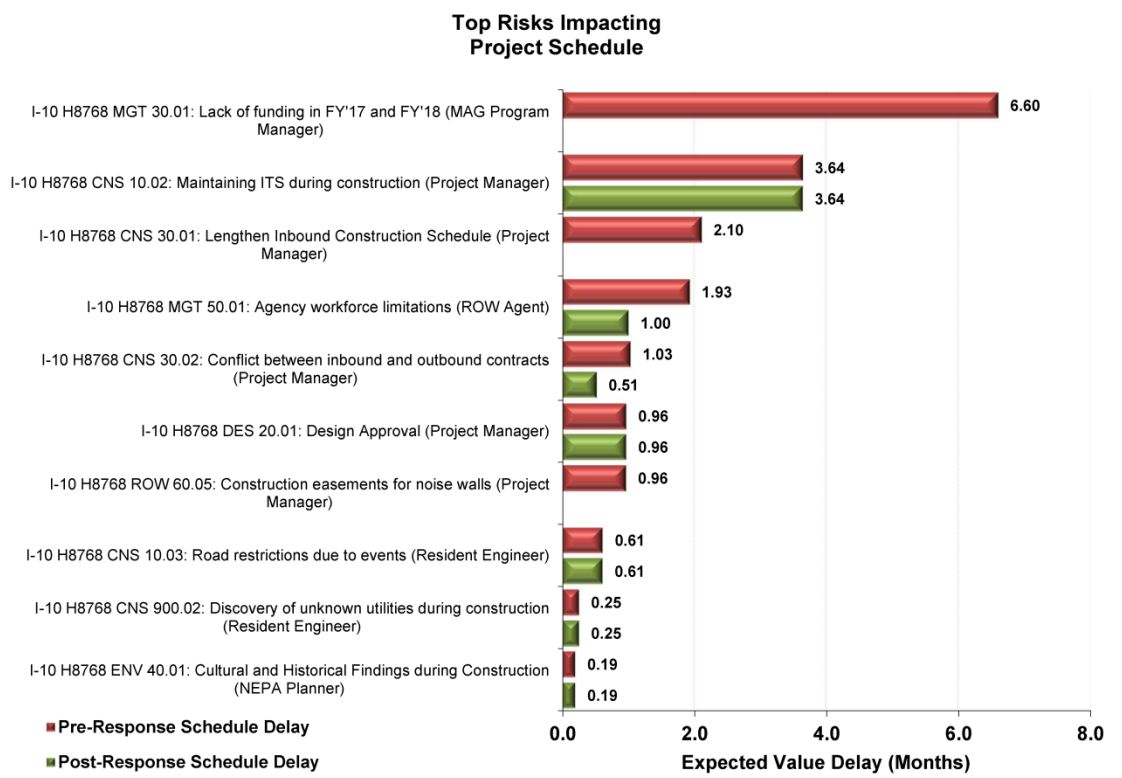
CRA Workshop Schedule Summary Sheet	I-10/Maricopa (SR-143 – SR-202L/Santan-South Mountain) Near-Term Improvements TRACS# H8768 Last Updated January 2015	Level of Project Design: Low / Medium / High	ADOT





Schedule Results

Under the base schedule, the project is expected to be completed in **November, 2019**. The S-curves reveal that, prior to risk response, there is a **70 percent** chance that the project will be completed by **December, 2020** indicating a risk of potential delay to project completion of approximately **12.1 months**.

After including the risk response strategies developed at the CRA workshop, the project completion delay is reduced to approximately **4.5 months** with the project being completed in **April, 2020**.

By employing the risk response strategies developed within the CRA, project completion can be achieved **7.6 months** earlier.

Risk-Adjusted Schedule Results

Category	Base Date	Project Completion Date Range		
		10th Percentile	70th Percentile	90th Percentile
Pre-Response Results	Nov-2019	Nov-2019	Dec-2020	Jun-2022
Post-Response Results		Nov-2019	Apr-2020	Sep-2020
Post-Response Advertisement Date (Inbound)	Jun-2017	Jun-2017	Jun-2017	Oct-2017
Post-Response Construction Duration (Inbound)	18.0 Months	18.0 Months	20.3 Months	27.3 Months
Post-Response Advertisement Date (Outbound)	Jun-2018	Jun-2018	Jun-2018	Oct-2018
Post-Response Construction Duration (Outbound)	14.0 Months	14.0 Months	16.4 Months	22.5 Months

Key Risk Response Strategies

ROW 60.01 - ROW for Alameda pedestrian bridge Move the Alameda pedestrian bridge switchback ramps on the east side into the existing ROW that is owned. Would eliminate impacts on the east side. Move the Alameda pedestrian bridge switchback ramps on the west side closer to I-10 would minimize impacts to parking for Diablo stadium and the billboard that is in the stadium parking lot. There may be a requirement for an easement on the east side. Negotiations with city of Tempe about impacts to Diablo stadium parking impacts.

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Source: MAG Cost Risk Analysis process, developed in cooperation with ADOT Staff, updated January 2015.

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Project Cost Risk Analysis Results

Project	70% Costs Before	70% Costs After
I-10 **Near Term Improvements**, SR-143 to Loop 202	$199.6m	**$189.5m**
Loop 101/Pima **Add Lanes**, I-17 to SR-51	$138.2m	**$137.9m**
Loop 101/Pima **Add Lanes**, SR-51 to Pima Rd-Princess Dr	$78.3m	**$78.1m**
Loop 303 **New Freeway**, I-10 to Elwood St	$248.8m	**$171.9m**

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Source: MAG Cost Risk Analysis process, developed in cooperation with ADOT Staff, updated January 2015.

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Project Cost Risk Analysis Results

Project	70% Costs Before	70% Costs After	Greatest Risk Affecting Costs
I-10 **Near Term Improvements**, SR-143 to Loop 202	$199.6m	**$189.5m**	ROW for Alameda Bike-Ped Overcrossing ($4.4m)
Loop 101/Pima **Add Lanes**, I-17 to SR-51	$138.2m	**$137.9m**	Design Uncertainties ($3.4m)
Loop 101/Pima **Add Lanes**, SR-51 to Pima Rd-Princess Dr	$78.3m	**$78.1m**	Fill Borrow Costs ($3.1m)
Loop 303 **New Freeway**, I-10 to Elwood St	$248.8m	**$171.9m**	Section 4(f) Analysis at Yuma Rd/Cotton Ln ($8.3m)

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Project Cost Risk Analysis Results

Project	70% Costs Before	70% Costs After	Greatest Risk Affecting Costs	Greatest Risk Affecting Schedule
I-10 **Near Term Improvements**, SR-143 to Loop 202	$199.6m	**$189.5m**	ROW for Alameda Bike-Ped Overcrossing ($4.4m)	Program Cash Flow to fund Project (6.6 months)
Loop 101/Pima **Add Lanes**, I-17 to SR-51	$138.2m	**$137.9m**	Design Uncertainties ($3.4m)	Hotspot Analysis Mitigation (2.5 months)
Loop 101/Pima **Add Lanes**, SR-51 to Pima Rd-Princess Dr	$78.3m	**$78.1m**	Fill Borrow Costs ($3.1m)	Hotspot Analysis Mitigation (2.5 months)
Loop 303 **New Freeway**, I-10 to Elwood St	$248.8m	**$171.9m**	Section 4(f) Analysis at Yuma Rd/Cotton Ln ($8.3m)	Section 4(f) Analysis at Yuma Rd/Cotton Lane (7.8 months)

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Project Cost Risk Analysis Results

Project	70% Costs Before	70% Costs After	Greatest Risk Affecting Costs	Greatest Risk Affecting Schedule
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Loop 101/Pima **Add Lanes**, I-17 to SR-51	$138.2m	**$137.9m**	Design Uncertainties ($3.4m)	Hotspot Analysis Mitigation (2.5 months)
Loop 101/Pima **Add Lanes**, SR-51 to Pima Rd-Princess Dr	$78.3m	**$78.1m**	Fill Borrow Costs ($3.1m)	Hotspot Analysis Mitigation (2.5 months)
Loop 303 **New Freeway**, I-10 to Elwood St	$248.8m	**$171.9m**	Section 4(f) Analysis at Yuma Rd/Cotton Ln ($8.3m)	Section 4(f) Analysis at Yuma Rd/Cotton Lane (7.8 months)
Summary:	**$664.9m**	**$577.4m**	**Potential for another $19.2m retirement**	

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Project Cost Risk Analysis Results

THESE RETIREMENTS ARE NOT REFLECTED IN CURRENT CASH-FLOW MODELS

Project	70% Costs Before	70% Costs After	Greatest Risk Affecting Costs	Greatest Risk Affecting Schedule
I-10 **Near Term Improvements**, SR-143 to Loop 202	$199.6m	**$189.5m**	ROW for Alameda Bike-Ped Overcrossing ($4.4m)	Program Cash Flow to fund Project (6.6 months)
Loop 101/Pima **Add Lanes**, I-17 to SR-51	$138.2m	**$137.9m**	Design Uncertainties ($3.4m)	Hotspot Analysis Mitigation (2.5 months)
Loop 101/Pima **Add Lanes**, SR-51 to Pima Rd-Princess Dr	$78.3m	**$78.1m**	Fill Borrow Costs ($3.1m)	Hotspot Analysis Mitigation (2.5 months)
Loop 303 **New Freeway**, I-10 to Elwood St	$252.0m	**$171.9m**	Section 4(f) Analysis at Yuma Rd/Cotton Ln ($8.3m)	Section 4(f) Analysis at Yuma Rd/Cotton Lane (7.8 months)
Summary:	**$668.0m**	**$577.4m**	**Potential for another $19.2m retirement**	**RISK POTENTIAL: $106.7m**

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Next Steps

REGIONAL FREEWAY AND HIGHWAY PROGRAM REVIEW

- **Complete Cost Risk Analysis** on all remaining Regional Freeway and Highway Program projects.
- Clean up expenditures ledger and update cash-flow model with **refined project costs retiring risks**.
- Incorporate **Loop 202/South Mountain Freeway costs** at earliest opportunity.
- **Adjust (balance) program as needed in early 2016**.

Maryland Avenue DHOV Interchange, Glendale

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For Information and Discussion.

Regional Freeway and Highway Program Update

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