

BATA TOLL BRIDGE REHABILITATION PROGRAM



November 20, 2020
Ad Hoc BATA Working Group

AD HOC WORKING GROUP MEETING TIMELINE

Deep Dive

Recommendations

✓ **August**

Traffic &
Revenue Trends
Finances
Ad Hoc Goals



✓ **September**

Fast-Track
Projects to
Serve Buses &
Carpools



✓ **October**

Toll Collection
& Toll Plaza
Operations



November

Toll Bridge
Rehabilitation
& Asset
Management



December

Agency Roles &
Responsibilities
BATA/Caltrans
Joint Venture

February

Program
Costs,
Shortfalls
& Priorities
Next Steps

1
2
3

AGENDA

3a. Overview of Toll Bridge Rehabilitation Program

3b. Toll Bridge Asset Management and Current Bridge Needs

3c. Impacts of COVID-19 and Prioritization

OVERVIEW OF TOLL BRIDGE REHABILITATION PROGRAM

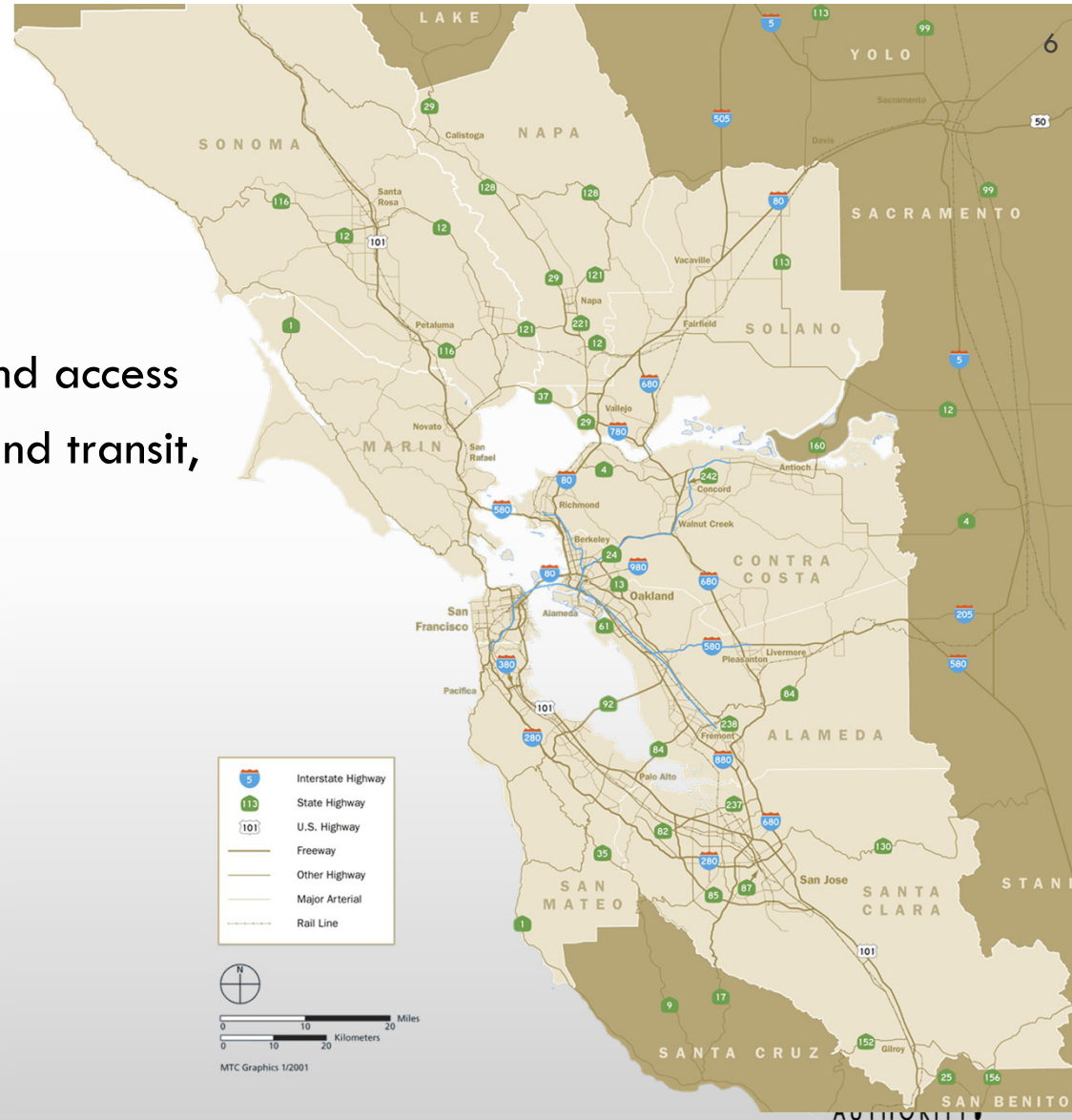




THE BRIDGES ARE CRITICAL TO THE REGION

- Provide regional multi-modal mobility and access
- Key to funding regional transportation and transit, including:
 - Regional Measure 2 Capital
 - Regional Measure 2 Transit Operations
 - Regional Express Lanes
 - Transit Core Capacity
 - AB 1171

Program	Toll
Regional Measure 1	\$1
Seismic Retrofit	\$3
Regional Measure 2	\$1



SINCE 1998, BATA AND CALTRANS HAVE JOINT-VENTURED ON THE BRIDGES

» BATA

- Administers the toll revenue
- Budgets and funds operation, maintenance, and rehabilitation of the bridges

» Caltrans

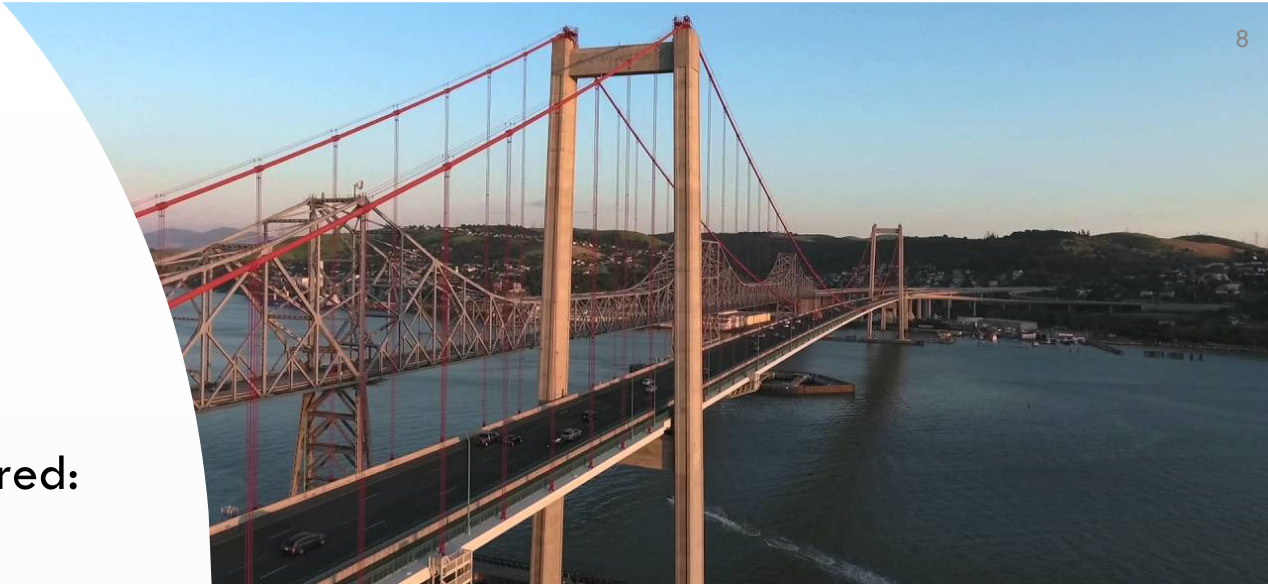
- Owns, plans, operates, maintains, and manages rehabilitation of the bridges, including toll facilities
- Designs and constructs eligible projects



DELIVERED \$2.2B REGIONAL MEASURE 1 TOLL PROGRAM

\$2.2B Toll Financed Program delivered:

- New Benicia-Martinez Bridge
- New Carquinez Bridge
- Widened San Mateo-Hayward Bridge



COMPLETED \$8.7B TOLL BRIDGE SEISMIC RETROFIT PROGRAM

- **\$8.7B** Toll Financed Program retrofitted or replaced all seven toll bridges.
- Seismic research continues to evolve requiring regular reassessment of the bridges and maintenance of the seismic systems.

Bridge	Seismic Design Criteria
San Francisco - Oakland Bay*	Lifeline
Benicia – Martinez*	Lifeline
Carquinez	Intermediate/No Collapse
Dumbarton	Intermediate
San Mateo - Hayward	Intermediate
Antioch	No Collapse
Richmond – San Rafael*	No Collapse

*Bridge eligible for federal funds



TOLL BRIDGE REHABILITATION PROGRAM

SCOPE

BRIDGE INTEGRITY

Projects that maintain and restore the structural integrity and safety of the bridges from abutment to abutment, including decks, superstructure, substructure, and systems.

TOLL COLLECTION




Projects that maintain and upgrade the toll collection systems, including the tolling system, customer service systems, toll tags, tolling infrastructure and facilities.

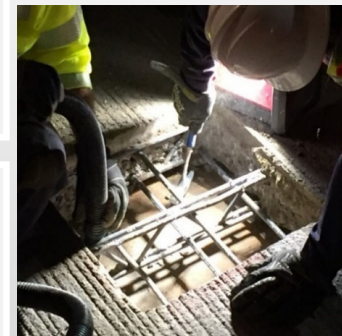
APPROACHES, FACILITIES & OTHER

Bridge related projects eligible for BATA and non-BATA funding, including bridge approaches, traffic management systems, maintenance and other facilities.






SINCE 2007, BATA HAS FUNDED \$1.5B FOR REHABILITATION

		FUNDING TO DATE	PAST MAJOR PROJECTS
	BRIDGE INTEGRITY	\$800M	<ul style="list-style-type: none"> San Mateo-Hayward Paint Ph 1 (\$60M) Richmond-San Rafael Paint Ph 1 (\$40M) San Mateo-Hayward Deck (\$40M)
	TOLL COLLECTION	\$350M	<ul style="list-style-type: none"> FasTrak® Tags (\$100M) Toll System Upgrades (\$30M) FasTrak® Sign and Sign Structure improvements (\$30M)
	APPROACHES, FACILITIES & OTHER,	\$300M	<ul style="list-style-type: none"> Richmond-San Rafael Peak Period Lane & Bike Path (\$90M) 160/4 Interchange (\$50M) 680/80/12 -RM3 Advance (\$14M)



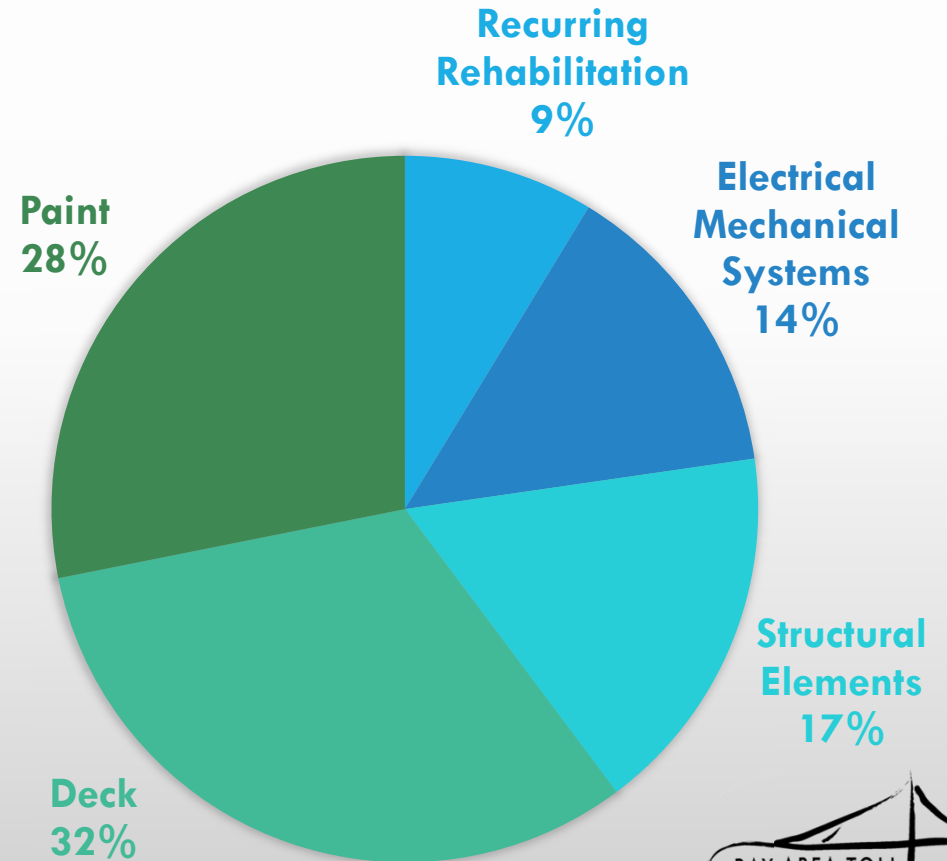
BRIDGES WILL REQUIRE CONTINUING INVESTMENT

			Bridge	Age
 BRIDGE INTEGRITY	IDENTIFIED POTENTIAL PROJECTS	FUTURE MAJOR PROJECTS	San Francisco - Oakland Bay (West)	84
			San Francisco - Oakland Bay (East)	7
			Benicia – Martinez (East)	13
			Benicia – Martinez (West)	58
 TOLL COLLECTION	\$2B+	<ul style="list-style-type: none"> Richmond-San Rafael and SFOBB Deck Replacements (\$370M, \$330M) Bridge Painting by Contracts and State Crews (\$630M, \$100M) 	Carquinez (East)	62
			Carquinez (West)	17
			Dumbarton	38
			San Mateo - Hayward	53
 APPROACHES, FACILITIES & OTHER	\$240M	<ul style="list-style-type: none"> Open Road Tolling (\$60M) Toll Tags and Customer Service Center procurement (\$120M) 	Antioch	42
			Richmond – San Rafael	68
	\$220M	<ul style="list-style-type: none"> Pavement repairs on approaches (\$150M) New BATA Bridge Due Diligence SR-37 (\$12M) Bay Bridge Forward 2020 (\$4M) 		



CALTRANS HAS IDENTIFIED \$2B+ IN POTENTIAL BRIDGE INTEGRITY PROJECTS

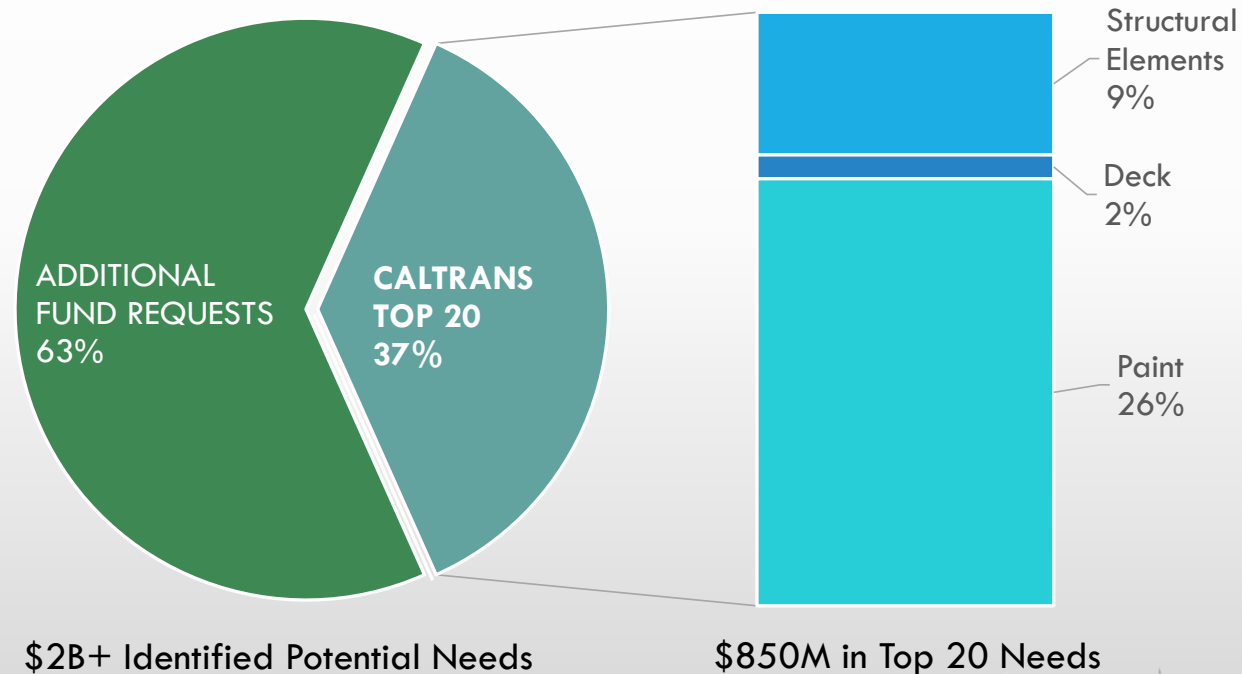
- Bridges will require continuing work to maintain in a state-of-good repair.
- \$2B+ estimate includes routine and end-of-useful-life projects on a schedule but is not necessarily optimized for cost.
 - E.g. Richmond-San Rafael deck replacement will be reconsidered pursuant to the recent lifecycle analysis work.
- A toll increase in 2027 is planned to support funding of future major rehabilitation projects.





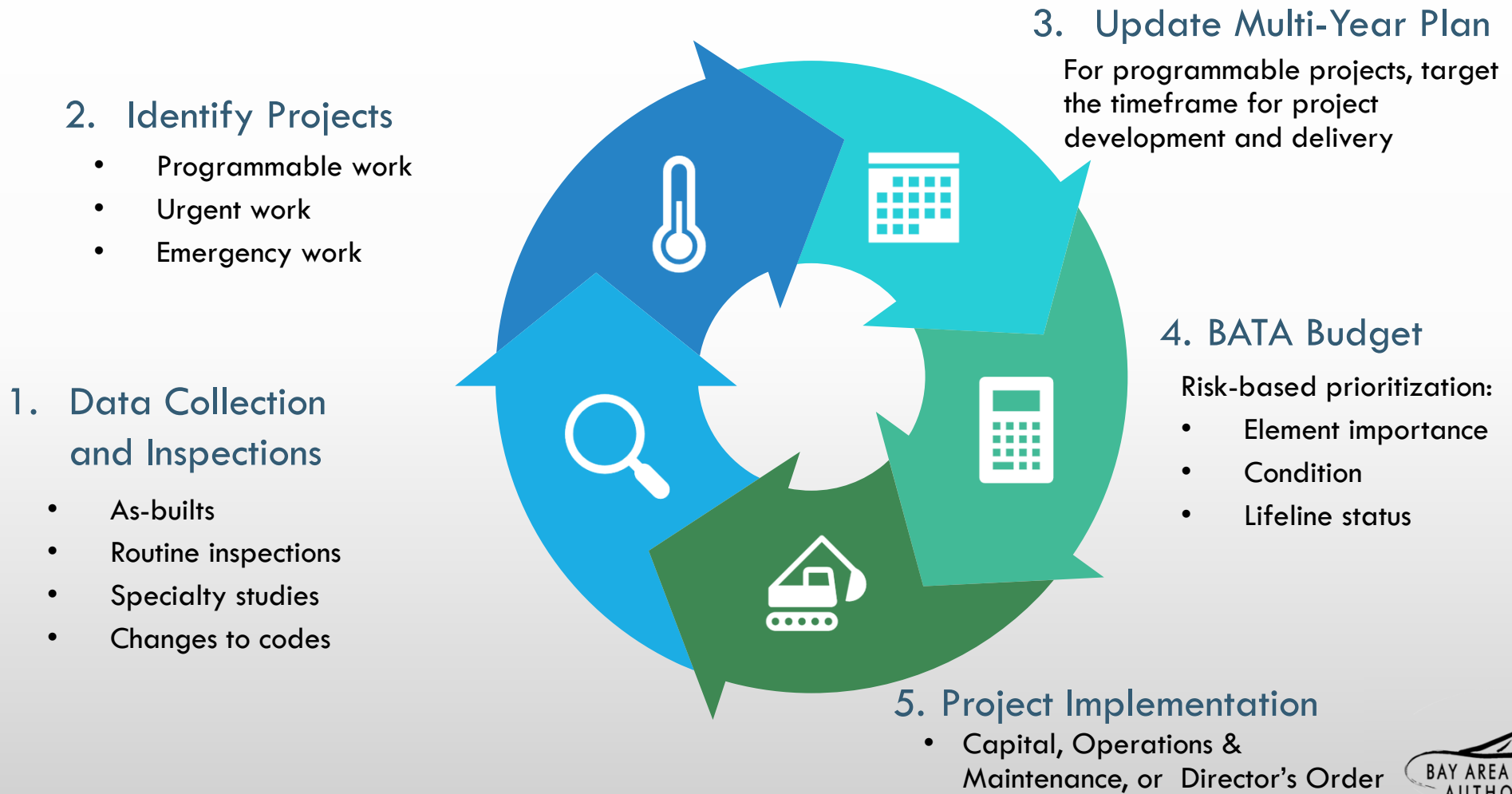
TOP 20 BRIDGE INTEGRITY PROJECTS ARE FOCUSED ON BRIDGE PRESERVATION

- » The most immediate projects are aimed at preserving and delaying deterioration of the bridge elements, focusing on corrosion protecting coatings.



TOLL BRIDGE ASSET MANAGEMENT AND CURRENT BRIDGE NEEDS

ASSET MANAGEMENT TODAY



BRIDGE 101

Major Bridge Components

➤ Structural

- Trusses
- Cables and Suspenders
- Dehumidification
- Seismic Dampers
- Fenders

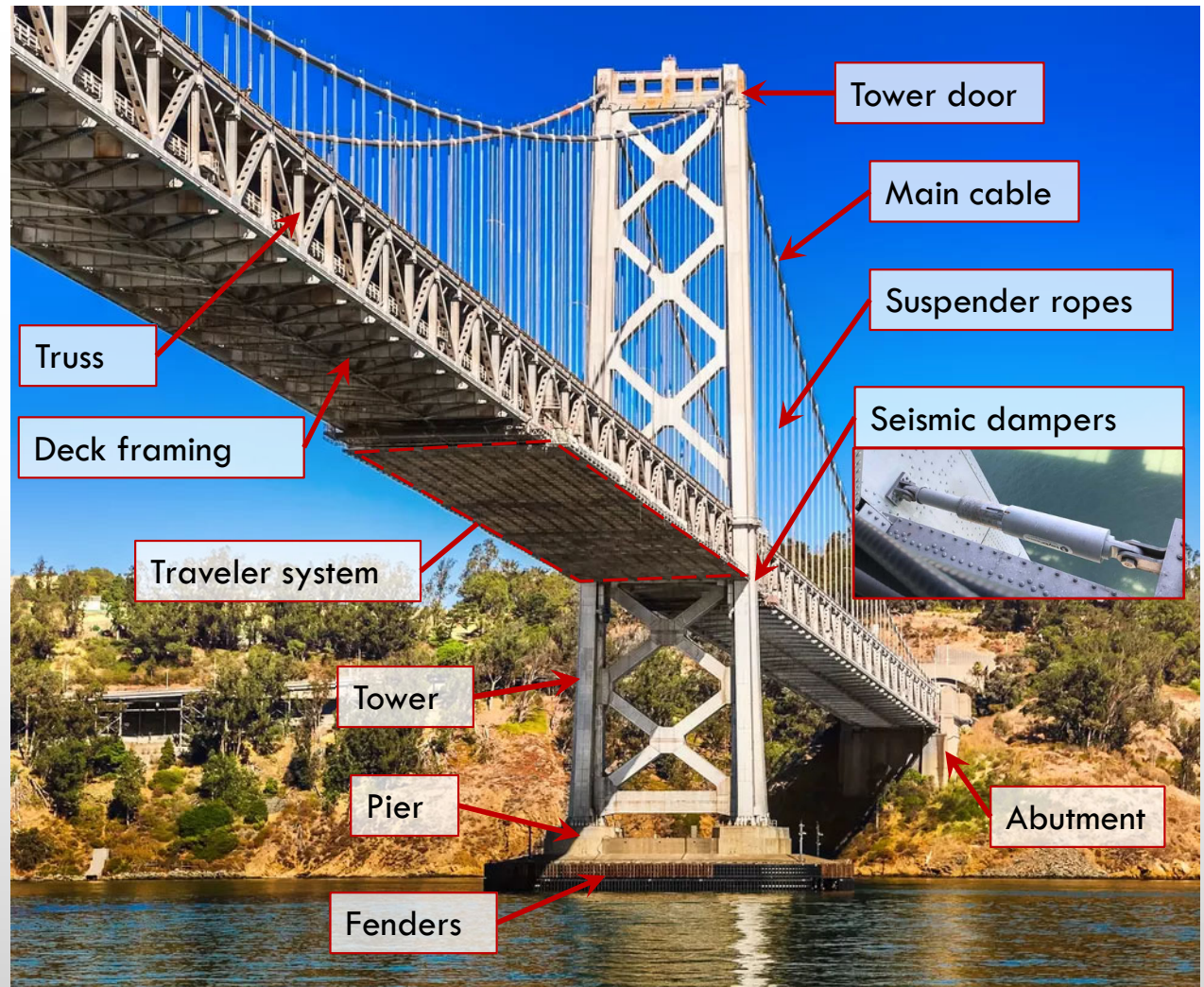
➤ Deck

- Structural Section
- Wearing Surfaces and Joints

➤ Structural Steel Paint

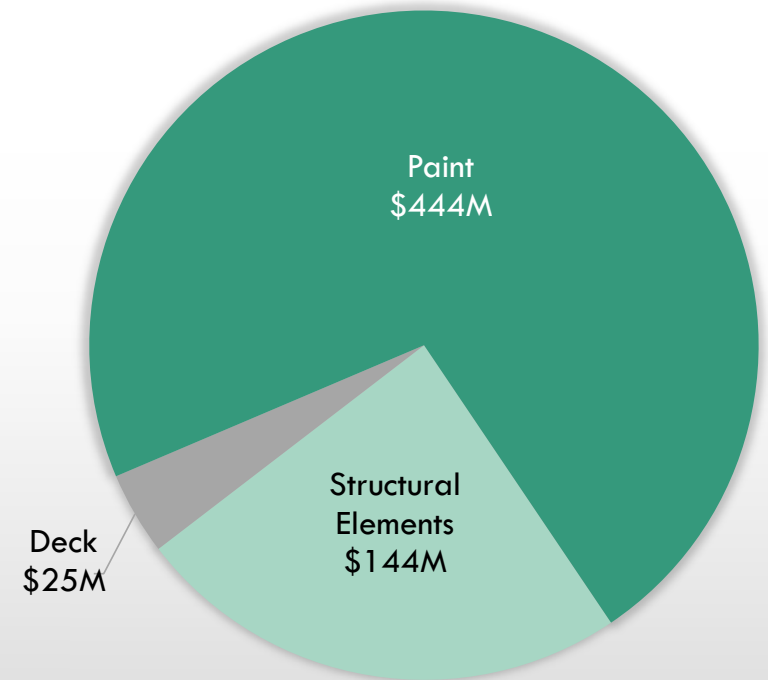
➤ Systems

- Navigational and Security
- Electrical and Mechanical Systems
- Traffic Operations



CALTRANS TOP 20 BRIDGE INTEGRITY PROJECTS

PRIORITY	PROJECT	CATEGORY	Cost* (\$M)
1	RSR PAINT PHASE 2	PAINT	60
2	RSR PAINT PHASE 3	PAINT	36
3	SMH PAINT PHASE 2	PAINT	11
4	SFOBB (WEST) DECK REPAIR	DECK	3
5	SFOBB PAINT PHASE 1 LOWER DECK	PAINT	10
6	SFOBB FENDER REPLACE	STRUCTURAL	90
7	SFOBB (WEST) JOINT RECONSTRUCTION	DECK	14
8	SFOBB PAINT PHASE 2 UPPER DECK	PAINT	26
9	SFOBB (WEST) IN DEPTH CABLE INVESTIGATION	STRUCTURAL	17
10	SFOBB WS MAIN CABLE DEHUMIDIFICATION	STRUCTURAL	30
11	RSR SEISMIC DAMPER REPLACE	STRUCTURAL	5
12	RSR PAINT PHASE 4, UPPER DECK FLOOR SYSTEM	PAINT	70
13	RSR PAINT PHASE 5, TOWERS	PAINT	52
14	BM (WEST) DECK AND JOINT REPAIRS	DECK	4
15	SFOBB WS PAINT PHASE 3 UPPER DECK FLOOR SYS	PAINT	13
16	SFOBB WS PAINT PHASE 4 TOWERS	PAINT	40
17	CARQUINEZ (WEST) DECK REHAB	DECK	4
18	CARQUINEZ (EAST) PAINT	PAINT	125
19	ANTIOCH FENDER REPLACE	STRUCTURAL	2
20	CARQUINEZ (WEST) SEISMIC TRANSMISSION UNITS	STRUCTURAL	1
Total =			\$613



* All Top 20 costs are Caltrans' estimates of capital outlay only



TOP 20: STRUCTURAL STEEL PAINT

- Structural steel paint protects the steel from corrosion caused by the salt marine environment.
- The seven bridges have 27M square feet of painted surface, and paint has a 25-year life with maintenance.
- A combination of State forces and contracted paint is necessary to catch up and maintain.



TOP 20: STRUCTURAL STEEL PAINT

- Richmond-San Rafael Bridge (\$218M)
 - Girder spans and deck trusses
 - Deck floor systems
 - Towers
- San Mateo-Hayward Bridge (\$11M)
 - Steel tower legs
- SFOBB (\$93M)
 - Deck floor systems & deck repairs
 - Towers
- Carquinez Bridge (\$125M)
 - Towers base to top of truss



TOP 20: BRIDGE DECKS

- » Deck Resurfacing, Rehabilitation, and Replacement
- » Expansion Joints and Joint Seals
- » Seismic Joints



TOP 20: BRIDGE DECKS

» SFOBB West Spans (\$1.4M)

- Replace 56 joints located on the northern side of the lower deck



» Benicia-Martinez (West) Deck and Joint Repairs (\$4M)

- Reconstruct/repair seismic expansion joints, bent cap, deck at centerline

» Carquinez (West) Bridge Deck Overlay (\$4M)

- Grind off top layer of asphalt, seal cracks, repave.



TOP 20: STRUCTURAL ELEMENTS

» Structural Components

- Steel Members
- Concrete Members
- Cable Systems
- Seismic Systems



TOP 20: STRUCTURAL ELEMENTS CONCRETE PIER REPAIRS AND PROTECTION

➤ SFOBB West Spans Piers Crack Mitigation (\$2M)

- At Piers W4 and W2 and YBI Anchorage

➤ SFOBB West Spans Skirt and Fender System Replacement (\$90M)

- At Piers W3 to W6

➤ Antioch Fender System Replacement (\$2M)

- At Piers 19 and 20



TOP 20: STRUCTURAL ELEMENTS CABLE SYSTEMS

» SFOBB West Spans Main Cable Investigation and Protection

- Part 1: Inspect main cable, analyze suspender ropes, repair tower door (\$17M)
- Part 2: Install main cable dehumidification (\$30M)

Photos are examples from non-BATA bridges



TOP 20: STRUCTURAL ELEMENTS SEISMIC SYSTEMS

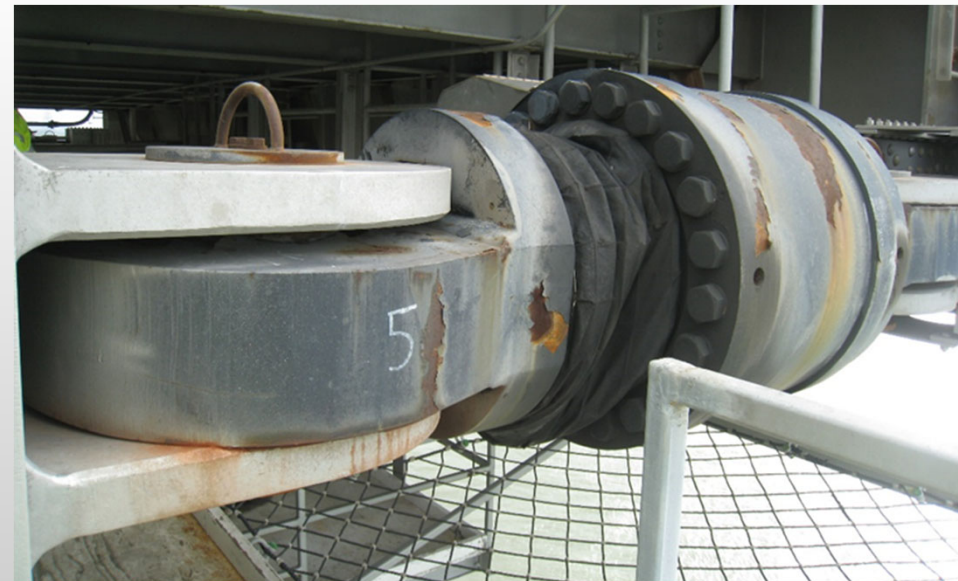
➤ Richmond-San Rafael Dampers (\$5M)

- Replace existing dampers (24 total) and install monitoring system



➤ Carquinez (East) Seismic Transmission Units (\$1M)

- Replace existing Seismic Transition Units (6 total)



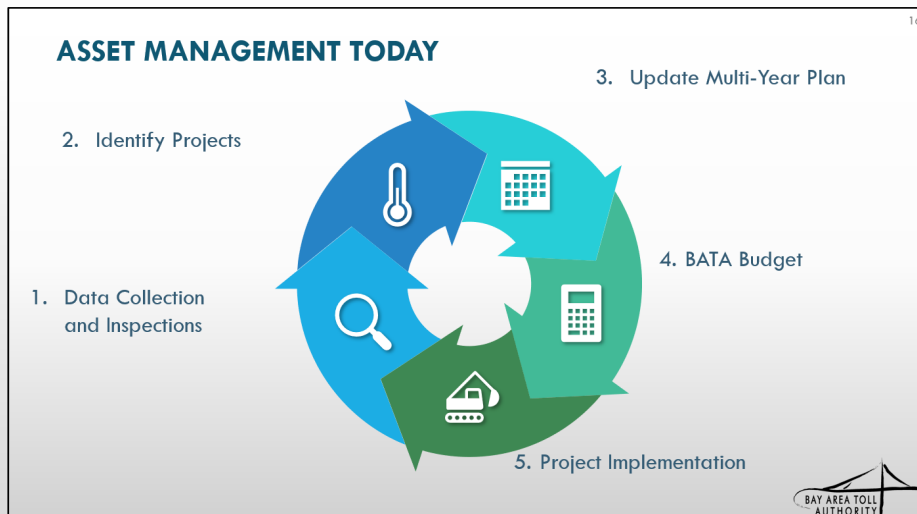
DIRECTOR'S ORDERS (RECENT EXAMPLES)

- » Uncommon and unpredictable
 - Carquinez Wild Fire Damage
- » Common but unpredictable
 - Collision/Car Fire Repairs
 - Deck Joints
 - Fender Repairs
- » Pending
 - Yerba Buena Island Tunnel Fire Suppression (In Design)



ASSET MANAGEMENT: WHERE CAN WE ADD VALUE?

Asset Management: A process to sustain the toll bridges in a desired state of good repair over their lifecycle at a minimum practicable cost.



➤ **Purpose:** Draw on the evolution of asset management best practices to strengthen the existing process.

➤ **Need:** Constrained funding and the increasing cost of maintaining infrastructure risk leading to asset deterioration.

ASSET MANAGEMENT ROADMAP

1. Evaluate Highest Cost Projects

Paint



- 72% of Top 20
- 28% of Identified Potential Projects

Decks



- 4% of Top 20
- 32% of Identified Potential Projects

2. Create Bridge Asset Management Plans

1. Desired State of Good Repair

2. Gaps

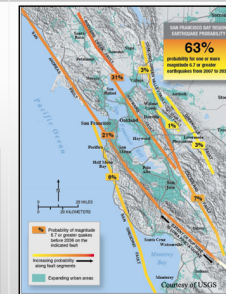


What is the condition today...

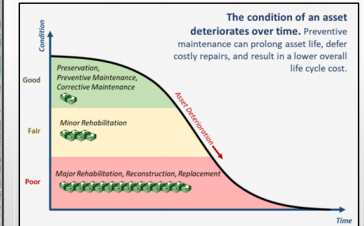


...versus the state of good repair?

3. Risks

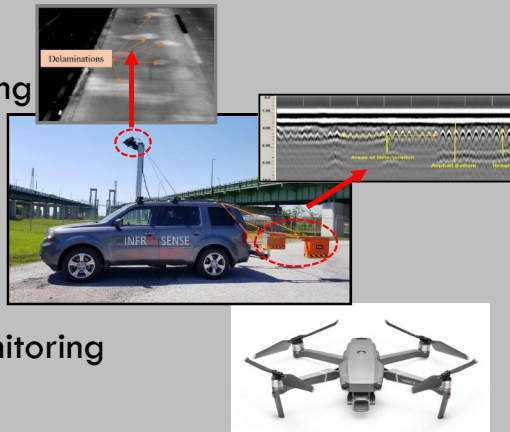


4. Lifecycle



4. Evaluate Tools

- Non-destructive testing
- Paint testing
- Digital twin
- Drone inspection
- Structural health monitoring
- ISO 55001

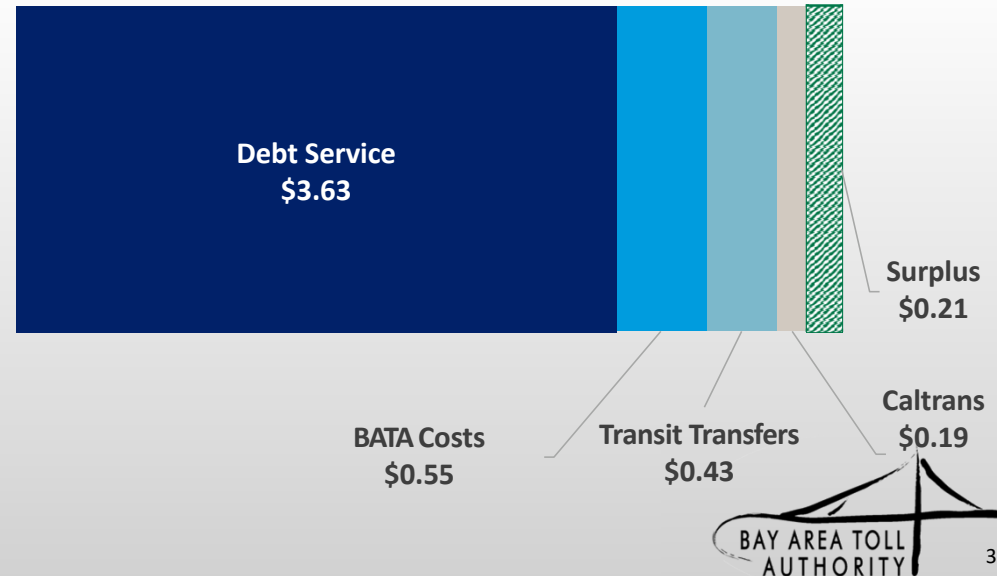
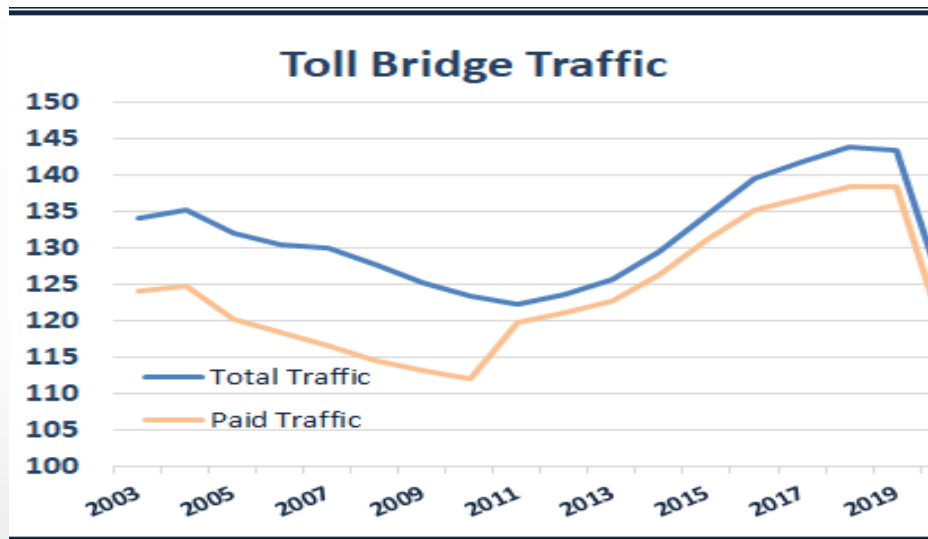


3. Deliver Projects Efficiently and Effectively

- Alternative delivery
 - Contracted vs state crews
 - Alternatives to design-bid-build
 - Streamline delivery of repetitive work
- Seek administrative-cost efficiencies
 - Review Caltrans overhead rate
 - Position eligible projects for federal stimulus

IMPACTS OF COVID-19 AND PRIORITIZATION

CURRENT REHABILITATION BUDGET ADJUSTED DOWNWARD DUE TO CURRENT ECONOMIC CRISIS



- Currently, the Toll Bridge Rehabilitation Program is a paygo program from surplus revenues.

CURRENT REHAB BUDGET ADJUSTED DOWN \$190M

The significant and sustained decline in toll revenue has reduced the near-term cash flow to the Rehabilitation program over next five years.

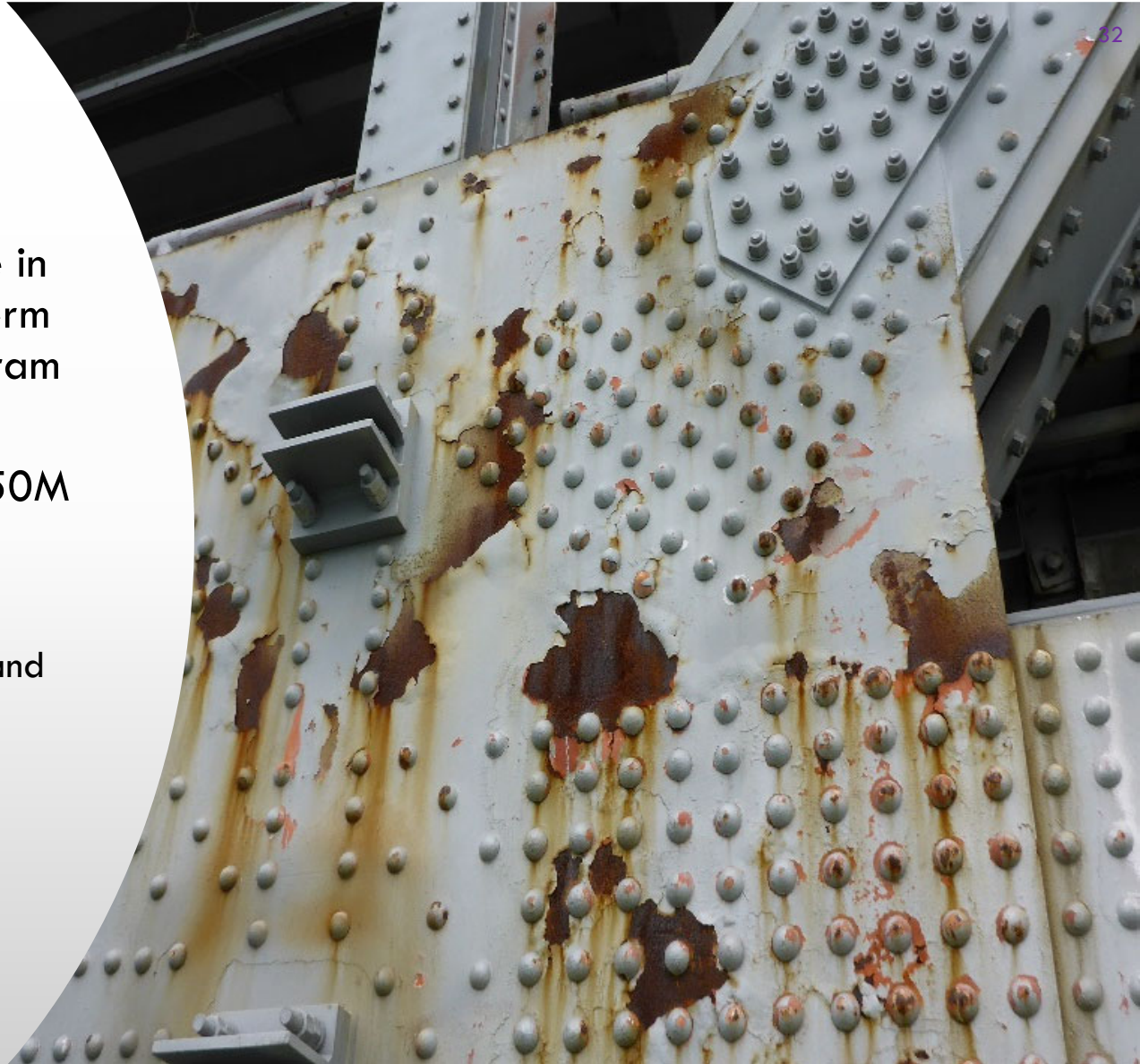
Overall, program reduced from \$750M to \$560M (FY21-FY29)

» Prioritized Projects

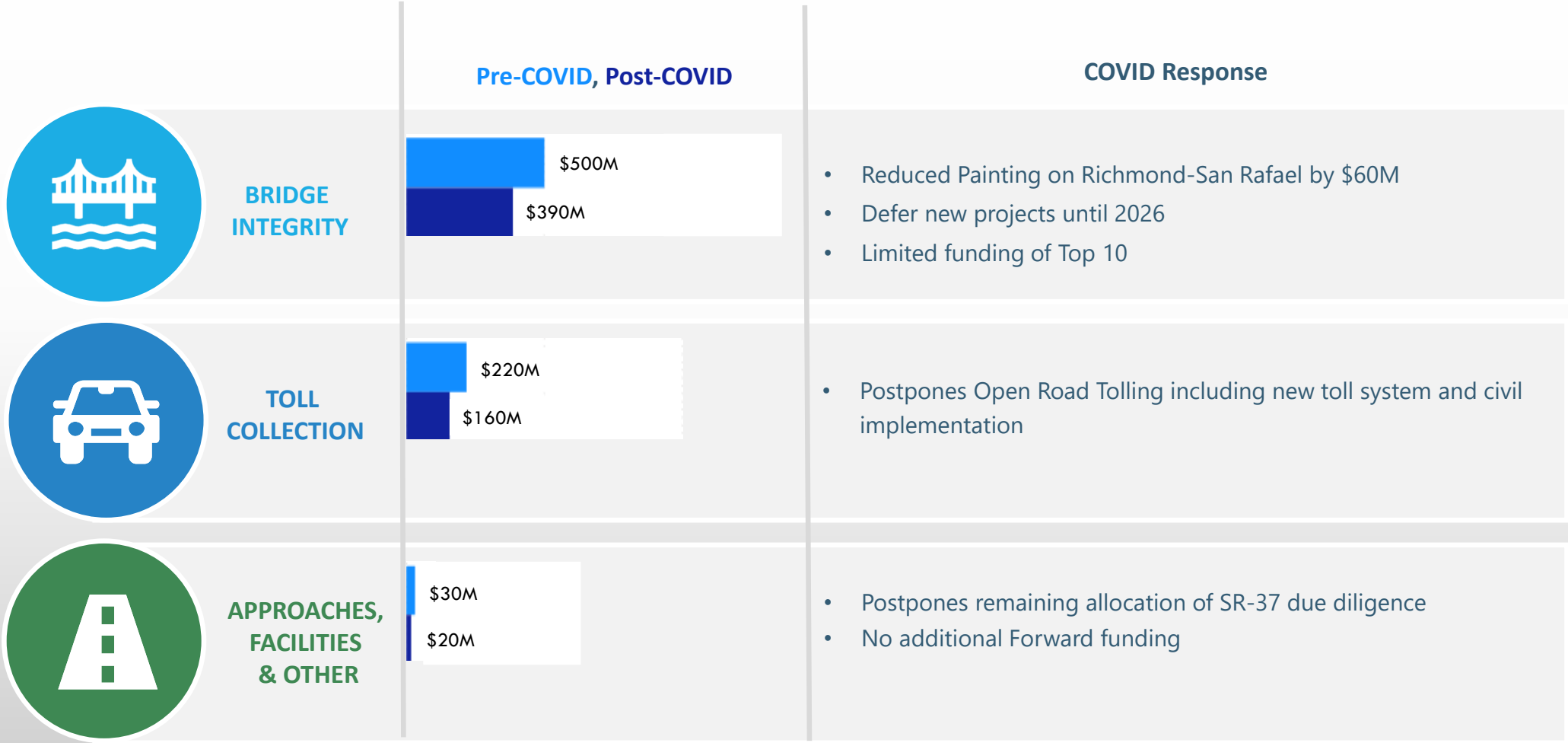
- On-going operations, maintenance, and inspections
- Completing projects in construction
- Funding projects near delivery

» Rescoping projects


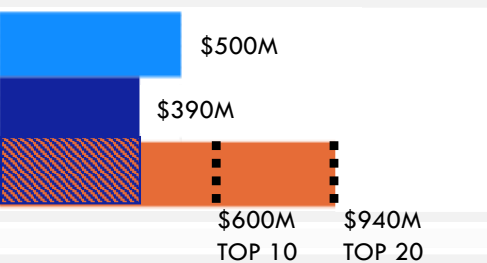




» Postponing projects



COVID IMPACTS TO TOLL BRIDGE REHABILITATION PROGRAM



WHAT COULD WE DO WITH ADDITIONAL FUNDS?

	Pre-COVID, Post-COVID, and Top Priorities	Additional Funding Needs	Potential NON-BATA Funding Sources
 BRIDGE INTEGRITY		<ul style="list-style-type: none"> Top 10 Projects (\$210M) Top 20 Projects (\$550M) 	<ul style="list-style-type: none"> Federal stimulus or reauthorization funding for eligible bridges (SFOBB, Benicia-Martinez, Richmond-San Rafael)
 TOLL COLLECTION		<ul style="list-style-type: none"> Open Road Tolling (\$60M) 	<ul style="list-style-type: none"> Other Operators or other State and Federal funding
 APPROACHES, FACILITIES & OTHER		<ul style="list-style-type: none"> Complete project development of RSR Forward and SFOBB Forward (2020) (\$9M) Remaining SR37 Due Diligence (\$12M) 	<ul style="list-style-type: none"> Other State and Federal funding for shared responsibility assets

CONCLUSIONS

- The toll bridges are key regional assets. BATA has invested billions to preserve them and will spend billions more in the future.
- Near term: Reduction in toll revenue due to COVID-19 has resulted in the delay of \$190M in rehabilitation program projects.
 - Seek funds to minimize delay for important projects
 - Seek cost efficiencies
 - Investigate alternative delivery options for paint projects
 - Expand Asset Management Program to optimize lifecycle costs
- Long term: Assuming return of toll revenue and the 2027 toll increase modeled in the financial plan, funding should be available to fund the future bridge needs in the Toll Bridge Rehabilitation Program.