



5. Measure RR BART Safety, Reliability and Traffic Relief Program Presentation (For Discussion)

Bond Oversight Committee
June 17, 2022



Bond Oversight Committee

Duties & Responsibilities

- Provide diligent, independent and public oversight over the expenditure of funds from the sale of District general obligation bonds
- Assess how bond proceeds are invested to ensure that all spending is authorized by the ballot measure
- Assess whether projects funded by bond proceeds are completed in a timely, cost-effective and quality manner consistent with the best interest of BART riders and District residents
- Publish an annual report that includes a detailed account of the Committee's activities including its expenditures

Executive Summary

- Through March 2022, \$1.26B of the Measure RR funds have been invested to complete 38% of the work
- Successes
 - Completion of Design of Fire Suppression Upgrade System Wide Phase 1, Balboa Park – Upper Plaza project
 - Begin Construction for Turntable Replacement at Concord Yard
 - Bridge Opening for Warm Springs West Pedestrian Bridge and Plaza Project
 - Completion of Construction for Public Restrooms for Powell and 19th Street Stations
- Challenges
 - COVID-19
 - Material availability
 - Schedule recovery from stop notice issued to consultant team
 - Emergency repairs impacted capital improvement work

# Projects in Planning	# Projects in Design	# Projects in Bid/Award	# Projects in Construction	# Projects Completed	TOTAL # Projects
3	37 (-5)	18 (+4)	50 (+2)	43	151(+1)

- + (Projects added in the phase)
- (Projects no longer in the phase)

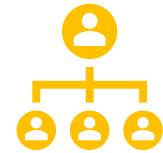
Introduction



Measure RR Project Successes



Preview of Next Year's Projects by Program



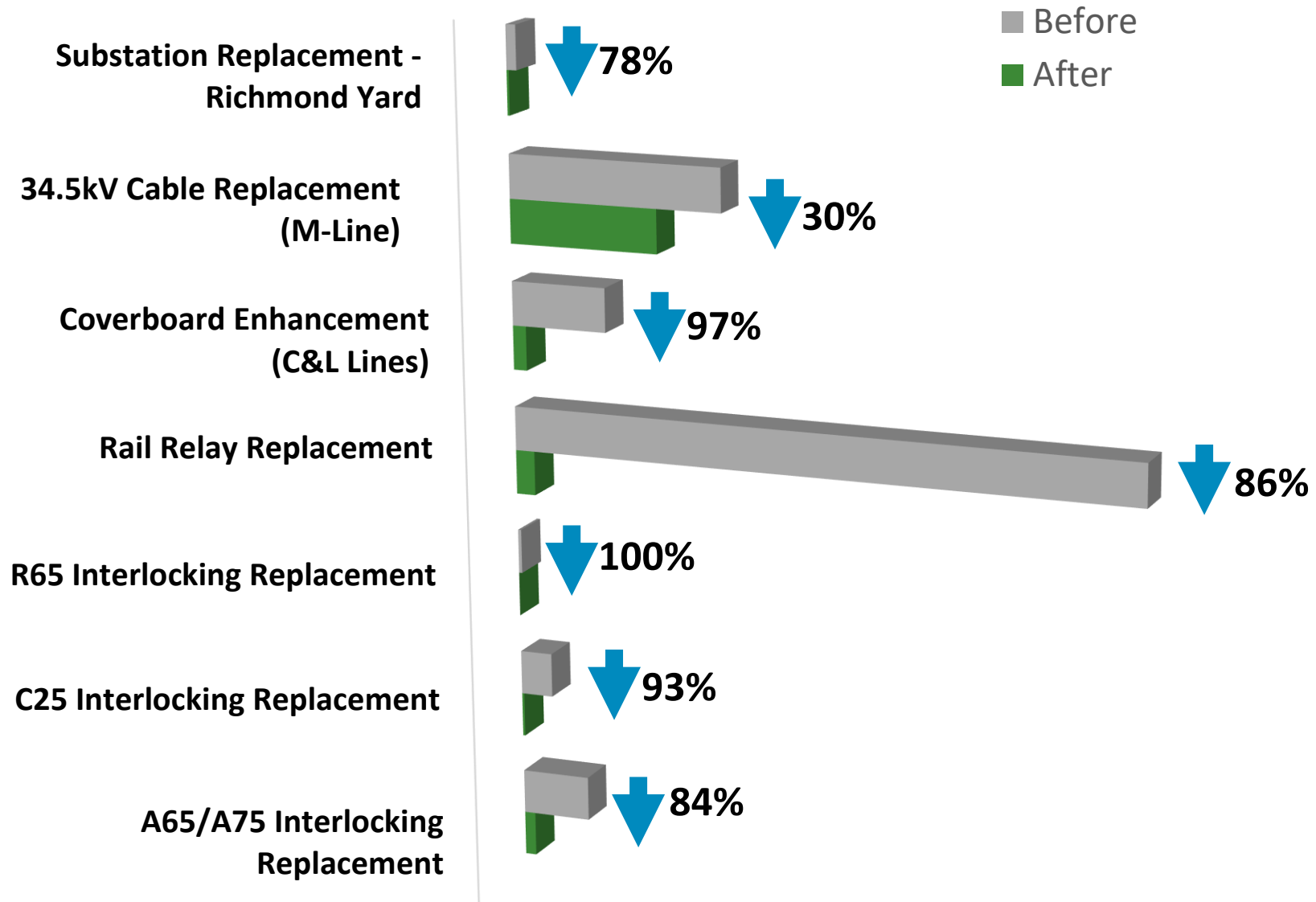
Staff Organization Chart



Appendix: Financial Outlook, Project Status
& Milestones

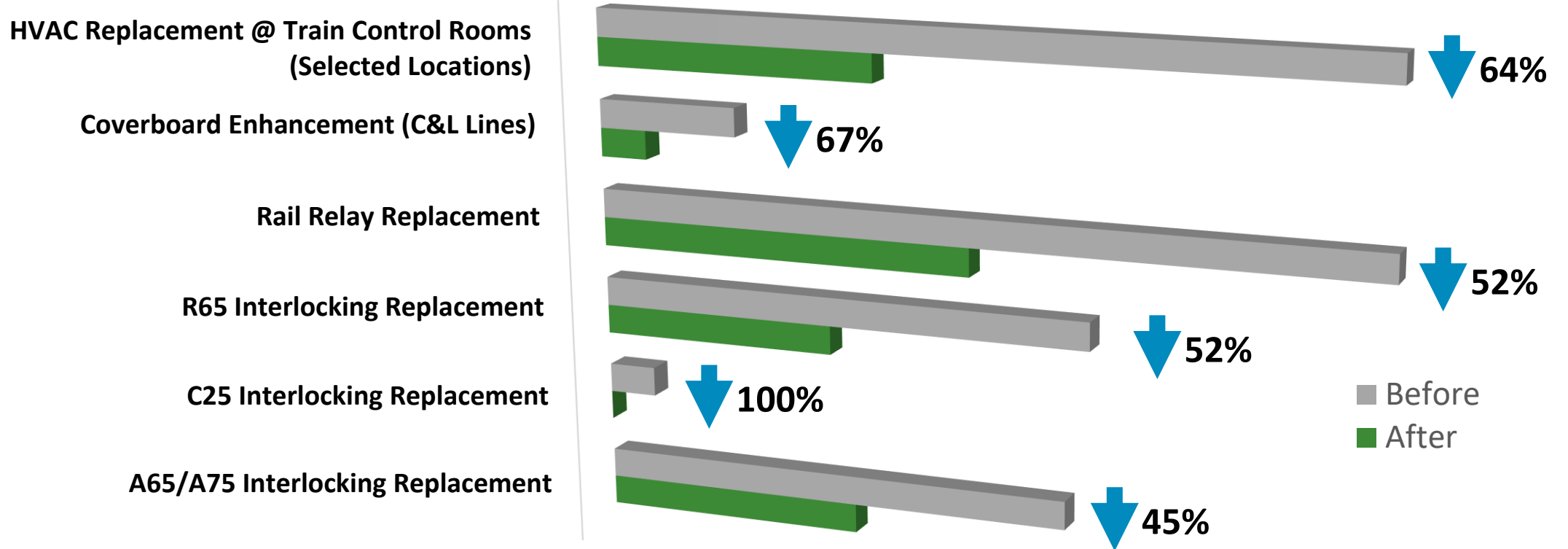
5.A. Measure RR Project Successes

Service Delay Improvement



% values are measured based on delayed trains/ year

Unscheduled Maintenance Improvement



% values are measured based on Number of Work Orders

Project Progress – Accomplishments

Period of Performance: April 2021 to March 2022



Renew Track

- *R65 interlocking replacement*
- *Replacement of 8 miles of rail*



Renew Power

- *Emergency 34.5kV cable replacement R Line*
- *Replacement of 19 miles of 34.5kV Cable*



Repair Tunnels & Structures

- *Construction of safety barriers*
- *Transbay tube M1 bore earthquake retrofit*



Renew Mechanical

- *Renovation of Richmond Yard fire infrastructure*
- *HVAC replacements at 6 facilities*



Replace Train Control/ Increase Capacity

- *CBTC conceptual design review*
- *Initial surveys for train control rooms*



Renew Stations

- *Construction of El Cerrito del Norte*
- *Construction of Union City station modernization*



Safe Access to Stations

- *Reconfiguration of Dublin/Pleasanton parking lot*
- *Construction of new eBART Antioch parking lot*



Relieve Crowding

- *Begin steel erection for Civic Center station scissor stairs*
- *60% Design of Hayward maintenance complex phase 2: east storage yard*



Project Progress Overview

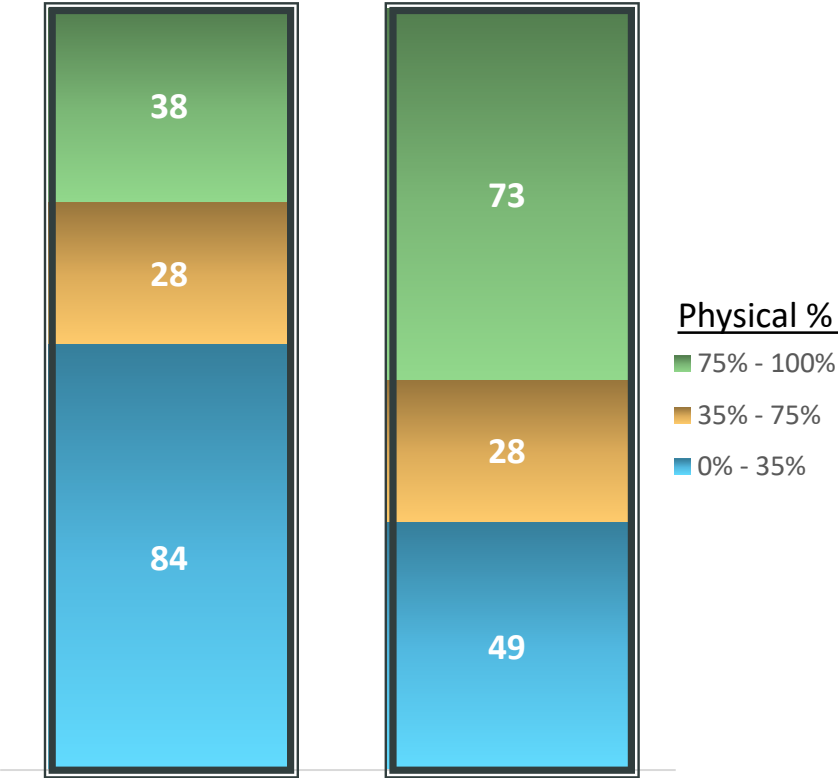
Period of Performance: April 2021 to March 2022

Contract → Self-Perform
Construction



* - Estimated Construction RR Dollars

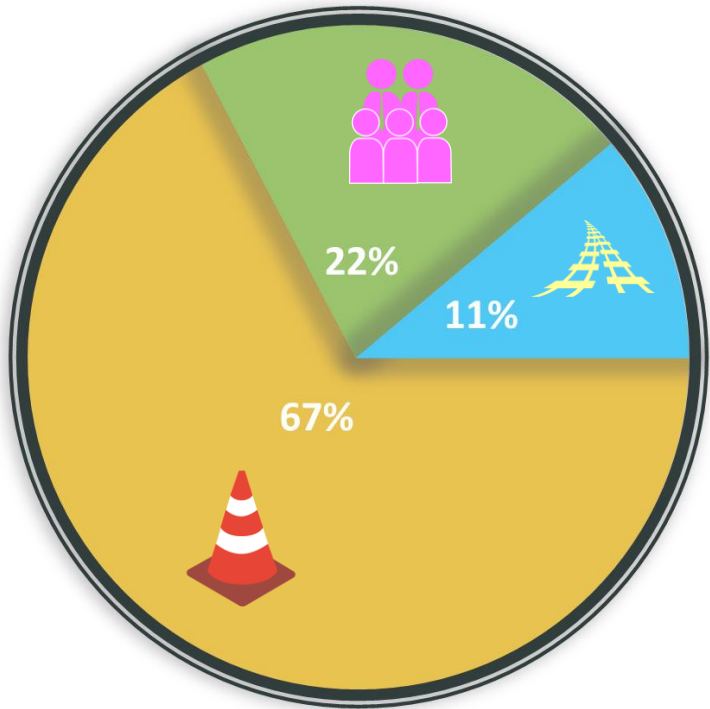
Work Progression



2021 2022

Values represent Count of Projects

Purchase Orders Issued



Professional & Tech Services



Construction



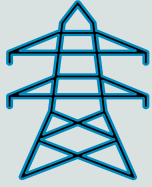
Materials

% based on estimated RR dollars





Richmond Line - Update



BART Traction Power System Overview

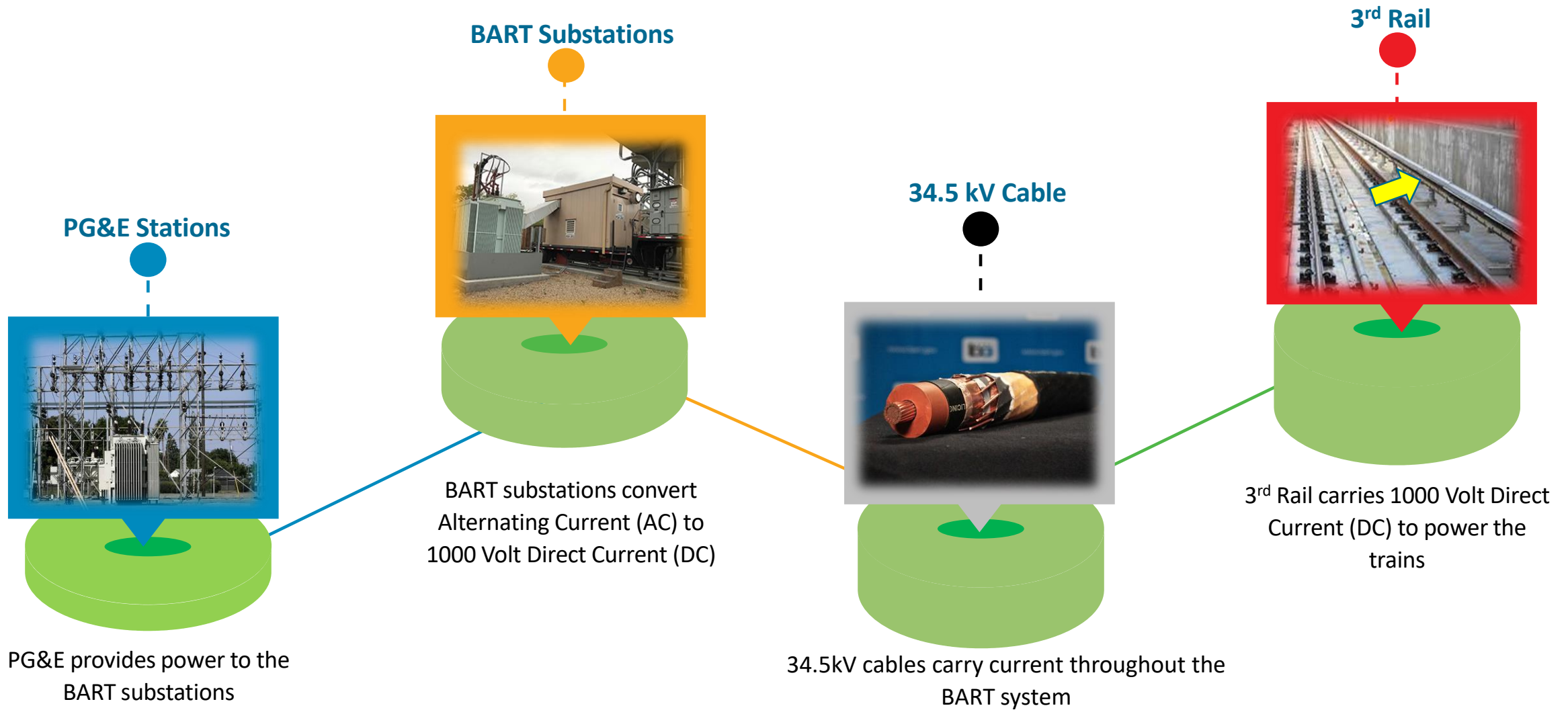


Event Summary

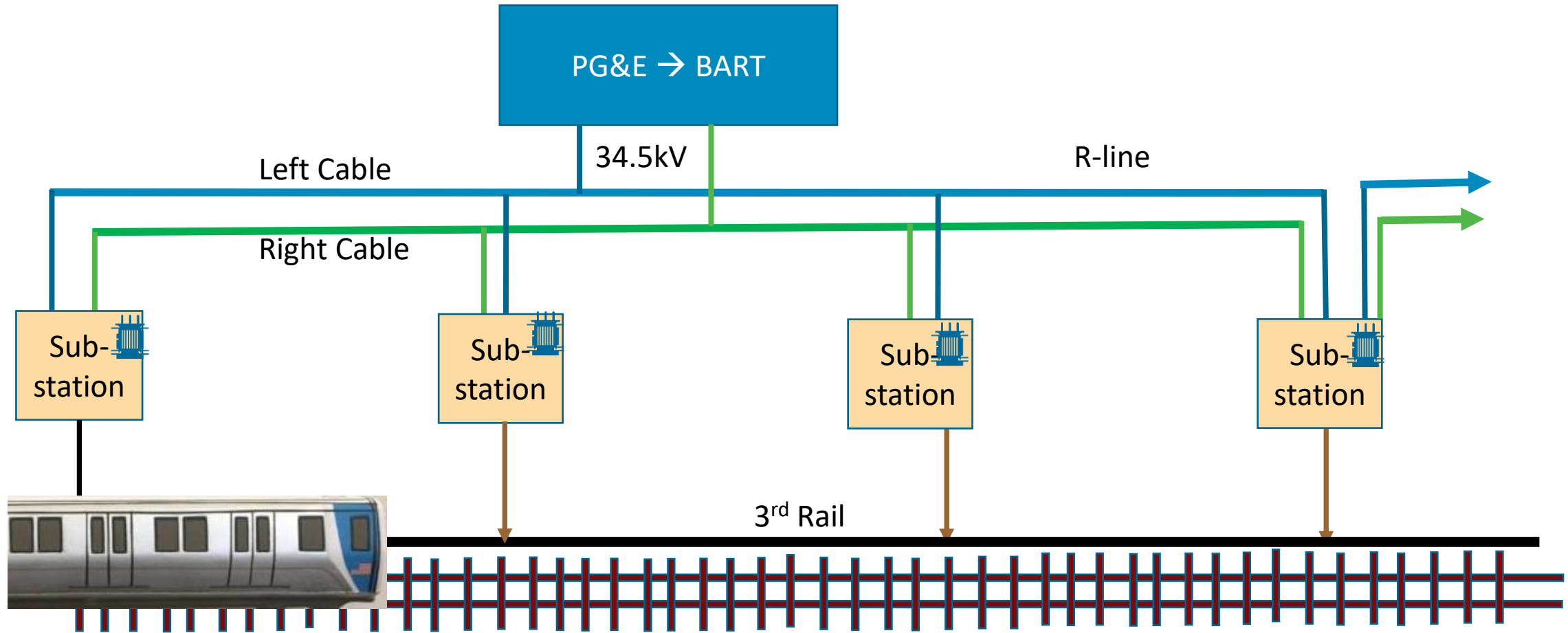


Service Restoration

BART Traction Power Overview



BART Traction Power System Redundancy



Richmond Line Faults



Left Cable El Cerrito del Norte



Right Cable El Cerrito del Norte



El Cerrito Plaza Substation

Why BART's red line is still out of service, and when it might return

Limited BART Service Returns To Richmond's Red Line

Trouble on BART's Richmond line may take weeks to repair, officials say

BART 'may resume full Red Line service in the coming weeks' following power cable failure

Update: BART resumes service on Red Line through Berkeley

BART line suspended 'for a few days'

BART in the News!!!!

Plan of Action Overview

INVESTIGATION

- Site Evaluation
- Forensic
- Root Cause



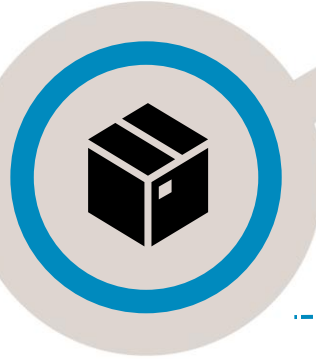
COMMUNICATIONS

- Provided periodic service updates to the Public
- Updated Board of Directors



COLLABORATION

- Maintenance & Engineering
- Community Relations
- Transportation
- Rolling Stock & Shops
- Operations Planning
- Contractor
- 3rd Party



ACTIONS TAKEN BY TEAM

- Mobilized Team Immediately
- Analysis Launched
- Evaluate service for Red & Orange lines
- Develop Service Restoration Plan



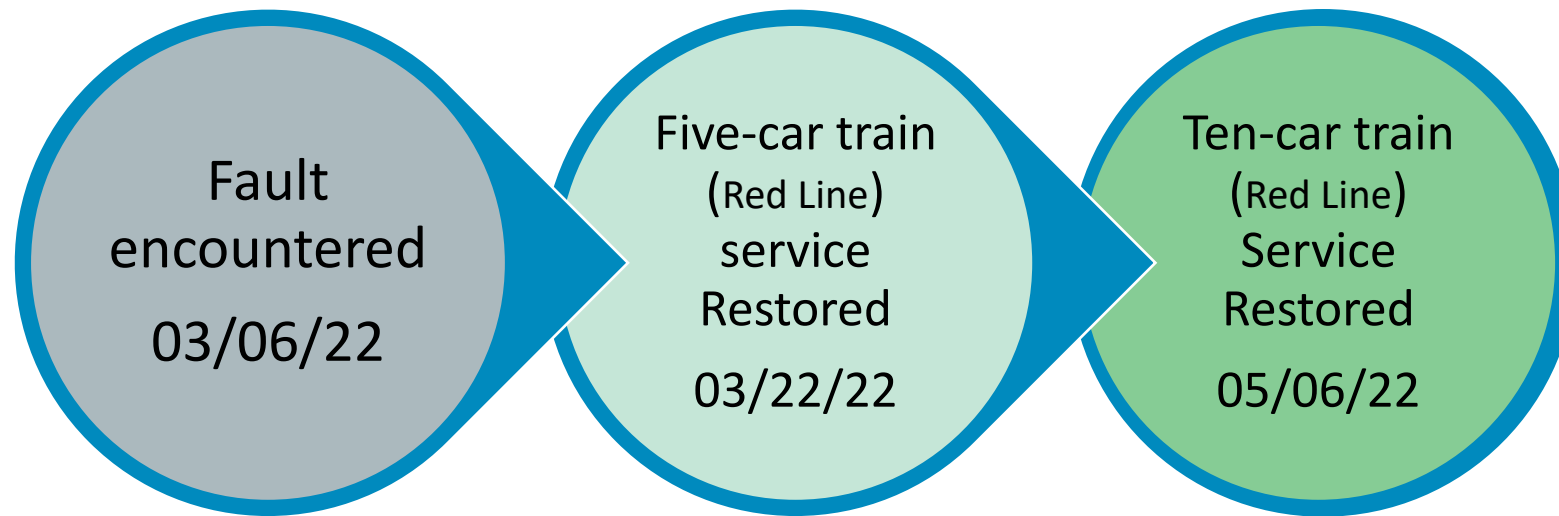
SIMULATION

- Load Study, Train Configuration
- Performed Scenarios of Train Length and Frequency

Restore Service



Richmond Lines - Restored



5.A.1. Q&A

5.B. 10 Minute Break

5.C. Preview of Next Year's Projects by Program

Project Progress – Forecast

Period of Performance: April 2022 to March 2023



Renew Track

- *Complete A77 Interlocking*
- *Complete Rail Reprofilng*



Renew Power

- *Complete M-Line 34.5kV Cable replacement*
- *Award Construction Contract for CWC Substation*



Repair Tunnels & Structures

- *Complete Fence replacement at Richmond Yard*
- *Begin construction for water intrusion at Escalator & Elevator*



Renew Mechanical

- *Advertisement for wheel truing facility*
- *Complete Turn Table Construction at Concord yard*



Replace Train Control/ Increase Capacity

- *Receive Release #2 of the ATS Software from Hitachi*
- *Begin installation of LIDAR survey bench markers on W, Y, M Lines*



Renew Stations

- *Complete Escalator construction (Phase 2&3)*
- *Complete Canopy Construction (4 Locations)*



Safe Access to Stations

- *Final Acceptance for Warm Springs West Access Bridge*



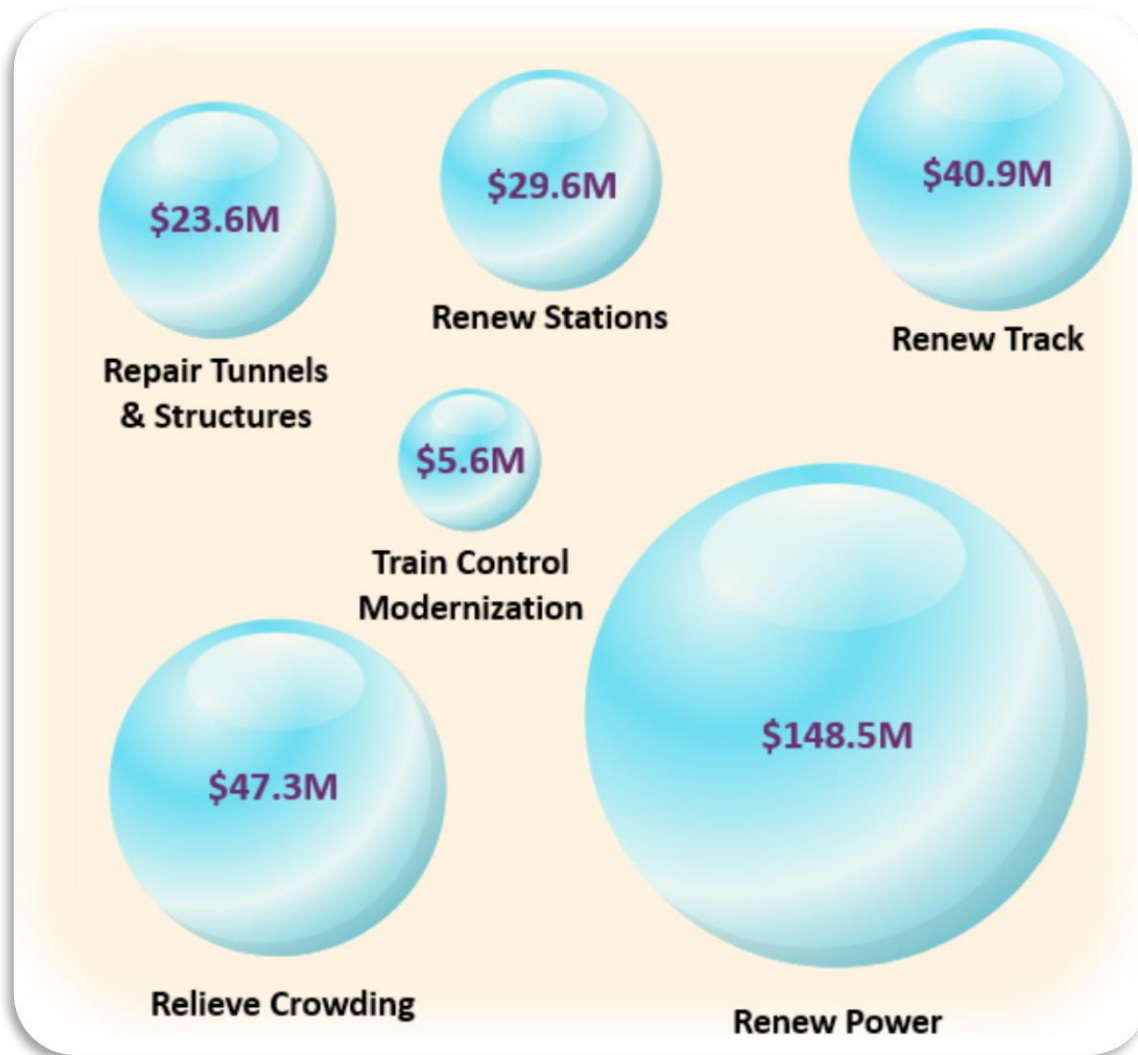
Relieve Crowding

- *Complete Civic Center Scissor Stairs Project*

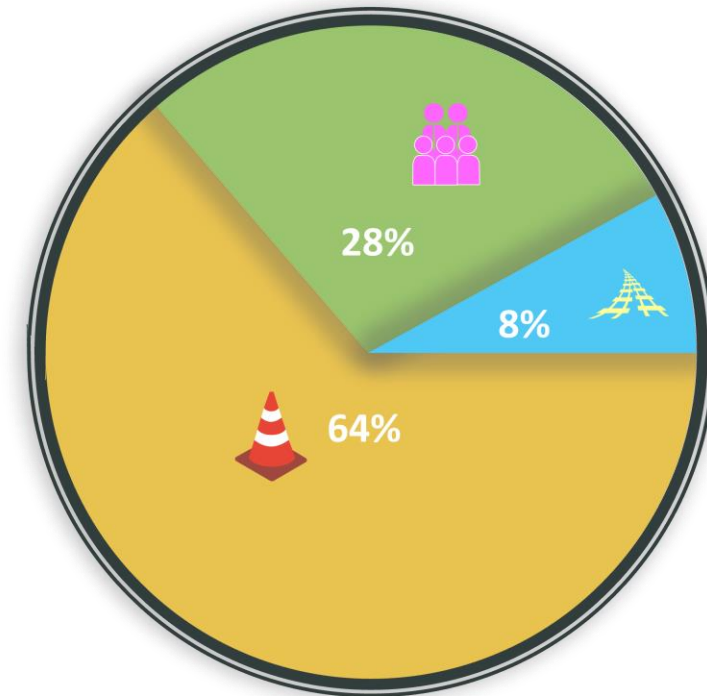





Project Progress - Forecast

FY23 Capital Budget - RR Investment



Purchase Order Issuance



-  Professional & Tech Services
-  Construction
-  Materials

Period of Performance: April 2022 to March 2023

% based on estimated RR dollars

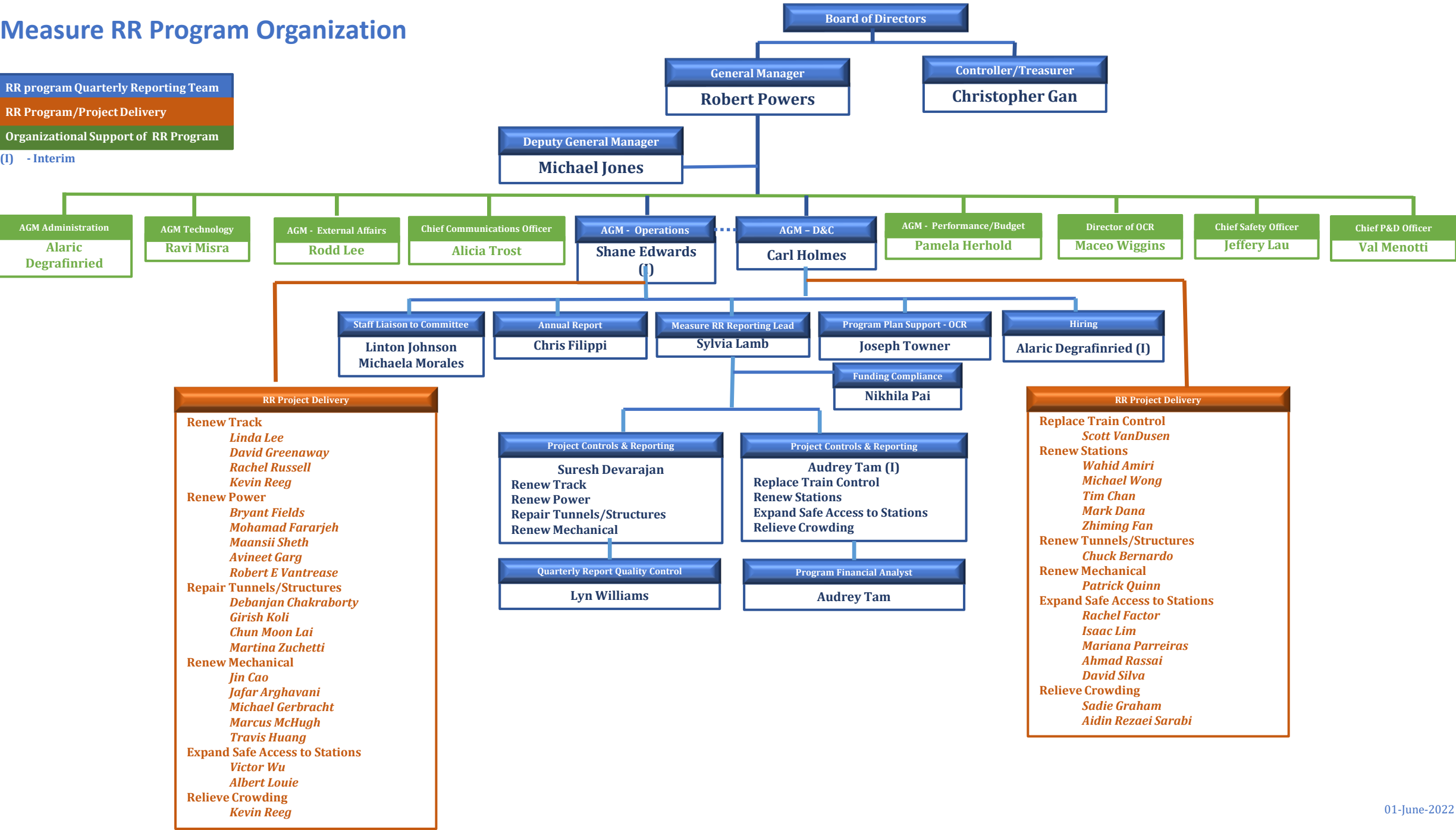


5.C.1. Q&A

5.D. Staff Organization Chart Q&A

Measure RR Program Organization

- RR program Quarterly Reporting Team
- RR Program/Project Delivery
- Organizational Support of RR Program
- (I) - Interim



5.E. Appendix: Financial Outlook, Program Status & Milestones Q&A



BART Safety, Reliability, and Traffic Relief Program (Measure RR) Update

(Not To Be Presented)



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RR Program Small Business & Outreach



RR Program Update – Small Business

Program	Total RR Commitment	Total RR SB Commitment	SB Commitment %	# of SB Contracts	Total RR Payments on RR Contracts	RR Payments to SBs	SB Payment %
Renew Track	\$150.9 M	\$33.8 M	22%	141	\$115.2 M	\$23.4 M	20%
Renew Power	\$361.3 M	\$115.1 M	32%	312 (+18)	\$227.2 M	\$105.1 M	46%
Repair Tunnels & Structures	\$144.2 M	\$30.3 M	21%	146	\$110.4 M	\$14.9 M	14%
Renew Mechanical	\$35.1 M	\$12.1 M	34%	78	\$23.7 M	\$9.2 M	39%
Replace Train Control/Increase Capacity	\$31.8 M	\$6.5 M	21%	117	\$22.2 M	\$2.5 M	11%
Renew Stations	\$150.7 M	\$28.6 M	19%	121	\$41.4 M	\$9.5 M	23%
Expand Safe Access to Stations	\$20.4 M	\$6.2 M	30%	163	\$13.4 M	\$4.7 M	35%
Design/Engineer to Relieve Crowding	\$136.0 M	\$34.7 M	26% (+4%)	191 (+33)	\$65.6 M	\$17.6 M	27%
Total	\$1,030.4 M	\$267.3 M	26% (+1%)	1268 (+84)	\$619.2 M	\$187.0 M	30%

Notes: All amounts are based on RR fund percent only. Amounts are updated to Apr. 30, 2022. Includes formal contracts only; does not include informal purchases or work performed by BART's own forces. SB totals include DBEs, MSBEs, SBs, and LSBs. Sources: RR commitments are based on RR Requisitions report, Procurement Sealed Bids Report and PeopleSoft Work Plans application. RR% for each project is based on Financial Analysts' report, RR Funds / Total Project Budget. Payments based on PeopleSoft and B2GNow.



RR Program Update – 2022 Outreach



Recently Completed Events

- Small Business Construction Expo – Richmond, CA
- Meet Project Staff and Learn About Upcoming M&E Opportunities - Zoom



Upcoming Events

- Learn BART's Procurement Process and Meet Procurement Staff – Zoom
- Intro to Equity Programs – OCR Series of Recorded Training Videos for Small Businesses

Work Progress Since Last Meeting



Measure RR – Project Progress



- ## Renew Power Infrastructure

- ## Renew Tunnel & Structures

- Renew Mechanical

- ### Design/Engineer to Relieve Crowding

- ## Renew Stations

- ## Expand Safe Access

- ### Replace Train Control/Increase Capacity

- 18 Train Control Rooms (Systemwide Not Mapped) – Ongoing Construction*



Individual Program Milestones



Renew Track

STATUS & MILESTONES

EXPENDED Thru 3/2022: **\$313.7**

FORECAST Thru 6/2025: **\$433.5**

TOTAL PROGRAM VALUE: **\$625**

PERIOD CASHFLOW: **\$10.6**

STATUS – Renew Track

# Projects in Planning	# Projects in Design	# Projects in Bid/Award	# Projects in Construction	# Projects Completed	TOTAL # Projects
0	2	1	8	9	20

MILESTONES			
Completed (Jan 2022 – Mar 2022)	Q4 (Apr 2022 – Jun 2022)	Q1 (Jul 2022 – Sept 2022)	Q2 (Oct 2022 – Dec 2022)
<ul style="list-style-type: none"> Issue for Bid K Line Interlocking Replacement Special Trackwork (near Rockridge Station) 	<ul style="list-style-type: none"> Issue for Bid K Line Interlocking Replacement Special Trackwork (near MacArthur Station) Contract Award for K Line Interlocking Replacement Special Trackwork (near Rockridge Station) 	<ul style="list-style-type: none"> <i>Substantial Completion of Construction by Contractor Oakland Yard Tracks</i> <i>Completion of Design K Line Interlocking Replacement</i> <i>Issue for Bid for K Line Interlocking Replacement Traction Power Materials</i> 	<ul style="list-style-type: none"> <i>Substantial Completion of Construction A77 Track Interlocking Replacement</i> <i>Contract Award K Line Interlocking Replacement Special Trackwork (near MacArthur Station)</i> <i>Substantial Completion of Rail Reprofiling (Systemwide)</i>

Italic: Modified milestones from previous report.



Renew Power

STATUS & MILESTONES

EXPENDED Thru 3/2022: **\$472.7**

FORECAST Thru 6/2025: **\$868.0**

TOTAL PROGRAM VALUE: **\$1,225**

PERIOD CASHFLOW: **\$32.8**

STATUS – Renew Power Infrastructure

# Projects in Planning	# Projects in Design	# Projects in Bid/Award	# Projects in Construction	# Projects Completed	TOTAL # Projects
0	5	4	18	2	29

MILESTONES			
Completed (Jan 2022 – Mar 2022)	Q4 (Apr 2022 – Jun 2022)	Q1 (Jul 2022 – Sept 2022)	Q2 (Oct 2022 – Dec 2022)
<ul style="list-style-type: none"> Issue for Bid Station Fire Alarm Replacement Phase 3 	<ul style="list-style-type: none"> Completion of Power to the Transbay Tube for the Oakland Emergency Generator Project Completion of Design for the K Line 34.5kV Cable Replacement Substantial Completion of Steppable Trays and AFM IDS Installation for A Line 34.5kV Cable Replacement 	<ul style="list-style-type: none"> Completion of Design for MET G Generator Replacement Project <i>Issue for Bid Walnut Creek Traction Power Substation Replacement</i> 	<ul style="list-style-type: none"> <i>Contract Award Station Fire Alarm Replacement Phase 3</i> <i>Issue for Bid PG&E Feed for Gap Breaker Project</i> <i>Substantial Completion of CWS Transformer Replacement</i>

Watchlist:

- Bid Package Development for Walnut Creek Traction Power Substation Replacement

Italic: Modified milestones from previous report.



Tunnels & Structures

STATUS & MILESTONES

EXPENDED Thru 3/2022: \$186.7

FORECAST Thru 6/2025: \$318.3

TOTAL PROGRAM VALUE: \$549

PERIOD CASHFLOW: \$11.2

STATUS – Repair Tunnels & Structures

# Projects in Planning	# Projects in Design	# Projects in Bid/Award	# Projects in Construction	# Projects Completed	TOTAL # Projects
0	9	2	7	8	26

MILESTONES			
Completed (Jan 2022 – Mar 2022)	Q4 (Apr 2022 – Jun 2022)	Q1 (Jul 2022 – Sept 2022)	Q2 (Oct 2022 – Dec 2022)
<ul style="list-style-type: none"> Completion of Design for Slope Stabilization (MW-12) 	<ul style="list-style-type: none"> Completion of Construction for Renew Catwalks - Phase 1 Completion of Design for Water Intrusion at Track and Platform Joint at C and R Lines Completion of Design for Water Intrusion at Track and Platform Joint at A Line 	<ul style="list-style-type: none"> Completion of Design for Slope Stabilization Systemwide Completion of Design for Tunnel Waterproofing at R Line Begin Construction for Water Intrusion at Escalator & Elevator 	<ul style="list-style-type: none"> Completion of Construction Aerial Fall Protection (A Line North & Central) Completion of Design for Tunnel Waterproofing at M Line Completion of Construction for Richmond Yard Fence Rehabilitation Completion of Design for Water Intrusion at Train Control Rooms (Package 2)

Italic: Modified milestones from previous report.



Renew Mechanical

STATUS & MILESTONES

EXPENDED Thru 3/2022: **\$68.7**

FORECAST Thru 6/2025: **\$133.0**

TOTAL PROGRAM VALUE: **\$156**

PERIOD CASHFLOW: **\$2.7**

STATUS – Renew Mechanical

# Projects in Planning	# Projects in Design	# Projects in Bid/Award	# Projects in Construction	# Projects Completed	TOTAL # Projects
1	7	4	4	10	26

MILESTONES			
Completed (Jan 2022 – Mar 2022)	Q4 (Apr 2022 – Jun 2022)	Q1 (Jul 2022 – Sept 2022)	Q2 (Oct 2022 – Dec 2022)
<ul style="list-style-type: none"> • Notice to Proceed for Fire Services at Hayward Yard • Begin Construction for Turntable Replacement at Concord Yard • Completion of Design for Fire Suppression Upgrade System Wide Phase 1 	<ul style="list-style-type: none"> • Completion of Construction for Rotoclones Replacement • Completion of Design for LMA HVAC Renovation • Completion of Design for Control Tower HVAC 	<ul style="list-style-type: none"> • Completion of Design Facilities HVAC Replacement (Yard Control Towers) • <i>Begin Construction for Fire Services at Hayward Yard</i> • <i>Procurement of Concord Yard Wheel Truing Machine</i> 	<ul style="list-style-type: none"> • <i>Issue for Bid LMA HVAC Renovation</i> • <i>Issue for Bid Concord Yard Wheel Truing Facility Construction</i>

Replace Train Control

STATUS & MILESTONES

EXPENDED Thru 3/2022: **\$61.6**

FORECAST Thru 6/2025: **\$113.1**

TOTAL PROGRAM VALUE: **\$400**

PERIOD CASHFLOW: **\$6.6**

STATUS – Replace Train Control / Increase Capacity

# Projects in Planning	# Projects in Design	# Projects in Bid/Award	# Projects in Construction	# Projects Completed	TOTAL # Projects
0	0	2	4	0	6
MILESTONES					
Completed (Jan 2022 – Mar 2022)	Q4 (Apr 2022 – Jun 2022)	Q1 (Jul 2022 – Sept 2022)	Q2 (Oct 2022 – Dec 2022)		
<ul style="list-style-type: none"> Resolve Vital Train Length testing on Test Track Review of the Automatic Train Supervision (ATS) Human Machine interface (HMI) Specification and ATS Sub-system requirement specifications Issue for Bid for Enabling Works (Vehicle Procurement) 	<ul style="list-style-type: none"> Begin installation of LIDAR survey bench markers on W, Y, M Lines Complete CBTC Preliminary Design – Gate 1 and start CBTC FDR. Begin prep work for Enabling Works In-house and NTP for non-revenue equipment Hi-Railers 	<ul style="list-style-type: none"> Complete CBTC Preliminary Design – Gate 2 and continue FDR Start Automatic Train Supervision (ATS) Human Machine Interface (HMI) & ATS sub-system requirement specifications Release 3 testing Issue NTP to support traffic control and disposal for Enabling Works Design of Daly City Yard interface for CBTC Advertise K-Line Contract Complete electromagnetic interface and conductivity test (EMI/EMC) Survey on ROW for CBTC 	<ul style="list-style-type: none"> Complete CBTC equipment installations at Hayward Test Track Complete CBTC Oakland Lab Installation Issue NTP for Haz Mat On-Call for Enabling Works 		

Italic: Modified milestones from previous report.



Renew Stations

STATUS & MILESTONES

STATUS – Renew Stations

EXPENDED Thru 3/2022: **\$49.3**

FORECAST Thru 6/2025: **\$107.1**

TOTAL PROGRAM VALUE: **\$210**

PERIOD CASHFLOW: **\$2.6**

# Projects in Planning	# Projects in Design	# Projects in Bid/Award	# Projects in Construction	# Projects Completed	TOTAL # Projects
0	2	0	4	3	9

MILESTONES			
Completed (Jan 2022 – Mar 2022)	Q4 (Apr 2022 – Jun 2022)	Q1 (Jul 2022 – Sept 2022)	Q2 (Oct 2022 – Dec 2022)
<ul style="list-style-type: none"> • Completion of Construction for 1st escalator of the 2nd Group Market St. Escalators and begin 1st escalator of the 3rd group • Begin Construction of Canopy 12 at Montgomery St. Station and Canopy 16 at Westfield of Powell St. Station. • Completion of Construction for Public Restrooms as part of Powell St. Station Modernization • Completion of New Glass Barriers Installation at Hallidie Plaza entrance for Powell St. Station Modernization • Completion of Construction for Public Restrooms as part of 19th St. Modernization • Formal restroom opening with restroom attendants for Powell St. Station Modernization • Complete Market St. Entry Canopies Systems Infrastructure within Embarcadero Station 	<ul style="list-style-type: none"> • Opening of the new offices/breakrooms at Sector 6 for Powell St. Station Modernization • Completion of New glass barriers & faregates at Secondary Entrance/Sector 4 for Powell St. Station modernization • Relocation of TVMs at Secondary Entrance for Powell St. Station Modernization • Completion of Trash Bin Enclosure Renovation for Powell St. Station Modernization • Completion of remainder of escalators in the 2nd Group of Market St. Escalators and begin construction on the remainder of 3rd Group • Begin Construction of Canopy 3 at Embarcadero Station and canopy 22 at Civic center Stations. 	<ul style="list-style-type: none"> • Complete first two canopies and continue with second two canopies for the Market Street Entry Canopies Contract. • Continue with 3rd Group of Market Street Escalators installation • <i>Completion new office, breakroom and utility room at Sector 6 – Powell Modernization</i> • <i>Completion of LED lighting at platform and trackside – Powell Modernization</i> • <i>Completion of painting at platform level – Powell Modernization</i> 	<ul style="list-style-type: none"> • <i>Complete renovation of System Services Offices for Powell St. Station Modernization</i> • <i>Completion of staircase LED lighting enhancement – Powell Modernization</i> • <i>Installation of Light Box Art Work at Hallidie Plaza – Powell Modernization</i>



Italic: Modified milestones from previous report.

Station Access

STATUS & MILESTONES

EXPENDED Thru 3/2022: **\$36.1**

FORECAST Thru 6/2025: **\$69.2**

TOTAL PROGRAM VALUE: **\$135**

PERIOD CASHFLOW: **\$1.6**

STATUS – Expand Safe Access to Stations

# Projects in Planning	# Projects in Design	# Projects in Bid/Award	# Projects in Construction	# Projects Completed	TOTAL # Projects
0	10	4	4	10	28

MILESTONES			
Completed (Jan 2022 – Mar 2022)	Q4 (Apr 2022 – Jun 2022)	Q1 (Jul 2022 – Sept 2022)	Q2 (Oct 2022 – Dec 2022)
<ul style="list-style-type: none"> Bridge Opening for Warm Springs West Pedestrian Bridge and Plaza Project Completion of Design of Balboa Park – Upper Plaza project 	<ul style="list-style-type: none"> Final Acceptance for Warm Springs West Access Bridge Project <i>Begin Construction of SR2B-funded City of Dublin Iron Horse Trail bridge</i> 	<ul style="list-style-type: none"> Begin Construction for Balboa Park – Upper Plaza Project Complete Design for 19th St. Active Access Improvement Project Re-Advertise for Accessibility Improvement (Phase 1 & 2) Advertise for PA System Improvement <i>Begin Construction of SR2B-funded City of Pittsburg BART Ped/Bike connectivity project</i> <i>Begin Construction of SR2B-funded City of Fremont Walnut Ave./Liberty St. protected intersection</i> 	<ul style="list-style-type: none"> Award for Accessibility Improvement (Phase 1 & 2) <i>Complete construction of SR2B-funded SFMTA 5th Street Improvement project</i> Completion of Construction for 12th St. Bike Racks

Italic: Modified milestones from previous report.



Relieve Crowding

STATUS & MILESTONES

EXPENDED Thru 3/2022: **\$72.3**
 FORECAST Thru 6/2025: **\$127.8**
 TOTAL PROGRAM VALUE: **\$200**
 PERIOD CASHFLOW: **\$8.7**

STATUS – Design / Engineer to Relieve Crowding

# Projects in Planning	# Projects in Design	# Projects in Bid/Award	# Projects in Construction	# Projects Completed	TOTAL # Projects
2	2	1	1	1	7

MILESTONES			
Completed (Jan 2022 – Mar 2022)	Q4 (Apr 2022 – Jun 2022)	Q1 (Jul 2022 – Sept 2022)	Q2 (Oct 2022 – Dec 2022)
<ul style="list-style-type: none"> Stage Gate 1 for Link 21(NTRC) Program 	<ul style="list-style-type: none"> NTP for Hayward Maintenance Complex Phase 2: Civil/Grading <i>Board adoption of Stage Gate 1 for Link 21 (NTRC) Project</i> 	<ul style="list-style-type: none"> Mobilization for Hayward Maintenance Complex Phase 2: Civil/Grading <i>Round 3 of Public Outreach for Link21 (NTRC) Program and creation meeting for Link21 (NTRC) Program</i> <i>Complete Opportunities and Constraints Report and Freight Rail Coordination Study for Link 21 (NTRC)</i> 	<ul style="list-style-type: none"> <i>Completion of Construction for Civic Center Platform Stairs</i> <i>Round 4 of Public Outreach and cocreation meeting for Link21 (NTRC) Program)</i>

Italic: Modified milestones from previous report.



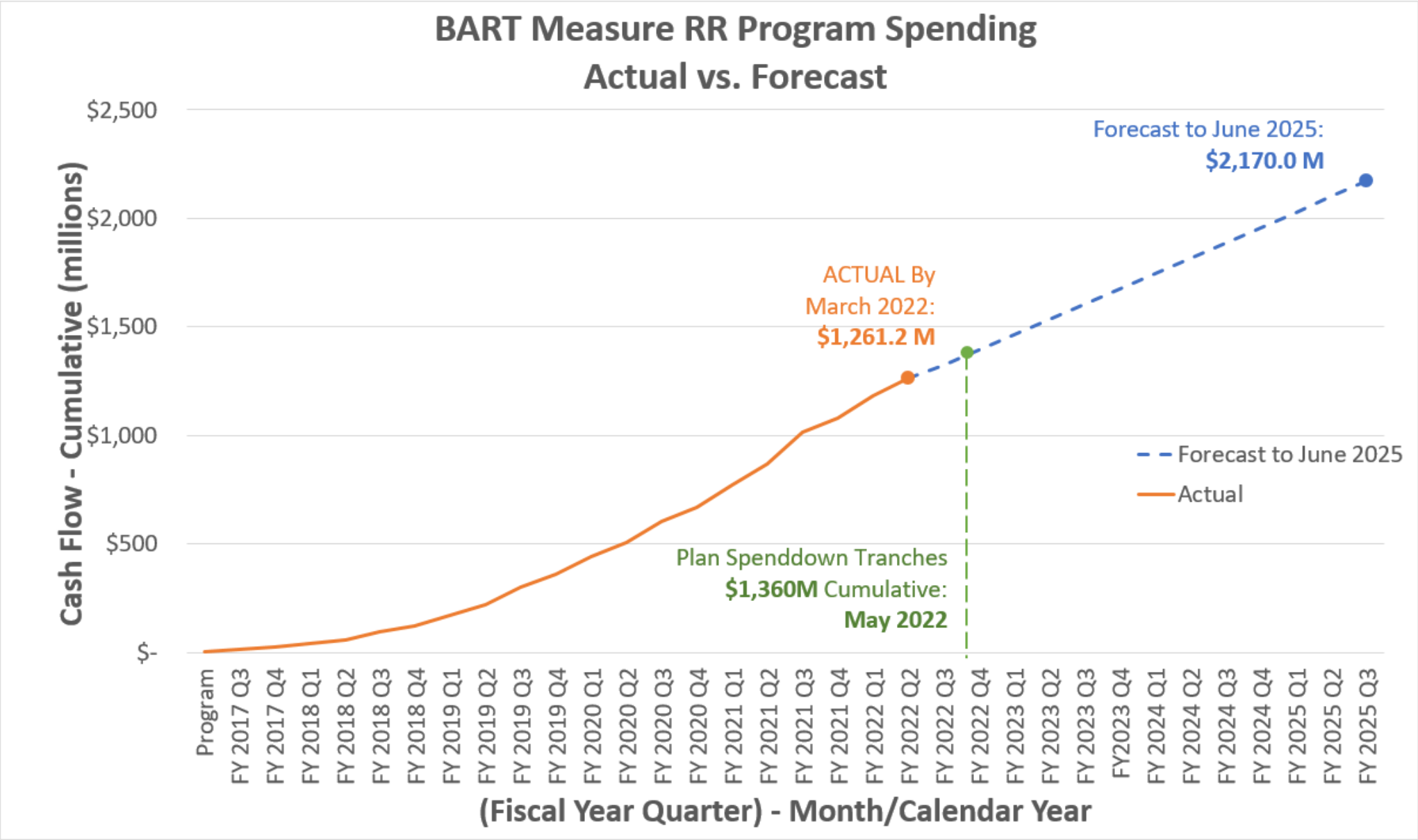
Budget and Schedule Status



Measure RR Cashflow (\$ Millions) – Mid-Term & Long-Term Outlook

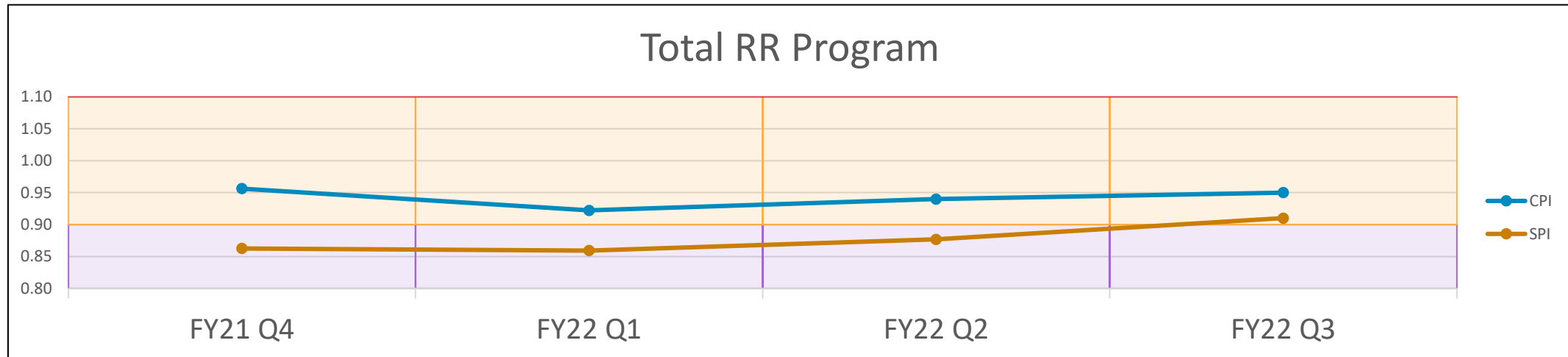
Program	Expended (thru Dec 2021)	Expended (thru Mar 2022)	Period Cashflow (Jan 2022 – Mar 2022)	% Expended out of Total Bond Investment	Forecast Expenditures	
					MID-TERM (thru 2025)	LONG-TERM (thru End of Bond)
Renew Track	\$303.1	\$313.7	\$10.6	50%	\$433.5	\$625
Renew Power Infrastructure	\$439.9	\$472.7	\$32.8	39%	\$868.0	\$1,225
Repair Tunnels & Structures	\$175.5	\$186.7	\$11.2	34%	\$318.3	\$549
Renew Mechanical	\$66.0	\$68.7	\$2.7	44%	\$133.0	\$156
Replace Train Control/Increase Capacity	\$55.0	\$61.6	\$6.6	15%	\$113.1	\$400
Renew Stations	\$46.7	\$49.3	\$2.6	23%	\$107.1	\$210
Expand Safe Access to Stations	\$34.5	\$36.1	\$1.6	27%	\$69.2	\$135
Design/Engineer to Relieve Crowding	\$63.6	\$72.3	\$8.7	36%	\$127.8	\$200
Total	\$1,184.3	\$1,261.1	\$76.8	36%	\$2,170.0	\$3,500

RR Overall Program Budget Progress



Earned Value Rollup by Program As of March 2022

Goal: CPI and SPI between 0.9 and 1.1



RR Program	Total RR Budget	Physical % Complete	Planned Value	Earned Value	RR Accrued to Date	CPI	SPI
Renew Track	\$625	57%	\$354.59	\$358.81	\$353.85	1.01	1.01
Renew Power	\$1,225	41%	\$556.14	\$497.05	\$571.14	0.87	0.89
Repair Tunnels and Structures	\$549	36%	\$253.30	\$199.87	\$196.97	1.01	0.79
Renew Mechanical	\$156	44%	\$75.07	\$68.68	\$67.75	1.01	0.91
Replace Train Control/ Increase Capacity	\$400	15%	\$60.92	\$58.32	\$61.60	0.95	0.96
Renew Stations	\$210	25%	\$55.07	\$52.59	\$49.44	1.06	0.95
Expand Safe Access to Stations	\$135	27%	\$39.52	\$36.81	\$36.10	1.02	0.93
Design/Engineer to Relieve Crowding	\$200	37%	\$79.23	\$73.02	\$77.40	0.94	0.92
Total	\$3,500	38%	\$1,473.84	\$1,345.14	\$1,414.24	0.95	0.91

CPI – Cost Performance Index SPI – Schedule Performance Index



Track Program Drill Down

Project	Count
Number of Projects (>25% Spent)	17
CPI <0.9 or >1.1	6
SPI <0.9 or >1.1	2
Number of Risk Register Updates Performed in Previous Period	16
Number of Project Quality Reviews Performed in Previous Period	6

Project	Physical % Complete	CPI	SPI	Comments
R65 Mainline Interlocking	99%	1.14	0.99	Realized savings during construction
A65/A75 Interlocking Replacement	99%	1.31	0.99	Realized savings during construction
Replace Direct Fixation Pads	82%	1.03	1.71	Realized efficiencies during construction
Joint Elimination Systemwide	82%	1.21	1.05	Delivery method changed from Contractor to in-house
Rail Relay	80%	0.88	0.97	Cost of demolition and removal of material higher than planned
Frog Capital Maintenance	76%	1.15	0.96	Work performed shifted to normal blanket hours
Switch Replacement	60%	0.86	1.20	Realized efficiency from extended blanket hours but at higher cost

Power Program Drill Down

Project				Count
Number of Projects (>25% Spent)				18
CPI <0.9 or >1.1				7
SPI <0.9 or >1.1				5
Number of Risk Register Updates Performed in Previous Period				4
Number of Project Quality Reviews Performed in Previous Period				4

Project	Physical % Complete	CPI	SPI	Comments
Emergency Generator for Transbay Tube	91%	0.89	0.92	Change notice executed to address project complexity
M-Line 34.5 kV AC Cable Replacement	87%	0.98	1.20	Benefitted from extended blanket hours due to COVID-19
San Leandro and Transbay Tube East Substation Replacements	83%	0.81	1.06	Costs of pre-requisite work increased due to complex site conditions. Working with contractor to minimize project impact
CWS Bulk Supply Transformer	66%	0.84	0.95	Material procurement and PSPS-related delays increased construction management and design costs
MPR Install & Rectifier Rehab	48%	0.95	0.80	Installation progress impacted by R-Line emergency repairs
A-Line 34.5kV AC Cable Replacement	45%	0.89	1.01	Differing site conditions lead to multiple change orders. Working with contractor to minimize project impact
Stations Emergency Lighting	38%	0.84	0.51	Change notice executed to address differing site conditions
34.5kV Blocking Scheme Systemwide	38%	0.62	0.96	BART labor resources reprioritized to required emergent repair work impacting continuity of the project
SFTS Transformer / Bus Upgrade	26%	0.71	0.26	Coordination with external agencies for transformer design, testing and installation plans

Tunnels & Structures Program Drill Down

Project	Count
Number of Projects (>25% Spent)	26
CPI <0.9 or >1.1	3
SPI <0.9 or >1.1	2
Number of Risk Register Updates Performed in Previous Period	4
Number of Project Quality Reviews Performed in Previous Period	6

Project	Physical % Complete	CPI	SPI	Comments
Rehab Expansion Joints at Abutment	88%	1.18	0.94	Savings realized from efficiencies in design
Water Intrusion Escalator/Elevator	74%	1.03	0.84	Onboarding of new Contractor
Wayside Regulatory Signage	45%	1.16	0.96	Savings realized from application of lessons learned from repetitive work
Tunnel Waterproof R-Line	27%	0.76	0.27	Redesign methodology to potentially reduce construction cost

Mechanical Program Drill Down

Project				Count
Number of Projects (>25% Spent)				21
CPI <0.9 or >1.1				1
SPI <0.9 or >1.1				0
Number of Risk Register Updates Performed in Previous Period				1
Number of Project Quality Reviews Performed in Previous Period				3

Project	Physical % Complete	CPI	SPI	Comments
Replace Fire Hoses and Piping	99%	1.25	0.99	Self-performed to improve efficiency. Benefitted from reassignment of labor resources due to COVID-19 response

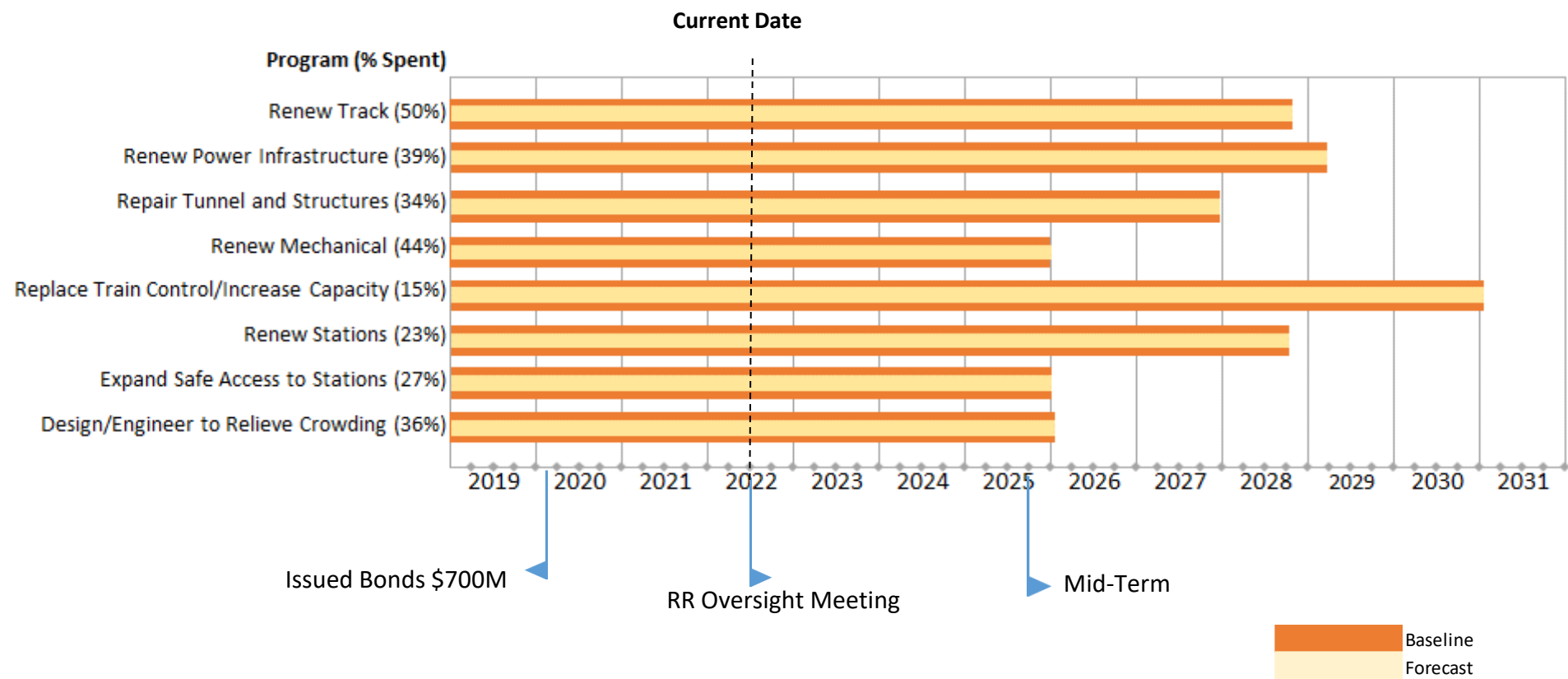
Station Access Program Drill Down

Project	Count
Number of Projects (>25% Spent)	15
CPI <0.9 or >1.1	0
SPI <0.9 or >1.1	0
Number of Risk Register Updates Performed in Previous Period	0
Number of Project Quality Reviews Performed in Previous Period	0

Relieve Crowding Program Drill Down

Project				Count
Number of Projects (>25% Spent)				5
CPI <0.9 or >1.1				0
SPI <0.9 or >1.1				1
Number of Risk Register Updates Performed in Previous Period				4
Number of Project Quality Reviews Performed in Previous Period				1
Project	Physical % Complete	CPI	SPI	Comments
Civic Center Scissor Stairs	78%	1.07	0.82	Stainless steel cladding fabricating taking longer than anticipated

Program Level Schedule Update



Next Steps

- Board Presentation RR Annual Report
- September 2022 Bond Oversight Meeting



Thank you!

