

**SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT**  
2150 Webster Street, P. O. Box 12688, Oakland, CA 94604-2688

**NOTICE OF MEETING AND AGENDA**  
**BOND OVERSIGHT COMMITTEE**

Friday, April 21, 2023  
9:30 a.m. – 12:00 p.m.

COMMITTEE MEMBERS: Marian Breitbart, Daren Gee, Michael McGill (Chair), Catherine Newman (Vice Chair), Cindy Simon Rosenthal, Vinit Shrawagi, Sonja C. Stewart

A Meeting of the Bond Oversight Committee will be held on Friday, April 21, 2023, at 9:30 a.m. in the BART Board Room, 2150 Webster Street, 1<sup>st</sup> Floor, Oakland, California 94612.

**This will be an In-Person Meeting in the BART Board Room, 2150 Webster Street, 1<sup>st</sup> Floor, Oakland, California 94612 with an option for public participation via teleconference.**

**Presentation materials will be available** via Legistar at <https://bart.legistar.com>

You may attend the Committee Meeting in person or join the Committee Meeting via Zoom by calling 1 (833) 548-0282 and entering **access code** 829 2318 1400; logging in to Zoom.com and entering **access code** 829 2318 1400; or typing the following Zoom link into your web browser:  
<https://us06web.zoom.us/j/82923181400>

**If you wish to make a public comment:**

- 1) Submit written comments via email to [ljohnso@bart.gov](mailto:ljohnso@bart.gov), using “public comment” as the subject line. Your comment will be read into the record and will become a permanent part of the file. Please submit your comments as far in advance as possible. Emailed comments must be received before 9:00 a.m. of the day of the Committee meeting in order to be included in the record.
- 2) **Call** 1 (833) 548-0282, enter **access code** 829 2318 1400, dial \*9 to raise your hand when you wish to speak, and dial \*6 to unmute when you are requested to speak; log in to Zoom.com, enter **access code** 829 2318 1400, and use the raise hand feature; or join the Committee Meeting via the Zoom link (<https://us06web.zoom.us/j/82923181400>) and use the raise hand feature.

**Public comment is limited to three (3) minutes per person.** If public comment is by phone, your phone will be muted until you are called upon.

**AGENDA**

1. **Call to Order** (Approximately 5 minutes)
  - A. Roll Call
2. **Public Comment** (Approximately 5 minutes)
3. **Meeting Minutes: January 20, 2023** (For Discussion/Action Approximately 5 minutes)
4. **2023 Annual Report Draft** (For Discussion Approximately 5 minutes)

A. Q&A (Approximately 10 minutes)

**5. Annual View of BART Safety, Reliability and Traffic Relief Program (Measure RR)**

A. Measure RR Related Audits (For Discussion Approximately 15 minutes)

1. Q&A (Approximately 10 minutes)

B. Project Controls Framework/Timelines (For Discussion Approximately 15 minutes)

1. Q&A (Approximately 10 minutes)

**C. 10 MINUTE BREAK**

D. Calendar Year 2023 Track Shutdowns (For Discussion Approximately 10 minutes)

1. Q&A (Approximately 10 minutes)

E. Bond Funded Program Watch List Items Review (For Discussion Approximately 5 minutes)

1. Q&A (Approximately 10 minutes)

F. Appendix: Financial Outlook, Program Status & Milestones (For Information Only)

1. Q&A (Approximately 10 minutes)

**6. Future Agenda Items & Questions** (For Discussion Approximately 5 minutes)

**7. Committee Member Announcements** (For Discussion Approximately 5 minutes)

**8. Public Comment** (Approximately 5 minutes)

**9. Adjournment**

BART provides services/accommodations upon request to persons with disabilities and individuals who are limited English proficient who wish to address Committee matters. A request must be made within one and five days in advance of Board/Committee meetings, depending on the service requested. Please contact the Office of the District Secretary at (510) 464-6083 for information.



# San Francisco Bay Area Rapid Transit District

Measure RR Program

BART Bond Oversight Committee

Friday, January 20, 2023

9:30 AM – 12:00 PM

Via Zoom Conference Call

**\*\*\*\*\*Draft Minutes\*\*\*\*\***

MEETING NUMBER	MEETING DATE	MEETING TIME
Term 4, Meeting 2	Friday, January 20, 2023	9:30 am – 12:00 pm
	<b>Committee Members</b> Michael McGill, Chair Catherine Newman, Vice Chair Marian Breitbart Daren Gee Sonja C. Stewart Cindy Simon Rosenthal Vinit Shrawagi	

Agenda Item	Meeting Notes
1. Call to Order (15 minutes)	
A. Roll Call	Chair McGill, and Cindy Rosenthal are absent.
2. Public Comment	Member of the public Aleta Dupre makes a comment. Linton Johnson discusses another comment that came in to the board via email.
3. Meeting Minutes: September 16, 2022	Vinit Shrawagi makes the motion to pass the meeting minutes. Daren Gee seconds the motion. It passes unanimously.
4. 2023 Annual Report Draft Outline Presentation	Chris Filippi, Communications Officer, presents the outline.  Sonja Stewart wants to make sure that we continue to show how stakeholders were involved in the process of Measure RR and how we keep them engaged.

	Daren Gee wants to know how staff distinguishes between the cost of replacing items vs what the normal cost of maintenance.
5. Annual View of BART Safety, Reliability and Traffic Relief Program (Measure RR)	Sylvia Lamb, Assistant General Manager of Infrastructure Delivery, gives an overview.
A. Program Successes & Challenges	Linda Lee, Manager of Engineering Programs, presents.  Catherine Newman would like to hear about the 12 shutdowns at the April 21, 2023 meeting.
B. Financial Overview Update	Linda Lee gives presentation.
C. Procurement Presentation	John Mazza, Director of Procurement, presents.
<b>D. 10 MINUTE BREAK</b>	Break was for 15 minutes as the meeting ran early.
E. Human Resources/Staffing	Alaric Degrafinried, Assistant General Manager of Administration, presents.  Sylvia Lamb recommends that we eliminate the staffing section moving forward because recruitment is no longer a need. Instead, she recommends we swap out recruitment for talking about culture. Daren Gee agrees that this is a good change. Vinit Shrawagi and Sonja Stewart nod in agreement.
F. Small Business Outreach	Joseph Towner, Manager of Program Planning Support in the Office of Civil Rights, presents.  Catherine Newman wants to have a link in annual report in the Appendix section, which the public can use to see which projects are coming up for bid.
G. Public Outreach Update	Chris Filippi begins the presentation. David Martindale and Amanda Cruz, Directors of Marketing and Government and Community Relations respectively, present.



	Sonja Stewart would like to see a spreadsheet showing the different communities and subcommittees of the board.
H. Measure RR Staff Organizational Chart	
I. Appendix: Financial Outlook, Program Status & Milestones	
6. Future Agenda Items & Questions/Committee Member Announcements	Vinit Shrawagi would like to know more about ridership data in general and how that's trending – an historical timeline.
7. Public Comment	
8. 15 Minute Break	
9. AB1234 Training	Catherine Newman, Sonja Stewart, Vinit Shrawagi attend in person. Marian Breitbart and Daren Gee attend virtually.
10. Adjournment	Meeting adjourned at 1:36pm.



MEASURE RR BOND  
OVERSIGHT COMMITTEE  
**ANNUAL REPORT**

JUNE 2023





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Dear Bay Area residents:

It's a pleasure to present you with the independent Measure RR Bond Oversight Committee's sixth annual report. Thank you for your interest in BART's efforts to rebuild its core infrastructure. Measure RR was approved in November 2016 by more than two-thirds of voters in the three Bay Area counties that comprise the BART District (Alameda, Contra Costa, and San Francisco). Measure RR raises \$3.5 billion to replace essential infrastructure components that in some cases are more than 50 years old.

The independent Bond Oversight Committee is comprised of volunteers with expertise in engineering, finance, project management, and other relevant fields. The committee has unfettered access to BART documents and receives regular updates from staff on the progress of RR-funded projects. BART staff has been highly responsive to requests from the committee and has worked to provide all committee members with relevant information and the context necessary to measure progress. This consistent information sharing is essential as the committee works to meet its charge of ensuring BART is spending bond revenues in a manner consistent with what was promised to voters.

This year's report updates the progress of Measure RR construction projects and the impact the work is having on the rider experience. This is especially important for BART as it emerges from the impacts of the pandemic and tries to attract riders back to the system with the promise of more reliable service.

The Bond Oversight Committee wants to hear from riders and taxpayers. The committee holds quarterly public meetings. In 2023 the committee is going back to in-person meetings that members of the public can participate in either in person or via videoconference. You can learn more about upcoming meetings at the committee's website [www.bart.gov/bondoversight](http://www.bart.gov/bondoversight). We will publish annual reports throughout the lifetime of Measure RR.

Sincerely,

Michael R. McGill  
 RR Bond Oversight Committee Chairperson  
 Professional Engineer, Institute of Electrical and Electronic Engineers (IEEE) seat

**OTHER COMMITTEE MEMBERS**

Full biographies and photographs at [www.bart.gov](http://www.bart.gov)

- MARIAN BREITBART**, Budgeting & Financial Management Seat
- VINIT SHRAWAGI**, Accounting Seat
- DAREN GEE**, Civil Engineering Seat
- CATHERINE NEWMAN**, League of Women Voters Seat
- CINDY ROSENTHAL**, League of Women Voters Seat
- SONJA STEWART**, Project Management Institute Seat

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# EXECUTIVE SUMMARY

The work of rebuilding the backbone of BART is moving forward as the Measure RR program enters its seventh full year of existence. It's the responsibility of the independent Bond Oversight Committee (BOC) to evaluate the RR program with an emphasis on overseeing cost effectiveness, quality, and the timeliness of work completion. This is the sixth annual Measure RR report from the BOC.

The importance of the work being done through the RR rebuilding program has never been clearer as BART continues its efforts to bring riders back to the system. BART ridership remains well below pre-pandemic levels. A key factor in getting more people in the Bay Area to ride BART is to revitalize the system's core infrastructure so it can support a more reliable and safe service that provides a compelling alternative to driving.

This report examines BART's rebuilding efforts in the following major project categories: Renew Track, Renew Power Infrastructure, Repair Tunnels and Structures, Renew Mechanical Infrastructure, Renew Stations, Train Control Modernization, Relieve Crowding, and Access Improvements. In this year's annual report the BOC examines the progress of work, whether BART is meeting the expectations of the public, and the impact rebuilding efforts are having on the rider experience.

Through December 2022 \$1.49 billion of Measure RR funds were invested in rebuilding projects. There are now 152 projects that are in planning, design, construction, or have been completed. A total of 47 projects are complete, up from 36 when this committee issued its last annual report in 2022.

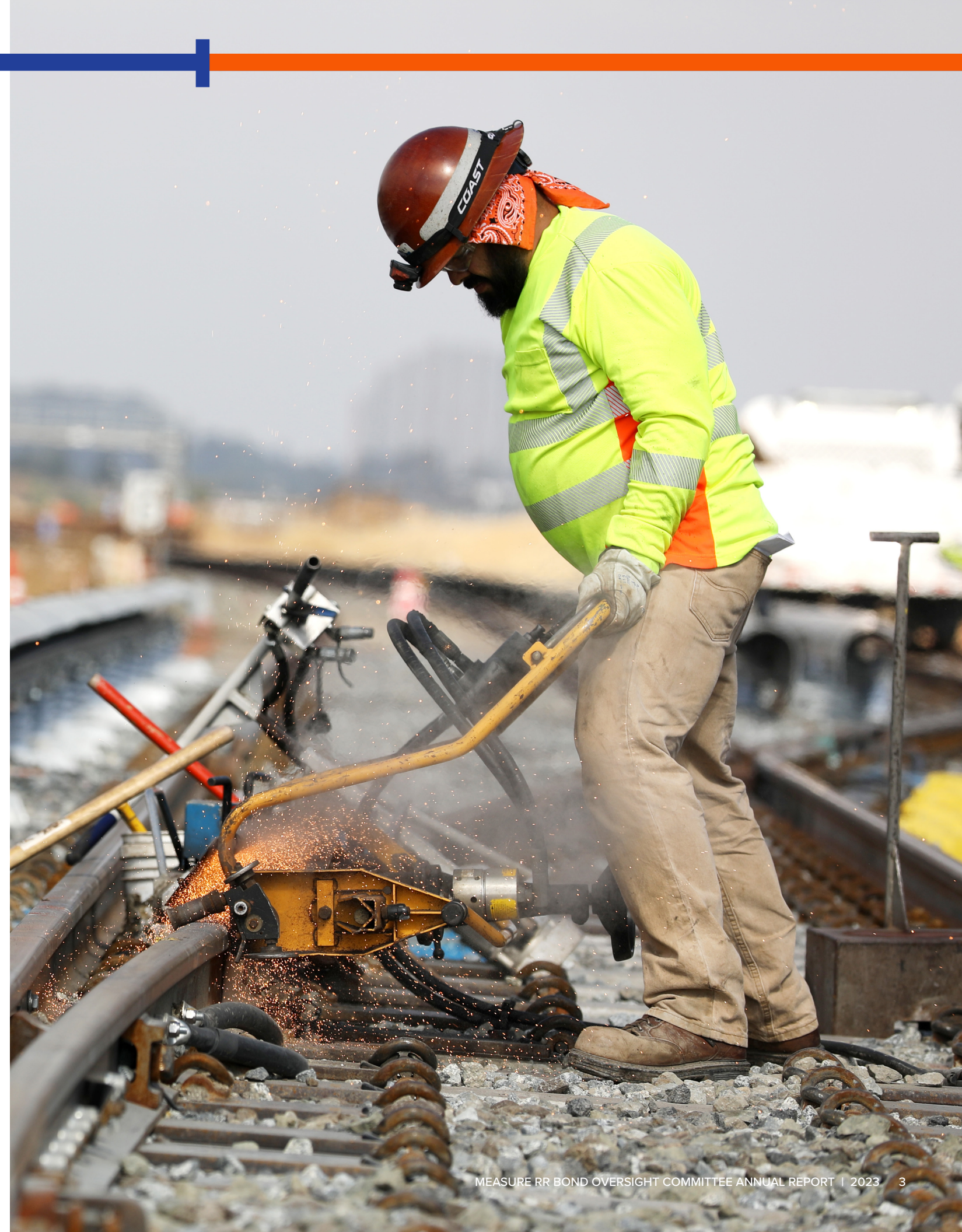
## Significant accomplishments in the last year include:

- The substantial completion of 34.5kV (kilovolt) traction power cable replacement work in downtown San Francisco.
- Completed trackway demolition and restoration for the Transbay Tube retrofit.
- Station modernization projects completed at Powell Street Station in downtown San Francisco and 19th Street Station in downtown Oakland.
- Issuance of \$700 million in climate-certified Green Bonds to ensure uninterrupted funding of RR projects.

Measure RR is more than 6 years into its expected 20-year lifespan of work, yet 46% of all anticipated Measure RR work has already been completed. This is ahead of projections made by BART in 2016 when Measure RR was put before BART District voters in Alameda, Contra Costa, and San Francisco counties.

The BOC is actively monitoring several challenges that are beyond the control of BART but nevertheless have already impacted rebuilding work. In the last year BART has been confronted with supply chain issues that have resulted in delays in the arrival of needed materials. Unseasonably hot weather has caused construction delays as well as a derailment on the Yellow Line in Contra Costa County that required the redirection of workers and materials. Another concern is rising inflation that has led to increases in the costs of materials and labor. BART staff are continuing to provide updates to the BOC on how these emerging trends are impacting the Measure RR program.

The BOC believes BART is delivering rebuilding projects in a timely manner and that the work is improving the reliability and safety of the system. The BOC further believes BART is doing RR work in accordance with industry best practices. These conclusions are based on the BOC's review of projects and data presented by BART staff.





# ABOUT THE BOND OVERSIGHT COMMITTEE

The Independent Bond Oversight Committee (BOC) is responsible for providing diligent, and public oversight of the expenditure of funds from bond sales associated with Measure RR. The BOC is comprised of seven members who represent a diversity of expertise, geography, and demographic characteristics. All members of the BOC are unpaid volunteers.

The BOC assesses whether projects funded by Measure RR bond proceeds are completed in a timely, cost-effective, and high-quality manner consistent with the best interests of BART riders and District residents. The BOC publishes its findings in its annual report. This document is the sixth annual report from the BOC.

Organizations with members on the BOC include:

- The American Society of Civil Engineers, or its successor organization, is represented by one member who has expertise in civil engineering management and oversight.
- The Institute of Electrical and Electronic Engineers, or its successor organization, is represented by one member who has expertise in electrical engineering management and oversight.
- The American Institute of Certified Public Accountants, or its successor organization, is represented by one member who has expertise in audit or financial oversight.
- The Association for Budgeting & Financial Management section of the American Society for Public Administration, or its successor organization, is represented by one member who has expertise in municipal finance.
- The Project Management Institute, or its successor organization, is represented by one member who has expertise in project management.
- The League of Women Voters, Bay Area, or its successor organization or chapter, is represented by two members.

In addition to reviewing BART documents and receiving briefings from BART staff, BOC members also tour sites of Measure RR projects. Members of the committee in May 2022 visited where workers were replacing an interlocking between the South Hayward and Union City stations. Such visits allow committee members to see RR work firsthand, ask frontline staff questions, and gain a better understanding of the complexities of BART's rebuilding projects.

Members serve two-year terms and are eligible to serve up to a total of six years. Members of the BOC are appointed by the BART Board of Directors. You can find the full text of the duties and responsibilities of the BOC in Section 11 of the resolution that established the committee. It's available at [www.bart.gov/about/bod/advisory/bond](http://www.bart.gov/about/bod/advisory/bond).



**Michael R. McGill**  
Chairperson of the Committee  
American Institute of Electrical Engineers Seat

**Catherine Newman**  
Vice Chairperson of the Committee  
League of Women Voters of the Bay Area Seat

**Marian Breitbart**  
Association of Budgeting & Financial Management Seat

**Vinit Shrawagi**  
American Institute of Certified Public Accountants Seat



**Cindy Rosenthal**  
League of Women Voters of the Bay Area Seat

**Daren Gee**  
Civil Engineering Management and Oversight Seat

**Sonja Stewart**  
Project Management Institute Seat

# THE STORY OF MEASURE RR

BART District voters approved Measure RR in the November 2016 election. But the story of how Measure RR came to be goes back to 2014. That's when BART staff began the public conversation about the critical need to rebuild the backbone of the system. Despite employing the best preventative maintenance practices for decades, the critical assets that allowed BART to operate were deteriorating from nearly 50 years of heavy use. Rail, track switches, electrical power cables, coverboards, and many more components were poised to reach the end of their design lives within the coming 10 years.

BART leaders decided to turn to voters for support in keeping the Bay Area's critical transportation system operating and moving BART into a state of good repair. BART's Office of External Affairs organized more than 200 meetings starting back in 2014. The Better BART education campaign included meetings with community groups, business organizations, advocacy groups, and elected officials.

The Better BART Bond Community Stakeholder Committee was formed in 2015 by community leaders and various organizations. Bike East Bay, Self-Help for the Elderly, East Bay Leadership Council, San Francisco Bicycle Coalition, Metropolitan Transportation Commission, United Seniors of Oakland and Alameda County, Transform, Sierra Club, SPUR, Bay Area Council, League of Women Voters of the Bay Area, and Genesis all had seats at the table to ensure the bond measure reflected the interests and needs of the District's many communities.

In November 2016 more than 70% of voters in the BART District (Alameda, Contra Costa, and San Francisco counties) cast ballots in favor of Measure RR. The bond measure easily exceeded the two-thirds support requirement to become law.

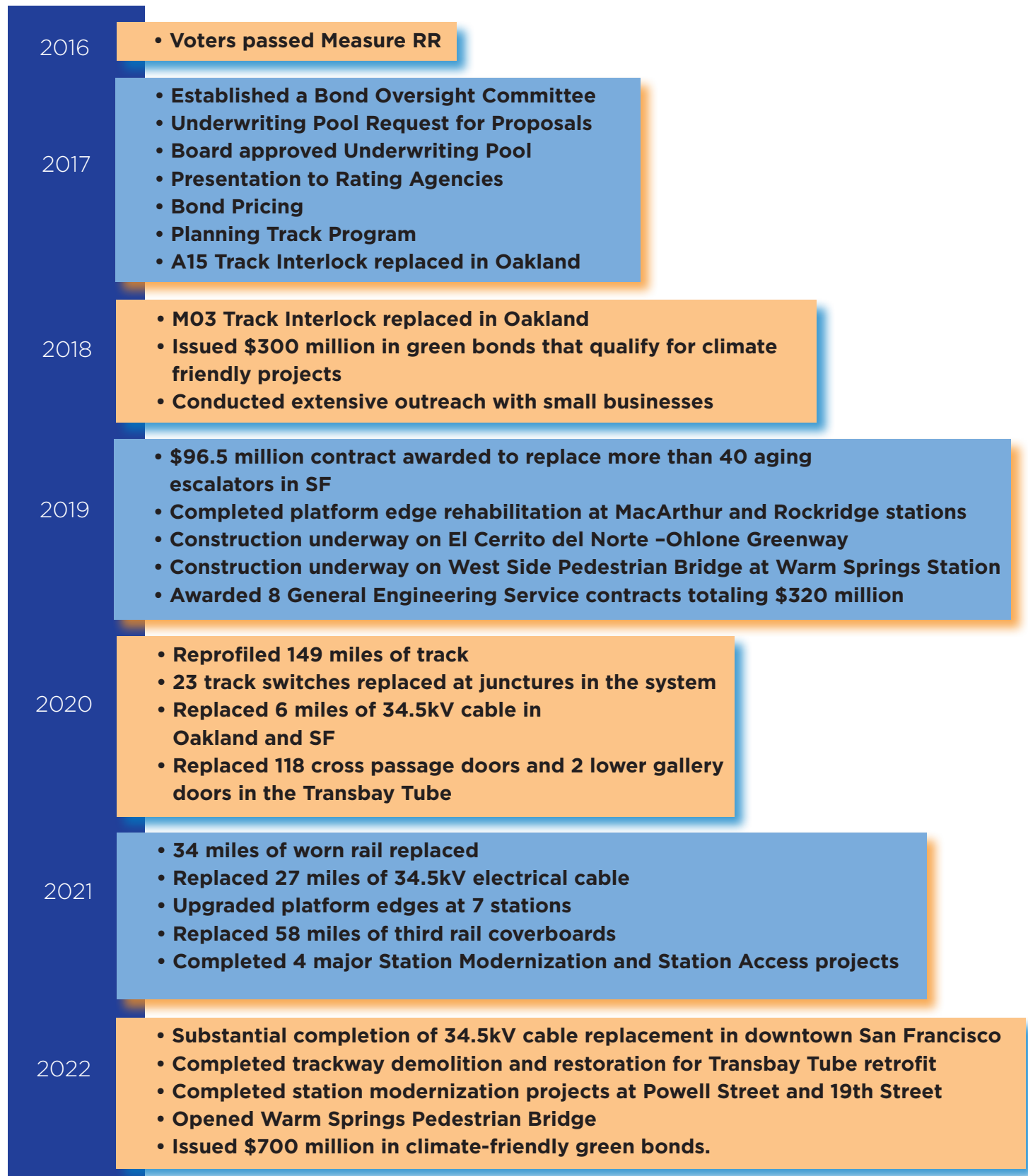


Assistant Chief Maintenance Officer David Scherer (right) provides a project overview for committee members Sonja Stewart and Daren Gee.

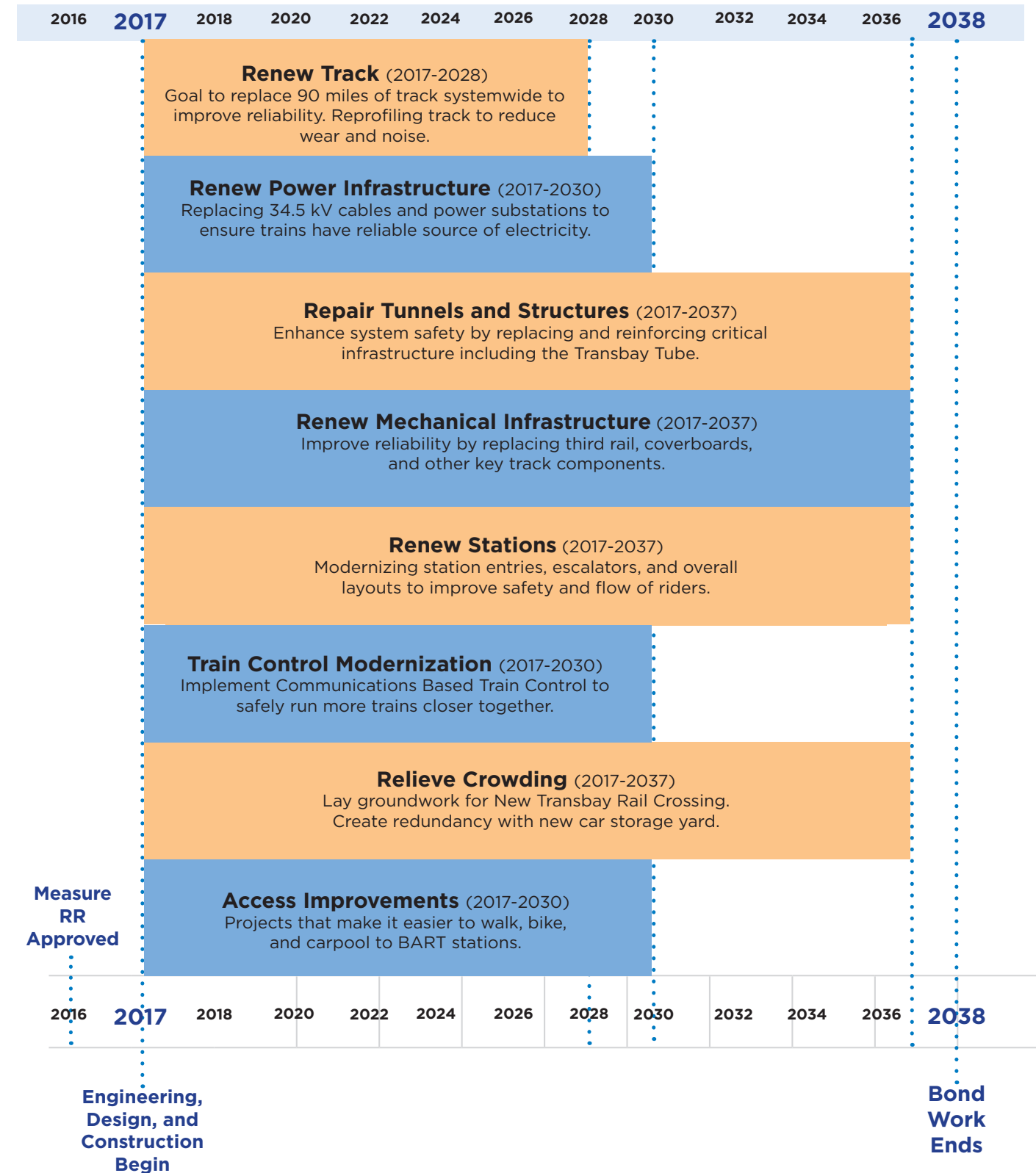


# PAST ACCOMPLISHMENTS 2016-2022

# THE LIFE SPAN OF MEASURE RR



Measure RR work is organized in to these eight major project areas.





## EQUITY AND RR

Communities thrive when everyone has access to robust public transportation. BART aims to provide an equitable delivery of transit services, create a workplace free of discrimination, ensure those who do business with the District are treated fairly, and that riders and community members have equal access to our system. BART is working to incorporate equity into all aspects of its operations including infrastructure decision-making.

The focus on equity is an essential component of the Measure RR rebuilding program as it influences the decision-making process for the advancement of rebuilding projects. It requires that planners look at both the community impacts of the work such as noise, lights, reduced access, and delays and compare them with the anticipated benefits including increased reliability, quieter trains, and less of a need for work in the same area for decades to come.

There is a process for assessing projects based on our criteria/parameters such as: safety, security, operation reliability, and compliance. As part of the Measure RR supported Station Access program several projects are underway to make it easier for riders and disabled communities to access BART system. Wayfinding improvements will include fabrication and installation of illuminated wayfinding signs, custom display cases, station identification pylons, kiosks and real-time displays at 14 stations. Wayfinding, directional, and transit information will be improved by replacing existing signs with new versions to provide consistent and understandable information by reducing written messages and using more pictograms, graphic symbols and operator logos. The 14 stations included in this project are in Alameda, San Mateo, and San Francisco counties. 19th Street Station accessibility improvements, and public address system improvements districtwide, are all geared towards expanding safe access to BART stations.



## ADVANCING SUSTAINABILITY

The Bond Oversight Committee has a mandate to ensure Measure RR work measures up to BART's sustainability standards. BART's commitment to sustainability is advanced by providing safe, affordable, equitable, and environmentally friendly transit to move people to jobs, recreation, and services. BART riders get the equivalent of 50.9 miles per gallon as the system is twice as efficient compared with a typical car driven alone. BART is also working towards getting 100% of its power from zero-carbon sources by 2035.

Measure RR is helping BART live up to its sustainability goals. Projects that make BART easier to use for more people help the Bay Area be less dependent on cars. Recent examples of RR-funded projects benefiting the local environment include:

- The 19th Street Station Modernization Project has several features that boost sustainability, including a reconfigured concourse that improves access for all riders. The updated station now offers bike stair channels to make it easier to get bikes into the station as well as additional interior bike parking. Station modernization projects also typically include upgrades to LED lighting, which not only improve the brightness of the station but help to reduce BART's energy consumption.
- Phase 1 of the Walnut Creek Transit-Oriented Development project includes improved connection to N. California Street to enhance station access. Additional improvements were made to the pedestrian path leading from the station towards downtown by removing bus windscreens that were no longer needed when the new bus area was completed.
- Work is underway on the Balboa Park Station Plaza, which will include a new passenger loading zone. The project will provide a fully compliant accessible path between the street elevator and the new passenger loading zone by adding an ADA (Americans with Disability Act) ramp along a portion of the Geneva Avenue sidewalk.

The newly reconfigured concourse at 19th Street Station in downtown Oakland.





# MONITORING PUBLIC IMPACTS OF LARGE PROJECTS

The independent Bond Oversight Committee has a mandate to monitor the public impacts of large construction projects. This includes delays for riders and how construction is seen and heard in neighborhoods around work sites. The committee also examines efforts by BART to inform the public about the impacts of large construction projects.

BART crews in 2022 continued their efforts to rebuild a major section of trackway between the South Hayward and Union City stations in southern Alameda County. This extensive work included the replacement of an interlocking, a large and critical track component that allows trains to safely move from line to line. Crews also advanced preliminary work to create a new storage facility at the Hayward Maintenance Complex for hundreds of Fleet of the Future cars. From April into September BART closed the trackway between the two stations on 10 nonconsecutive weekends. That meant riders traveling in the area had to exit trains and board a free bus shuttle service provided by AC Transit. Typical delays for riders using the bus bridge ranged from 20 to 25 minutes.

Informing the public about this work was the responsibility of BART's External Affairs Department. Communications, Marketing, and Government and Community Relations teams worked together to reach a variety of audiences in multiple languages about the project. Public outreach began months before the first shutdown weekend in April and continued throughout the duration of the project. Key messages communicated to the public included the track shutdown schedule, bus bridge details, anticipated delay lengths, benefits of the work, and neighborhood impacts.

An online passenger bulletin for the project was posted and highlighted on bart.gov. It included links to a Frequently Asked Questions (FAQ) page and a fact sheet for the project. A news release was sent to a list of more than 300 reporters and news outlets. Multiple posts were made on Twitter and Facebook for each shutdown weekend. Emails and text alerts were sent each weekend to BART news subscribers who signed up for updates at impacted stations.

Government and Community Relations staff provided briefings for BART Directors who represent the station areas impacted by the project. Direct mailers were sent to residents and businesses along the construction corridor. Mailers were translated into multiple languages and provided contact information for questions or complaints. Project briefings were offered to local elected officials. Outreach was conducted with neighborhood stakeholder groups including Hayward Rotary, San Leandro Chamber of Commerce, and the Hayward-South Alameda County NAACP.

Targeted marketing campaigns were launched two days before each shutdown and ran through each weekend. Ads targeted everyone in the impacted areas as well as people searching/discussing travel-related keywords. Ads appeared on Twitter, Facebook, Instagram, and Google and were available via all mobile and tabletop devices. Media buys for this project included ads in ethnic print publications in Spanish, Mandarin, Cantonese, Korean, and Vietnamese.

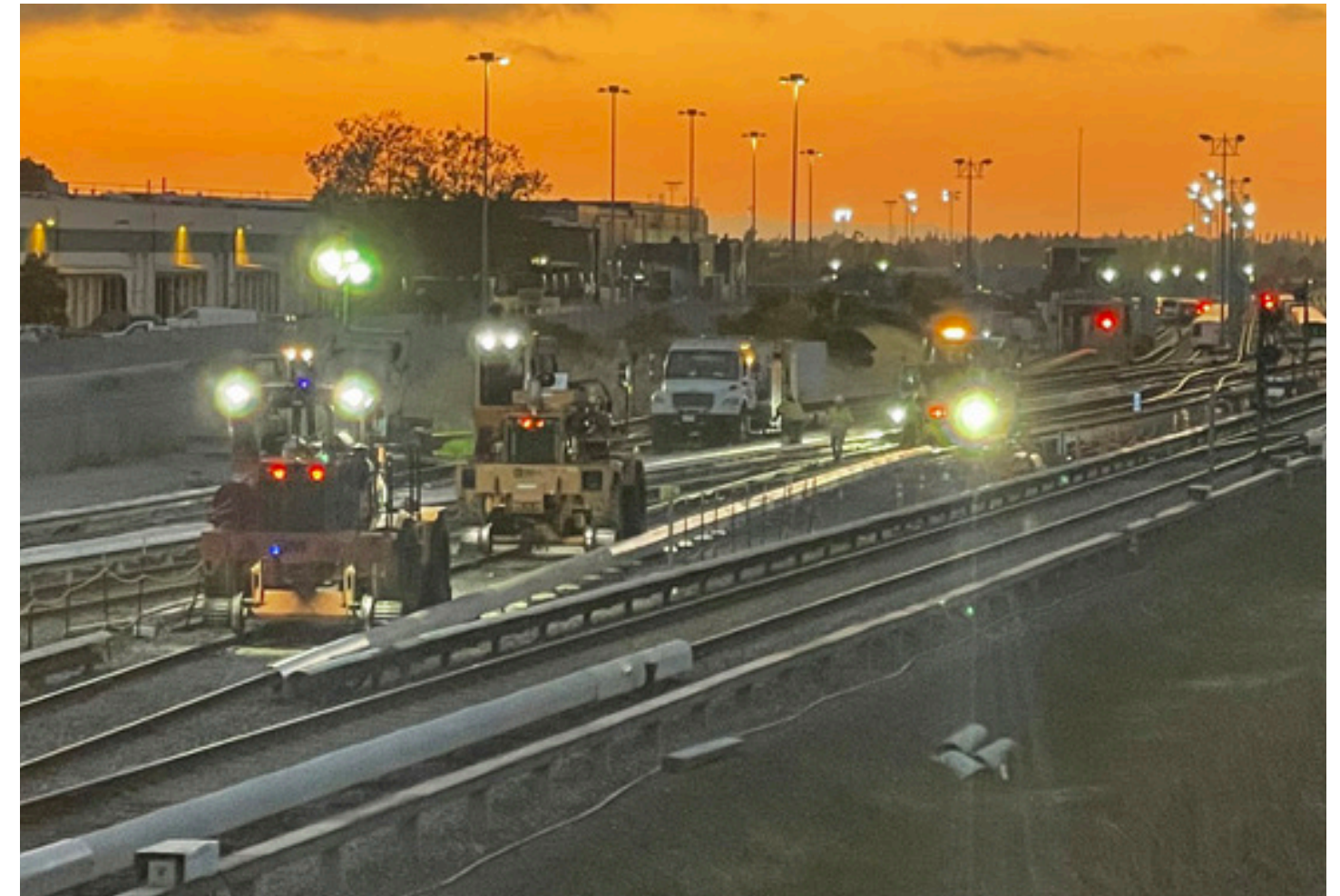
There were also outreach activities within the BART system itself. Public address announcements about the project were made in English, Spanish, and Chinese. Systemwide messages were displayed on digital platform signs. Posters with project information and the bus bridge map were placed in impacted and adjacent stations.

# FUTURE TRACK SHUTDOWNS

BART's track shutdowns in early 2023 focused on the Yellow Line in Alameda and Contra Costa counties. Workers replaced more than 7,000 feet of track and performed other maintenance work during Presidents' Day weekend in February between Rockridge and Lafayette stations. That work shutdown the Orinda Station and required riders in the area to take a free shuttle bus between Rockridge and Lafayette stations to continue their trips. Delays were about 30 minutes. Then in April through June BART began work on five nonconsecutive weekends on an interlocking replacement project between Rockridge and Orinda stations. That work also required free shuttle bus service between the two impacted stations and resulted in delays of up to 30 minutes.

Starting in August 2023 BART planned to replace an interlocking between Union City and Fremont stations. The work was scheduled to take place on six nonconsecutive weekends through November with anticipated delays of 30 minutes. Riders would have to ride a free shuttle bus to continue their trips between Union City and Warm Springs stations.

In early 2024 BART plans to perform major track repairs between Richmond and El Cerrito del Norte stations. That work is scheduled to happen on five nonconsecutive weekends from January through March. Then later in 2024 BART hopes to replace an interlocking between 19th Street and MacArthur stations. That work is tentatively scheduled to occur on nine nonconsecutive weekends from May to November. Riders who wish to travel between 19th Street and MacArthur on work weekends will have to take a free bus shuttle service.





# RACE TO RESTORE THE RED LINE

Some of the oldest traction power cables in the entire BART system run along 10 miles of track in the East Bay on the system's Red Line, which provides service from Richmond to Millbrae. Those aging 34.5 kV (kilovolt) cables have been in place since BART began service in the early 1970s. On two separate occasions in 2022 the Red Line experienced cable faults that had major impacts on service. A cable fault in early March between the El Cerrito del Norte and Ashby stations temporarily shut down Red Line service for two weeks and limited service on the line until May 4. A similar cable fault near Richmond Station in June impacted Red Line service for five days. In both situations, restoring Red Line service required coordination among multiple departments at BART. The Structures group mounted the supports; Electrical spliced the cable; Engineering devised the plans; and Construction and Maintenance were put it into action, among others. The restoration work was funded by Measure RR. BART and DMZ, a BART contractor, worked 12-hour shifts night and day to identify the location of the initial problem in March and fix it. The repair effort required two months of nonstop labor and ingenuity.

The line from Richmond to MacArthur has two separate 34.5 kV cables that power the trains. In December one of the line's cables failed due to an insulation breakdown. Just three months later its second cable failed, forcing a temporary closure of the line. It was an unprecedented moment in BART history, and it spurred immediate action from nearly every corner of the agency.

The contracting team from DMZ worked on the line from one direction, while the BART team worked on the line from the other. The two groups met in the middle – just outside of BART's El Cerrito del Norte Station.

BART crews are now tasked with replacing the entirety of the Red Line's cables. Measure RR-funded power cable replacements are well underway in San Francisco as well as Alameda and Contra Costa counties. BART was working to replace the near-end-of-life power cables with modern fiber optic cable throughout the system before the failure. Work to replace this section of cable had been scheduled to begin March 10, 2022, but the cable fault happened four days earlier.

The new fiber optic cables help BART get data from the field as they contain fibers for traction power and relay protection. The cables are also able to send information to the Operation Control Center. Because the cables are made of ethylene propylene rubber (EPR), they are easier to splice when problems along the line arise. BART is also installing isolation disconnect switches (IDS) to reduce the



risk of fire, and caging the cable in fiberglass, which is lighter and not conductive of electricity, unlike the steel pipe that is currently in use.

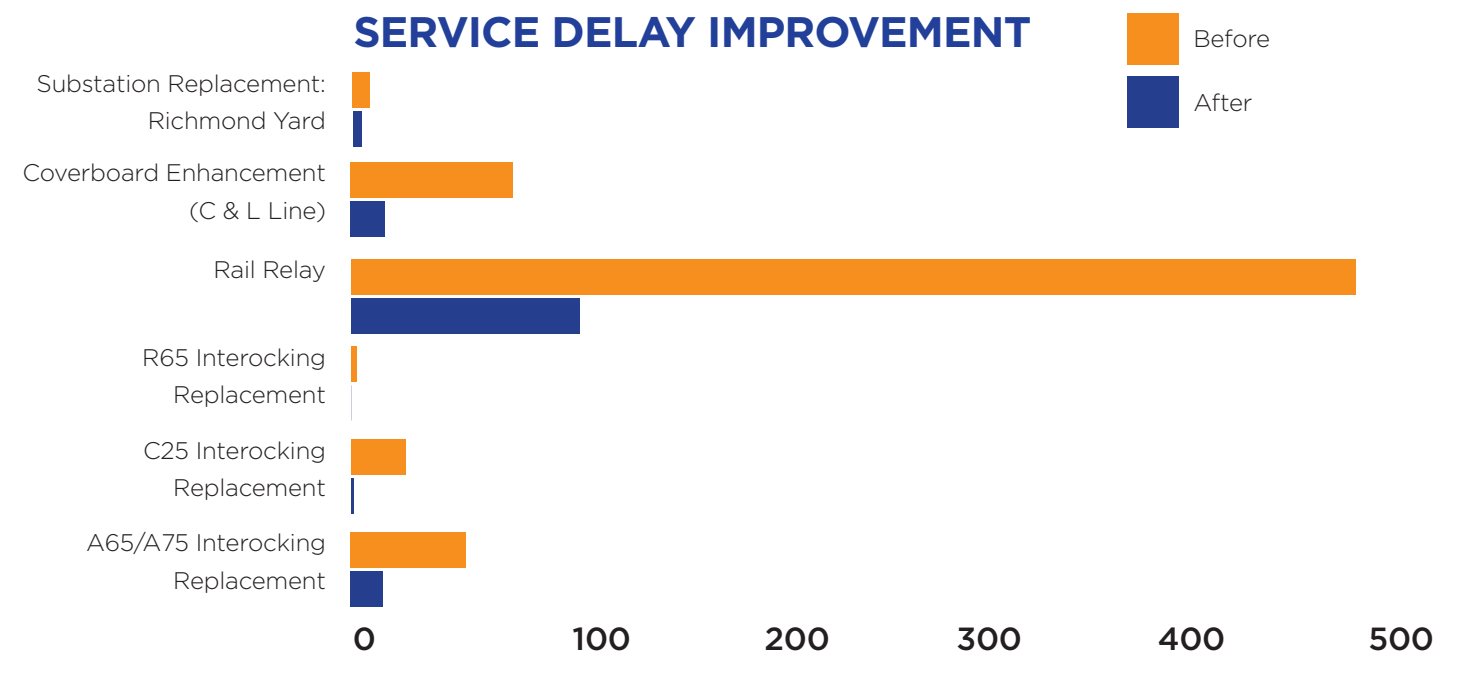
The District also has a system called predictive remote monitoring that observes current voltage on batteries along the lines. If the voltage fluxes consistently, it will fail within a few weeks.

In about 40 days BART and DMZ replaced approximately 3,000 feet of cable. Engineers estimate that replacing the entire Red Line cabling will take up to three years.

## RR IMPROVING BART SERVICE

The Bond Oversight Committee believes BART District voters sent a clear message when more than two-thirds of them supported Measure RR in 2016. They passed RR because they want more reliable BART service and an important way to deliver it is to rebuild the system's core aging infrastructure. Riders are now experiencing the benefits of Measure RR funded projects as more work happens across the system.

At the top of the list is the impact of rail replacement or as it's known in the industry rail relay. BART has been working to replace aging rail across the system. In 2022 the number of service delays due to rail-related issues dropped to 95 from 417 in the previous year. BART has also been working to replace aging coverboards along the Yellow Line in Contra Costa County and the Blue Line in Alameda County. Coverboards protect the electrified third rail. Those efforts reduced coverboard related delays on those two lines from 63 in 2021 to only 14 last year. The chart below shows before and after service delay improvements related to multiple projects funded by Measure RR including several interlocking revitalization projects as well as the replacement of an electrical substation at the Richmond Yard.





# MAJOR PROJECTS: RENEW TRACK

BART's efforts to renew track are having a direct impact on the rider experience through enhanced reliability as well as providing a smoother and quieter trip. A total of 20 projects have been launched in the Renew Track category. That includes 9 that have been completed and 8 that are currently under construction.

Over the lifetime of RR BART has replaced 44 miles of worn rail across the system. BART has replaced 50 track switches. These track switches are the main components of interlockings, which are the sections of the track system that make it possible for a train to move safely from line to line.

One of the highlights for the Renew Track category in the last year has been the substantial completion of BART's rail reprofiling program. Rail grinding has been employed by BART across all of its lines to improve the interaction between the track and rail. Since 2016 BART has been slightly changing the surface of the wheels so trains can ride more quietly on the track. The other half of that equation has been efforts to smooth out rails to address corrugation, which is the presence of visible ruts in the rail that can create more noise. BART has two rail grinders that will continue to operate to maintain this improved experience for riders.

Workers have been busy in southern Alameda County for the last two years working on the replacement of an interlocking between the South Hayward and Union City stations. The interlocking is a key part of the track system that allows trains to safely move from line to line. In the last year BART achieved substantial completion of this project. The work included a series of shutdowns on non-consecutive weekends in 2021 and 2022 to complete. On those weekends riders in the work area had to get off their train and board a bus to continue their journeys.

Measure RR dedicates a total of \$625 million toward renewing track. Through December 2022 \$362.7 million in RR funding has been invested in track renewal projects. 67% of planned work has been completed in the Renew Track project category. The completed work has a value of \$417.97 million.



## Active Projects Completed or Under Construction

Status as of 03/09/2023





# MAJOR PROJECTS: RENEW POWER INFRASTRUCTURE

2022 included a flurry of activity to replace aging power equipment across the BART system. In many cases the 34.5kV (kilovolt) cables being replaced had been relied upon to provide traction power to trains for decades and had long since outlived their design life. Replacing these cables enhances the reliability of the BART system for riders. In the lifetime of RR crews have replaced 61 miles of traction power cable including 15 miles in 2022. A total of 29 projects have been initiated in this project category with 17 in construction and 4 completed.

BART in 2022 completed the M Line 34.5kV Cable Replacement Project a year ahead of schedule. This work focused on replacing approximately 7 miles of traction power cabling through downtown San Francisco. BART completed much of this work on Sundays by reducing service through various stretches of San Francisco to only one track. Using only one track for service created enough space for workers to safely replace the aging cable. This effort was advanced at a time when BART ridership was low due to the impacts of the pandemic so fewer riders would be negatively impacted by delays. The completion of this project ahead of schedule is an encouraging sign for future cable work. Near term cable replacement work is focused on the Red Line near Richmond where workers had to respond in March 2022 to an emergency fault in the system. You can read more about that work on page 12 of this report.

In 2022 BART installed a new power substation at Civic Center Station in downtown San Francisco. New substations are an essential part of the Transbay Corridor Core Capacity Program, which will eventually increase BART's capacity to run additional trains and offer more frequent service. Five new substations will be added to the BART system as part of the program at Civic Center, Montgomery Street, MacArthur, Concord, and Richmond stations.

Measure RR dedicates a total of \$1.225 billion towards the renewal of BART's power infrastructure. Through December 2022 \$580.6 million in RR funding has been invested in power infrastructure projects. The completed work has a value of \$642.86 million. 52% of planned work has been completed in the Renew Power Infrastructure project category.

**Boxes weighing up to 37,000 pounds containing transformers and other equipment were lifted by a crane into Civic Center Station.**



## Active Projects Completed or Under Construction Status as of 03/09/2023



# MAJOR PROJECTS: REPAIR TUNNELS AND STRUCTURES

Projects in the Repair Tunnels and Structures category often focus on life-safety priorities for everyone who rides or works in the BART system. This includes ensuring the Transbay Tube is prepared for the next big earthquake. A total of 26 projects have been launched under the Repair Tunnels and Structures category including 8 that have been completed and 8 more that are currently under construction.

In the last year work has been completed on the trackway demolition and restoration for the Transbay Tube Retrofit Project. This is an important milestone for the project which aims to ensure the Tube can withstand a 1,000-year earthquake, the largest temblor BART could experience in 1,000 years.

Construction has been completed in Alameda County on new aerial fall protection structures and catwalks to enhance safety for BART employees. This work happened along the Orange and Green lines in locations where the BART tracks are supported by elevated structures. Workers installed 86,863 linear feet of aerial fall protection.

BART installed 9,800 feet of physical safety barriers and 17 swing gates systemwide. Workers also replaced the platform edge tiles at 9 stations which included the installation of 27,000 square feet of detectable tiles to make it easier for those with limited sight to discern the edges of the station platforms.

The Slope Stabilization Project is meant to ensure BART tracks are not vulnerable to mudslides by repairing eroding slopes below bridge structures and repairing damaged abutment joints below bridges. The project is also an example of how BART is leveraging RR to attract other funds. BART applied for California Office of Emergency Services grants of \$2.3 million to cover 40% of the estimated project cost. The CalOES funds had specific requirements to spend the money on a state schedule. To ensure BART met the RR program schedule the project was split into separate packages, one that relied on RR funds only and other packages that contained mixed funds. The package that relied on RR funds only was focused on the most critical locations so funding constraints would not cause delays. For mixed funds packages, BART used RR funding to complete design and matching funds to complete construction.

Measure RR dedicates a total of \$570 million toward the repair of tunnels and structures. Through December 2022 \$211.4 million in RR funding has been invested in tunnels and structures projects. The completed work has a value of \$220.99 million. 40% of planned work has been completed in the Repair Tunnels and Structures project category.



Slope stabilization work along tracks in Walnut Creek.

## Active Projects Completed or Under Construction Status as of 03/09/2023





# MAJOR PROJECTS: RENEW MECHANICAL INFRASTRUCTURE

Work in the Renew Mechanical category focuses on core infrastructure needs such as fire safety systems and replacing Heating, Ventilation, and Air Conditioning (HVAC) units. A total of 26 projects have been initiated in this program category including 11 that have been completed and 4 that are in the construction phase. 6 projects in this category have been completed since the previous RR Annual Report.

Recently completed work includes the installation of new fire hoses and piping at various locations, new fire services put in place at the Orinda Yard and Oakland Shops facilities, and a project to improve fire protection in BART's main computer room. BART has also completed design for HVAC replacement at yard control towers and started construction on fire services at the Hayward Yard. In the near-term BART hopes to procure a new wheel truing machine for the Concord Yard. The truing machine will allow workers in Concord to better address issues with train car wheels. This will be a boost for the rider experience as it will give BART staff greater flexibility in responding to wheel issues and hasten the return of cars to service.

Measure RR dedicates a total of \$135 million toward renewing mechanical support structures. Through December 2022 \$79.2 million in RR funding has been invested in renewing BART's mechanical infrastructure. The completed work has a value of \$83.49 million. 54% of planned work has been completed in the Renew Mechanical Infrastructure project category.



## Active Projects Completed or Under Construction Status as of 03/09/2023





# MAJOR PROJECTS: RENEW STATIONS

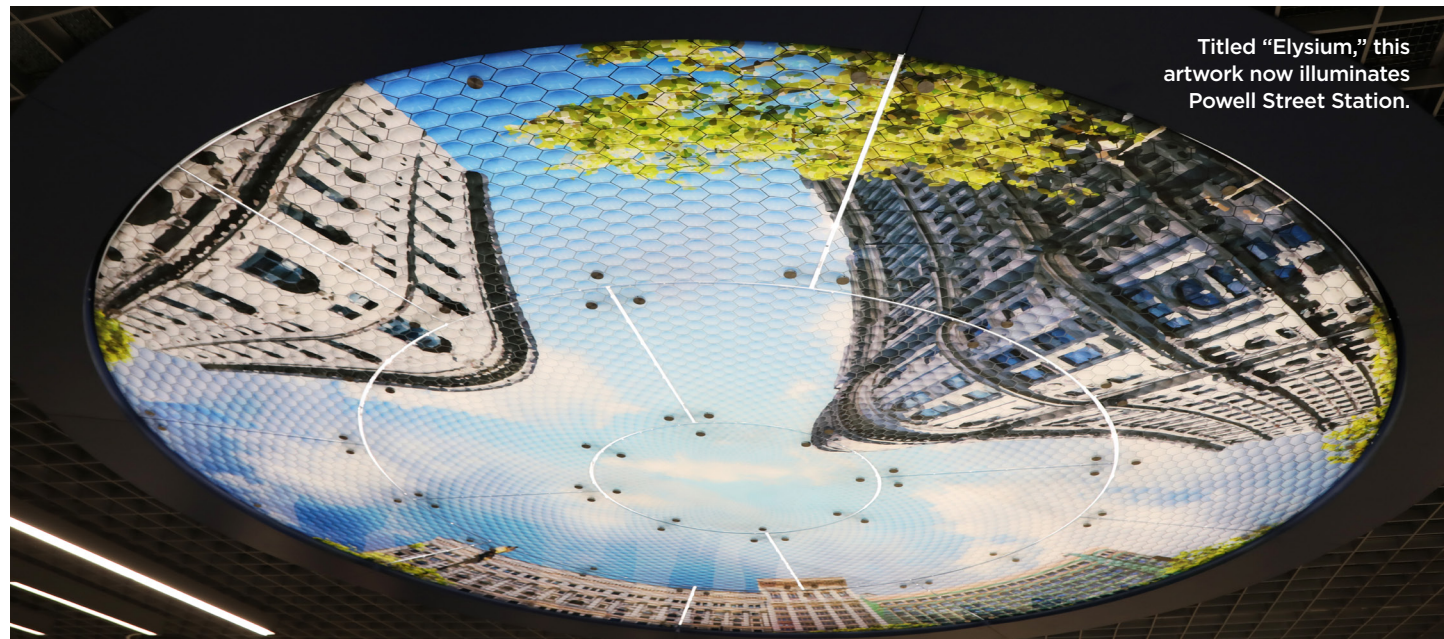
Projects in the Renew Stations category are likely the most visible to BART riders. That is especially true this year as BART has recently completed major renovations at two of its busiest stations: Powell Street Station in downtown San Francisco and 19th Street Station in downtown Oakland. A total of 8 projects have been initiated in this program category including 3 that have been completed and 4 that are in the construction phase.

BART officially unveiled the improved Powell Street Station in November 2022 at the start of the holiday shopping season when BART typically sees an increase in weekend riders at Powell. Among many updates, the station boasts reopened public restrooms, LED lighting, five-foot-tall glass fare barriers, a modern metallic grid ceiling, and a new external canopy. The modernization also includes the installation of new illuminated ceiling artwork titled “Elysium” by San Francisco artist Stephen Galloway.

BART held a ribbon cutting for the improvement at the 19th Street Station in January 2023. The project redesigned the concourse to merge three previously separate platform access points into one continuous paid area and eliminated hidden corners by using glass barriers instead of brick. Features include the repair of terrazzo flooring and ceramic wall tiles, a new north end elevator and the addition of bike channels. The project also involved the renovation and reopening of the public restrooms on the concourse level, a milestone marked in February 2023.

Work is progressing on other station improvements. This includes the completion of a new platform-level escalator at Embarcadero Station and the completion of the first four entrance canopies at the Embarcadero, Montgomery Street, Powell, and Civic Center stations in downtown San Francisco through the Market Street Entry Canopies Project.

Measure RR dedicates a total of \$210 million toward renewing stations. Through December 2022 \$64.8 million in RR funding has been invested in station renewal. The completed work has a value of \$66.44 million. 32% of planned work has been completed in the Renew Stations project category.



## Active Projects Completed or Under Construction

Status as of 03/09/2023





## MAJOR PROJECTS: TRAIN CONTROL MODERNIZATION

One of the most significant improvements for the rider experience will come when BART installs a new Communications Based Train Control (CBTC) system. CBTC is the next generation of train control that will take BART away from its current fixed-block signaling system, which requires that BART trains be separated by a certain length of block space in order to move forward. CBTC allows for real-time adjustments of speed and braking to allow for safe separation while trains to travel closer together. This system in the future will make it possible for BART to run more trains and reduce wait times for riders. CBTC is part of BART's larger Transbay Corridor Core Capacity Program.

6 projects have been launched in this category including 5 that are in the construction stage. Initial work on the CBTC project has included beginning proof of concept installation at the Hayward Test Track. The test tracks allow BART a safe way to work on CBTC without impacting riders.

Measure RR dedicates a total of \$400 million toward the implementation of a new train control system. Through December 2022 \$48.4 million in RR funding has been invested in train control modernization. This is a decrease from \$61.6 million listed in last year's report. That change is due to BART transferring costs to spend down federal American Rescue Plan funds. The completed work has a value of \$47.43 million. 12% of planned work has been completed in the Train Control Modernization project category.





# MAJOR PROJECTS: RELIEVE CROWDING

Even with ridership relatively low due to the global pandemic crowding still occurs in the system, especially during peak commute hours. As BART continues its efforts to encourage former riders to return to the system, Measure RR funding is being used to expand storage for new Fleet of the Future cars as well as continuing project outreach for a project that would create a new transbay rail crossing. There are 7 active projects in the Relieve Crowding category with 1 project completed and 2 under construction.

BART has completed design for the east storage yard at the Hayward Maintenance Complex (HMC). HMC will ensure BART's maintenance and repair capacity is sufficient to support the new railcar fleet. HMC will consist of the acquisition and improvement of four properties on the west side of the existing Hayward Yard for a larger primary repair shop, a new component repair shop, a vehicle overhaul shop, a new central parts warehouse, and a new maintenance and engineering repair shop. It will also include the construction of additional storage tracks for a maximum of 250 vehicles.

Public outreach for Link 21, the new transbay rail crossing project, is in its initial phase. Link 21 and its partner agencies aim to better connect BART and regional rail networks in Northern California, as envisioned by the California State Rail Plan. The program is working to identify projects that will improve the ability of riders to move around the 21-county Northern California megaregion by train. Public outreach at this stage includes gathering thoughts from riders and other stakeholders on initial concepts. Near term work will focus on developing a travel plan and land use model for the project.

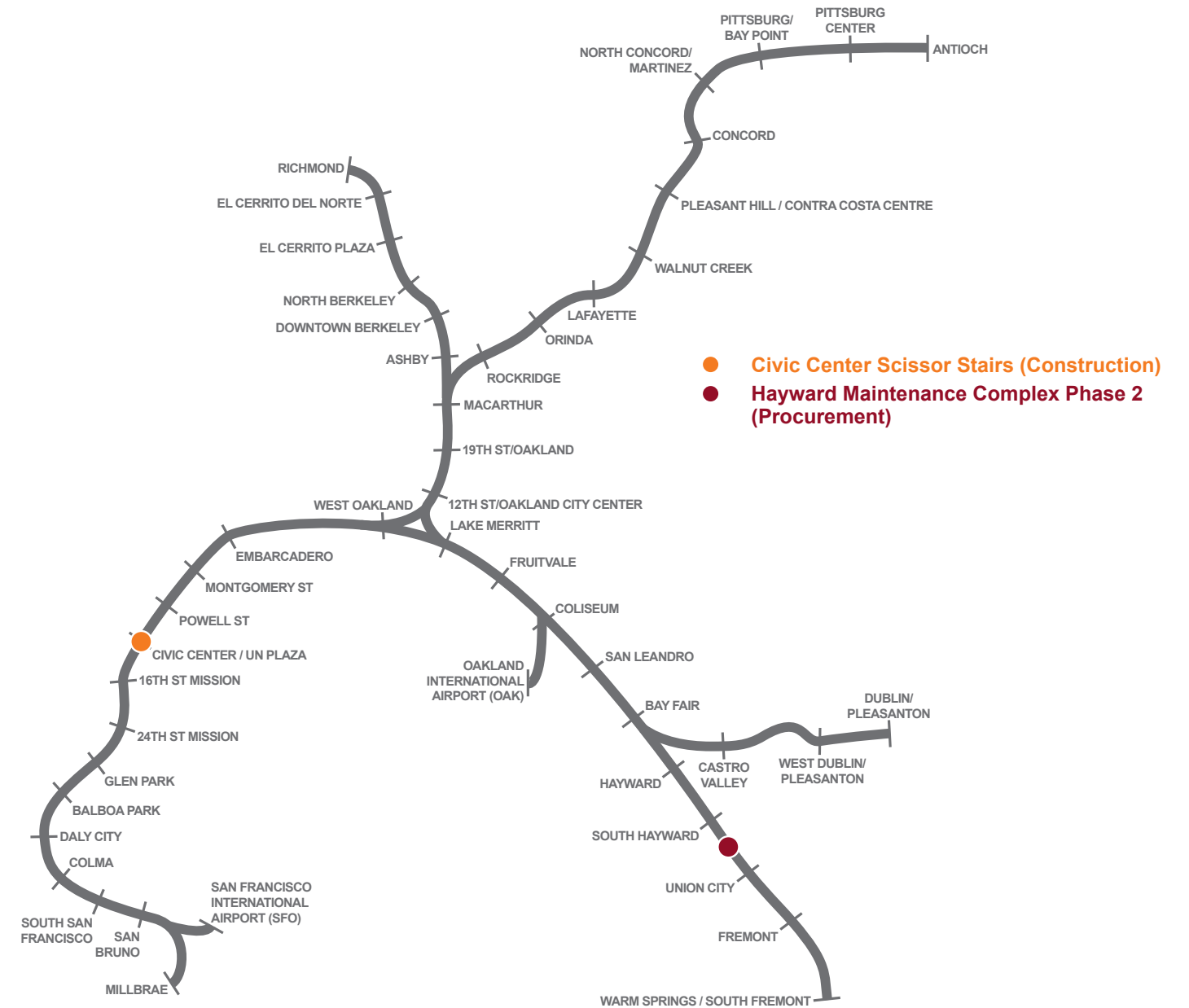
Measure RR dedicates a total of \$200 million toward relieving crowding. Through December 2022 \$106.5 million in RR funding has been invested on crowding-related projects. The completed work has a value of \$105.27 million. 53% of planned work has been completed in the Relieve Crowding project category.



Construction at the Hayward Maintenance Complex.

## Active Projects Under Construction, Design or Planning

Status as of 03/09/2023





# MAJOR PROJECTS: ACCESS IMPROVEMENTS

Measure RR is supporting projects that better connect BART with the communities it serves and ensure the system is as easy to use as possible for all riders. Station Access projects are a critical part of BART's focus on equity. These projects are opening up the system to disadvantaged communities and making BART more user friendly for stakeholders. There are currently 30 projects in the Station Access category including 11 that have been completed.

The Safe Routes to BART program is a first-of-its-kind community partnership initiative for the District that leverages RR money with local funding to support projects that improve access to the system. To participate in the program local projects must offer a minimum funding match of 30%. One of the projects supported by the initiative is now complete. In late 2022 work wrapped up on the Fifth Street Improvement Project in downtown San Francisco near the Powell Street Station. This project includes vehicle-lane reductions, new striping, signal timing changes, raised crosswalks, and more pedestrian-friendly upgrades.

For years many riders have complained they struggle to hear station announcements. BART is using RR funding to revamp its public address system. This year BART plans to award a contract to begin that work.

Encouraging people to get to BART by means other than driving alone is another priority. In early 2023 BART completed work on new bike racks at the 19th Street Station in downtown Oakland to encourage more riders to use their bicycles to get to BART.

Measure RR dedicates a total of \$135 million toward access improvements. Through December 2022 \$39.9 million in RR funding has been invested in access improvements. The completed work has a value of \$39.05 million. 29% of planned work has been completed in the Access Improvements project category.

New bike rack at 19th Street Station.



## Active Projects Completed or Under Construction Status as of 03/09/2023



# FUNDING RR WITH GREEN BONDS

BART has offered four tranches of Green Bonds totaling more than \$2.1 billion to support the Measure RR rebuilding program since work started in 2017. The initial tranche was for \$300 million and was offered in 2017. The second tranche offering in August 2019 was \$360 million. The third tranche was offered in August 2020 for \$700 million, and the latest tranche for \$700M was issued in May 2022. For all these issuances, BART has worked closely with its financial advisors to develop a financing plan that ensures funds are available as needed for projects while taking into consideration the rate paid by taxpayers.

When the fourth tranche was offered last year Moody's Investor Service gave BART's General Obligation Bond Program a credit rating of 'Aaa Stable.' The service wrote about BART, "the District's healthy financial metrics, strong liquidity and additional federal aid that position the District well to manage through current declines in ridership due to the coronavirus pandemic and the longer term shift to remote work that it has spurred." Fitch Ratings issued BART an 'AA Long-Term Issuer Default Rating.' The service wrote the rating reflects BART's "low long-term liabilities and manageable capital spending pressures in the context of an unusually broad and deep economic resource base."

Green Bonds have been at the center of BART's plan to finance Measure RR construction work since the beginning of the program. BART is among the first transit agencies in the country to earn a green climate certification for its bonds. BART received its certification in 2017 through the Climate Bonds Initiative's Low Carbon Transport Standard. The Climate Bonds Initiative promotes investments in projects that bring the world closer to a low-carbon and climate-resilient economy consistent with the 2015 Paris Agreement. As the market for Green Bonds expands, costs for climate-friendly projects everywhere may decrease. Green Bonds are not more expensive than traditional bonds, but they allow BART to further demonstrate its commitment to the environment.

BART originally expected to offer bonds in equal installments every two years for 18 years. But Measure RR-funded rebuilding work has progressed faster than initial projections and as a result more funds have been needed sooner to ensure work continues. If BART stayed with its original financing plan only about \$1.2 billion in Green Bonds would have been issued up to this point.

## Measuring up to Bond Requirements

IRS rules require that BART has a reasonable expectation that 85% of bond proceeds, including interest earning on the proceeds, will be spent within three years of the issuance of the bond. BART has progressed on Measure RR work at a pace that exceeds this requirement. As of July 2022 BART had spent \$1.36 billion on Measure RR projects or the equivalent of all the first three tranches of Green Bonds. It's projected that the latest tranche will be spent by early 2025. This pace of spending reflects BART's ability to exceed IRS requirements. It also demonstrates that Measure RR-funded work is being delivered in a timely manner.

Property taxes assessed in Alameda, Contra Costa, and San Francisco counties are being used to pay back Measure RR bonds. At the start of the program BART estimated the average yearly tax rate over the life of the bond program would be \$8.98 per \$100,000 of assessed property value. BART further projected that the yearly tax rate would range from \$0.80 to \$17.49 per \$100,000 of assessed value. BART's latest property tax assessment for Measure RR to cover debt service in FY 2022-23 is \$8.70 per \$100,000 of assessed valuation.

## RR PROGRAM EXPENDITURES OVERVIEW

Program	Expended Through December 2022	% Expended Out of Total Bond Investment		
			MID-TERM (Through 2025)	LONG-TERM (Through End of Bond)
Renew Track	\$362.7	58%	\$433.5	\$625
Renew Power Infrastructure	\$580.6	47%	\$868.0	\$1,225
Repair Tunnels and Structures	\$211.4	39%	\$318.3	\$570
Renew Mechanical Infrastructure	\$79.2	51%	\$133.0	\$135
Renew Stations	\$64.8	31%	\$107.1	\$210
Train Control Modernization	\$48.4	12%	\$113.1	\$400
Relieve Crowding	\$106.5	53%	\$127.8	\$200
Access Improvements	\$39.9	30%	\$69.2	\$135
<b>TOTAL</b> In (\$ Millions)	<b>\$1,493.6</b>	<b>43%</b>	<b>\$2,170.0</b>	<b>\$3,500</b>



# MEASURE RR SPENDING BREAKDOWN

Total Measure Investment	\$ Millions	% of Total Bond	Benefits		
			 Safety	 Reliability	 Crowding +Traffic Relief
<b>REPAIR AND REPLACE CRITICAL SAFETY INFRASTRUCTURE</b>	<b>\$3,165</b>	<b>90%</b>	✓	✓	✓
Renew Track	\$625	18%	✓	✓	
Renew Power Infrastructure	\$1,225	35%	✓	✓	
Repair Tunnels and Structures	\$570	16%	✓	✓	
Renew Mechanical Infrastructure	\$135	4%	✓	✓	
Renew Stations	\$210	6%	✓	✓	✓
Train Control Modernization	\$400	12%	✓	✓	✓
<b>RELIEVE CROWDING, REDUCE TRAFFIC CONGESTION AND EXPAND OPPORTUNITIES TO SAFELY ACCESS STATIONS</b>	<b>\$335</b>	<b>10%</b>	✓	✓	✓
Relieve Crowding	\$200	6%		✓	✓
Access Improvements	\$135	4%	✓	✓	✓
<b>TOTAL</b>	<b>\$3,500</b>	<b>100%</b>			

# RR – ONLY PART OF THE SOLUTION

Measure RR goes a long way in addressing BART’s need to rebuild its critical infrastructure. But the \$3.5 billion that will be raised over the lifetime of RR does not go far enough to fulfill all BART’s capital needs. BART estimates its total capital need through Fiscal Year 2033 is \$22.4 billion. The agency has so far identified \$12.4 billion in funding, which leaves a gap of \$10 billion. The pie chart on this page shows the various funding sources to fund BART’s capital program as well as the funding gap.

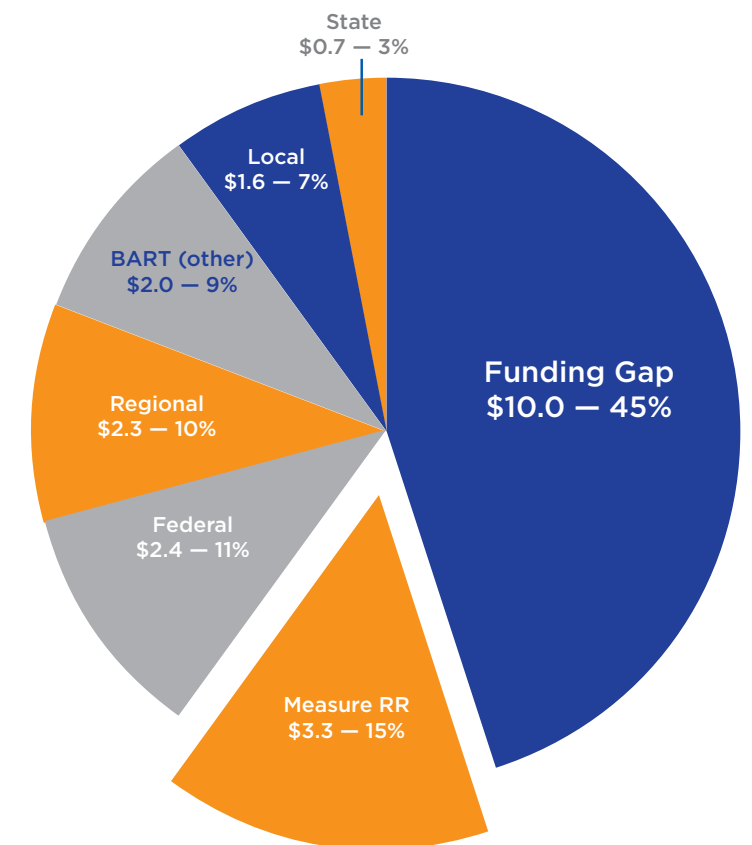
BART faces long-term capital funding challenges and continues to pursue additional grants by leveraging RR dollars. Through 2022, almost \$1.5 billion of Measure RR has been expended which has leveraged more than \$3.2 billion of external grant funding and other BART funding to support the RR Program. The external grant funding represents funding from the Federal Transit Administration to county transportation agencies. These grants funded a diversity of projects from core repair and basic maintenance investments to station modernization projects.

BART is in the process of developing an updated Capital Improvement Program, which will forecast the BART Capital Program and funding landscape over the next 15 years. That document is expected to be published later in 2023.

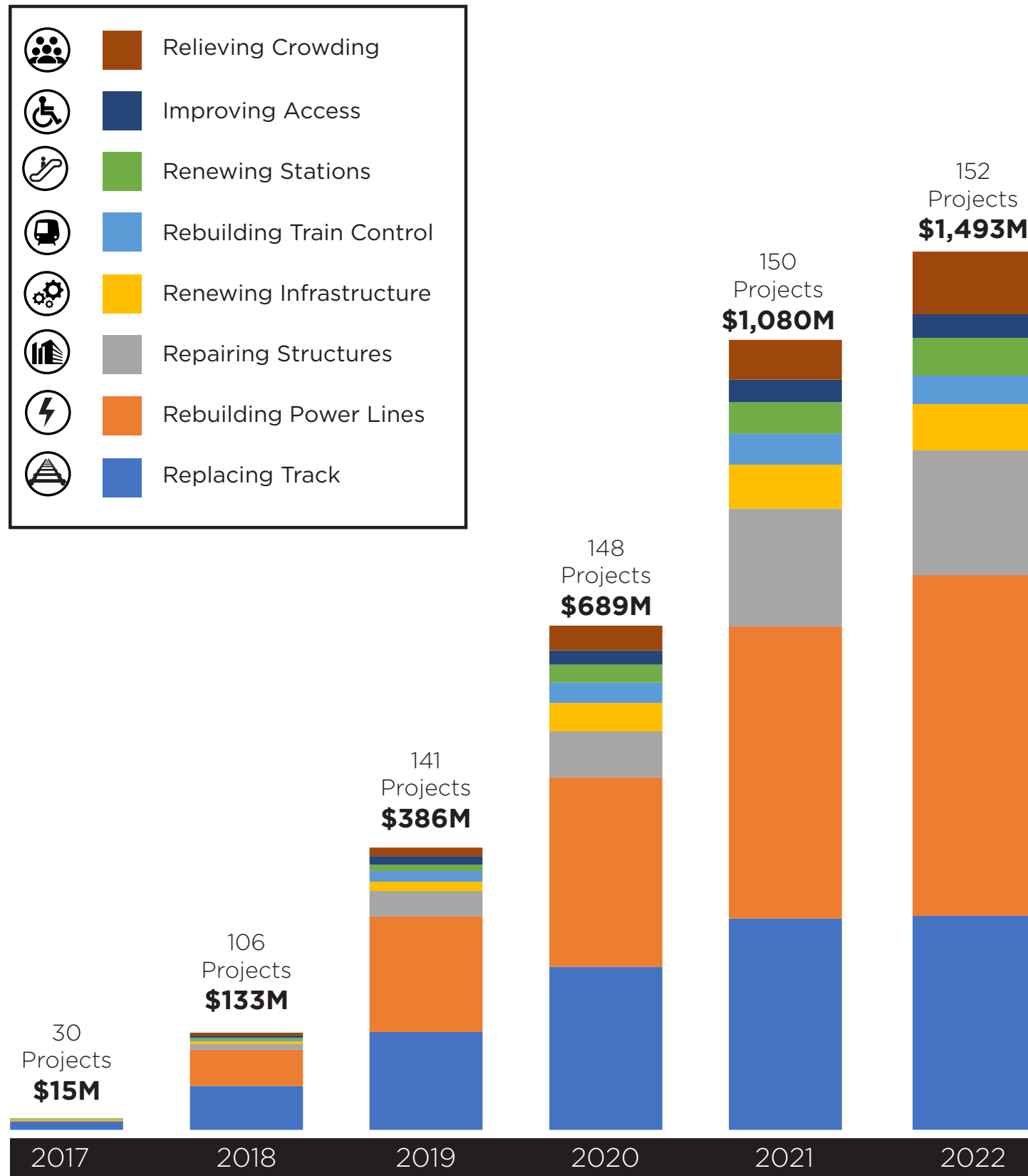
## BART FY19–33 Capital Investment Needs and Funding Sources (Billions)

Total capital need: \$22.4  
 Total funding identified: \$12.4  
 15-year capital funding gap: \$10

NOTE: All numbers are noted in billions.



# YEARLY PROGRAM EXPENDITURES

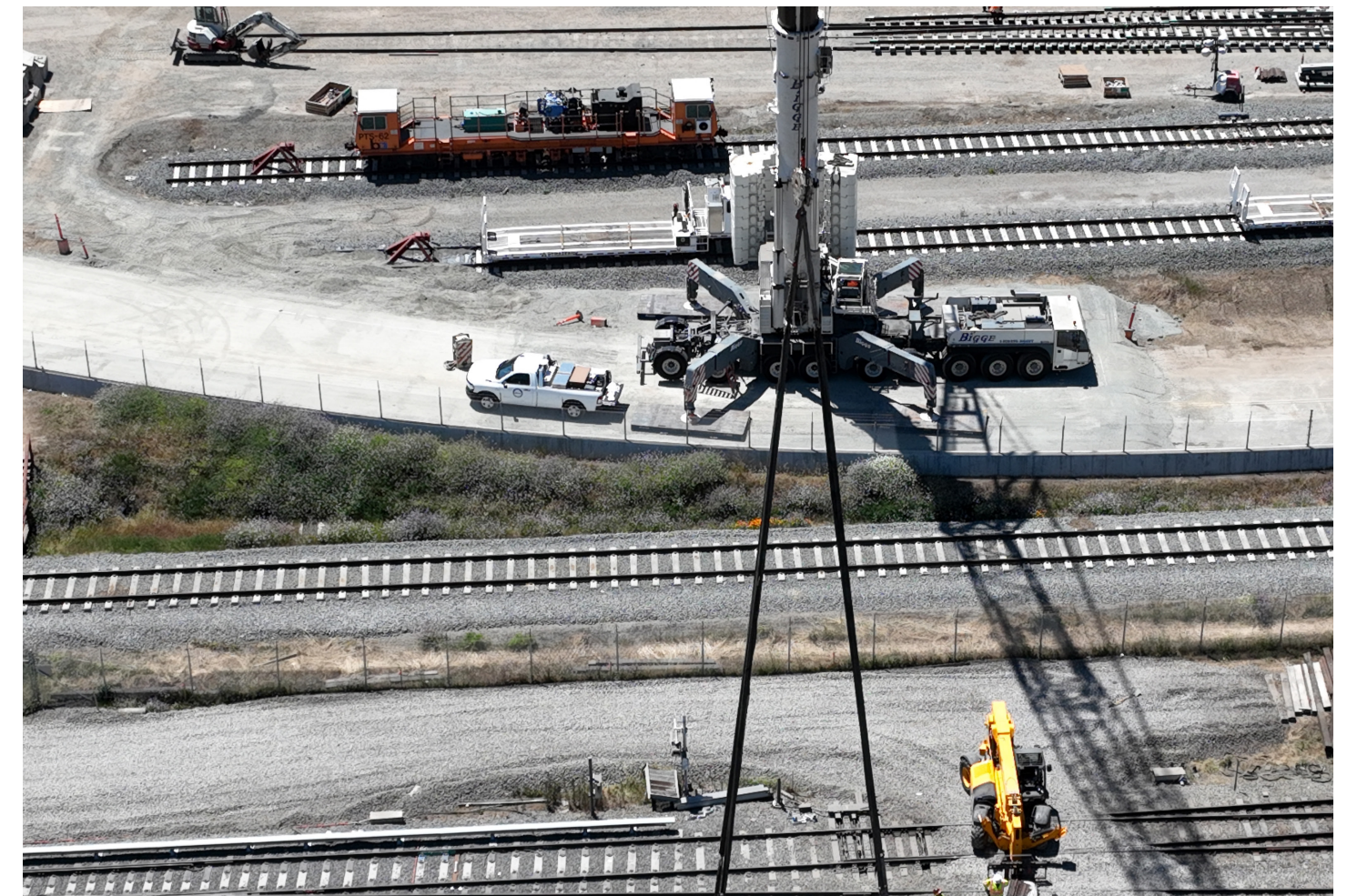


# MEASURING COST EFFECTIVENESS

The independent Bond Oversight Committee mandate is to ensure the Measure RR rebuilding program is proceeding in a cost-effective manner. BART and the BOC utilize an integrated method known as Earned Value Management (EVM). The EVM method is used to evaluate the progress of individual projects as well as larger program categories. It is popular, well-established, and widely recognized as an objective measurement within government contracting and other sectors.

BART staff present to the BOC what work will be done, when it will happen, and how much money and time it will take to reach completion. EVM allows someone to assess whether the value of work completed at a given point is worth the money spent at that point in time.

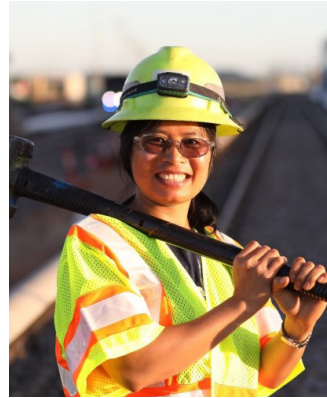
By providing both a Cost Performance Index (CPI) as well as a Schedule Performance Index (SPI) EVM is useful in project forecasting. When BART staff analyze EVM results they are looking for trends that emerge over multiple quarters. Projects are considered on track when both the CPI and SPI consistently hover around 1.0. When a CPI or SPI rises above 1.2 or below 0.80 in a given reporting period, the program is given additional scrutiny to determine if there are any risks or issues. If risks exist, staff develop a mitigation plan to either correct or hinder the risks from growing larger. It's normal for some projects to perform better than others at different times, which makes looking at the overall programs so important for the long term. The BOC receives regular EVM updates from BART staff and is advised if any issues are identified that require mitigation.





# THE PEOPLE OF RR

The innovation and diversity of the Bay Area's workforce is reflected throughout the Measure RR rebuilding program. Measure RR is revitalizing BART's core infrastructure while also boosting the region's economy. From April 2022 through March 2022 Measure RR supported 503 Full-Time Equivalent (FTE) jobs. These are positions that are based across the BART District and pay a living wage that measures up to the Bay Area's well-known high cost of living.



## **\$300 in her wallet and a dream; How a BART track operator forged her own path**

On a recent Saturday morning, Thu Nguyen made her way to the Hayward Maintenance Complex, where a dozen workers were busy uprooting old track and laying the groundwork for a new track switch under the morning sun.

When Nguyen arrived, the workers – all men – in their bright yellow safety vests and hard hats greeted her with exclamations and smiles.

“Hi, everyone!” said Nguyen, smiling back.

Nguyen has worked at BART as a track worker for two-and-a-half years. Recently, she was promoted to track operator, meaning “I have a little more responsibility,” she said.

Nguyen's ambitions do not stop with track operator. Once she passes her TOEFL assessment, a standardized exam that measures English proficiency, she intends to pursue a master's degree in Transportation Management from San Jose State University. BART offers employees who pursue the degree from SJSU large financial support packages.

Nguyen's path to track operator was not an easy one. She grew up in rural Vietnam, where she worked in the fields of her family's farm.

“From a young age, I did a lot of physical work. I learned [from the time I was a child] to do what is happening here,” she said, gesturing at the men working around her.

In young adulthood, Nguyen received a bachelor's degree in biology from a university in Vietnam, but she sought new pastures. She moved to Israel to learn agriculture, then to San Diego in 2016. Moving to the U.S. was difficult for Nguyen, who struggled with family and adapting to a new culture and language. A few years after moving to San Diego, Nguyen packed up her daughter and her things and set out for Oakland. She had \$300 in her wallet, no job, and no housing.

“I moved to Oakland, and from there, things changed,” she said. “I [realized I could] do a lot more than I imagined.”

Nguyen eventually connected with the Cypress Mandela Training Center, which offers free pre-apprenticeship program for Bay Area residents to BART opportunities.

Track work is hard, but fulfilling, Nguyen said. “I learn something new every day.”

Working with mostly male colleagues hasn't been a problem for Nguyen. She said her colleagues “make me stronger” – and she likes that the men rarely “hold a grudge.” “You have to let them know you're willing to learn and try a new thing,” she said. “I tell them I'm ready to learn. I might make mistakes, but I'll try to get better.”

In five years, Nguyen said she hopes to have her master's degree at San Jose State University and to continue working track. And she'll never, ever stop learning.

“Don't look at the challenge as the thing you must do,” she said, stringing pearls of wisdom. “Look at the challenge as an opportunity to learn, an opportunity to experience something ... You need to know suffering to know happiness. You need to be challenged to appreciate your achievements. And if you don't try it, you'll never know what could have been.”



## **Veterans are a key part of the RR team**

The diversity of the Measure RR program features a variety of life experiences including veterans of the U.S. Armed Forces. Mahendra Gautam, Principal Construction Engineer, served in the U.S. Army from 2009 to 2014 as a technical engineer sergeant. When you serve in the military, he said, you are motivated by a common goal: keep the country and its citizens safe. At BART, employees are also motivated by a common, singular goal: make the trains run safely and timely.

Gautam says the Army prepared him for BART's 24/7 operations – “Somebody's always working in some portion of BART,” he said. “Most of the construction and maintenance happens at night, actually.”

He said the Army made him flexible and amenable to shifting situations.

“If you can do the military, all the other things aren't a big deal,” he said.

Gautam, who called BART “a big family,” said he continuously and randomly discovers fellow employees served in the military.

“There are a lot of veterans around BART in various fields,” he said. “I've seen more veterans here than anywhere else I've worked.”

Gautam takes pride in that. “It's good to see people transitioning into civilian life and doing well,” he said.

# SMALL BUSINESS OUTREACH

In 2022 OCR organized 46 outreach events which had an average audience of 40 participants. That included 19 Small Business Support Services training and outreach events. The Small Business Support Services (SBSS) program is operated by BART’s Office of Civil Rights (OCR). The program was instituted as a free resource to increase the pool of qualified small, local, minority, women, disabled veteran, and lesbian, gay, bisexual and transgender businesses in BART contracting opportunities, and to also provide them with the type of customized technical assistance that would make them more competitive in the bidding process. SBSS guides their efforts to successfully bid on these projects. Once a contract is awarded, the program provides support services to ensure the successful delivery of the project from start to finish.

Mitchells Transport is one of more than a thousand businesses assisted by the SBSS program. Catherean and Taishawn Mitchell opened their Oakland-based trucking company in just 17 days. They won their first contract within 30 days of being in compliance. And they haven’t slowed down since.

“We are first-generation entrepreneurs, my husband and I,” Catherean said. “And we really bootstrapped our business to get it where it is today. It has been a difficult, eye-opening journey.” While Mitchells Transport awaits the right BART project to bid on, the business has benefited from the coterie of training and services offered by SBSS in the meantime.

“The SBSS program has supported us tremendously,” said Catherean, noting that she’s received assistance writing grants, finetuning pitches, and redesigning the company’s website. She’s also taken advantage of SBSS events and trainings.

For Mitchell Transport, the support from SBSS has been invaluable. Catherean encourages anyone looking to start a small business to “find an organization that’s willing to mentor you.”

“You have to invest in your future,” she said. “If you never start, you’ll never know how much opportunity is out there.”

BART’s Office of Civil Rights also administers a Non-Discrimination Program for Subcontracting on non-federally funded contracts to ensure prime contractors don’t discriminate when subcontracting out work. This program and SBSS are examples of how BART celebrates and supports the utilization of small, local, minority, and women contractors whose services help build and maintain BART’s core infrastructure.

Small businesses have been awarded 25% of all Measure RR contract dollars. 1,319 Measure RR contracts have been awarded to small businesses through the end of 2022. Those contracts have a value of \$274 million.

**Mitchells Transport drivers stand in front of the fleet.**



# Committee Activities and Expenditures

**As part of this report, the Bond Oversight Committee also presents a summary of its activities and expenditures.**

## **April 1, 2022**

'22 RR Annual Report draft presented to committee for review and feedback. Staff presents quarterly update on RR rebuilding program. BART interim Controller-Treasurer Christopher Gan presents status update on 2022 GO bond issuance. Committee Chair Michael McGill requests staff briefing on how BART issues bonds. Committee members are offered opportunity to tour site of interlocking replacement project between South Hayward and Union City stations.

## **June 17, 2022**

BART staff presents draft of the '22 RR Annual Report to the committee with final edits. It is approved unanimously by the full committee. Vice Chair Catherine Newman agrees to present the report to the BART Board. Members Cindy Rosenthal and Sonja Stewart agree to attend presentation as well. Staff provides update on status of the overall RR program. Committee member Rosenthal requests future discussion on what expectations are for how the committee reports on equity issues in the next report.

## **September 16, 2022**

Update on public outreach efforts for the RR Annual Report. Committee member Rosenthal says she wants to beef up the equity component in the next report. Committee member Marian Breitbart would like the report to show how BART is leveraging RR funds with federal and other funds. Chair McGill says he wants the Chair’s welcome letter in the report to mention how staff does a good job keeping the committee up to date on the various aspects of the bond measure. Committee members Vinit Shrawagi, Stewart, and Rosenthal appointed to '23 Annual Report Subcommittee. Staff provides quarterly update on progress of RR rebuilding program. Committee member Shrawagi requests including turntable replacement at Concord and Richmond yards on watch list.

**Committee Expenditures:** As of this report, the committee has spent \$xxx in Fiscal Year 2023 on the design and production of the RR Annual Report.

You are invited to participate in future Measure RR Bond Oversight Committee meetings. Those meetings are schedule to happen on the third Fridays of January, April, June, and September.

**The meetings are open to the public and are listed on the BART website at <https://bart.legistar.com/Calendar.aspx>**

**The public can view meeting minutes at [www.bart.gov/bondoversight](http://www.bart.gov/bondoversight)**

This committee will continue to publish annual reports throughout the life of the Measure RR rebuilding program.

# Helpful Links

Additional information about the Measure RR Rebuilding Program can be found on [bart.gov](http://bart.gov). Here is a list of helpful links if you'd like to learn more about the details of Measure RR.

<p><b>Previous Measure RR Annual Reports published by the Bond Oversight Committee</b></p>	<p><b>2022 Annual Report</b>  <a href="http://www.bart.gov/sites/default/files/docs/RR%20Report%202022%20FINAL%206_20_2022.pdf">www.bart.gov/sites/default/files/docs/RR%20Report%202022%20FINAL%206_20_2022.pdf</a></p> <p><b>2021 Annual Report</b>  <a href="http://www.bart.gov/sites/default/files/docs/BART%20Measure%20RR%20June%2018_2021%20FINAL%20%20sp.pdf">www.bart.gov/sites/default/files/docs/BART%20Measure%20RR%20June%2018_2021%20FINAL%20%20sp.pdf</a></p> <p><b>2020 Annual Report</b>  <a href="http://www.bart.gov/sites/default/files/docs/Measure%20RR%20Report%202020%20June%20Final.pdf">www.bart.gov/sites/default/files/docs/Measure%20RR%20Report%202020%20June%20Final.pdf</a></p> <p><b>2019 Annual Report</b>  <a href="http://www.bart.gov/sites/default/files/docs/RR%20Report%20July%202019.pdf">www.bart.gov/sites/default/files/docs/RR%20Report%20July%202019.pdf</a></p> <p><b>2018 Annual Report</b>  <a href="http://www.bart.gov/sites/default/files/docs/BART_Measure_RR_AReport_6_27_18_WEB.pdf">www.bart.gov/sites/default/files/docs/BART_Measure_RR_AReport_6_27_18_WEB.pdf</a></p>
<p><b>Measure RR Standing Rules and Original Documents</b></p>	
<p><b>Bond Oversight Committee Standing Rules</b></p>	<p>This document outlines the basics of how the Measure RR Bond Oversight Committee operates including length of committee member terms, how many meetings must occur each year, and rules to safeguard against conflicts of interest.  <a href="http://www.bart.gov/sites/default/files/docs/Bond%20Oversight%20Committee%20Standing%20Rules_Adopted%2012-18-2020%20.pdf">www.bart.gov/sites/default/files/docs/Bond%20Oversight%20Committee%20Standing%20Rules_Adopted%2012-18-2020%20.pdf</a></p>
<p><b>Original Measure RR Bond Resolution</b></p>	<p>This is the document approved unanimously by the BART Board of Directors on June 9, 2016 that lead to Measure RR being placed on the November 2016 ballot in the BART District.  <a href="http://www.bart.gov/sites/default/files/docs/Bond%20resolution.pdf">www.bart.gov/sites/default/files/docs/Bond%20resolution.pdf</a></p>
<p><b>2016 Treasurer's Tax Rate Statement</b></p>	<p>The statement from BART's Treasurer was issued in compliance with the state election code ahead of the November 2016 vote and offers best estimates of the highest tax rate which would be required to be levied to fund the bond issue, the total debt service and more.  <a href="http://www.bart.gov/sites/default/files/docs/2016%20Tax%20Rate%20Statement%20SIGNED.pdf">www.bart.gov/sites/default/files/docs/2016%20Tax%20Rate%20Statement%20SIGNED.pdf</a></p>
<p><b>2016 Measure RR Fact Sheet</b></p>	<p>Includes details put before District voters in advance of the 2016 election including how the bond would work, how much property owners could expect to pay, and a financing schedule for Measure RR.  <a href="http://www.bart.gov/sites/default/files/docs/BART%20%243%205%20Billion%20GO%20Bond%20Measure%20Tax%20Analysis%20%284%25%20AV%20Growth%20Assumption%29%20Summary%20FINAL%20WEBSITE%20POSTING%208%2019%2016.pdf">www.bart.gov/sites/default/files/docs/BART%20%243%205%20Billion%20GO%20Bond%20Measure%20Tax%20Analysis%20%284%25%20AV%20Growth%20Assumption%29%20Summary%20FINAL%20WEBSITE%20POSTING%208%2019%2016.pdf</a></p>
<p><b>Green Bond Background</b></p>	
<p><b>Green Bonds</b></p>	<p>BART provides updated information on its climate-certified green bonds including preliminary offering statements and credit reports at <a href="http://www.bart.gov/greenbonds">www.bart.gov/greenbonds</a>.</p>

# Appendix

Appendix 1: List of capital grants awarded to BART in 2022 through the use of Measure RR matching funds.

Fund Source	Awarded Through CY2022 (\$M)*	Notes
FTA Capital Investment Grant	1,295.9	CIG, ARP CIG and supplemental CIG Award from FY23 Appropriations
State Funds	654.0	SB1 grants (TIRCP, LPP, SCCP), AHCS, and other state grants
City/County Funds	514.6	
BART Sales Tax Bonds	410.5	Measure AA and bond proceed interest
Capital Allocations	176.6	
Federal Formula/Other Federal Funds	160.5	
MTC/Regional Funds	62.9	RM1, RM2, RM3, and other bridge toll proceeds
Other	3.0	
<b>Total</b>	<b>3,278.1</b>	

\*Reflects grant awards (allocated and not yet allocated) through CY2022

Appendix 2: Projects completed over the lifespan of RR. Total of 44 closed projects

Project Name	RR Funds Invested	Project Name	RR Funds Invested
Platform Doors		C35 interlocking replacement	\$19,406,194
Feasibility Study	\$2,172,740	C25 interlocking replacement	\$13,168,130
Corrosion assessment of		Restraining Rail	\$409,613
metallic gas lines	\$1,339,766	A65/A75 interlocking replacement	\$23,809,577
Fire hoses and piping	\$469,945	Friction modification study	\$1,427,981
Fire Services Yards -		R65 interlocking replacement	\$8,517,215
Concord	\$7,462,119	Warm Springs pedestrian bridge	\$1,509,999
Fire Services Yards -		eBART additional parking lot	\$4,193,651
Richmond	\$9,964,936	El Cerrito del Norte gateway	\$11,301,053
Fire Services Yards -		MacArthur transit improvements	\$4,208,167
Oakland Shops	\$259,182	Embarcadero entrance gates	\$110,435
Access Ladders	\$646,236	ADA lighting improvements	\$281,200
Vacuum system		Fare evasion barriers and control	\$189,565
(non-revenue vehicle shop)	\$1,526,779	Embarcadero and Civic Center	
Coverboard Enhancement -		bike modernization	\$541,241
Phase 4 C & L Lines	\$4,056,616	Wayfinding improvements	
Computer Room		phase 2	\$78,729
Fire Protection	\$9,742	Last mile investments	\$796,596
Replace fire suppression		Outer C Line access study	\$22,793
system at LMA	\$1,251,749	Replacement Transbay Tube	
Facilities HVAC replacement		emergency doors	\$105,184
systemwide Phase 1 & 2	\$9,071,523	Replacement of TBT	
Traction Power Cable Replacement:		emergency doors	\$12,011,147
M Line MBP-MTF	\$4,323,220	Berkeley Hills Tunnel creep	\$1,765,100
Traction Power Cable Replacement:		Safety barriers phase 3	\$2,956,488
M Line MTW-MPB	\$104,505,953	A Line operability feasibility study	\$3,810,453
Substation Replacement:		Renew sound walls of guideway	
Richmond Yard	\$1,392,350	(C,R, and L lines)	\$1,429,073
UC Intermodal Station		Platform edge structural rehab	\$5,018,027
Phase 2A	\$7,929,773	Substation walls	
El Cerrito del Norte Station		(painting and repair)	\$515,737
modernization	\$9,766,553	Total RR funds invested (through December 2022) for closed projects: \$293,070,837	
West Oakland Station		modernization plan	
modernization plan	\$298,333	C55 interlocking replacement	
C55 interlocking replacement	\$9,030,974		



# Keep up with Measure RR

The independent Bond Oversight Committee encourages you to stay updated on Measure RR and share comments or questions about BART's rebuilding efforts. Community engagement and feedback from stakeholders is essential to the success of the Measure RR program.

## Follow and comment via social media:



Facebook  
@bartssf



Instagram  
@sfbayarearapidtransit



Twitter:  
@sfbart



Email BART directly:  
BetterBART@bart.gov

## Attend a public meeting and email comments to the oversight committee:

Details on upcoming Bond Oversight Committee meetings can be found at **[www.bart.gov/bondoversight](http://www.bart.gov/bondoversight)**. Meetings are open to the public via videoconference during the pandemic. You may also email public comments that will be entered into the public record. List "public comment" as the subject line and email [ljohnson@bart.gov](mailto:ljohnson@bart.gov).







# 5. Measure RR BART Safety, Reliability and Traffic Relief Program Presentation

Bond Oversight Committee  
April 21, 2023



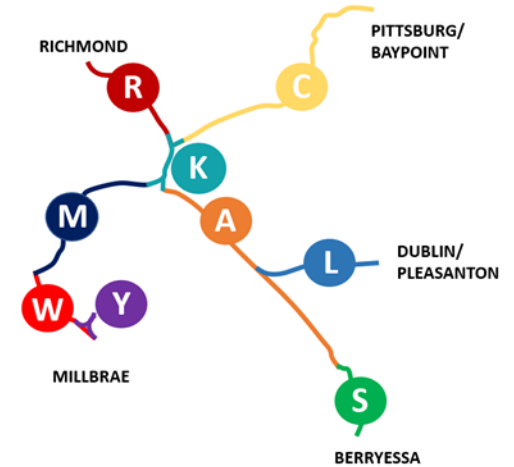
# Bond Oversight Committee Duties & Responsibilities

- 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 December 2022, \$1.49B of the Measure RR funds have been invested to complete 46% of the work
- Successes
  - Substantial Completion of Rail Reprofilng (Systemwide)
  - Substantial Completion of 19<sup>th</sup> Street Station Modernization
  - Partial Substantial Completion of Powell Street Station Modernization
  - Completion of M2 Bore Retrofit for TBT Retrofit
- Challenges
  - Increased costs of labor and materials
  - Material availability and delivery delays
  - Approval of permits from external agencies



# Projects in Planning	# Projects in Design	# Projects in Bid/Award	# Projects in Construction	# Projects Completed	TOTAL # Projects
3	35 (-1)	16 (-1)	51 (+1)	47	152 (-1)

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



# Introduction



Measure RR Related Audits



Project Controls Framework



Calendar Year 2023 Track Shutdowns



Bond Funded Program Watchlist Items Review

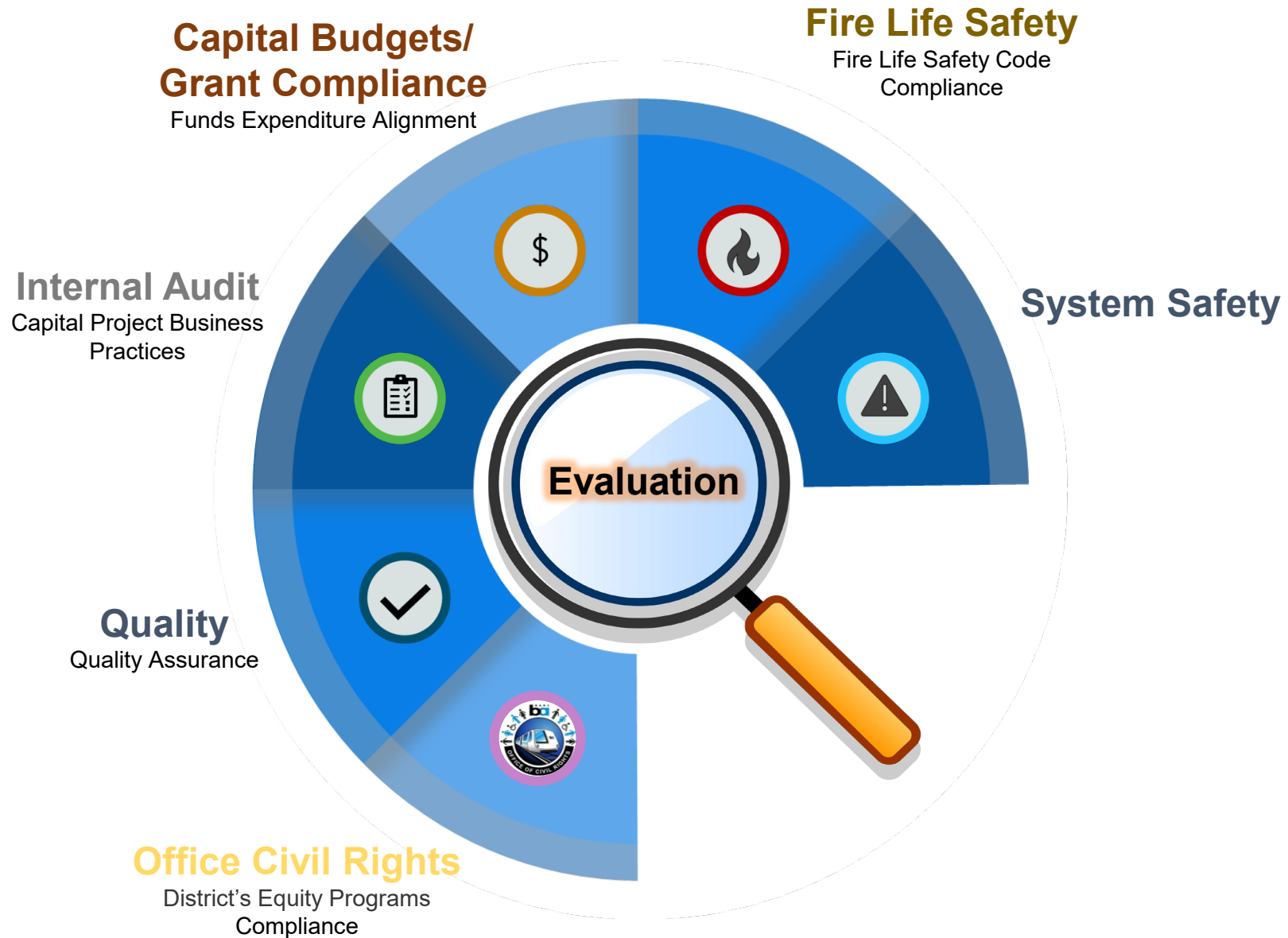


Appendix: Financial Outlook, Program Status & Milestones

# 5.A. Measure RR Related Audits



# RR Program Oversight





# RR Program - Audit



## CPUC

Annual/Triennial

Adherence to PTASP\* Safety Plan. (Incl. RWP\* & Asset Certification Compliance)



## FTA

Annual/Triennial

Management practices & Program implementation in accordance with FTA requirements.  
Oversight of Davis Bacon Monitoring and Enforcements#



## External Audit

Annual

Audit the year end financial statements of the business-type activities

\* -Public Transportation Agency Safety Plan (PTASP)  
-Railway Worker Protection (RWP)

# -Audit payroll records ensuring prevailing wages were paid to employees by Contractor

# 5.A.1. Q&A



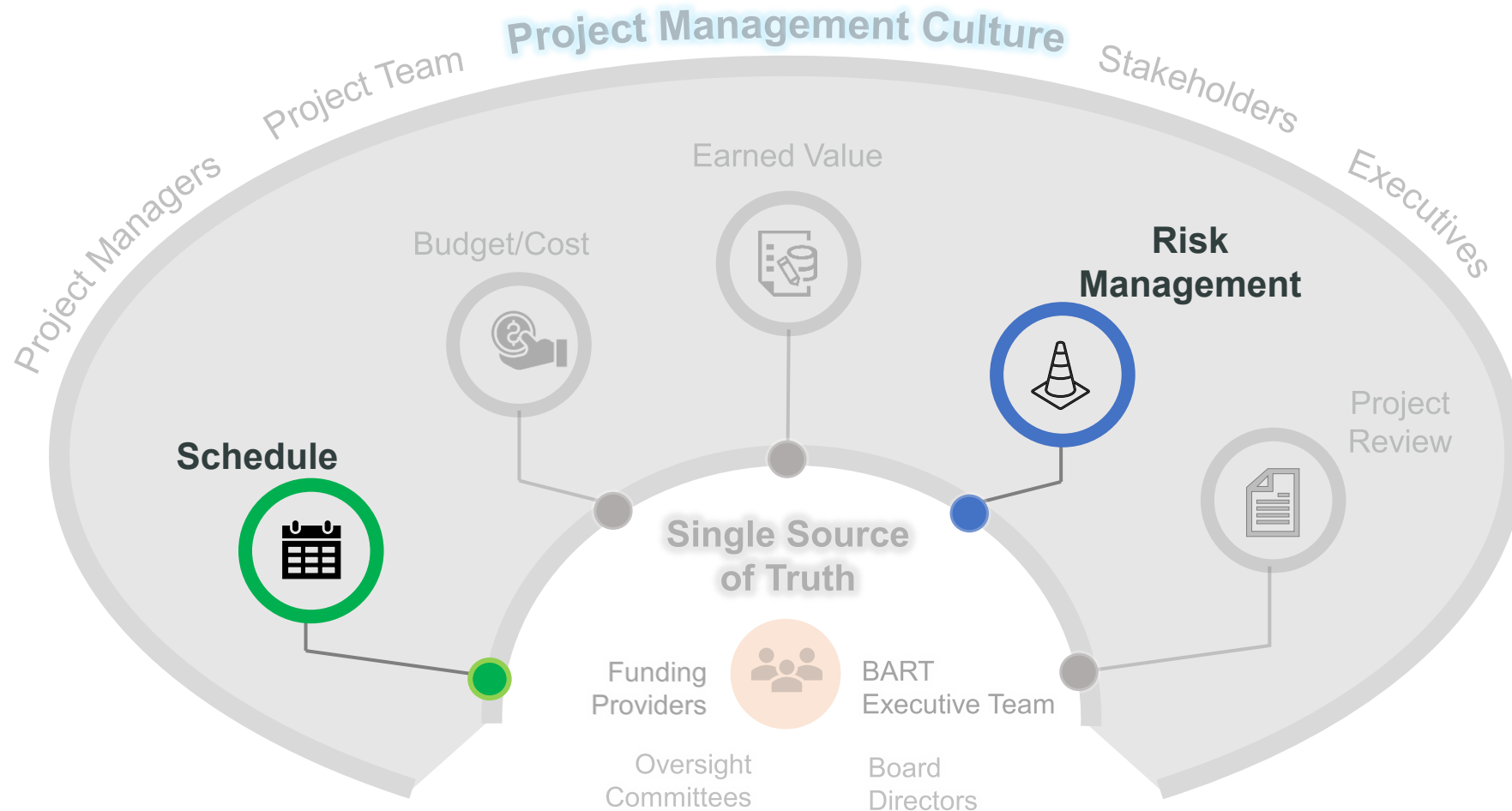


# 5.B. Project Controls Framework



# Project Controls Framework

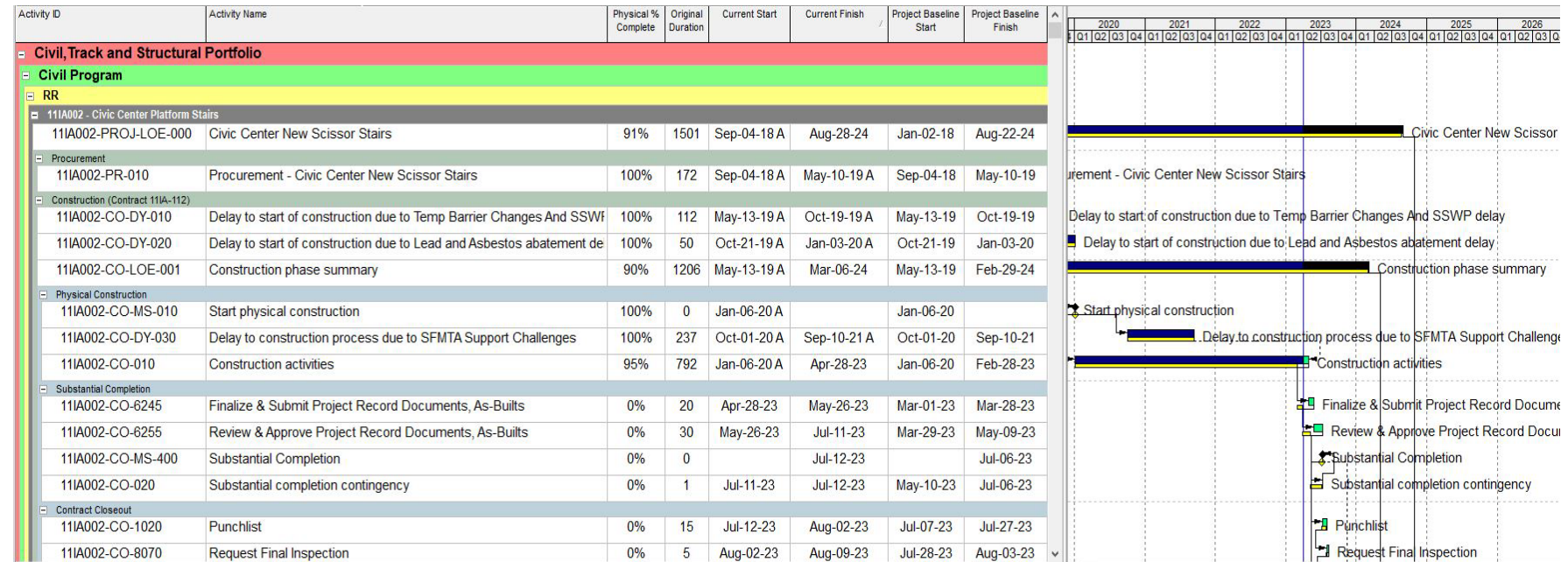
**Project Controls:** A process which utilizes resources, procedures, and tools to **control** all phases of the capital **project** lifecycle.



# Scheduling



- Transparency and Communication of project expectations to the team
- Track the progress and review various project scenarios to reduce cost and improve productivity
- Provide What-If scenario considerations
- Application and processing
- Techniques:
  - Fast Tracking
  - Deconfliction
  - Crashing Technique





# Schedule Crashing: Case Study



- 34.5 kV R-Line Cable Project

- March 6, 2022: Left cable failure, impacted train operations (reduced train service)
- BART staff worked round the clock to mitigate and develop service restoration plans
- BART collaborated with Contractor DMZ to re-sequence R-Line cable replacement work
- BART and DMZ coordinated to mobilize crews to allow maximum work simultaneously and expeditiously
- May 6, 2022: System tested and energized; Full 10 Car Train Service restored



# Risk Management



		Impact Descriptors				Very little, slight	Small, mild	Moderate, noticeable	Significant, strong	Critical, grave	Probability Descriptors
Probability	Very High	5	90%	100%	10	20	30	40	50	Almost certain, very sure	
	High	4	70%	90%	8	16	24	32	40	Very likely, repeatable	
	Moderate	3	30%	70%	6	12	18	24	30	Likely, possible or probable	
	Low	2	10%	30%	4	8	12	16	20	Unlikely, seldom	
	Very Low	1	1%	10%	2	4	6	8	10	Improbable, uncommon	
					1 Very Low	2 Low	3 Medium	4 High	5 Very High		
Cost-Relative to Project Estimate		0.25%	1.0%	3.0%	3.0%	6.0%	6.0%	10.0%	10.0%	15.0%	
Schedule-Relative to Project Duration		0.5%	1.0%	3.0%	3.0%	6.0%	6.0%	10.0%	10.0%	15.0%	
						Impact					

# Risk Management: Case Study



- **A85 Interlocking Replacement Project**

Current budget, \$12M

Current project contingency, \$1.5M

- Delivery method switched from Contract to in-house
- Cost Estimate was prepared based on previous in-house projects
- Risk register was prepared based on similar project experience
- Construction planned to start Summer 2023
- Long-lead material (special track work) has already been procured and delivered

Risk Title	Probability	Schedule Impact	Cost Impact	Rank	Mitigation
Ductbank Work	3	3	1	12	Coordinate with NS-MUX project team to allow for C15 ductbank work to be performed during weekend blankets.
Earthworks PO's	3	2	1	9	Begin working on separate Earthworks material procurement inside of this project to cover needs for the shutdown work.
Ramp Construction	2	2	1	6	Begin working on separate Earthworks material procurement inside of this project to cover needs for the ramp.



# 5.C. 10 Minute Break



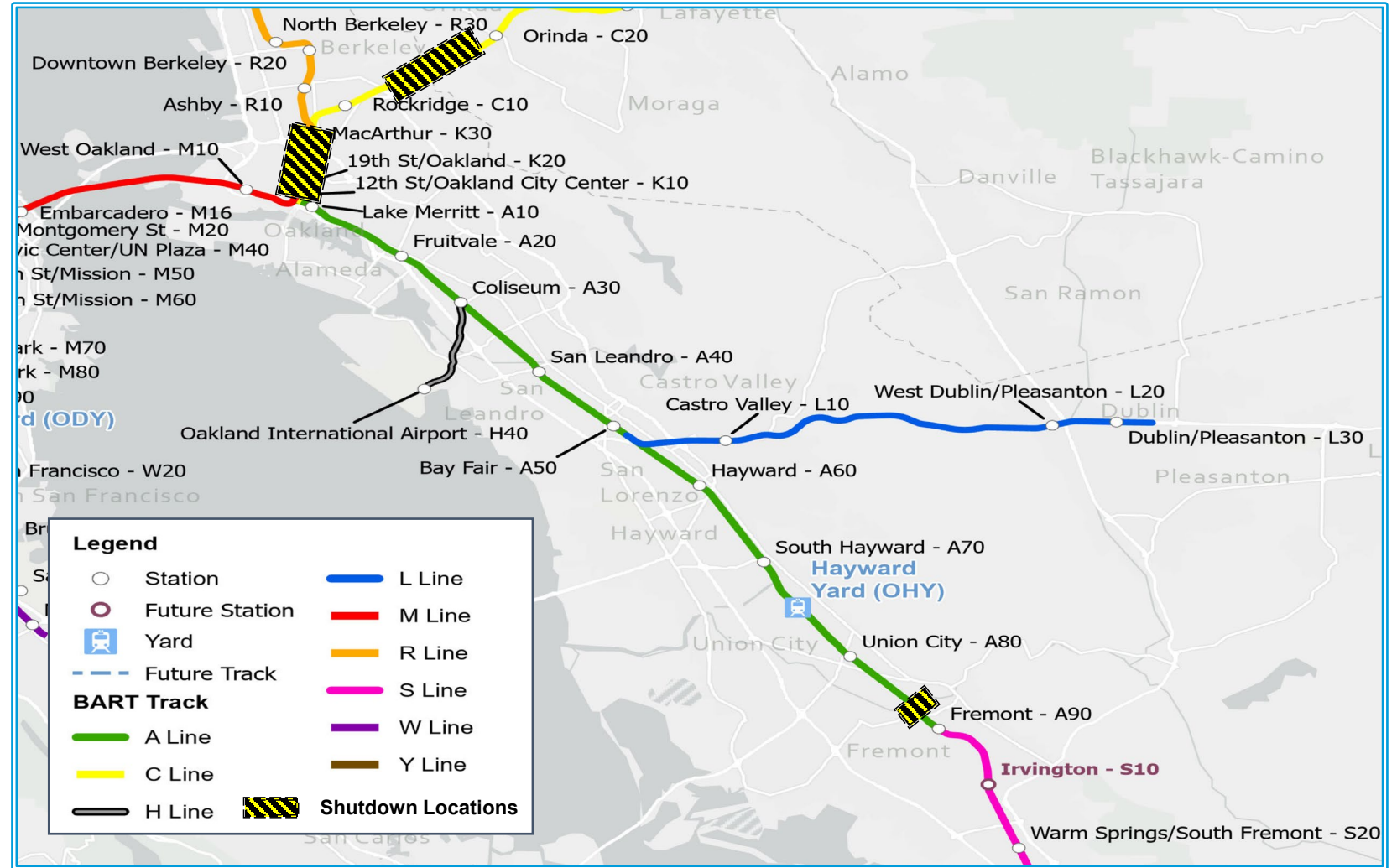
# 5.D. Calendar Year 2023 Track Shutdowns





# Track Shutdowns

- A shutdown is a Closure of segment of track between 2 or sometimes 3 stations to allow for uninterrupted work
- There have been over 37 shutdowns successfully completed since 2019
- We have 30 more planned over the next 3 years
- 12 shutdowns for calendar year 2023



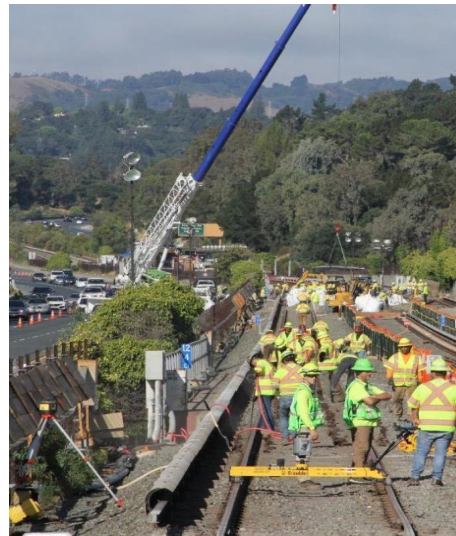
Planned Shutdown Locations (2023-2026)



# Track Shutdowns

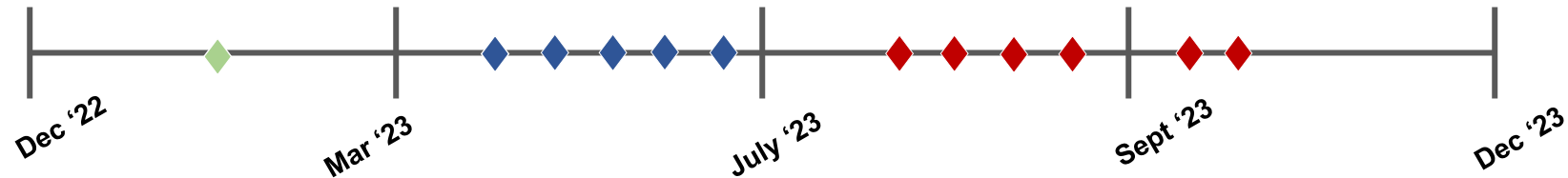
## Key Benefits:

- Helps expedite schedule of projects
- Allows major track rehabilitation in a short amount of time
- Allows multiple activities to be performed simultaneously
- Safer work environment – No live trains





# Track Shutdowns – 2023 Timeline



## ◆ C Line Rail Replacement

- 1 shutdown completed in Feb 2023
- Piggyback work - track alignment repairs in the Berkeley Hills Tunnel, was also completed during this shutdown.

## ◆ C15 Interlocking (serves Rockridge Station)

- 5 shutdowns planned from April 2023 – June 2023
- Scope: 4 turnouts (switches), contact rail, train control raceway and associated cables
- Piggyback work planned: lighting repairs in the Berkeley Hills Tunnel

## ◆ A85 Interlocking (serves Fremont Station)

- 6 shutdowns planned from August 2023 – November 2023
- Scope: 1 double crossover (4 switches and 1 diamond), contact rail, train control raceway and associated cables

# 5.D.1. Q&A

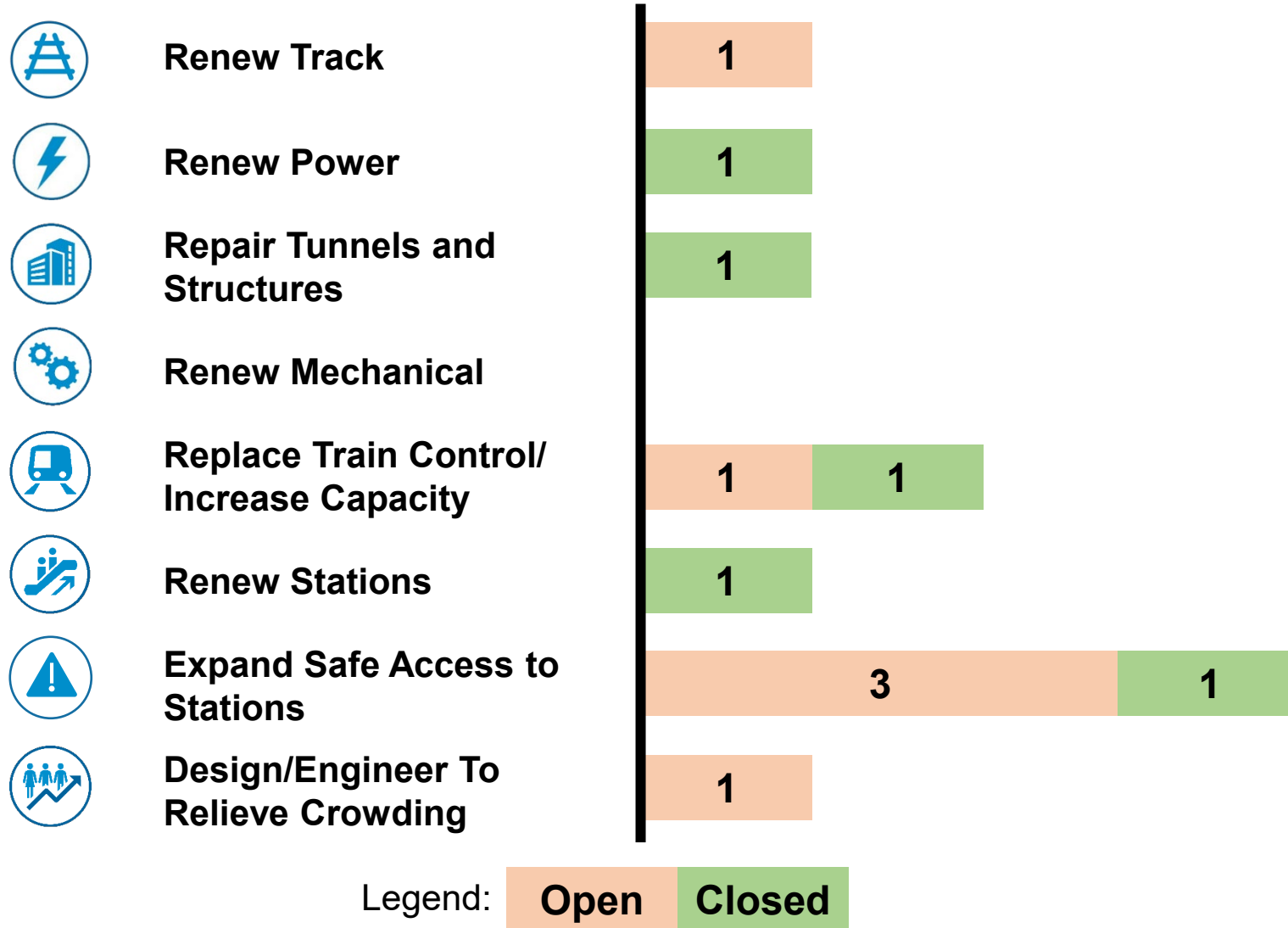




# 5.E. Bond Funded Program Watch List Items for Review



# Watchlist Review Summary





# Open Watchlist Items



Renew Track

## Material Procurement Delay of Special Trackwork

*Evaluating re-sequence options of Interlock construction to minimize impact of long lead items*



Design/Engineer To Relieve Crowding

## Embarcadero Platform Elevator Construction

*Evaluating scope options and funding opportunities*



Replace Train Control/ Increase Capacity

## Securing Building Permit for CBTC Lab Installation

*Optimizing in-house review process to allow project to secure building permit with shorter lead time*



Expand Safe Access to Stations

## City of Pittsburg BART Pedestrian/Bike Connectivity Project Construction

*Evaluating options, helping navigation with CalTrans and BART to obtain required permits for construction*



Expand Safe Access to Stations

## Walnut Ave/Liberty St Protected Intersection Project

*In regular communication with the city's project manager. Traffic signal equipment ordered by City with expected delivery in early 2023.*



Expand Safe Access to Stations

## Iron Horse Trail Bridge at Dublin Blvd

*In regular communication with the city's project manager. Concurrent and critical path activities are being tracked and monitored by the city and their consultant to recover lost time.*



## Mitigation Strategy\*



**Risk Reduction** is a planned action that will either reduce the consequence or the likelihood of a risk event.



**Risk Avoidance** is available when project elements may be alternatively delivered through a less risky process or design, or maybe eliminated altogether.



**Risk Acceptance** results from the recognition that further reduction of particular risk would only come at the expense of the project's fundamental goals.



**Risk Transfer** occurs when responsibility and consequences for risk are transferred to a party other than the sponsor. Risk transfers may be partial or complete.

\* - FTA OP 40c Risk and Contingency Review

# Common Causes for Open Watchlist Items





# 5.E.1. Q&A



# 5.F. Appendix: Financial Outlook, Program Status & Milestones





# RR Program Small Business and 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	\$159.1 M	\$35.0 M	22%	150	\$134.8 M	\$30.8 M	23%
Renew Power	\$414.4 M <b>(+\$3 M)</b>	\$122.7 M	30%	336	\$291.3 M <b>(+\$31 M)</b>	\$124.5 M <b>(+\$9 M)</b>	43%
Repair Tunnels & Structures	\$154.4 M	\$32.9 M	21%	160	\$126.2 M	\$18.1 M	14%
Renew Mechanical	\$36.9 M	\$12.5 M	34%	85	\$27.1 M	\$10.4 M	38%
Replace Train Control/Increase Capacity	\$32.2 M	\$6.6 M	20%	120	\$25.5 M	\$3.5 M	14%
Renew Stations	\$157.1 M <b>(+\$5 M)</b>	\$29.6 M	19%	132	\$56.7 M	\$12.0 M	21%
Expand Safe Access to Stations	\$21.2 M	\$6.6 M	31%	173	\$18.4 M	\$6.3 M	34%
Design/Engineer to Relieve Crowding	\$137.1 M	\$34.8 M	25%	204	\$94.9 M	\$26.5 M	28%
<b>Total</b>	<b>\$1,112.4 M</b> <b>(+\$14 M)</b>	<b>\$280.8 M</b> <b>(+\$7 M)</b>	<b>25%</b>	<b>1359</b> <b>(+40)</b>	<b>\$775.0 M</b> <b>(+\$63 M)</b>	<b>\$232.1 M</b> <b>(+\$19 M)</b>	<b>30%</b>

Notes: All amounts are based on RR fund percent only. Amounts are updated to March 31, 2023. 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 - Small Business Outreach



## Recently Completed Events:

- How to Apply for Certifications with BART
- Association of General Contractors – Bay Area Contractors Meeting
- Meet Contract Compliance Staff and Learn About Upcoming Opportunities



## Upcoming Events:

- How to Do Business with BART - Zoom
- Association of General Contractors - Small Business Construction Expo

# Individual Program Milestones

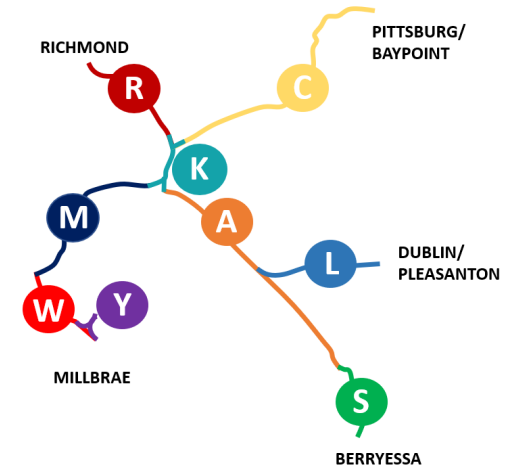






# Renew Track STATUS & MILESTONES

EXPENDED Thru 12/2022: **\$362.7**  
 FORECAST Thru 6/2025: **\$433.5**  
 TOTAL PROGRAM VALUE: **\$625**  
 PERIOD CASHFLOW: **\$15.9**



## 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 (Oct 2022 – Dec 2022)	Q3 (Jan 2023 – Mar 2023)	Q4 (Apr 2023 – Jun 2023)	Q1 (Jul 2023 – Sep 2023)
<ul style="list-style-type: none"> <li>Contract Award K Line Interlocking Replacement Special Trackwork (near MacArthur Station)</li> <li>Substantial Completion of Rail Reprofilng (Systemwide)</li> <li>Issue for Bid for K Line Interlocking Replacement Traction Power Materials</li> <li>Complete Design of Richmond Yard Track Rehabilitation (Phase 1 Transfer Switches)</li> <li><i>Fifth and Final Rail Delivery to support Rail Relay (Systemwide)</i></li> </ul>	<ul style="list-style-type: none"> <li>Begin Construction of K Line Interlocking Replacement (near Rockridge Station)</li> <li>Completion of Design K Line Interlocking Replacement (near MacArthur Station)</li> </ul>	<ul style="list-style-type: none"> <li>Substantial Completion of Construction of K Line Interlocking Replacement (near Rockridge Station)</li> <li><i>Completion of Design of A85 Interlocking Replacement (near Fremont Station)</i></li> <li><i>Substantial Completion of Construction A77 Interlocking Replacement</i></li> <li><i>Contract Award for K Line Interlocking Replacement Traction Power Materials</i></li> </ul>	<ul style="list-style-type: none"> <li><i>Begin Construction of A85 Interlocking Replacement (near Fremont Station)</i></li> </ul>

### Watchlist:

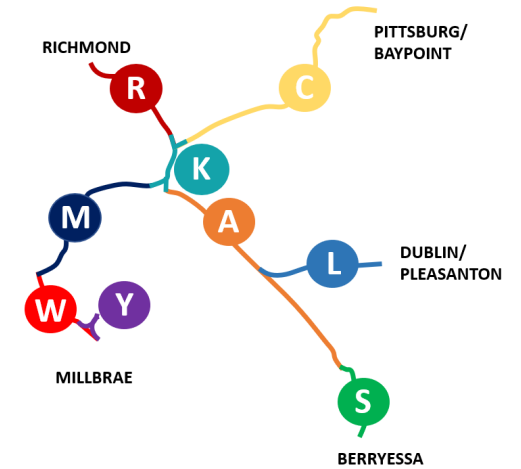
- Material Procurement Delays at K-Line, A77, and Oakland Yard

*Italic: Modified milestones from previous report.*



# Renew Power STATUS & MILESTONES

EXPENDED Thru 12/2022: **\$580.6**  
 FORECAST Thru 6/2025: **\$868.0**  
 TOTAL PROGRAM VALUE: **\$1,225**  
 PERIOD CASHFLOW: **\$27.9**



## STATUS – Renew Power Infrastructure

# Projects in Planning	# Projects in Design	# Projects in Bid/Award	# Projects in Construction	# Projects Completed	TOTAL # Projects
0	4	4	17	4	29

MILESTONES			
Completed (Oct 2022 – Dec 2022)	Q3 (Jan 2023 – Mar 2023)	Q4 (Apr 2023 – Jun 2023)	Q1 (Jul 2023 – Sep 2023)
<ul style="list-style-type: none"> <li>Contract Award Station Fire Alarm Replacement Phase 3</li> <li>Substantial Completion of CWS Transformer Replacement</li> <li>Begin Construction K-line 34.5kV Cable Replacement (KOW – KTE)</li> </ul>	<ul style="list-style-type: none"> <li>Substantial Completion of Fire Alarm Replacement Phase 2</li> <li>Design Completion for Fire Alarm Replacement Phase 4</li> </ul>	<ul style="list-style-type: none"> <li>Issue for Bid PG&amp;E Feed for Gap Breaker Project</li> <li>Notice to Proceed for Cast Coil Transformer Replacement</li> <li>Completion of Construction Phase 2 for Systemwide Stations Facilities Grounding Assessment</li> <li><i>Issue for Bid for the Cast Coil Transformer Replacement Project</i></li> <li><i>Completion of Design for MET G Generator Replacement Project</i></li> </ul>	<ul style="list-style-type: none"> <li><i>Completion of C-Line High Voltage Transformer Replacement</i></li> <li><i>Issue for Bid Oil-Filled Transformer Replacement</i></li> </ul>

### Watchlist:

- None

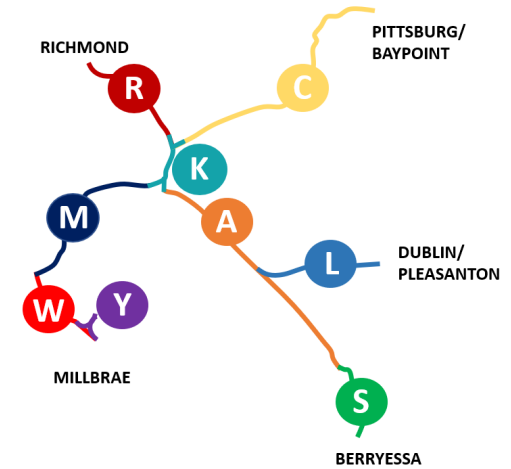
*Italic: Modified milestones from previous report.*



# Tunnels & Structures

## STATUS & MILESTONES

EXPENDED Thru 12/2022: \$211.4  
 FORECAST Thru 6/2025: \$318.3  
 TOTAL PROGRAM VALUE: \$549  
 PERIOD CASHFLOW: \$11.9



### STATUS – Repair Tunnels & Structures

# Projects in Planning	# Projects in Design	# Projects in Bid/Award	# Projects in Construction	# Projects Completed	TOTAL # Projects
0	9	1	8	8	26

MILESTONES			
Completed (Oct 2022 – Dec 2022)	Q3 (Jan 2023 – Mar 2023)	Q4 (Apr 2023 – Jun 2023)	Q1 (Jul 2023 – Sep 2023)
<ul style="list-style-type: none"> <li>Completion of Construction Aerial Fall Protection (A Line North &amp; Central)</li> <li>Completion of Design for Water Intrusion at Train Control Rooms (Package 2)</li> <li>Completion of M2 Bore Retrofit for TBT Retrofit</li> </ul>	<ul style="list-style-type: none"> <li>Completion of Design for Slope Stabilization Systemwide</li> <li>Complete Pump System Upgrade for TBT Retrofit</li> <li>Completion of Design for Tunnel Waterproofing at Oakland WYE (formerly R Line)</li> </ul>	<ul style="list-style-type: none"> <li>Completion of Design for Tunnel Waterproofing at M Line</li> <li>Completion of Design for Water Intrusion at Train Control Rooms (Package 3)</li> <li>Completion of Construction for Water Intrusion at Escalator &amp; Elevator</li> </ul>	<ul style="list-style-type: none"> <li><i>Completion of Assessment for Aerial Bearing Pad Study</i></li> <li><i>Completion of Design for TBT Door Hardware Upgrade</i></li> <li><i>Completion of Design for Street Grate and Vent Shafts (East Bay)</i></li> </ul>

### Watchlist:

- None

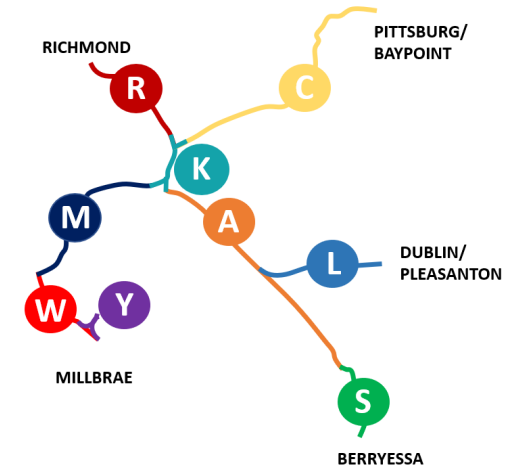
*Italic: Modified milestones from previous report.*





# Renew Mechanical STATUS & MILESTONES

EXPENDED Thru 12/2022: \$79.2  
 FORECAST Thru 6/2025: \$133.0  
 TOTAL PROGRAM VALUE: \$156  
 PERIOD CASHFLOW: \$5.2



## STATUS – Renew Mechanical

# Projects in Planning	# Projects in Design	# Projects in Bid/Award	# Projects in Construction	# Projects Completed	TOTAL # Projects
1	7	3	4	11	26

MILESTONES			
Completed (Oct 2022 – Dec 2022)	Q3 (Jan 2023 – Mar 2023)	Q4 (Apr 2023 – Jun 2023)	Q1 (Jul 2023 – Sep 2023)
<ul style="list-style-type: none"> <li>Begin Construction for Turntable Replacement Concord Yard</li> </ul>	<ul style="list-style-type: none"> <li>Issue for Bid Fire Suppression Upgrade</li> <li>Procurement of Concord Yard Dual Gauge Wheel Truing Equipment</li> </ul>	<ul style="list-style-type: none"> <li><i>Issue for Bid Concord Yard Wheel Truing Facility</i></li> <li><i>Completion of Design for LMA HVAC Renovation</i></li> </ul>	<ul style="list-style-type: none"> <li><i>Issue for Bid LMA HVAC Renovation</i></li> </ul>

### Watchlist:

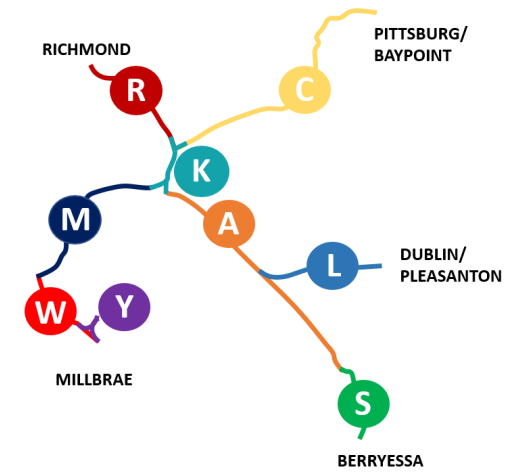
- None

*Italic: Modified milestones from previous report.*



# Replace Train Control STATUS & MILESTONES

EXPENDED Thru 12/2022: \$48.4  
 FORECAST Thru 6/2025: \$113.1  
 TOTAL PROGRAM VALUE: \$400  
 PERIOD CASHFLOW: (\$16.7)



## 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	1	5	0	6

MILESTONES			
Completed (Oct 2022 – Dec 2022)	Q3 (Jan 2023 – Mar 2023)	Q4 (Apr 2023 – Jun 2023)	Q1 (Jul 2023 – Sep 2023)
<ul style="list-style-type: none"> <li>Start Phase 0 Test Track Migration Design Submittals</li> </ul>	<ul style="list-style-type: none"> <li>Issue NTP for Haz Mat on-call for Enabling Works</li> </ul>	<ul style="list-style-type: none"> <li>Start CBTC equipment installations at Hayward Test Track</li> <li>Install foundations at Hayward Test Track</li> <li>Advertise Contract K-Line Enabling works</li> </ul>	<ul style="list-style-type: none"> <li><i>Completion of Vehicle Impacted Preliminary Design Review (PDR)</i></li> <li><i>Completion of Non-Vehicle Impacted Final Design Review (FDR) Gate 1</i></li> </ul>

### Watchlist:

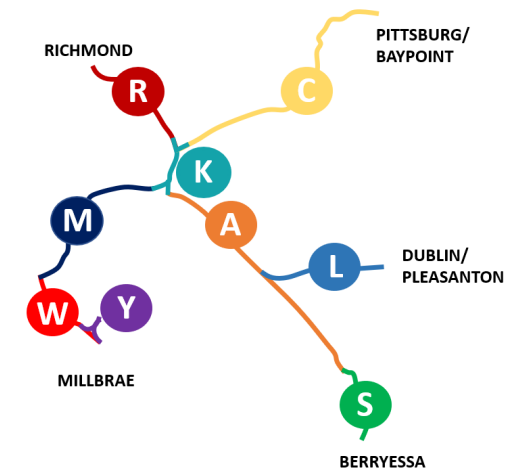
- Securing Building Permit for CBTC Lab Installation

*Italic: Modified milestones from previous report.*



# Renew Stations STATUS & MILESTONES

EXPENDED Thru 12/2022: \$64.8  
 FORECAST Thru 6/2025: \$107.1  
 TOTAL PROGRAM VALUE: \$210  
 PERIOD CASHFLOW: \$7.7



## STATUS – Renew Stations

# Projects in Planning	# Projects in Design	# Projects in Bid/Award	# Projects in Construction	# Projects Completed	TOTAL # Projects
0	1	0	4	3	8

MILESTONES			
Completed (Oct 2022 – Dec 2022)	Q3 (Jan 2023 – Mar 2023)	Q4 (Apr 2023 – Jun 2023)	Q1 (Jul 2023 – Sep 2023)
<ul style="list-style-type: none"> <li>Completion of renovation of System Services Offices for Powell St. Station Modernization</li> <li>Completion of staircase LED lighting enhancement – Powell St. Station Modernization</li> <li>Installation of Light Box Art Work at Hallidie Plaza – Powell St. Station Modernization</li> <li>Completion of Art wall relocation – Powell St. Station Modernization</li> <li>Partial Substantial Completion for Powell St. Station Modernization</li> <li>Substantial Completion for 19<sup>th</sup> St Station Modernization</li> </ul>	<ul style="list-style-type: none"> <li><i>Completion of Construction for Powell Modernization at Sector 2,3,4 &amp; 6</i></li> </ul>	<ul style="list-style-type: none"> <li><i>Completion of Powell St. Station Platform Escalator P3, Montgomery St. Station Platform Escalator P4, and Embarcadero Station Platform Escalator P2 for Market Street Escalators Project</i></li> <li><i>Completion of the first four canopies at Embarcadero, Montgomery St., Powell St., and Civic Center for Market Street Entry Canopies Contract</i></li> <li><i>Begin Installation of next canopies at each of Montgomery St., and Powell St., Stations for Market Street Entry Canopies Contract</i></li> <li><i>Begin Construction for Replacement of Embarcadero Station platform escalator P6, Montgomery St. platform escalator P3, and Powell St. platform escalator P1</i></li> <li><i>Completion of Construction for Powell Modernization at Sector 5</i></li> </ul>	<ul style="list-style-type: none"> <li><i>Begin Construction for Replacement of Civic Center Platform Escalator P1</i></li> <li><i>Completion of Construction for Platform Lighting for Powell St. Station Modernization</i></li> </ul>

### Watchlist:

- None

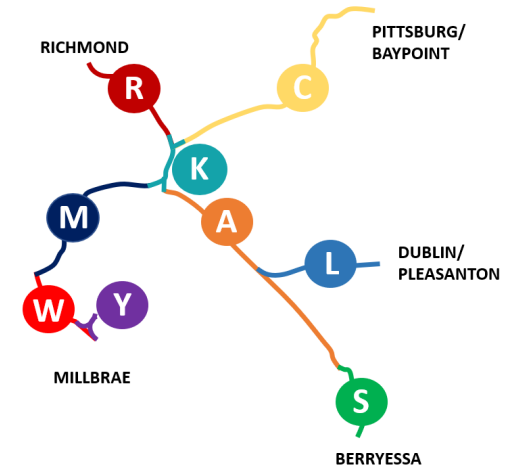
*Italic: Modified milestones from previous report.*





# Station Access STATUS & MILESTONES

EXPENDED Thru 12/2022: **\$39.9**  
 FORECAST Thru 6/2025: **\$69.2**  
 TOTAL PROGRAM VALUE: **\$135**  
 PERIOD CASHFLOW: **\$0.9**



## 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	6	3	11	30

MILESTONES			
Completed (Oct 2022 – Dec 2022)	Q3 (Jan 2023 – Mar 2023)	Q4 (Apr 2023 – Jun 2023)	Q1 (Jul 2023 – Sep 2023)
<ul style="list-style-type: none"> <li>Re-Advertise for Accessibility Improvement (Phase 1 &amp; 2)</li> <li>Begin Construction for Balboa Park – Upper Plaza Project</li> <li>Award for Wayfinding Improvements Phase 4</li> <li>Advertise for PA System Improvement</li> </ul>	<ul style="list-style-type: none"> <li>Award for Accessibility Improvement (Phase 1 &amp; 2)</li> <li>Award for PA System Improvement</li> <li>NTP for East Bay Greenway II Project</li> </ul>	<ul style="list-style-type: none"> <li>NTP for Accessibility Improvement (Phase 1 &amp; 2)</li> <li>NTP for PA System Improvement</li> <li><i>Completion of Design for Ashby Access Improvement Project</i></li> <li><i>Completion of Design for the Dublin/Pleasanton Access Improvement Project</i></li> <li><i>Completion of Construction of SR2B-funded SFMTA 5<sup>th</sup> Street Improvement Project</i></li> </ul>	<ul style="list-style-type: none"> <li><i>Completion of Construction for 12th St. Bike Racks</i></li> <li><i>Completion of Design for the MacArthur Station Access Improvements</i></li> </ul>

### Watchlist:

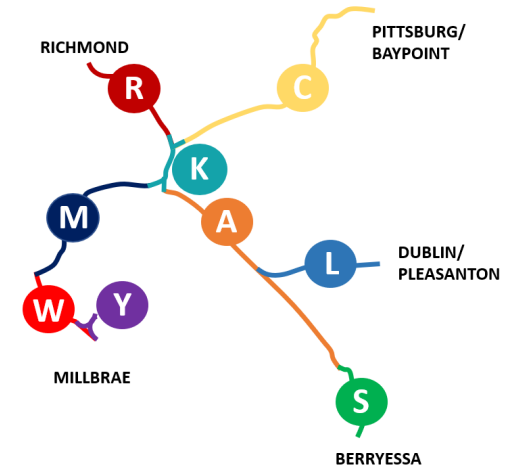
- City of Pittsburg BART Ped/Bike Connectivity Project Construction
- Walnut Ave/Liberty St Protected Intersection Project
- Iron Horse Trail Bridge at Dublin Blvd

*Italic: Modified milestones from previous report.*



# Relieve Crowding STATUS & MILESTONES

EXPENDED Thru 12/2022: \$106.5  
 FORECAST Thru 6/2025: \$127.8  
 TOTAL PROGRAM VALUE: \$200  
 PERIOD CASHFLOW: \$12.4



## 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	0	2	1	7

MILESTONES			
Completed (Oct 2022 – Dec 2022)	Q3 (Jan 2023 – Mar 2023)	Q4 (Apr 2023 – Jun 2023)	Q1 (Jul 2023 – Sep 2023)
<ul style="list-style-type: none"> <li>Link21 Public Outreach – Introduction to Concepts</li> </ul>	<ul style="list-style-type: none"> <li>Complete Design for Hayward Maintenance Complex 2 (HMC2): East Storage Yard</li> <li>Link21: Cocreation Round 4 (NTRC)</li> </ul>	<ul style="list-style-type: none"> <li>Public Outreach – Full list of Concepts for Link21 (NTRC)</li> <li>Completion of Travel Demand and Land Use Model for Link21 (NTRC)</li> <li>Completion of Construction for Civic Center Platform Stairs</li> <li>Begin Construction of Access Road and Concrete Retaining Wall for HMC2: Civil Grading Contract</li> <li>Complete Fence Fabrication for HMC2: Civil Grading Contract</li> </ul>	<ul style="list-style-type: none"> <li><i>Link 21: Concept Refinement and Evaluation</i></li> <li><i>Completion of Construction for Concrete Retaining Wall for HMC2: Civil Grading Contract</i></li> <li><i>Complete Delivery of Concrete Ties for HMC2: Trackwork Procurement</i></li> </ul>

### Watchlist:

- Funding for Embarcadero Platform Elevator Construction

*Italic: Modified milestones from previous report.*



# Budget and Schedule Status



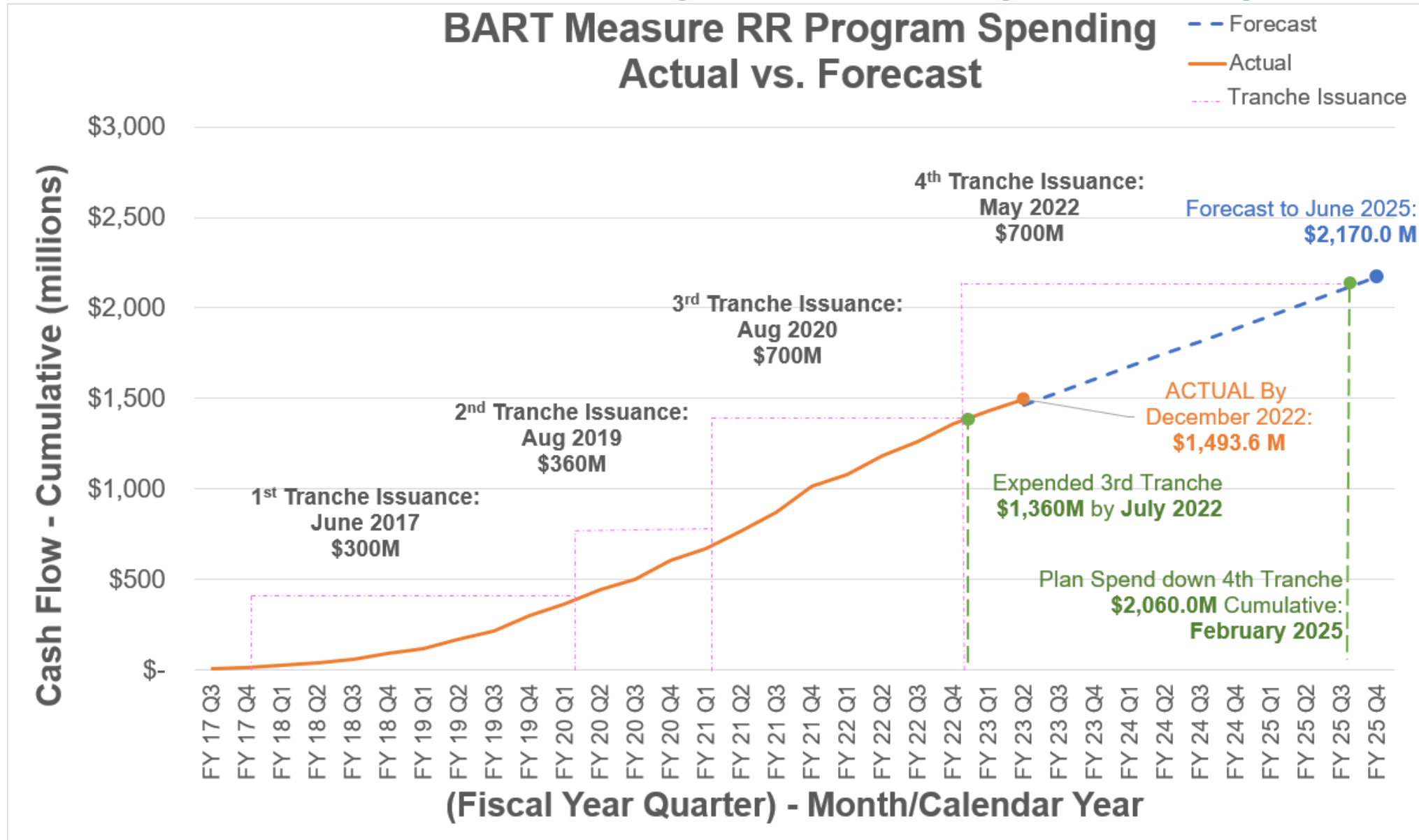


# Measure RR Cashflow (\$ Millions): Mid-Term & Long-Term Outlook

Program	Expended (thru September 2022)	Expended (thru December 2022)	Period Cashflow (October 2022 – December 2022)	% Expended out of Total Bond Investment	Forecast Expenditures	
					MID-TERM (thru 2025)	LONG-TERM (thru End of Bond)
Renew Track	\$346.9	\$362.7	\$15.9	58%	\$433.5	\$625
Renew Power Infrastructure	\$552.7	\$580.6	\$27.9	47%	\$868.0	\$1,225
Repair Tunnels & Structures	\$199.5	\$211.4	\$11.9	39%	\$318.3	\$549
Renew Mechanical	\$74.1	\$79.2	\$5.2	51%	\$133.0	\$156
Replace Train Control/Increase Capacity	\$65.1	\$48.4	(\$16.7)	12%	\$113.1	\$400
Renew Stations	\$57.1	\$64.8	\$7.7	31%	\$107.1	\$210
Expand Safe Access to Stations	\$39.0	\$39.9	\$0.9	30%	\$69.2	\$135
Design/Engineer to Relieve Crowding	\$94.1	\$106.5	\$12.4	53%	\$127.8	\$200
<b>Total</b>	<b>\$1,428.4</b>	<b>\$1,493.6</b>	<b>\$65.1</b>	<b>43%</b>	<b>\$2,170.0</b>	<b>\$3,500.0</b>

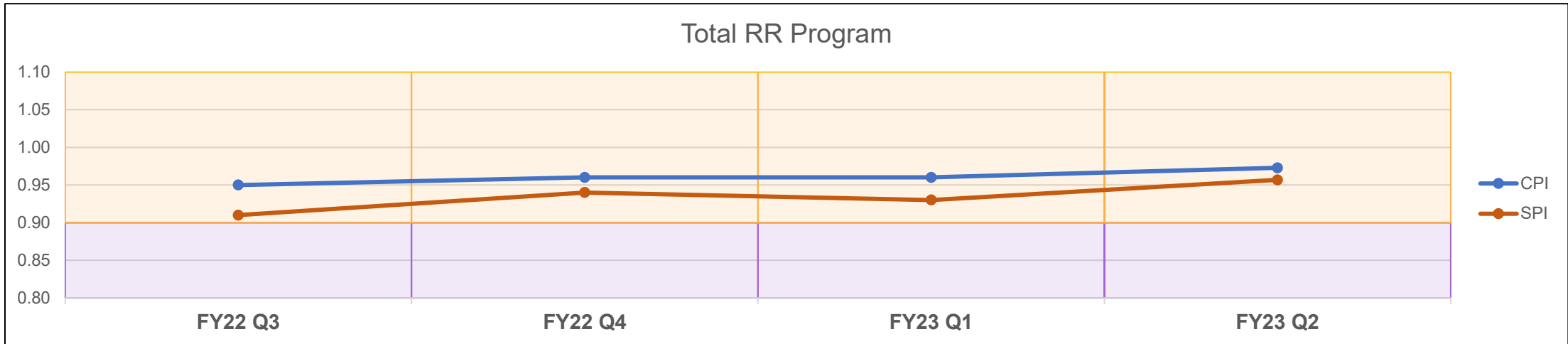


# RR Overall Program Budget Progress



# Earned Value Rollup by Program As of December 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	67%	\$411.50	\$417.97	\$400.92	1.04	1.02
Renew Power	\$1,225	52%	\$683.73	\$642.86	\$708.56	0.91	0.94
Repair Tunnels and Structures	\$549	40%	\$221.14	\$220.99	\$215.35	1.03	1.00
Renew Mechanical	\$156	54%	\$85.31	\$83.49	\$81.55	1.02	0.98
Replace Train Control/ Increase Capacity	\$400	12%	\$54.48	\$47.43	\$48.42	0.98	0.87
Renew Stations	\$210	32%	\$70.48	\$66.44	\$64.97	1.02	0.94
Expand Safe Access to Stations	\$135	29%	\$45.53	\$39.05	\$36.91	1.06	0.86
Design/Engineer to Relieve Crowding	\$200	53%	\$124.83	\$105.27	\$112.32	0.94	0.84
<b>Total</b>	<b>\$3,500</b>	<b>46%</b>	<b>\$1,696.99</b>	<b>\$1,623.50</b>	<b>\$1,669.00</b>	<b>0.97</b>	<b>0.96</b>

CPI – Cost Performance Index

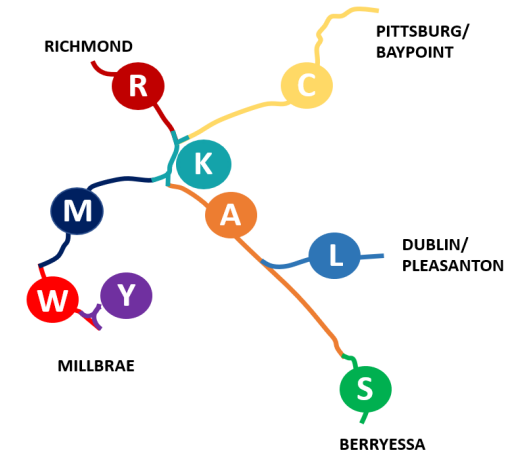
SPI – Schedule Performance Index





# Track Program Drill Down

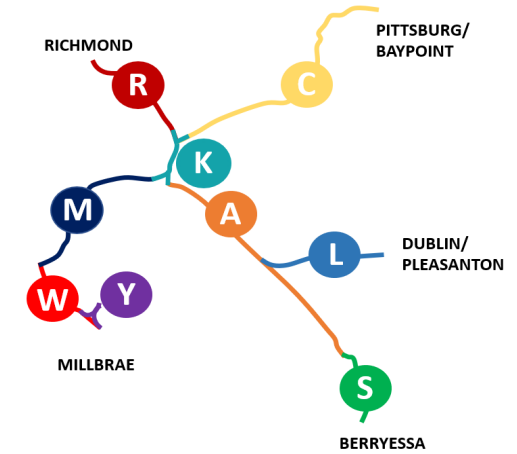
Project	Count
Number of Projects (>25% Spent)	18
CPI <0.9 or >1.1	0
SPI <0.9 or >1.1	1
Number of Risk Register Updates Performed in Previous Period	10
Number of Project(s) with Quality Reviews Performed in Previous Period	5



Project	Physical % Complete	CPI	SPI	Comments
Replace Direct Fixation Pads	83%	1.08	1.51	Realized efficiencies during construction.

# Power Program Drill Down

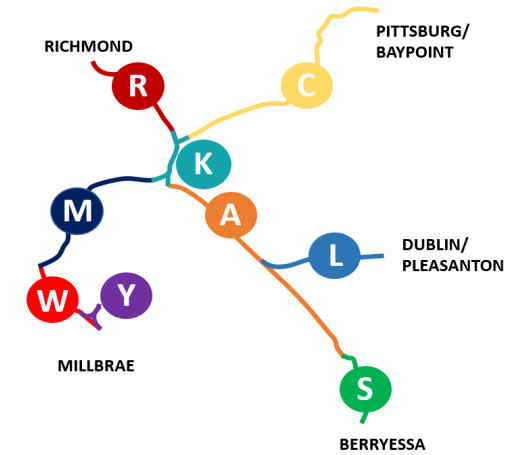
Project	Count
Number of Projects (>25% Spent)	19
CPI <0.9 or >1.1	5
SPI <0.9 or >1.1	6
Number of Risk Register Updates Performed in Previous Period	10
Number of Project(s) with Quality Reviews Performed in Previous Period	2



Project	Physical % Complete	CPI	SPI	Comments
San Leandro and Transbay Tube East Substation Replacements	94%	0.82	0.92	Costs of pre-requisite work increased due to complex site conditions. Working with contractor to minimize project impact
Stations Emergency Lighting	69%	0.92	0.70	Change notice executed to address differing site conditions
A-Line 34.5kV AC Cable Replacement	68%	0.89	1.12	Differing site conditions lead to multiple change orders. Working with contractor to minimize project impact
Substation for Core Capacity	64%	1.00	0.83	Delayed due to increased environmental remediation
R-Line 34.5kV AC Cable Replacement	52%	0.81	1.16	Accelerated installation impacted by R-Line emergency as work was performed over extended hours and multiple crews.
MPR Install & Rectifier Rehab	49%	0.88	0.74	Resources reallocated to emergency repair work
SFTS Transformer / Bus Upgrade	37%	0.70	0.37	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	2
SPI <0.9 or >1.1	5
Number of Risk Register Updates Performed in Previous Period	9
Number of Project(s) with Quality Reviews Performed in Previous Period	8

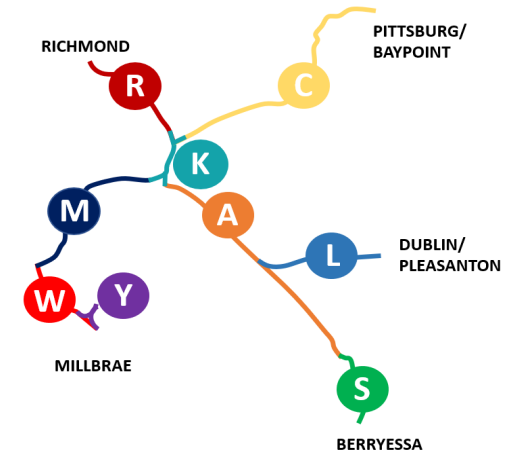


Project	Physical % Complete	CPI	SPI	Comments
Rehab Expansion Joints at Abutment	93%	1.20	0.93	Realized Efficiency in Design
Water Intrusion Escalator/Elevator	87%	1.00	0.88	Resources reallocated to higher priority projects
Cross Passage Doors & Hardware	79%	1.00	0.88	Delays due to design changes for the pilot project
Aerial Structure Bear Pad Study	66%	1.04	0.81	Delay due to inclement weather conditions and resources reallocated to higher priority projects
Substation Roofs	45%	1.22	0.75	Easier locations are completed, which cost less. Additional safety requirement impacted the schedule
Slope Stabilizations SWD	39%	0.96	0.77	Delays to design due to Environmental Clearance



# Mechanical Program Drill Down

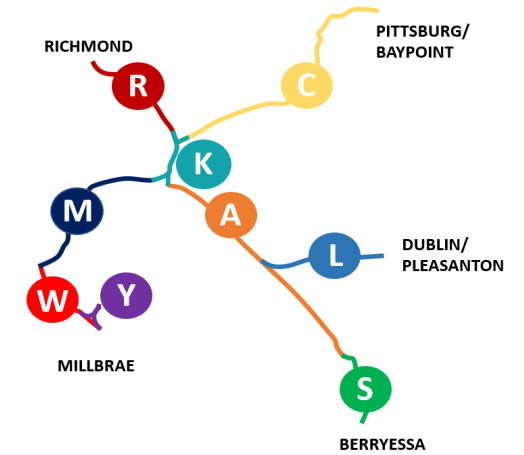
Project	Count
Number of Projects (>25% Spent)	21
CPI <0.9 or >1.1	1
SPI <0.9 or >1.1	1
Number of Risk Register Updates Performed in Previous Period	14
Number of Project(s) with Quality Reviews Performed in Previous Period	0



Project	Physical % Complete	CPI	SPI	Comments
Replace Fire Hoses and Piping	99%	1.24	0.99	Self-performed to improve efficiency.
Replace Backflow Preventers	53%	1.09	0.71	Change in delivery method (to self-performed) is causing a delay in completion, but a cost benefit.

# Station Access Program Drill Down

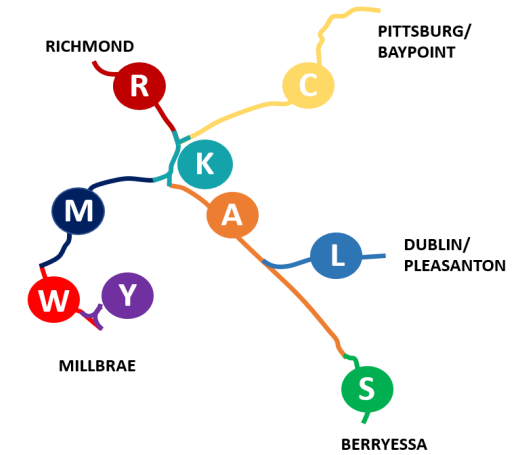
Project	Count
Number of Projects (>25% Spent)	15
CPI <0.9 or >1.1	1
SPI <0.9 or >1.1	0
Number of Risk Register Updates Performed in Previous Period	0
Number of Project(s) with Quality Reviews Performed in Previous Period	0



Project	Physical % Complete	CPI	SPI	Comments
North Berkeley Station Access Improvement	32%	1.29	0.98	Resources reallocated to higher priority projects

# Relieve Crowding Program Drill Down

Project	Count
Number of Projects (>25% Spent)	5
CPI <0.9 or >1.1	1
SPI <0.9 or >1.1	2
Number of Risk Register Updates Performed in Previous Period	1
Number of Project(s) with Quality Reviews Performed in Previous Period	1



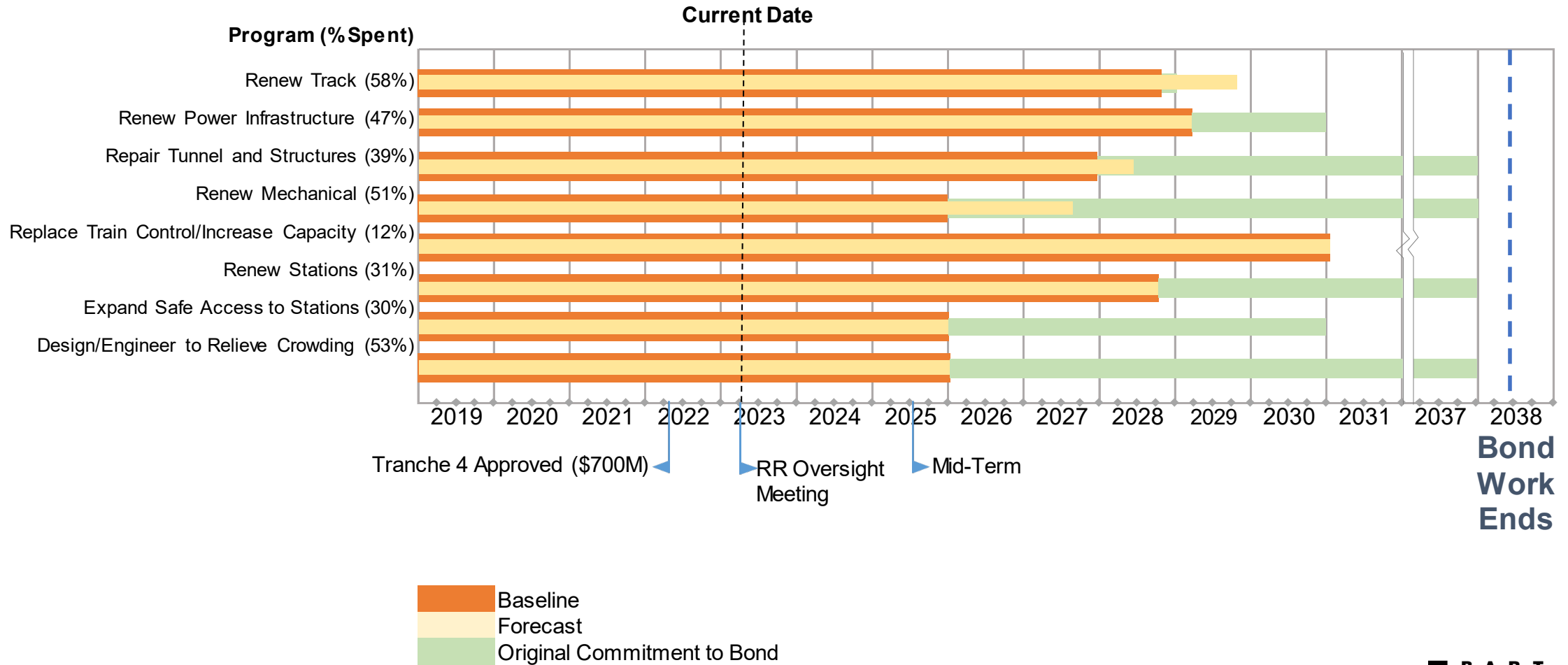
Project	Physical % Complete	CPI	SPI	Comments
Civic Center Scissor Stairs	89%	0.93	0.89	Stainless steel cladding fabricating taking longer than anticipated
Hayward Maintenance Phase 2	42%	1.18	0.66	Schedule recovery from stop notice issued to consultant team



# 5.F.1. Q&A



# Program Level Schedule Update



# Next Steps

- April – June 2023: Subcommittee Review of the Measure RR Annual Report
- June 2023
  - Bond Oversight Meeting
  - Adopt Measure RR Annual Report
- Summer 2023
  - Present Measure RR Annual Report to BART Board
  - Public distribution of Measure RR Annual Report



# Thank you!

