



MEASURE RR BOND  
OVERSIGHT COMMITTEE  
**ANNUAL REPORT**

JUNE 2020



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Dear Bay Area residents:

Thank you for your interest in Measure RR and what BART is doing to rebuild its critical infrastructure. Measure RR was approved by voters in Alameda, Contra Costa, and San Francisco counties in 2016. It authorizes BART to issue \$3.5 billion in bonds to support infrastructure rebuilding projects across the system. The goal of Measure RR is to help bring BART into a state of good repair so it can be a reliable transportation service for the Bay Area.

Right now, there are more rebuilding projects happening across BART than at any point in the system's history. This annual report is meant to update you on the progress of that work and to show how Measure RR funds are being spent. It's the responsibility of the independent Bond Oversight Committee to verify that BART is spending bond revenues as promised. The committee includes members with extensive experience in engineering, finance, and project management.

As the chair of the oversight committee, I encourage you to read this report as well as to join us at one of our public meetings. We very much want to hear from riders and taxpayers. Our meetings are open to the public and are listed on our website at [www.bart.gov/about/bod/advisory/bond](http://www.bart.gov/about/bod/advisory/bond). 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

**MICHAEL DAY**, Accounting Seat

**DAREN GEE**, Civil Engineering Seat

**CATHERINE NEWMAN**, League of Women Voters Seat

**LEAH E. EDWARDS**, League of Women Voters Seat

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# EXECUTIVE SUMMARY

It's the responsibility of this Bond Oversight Committee to regularly evaluate projects funded by Measure RR and report those findings to the public. The committee has a mandate to report whether projects are cost-effective, meet quality standards and are being completed in a timely manner. The purpose of this annual report is to give BART riders, BART District residents, and taxpayers a clear and comprehensive overview of the status of Measure RR. This document offers a progress report on RR that includes a look at what was accomplished in the first three full years of the program, what comes next, and whether the progress made so far measures up to expectations.

As Measure RR enters its fourth year of existence, there are now more rebuilding projects happening in the BART system than at any point in the District's history. There is a total of 135 projects currently underway across BART's 48 stations and 122 route miles of track.

Despite the large number of projects underway across BART, the overall Measure RR program is only about 10% complete. The committee believes the current rate of progress is consistent with the goals outlined by BART when Measure RR was presented to voters in Alameda, Contra Costa, and San Francisco counties in 2016.

Through March 2020, \$504 million in Measure RR funds have been invested in rebuilding projects. The value of the work completed has outpaced projections for this stage of the overall program. IRS rules require that at the time of issuance the BART District needs to have a reasonable expectation that 85% of the bond proceeds, including interest earnings on the proceeds, will be spent within three years. That means there's a reasonable expectation that BART would spend \$300 million in RR funds by June 2020. BART met that goal in August 2019.



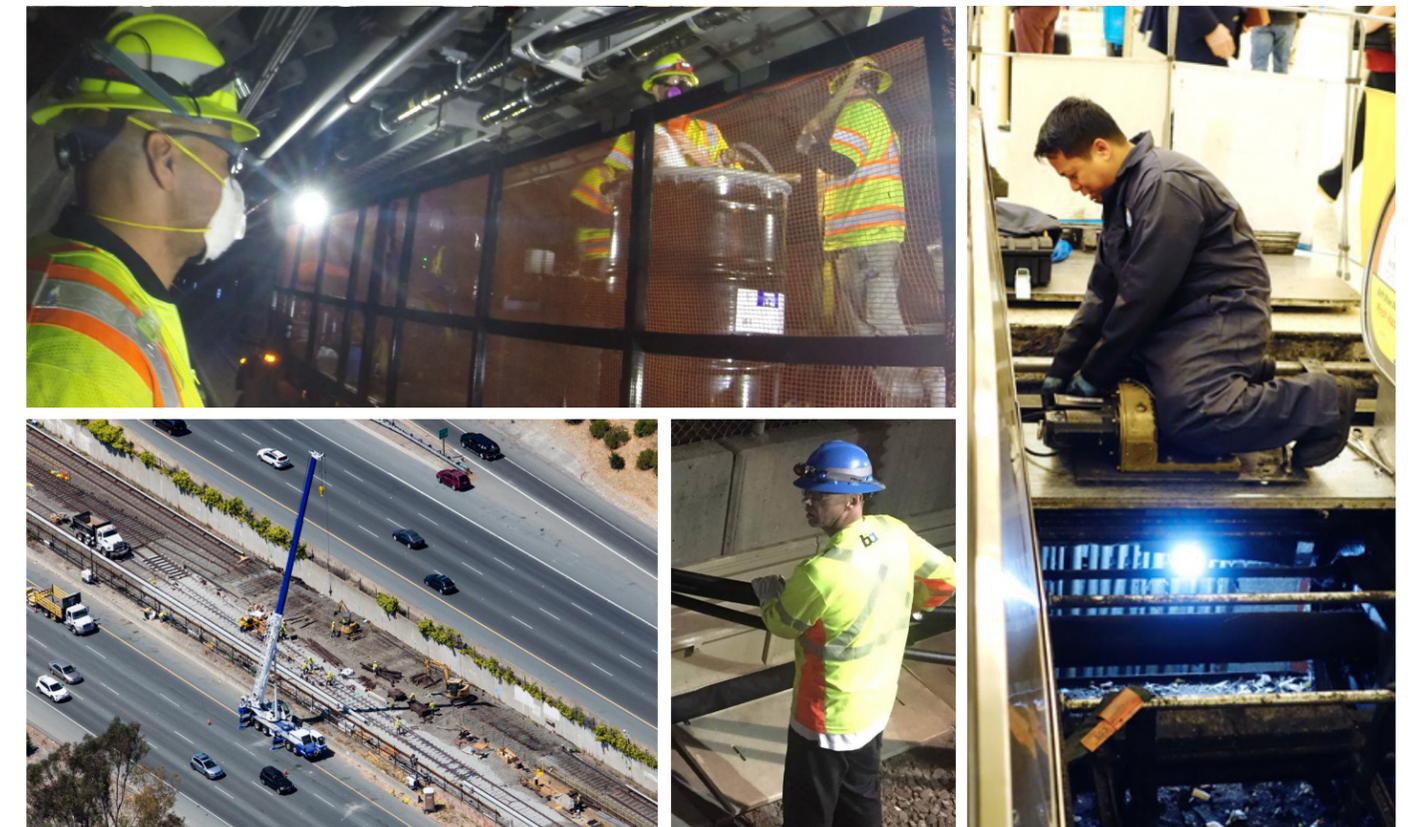
Rebuilding efforts funded by Measure RR are having an impact on the overall rider experience.

Some examples include:

- Interlocking replacement and track replacement projects have improved ride quality and increased equipment reliability.
- Upgrades to station platform edges have improved patron safety and meet new ADA requirements.
- 34.5kV (kilovolt power transmission lines) cable replacements have increased power system reliability by bolstering system redundancy.
- An extended pocket track near Lafayette improves BART's ability to provide additional trains to its highest demand line.

These and many other projects are improving the patron experience.

As BART moves forward with Measure RR, major infrastructure projects are currently under construction which will further improve system reliability, performance, and efficiency. These improvements include continued upgrades to the traction power 34.5kV transmission cables, traction power substation replacements, rail interlocking replacements, station upgrades, earthquake safety improvements, and much more. The Bond Oversight Committee believes BART is implementing the right projects to satisfy the bond mandate and is on track to deliver on its commitments to the public and its patrons.



# ABOUT THE BOND OVERSIGHT COMMITTEE

Measure RR required BART to establish a Bond Oversight Committee (BOC) to verify that bond revenues are being spent as promised. The independent committee is comprised of seven members who represent a diversity of expertise, geography, and demographic characteristics. Members serve two-year terms and are eligible to serve up to six years total. They are appointed by the BART Board of Directors. All members of the BOC were reappointed to the panel by the BART Board in April of 2019. The terms of the committee members expire June 30, 2021. Members of the committee represent different areas of expertise.

- 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 construction project management.
- The League of Women Voters, Bay Area, or its successor organization or chapter is represented by two members.

The Bond Oversight Committee is responsible for providing diligent, independent, and public oversight of the expenditure of funds from bond sales. The BOC assesses how bond proceeds are spent to ensure all spending is authorized by the ballot measure. The committee assesses whether projects funded by 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 also publishes this annual report.

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).



Back row, L-R: Daren Gee, former committee member John Post, Michael Day, and Committee Chair Michael R. McGill; front row, L-R: Marian Brietbart, Catherine Newman, and Leah Edwards.

## Lafayette Construction Site Visit

In addition to receiving regular updates from BART staff, members of the committee visited one of the largest Measure RR rebuilding projects of 2019. Several committee members toured the work site near the Lafayette Station where crews worked around the clock over several weekends to replace critical track components. Committee members were impressed by the teamwork on display as well as BART's commitment to safety.

"I learned about the precision required in the build to ensure that the system is safe and functional under stress," said Committee Member Leah Edwards. "There is a lot of weight moving along the tracks at high speed, so the new rail must be tested for imperfections that could cause breaks or other problems in the future. Prior to the tour I hadn't been aware of all the processes that are in place to ensure the system is safe."

"Physically visiting the track allowed me to appreciate the many layers of necessary infrastructure and expertise required for BART to function," said Committee Member Catherine Newman. "It's not just the train you're riding in every day. It's the wheels underneath, it's the rails and ties, it's the power, it's the safety tunnels below, it's the lighting for the safety tunnels and so on. All of which have to be expertly designed, installed, monitored and maintained for trains to run."

The committee plans to make similar visits to construction sites throughout the lifetime of Measure RR.



L-R Construction Engineering Group Manager Laurence Farrell, Committee Member Daren Gee, Superintendent of Power and Mechanical Maintenance David Scherer, Committee Member Catherine Newman, and Senior Construction Engineer Sam Sowko

## THE STORY OF MEASURE RR:

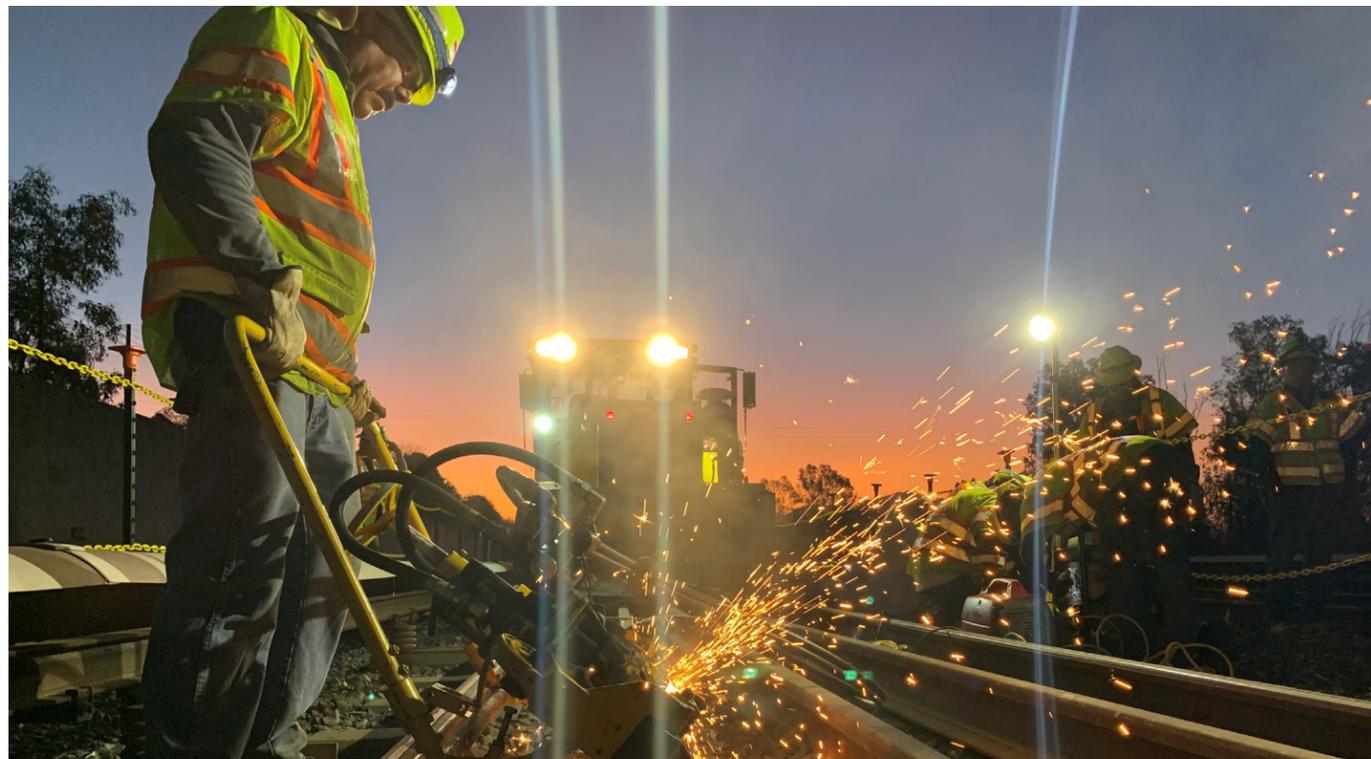
In 2016 BART reached a critical juncture. The transit agency faced a growing backlog of rebuilding needs that had to be addressed quickly. If action wasn't taken the risk of a major system failure would continue to grow. The challenge was compounded by the fact that BART didn't have enough funding to do the needed rebuilding work. BART estimated that if nothing was done, in just 10 years nearly half of the system's assets including long stretches of track and power cables would be at the end of their design lives.

There was a need to educate the public about BART's declining infrastructure. BART held more than 300 community meetings to explain the system's needs as well as to hear from riders and taxpayers. After gathering that public input, the BART Board of Directors voted unanimously to put a \$3.5 billion general obligation bond on the November 2016 ballot. The Board decided it should be up to District voters to decide whether to reinvest in BART.

Those voters responded 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 met the two-thirds support requirement for approval.

Measure RR funding has been devoted to the system's most critical rebuilding needs first. That includes replacing track and traction power components that in many cases predate the start of BART service in 1972.

You can learn more about Measure RR including what's in the bond and how it relates to safety and system reliability by going to [bart.gov/betterbart](http://bart.gov/betterbart)



## REBUILDING THE BACKBONE OF BART

Rebuilding work funded by Measure RR touches on all aspects of the infrastructure BART relies on to safely transport more than 400,000 riders daily during the work week. The initial focus of these efforts in the first few years of the Measure RR program has been on the areas of greatest need. These include replacing track, electrical cabling, and other critical components that were first installed 50 years ago and have long since outlived their design lives. RR is also supporting the renewal of aging stations, boosting capacity, expanding safe access to the system, and relieving crowding.

Measure RR-funded work is becoming more visible as the program reaches a state of greater maturity. Here are just some of the examples of rebuilding work that has happened through support from RR:

- 32 miles of worn rail replaced to enhance overall system safety and reliability.
- Reprofiled 149 miles of track to improve the interaction between train cars and the rail to provide riders with a smoother and quieter ride.
- 23 track switches replaced at critical junctures in the system. Switches are oversized track components that can measure up to 200 feet in length and are instrumental in allowing trains to move from line to line.
- Replaced 6 miles of 34.5kV (kilovolt) cable in Oakland and San Francisco to ensure trains have a reliable source of power.
- Critical work to boost the safety of the Transbay Tube by replacing 118 cross passage doors and 2 lower gallery doors.
- 20 miles of coverboard enhancement on the Dublin/Pleasanton Line to better protect the third rail, which supplies power to trains.

Vital contracts to continue rebuilding have also been awarded since this committee's last annual report. Measure RR provides at least partial funding for these transformative projects:

- \$798 million contract to design and build a modern Communications Based Train Control System, which will allow BART to run more trains closer together.
- 19th Street and Powell Street station modernization projects.
- Embarcadero and Civic Center Bike Station modifications.

This is a busy period for revitalizing BART's core infrastructure but there's much more work ahead. The upcoming pages provide a deeper look into what's been accomplished so far and what comes next.

**“BART is the backbone of the Bay Area's transportation network. Measure RR is allowing us to deliver on major rebuilding projects that are improving the rider experience. Reaching a state of good repair is a critical step toward transforming BART into a world class transit system.”**

BART General Manager Robert Powers

# MEASURE RR SPENDING BREAKDOWN

# RR – ONLY PART OF THE SOLUTION

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>			

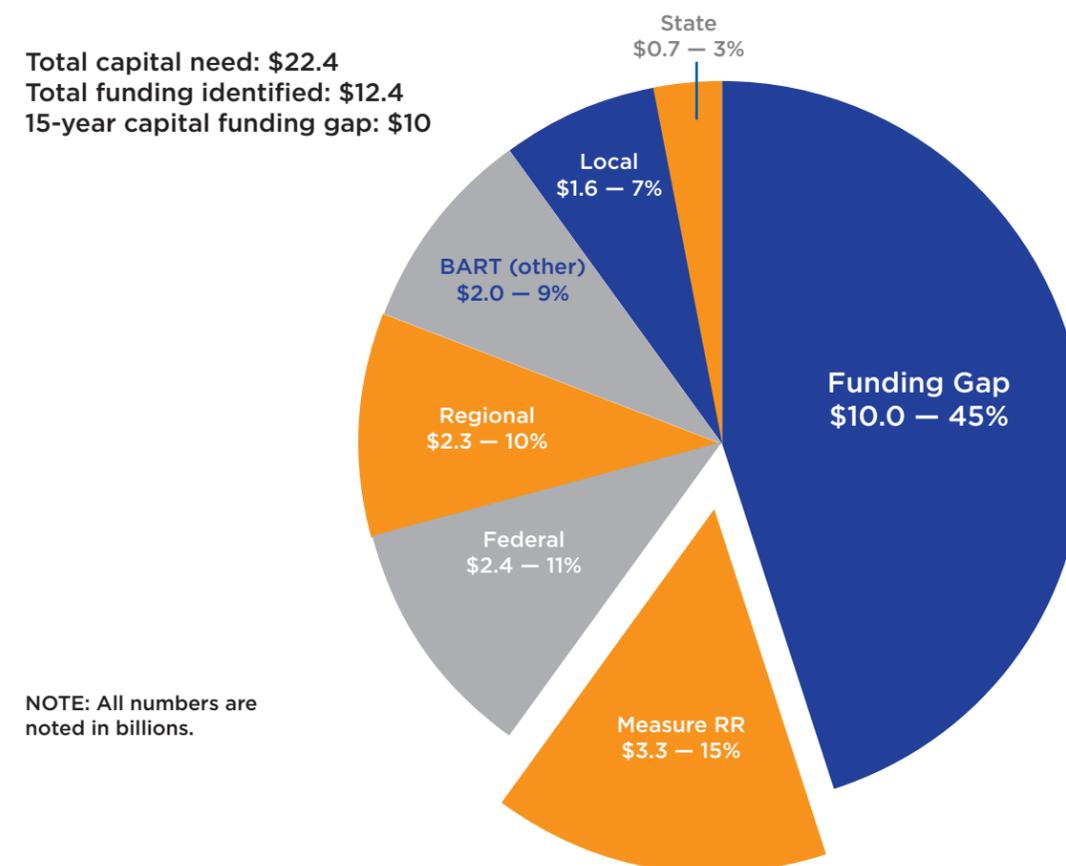
Measure RR is a key part of BART’s overall plan to rebuild its aging system, but it fills only part of the need. Measure RR will contribute \$3.5 billion in funding to help rebuild BART’s aging system (In BART’s adopted Capital Improvement Program, \$3.3 billion is expected to be spent through fiscal year 2033; the remaining \$200 million will be expended after fiscal year 2033.) BART’s adopted capital improvement program shows the District’s total capital need through Fiscal Year 2033 is \$22.4 billion.

As shown in the chart below, funding sources identified to rebuild and enhance the system include Measure RR and other BART funding as well as federal, state, regional, and local sources. These combined sources total \$12.4 billion, which is \$10 billion short of the District’s total 15-year need of \$22.4 billion. The 15-year capital need is updated biennially and will be updated next in Summer 2020.

BART continues to pursue additional grant funding opportunities and work with regional and state partners to expand transportation funding.

Despite progress on near-term projects, long-term funding challenges persist. Capital programs are scaling up at a time when the Bay Area has a strong economy, which can increase the costs of projects. High material costs are another issue the District is aware of and monitoring closely.

**BART FY19-33 Capital Investment Needs and Funding Sources (Billions)**



NOTE: All numbers are noted in billions.

# FUNDING RR WITH GREEN BONDS

All the bonds issued to support Measure RR are labeled as climate certified. In anticipation of issuing the first tranche of bonds for Measure RR back in June 2017, BART sought and received certification through the Climate Bonds Initiative’s Low Carbon Transport Standard. That made BART the first transit agency on the West Coast to earn such a certification. 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 these “green” bonds grows costs for climate-friendly projects everywhere may decrease.

The second and latest tranche of Measure RR bonds was offered to the public in August 2019. The second tranche offering was for \$360 million. Coupled with the \$300 million in green bonds offered in the first tranche, the total amount of bonds issued for RR is \$660 million. Based on current project schedules, there is a possibility that a third tranche of RR bonds could be issued as soon as the end of this year.

“Climate-friendly green bonds have proven to be especially popular with investors in the Bay Area,” said BART’s Controller-Treasurer Rose Poblete. “Local investors have now twice turned out in great numbers to buy green bonds, which has allowed us to expand our investor base.” The starting threshold for investing in Measure RR bonds is \$5,000.

During both bond sales, BART offered certain maturities with a preference for retail investors who live in the three counties that comprise the BART District. The Measure RR bonds, including both the 2019 Series B-1 and 2019 Series B-2, received 168 retail orders, totaling \$181.935 million. In aggregate, the Measure RR bonds received \$939.555 million of orders, indicating that retail orders made up 19.4% of all orders placed for Measure RR.

Green bonds are part of BART’s overall commitment to improving the environment. All conventional BART trains are 100% electric. On average, BART is 10 times more efficient than a typical car driven alone (on a passenger-miles per gallon basis of comparison). During the peak commute period BART is 20 times more efficient. BART also has set a goal that 100% of its energy will be generated from zero carbon sources by 2035.

## Exceeding Bond Objectives

Measure RR gave BART the authority to issue up to \$3.5 billion in general obligation bonds to pay for rebuilding projects. Through the purchase of bonds investors loan money to BART so it can rebuild, and BART then repays those investors with interest on the amount borrowed. The funds to pay back the bonds are raised through property taxes assessed in Alameda, Contra Costa, and San Francisco counties. Those are the three counties that comprise the BART District and voted to approve Measure RR.

When Measure RR began 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. In the latest assessment for Fiscal Year 2019-20 the tax amount was \$4.60. This is well below the average yearly tax rate and at the lower end of the range projected by BART. However, this tax rate will fluctuate from year to year and is likely to increase deeper into the life of the bond measure as additional bonds are issued.

BART anticipates that each bond tranche will be paid off within 30 years of being issued. BART has worked with its financial advisor to develop a financing plan to ensure funds are available as needed for projects while taking into consideration the tax rate paid by taxpayers. From start to finish, BART estimates property owners could pay off the bonds associated with Measure RR in 48 years.

BART’s bond spending is in compliance with IRS rules. Those regulations say that at the time of issuance the BART District needs to have a reasonable expectation that 85% of the bond proceeds, including interest earnings on the proceeds, will be spent within three years. BART has progressed on Measure RR projects at a pace that exceeds this requirement. This reflects the District’s success in delivering Measure RR-funded work in a timely manner.

## RR PROGRAM EXPENDITURES OVERVIEW

In (\$ Millions)	Expended Through March 2020	% Expended Out of Total Bond Investment	Forecast Expenditures		
			SHORT-TERM (Through June 2021)	MID-TERM (Through 2025)	LONG-TERM (Through End of Bond)
Renew Track	\$168.0	19%	\$183	\$400	\$625
Renew Power Infrastructure	\$199.3	11%	\$248	\$608	\$1,225
Repair Tunnels and Structures	\$44.5	5%	\$57	\$268	\$570
Renew Mechanical Infrastructure	\$19.3	8%	\$41	\$65	\$135
Renew Stations	\$18.6	3%	\$29	\$148	\$210
Train Control Modernization	\$21.9	3%	\$32	\$286	\$400
Relieve Crowding	\$17.2	5%	\$33	\$69	\$200
Access Improvements	\$15.4	9%	\$37	\$86	\$135
<b>TOTAL</b>	<b>\$504.2</b>	<b>10%</b>	<b>\$660</b>	<b>\$1,930</b>	<b>\$3,500</b>

## PUTTING PEOPLE TO WORK



Senior Construction Engineer Sam Sowko

RR-funded projects are allowing BART to move forward with critical rebuilding work and there's also a secondary benefit. These projects are boosting the Bay Area's economy by creating hundreds of high-quality construction and support jobs. Over the last year RR has created 129 fulltime jobs, 358 consulting positions, and 114 contractor openings. These employees and contractors are working across the BART District. The hiring data reflect the surge in the number of RR projects that are moving into construction.

Being a part of the growing team that's rebuilding BART is a source of pride for many. "As a child in the Bay Area you ride, and you take certain things for granted. Then you get out here and you really see what it takes to keep this system running," said Senior Construction Engineer Sam Sowko. He played a leading role in organizing the Lafayette track rebuilding project. Sowko says major track rebuilds are not possible without teamwork. "The coordination, the cooperation from everybody to riders, to the public, the community, and even the folks at Caltrans. It's bigger than anything I ever thought it was," said Sowko.

Members of the rebuilding effort say their work will benefit millions of riders for decades. "BART hasn't done these upgrades in the last 40, 50 years and we finally get to improve the lives of the Bay Area and commuters," said Principal Electrical Engineer Gordon Wong.

Wong says it's vital to rebuild BART and the projects supported by RR are helping to ensure BART has the steady stream of new talent it needs to continue to make progress. "It feels really good to be part of the team. I know that I'm helping to rebuild the Bay Area. It's encouraging to see a lot of new engineers come out too," said Wong.

**“As a child in the Bay Area you ride, and you take certain things for granted. Then you get out here and you really see what it takes to keep this system running.”**

Sam Sowko  
Senior Construction Engineer

## SMALL BUSINESS OUTREACH

Small businesses are playing a vital role in rebuilding BART. Private contractors are providing valuable expertise for numerous projects including work on renewing track, replacing components of the power infrastructure, renovating stations, and repairing tunnels. Small businesses have been awarded 31% of Measure RR contracts.

Red Dipper Electric is one of those small companies to be awarded an RR contract. With enough employees to count on one hand, Red Dipper Electric is truly a small business – but it's one with a big mission.

"We fight injurious carbon emissions," says President/CEO Douglas M. Parrish, whose San Francisco-based company is working with BART to provide bright, environmentally friendly light-emitting diode (LED) lighting as part of the 19th Street/Oakland Station modernization project.

The switch from old, dim fluorescent lights to modern LED lights will save money on energy costs, reduce disposal of hazardous waste, and provide brighter, more reliable lighting to improve safety and security for riders.

"BART has a lot of resources to help small businesses who want to compete for work on major contracts, such as many of those funded by Measure RR," Parrish said. "You still have to be persistent, and stick with it, but they can help cut through the red tape."

BART's Office of Civil Rights administers a Non-Discrimination Program for Subcontracting to ensure prime contractors don't discriminate when subcontracting out work. Additionally, BART has a Small Business Program for non-federally funded contracts that provides bid preferences for qualified small businesses. The Small Business Program also includes Small Businesses that are Local Small Businesses, Disabled Veteran Business Enterprises, and Lesbian, Gay, Bisexual, and Transgender Business Enterprises.

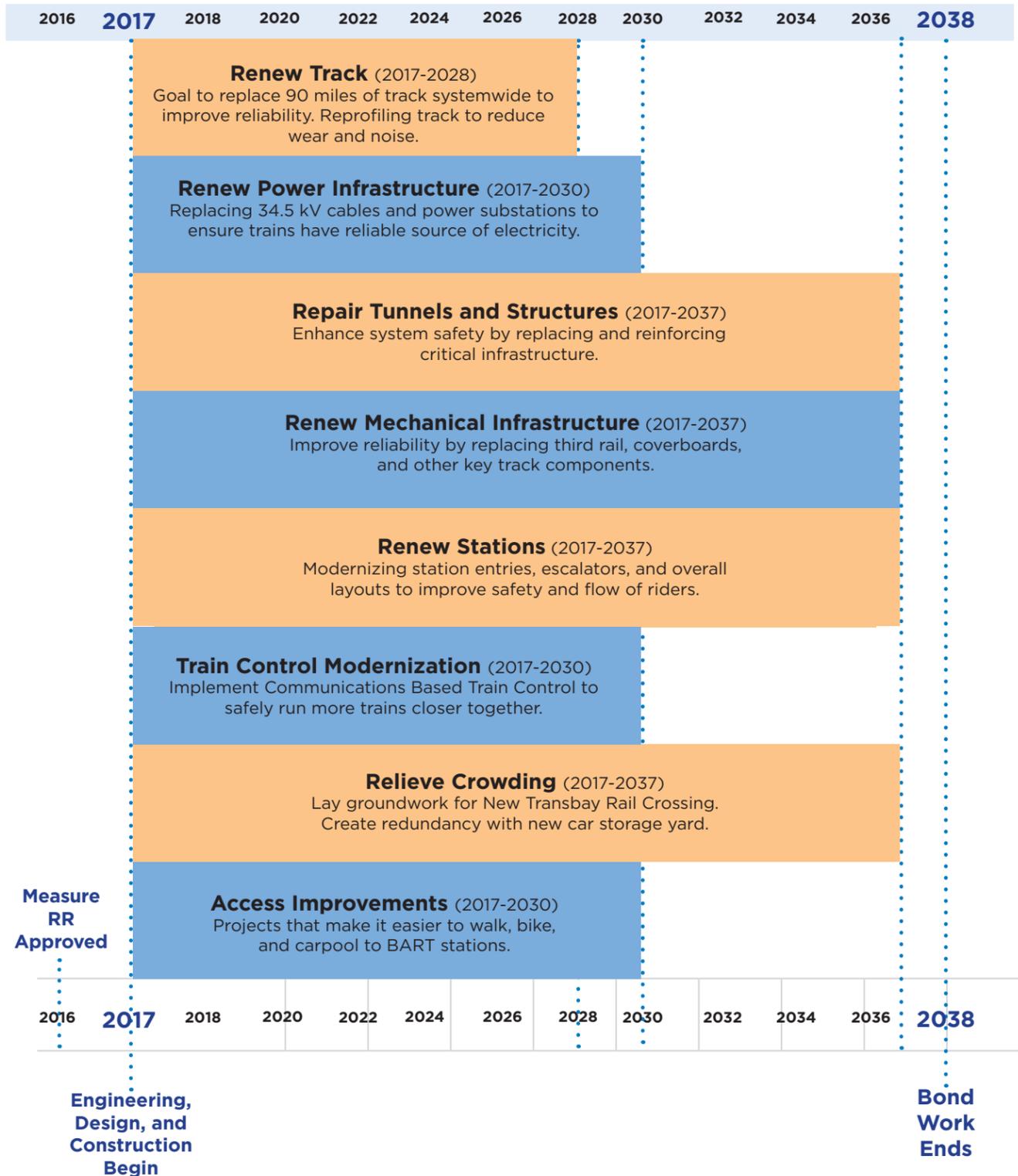


The Office of Civil Rights is continuing to take the lead on efforts to encourage small businesses to bid on projects funded by Measure RR. BART held 32 small business outreach events in 2019 and more are scheduled for 2020. The District's Small Business Supportive Services and outreach have been the critical reason why 631 RR contracts have been awarded to small businesses. Those contracts have a value of \$185,274,514.

L-R: Red Dipper Electric General Foreman Abraham Ley, CEO Douglas M. Parrish, and Project Manager Hunter W. Schneider

# THE LIFE SPAN OF MEASURE RR

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



# BART RESPONDS TO THE CORONAVIRUS

The pandemic caused by the coronavirus has had a dramatic impact on public transit agencies across the country and BART has been no exception. The health officers in all the Bay Area counties served by BART issued their first stay-at-home order on March 16th. BART ridership in April dropped dramatically to only 6% of original projections. BART responded to the steep decline in ridership by gradually reducing service, which has created an opportunity to accelerate multiple RR projects.

## RR-funded projects advance

When the full impacts of the pandemic on public transit became apparent and BART service was reduced, the agency quickly went to the drawing board to identify capital projects that could be accelerated during the down time. A priority was placed on projects based on how critical they are to the core mission of providing reliable train service. BART staff also took other factors into account including the availability of materials and concerns about the stability of supply chains.

The addition of just a few hours a night of wrench time is having a dramatic impact on infrastructure replacement projects. Examples include:

- Before BART moved the end of service to 9 pm workers were replacing 100 feet of running rail a night. With the earlier closing time they're now getting 500 feet of rail replaced a night.
- The earlier closing time has allowed for downtown San Francisco electrical cable replacement work to start at 7 pm on some weeknights. For every six weeks BART can single track at 7 pm BART can eliminate six months of the Sunday single tracking.

BART is also using the time to advance work on the station modernization projects at the 19th Street and El Cerrito del Norte stations, grinding to improve the interaction between train wheels and the rail, and the Transbay Tube Cathodic Protection Project to safeguard the vital link against corrosion. On weekends BART is expanding the number of sites where rail replacement and other rebuilding work is occurring since fewer riders are impacted by service delays.

## Worker safety is the priority

Many transit projects were designated as essential public works per the region's public health orders.

BART has adjusted its job site protocols and all contractors that perform rebuilding work are required to develop social distancing policies for all their employees. Job briefings that used to take place in a huddle are now happening in a way that allows workers to spread out. More vehicles are being used to transport workers to job sites. 55-gallon drums of clean water and soap are deployed at work sites and workers have been instructed to wash their hands more often. Social distancing is enforced during breaks and mealtimes. Workers are spread out on job sites but sometimes the nature of the project make it very challenging to achieve social distancing. In those instances, all BART workers are required to wear N95 masks. The committee will continue to monitor how the coronavirus pandemic could impact the timing of the delivery of RR projects.



# MEASURE RR LAUNCHES MAJOR PROJECTS

The number of active Measure RR projects has increased every year of the rebuilding program's existence. Some of the larger projects involve replacing critical pieces of infrastructure that have outlived their design lives. The work is essential for ensuring BART can reach a state of good repair, but the committee is also mindful of the impact this work can have on the public. This section looks at two of the largest projects in 2019 and the steps that were taken to mitigate service and traffic impacts.

## Lafayette Track Replacement Project

In the summer and fall of 2019 BART rebuilt a critical section of trackway near the Lafayette Station in Contra Costa County. The BART line that runs through Contra Costa into San Francisco is the busiest in the entire system. The construction team worked around the clock during four shutdown weekends to accomplish its work. The primary goal of the project was to replace six track switches. These are large track components that can measure up to 200 feet in length and are instrumental in allowing BART trains to move from line to line. In addition to replacing those switches, workers installed 5,000 feet of new running rail, replaced 10,000 feet of train control cable, and 3,200 feet of third rail. The team also replaced the platform edge tiles at Lafayette Station.



Because of the narrow space available for the work, construction equipment had to be placed in the two far left eastbound lanes of Highway 24 in Lafayette during the weekend shutdowns. BART partnered with Caltrans to monitor traffic backups caused by these lane closures in real time. Whenever delays approached 30 minutes, BART voluntarily reduced the number of lanes closed from two to one. The four weekend closures required a bus bridge to replace train service between the Walnut Creek and Orinda stations. BART partnered with County Connection and AC Transit so riders could use free buses to get between the impacted stations. BART riders who used the bus bridge experienced delays of up to 40 minutes. In addition to those weekend track shutdowns, BART also reduced service through Lafayette to a single track on six Saturdays. Those Saturdays with single-track service did not require any station closures but did result in rider delays of up to 20 minutes.

BART engaged in extensive outreach to alert the public about the work and service impacts. Posters with closure dates and service maps were installed in stations along the Contra Costa line. Several news releases were issued to the local press and BART held a news conference before the first shutdown weekend. The BART Communications Department conducted multiple waves of interviews with members of the press throughout the project. Messages on various social media networks were posted throughout construction and special service advisories were on the homepage of BART.gov as well as on the Alerts and Advisories page. Changeable Message Signs (CMS) were utilized across the East Bay to advise drivers of delays. BART purchased online and radio advertising to promote the work and impacts. BART staff gave presentations on the project to the Lafayette and Orinda city councils. BART's Government and Community Relations Department conducted outreach to

members of the Contra Costa County Board of Supervisors as well as various city managers along the impacted line. Additionally, a public notice was mailed to residents who live within a half mile of the construction site.

## Downtown San Francisco Electrical Cable Replacement Project

In addition to track renovation work, BART is also replacing other critical infrastructure. This includes the 34.5kV (kilovolt) traction power cabling, which provides power for all trains. In many cases the cabling still in use today was installed before BART first began service in 1972. BART must replace this outdated cable to ensure it can provide reliable power for its fleet and accommodate the future addition of more trains to expand the capacity of the system.

Cable replacement work has been happening across the system but the location of work that's had the greatest impact on service is in downtown San Francisco. On 26 Sundays throughout 2019 BART reduced service to a single-track between the Embarcadero and 24th Street Mission stations to accommodate cable replacement work. Utilizing only one track instead of the normal two limits the number and frequency of trains. Though no stations have been closed due to this project, it has still resulted in significant delays to Sunday service in the BART system's San Francisco core.

BART has maintained a consistent presence on BART.gov with the latest information on service impacts from the cable replacement work. This information can be readily found on the Alerts and Advisories page. When the work is happening on an upcoming Sunday, a special alert is highlighted in a red box at the top of the BART homepage. Multiple passenger bulletins have been issued with the latest dates on the project. BART Communications has engaged the media and allowed a news crew to capture video of the work. Posts have been made on Twitter and Facebook to spread awareness of service impacts on every Sunday that has included cabling work. BART's Government and Community Relations Department has been sending email updates to community leaders and other stakeholders to provide notifications for the project and reminders of service dates. Outreach flyers have also been distributed in neighborhoods most impacted by the work.

Though specific dates are still being finalized, cable replacement work will continue in downtown San Francisco on 26 Sundays throughout 2020 and into 2021. The second phase of this work between the 24th Street Mission and Balboa Park stations is scheduled to begin in 2022.

## Upcoming Major Projects

The oversight committee will continue to meet its mandate by closely monitoring the impacts of rebuilding projects that require service interruptions. The next major track rebuild will happen near Orinda Station in Contra Costa County. Crews will replace four switches as well as other major track components over five scheduled shutdown weekends starting in mid-May into early July. The shutdown will extend between the Lafayette and Rockridge stations. Riders will be offered free bus rides provided by AC Transit. Unlike the work done at Lafayette, this project will not require any single tracking or daytime lane closures of Highway 24.

There are also expected to be five weekend shutdowns starting in late July for major track replacement work near the South Hayward Station in Alameda County. Those shutdowns are expected to extend between the Bay Fair and South Hayward stations. A bus bridge provided by AC Transit will replace trains on those weekends. Exact dates for those shutdowns are still being determined.

# MAJOR PROJECTS: RENEW TRACK

There's nothing more essential to ensuring the safe operation of a railway than replacing aging track that has outlived its design life. This work has been a priority of Measure RR funded rebuilding efforts. Since the implementation of the RR program, BART has replaced 32 of a planned 90 miles of track systemwide. BART has prioritized replacing rail that has shown the greatest amount of wear and is in the busiest sections of the system. Much of the remaining outdated track still in the system was installed before BART began service in 1972. Newly installed track sections are expected to provide reliable service for up to 50 years.

BART has also made significant progress in replacing larger track components. BART has replaced 23 switches, at critical points in the system including West Oakland, near the Concord Yard, next to the Lafayette Station and near the Oakland Shops which is a maintenance facility not far from the Lake Merritt Station. Switches are to a railroad what intersections are to motor vehicles. They allow for the safe transition of trains from one line to another. These are oversized components that require heavy equipment to move and can measure up to 200 feet in length. Switch replacements are typically accomplished during weekend track shutdowns.

In addition to replacing aging track and other critical components, BART is also taking steps to reduce the levels of noise produced by contact between the rail and train cars. BART has reprofiled 149 miles of track to improve the performance of the rail and to provide a smoother interaction with train wheels. This work is having a direct impact on the experience of riders by reducing sound intensity by as many as 20 decibels in some sections of the system.

\$168 million has been invested in RR track renewal projects through March 2020. The amount of spending and work completed gives the committee confidence that track replacement work is moving forward in a timely manner consistent with RR objectives.



## Active Projects Completed or Under Construction

Status as of March 2020

- M03 Interlocking Replacement
- C55 Interlocking Replacement
- C35 Interlocking Replacement
- A15 Interlocking Replacement
- Track Restraining Rail Replacement
- C25 interlocking Replacement
- A65 Interlocking Replacement

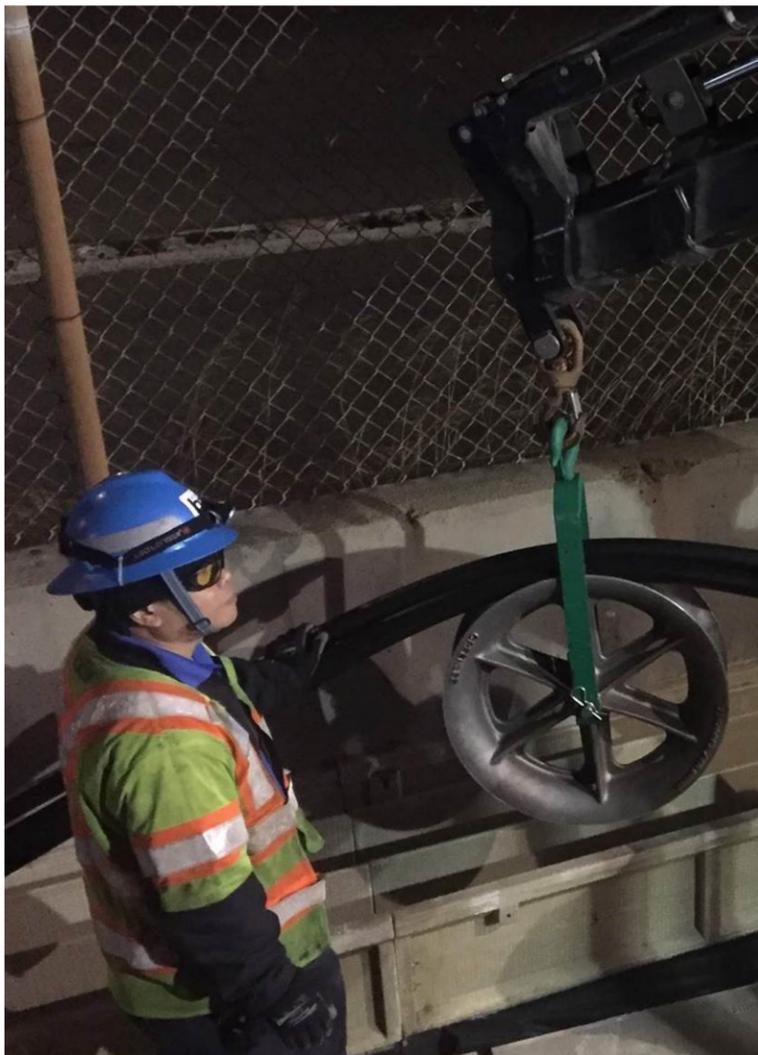
Direct Fixation Pads Replacement - SYSTEMWIDE  
 Rail Replacement - SYSTEMWIDE  
 Rail Reprofilng - SYSTEMWIDE



# MAJOR PROJECTS: RENEW POWER INFRASTRUCTURE

BART is renovating its power infrastructure to ensure that trains have a reliable source of traction power and that stations can rely on a steady stream of electricity. The work currently happening in the BART system will not only enhance reliability, but also boost the system's overall electrical efficiency to conform with BART's long-term renewable and low/zero carbon resource sustainability goals.

Perhaps the most high-profile portion of the power infrastructure renewal program has been the replacement of 34.5 kV electrical cables. The nature and location of the work often in underground portions of the system has necessitated service impacts, especially on weekends. So far six miles of this cable have been replaced between the West Oakland and Lake Merritt stations and between the Glen Park and 24th Street Mission stations in San Francisco. In addition to those six miles, additional electrical cabling is being replaced in downtown San Francisco and Oakland. BART will have the first segment of new cables installed and ready for commissioning in downtown San Francisco this year. Additionally, BART's goal is to have two more miles of cable replaced and in service between West Oakland and 19th St Oakland stations this year.



BART is also taking steps to enhance the resilience of its power system. 21 new Uninterruptible Power Supply (UPS) systems have been installed systemwide. These are valuable backups if there should be an interruption to BART's normal power supply. The new substation DC (direct current) house in the Richmond Yard is in service, and workers have installed the new substation AC (alternating current) and DC houses at San Leandro Station, which will be commissioned this year. Additionally, construction is in progress to bolster the Transbay Tube's emergency generator system by installing a new emergency generator and high voltage switchgear.

Through March 2020, \$199.3 million was invested in RR power infrastructure renewal projects. This investment represents the largest expenditure out of all the major program categories supported by RR. This level of investing is being driven by the scope of work to renew BART's power infrastructure being completed at a faster pace than initial projections.

## Active Projects Completed or Under Construction

Status as of March 2020

- M-Line 34.5 kV Cable Replacement
- C-Line 34.5 kV Cable Replacement
- K-Line 34.5 kV Cable Replacement
- Substation Replacement/Installation
- Richmond Yard Substation DC House Replacement
- Transbay Tube Emergency Generator
- Tunnel Lighting Replacement
- MPR Installation & Rectifier Rehabilitation - SYSTEMWIDE**
- Train Control UPS Replacement - SYSTEMWIDE**
- 3rd Rail Replacement - SYSTEMWIDE**



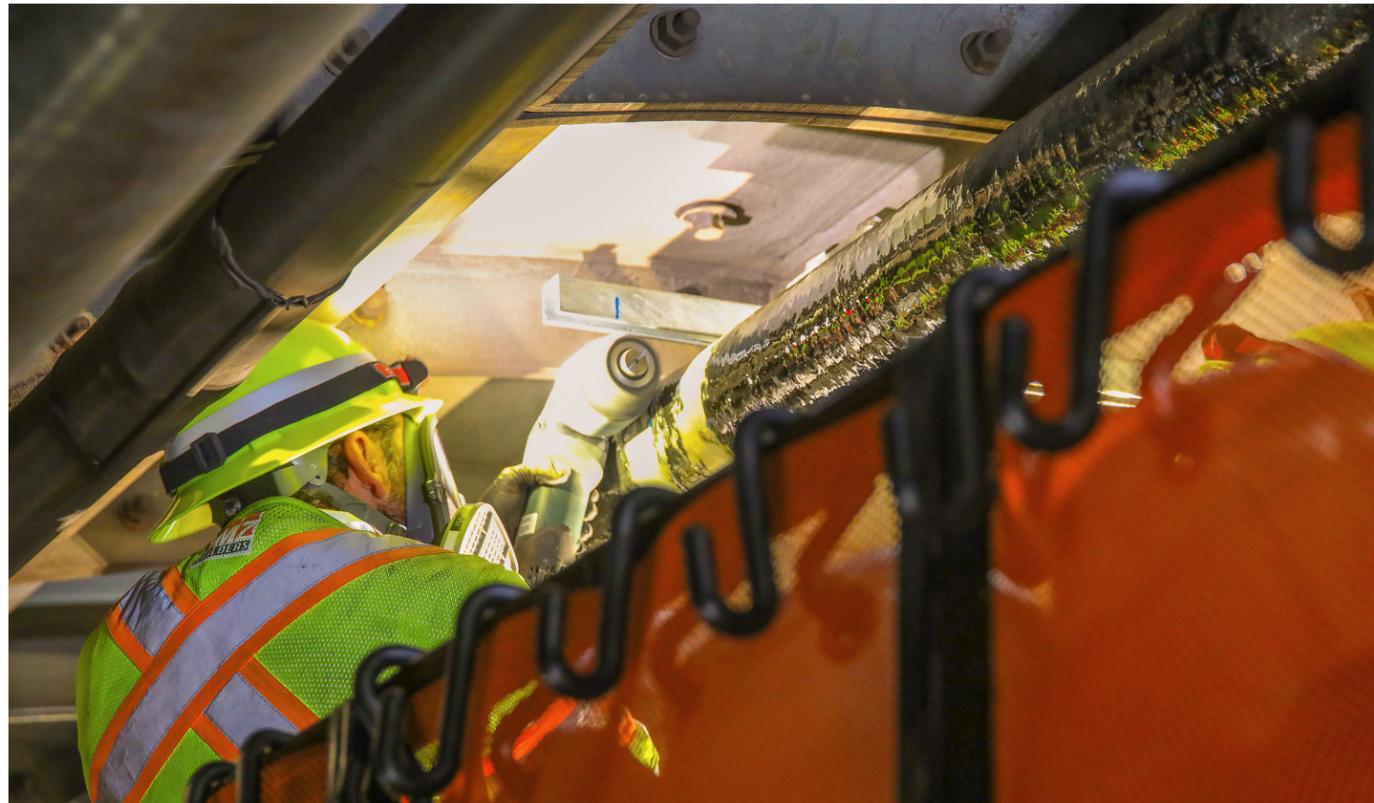
# MAJOR PROJECTS: REPAIR TUNNELS AND STRUCTURES

Earthquake preparedness comes with the territory for BART. The 1989 Loma Prieta earthquake made BART's role in the region as a vital transportation lifeline clear. The entire system, including the Transbay Tube, withstood the shaking that time around, but the concern over future temblors that could be even larger in magnitude is a possibility that BART must prepare for. The Transbay Tube is structurally sound but now BART is taking steps to protect the structure against what experts describe as a rare 1,000-year quake.

Significant work has taken place to bolster the Transbay Tube. 118 cross passage doors and two lower gallery doors have been replaced in the Tube. These are the emergency egress doors connecting the Trackways to the Tube's Lower Gallery. Much of this work was accomplished during overnight hours. To accommodate this work and other projects BART last year moved the start of its revenue service back one hour from 4 am to 5 am. Opening an hour later increases the amount of time workers have to perform these important tasks by 20%.

Seismic improvements at BART are also on the way for other portions of the system. In the last year BART complete a seismic operability upgrade study for the portion of the system that extends between the Lake Merritt and Warm Springs/South Fremont stations. BART also completed a Caldecott Tunnel creep repair study. That tunnel extends between the Rockridge and Orinda stations.

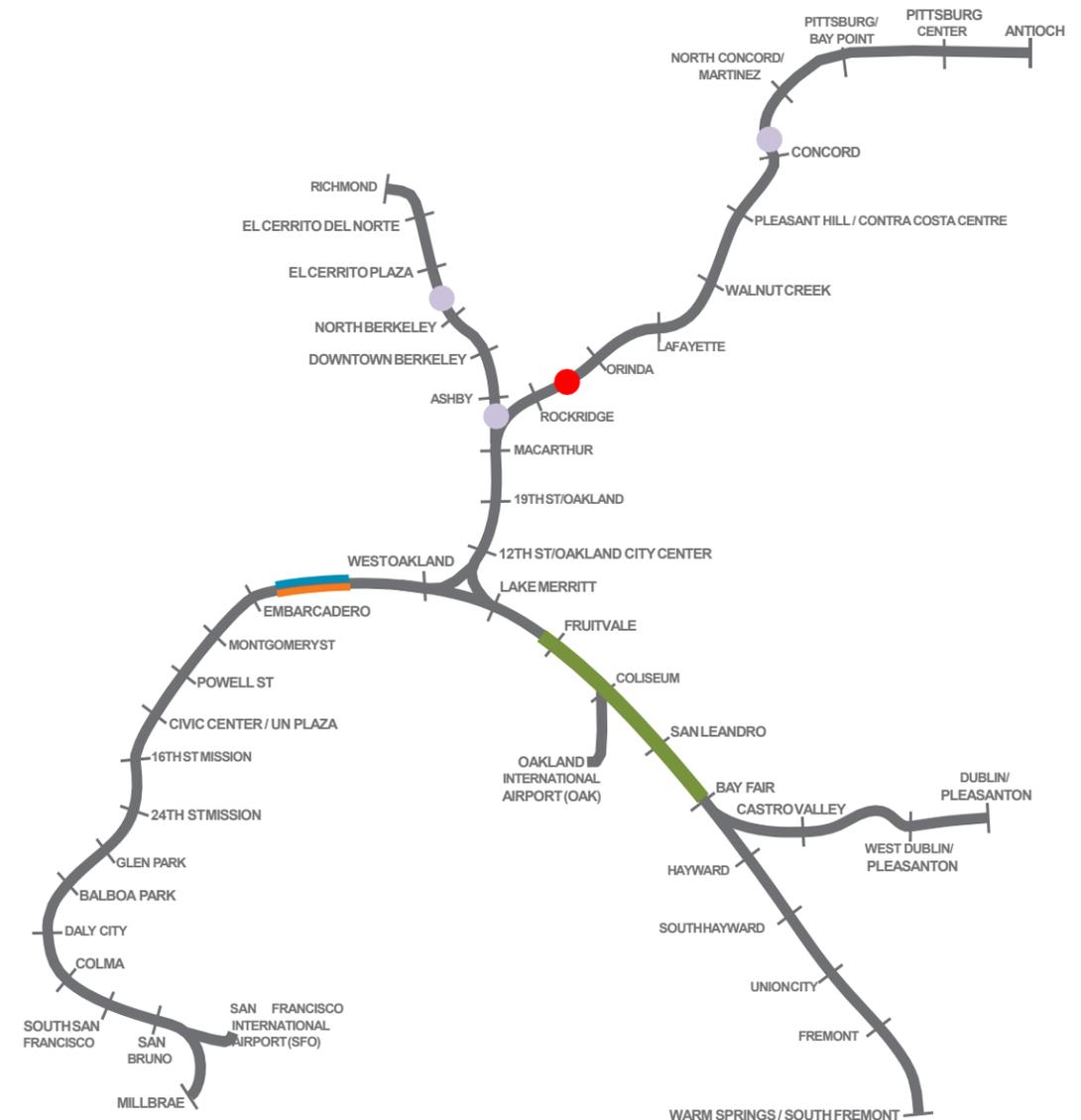
Through March 2020, \$44.5 million in Measure RR dollars have been invested in projects to repair tunnels and structures. This is well ahead of program category investment goals for 2020 and reflects BART's commitment to patron safety.



## Active Projects Completed or Under Construction

Status as of March 2020

- Renew Soundwalls Guideway
- Replace Transbay Tube Cross Passage Doors
- Transbay Tube Earthquake Retrofit
- Install Aerial Fall Protection A-Line North and Central
- Berkley Hills Tunnel Creep Repair
- Wayside Regulatory Signage - SYSTEMWIDE
- Platform Edge Structure Rehab - SYSTEMWIDE
- Substation Roofs - SYSTEMWIDE
- Substation Walls - SYSTEMWIDE
- Replace Safety Barriers - SYSTEMWIDE
- Mitigate Water Intrusion in Train Control Rooms - SYSTEMWIDE



# MAJOR PROJECTS: RENEW MECHANICAL INFRASTRUCTURE

The critical support structures necessary for maintaining a safe railway are also getting a makeover because of Measure RR. A big part of that effort is the on-going Coverboard Enhancement Project. Coverboards are the curved boards that are placed over the electrified third rail for safety and to protect train cars. To improve service reliability, coverboard failures are being mitigated by installing additional supports and replacing damaged coverboards. 20 miles of third rail coverboards have been enhanced on the Dublin/Pleasanton Line, between the Dublin/Pleasanton and Bay Fair stations.

Upgrades are also happening at the yards where BART trains are repaired and stored. 20 train access ladders have been replaced or installed in multiple yards. These ladders are an important safety upgrade as they make it easier for technicians to access difficult to reach portions of the train cars.

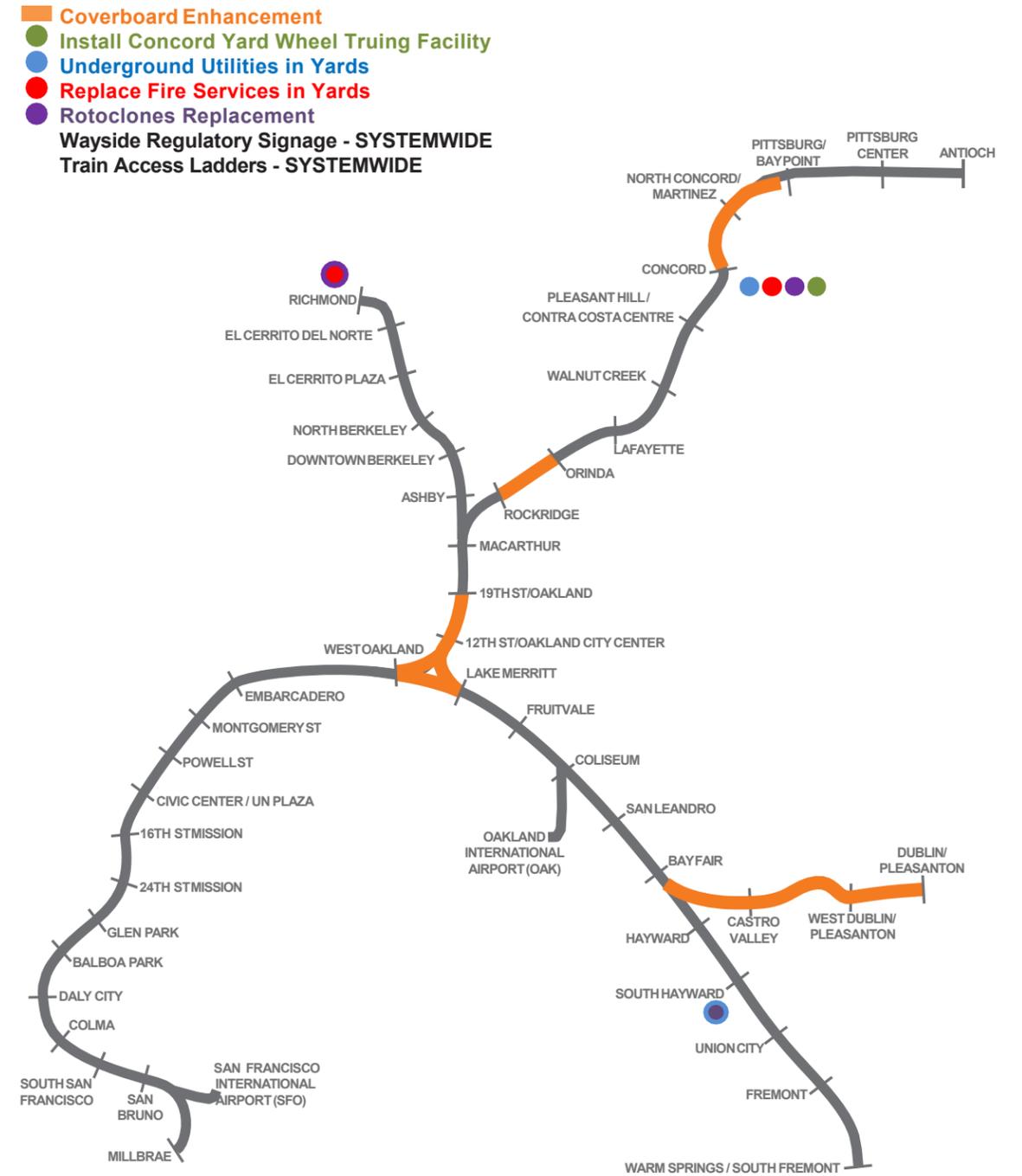
BART has also advertised a contract to build a wheel truing facility at the Concord Yard. This will help technicians to ensure the wheels on BART train cars have the correct shape, alignment, and positioning to best interact with the reprofiled rail.

BART's progress in this program category is consistent with its objective of investing in service reliability, efficiency and safety by replacing essential components such as gas lines in train yards, fire hose cabinets, and piping systems. Through March 2020, \$19.3 million in Measure RR money has been invested in projects to rebuild BART's mechanical infrastructure.



## Active Projects Completed or Under Construction

Status as of March 2020



# MAJOR PROJECTS: RENEW STATIONS

BART is working to modernize its station entries, escalators, and overall layouts to improve safety and flow of riders. The BART Board in January approved a contract to construct 22 canopies over entrances at BART stations along Market Street in downtown San Francisco. Each canopy includes a real-time digital display that shows train arrival times, a retractable gate, LED lighting, and security cameras.

Two canopies were completed in November 2018 and have proven to be successful in securing the entrances when BART is not open for service, reducing the need for excessive maintenance, and increasing safety for frontline employees who open and close the stations every day. Construction on the next canopies will begin this year. The entire project will take seven years to complete because no more than one entrance per station will be under construction at any one time in order to reduce impacts to patrons.

The canopy contract is worth \$64 million and is funded by Measure RR, San Francisco Prop A, and state Prop 1A. The canopy project is happening in conjunction with the Market Street Escalators Renovation Project, which the BART Board approved in March of 2019. That contract will install and replace 41 escalators in downtown San Francisco and is worth \$96.5M.



The work in San Francisco is happening as BART moves forward with station modernization projects at El Cerrito del Norte, Union City, Powell Street, and 19th Street in downtown Oakland. The 19th Street Station Modernization Project is the latest to get underway with construction beginning this year. The work will bring a series of upgrades to the station including the renovation and reopening of public restrooms, the replacement of existing light fixtures with energy-efficient LED lighting, the installation of new glass railing and fare barriers, and a new elevator at the north end to improve vertical circulation from the concourse level to the platform levels. The plan also calls for the concourse to be reconfigured from three paid areas into one continuous paid area to improve patron flow.

Money for the 19th Street improvements is coming not only from Measure RR but also state Prop 1B, Caltrans funds, Alameda County Transportation Commission Measure BB, and a Federal Department of Transportation TIGER Grant, as part of the broader GO Uptown project with the City of Oakland. Overall construction is expected to take approximately 30 months to complete. \$18.6 million in Measure RR dollars were spent through March 2020 on station renewal projects.

## Active Projects Completed or Under Construction

Status as of March 2020

- El Cerrito del Norte Station Modification
- Union City Station Modification
- San Francisco Escalator Replacement
- 19th St. Station Modernization
- San Francisco Canopies
- Powell Street Station Modernization



## MAJOR PROJECTS: TRAIN CONTROL MODERNIZATION

Implementing a new Communications Based Train Control (CBTC) system is critical if BART is to meet what is expected to be a surge in demand for transbay travel over the coming decade. BART's current fixed-block train control system is very safe but limits the frequency and number of trains BART can run. The current system relies on widely spaced signal blocks to denote train occupancy on the track. This contributes to longer distances between trains and increased travel times. A new CBTC system will detect a train's location using "moving" block technology that allows for more efficient train movement. This translates to a shorter distance between trains (while maintaining safe breaking/stop distances) and means BART can safely operate more trains, improve reliability in service, and decrease travel times. CBTC could boost BART's Transbay capacity by as much as 35%.

In January of 2020 the BART Board of Directors awarded a \$798 million contract to Hitachi Rail STS USA, Inc. to design and build a modern Communications Based Train Control (CBTC) system. The contract is expected to be the largest BART award for any project this decade. The long-term objective is to fully implement a new train control system over the next 11 years.

The Communications Based Train Control System is a key component of BART's Transbay Corridor Core Capacity Project (TCCCP) that also includes additional revenue vehicle purchase, new storage yard at HMC and five new Traction Power Sub-Stations (TPSS).

Funding for the new train control system is coming from a variety of local, state, and federal sources including \$400 million from Measure RR. After several months of project review and discussions with the Federal Transit Administration the TCCCP was approved to advance into the engineering phase of the Capital Investment Grant (CIG) program. This is an important step in BART's efforts to secure a \$1.17 billion federal grant for the TCCCP, which is one of the highest rated CIG eligible projects in the country. BART is working closely with FTA to secure a full funding grant agreement by mid-year.

So far \$21.9 million in RR funding has been invested in train control modernization through March 2020.



# MAJOR PROJECTS: RELIEVE CROWDING

BART is working to improve system resilience and redundancy by moving forward with the Hayward Maintenance Complex project. The project would consist of acquiring and improving four properties on the west side of the existing Hayward Yard for a larger primary repair shop and a new storage yard for 250 train cars to support the Fleet of the Future. BART is now advertising the trackwork procurement contract for the project. The Hayward Maintenance Complex plan has an estimated price tag of \$791 million. It's jointly supported by BART and the Santa Clara Valley Transportation Authority, since many of the cars serviced there will operate on the upcoming extension of BART service to San Jose. BART is also seeking funding from the Federal Transit Administration as part of the Core Capacity Program.

Since 1990 the Northern California Mega-Region has grown by 3.3 million people and has added 1.5 million jobs. This growth is anticipated to continue into the foreseeable future, which creates two core challenges: the current transportation system is running up against capacity constraints and emerging travel patterns are not currently served by the existing system. These challenges are the main reasons why BART is partnering with other transit agencies to study the possibility of building a new transbay rail crossing.



A second transbay rail crossing has the potential to transform Northern California's rail network. It could leverage the region's existing and planned transportation assets and enable transfer-free train rides between many Northern California locations such as Sacramento and San Francisco. A second crossing would increase resiliency and redundancy for the BART system while also allowing the possibility that it could be shared by BART and its standard-gauge rail partners such as Capitol Corridor.

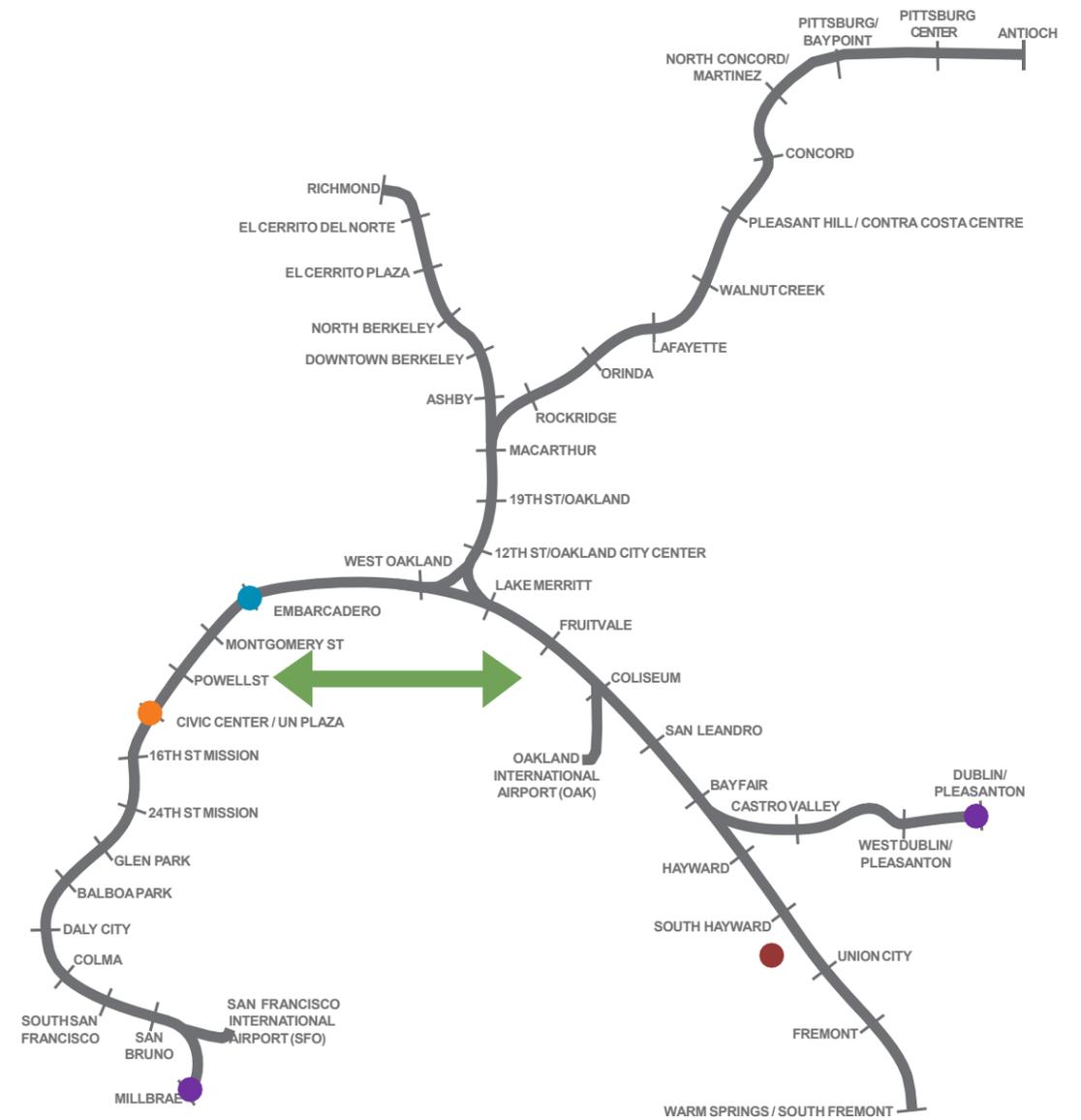
The BART Board approved a consulting contract for strategic advising and program management for a second crossing project in June of last year. The next steps are to complete a feasibility study, as well as a community engagement and environmental analysis. That work is likely to be completed in late 2020 or early 2021. There is no planned date for construction to begin but it's likely years off. Among the challenges going forward are to line up funding.

\$17.2 million in Measure RR funds have been spent on programs to relieve crowding, increase redundancy, and reduce congestion through March 2020.

## Active Projects Under Construction, Design or Planning

Status as of March 2020

- Civic Center Scissor Stairs (Construction)
- Embarcadero Elevator (Design)
- Hayward Maintenance Complex Phase 2 (Design)
- 2nd Transbay Tube Crossing (Planning / Study)
- Dublin Pleasanton/Millbrae Tail Tracks (Design)



# MAJOR PROJECTS: ACCESS IMPROVEMENTS

Access improvements funded by Measure RR not only expand opportunities to safely access BART stations, making it easier for all riders to use the system, but also improve the environment. BART is working to leverage Measure RR dollars with local and regional funding to expand available resources and deliver more capital projects. With that concept in mind, the District plans to launch Safe Routes to BART this year. The Safe Routes to BART program will help local governments fund projects that will improve safe walking and biking networks that will bring riders to BART stations. Safe Routes to BART hopes to identify projects that can offer a minimum funding match of 30%, have evidence of governing body support, and have a minimum of 35% design completion.

BART is moving forward with improvements to some of its bike stations. BART currently has eight bike stations across the system. BART recently awarded a contract to bring modifications to its bike stations at Embarcadero and Civic Center stations in downtown San Francisco. These facilities attract more bicyclists to BART by offering secure, controlled-access parking all times the stations are open. In addition to the bike stations, BART has over 1,700 BikeLink lockers at 37 stations and high security smart racks (Bikekeep) at five stations.

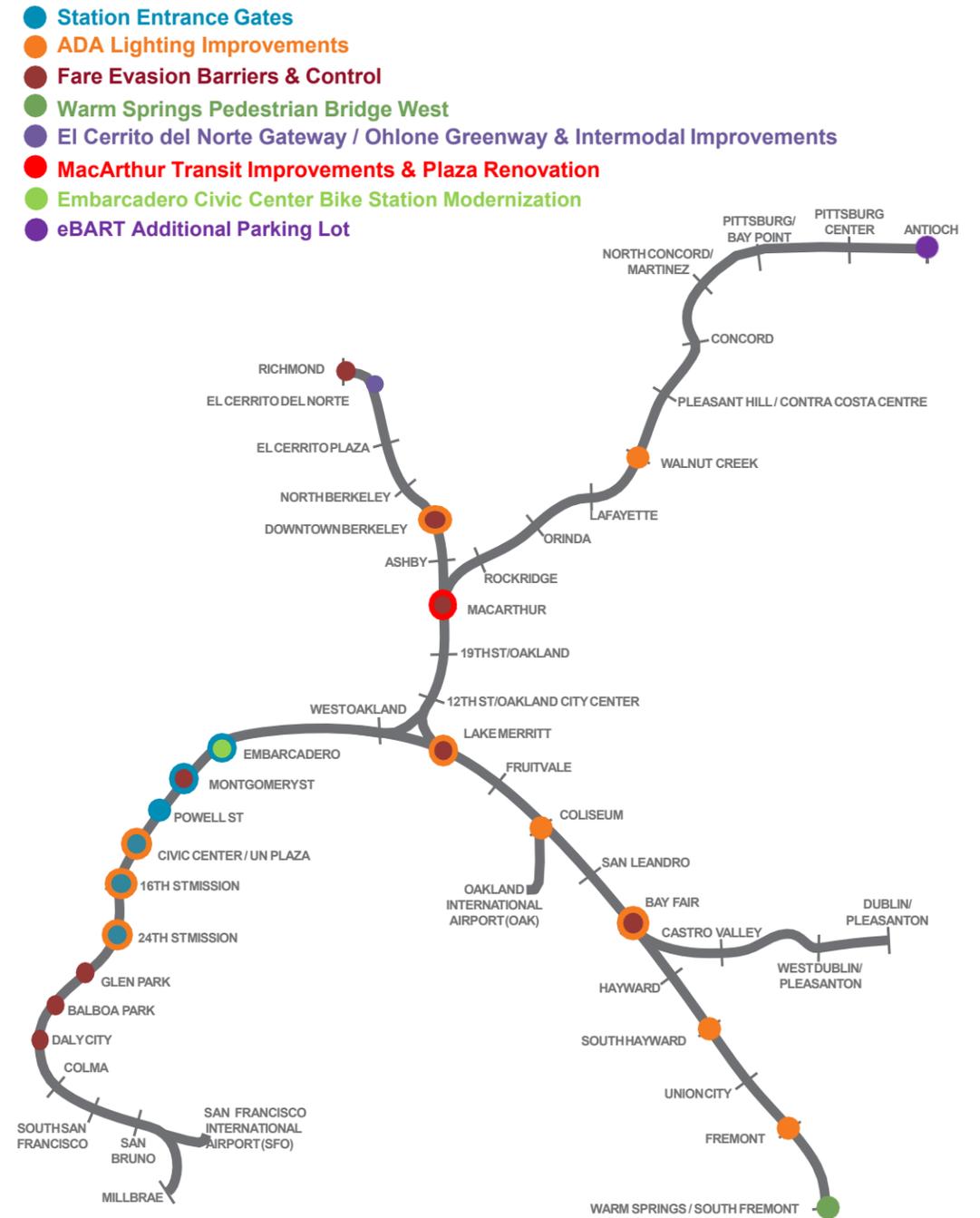
The BART Board in November approved the construction of more than 850 additional parking spaces at the Antioch Station. These additional spots will be on top of the 1,000 spaces already at Antioch. The \$9.9 million contract approved by the BART Board calls for additional multimodal access upgrades including better pedestrian and bicycle infrastructure, directional signage improvements and widening the bus lane to alleviate congestion.

\$15.4 million in Measure RR funds were spent through March 2020 on projects to improve system access.



## Active Projects Completed or Under Construction

Status as of March 2020



# Committee Activities and Expenditures

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

- **June 21, 2019 – Regular Meeting**

BART General Manager Grace Crunican briefs the committee on BART receiving a \$1.2 billion federal grant to bolster core capacity. Committee reviews the draft of the 2019 RR annual report and offers suggested edits. Vice Chair Post requests that the report give proper credit to staff for their work on RR projects while Committee Member Day requests the report provide more context on whether bond spending is meeting legal requirements. Committee then receives updates on progress for RR projects. Treasurer Rose Poblete updates committee on next bond issuance. Committee discusses future site visit to learn more about track replacement.

- **July 16, 2019 – Special Meeting**

Committee members unanimously adopt the annual RR Report.

- **September 20, 2019 – Regular Meeting**

New BART General Manager Bob Powers attends and introduces himself to committee members. Committee views the video replay of Chairman McGill's presentation of the RR Report to the BART Board of Directors. Vice Chair Post suggests committee members create an outline for the next annual report. Staff provides an update on the track rebuilding project in Lafayette. Vice Chair Post requests update on Train Control at next meeting and says if the committee had a watch list, he would put that project on it.

- **September 28, 2019 – Site Visit**

Committee Members Gee, Edwards, Newman, and Post met BART staff at the Lafayette Station to tour the track replacement project.

- **December 20, 2019 – Regular Meeting**

Committee agrees to maintain schedule of meeting every three months on the third Friday of the month. Committee offers ideas for upcoming RR Annual Report, reviews draft outline, and forms subcommittee to review draft report before it's presented to the full committee. BART staff provides committee with progress overview of RR projects to date. Committee Member Day requests more context be given to numbers. Chair McGill says timelines should not only show where projects are but where they should be.

- **March 20, 2020 – Regular Meeting**

Postponed to May due to the coronavirus pandemic and related public health orders.

**Committee Expenditures:** As of this report, the committee has spent \$636 in Fiscal Year 2020.

You are invited to participate in future Measure RR Bond Oversight Committee meetings. Those meetings are scheduled to happen on the third Fridays of March, June, September, and December. The meetings are open to the public and will be listed on the BART website at [www.bart.gov/about/bod/meetings/2019](http://www.bart.gov/about/bod/meetings/2019). The committee will also be publishing an annual report each year to inform the public of BART's progress and activities. You can sign up for email notices of BART News, which will include major milestones in Measure RR work at [www.bart.gov/alerts](http://www.bart.gov/alerts).

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

