NOTICE OF MEETING AND AGENDA
BOND OVERSIGHT COMMITTEE

Friday, December 20, 2019
9:30 a.m. – 11:00 a.m.

COMMITTEE MEMBERS: Marian Breitbart, Michael Day, Leah Edwards, Daren Gee, Michael McGill, Catherine Newman, John Post

A Meeting of the Bond Oversight Committee will be held on Friday, December 20, 2019, at 9:30 a.m. The Meeting will be held in Conference Room 2100, 300 Lakeside Drive, 21st Floor, Oakland, California.

AGENDA

1. Call to Order
   A. Roll Call (5 minutes)

2. Introduction of Committee Members and BART Staff (5 minutes)

3. Meeting Minutes: September 20, 2019 (For Discussion/Action) (5 minutes)

4. Meetings Dates for the Remainder of 2020/2021 Term (For Discussion/Action) (5 minutes)

5. Review of Standardized Reporting (For Discussion) (5 minutes)

6. Review of the Outline of BART Safety, Reliability and Traffic Relief Program (Measure RR) Annual Report (For Discussion) (15 minutes)

7. BART Safety, Reliability and Traffic Relief Program (Measure RR) Update (For Discussion) (20 minutes)

8. Train Control Update (For Discussion) (10 minutes)

9. Committee Member Announcements (For Discussion) (10 minutes)

10. Requests for Future Agenda Items (For Discussion/Action) (5 minutes)

11. Public Comment (5 minutes)

12. Adjournment (5 minutes)

Please refrain from wearing scented products (perfume, cologne, after-shave, etc.) to this meeting, as there may be people in attendance susceptible to environmental illnesses.

BART provides service/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

**********DRAFT**********

Friday, September 20, 2019
9:30 AM – 11:00 AM
Kaiser Center Tower, 21st Floor
Conference Room 2100
300 Lakeside Drive Oakland, CA 94612

<table>
<thead>
<tr>
<th>MEETING NUMBER</th>
<th>MEETING DATE</th>
<th>MEETING TIME</th>
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<tbody>
<tr>
<td>Term 2, Meeting 1</td>
<td>September 20, 2019</td>
<td>9:30am – 11:00 am</td>
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Attendees

Present Members
Michael McGill, Chair
John Post, Vice Chair
Michael Day
Marian Breitbart
Daren Gee
Leah Edwards
Catherine Newman

Staff
Robert Powers
Rose Poblete
Tamar Allen
Rodd Lee
Linton Johnson
Gia Ilole
Sylvia Lamb
Sam Sowko
Michaela Morales
Chris Filippi
Audrey Tam
Jamal Thompson
Joseph Towner
Josh Reed
Tracy Johnson

Agenda Item | Meeting Notes
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1. Call to Order | M. McGill calls the meeting to order. L. Johnson takes roll call.
2. Introduction of Committee Members & BART Staff | Committee members introduce themselves. BART staff introduced themselves.
3. Meeting Minutes: June 21, 2019 | J. Post asks that we remove the s from the end of his name on page 3.
### Committee unanimously approves the minutes with the J. Post’s change.

<table>
<thead>
<tr>
<th>4. Review of BART Board Questions Following Annual Report Presentation- Video Replay- Chairman McGill</th>
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<tbody>
<tr>
<td>Committee hears the replay of Chairman McGill’s presentation to the BART Board of Directors. Committee discusses how they should include answers to some of the BART Board’s questions in the next Annual Report. J. Post suggests that Committee members create an outline of the Annual Report and start using the meetings to write the sections of the report so it’s complete by June. B. Powers suggests, to save some time, that staff come to the next meeting with the outline and members can edit the outline at the next meeting. J. Post says that he believes members are now more willing to generate content this year rather than reviewing and approving content that staff writes. M. Day says he does not have an issue with staff generating the content because in other corporations and governmental agencies, staff prepares remarks, reports, etc., and the official responsible for signing off on what the staff created still has to make their edits, and accept ownership of the content once the official puts his/her name to it.</td>
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<tr>
<th>5. BART Safety, Reliability and Traffic Relief Program (Measure RR) Update</th>
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<tr>
<td>T. Johnson and S. Lamb introduce S. Sowko and J. Reed who give updates on the C35 interlocking replacement project (C35 is the track area just north of the Lafayette BART Station). S. Lamb and T. Johnson provide updates on the progress of other Measure RR projects. J. Post requests at the next meeting, staff provide an update on Train Control and says if the Committee had a “watch list” then he would put Train Control on it. M. Day says he would like to have a watch list to put projects that the Committee should focus on. T. Johnson and S. Lamb said they will have a presentation on Train Control.</td>
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<td><strong>J. Towner</strong></td>
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<td><strong>G. Ilole</strong></td>
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<td><strong>7. C-35 Track Shutdown Tour</strong></td>
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<td><strong>8. Committee Member Announcements</strong></td>
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<td><strong>9. Request for Future Agenda Items</strong></td>
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<td><strong>10. Public Comment</strong></td>
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<tr>
<td><strong>11. Adjournment</strong></td>
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</tbody>
</table>
1: Table of Contents
2: Committee Chair Welcome Letter
3: Executive Summary
   A: Explain what committee is charged with presenting and its oversight role.
   B: Provide number of projects in works and total spent.
4: About the Bond Oversight Committee
   A: List organizations represented on committee.
   B: Detail committee’s tour of Lafayette track rebuild.
5: Story of Measure RR
   A: How RR made the ballot/public outreach leading up to vote.
   B: Explain the basics of the bond measure.
6: Meeting our Mandate
   A: Assess status of overall Measure RR program.
   B: Answer whether progress on RR work is where we expected it to be.
7: Rebuild BART’s Backbone
   A: List highlights of RR work.
8: Critical Trackway Replacement
   A: Describe major track work and public outreach for those projects.
   B: Explain steps taken to lessen public impacts from track and highway lane shutdowns.
   C: Highlight major projects coming up that will impact public.
9: Putting People to Work
   A: Highlight/profile the men and women who are making RR projects happen.
   B: Describe how many jobs created through RR work.
10: Small Business Outreach
    A: Update status of small business contracts
    B: Profile small businesses doing RR work.
    C: Detail small business outreach efforts.
11: Green Bonds
   A: Explain what are green bonds and why the designation matters.
   B: Where things stand after issuance of second tranche of bonds.

12: Exceeding Bond Requirements
   A: Explain legal spending requirements.
   B: Describe whether RR spending is meeting those regulations.

13: Investment Summary
   A: Chart showing percentage of total bond expended on major project groups.

   **Major Project Sections**
   A: Include system maps to show all projects for each category to highlight on-going RR work.
   B: Highlight major accomplishments as well as total amount spent for each section.

1: Renew Track
2: Renew Power Infrastructure
3: Repair Tunnels and Structures
4: Renew Mechanical
5: Renew Stations
6: Train Control Modernization
6: Relieve Crowding
7: Access Improvements
8: Committee Activities and Expenditures
   A: Meeting recaps.
   B: Expenditure total for committee.
• Provide diligent, independent and public oversight over the expenditure of funds from the sale of District general obligation bonds

• Assess how bond proceeds are spent 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
<table>
<thead>
<tr>
<th>Topic</th>
<th>Page No.</th>
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<tbody>
<tr>
<td>Executive Summary</td>
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<tr>
<td>Work Progress Since Last Meeting</td>
<td>5</td>
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<tr>
<td>• Transbay Tube Cross Passage Doors</td>
<td>8</td>
</tr>
<tr>
<td>Individual Program Milestones</td>
<td>12</td>
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<tr>
<td>Budget and Schedule Status</td>
<td>21</td>
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<tr>
<td>Hiring</td>
<td>27</td>
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<tr>
<td>Small Business &amp; Outreach</td>
<td>29</td>
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<tr>
<td>Next Steps</td>
<td>32</td>
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</table>
Executive Summary

- Through October 2019, $386M or 11% of the Measure RR funds have been spent.
- High Level Summary as of October 2019
  - Work Completed:
    - C55 Track Renewal (Construction)
    - Platform Edge Replacement at Lafayette Station (Construction)
    - ADA Lighting Improvements (Construction)

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<th># Projects in Planning</th>
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<tr>
<td>10</td>
<td>51 (+2)</td>
<td>32 (+8)</td>
<td>38 (+2)</td>
<td>8 (+2)</td>
<td>141</td>
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</table>
Work Progress Since Last Meeting
## Examples of Active RR Projects in August – October 2019

### Renew Track
1. C35 Track Interlocking Replacement – Substantial Completion
2. CS5 Track Interlocking Replacement – Substantial Completion

### Renew Power Infrastructure
3. M-Line 34.5kV Single Tracking for Conduit Installation
4. K-Line 34.5kv Cable Replacement – Ongoing In-house Construction*

### Renew Tunnel & Structures
5. Platform Edge Repair at Lafayette Station – Substantial Completion*
6. TBT Cross Passage Doors – Ongoing Construction
7. Aerial Fall Protection M-Line – Ongoing Construction

### Renew Mechanical
8. Concord Yard Wheel Truing Facility – Advertised*
9. Coverboard Enhancement – Ongoing Construction*

### Design/Engineer to Relieve Crowding
10. Civic Center Station Scissor Stairs - Site Mobilization
11. Embarcadero New Platform Elevator – Advertised*

### Renew Stations
12. 19th Street Station Modernization – Issued NTP
13. Market Street Canopies – Advertised*

### Expand Safe Access
14. eBART Antioch Parking Lot Contract – Awarded
15. ADA Lighting Improvements – Substantial Completion*
16. Embarcadero and Civic Center Bike Station Modernization – Start Construction*

### Replace Train Control/Increase Capacity
17. Design Support During Construction On-Call Contract (8) for Train Control Modernization Project – Advertised (Not Mapped)*

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* Updated projects
Updated Projects

Renew Track
1. C35 Track Interlocking Replacement – Substantial Completion
2. C55 Track Interlocking Replacement – Substantial Completion

Renew Power Infrastructure
3. M-Line 34.5kV Single Tracking for Conduit Installation
4. K-Line 34.5kV Cable Replacement – Ongoing In-house Construction*

Renew Tunnel & Structures
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Replace Train Control/Increase Capacity
17. Design Support During Construction On-Call Contract (s) for Train Control Modernization Project – Advertised (Not Mapped)*
Transbay Tube Cross Passage Doors

Measure RR - Project Progress

TBT Cross Passage Doors

Renew Track
1. C35 Track Interlocking Replacement – Substantial Completion
2. C55 Track Interlocking Replacement – Substantial Completion

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Replace Train Control/Increase Capacity
17. Design Support During Construction On-Call Contract(s) for Train Control Modernization Project – Advertised (Not Mapped)*
• 60 Pairs of Doors Procured (as of Nov 22, 2019)
• 43 Pairs (out of 60) of Doors Installed (as of Nov 22, 2019)
• 16 Pairs of Doors to be Installed (as of Nov 22, 2019)
• Project Substantial Completion by January 2020 for a total of 59 Pairs of Doors (with 1 pair for BART M&E to install)
Challenge #1:
Door opening dimensions vary from door to door, requiring doors to be custom made for each opening

Resolution:
Measured all door openings prior to submittals and manufacturing. Required the manufacturer to label each door to match each opening.

Challenge #2:
Quantity of Cart Charging Stations insufficient for competing projects. Carts are used in the lower gallery to access worksite during revenue hours.

Resolution:
Expedited design, approval, and construction of additional Electrical Cart Charging Stations and upgraded electrical system to provide enough charging capacity for this project and 3 other projects
Challenge #3:
Projects competing for track access to do work.

Resolution:
In-house and field coordination meetings were set up between the projects. Re-sequenced Door Installation around competing project work zones. Worked overtime, day & night shifts, and weekends to stay on track.
Individual Program Milestones
# Renew Track

## STATUS & MILESTONES

EXPENDED Thru 10/2019: **$134.3**  
FORECAST Thru 6/2021: **$183**  
TOTAL PROGRAM VALUE: **$625**  
PERIOD CASHFLOW: **$23.4**

## STATUS – Renew Track

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## MILESTONES

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<tbody>
<tr>
<td>Weekend Shutdowns for C35 (Near Lafayette) Interlocking Replacement</td>
<td>Commission the C35 pocket track</td>
<td>Contract award for A65/A75 Interlocking Replacement</td>
<td>Contract award for Oakland Yard Tracks project</td>
</tr>
<tr>
<td>Complete construction on C55 Interlocking Replacement (near Concord Yard)</td>
<td>Bid opening for A65/A75 Interlocking Replacement</td>
<td>Advertise for bid for Oakland Yard Geometry Vehicle Storage Shed</td>
<td>Contract award for A77 Interlocking Replacement project</td>
</tr>
<tr>
<td>Notice to Proceed (NTP) for Rail ReProfiling Services</td>
<td>Submit Oakland Yard Geometry Vehicle Storage Shed and A77 Interlocking (near Hayward Yard) Replacement to Procurements</td>
<td>Advertise for A77 Interlocking Replacement</td>
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</tr>
<tr>
<td>Start special track procurement for C25 (Near Orinda) Interlocking Replacement</td>
<td></td>
<td>Substantial completion of the restraining rail replacement construction</td>
<td></td>
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<tr>
<td>Advertise for A65/A75 (near Hayward Station and Hayward Yard) Interlocking</td>
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## Watchlist:

K-Line interlocking replacement access permit.  

*Italic:* Modified milestones from previous report.
## STATUS – Renew Power Infrastructure

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<td>10</td>
<td>8</td>
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## MILESTONES

|---------------------------------|--------------------------|--------------------------|--------------------------|
| • Start design of new East Bay substations | • Advertise Civic Center and Montgomery Substations  
• Advertise Replace R line 34.5 kV Cable | • Complete design for Station Fire Alarm Replacement Phase 3  
• Complete design for 34.5kV Blocking Scheme Systemwide  
• Award Replace CWS Bulk Supply Transformer  
• Award Replace Station Emergency Lighting | • Submit Station Fire Alarm Replacement Phase 3 to Contracts  
• Submit 34.5kV Blocking Scheme Systemwide to Contracts |
| • Complete Design to Replace MXP Gap Breaker (at M85 (near Balboa Park) interlocking) | • Advertise Replace A line 34.5kV Cable  
• Advertise TPSS Replacements (Ph 1)  
• Advertise Station Emergency Lighting Upgrade (11 locations) | | |

### Watchlist:
- Enhance single tracking Sunday’s for M Line Cable project between Embarcadero and Powell St. stations
- Rebidding of Replace Station Emergency Lighting

*Italic: Modified milestones from previous report.*
## Tunnels & Structures
### STATUS & MILESTONES

**EXPENDED Thru 10/2019:** $35.4
**FORECAST Thru 6/2021:** $57
**TOTAL PROGRAM VALUE:** $570
**PERIOD CASHFLOW:** $7.6

### STATUS – Repair Tunnels & Structures

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### MILESTONES

- **Completed (Aug 2019 – Oct 2019)**
  - Complete Platform Edge Rehabilitation at Lafayette station
  - Start Materials Procurement for Wayside Regulatory Signage

- **Q2 (Nov 2019 – Dec 2019)**
  - Completion of Aerial Fall Protection A Line North Design
  - Issue NTP Aerial Fall Protection M-Line

- **Q3 (Jan 2020 – Mar 2020)**
  - Completion of Market Street grating rehabilitation design
  - Advertise and bid opening for Aerial Fall Protection A Line North
  - Begin construction on Wayside Regulatory Signage
  - Completion of Phase 1 substation walls rehab
  - Completion of catwalk hangar rod replacement construction pilot program.
  - Substantial completion of TBT cross passage doors construction

  - Completion of Aerial Fall Protection A Line South construction pilot Project
  - *Completion of renew catwalk A Line catwalk renewal design*
  - Receive Notice of Award on Richmond Yard Fencing

### Watchlist:

- Potential schedule impact for Wayside Regulatory Signage project
- Potential schedule impact for MW 12 slope stabilization

*Italic: Modified milestones from previous report.*
### Renew Mechanical

**STATUS & MILESTONES**

EXPENDED Thru 10/2019: $12.4
FORECAST Thru 6/2021: $41
TOTAL PROGRAM VALUE: $135
PERIOD CASHFLOW: $2.9

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### STATUS – Renew Mechanical

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### MILESTONES

**Completed** (Aug 2019 – Oct 2019)
- Complete design for Replace LMA Computer Room Emergency Cooling System
- Complete design for Replace Concord Yard Turntable
- Complete design for Richmond Car Lifts

**Q2** (Nov 2019 – Dec 2019)
- Advertise Concord Yard Wheel Truing Facility
- Submit Richmond Car Lifts to Contracts
- Award for Replace Facilities HVAC Phase 1 (7 Sites at 6 Locations)
- Issue NTP for Replace Rotoclones
- Award for Replace Sewage Pumps – Reject All Bids
- Board approval of Richmond Yard Fire Services

**Q3** (Jan 2020 – Mar 2020)
- NTP for Facilities HVAC Equipment Replacement Systemwide
- NTP for Richmond Yard Fire Services
- Submit Hayward Yard Fire Services to OCR
- Concord Yard Wheel Truing Facility – Bids Due
- Advertise Richmond Car Lifts
- Advertise Concord Yard Turntable

**Q4** (Apr 2020 – Jun 2020)
- Award Concord Yard Wheel Truing Facility
- Advertise Hayward Yard Fire Services
- Advertise Vacuum System Replacement

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**Watchlist:**
Low bidder turnout

*Italic: Modified milestones from previous report.*
# Replace Train Control

## STATUS & MILESTONES

**EXPENDED Thru 10/2019:** $14.2

**FORECAST Thru 6/2021:** $32

**TOTAL PROGRAM VALUE:** $400

**PERIOD CASHFLOW:** $3.1

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## STATUS – Replace Train Control / Increase Capacity

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## MILESTONES

**Completed (Aug 2019 to Oct 2019)**

- Issued Design Build Best and Final Offer Modification #1 & received Bid Documents
- Advertised Design Support During Construction On-Call Contract(s) – 10/9/2019

**Q2 (Nov 2019 – Dec 2019)**

- Advertise owner controlled insurance program (OCIP) for CBTC Design Build Contract
- Issue 65% Design Review - Power Supply Cabinets & Switch Machine/Train Control Room Power Cable 49GH-130
- Advertise Construction Management On-Call 6M8171
- Select Best Value Contractor for DB Contract 49GH-110/TCPSS 49GH-120 (Extended Warranty)
- Issue 1st Change Order to Bombardier for D-Car Retrofit Talks

**Q3 (Jan 2020 – Mar 2020)**

- Issue 100% Contract for review – 49GH-130 Power Supply Cabinets & Switch Machine/Train Control Room Power Cable
- Notice of Award to BART Board for 49GH-110 CBTC Design Build Contract & 49GH-120 TCPSS (Extended Warranty)
- Construction Management On-call Contract – Notice to Proceed
- 2nd Change Order to Bombardier for D-Car Retrofit Design
- Bids due for 6M8168 Design Support During Construction On-Call Contracts
- OCIP Coverage/Notice to Proceed for CBTC 49GH-110

**Q4 (April 2020 – June 2020)**

- Notice to Proceed 6M8168 Design Support During Construction On-call
- Advertise/Review Bids 49GH-130 -Power Supply Cabinets & Switch Machine/Train Control
- NTP for CBTC Design Build Contract 49GH-110/Mobilize

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**Watchlist:**

Design Build Contract Award contingent upon Full Funding Grant Agreement.

*Italic: Modified milestones from previous report.*
Renew Stations
STATUS & MILESTONES

EXPENDED Thru 10/2019: $8.4
FORECAST Thru 6/2021: $29
TOTAL PROGRAM VALUE: $210
PERIOD CASHFLOW: $2.4

### STATUS – Renew Stations

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### MILESTONES

**Completed**
(Aug 2019 to Oct 2019)

- Process escalator fabrication and administrative submittals
- 19th St Station (07EA-120) – Notice to Proceed
- Advertised Canopy Contract
- Union City Intermodal Station Phase 2A – Began Construction

**Q2**
(Nov 2019 – Dec 2019)

- Finalize escalator submittal to allow fabrication of escalators to begin
- 19th St Station (07EA-120) – Work on Safe System of Work Plan (SSWP)
- Canopy Contract – Received Bids December 3, 2019

**Q3**
(Jan 2020 – Mar 2020)

- Fabrication of escalators
- 19th St Station (07EA-120) – Site Mobilization
- Canopy Contract – Tentative Award

**Q4**
(April 2020 – June 2020)

- Begin installation of escalators

**Watchlist:**
Canopy Contract Award delay

*Italic: Modified milestones from previous report.*
### Station Access

**STATUS & MILESTONES**

EXPENDED Thru 10/2019: $12.5
FORECAST Thru 6/2021: $37
TOTAL PROGRAM VALUE: $135
PERIOD CASHFLOW: $1.8

### STATUS – Expand Safe Access to Stations

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<th>TOTAL # Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>13</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>23</td>
</tr>
</tbody>
</table>

### MILESTONES

**Completed**
(Aug 2019 to Oct 2019)

- Embarcadero and Civic Center Bike Station Modernization – Notice to Proceed and Began Construction
- eBART – Antioch Parking Lot Contract – Advertised
- ADA Lighting Improvements (Substantial Completion)
- Warm Springs West Pedestrian Bridge – Cable Stay Bridge Pylon Erection

**Q2**
(Nov 2019 – Dec 2019)

- eBART – Antioch Parking Lot Contract – Awarded
- Warm Springs West Pedestrian Bridge – Complete concrete deck on the bridge

**Q3**
(Jan 2020 – Mar 2020)

- eBART – Antioch Parking Lot Contract – Notice to Proceed
- *Bicycle Stair Channels Contract – Submit to Procurement for Review*
- Advance Safe Routes to BART Grant Program
- MacArthur Transit Improvement – Complete Financial Closeout

**Q4**
(April 2020 – June 2020)

- eBART – Antioch Parking Lot Contract – Begin Site Mobilization
- Embarcadero and Civic Center Bike Station Modernization – Substantial Completion

### Watchlist:

None

*Italic: Modified milestones from previous report.*
### Relieve Crowding

**STATUS & MILESTONES**

**EXPENDED Thru 10/2019:** $10.9
**FORECAST Thru 6/2021:** $33
**TOTAL PROGRAM VALUE:** $200
**PERIOD CASHFLOW:** $2.2

## STATUS – Design / Engineer to Relieve Crowding

<table>
<thead>
<tr>
<th># Projects in Planning</th>
<th># Projects in Design</th>
<th># Projects in Bid/Award</th>
<th># Projects in Construction</th>
<th># Projects Completed</th>
<th>TOTAL # Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>8</td>
</tr>
</tbody>
</table>

### MILESTONES

|----------------------------------|--------------------------|---------------------------|-----------------------------|
| • Embarcadero New Platform Elevator – Advertised  
  • New Transbay Rail Crossing – Early Engagement Plan Development  
  • Hayward Maintenance Complex Phase 2: Trackwork Procurement – Complete Design  
  • Civic Center Scissor Stairs – Began Site Mobilization | • Embarcadero New Platform Elevator – Received Bids Nov 19, 2019  
  • Platform Screen Doors Pilot Project – Complete PE Design  
  • Hayward Maintenance Complex Phase 2: Trackwork Procurement – Advertise  
  • New Transbay Rail Crossing – Prepare Informational Briefing to BART and Capital Corridor Boards  
  • Civic Center Station Scissor Stairs – Begin Construction | • Embarcadero New Platform Elevator – Award  
  • New Transbay Rail Crossing – Project briefing update to BART and CCJPA Boards  
  • Hayward Maintenance Complex Phase 2: Trackwork Procurement – Advertise | • Embarcadero New Platform Elevator – Notice to Proceed  
  • Hayward Maintenance Complex Phase 2: Trackwork Procurement – NTP  
  • Hayward Maintenance Complex Phase 2 – Complete Civil/Grading Design |

### Watchlist:

Embarcadero New Platform Elevator.

*Italic: Modified milestones from previous report.*

20
Budget and Schedule Status
## Measure RR Cashflow ($ Millions) – Mid-Term & Long-Term Outlook

<table>
<thead>
<tr>
<th>Program</th>
<th>Expended (thru July 2019)</th>
<th>Expended (thru October 2019)</th>
<th>% Expended out of Total Bond Investment</th>
<th>Period Cashflow (July 2019 - October 2019)</th>
<th>SHORT-TERM (thru June 2021)</th>
<th>MID-TERM (thru 2025)</th>
<th>LONG-TERM (thru End of Bond)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renew Track</td>
<td>$110.9</td>
<td>$134.3</td>
<td>21%</td>
<td>$23.40</td>
<td>$183</td>
<td>$400</td>
<td>$625</td>
</tr>
<tr>
<td>Renew Power Infrastructure</td>
<td>$128.8</td>
<td>$157.9</td>
<td>13%</td>
<td>$29.10</td>
<td>$248</td>
<td>$608</td>
<td>$1,225</td>
</tr>
<tr>
<td>Repair Tunnels &amp; Structures</td>
<td>$27.8</td>
<td>$35.4</td>
<td>6%</td>
<td>$7.60</td>
<td>$57</td>
<td>$268</td>
<td>$570</td>
</tr>
<tr>
<td>Renew Mechanical</td>
<td>$9.5</td>
<td>$12.4</td>
<td>9%</td>
<td>$2.90</td>
<td>$41</td>
<td>$65</td>
<td>$135</td>
</tr>
<tr>
<td>Replace Train Control/Increase Capacity</td>
<td>$11.1</td>
<td>$14.2</td>
<td>4%</td>
<td>$3.10</td>
<td>$32</td>
<td>$286</td>
<td>$400</td>
</tr>
<tr>
<td>Renew Stations</td>
<td>$6.0</td>
<td>$8.4</td>
<td>4%</td>
<td>$2.40</td>
<td>$29</td>
<td>$148</td>
<td>$210</td>
</tr>
<tr>
<td>Expand Safe Access to Stations</td>
<td>$10.7</td>
<td>$12.5</td>
<td>9%</td>
<td>$1.80</td>
<td>$37</td>
<td>$86</td>
<td>$135</td>
</tr>
<tr>
<td>Design/Engineer to Relieve Crowding</td>
<td>$8.7</td>
<td>$10.9</td>
<td>5%</td>
<td>$2.20</td>
<td>$33</td>
<td>$69</td>
<td>$200</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$313.5</strong></td>
<td><strong>$386.0</strong></td>
<td><strong>11%</strong></td>
<td><strong>$72.5</strong></td>
<td><strong>$660</strong></td>
<td><strong>$1,930</strong></td>
<td><strong>$3,500</strong></td>
</tr>
</tbody>
</table>
RR Overall Program Budget Progress

BART Measure RR Program Spending
Forecast vs. Actual

Forecast Cumulative Total by Jun 2021: $746M

ACTUAL
By October 2019:
$386.0 M

Forecasted 1st & 2nd Tranche
$660M Cumulative Spenddown Date:
Apr 2021

Issue New Bonds

Cash Flow - Cumulative (millions)

(Fiscal Year Quarter) - Month/Calendar Year
<table>
<thead>
<tr>
<th>RR Program</th>
<th>Total RR Budget</th>
<th>Physical % Complete</th>
<th>Planned Value</th>
<th>Earned Value</th>
<th>RR Accrued to Date</th>
<th>CPI</th>
<th>SPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renew Track</td>
<td>$625</td>
<td>26%</td>
<td>$170.6</td>
<td>$164.6</td>
<td>$149</td>
<td>1.11</td>
<td>0.96</td>
</tr>
<tr>
<td>Renew Power</td>
<td>$1,225</td>
<td>19%</td>
<td>$247.5</td>
<td>$223.8</td>
<td>$171</td>
<td>1.31</td>
<td>0.90</td>
</tr>
<tr>
<td>Repair Tunnels and Structures</td>
<td>$424</td>
<td>10%</td>
<td>$42.2</td>
<td>$40.3</td>
<td>$39</td>
<td>1.04</td>
<td>0.96</td>
</tr>
<tr>
<td>Renew Mechanical</td>
<td>$135</td>
<td>1%</td>
<td>$3.7</td>
<td>$3.0</td>
<td>$2</td>
<td>1.21</td>
<td>0.81</td>
</tr>
<tr>
<td>Replace Train Control/Increase Capacity</td>
<td>$400</td>
<td>4%</td>
<td>$18.9</td>
<td>$12.1</td>
<td>$16</td>
<td>0.74</td>
<td>0.63</td>
</tr>
<tr>
<td>Renew Stations</td>
<td>$210</td>
<td>5%</td>
<td>$15.0</td>
<td>$13.6</td>
<td>$12</td>
<td>1.11</td>
<td>0.90</td>
</tr>
<tr>
<td>Expand Safe Access to Stations</td>
<td>$135</td>
<td>14%</td>
<td>$20.5</td>
<td>$18.6</td>
<td>$18</td>
<td>1.02</td>
<td>0.91</td>
</tr>
<tr>
<td>Design/Engineer to Relieve Crowding</td>
<td>$200</td>
<td>6%</td>
<td>$15.1</td>
<td>$13.6</td>
<td>$13</td>
<td>1.04</td>
<td>0.90</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$3,500</strong></td>
<td><strong>14%</strong></td>
<td><strong>$533.5</strong></td>
<td><strong>$489.7</strong></td>
<td><strong>$426</strong></td>
<td><strong>1.15</strong></td>
<td><strong>0.92</strong></td>
</tr>
</tbody>
</table>
Future updates may include additional projects as programs mature.
### Track Program Drill Down

<table>
<thead>
<tr>
<th>Project</th>
<th>Physical % Complete</th>
<th>CPI</th>
<th>SPI</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rails, Ties, Fasteners 2</td>
<td>100%</td>
<td>1.09</td>
<td>1.09</td>
<td>Includes M03 and A15 Interlocking Replacements</td>
</tr>
<tr>
<td>C55 Interlocking Replacement</td>
<td>90%</td>
<td>1.03</td>
<td>0.91</td>
<td>Construction complete</td>
</tr>
<tr>
<td>C35 Interlocking Replacement</td>
<td>79%</td>
<td>1.02</td>
<td>1.03</td>
<td>6 turnouts replaced; Pocket track to be commissioned</td>
</tr>
<tr>
<td>Replace Restraining Rail</td>
<td>50%</td>
<td>2.40</td>
<td>0.93</td>
<td>3 restraining rails replaced</td>
</tr>
<tr>
<td>Replace Direct Fixation Pads</td>
<td>24%</td>
<td>1.23</td>
<td>1.71</td>
<td>Pad replacement goal reached for fiscal year</td>
</tr>
<tr>
<td>Rail Relay</td>
<td>28%</td>
<td>0.92</td>
<td>1.04</td>
<td>25 miles of warn rail replaced</td>
</tr>
<tr>
<td>Frog Capital Maintenance</td>
<td>32%</td>
<td>0.97</td>
<td>1.07</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Projects (&gt;25% Spent)</td>
<td>8</td>
</tr>
<tr>
<td>CPI &lt;0.9 or &gt;1.1</td>
<td>2</td>
</tr>
<tr>
<td>SPI &lt;0.9 or &gt;1.1</td>
<td>1</td>
</tr>
<tr>
<td>Number of Risk Register Updates Performed in Previous Period</td>
<td>4</td>
</tr>
<tr>
<td>Number of Projects Quality Reviews Performed in Previous Period</td>
<td>3</td>
</tr>
</tbody>
</table>
RR Program
Hiring
### Bond Progress

<table>
<thead>
<tr>
<th>Bond Progress</th>
<th># of Positions</th>
</tr>
</thead>
<tbody>
<tr>
<td>FILLED/Pre-Emp</td>
<td>310</td>
</tr>
<tr>
<td>Recruiting</td>
<td>88</td>
</tr>
<tr>
<td>Pending Post / Hold</td>
<td>34</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>432</strong></td>
</tr>
</tbody>
</table>

- 43 of the FY20 headcount are budgeted for upcoming quarters
- 39 positions in FY20 are filled or in pre-employment.
- 48% of the FY20 positions are in active recruitment

### BOND PROGRESS

- Recruiting, 88, 22%
- FILLED/Pre-emp, 310, 78%

### TOTAL BOND PROGRESS

- Recruiting, 88, 20%
- Pending / Hold, 34, 8%
- FILLED/Pre-emp, 310, 72%
## RR Program Update – Small Business

**12/20/2019**

<table>
<thead>
<tr>
<th>Program</th>
<th>Total RR Commitment</th>
<th>Total RR SB Commitment</th>
<th>SB Commitment %</th>
<th># of SB Contracts</th>
<th>Total RR Payments on RR Contracts</th>
<th>RR Payments to SBs</th>
<th>SB Payment %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renew Track</td>
<td>$90,488,065</td>
<td>$20,579,358</td>
<td>23%</td>
<td>90</td>
<td>$27,635,565</td>
<td>$5,640,744</td>
<td>20%</td>
</tr>
<tr>
<td>Renew Power</td>
<td>$163,663,114</td>
<td>$81,176,995</td>
<td>50%</td>
<td>156</td>
<td>$76,561,649</td>
<td>$39,245,918</td>
<td>51%</td>
</tr>
<tr>
<td>Repair Tunnels &amp; Structures</td>
<td>$97,606,206</td>
<td>$22,174,499</td>
<td>23%</td>
<td>92</td>
<td>$37,823,604</td>
<td>$3,547,358</td>
<td>9%</td>
</tr>
<tr>
<td>Renew Mechanical</td>
<td>$28,595,357</td>
<td>$10,274,380</td>
<td>36%</td>
<td>50</td>
<td>$5,359,119</td>
<td>$1,346,234</td>
<td>25%</td>
</tr>
<tr>
<td>Replace Train Control/Increase Capacity</td>
<td>$8,078,462</td>
<td>$1,095,291</td>
<td>14%</td>
<td>16</td>
<td>$2,364,923</td>
<td>$89,233</td>
<td>4%</td>
</tr>
<tr>
<td>Renew Stations</td>
<td>$142,323,101</td>
<td>$25,576,184</td>
<td>18%</td>
<td>73</td>
<td>$7,452,207</td>
<td>$3,076,129</td>
<td>41%</td>
</tr>
<tr>
<td>Expand Safe Access to Stations</td>
<td>$14,330,419</td>
<td>$3,685,312</td>
<td>26%</td>
<td>84</td>
<td>$4,131,558</td>
<td>$926,130</td>
<td>22%</td>
</tr>
<tr>
<td>Design/Engineer to Relieve Crowding</td>
<td>$18,268,040</td>
<td>$5,298,267</td>
<td>29%</td>
<td>30</td>
<td>$4,617,443</td>
<td>$1,256,022</td>
<td>27%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$563,352,765</strong></td>
<td><strong>$169,860,286</strong></td>
<td>30%</td>
<td><strong>590</strong></td>
<td><strong>$165,946,069</strong></td>
<td><strong>$55,127,767</strong></td>
<td><strong>33%</strong></td>
</tr>
</tbody>
</table>

Notes: All amounts are based on RR fund percent only. Amounts are updated to November 29, 2019. 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.
• Recently Completed Events
  – Richmond Chamber of Commerce Annual Economic Summit (Richmond)
  – Association of General Contractors (Lafayette)
  – Tradeswomen, Inc. (Oakland)
  – Oakland African American Chamber of Commerce Business Awards Luncheon (Oakland)
  – Western Regional Minority Supplier Development Council - Construction Day (Oakland)
  – CPUC Business Expo (Citrus Heights)
  – Business Outreach Committee – Meet the Primes (Oakland)

• Upcoming Events
  – The Western Regional Minority Supplier Development Council Annual Meeting (TBD)
Next Steps

• Ongoing Development:
  — Continuous customization of RR Program Reporting

• Under Development
  — March 2020 Bond Oversight Meeting
  — Annual Report Preparation
OAKLAND WYE CAPACITY = 23 TPH
Project Justification – Transbay Corridor Peak Riders

Transbay AM Peak Hour/Direction

Highest Loads On Trains Today

Crush loads continue to grow

National Standard (5.4 S.F. per passenger)

Passengers per Hour

- 2012: 20,300
- 2013: 21,500
- 2014: 22,900
- May 2015: 24,500
- Sept 2015: 26,500
- Sept 2017: 26,000
- Feb 2019: 26,700
- 2025 Forecast: 28,000
- 2030 Forecast: 30,000

2025
2030
Forecast
Forecast
Train Control System Delay Trend

Total Delayed Trains Caused by the Train Control System

- Total Delayed Trains
- Train Control Delayed Trains
- Percent of TC Delayed Trains

15-25%
Core Capacity Program
Big 4 Capital Projects

30% MORE CAPACITY

Fleet of the Future
$1.105B
425 more vehicles
(1,200 total)

Train Control Modernization
$1.673B

Hayward Maintenance Complex
$345M

Traction Power Substations
$1.37M
Project Scope

- New CBTC train control systemwide
- 425 railcars
- New railcar storage yard at Hayward Yard
- 6 new traction power substations

Note: Corridor limit shown is for FTA CIG Program eligibility purposes only.
Capacity Improvements with CBTC

**Track Circuit**

- Begin Braking
- Speed Maintaining
- Second Stage Begin Braking
- Stopping Point

**Moving Block CBTC Concept**

- Begin Braking
- Stopping Point

Braking Profile for CBTC (Moving Block)
TCMP Objectives:

- Eliminate aged and obsolete equipment
- Improve reliability and availability
- Enhanced maintenance efficiency/state of good repair
- Increase in capacity/support future ridership numbers

CBTC addresses all!
The Case for CBTC

Capacity vs. Peak Demand – Transbay Tube

- **Demand**
- **Current Track Circuits**
- **Refurbished Track Circuit System**
- **CBTC**

- **2017:** Overcrowding
- **2018:** Refurbished Track Circuit System
- **2022:** CBTC provides Surplus Capacity (breathing room)
- **2029:** CBTC provides Surplus Capacity (breathing room)
- **2037:** Demand overtakes CBTC capacity (overcrowding resumes)
- **Second TBT Crossing Needed**

- **Passengers per Hour**

- **2012**
- **2014**
- **2016**
- **2018**
- **2020**
- **2022**
- **2024**
- **2026**
- **2028**
- **2030**
- **2032**
- **2034**
- **2036**
- **2038**
- **2040**
- **2042**
- **2044**
- **2046**
- **2048**
- **2050**

- **2029:** CBTC provides Surplus Capacity (breathing room)
- **2037:** Demand overtakes CBTC capacity (overcrowding resumes)
- **Second TBT Crossing Needed**
Train Control Modernization Scope

• Replacement of the existing Track Circuit Train Control System with CBTC which includes the following:

• 109 linear miles of brownfield revenue track controls, including 76 Train Control Room/Houses and 4 yards interfaces

• Retrofit of 310 Revenue Control D-Cars

• Replacement of the existing Central Control Automatic Train System (ATS) including interface to BART’s ICS

• Retrofit of 1 Geometry Car

• Options for VTA - Phase 1 Brownfield to Berryessa Station (10 Track miles) & Phase 2 Greenfield to Santa Clara Station including one Yard interface (6 Track miles)

• Centralized Zone Controls & Interlocks either centralized or distributed on the wayside
CBTC Design & Phasing

- Increase train Capacity from 23 Trains per hour to 30+ Trains per hour
- ATS Replacement First prior to wayside deployment
- 310 - D-Car Modified prior to wayside deployment
- Phased Deployment (District Preference 9 Phases)
- Proven on Test Track prior to Installation on Revenue Track
Phased Migration

- Richmond (6)
- Transbay Tube and (4) Oakland Wye
- Downtown SF Core (3)
- A Line (5)
- Pittsburgh Bay Point (7)
- Dublin / Pleasanton (8)
- Hayward Test Track (1)
- South SF (2)
- WSX+SVBX (9)
Original Schedule

• RFQ Issued: Aug 2017

• Award: Dec 2018 (w/o BAFO) – Contingent upon Full Funding Grant Agreement (FFGA)

Current Schedule

• RFQ Issued: Aug 2017

• Award: Feb 2020 (w/ BAFO)– Contingent upon FFGA

• Delay 13 months

• Notice to Proceed – mid-April 2020
• Prequalified Prime DB Proposers
  ▪ Alstom Signaling Inc.
  ▪ Hitachi Railway Systems
• Prequalified System Equipment Installers
  ▪ Aldridge Electric, Inc.
  ▪ Hitachi Railway Systems
Other Contract’s

Enabling Contracts

• Switch Machine and Train Control - Power and Communication Cable Replacement
• HVAC Train Controls Room Upgrades
• Data Warehouse
• Asbestos Removal

SF Downtown Tunnel
Questions