Next Generation Fare Gates Update

January 11, 2024 | BART Board of Directors Meeting
Highlights

- West Oakland Prototype Installation
- Our Journey
- New Mechanical Locking Mechanism Enhancement
- Project Estimate – Earned Value Management
- Timeline
- Next 8 Stations
West Oakland Prototype Installation

Time-lapse Video
West Oakland Prototype Installation

2 Installations | 2 Different Locations
Simultaneous delivery, installation, and testing in the Lab & West Oakland station

- **Sun, Dec 10**
  - Lab: Gate delivery & installation

- **Mon, Dec 11**
  - Warehouse: Inspections completed

- **Tue, Dec 12**
  - West Oakland: Temporary gates activated & Legacy gates taken out-of-service

- **Wed, Dec 13**
  - West Oakland: Legacy gates removed & power cables installed

- **Thurs, Dec 14**
  - West Oakland: Gate delivery & installation

- **Fri, Dec 15**
  - Lab: Testing completed
  - West Oakland: Software upload & troubleshooting

- **Sat, Dec 16**
  - West Oakland: Computer installed in gates

- **Sun, Dec 17**
  - West Oakland & Lab: Comprehensive Testing & Troubleshooting

- **Mon, Dec 18**
  - Transportation training

- **Tue, Dec 19**
  - Lab: Network/Software Troubleshooting & Testing

- **Wed, Dec 20**
  - FCC certification

- **Thurs, Dec 21**
  - Begin Stress Testing

- **Fri, Dec 22**
  - West Oakland Soft Opening

- **Sat, Dec 23**
  - Final cleaning/barrier removed

- **Mon, Dec 25**
  - Stress Testing, ADA Zone Enhancements, Additional Training

- **Tue, Dec 26**
  - West Oakland Soft Opening

- **Wed, Dec 27**
  - Final cleaning/barrier removed

- **Thurs, Dec 28**
  - West Oakland Soft Opening
West Oakland Prototype Installation

- Each Gate in the Array Subject to **260+** Tests
  - **125** Fare Collection Lab Tests
  - **90** Vendor Tests
  - **44** Commissioning Specific Tests

- Monitor & Control System Back Office Configuration

- Audible Feedback for Visually Impaired Customers

- Station Agent Access to Monitor Control System

- AI Sensor Programming for Safety Zone

- Station Agent Training
West Oakland Prototype Installation

Factors Leading to Successful Deployment

- BART & STraffic – True Alliance
- Devoted Union Engagement
- Critical and collaborative problem solving
- Development of innovative solutions
- Day-by-day and hourly schedules
- Local & State elected official briefings
- In-station outreach & neighborhood business canvassing
Our Journey

Since our last Project Update:

- **SEPT**: Project Update to BART Board
- **OCT**: Preliminary Design Review Completed
- **STraffic HQ Seoul, South Korea**: Initiated Final Design Review
- **Completed Design of NextGen Fare Gates**
- **DEC**: Multidiscipline Installation Rehearsal No. 2
- **Multidiscipline Installation Rehearsal No. 1**: Complete Review & Finalization of Prototype Testing Procedures
- **MCS Environment Testing Software Updates**
- **Nov**: Completed Final Design Review

- **JAN**: Project Update to BART Board
- **Prototype Production in Factory Completed**
- **Kiosk Factory Denver, CO**: Lab Testing
- **Initiated Install of Prototypes at West Oakland**
- **Completion of Prototype Install & Opened for Revenue**

Our Journey since our last Project Update:
Our Journey

In collaboration with our Union Partners:

- AFSCME
- ATU
- SEIU BC
- SEIU BPC
- BPMA
- BPOA

What we’ve accomplished:

100+ Daily check-in’s
26+ Training sessions
35Site implementation meetings
   (incl. District-wide stakeholder engagement & BATF)
28+Lab & site visits
10Risk assessment workshops
3Installation rehearsals
New Mechanical Locking Mechanism Enhancement

- Current design relies on a software aided brake

- Physical mechanical lock:
  - Under development by STRaffic
  - Compact, fits within the current console profile
  - Resists greater push-through

- Without power, the doors will remain open, and the mechanical lock will remain disengaged

- New innovative design
# Project Estimate - Earned Value Management

<table>
<thead>
<tr>
<th>Activity</th>
<th>Initial Estimate for Planning (June 2020)</th>
<th>Estimate at Vendor Award (May 2023)</th>
<th>Actual Costs to Date (Jan 2024)</th>
<th>Physical Percent Complete</th>
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<tbody>
<tr>
<td>Prototype Dev/Testing</td>
<td>$2.5M</td>
<td>$3M</td>
<td>$2.96M</td>
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<tr>
<td>Design</td>
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<td>$3M</td>
<td>$1.86M</td>
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<td>Procurement/Legal</td>
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<td>$2M</td>
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<tr>
<td>Materials/Hardware (incl. Vendor Contract)</td>
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<td>Installation/Construction</td>
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<tr>
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<tr>
<td>Project Management</td>
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<td><strong>TOTAL</strong></td>
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<td><strong>$90M</strong></td>
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<table>
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<tr>
<th>Planned Value (PV)</th>
<th>Earned Value (EV)</th>
<th>Schedule Performance Index (SPI)</th>
<th>Cost Performance Index (CPI)</th>
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</table>

**Earned Value Management:**

- Industry standard tool used at BART to objectively assess project progress
- Snapshot in Time
- CPI Compares Earned Value with Actual Cost
- Compares Earned Value with Planned Cost
- CPI/SPI should hover around 1.0 (< 0.90 or > 1.10 will elicit further scrutiny)
Timeline

2023
- Issued Notice to Proceed
- Visited STraffic Korea Lab

2024
- Installed Prototype at West Oakland
- Begin deployment of remaining stations
- Begin deployment of first 8 stations
- Initiate Survey & Design for Remaining Stations
- TR4 Integration

2025
- Districtwide Replacement Complete
Next 8 Stations

Civic Center
Montgomery
Powell Street
24th Street

SFO
Fruitvale
Richmond
Antioch

Alternate Stations
16th Street
12th Street
Downtown Berkeley
Coliseum
Embarcadero
Rockridge
Dublin/Pleasanton
Warm Springs
Thank You

Automated Fare Collection – AFC
BART Police Department
Buildings Maintenance
Comm Engineering
Comm Maintenance
Computer Systems Engineering – CSE
Communications/Government Community Relations
Customer Access/Accessibility Task Force
Electrical Engineering
Electrical Maintenance
Fare Collection Engineering – FCE
Funding Strategy

Operations/Training
Project Delivery Team
STraffic America, LLC
Transportation
AFSCME
ATU
SEIU BC
SEIU BPC
BPMA
BPOA
BART Board of Directors