Fare Gates & Fare Evasion

Board Presentation – September 26, 2019

Fare Evasion Estimation

- **5 to 6% Daily Average Systemwide**
  - Based on actual counts in stations and on trains by Proof of Payment Officers

Ring Counter

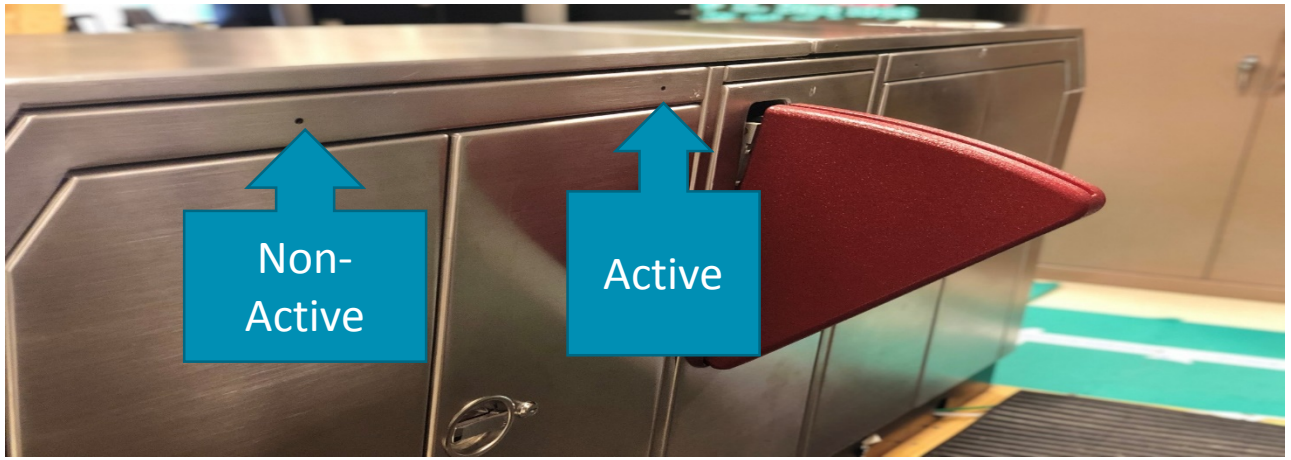
Proof of Payment Officers

Fare Gate Sensors

Gate Sensors – 5% Systemwide Average (April 1 – August 31, 2019)

Sensor activation without corresponding fare processing provides an indication of Fare evasion via forced barrier, tailgating, jumping over events

This method may capture some legitimate activities by staff; swiping sensor to clear open gate, or checking for cinch pressure



There are total of 4 sets of sensors along the fare gates, only the inner 2 sets are currently active.

Fare Gates Cinch Mod

Completed

- Embarcadero, Montgomery, Powell, Civic Center, 16th Street, 24th Street, Glen Park, Balboa, Richmond, Coliseum, Fruitvale, Antioch, Pittsburg Center, Berryessa, Milpitas

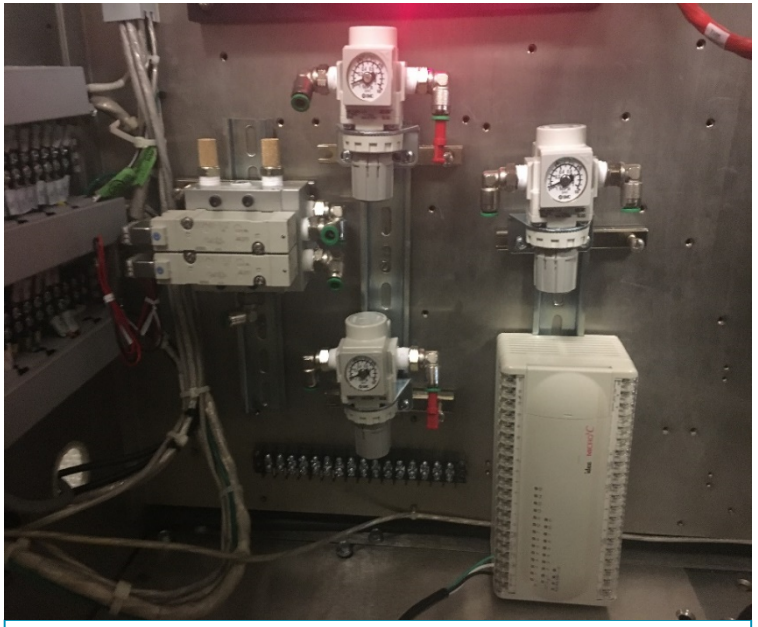
Scheduled

- Complete M line
- Next K, A, L, R, C and W line.

Effectiveness of Cinch Mod

- The cinch mod has been effective in curbing fare evasion

Stations	Cinch Mod Installation date	% Fare Evasion decrease
Embarcadero**	3/31/19	25%
Montgomery**	4/29/19	19%
Powell St.**	5/27/19	17%
Civic Center**	7/1/19	18%
16th & Missions	9/5/19	16%
Balboa Park	8/31/19	30%
Fruitvale*	5/27/19	31%
Richmond*	5/6/19	38%



Solenoid /manifold block and pressure regulator used for the Cinch Mod

*Pilot Station
**The decrease cis also attributed by Standup efforts.

Richmond Fare Gate Pilot Station Selection

- **Richmond station** was selected as the location for the stacked configuration pilot location for a number of reasons:
  - It has a relatively small fare gate array
  - Single array (not multiple locations)
  - In view of the agent's booth
  - Good camera coverage for monitoring
  - Lower ridership – we don't experience long queues at the gates
  - Input from frontline employees and BART Police suggesting that fare evasion at Richmond was particularly high

Richmond Fare Gate Pilot Facts

- Stacked configuration installed on all fare gates
- Installation completed on June 15
- Staffed fare gates during operating hours for seven days
- On July 10 there was an open house visit for BATF members to experience the fare gates and provide feedback. The feedback was generally positive
- Have had been more than 662,015 transactions through the modified gates
- There have been no reported injuries
- Based on a limited count post installation (July 2019) there was an overall fare evasion reduction of approximately 55 to 60%
- Based on sensor data through September 9, 2019 fare evasion is down 38%
- The primary method of fare evasion is pushing through the ADA fare gate
- Feedback from frontline employees is that these gates have greatly contributed to a reduction in fare evasion and a greater sense of security
- The cost for this pilot has been $114K

Richmond Stacked Configuration

Fruitvale Fare Gate Pilot Selection

- **Fruitvale station** was selected as the location for piloting the pop-up fare gates because:
  - It has a single fare gate array in view of the station agent
  - It is a medium size station with some queuing at the fare gates
  - Based on feedback from frontline employees, including a count of fare evaders over a limited period of time, and observation by management and BART Police there is a sizable problem with fare evaders jumping the fare gates
  - It is in close proximity for response from both engineering and maintenance

Fruitvale Fare Gate Pilot Facts

- Pop-up configuration installed on all regular fare gates on July 13, not on the ADA Gate
- Staffed gates for three days
- About 773,284 transactions before being removed
- There were no injuries attributable to pop-up modified gates
- Based on sensor data the pop-ups decreased fare evasion by 31%
- A high level of required synchronization combined with damage from fare gate jumpers resulted in excessive maintenance cost
- The cost for this pilot has been - $84K
- The pop-up barriers were removed on September 9th

Fruitvale Pop-Up Configuration

Pilot swing style barriers ADA Gates

- Working with vendors and BART Engineering in an attempt to develop pilot swing style barrier ADA gates that could be installed in Richmond and possibly Fruitvale Stations
  - Complicated by software compatibility and safety certifications concerns

Fare Evasion and Modified Fare Gate Survey Results

Survey Methodology

1. Online survey conducted with 1,006 randomly selected riders
   - Topics include attitudes about fare evasion and awareness of fare gate modifications.
   - Data is weighted by ethnicity to match BART rider demographics.

2. In person survey at Richmond Station modified fare gates with 263 randomly selected riders
   - Self administered paper survey about their experience with the modified fare gates.

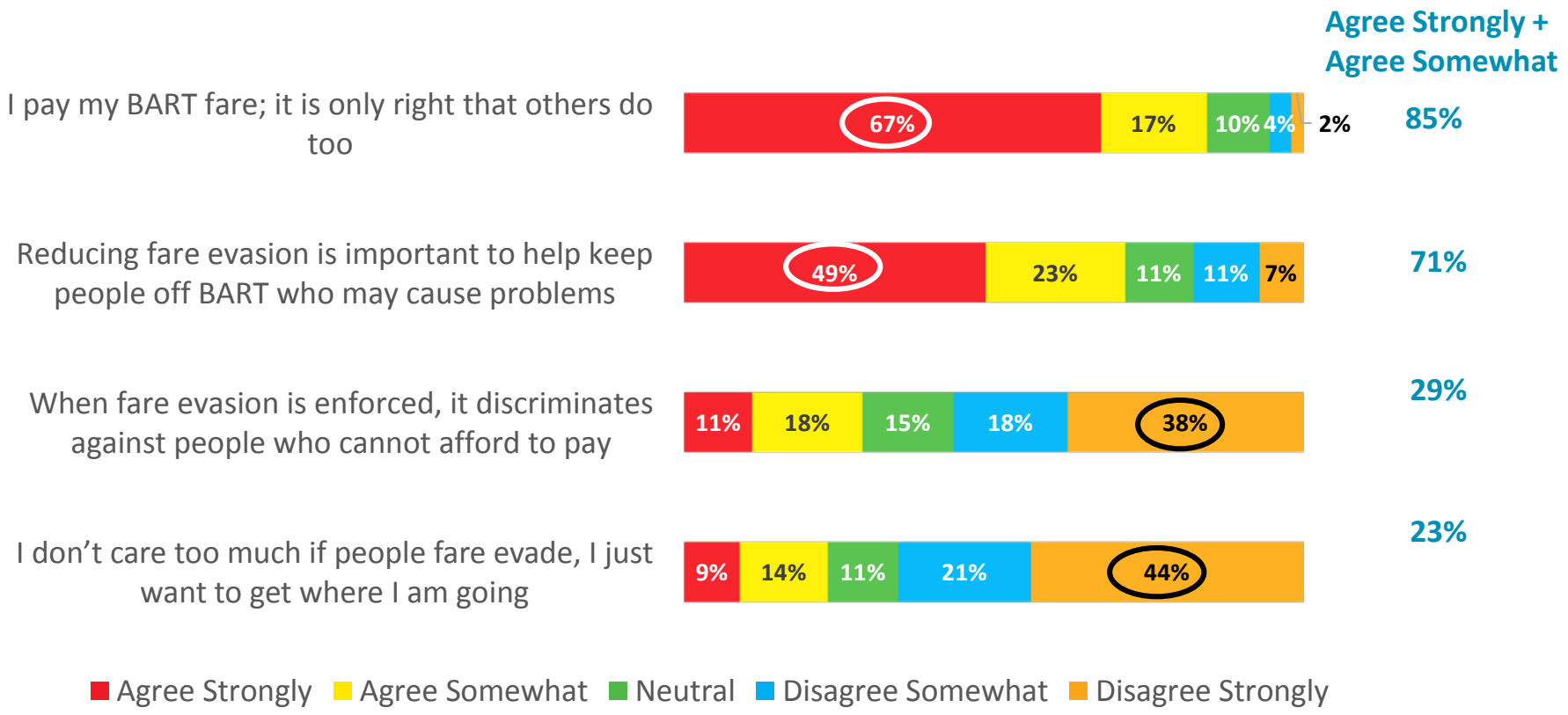
Importance of Reducing Fare Evasion

- 89% of riders report that it is important to reduce fare evasion on BART.
- 70% of riders say it is **very** or **extremely** important.
- Only 5% of riders say that it is not important.

Extremely Important	42%
Very Important	28%
Somewhat important	19%
Slightly Important	7%
Not important	5%

How important do you think it is to reduce fare evasion at BART?
Online system wide survey n=1,006

Attitudes About Fare Evasion



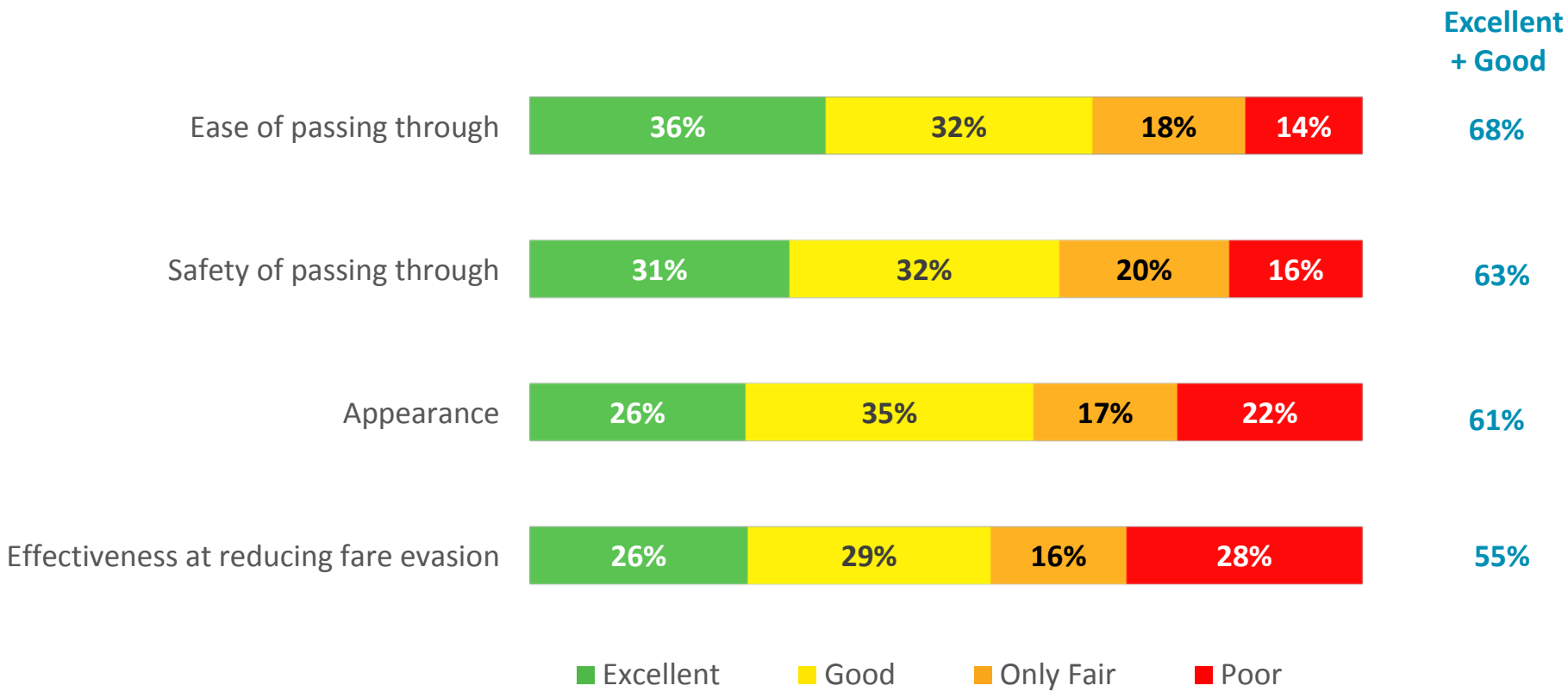
To what extent do you agree or disagree with the following statements?
Online system wide survey n=1,006

Awareness of Modified Fare Gates

- Almost two thirds (65%) of the riders surveyed online reported being aware that BART is testing modified fare gates designed to reduce fare evasion.
    - The awareness came from news (59%), social media (17%), seeing the faregates in person at Fruitvale or Richmond (14%) and BART.gov (9%).

Were you aware that BART is testing modified fare gates designed to reduce fare evasion? (fare evasion refers to when people ride BART without paying their fare)
Online system wide survey n=1,006

Perceptions of Modified Fare Gates at Richmond Station



Richmond in-person survey with riders who had just passed through the fare gates. n=263
Fare gates at this station were recently modified to reduce fare evasion. (Fare evasion is when people enter BART without paying their fare.) Please rate the following qualities of the fare gates at this station.

Sample of Representative Comments Regarding Fare Evasion

1. *"We all have to pay our fare. It costs the system when there are Fare Evaders. I see this almost every time I ride BART"*
2. *"This is ONE reason I am using less BART. Fare evasion brings on a host of other problems"*
3. *"Unchallenged fare evasion creates an atmosphere of lawlessness and unaccountability. I bet that if you reduced fare evasion, you would see a very direct reduction in more serious BART problems"*
4. *"The people that are evading fares are likely not following other rules that keep the system safe and running in orderly manner"*
5. *"Reducing fare evasion feels important to keep BART running smoothly, but should also be coupled with programs to help people afford tickets"*
6. *"I am a believer in the theory of broken windows, that small problems that go ignored contributes to escalating problems. What you permit, you promote"*

Online system wide survey n=1,006
Please explain your rating (following question: How important do you think it is to reduce fare evasion at BART?)

Sample of Representative Comments Regarding Modified Fare Gates

1. *"They work and I got through quickly"*
2. *"The faregates provide safety for the passenger hence is a much more pleasant experience"*
3. *"Its an annoyance but necessary"*
4. *"I am able to get through in time with my backpack"*
5. *"They are only partially effective in stopping fare evasion. Sometimes they stay open long enough for two people together"*
6. *"I feel like it might hit me when passing through"*
7. *"I think it's a move in the right direction but they still get through"*
8. *"Now fare evaders try to pass after you, pushing you to try to get out before it closes"*

Richmond in-person survey with riders who had just passed through the fare gates. n=263
Please explain why you rated your experience with the fare gates the way you did.

Summary of Survey Findings

- Reducing fare evasion matters to riders - 70% of riders believe that addressing fare evasion on BART is extremely (42%) or very (28%) important.
- 85% of riders surveyed agree strongly (67%) or somewhat (17%) with the statement *"I pay my BART fare; it is only right that others do too."*
- 71% of riders surveyed agree strongly (49%) or somewhat (23%) with the statement *"Reducing fare evasion is important to help keep people off BART who might cause problems"*
- The percent rating the *Ease* or *Safety* of passing through the gates as excellent and good are 68% and 63% respectively, while the percent rating *Effectiveness in Reducing Fare Evasion* as excellent or good is 55%.

Plans for Moving Forward

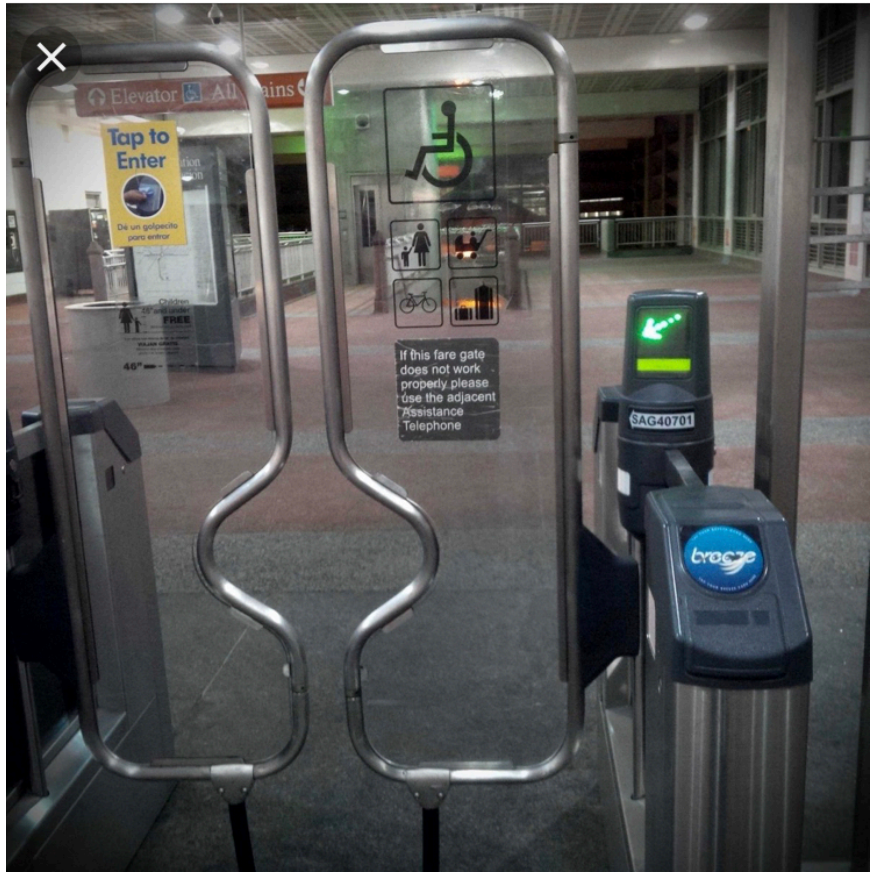
- Although the Richmond Pilot has been effective
  - Staff does not recommend installation of stacked configuration at stations with heavy queuing
  - The stacked configuration could be effective in low volume locations
  - Plan is to leave stacked configuration at Richmond.
- Ultimately, the fare gate solution must be a district wide installation of modern gates

Criteria for New Fare Gates

- Reliability – Equal to or better than existing gates (98%)
- Maintainability – Equal to or better than existing gates
- Throughput – 30 persons per minute (ppm) minimum
- Secure – Improve protection against
  - Jumping
  - Pushing through
  - Tailgating
- Provide more a modern appearance
- Off-the-shelf technology with minimal customization to integrate with Clipper/BART systems

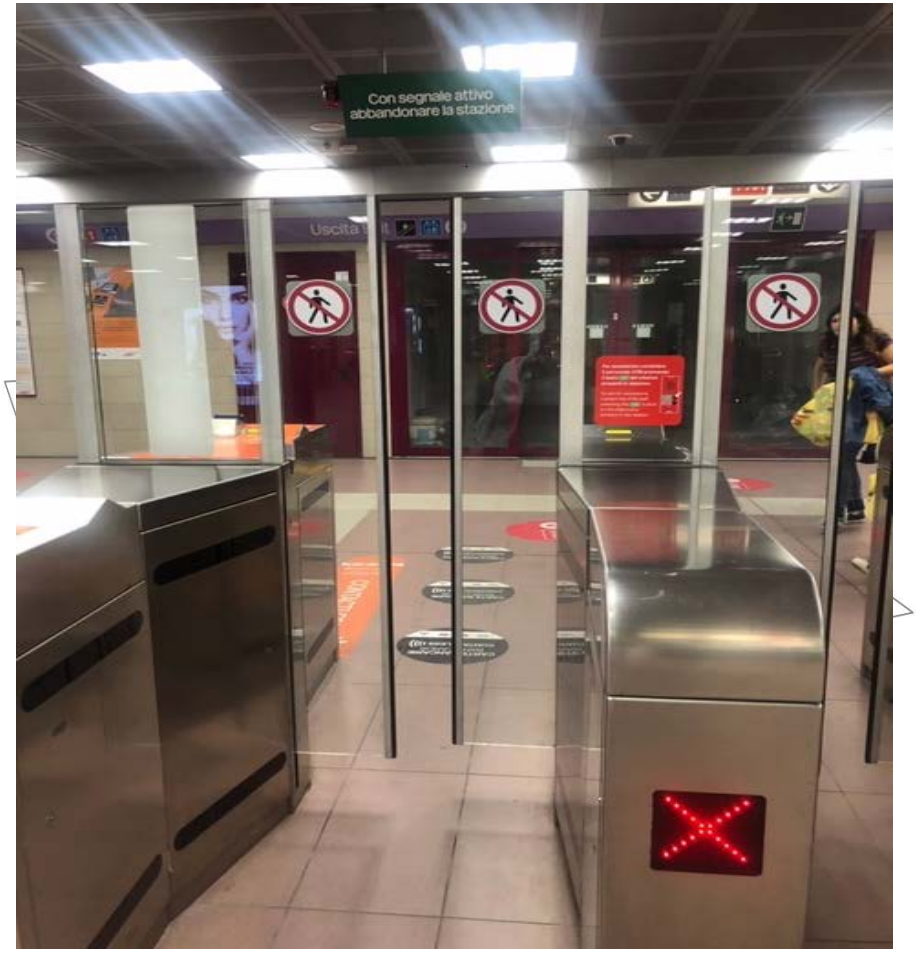
New Fare Gates – Option 1 Swing Style

- Reliability – Comparable to existing
- Maintainability – Comparable to existing
- Throughput 30-PPM – Yes
- Effective against fare evasion:
  - Jumping –Yes
  - Pushing Through –Yes
  - Tailgating – No
- Modern Appearance -Yes
- Off-the-shelf gate technology – depending on vendor could require modification to integrate with Clipper/BART systems



New Fare Gate – Option 2 Retractable Barrier

- Reliability – Less than current gates
- Maintainability – Less than current gates
- Throughput 30 PPM – Yes
- Effective against fare evasion
  - Jumping –Yes
  - Pushing Through –Yes
  - Tailgating –Potentially limited
- Modern Appearance – Yes
- Off-the-shelf gate technology – will require modification to integrate with Clipper and BART systems



New Fare Gates – Option 3
Floor to Ceiling Turnstiles

- Reliability – Comparable to existing
- Maintainability – Comparable to existing
- Throughput 30 PPM – No
- Effective against fare evasion
  - Jumping – Yes
  - Pushing Through – Yes
  - Tailgating – Potentially limited
- Modern Appearance – Yes
- Off-the-shelf gate technology – will require modification to integrate with Clipper and BART systems

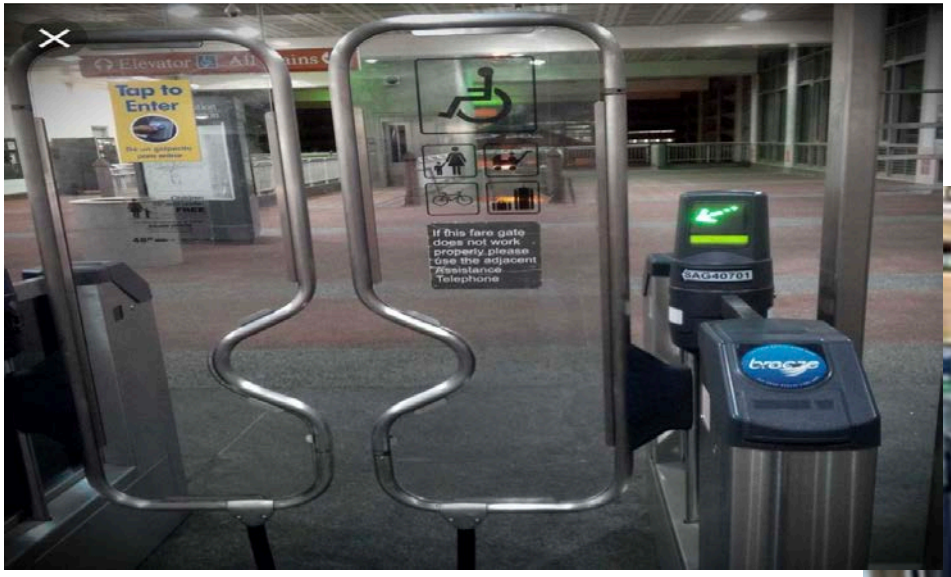
Side by Side Comparison of Design Options

Category	Swing Barrier	Retractable Barrier	Floor to Ceiling Turnstile
Reliability	high	medium	high
Maintainability	high	medium	high
Throughput	high	high	low
Fare Evasion	2 of 3	2 of 3	3 of 3
Appearance	high	high	medium
Technology	medium - high	low	low

Swing Style barrier Gates

Systemwide replacement of fare gates with new swing style barrier gates

- Estimated project cost $150M.



Motion

The Board of Directors adopts the swing style barrier fare gates as the preferred design for new fare gates

Staff is directed to adopt this design and update the BART Facilities Standards to ensure that future station modernizations and extension stations incorporate swing style barrier fare gates

Staff is directed to develop a funding strategy, including phasing options, for replacement of existing fare gates with new swing style barrier gates