

# Fleet of the Future Design Update

June 12, 2014



# Purpose



- Share public feedback with Board
- Finalize design decisions regarding the proposed tripod poles and bicycle racks, to allow assembly of the cars to begin

# Over 30,000 customers provided input so far



Outreach Event	Count
Previous Outreach	17,500
Embarcadero (SF)	3,542
West Oakland	1,546
Fremont	1,586
Pittsburg/Bay Point	1,858
Civic Center (SF)	2,341
North Berkeley	1,691
Milpitas/Great Mall	300
Dublin/Pleasanton	1,200
Fruitvale	1,618
Concord	1,785
<b>Grand Total</b>	<b>34,967</b>



Initial Model  
MacArthur  
July 2013



Final Model  
Embarcadero  
April 2014

# Train Car Model Positive Survey Results



	Excellent/Good	Only Fair/Poor
	%	%
Exterior appearance	95	4
Floor	91	5
Digital screens and signs	89	6
Lighting	89	5
Floor to ceiling pole	85	13
Seats - ease of cleaning	84	5
Seats - comfort	84	13
Overall interior layout	83	16
Color Scheme	82	16
Bike rack	79	10

# Not The Same



Pantone 7706



Pantone 390

Our Colors – 82% Support



Pantone 289



Pantone 368

the other team

# You Spoke, We Listened (Examples)



1. Digital screens and automated announcements. More use of line color to help people navigate the system.
2. Microplug doors to help seal out the noise and provide a quieter ride
3. Improved cooling distribution making it more comfortable for standees on hot days
4. Easy to keep clean, wipeable seats and floors
5. More handholds – poles and straps – to provide something to hold onto
6. Seat choice – dimensions, foam density, lumbar support. Wider aisles.
7. Higher seats make it easier to get up and sit down, and room underneath for carry-on luggage
8. More senior/disabled seating, and a different color to remind people to yield these seats to those who need them

More info at [bart.gov/cars](http://bart.gov/cars)

# More Detailed Listening (Examples)



1. Added legroom at L-shaped seat configurations
2. Removed center armrests to better accommodate larger people
3. Add armrests on seats next to doors as a safety measure
4. Removed flip down seats from bicycle area to remove potential for conflict
5. Increased various knuckle, arm, and head clearances
6. Will lower the bright, contrasting decal on tripod poles
7. LCD screen improvements – reduced glare, highlighted route and You Are Here bubble
8. Static plus flashing mode for end door LED's
9. Will move intercom lower for wheelchair users
10. Braille for blind customers

More info at [bart.gov/cars](http://bart.gov/cars)

# Seat Count

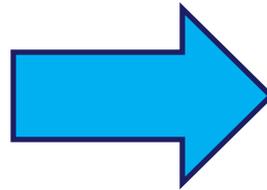


## Current Fleet

58.6 seats per car

669 train cars

39,220 seats in fleet



## Fleet of the Future

54 seats per car

Goal: 1000 train cars

54,000 seats in fleet

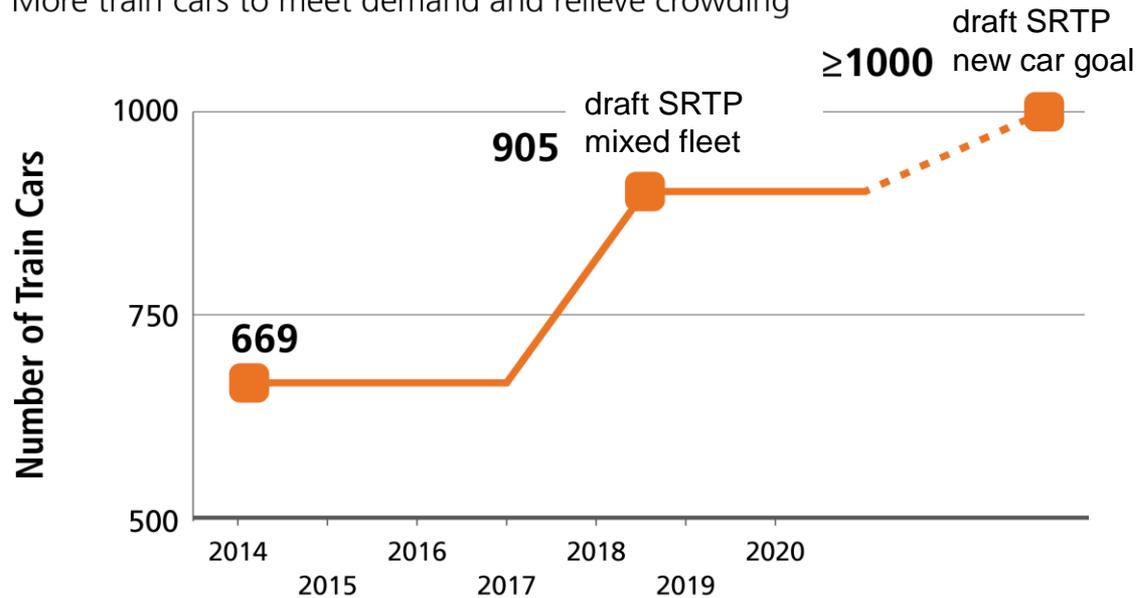
**Net effect:  
38% more  
seats overall**

# Car Count Increase



## BART Fleet Growth Plan

More train cars to meet demand and relieve crowding



### Notes:

- 905 car plan is based on a mix of old and new cars, and could only be sustained after old cars are retired if additional funding and contract authority are identified. Current Contract is for 775 cars.
- Use of 1,000 cars requires companion investment in train control upgrade.

# Accessible Features

## For People Who Use Wheelchairs



1. Third door reduces congestion at each doorway by 1/3 and provides separation from bicycles
2. Floor marking for wheelchair areas
3. Bulge removed from wheelchair area wall
4. Wider aisles permit people in wheelchairs to go down the aisles
5. LCD screen placed directly across from wheelchair area to maximize visibility
6. Intercoms near doors

# Other Accessible Features



- For customers with **vision** impairments: inter-car barriers, automated announcements
- For customers with **hearing** impairments: interior and exterior digital displays, test of induction loop system
- For customers with **mobility** impairments: different-colored priority seating to encourage others to yield them, seats that are higher off the floor making it easier to sit down and stand up

# Floor to ceiling pole



- Requested by seniors, shorter people, people with balance or mobility issues
- But many people who use wheelchairs and blind customers have expressed concerns



# Diverse Needs



- Pole rated excellent or good by 82% of seniors and 72% of people with disabilities
- Ratings by type of disability:

Category	Excellent/Good	Only Fair/Poor	Sample size
Mental or cognitive	77%	19%	149
Low Vision	76%	23%	165
Deaf/hearing impaired	76%	22%	119
Other mobility issue	71%	25%	332
Other disability	71%	24%	119
Wheelchair	41%	58%	103
Blindness	34%	61%	41

# Modifications To Address Concerns



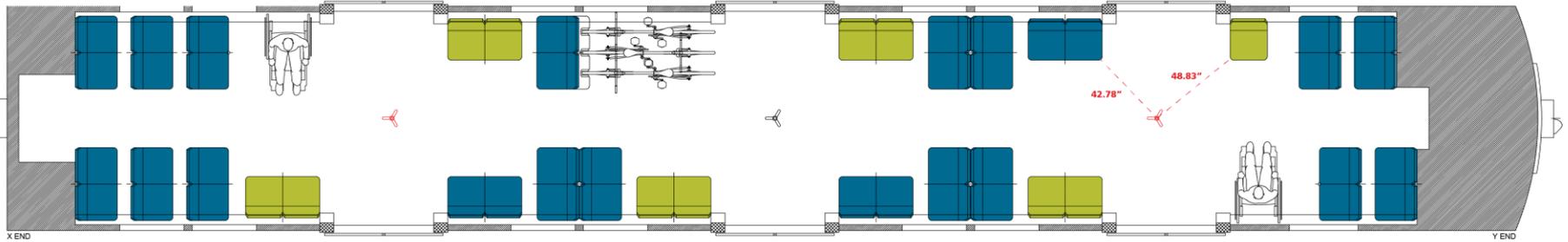
Discussions with BATF led to four steps to address concerns:

1. Pole offset by 4 inches. Creates four foot wide accessible path. Exceeds ADA standard and almost as wide as 54 inch door opening.
2. Wheelchair symbol embedded in floor
3. Pole marked with high contrast decal
4. Commitment to Clear The Path campaign

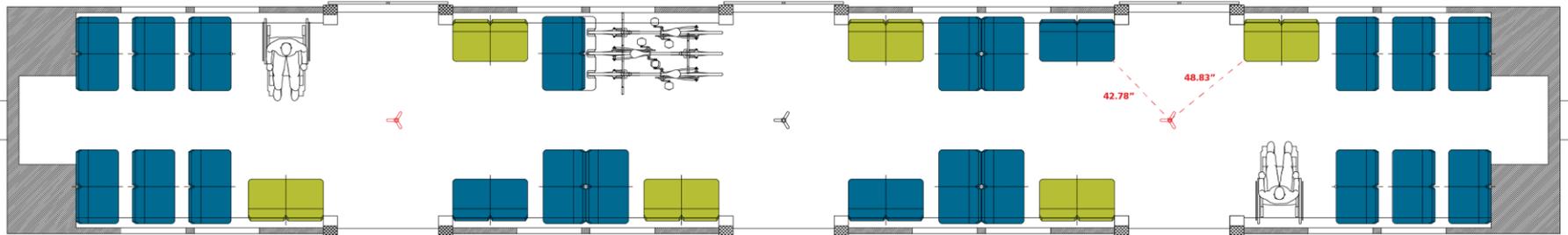
# Current Design



**Cab Car: 51 Seats**

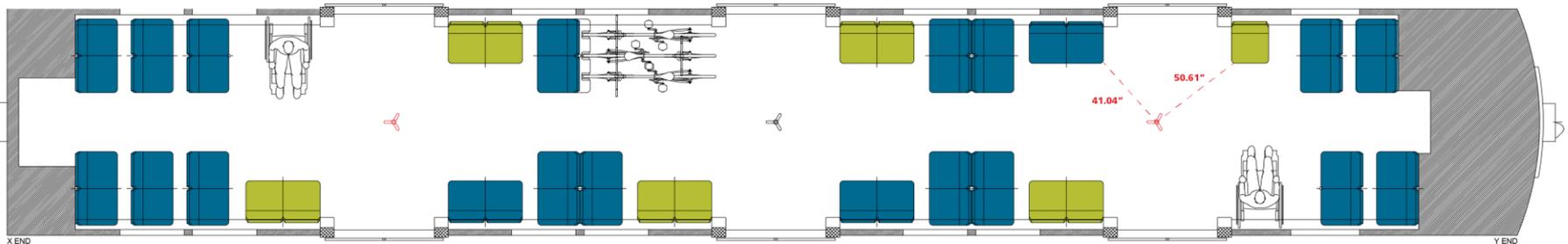


**Other Cars: 56 Seats**



# Alternative 1

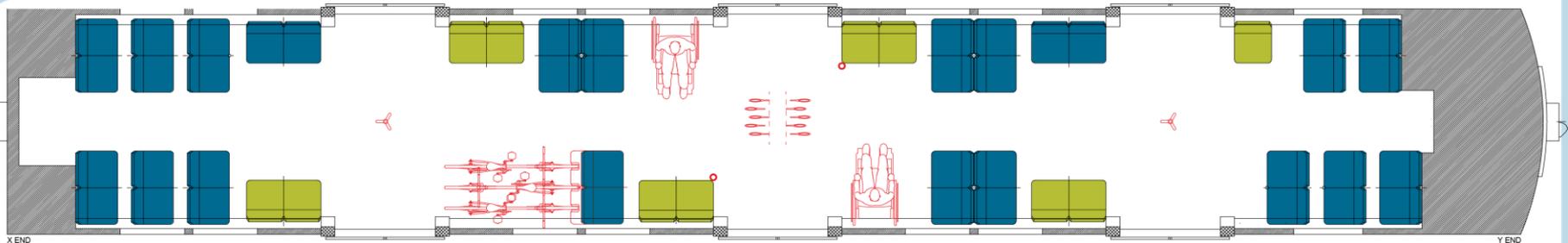
Increase End Door Pole Offsets to 6 Inches  
(on all cars)



- On all cars, retain poles but increase offset of end poles to 6 inches.
- Upside: Makes accessible path to wheelchair area almost as wide as door opening (50.6 inches vs 54.0 inches).
- Downside: Decreases path to aisle to approximately 41.0 inches.
- Keeps 100% of poles for passenger use.

# Alternative 2

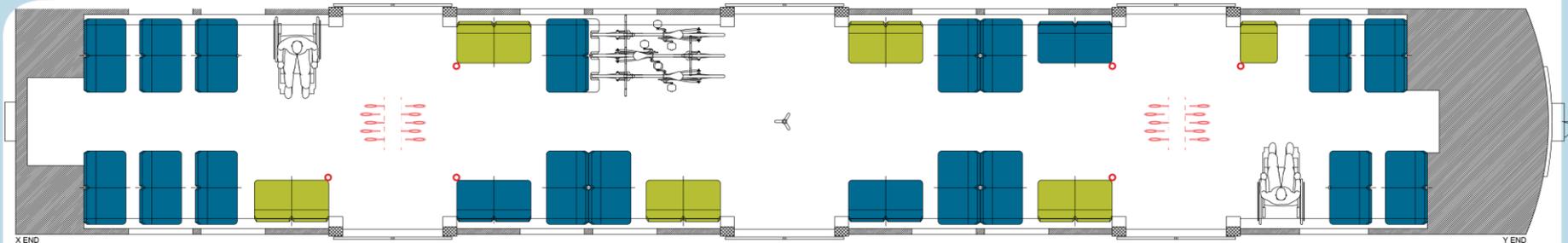
Wheelchairs and no pole at middle door.  
(on all cars)



- On all cars, move wheelchair areas to middle door and bicycle rack to an end door. Replace middle door pole with ceiling straps.
- Upside: All cars have similar floor plan. A wheelchair user will find a wheelchair area immediately to the right as they board from either the center or outside platform. People who use wheelchairs can sit closer together. Less likelihood of boarding car and finding wheelchair space taken by another wheelchair user. This option works best after old fleet is retired.
- Downside: Only one door per car has wheelchair areas. Could be confusing during mixed fleet period: wheelchair users and bicyclists will be forced to reposition on platform upon train arrival – this has potential to increase dwell time and delays, and could force wheelchair users to be last to board. Straps are less stable handhold; tall customers may hit head on straps.
- Keeps 67% of poles for passenger use

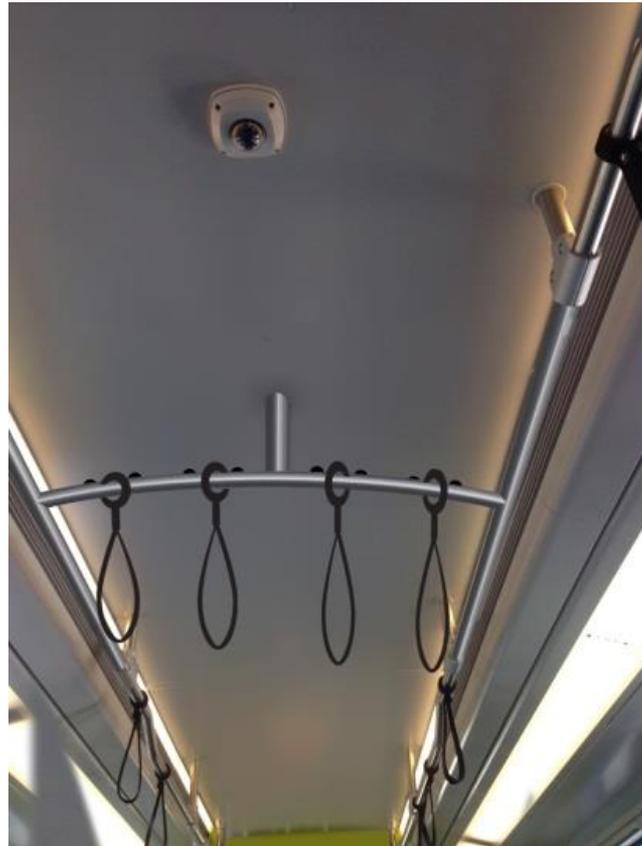
# Alternative 3

## Remove two poles in cab car



- On cab cars, remove poles near both wheelchair areas and replace them with ceiling straps. On noncab cars, retain poles offset by 4 inches. Note: 40% of the BART fleet are cab cars, and there are always cab cars at both ends of a train at a minimum.
- Upside: Cab cars tend to be in a somewhat predictable position and will often be near platform elevators. End doors have similar configuration.
- Downside: Only one wheelchair space per door. Some wheelchair users will need to reposition on platform upon train arrival and cab car may not be close by. Straps are less stable handhold; tall customers may hit head on straps.
- Keeps 73% of poles for passenger use.

# Sample Concept For Ceiling Straps

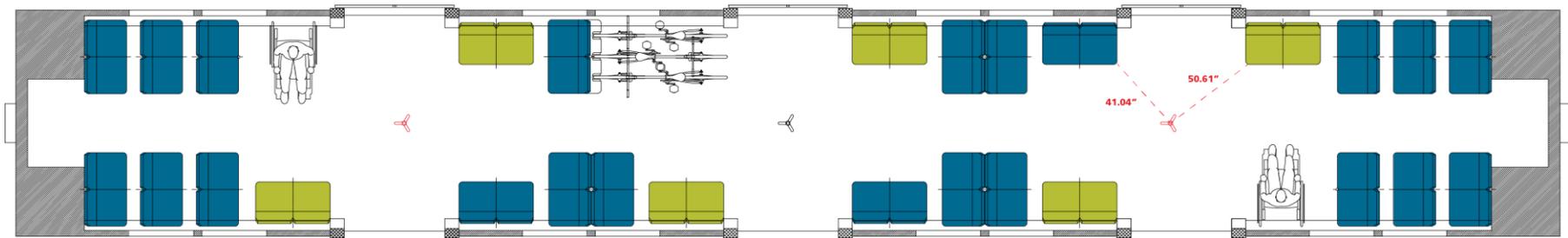
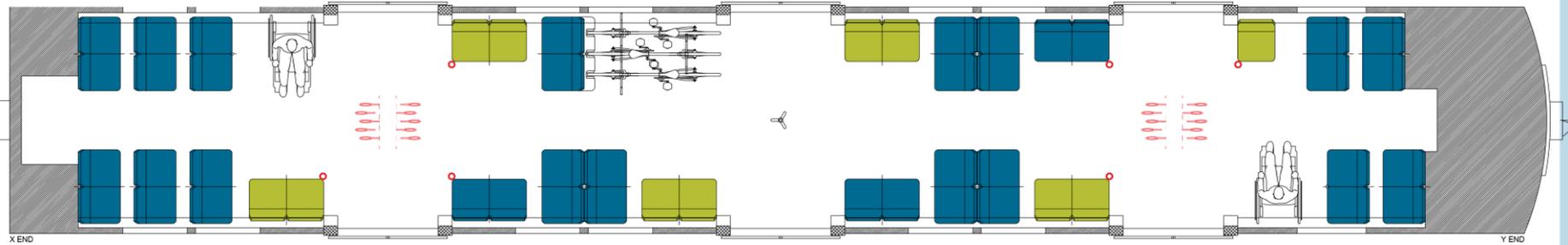


# Pole Recommendation



- Adopt hybrid of Alternatives 3 and 1 – Remove two poles on cab cars, and shift poles to 6 inch offset on non-cab cars.
- This recommendation:
  - Further offsets and removes poles to better serve people with disabilities, including those with large scooters
  - Keeps some poles for seniors, shorter people, and people with disabilities who need a stable handhold in the center of the doorway vestibule
  - Keeps wheelchair areas at end door locations during the mixed fleet period – providing consistency for people with disabilities.

# Illustration of Recommendation



- Bike Rack



# Bike Rack Alternatives



Alternative	Description
A	One rack on all cars (this is the current design)
B	One rack – noncab cars only
C	No bike racks on any cars

# Bike Rack Alternatives Analysis



Alternative	Description	# Bike Slots - 10 car peak train with four cab cars*	# Bike Slots - 5 car offpeak train with two cab cars	Average Seats Per Car**	Seats in Fleet***
A	One rack on all cars (this is the current design)	21	12	54	+38%
B****	one rack – noncab cars only	12	9	55.6	+42%
C****	No bike racks	0	0	58	+48%

\* Figures are # of usable slots assuming current bike rules. If future rules allow peak bikes on 2<sup>nd</sup> and 3<sup>rd</sup> cars, Alternatives A and B would provide 27 and 18 slots per peak 10 car train, respectively.

\*\* Existing BART cars average 58.6 seats per car.

\*\*\* Based on 1,000 car goal.

\*\*\*\* Alternatives B and C assume bike racks replaced with four seats. Alternatively, bike racks could be replaced with two seats, or no seats (open space).

# Bike Rack Recommendation



- Adopt Alternative A –
  - One rack on all cars
- This recommendation:
  - Provides space on every car for bicyclists to park their bike in an out-of-the-way location
  - Helps keep bikes from blocking seats, aisles, and doorways