



SFMTA

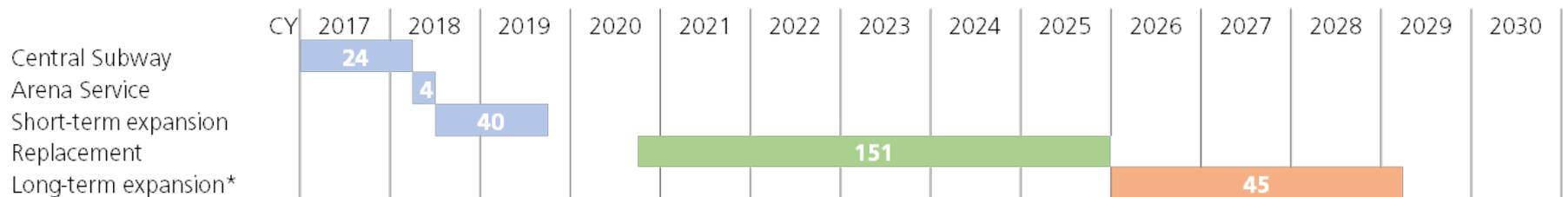


LIGHT RAIL VEHICLE PROCUREMENT PHASE 2

Replacement Fleet Upgrades, February 2019

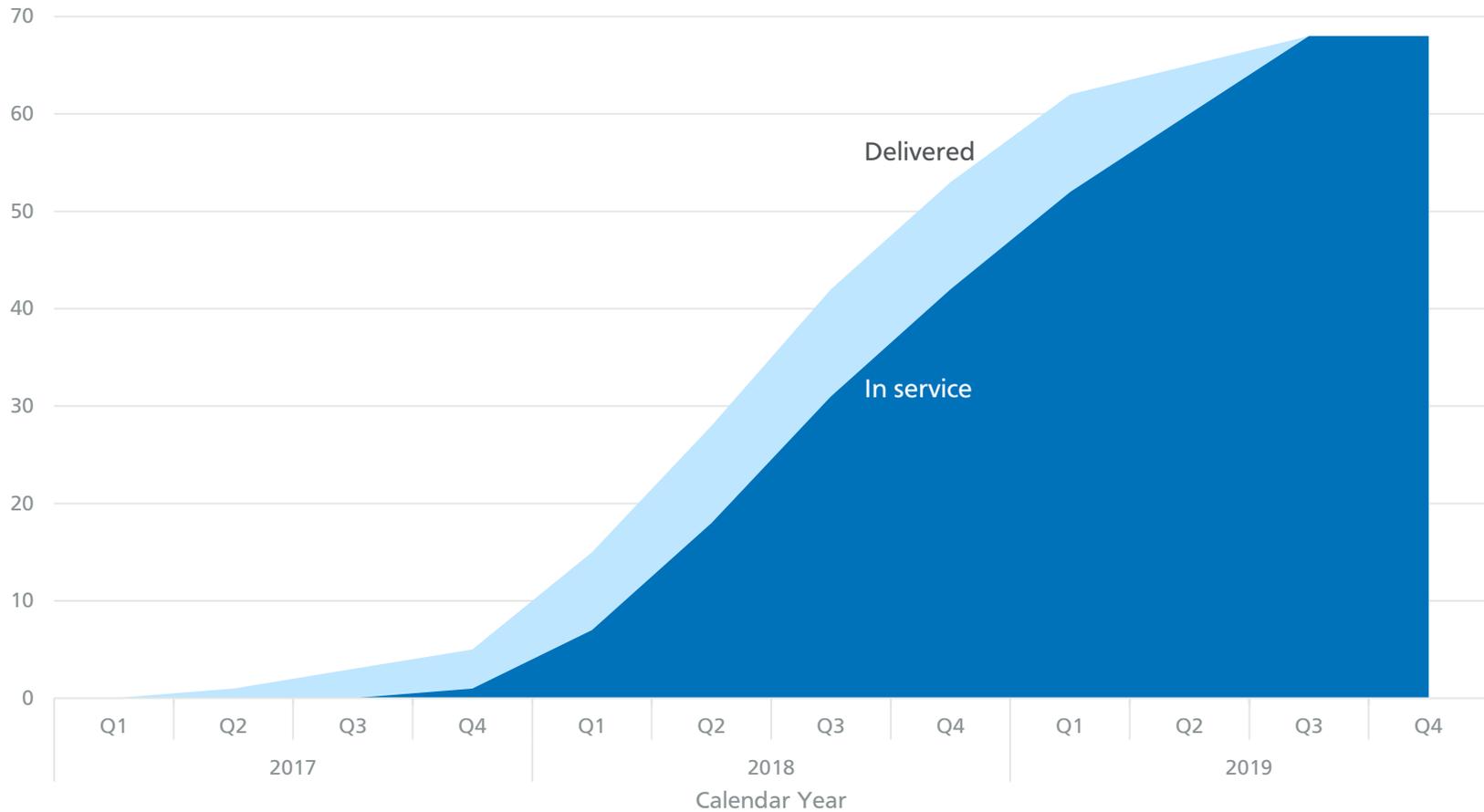
Background

Summer 2014	SFMTA awarded a contract to Siemens
January 2017	First vehicle delivered to SFMTA property
Fall 2017	First vehicle in revenue service
Fall 2018	Operator familiarization complete, systemwide deployment of LRVs
Spring 2019	Initiate replacement phase (Phase II)
Summer 2019	Complete expansion phase (Phase I)
Fall 2025	Complete procurement of replacement phase (Phase II)



Project status

All 68 expansion vehicles will be delivered and in service this summer



Key design features

The new trains feature updates from lessons learned on past procurements:

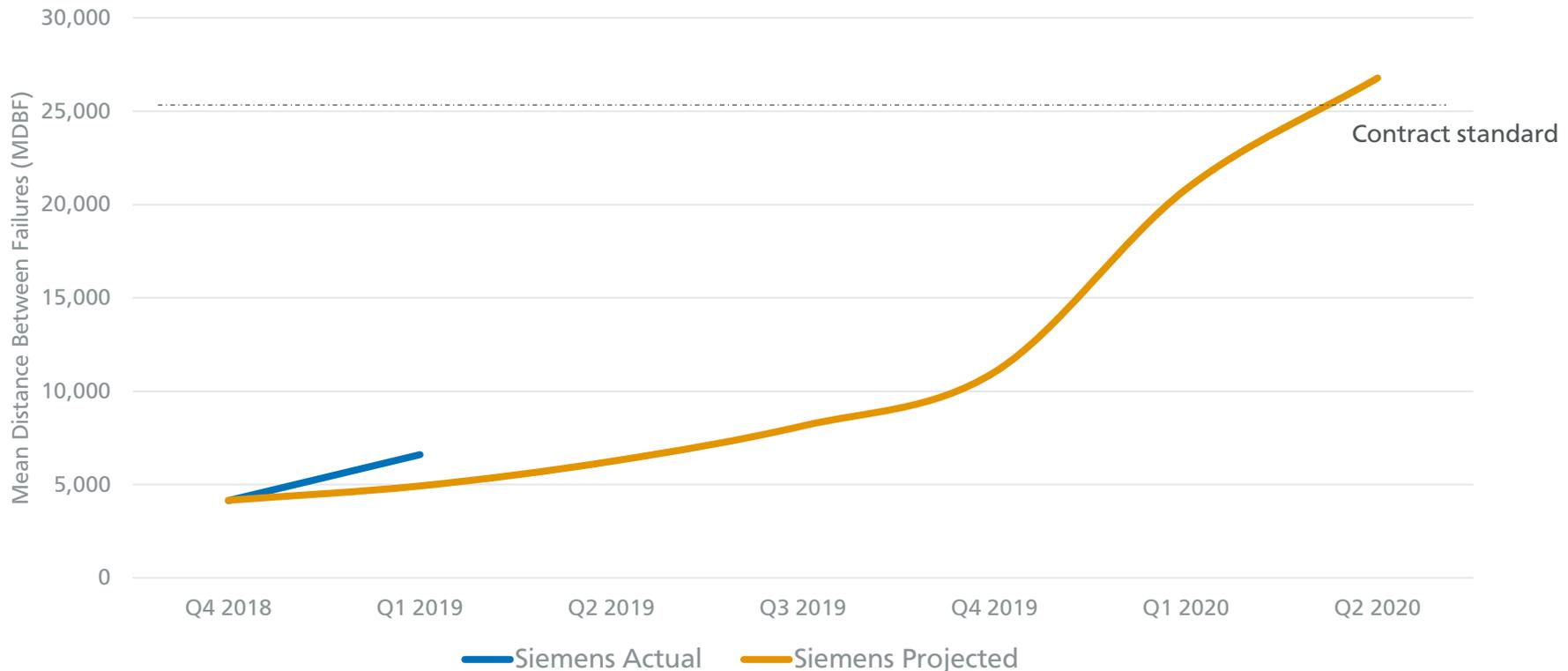
- **Lighter vehicle**—quieter ride for passengers and neighbors
- **Improved interior design:**
 - **Facilitates flow of people**—less blocking the doors
 - **Increased potential standing capacity**—more comfortable ride during peak hours
- **Upgraded passenger information**—know where you are and where you're going
- **Easier to maintain door and step units**—less time spent fixing critical systems

Performance and reliability

Reliability Demonstration Program launched August 2018, runs for 2 years

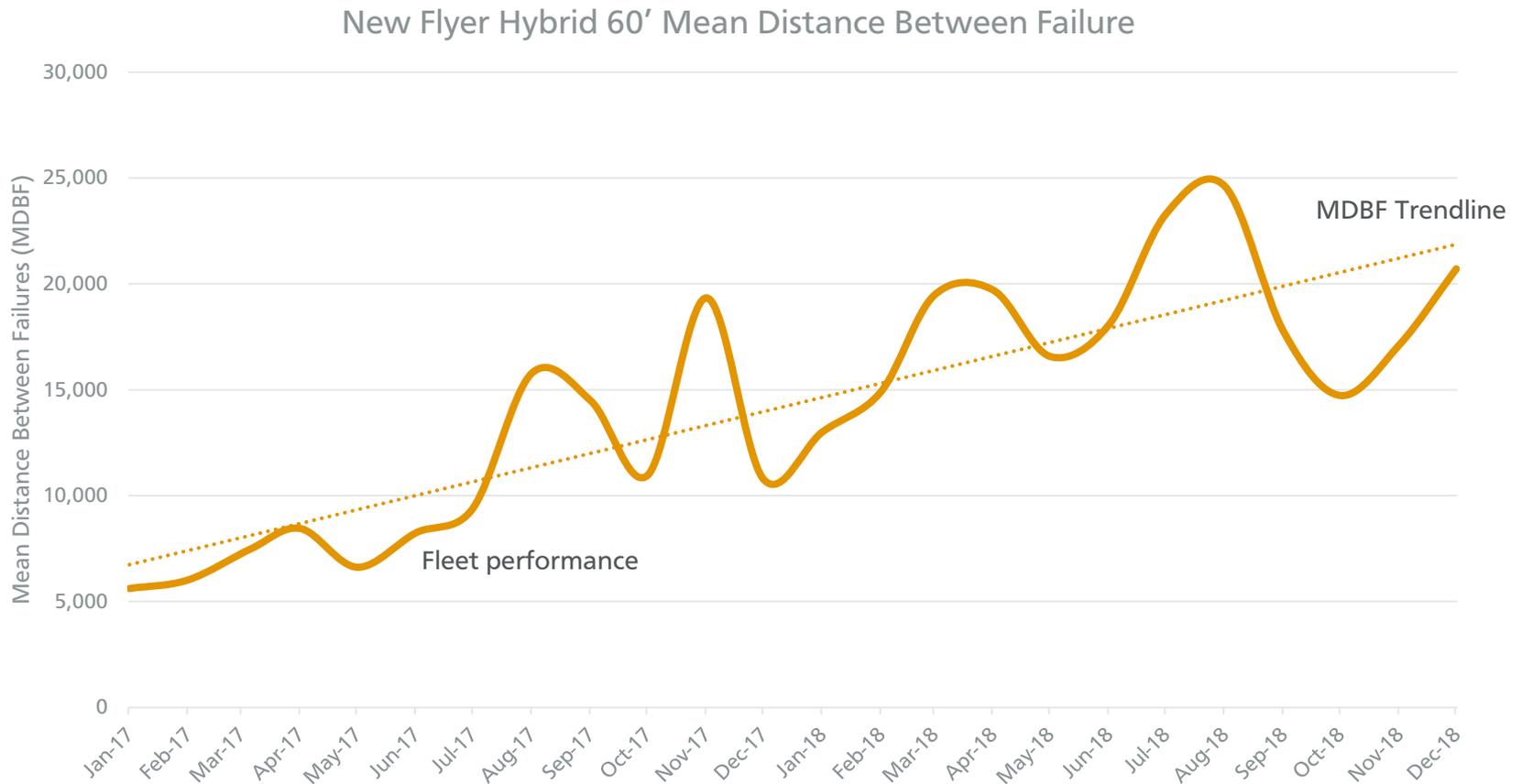
Program validates progress to reliability standard of 25k miles between failure

Fleet currently performing at 6,600, on track to meet target



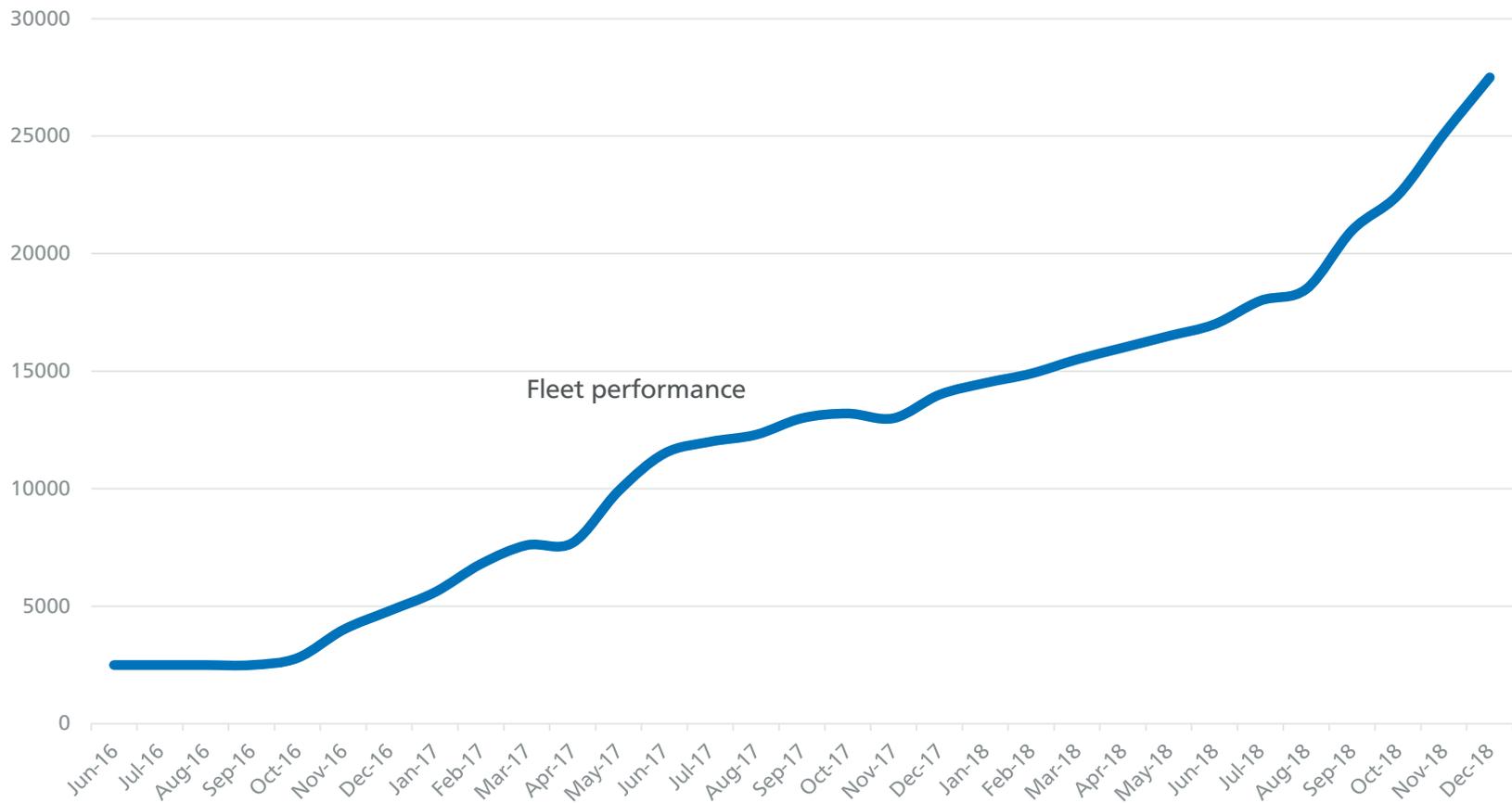
New Flyer Procurement Reliability

Reliability ramp up and performance fluctuations during wear-in are common in any custom fleet procurement



Calgary Siemens LRV procurement

Calgary Transit procured similar Siemens vehicles and also underwent a reliability demonstration during the first two years of regular operation



Planning for LRV4 Phase 2

Replace 151 Bredas on expedited schedule

Incorporate design enhancements based on:

- System Performance
- Operator and Mechanic Feedback
- Customer Feedback Sources
 - 311, Twitter, Letters, etc.
 - Intercept survey
 - Focus groups

Operations and maintenance enhancements

We've been collecting feedback from operators, maintenance, engineering and the public about all aspects of these vehicles since they first arrived

Operations: *20 enhancements*

- Improved sunshades for enhanced Operator visibility
- Updated operator panel switches to more easily distinguish functionality (e.g., front door versus all door button)
- Updates to passenger information system to clarify messaging

Maintenance: *22 enhancements*

- Updates to wheel design to make wheel-truing easier
- Modify brakes to better distribute force during quick stops
- Changes to panel securements for easier access

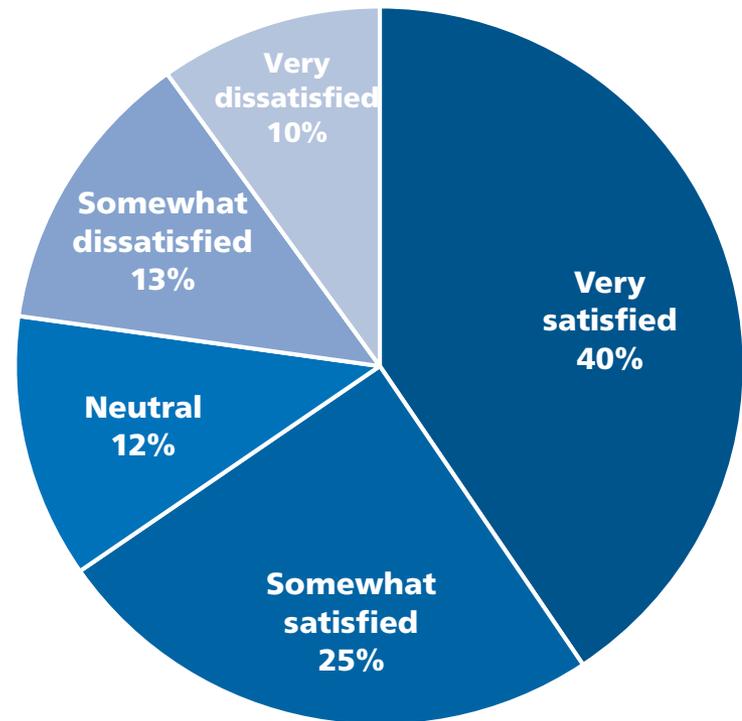
Customer Feedback for Phase 2 Survey Results

Are you satisfied with the new LRV4s?

Riders are overwhelmingly satisfied with the new vehicles

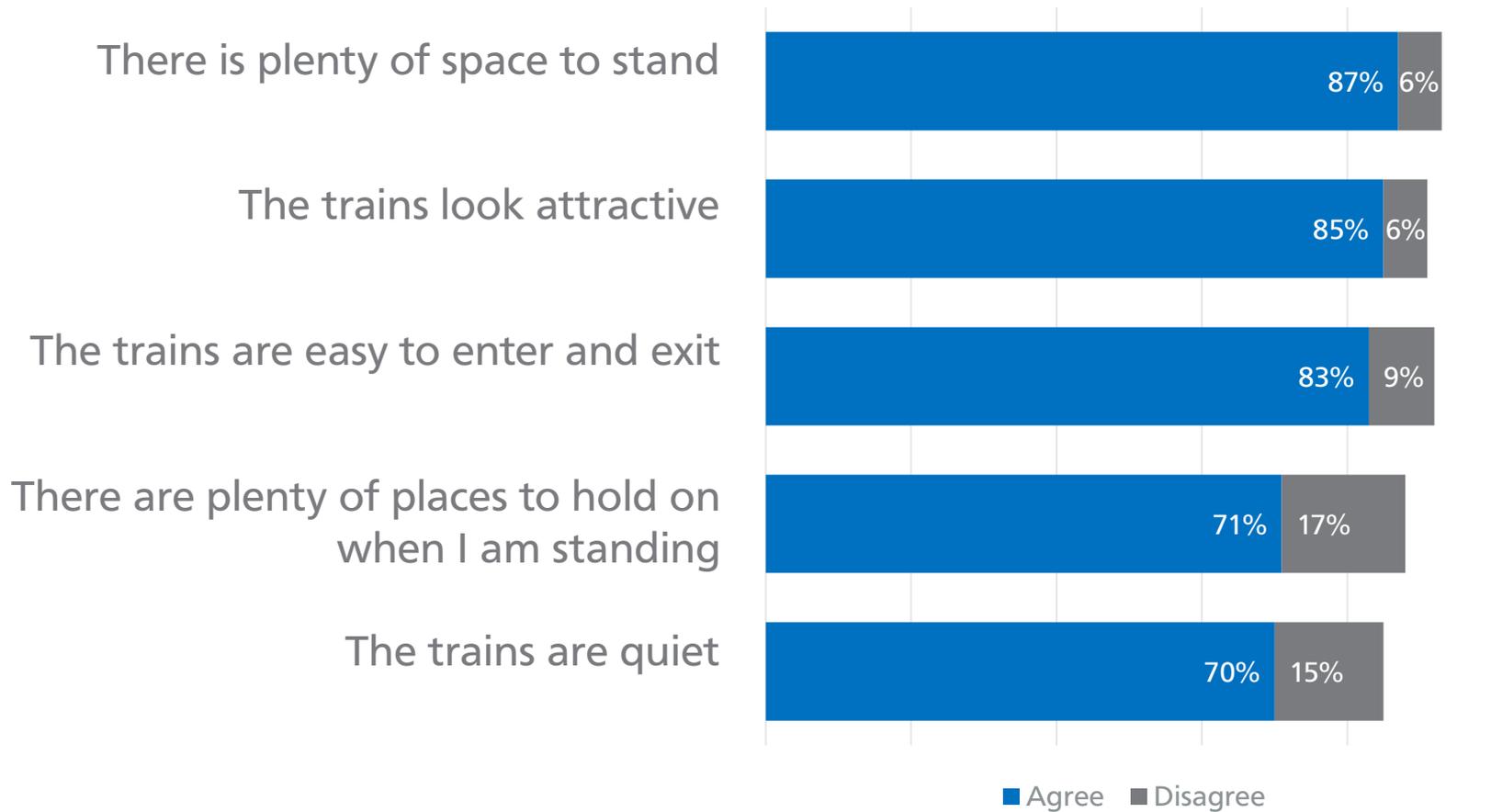
Majority of those surveyed are regular riders, all had first hand experience onboard the new Siemens trains

In all categories we surveyed, people are more satisfied than dissatisfied



n=340

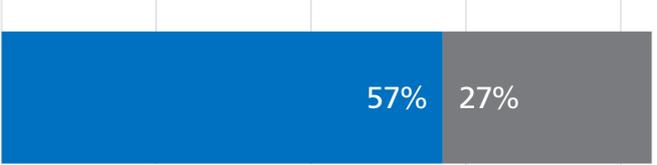
Where we've got it right



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What we heard: Room for improvement

I feel comfortable sitting on the bench seats because I find the height just right



I feel comfortable sitting on the bench seats



There are plenty of spaces to sit



I feel comfortable sitting on the bench seats when the train accelerates and stops

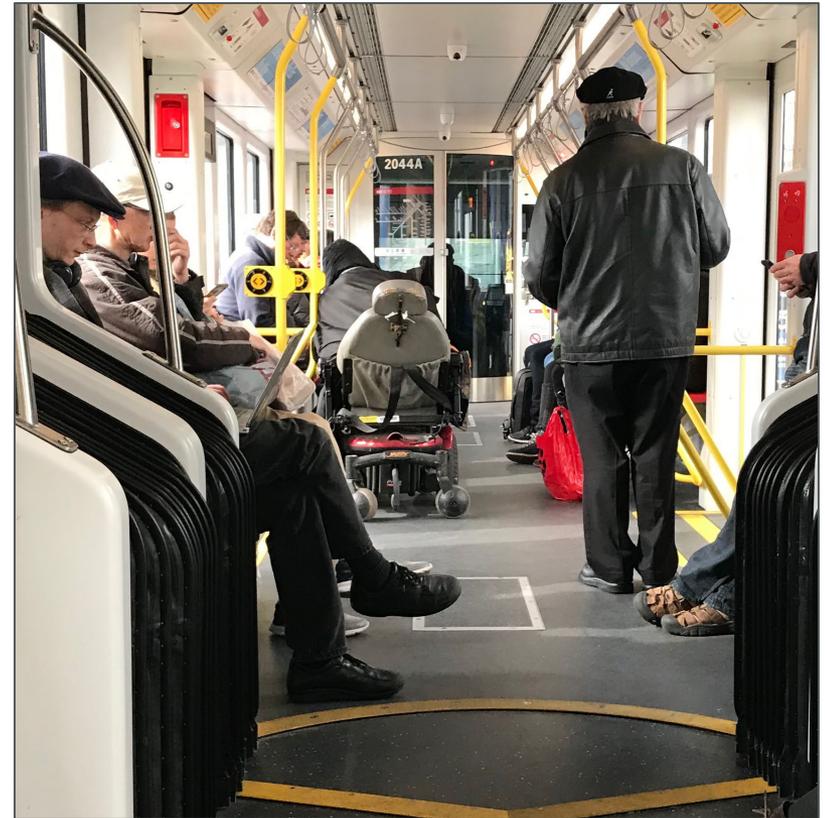


■ Agree ■ Disagree

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Focus group feedback

- The **seats are very uncomfortable**, they are slippery and need seat definition.
- Most participants **like the handholds** and want **one to three more** of them per vertical pole; also received requests for hand straps that accommodate different rider heights.
- Participants **liked the wider aisle** created by the sideways-facing seats for people to **travel through more easily**.



Focus Groups Special considerations

Customers with disabilities

- Similar overall satisfaction levels as all respondents
- High levels of approval for ease of access and egress
- Much higher levels of dissatisfaction with the seats

Shorter riders: 5'4" or less

- Similar overall satisfaction levels as all respondents
- Lower levels of satisfaction with the height of seats



PASSENGER ENHANCEMENTS

Passenger comfort updates

Options for changes were developed to address customer feedback in the following categories:

- Additional handholds
- Seating type
- Interior seating layout

Additional Handholds

Archways
Provide handholds in center of aisle



Hand Straps
Provide multi-length hand straps



Seating type

Seat type can be updated to provide more definition of seats and to increase passenger comfort

Seat Options B & C reduce seating capacity



Seating layout

Base Change	Modest alteration	Lower bench seating 2 inches, except where train control equipment box is stored (applies to all options)
Option 1	Modest alteration	Convert area across from leaning bar to single transverse seats
Option 2	Intermediate alteration	Convert most longitudinal seats to single transverse seats
Option 3	Significant alteration	Convert one side of seating to double transverse seats

Base Change: Lower bench seating



All seats would be lowered 2 inches except over the train control equipment box



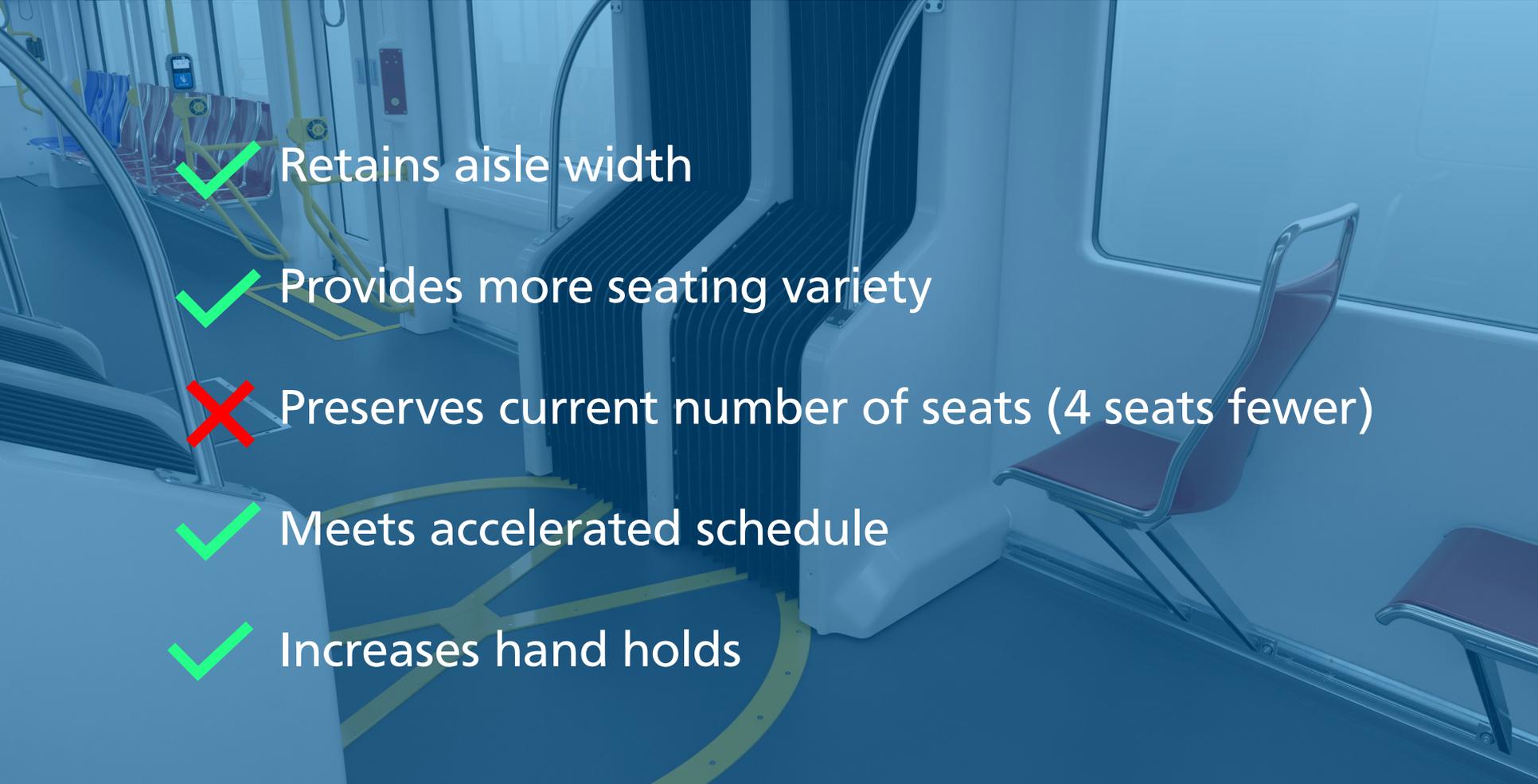
Base Change: Lower bench seating

- 
- ✓ Retains aisle width
 - ✗ Provides more seating variety
 - ✓ Preserves current number of seats
 - ✓ Meets accelerated schedule
 - ✗ Increases hand holds

Option 1: Convert area across from leaning bar to single transverse seats



Option 1: Convert area across from leaning bar to single transverse seats

- 
- ✓ Retains aisle width
 - ✓ Provides more seating variety
 - ✗ Preserves current number of seats (4 seats fewer)
 - ✓ Meets accelerated schedule
 - ✓ Increases hand holds

Option 2: Convert most longitudinal seats to single transverse seats



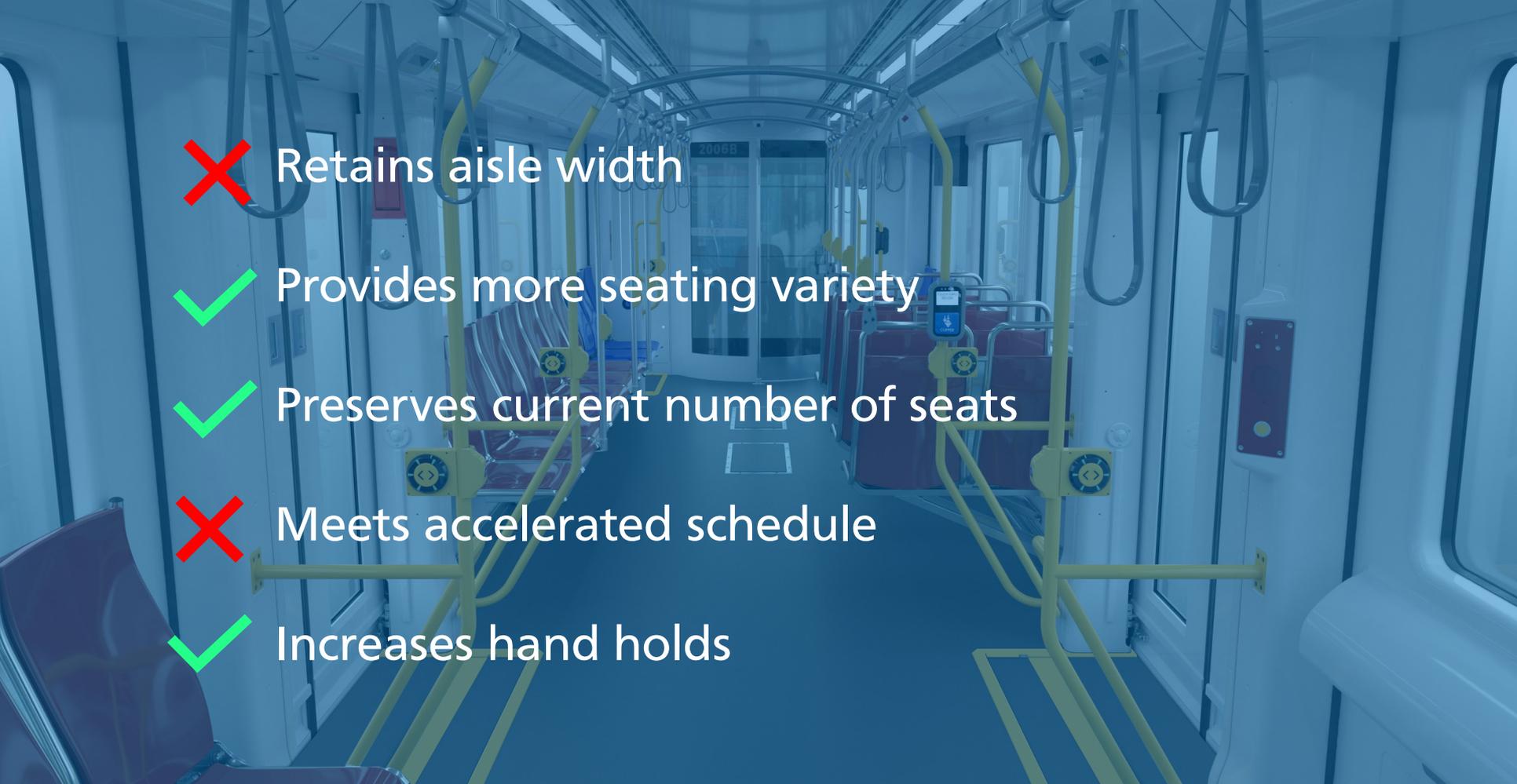
Option 2: Convert most longitudinal seats to single transverse seats

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- The image shows the interior of a bus with a blue tint. It features longitudinal seats with red and blue upholstery. Yellow hand holds are visible throughout the cabin. A door with the number '2006A' is visible in the background. A 'CLIPPER' fare reader is mounted on a hand hold in the foreground.
- ✓ Retains aisle width
 - ✓ Provides more seating variety
 - ✗ Preserves current number of seats (12 seats fewer)
 - ✓ Meets accelerated schedule
 - ✓ Increases hand holds

Option 3: Convert one side of seating to double transverse seats



Option 3: Convert one side of seating to double transverse seats

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- ✗ Retains aisle width
 - ✓ Provides more seating variety
 - ✓ Preserves current number of seats
 - ✗ Meets accelerated schedule
 - ✓ Increases hand holds

Seat Layout Summary

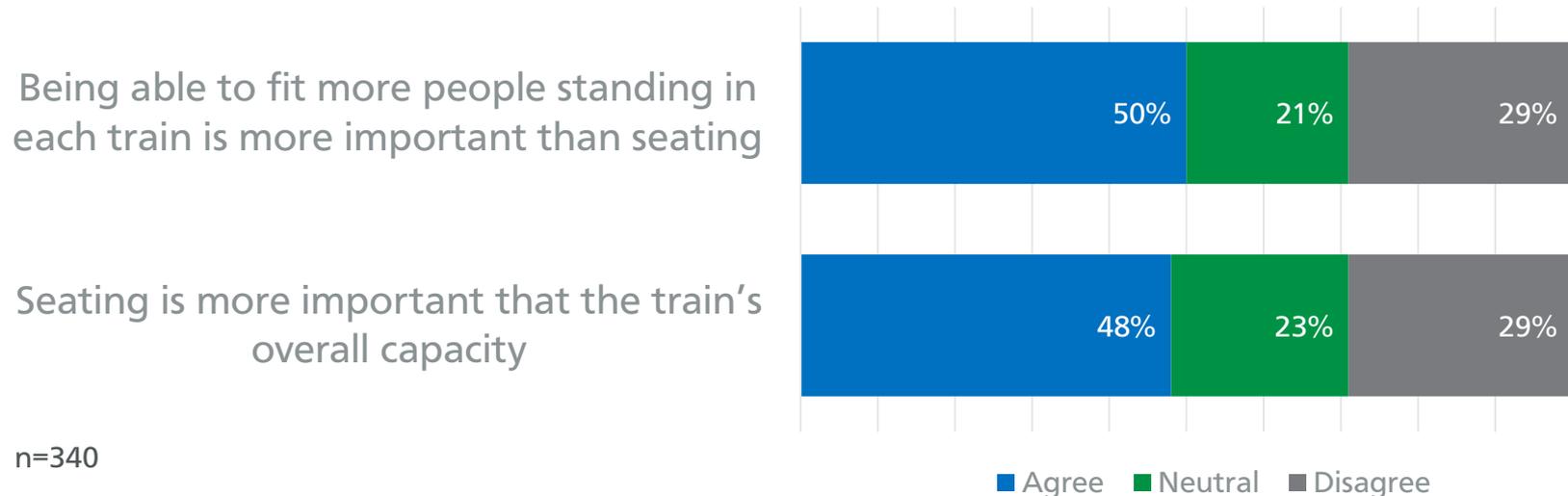
	Base Change: All Bench Seating but Lowered	Option 1: Convert area across from leaning bar to single transverse seats	Option 2: Convert One Side to Single Transverse Seats	Option 3: Convert One Side to Double Transverse Seats
Retains Aisle Width	✓	✓	✓	✗
Provides More Seating Variety	✗	✓	✓	✓
Preserves Number of Seats	✓	✗	✗	✓
Meets Accelerated Schedule	✓	✓	✓	✗
Increases Hand Holds	✗	✓	✓	✓



NEXT STEPS

How do we take feedback and turn them into improvements?

- There are no easy choices - even survey responses from the same participants appear to conflict (see below)
- Timeline matters: quick decisions help preserve schedule
- Some changes could impact popular features



Timeline

March 2019	Present Options to CAC and Board for Feedback
March - April 2019	Negotiate change order and pricing with Siemens
May 2019	SFMTA Board reviews/approves change order
Summer 2019	Final expansion vehicle in service
December 2020	First replacement LRV delivered
October 2025	Last replacement LRV delivered