



METROPOLITAN
TRANSPORTATION
COMMISSION

Agenda Item 5b
Bay Area Metro Center
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San Francisco, CA 94105
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Memorandum

TO: Planning Committee

DATE: September 1, 2017

FR: Deputy Executive Director, Policy

W.I. 1519

RE: Core Capacity Transit Study- Final Report

Background

The Core Capacity Transit Study (CCTS) is a collaborative, multi-agency effort to evaluate and prioritize short-, medium-, and long-term transit investments and strategies to address existing and forecasted capacity constraints serving the San Francisco central business district, or Core. MTC has been the lead agency on the study, working in close partnership with Alameda-Contra Costa Transit District (AC Transit), San Francisco Bay Area Rapid Transit District (BART), Caltrain, San Francisco County Transportation Authority, San Francisco Municipal Transportation Agency, and the San Francisco Bay Area Water Emergency Transportation Authority. Together with the City of San Francisco, City of Oakland, Caltrans, and the Federal Transit Administration, these agencies form the Study's Executive Team.

At the September 8, 2017 meeting, staff will present the CCTS Final Report, located on the MTC Website here: <http://mtc.ca.gov/our-work/plans-projects/other-plans/core-capacity-transit-study>. Additionally, the *Study Overview*, which summarizes the study's approach and describes short- and medium-term improvements and long-term options, is included as **Attachment A**.

Study Purpose

The purpose of the CCTS is to answer the following question: what types of transit investments are needed, and when, to safely and reliably move a growing number of people to and from San Francisco's core job centers? To answer this question, the study did the following:

1. Assessed current and future capacity and demand for travel to San Francisco's main job centers, both from within San Francisco and from the East Bay
2. Developed and assessed potential transit investment projects to address the challenges facing travelers, including transit congestion, reliability, and redundancy
3. Identified a recommended set of transit investments to address short- and medium-term challenges
4. Proposed potential long-term investment options to improve capacity and system resiliency in the future
5. Set a course for next steps to continue development of the recommended projects

Transbay Corridor- Short, Mid, and Long-Term

The CCTS largely focused on the crowding and reliability issues facing the Transbay Corridor, which operates over its planned capacity in the peak-period. In response, transit operators have been working to deliver a number of critical projects in the short and mid-term to relieve crowding and

move toward a state of good repair. These so-called “prerequisite projects” should remain among the region’s highest priorities. Ultimately, the Study finds that future growth in demand will lead to persistent capacity and reliability pressures in this corridor without additional investment or policy intervention.

The CCTS engaged in two simultaneous efforts to address the Transbay capacity/demand problem. First, the Study conducted a planning-level evaluation of several short and mid-term package alternatives. The study team recommended and the Executive Team agreed to advance a package consisting of additional bus and ferry transit service with increased bus and ferry fleets, new bus-priority infrastructure to ensure buses can travel quickly through the bridge toll plaza, surface street improvements to improve travel times leading up to the bridge in Oakland and Emeryville, and a small increase of Bay Bridge auto tolls.

Second, the Study assessed a number of long-term solutions for the corridor, focusing on a potential “second tube” to serve BART and/or conventional rail. These options vary in the degree to which they add BART network redundancy, add capacity to new markets, or connect multiple regional rail services. While all options are likely to dramatically increase capacity to the SF core, additional study is required to analyze specific alternatives along with operational challenges and opportunities.

Next Steps

The CCTS recommended package of short- and medium-term projects for both the Transbay and SF Metro Corridors requires further action to advance toward implementation, including prioritization of the improvements for upcoming regional and state funding opportunities. MTC staff will continue convening the CCTS agencies to ensure that the recommended improvements are prioritized for funding. The timing of this Core Capacity Study was fortuitous, as the latest version of Regional Measure 3 (SB 595 - Beall) proposes a \$140 million commitment to projects identified in the study.

To further develop the Transbay Corridor long-term options, the study recommends development of a second crossing continuation study framework, with input from CCTS Executive Team. Moving forward, it will be important to identify the appropriate geographic scale for this work as well as institutional governance and other policy considerations. It is also expected that the Megaregional Working Group, which includes membership from MTC, Sacramento Area Council of Governments, and San Joaquin Council of Governments, can play a key role in guiding some of these next steps, along with the California State Transportation Agency, the California High Speed Rail Authority, congestion management agencies, Capitol Corridor, and Altamont Corridor Express.



Alix A. Bockelman

Attachments:

- Attachment A: Bay Area Core Capacity Transit Study Overview
- Attachment B: PowerPoint Presentation

AAB: mm

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Bay Area Core Capacity Transit Study



JUNE 2017



Study Overview

The challenge: Congested transit

Every day, the region's transit operators move hundreds of thousands of people into and out of San Francisco's busiest employment centers. Facing increasingly crowded conditions as the region and transit ridership continue to grow, our transit system is challenged to deliver quality service to riders both now and in the future. Transit operators will need to increase capacity and improve service quality to meet growing demand. Failing to address these issues will limit the region's potential to accommodate growth and slow the regional economy or further push new growth to low-density areas on the urban fringe.

Answering the challenge: The CCTS

Answering this challenge is the Core Capacity Transit Study (CCTS), a collaborative multi-agency effort to examine the transit system's capacity limitations and identify and prioritize the major investments needed to address these limitations today and in the future. The purpose of the CCTS is to answer the following question: what types of transit investments are needed, and when, to safely and reliably move a growing number of people to and from San Francisco's core job centers?

Study components

The CCTS identifies transit capacity investment projects to address shortfalls over the short, medium, and long term. The investments were developed with consideration of future transit demand, driven by growth in employment projected by the CCTS market assessment.

The study recommends projects in the short and medium term, and strongly advocates for developing and selecting a long-term project in the near future.

Short and medium term (5-15 years)

Prerequisite projects	Priority projects identified by transit operators as critical to offering future capacity; some projects are not fully funded but many are underway.
Recommended projects	New projects identified to meet growing demand in the future; significant portions of some projects are not yet funded.

Long term (15+ years)

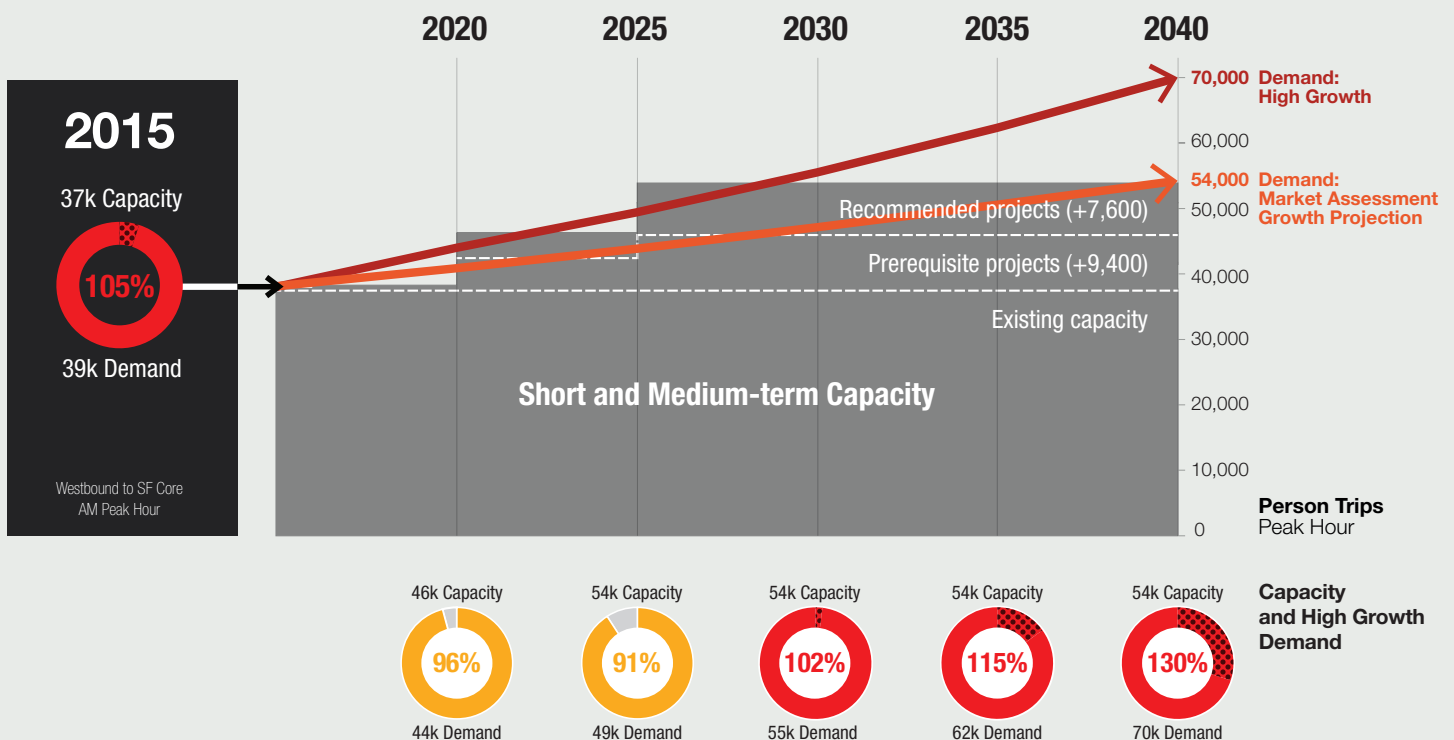
The CCTS identifies a number of options for a large investment to increase transit capacity in the long term.

Short- and Medium-term Improvements

	Transbay Corridor		SF Metro Corridor			
Recommended improvement projects	<ul style="list-style-type: none">Add bus and ferry serviceAdd dedicated bus transitway and transit priority infrastructure to reduce travel timesSet Bay Bridge toll level to manage demand and reduce toll plaza queuesFully fund and implement prerequisite projects		<ul style="list-style-type: none">Expand Muni Forward improvements to improve train surface operations on city streets, improving transit travel time and reducing delaysLengthen trains throughout the systemFully fund and implement prerequisite projects			
Capital cost need	AC Transit	110 buses, maintenance facility, and bus priority infrastructure	\$445m	SFMTA	Fleet and yard	\$787m
	WETA	11 boats for 15-30 Plan service, new and enhanced terminals	\$374m		Surface Light-Rail Safety & Capacity	\$100m
	BART	306 additional railcars, train control, traction power, maintenance facility, and other supportive projects	\$4.0bn		Surface Improvements (station, roadway, and transit priority traffic control improvements)	\$51m
					Geary Corridor Bus Rapid Transit	\$300m
		Total costs*	\$4.8bn		Total costs*	\$1.2bn
Operations cost needs	Bus: Transbay service		\$33m/yr	SFMTA: Light Rail		\$19m/yr
	Bus: Ferry feeder service		\$13m/yr	SFMTA: Geary Corridor BRT		\$12.5m/yr
	Ferry: WETA 15-30 Plan service		\$23m/yr	Total unfunded annual costs		\$31.5m/yr
	BART: Additional Transbay service		\$16m/yr			
	Total annual operating costs		\$85m/yr	* Reflects only the portion of each project that is not funded.		

* Reflects only the portion of each project that is not funded.

Transbay Corridor: Short- and medium-term capacity improvements



Long-term Options

Long Term #1

- Maximize use of existing infrastructure by adding Transbay bus service, ferry service, transit-priority infrastructure, and side platforms at Embarcadero and Montgomery BART stations

Long Term #2[†]

- Add second BART crossing
- Provide redundancy to the key Market Street corridor
- Opportunity for new SF line



Long Term #3[†]

- Add second BART crossing
- Serve new markets in SoMa/Mission Bay



Long Term #4

- Add new conventional rail crossing
- Connect East Bay to Peninsula rail



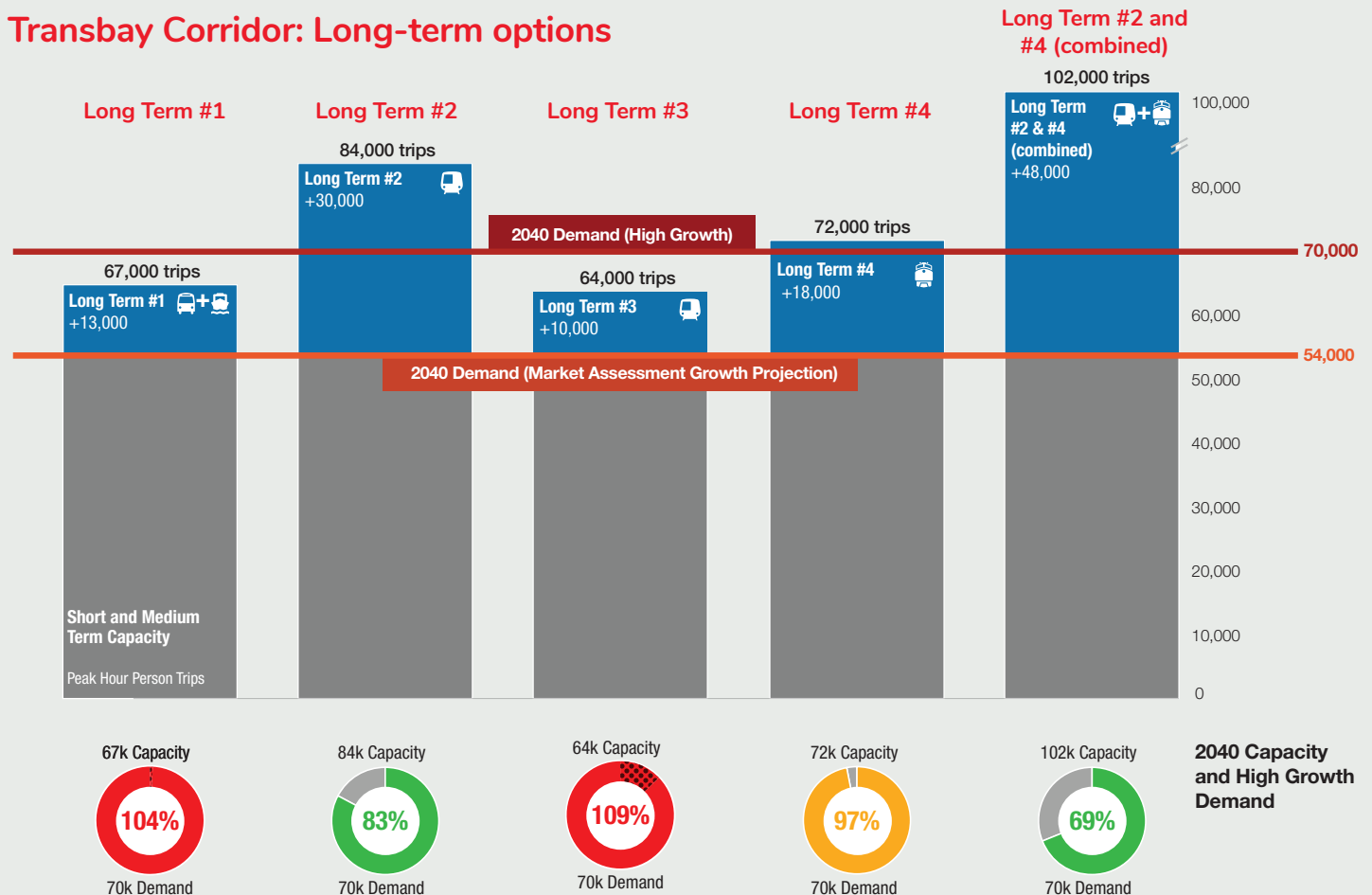
Long Term #2, 3, 4 East Bay Alignments

Two options to connect to MacArthur Station:

- 980 Corridor (BART/rail)
- Broadway (BART only)



Transbay Corridor: Long-term options



[†] Additional options for Long Term #2 and #3 can be found in the CCTS Final Report, available on the project website (see next page).



Photo: Sergio Ruiz

Next steps

The recommended short- and medium-term improvement projects must be programmed into regional and state funding plans for prioritization. In particular, it is critical that unfunded prerequisite projects are prioritized for funding.

For the long-term options, BART will take the lead in further developing these concepts, in cooperation with the CCTS study partners and new partners from surrounding regions.

More information

Visit the project website at:
<http://mtc.ca.gov/our-work/plans-projects/other-plans/core-capacity-transit-study>

Study partners



Metropolitan Transportation Commission (MTC)



Alameda-Contra Costa Transit District (AC Transit)



Bay Area Rapid Transit District (BART)



Caltrain



WETA
(San Francisco Bay Ferry)



San Francisco Municipal Transportation Agency (SFMTA)



San Francisco County Transportation Authority (SFCTA)

Core Capacity Transit Study



MTC Planning Committee
September 8, 2017

Study Purpose

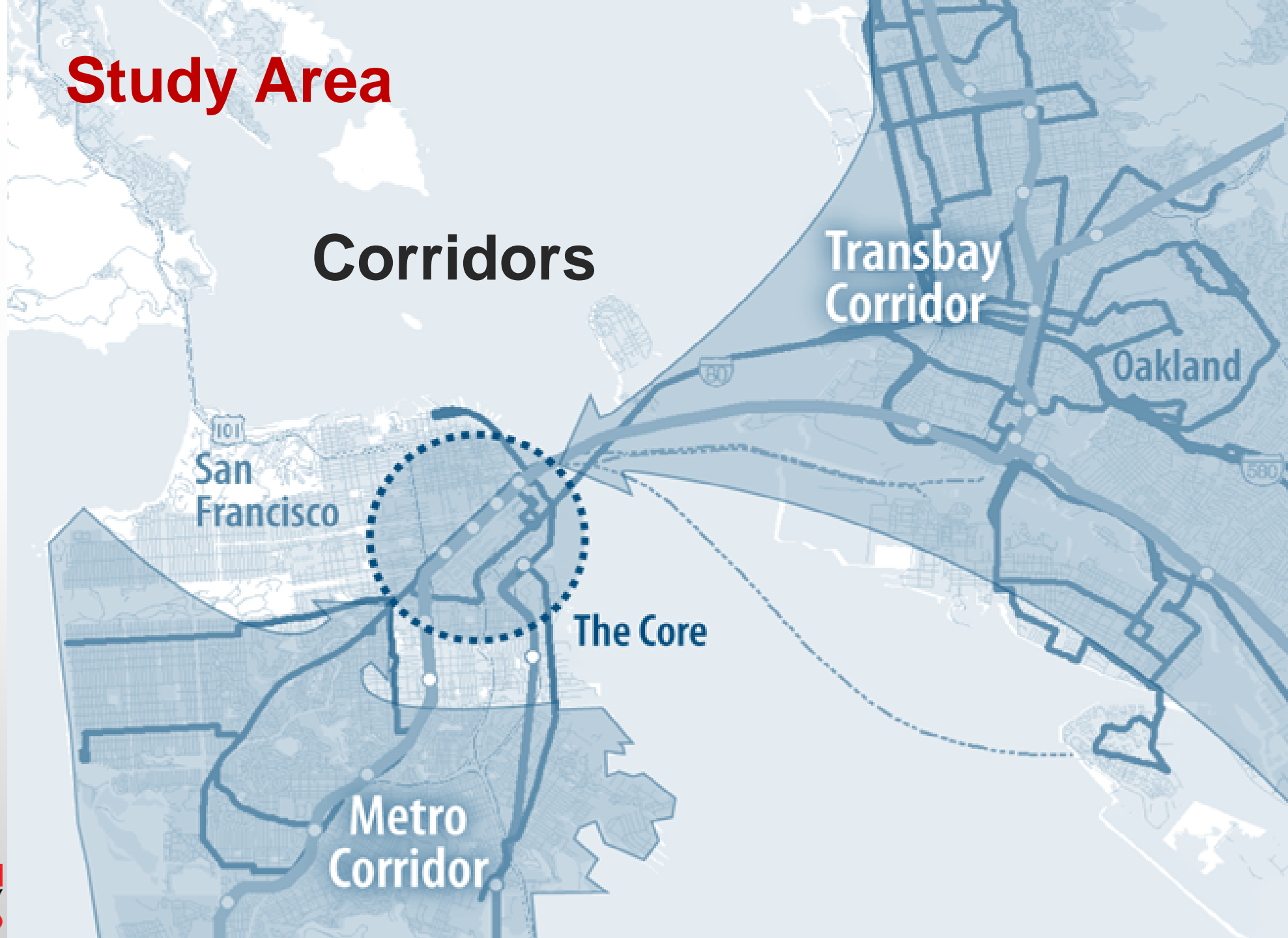
- Multi-agency effort focused on increasing transit capacity to the San Francisco Core



- Study investigates *short, medium, and long term* transit solutions that:
 - Increase transit capacity to meet expected demand
 - Improve transit reliability
 - Manage demand
- Tests multiple packages to understand tradeoffs between infrastructure investments and policy changes
- Identifies project synergies between short, medium and long term projects

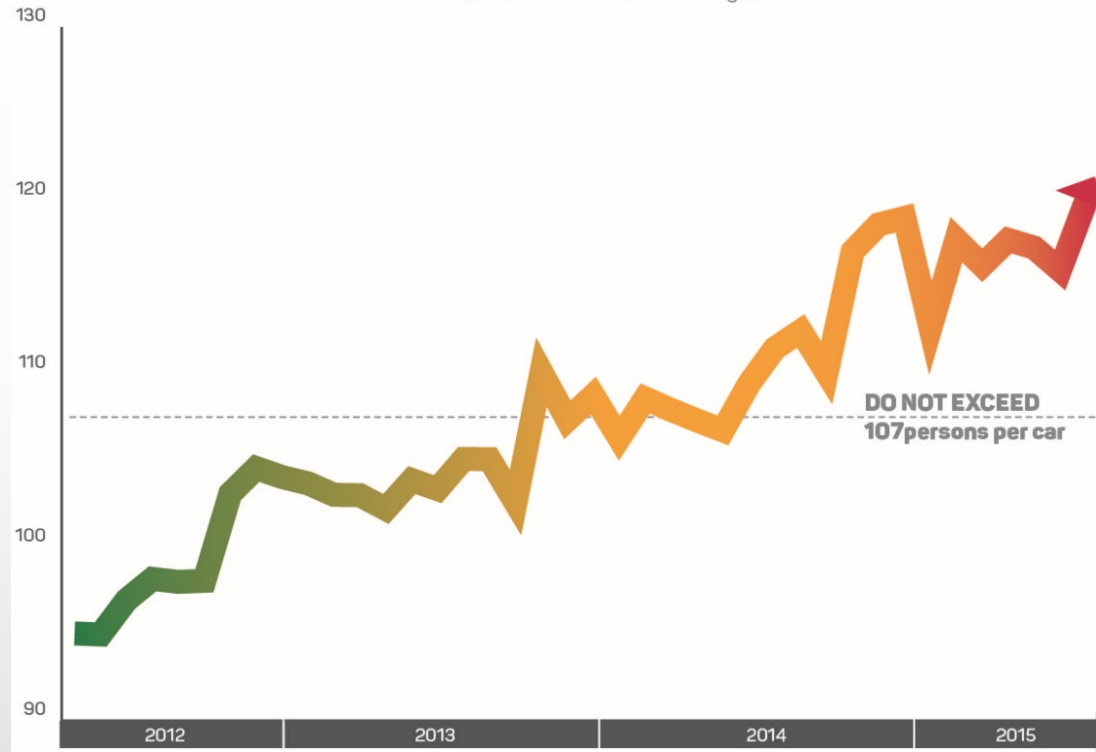
Study Area

Corridors



Transbay Constraints: BART Train Capacity

Transbay Peak Hour Passengers per Car
(AM/PM Peak Hour Average)



COMFORTABLE (100 people per car)



CROWDED (115 people per car)

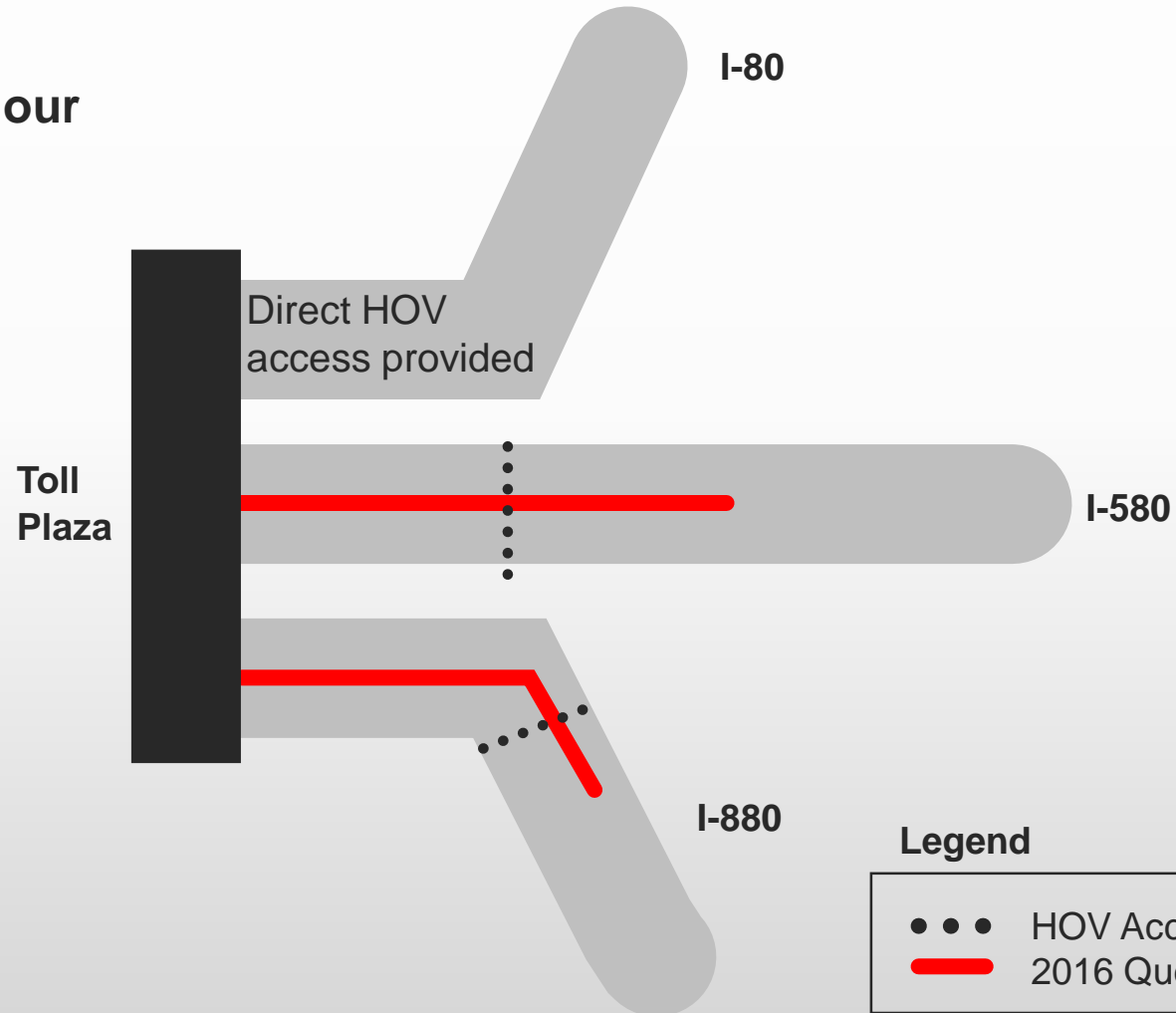


OVERCROWDED (130 people per car)



Transbay Constraints: Congestion

2030 Peak Hour
7am – 8am



Transbay: Prerequisite Projects

Tier 1: Fully funded Tier 2: Not Fully Funded

Tier	Timeframe	Sponsor	Project
1	Short Term	AC Transit	AC Transit Richmond Facility Reopening
1	Short Term	BART	BART Additional Cars – Fleet Transition
1	Short Term	WETA	WETA Maintenance Facilities Alameda, Vallejo
1	Short Term	WETA	WETA Richmond-SF Ferry Service
1	Short Term	WETA	WETA SF Ferry Terminal Expansion
1	Short Term	WETA	WETA SF Fleet Replacement & Expansion
1	Short Term	Caltrans	I-80 Integrated Corridor Mobility
1	Short Term	TJPA	Transbay Terminal (Phase 1)
1	Short Term	TJPA	AC Transit Bus Ramp to Transbay terminal
1	Short Term	MTC	Bay Bridge Forward
2	Short Term	AC Transit	AC Transit Fleet Expansion (40 buses)
2	Short Term	AC Transit	AC Transit West County Bus Facility (new)
2	Short Term	BART	BART Hayward Maintenance Complex, Phase 1
2	Medium Term	BART	BART Additional Railcars – Core Capacity
2	Medium Term	BART	BART Metro Program
2	Medium Term	BART	BART Traction Power System
2	Medium Term	BART	BART Train Control System
2	Medium Term	BART	BART Hayward Maintenance Complex, Phase 2

Transbay Corridor Capacity/Demand (including Prerequisite Projects)

Transbay Corridor

Existing Conditions

Westbound to SF Core
AM Peak Hour

10,000 People in Cars

29,000 Transit Trips

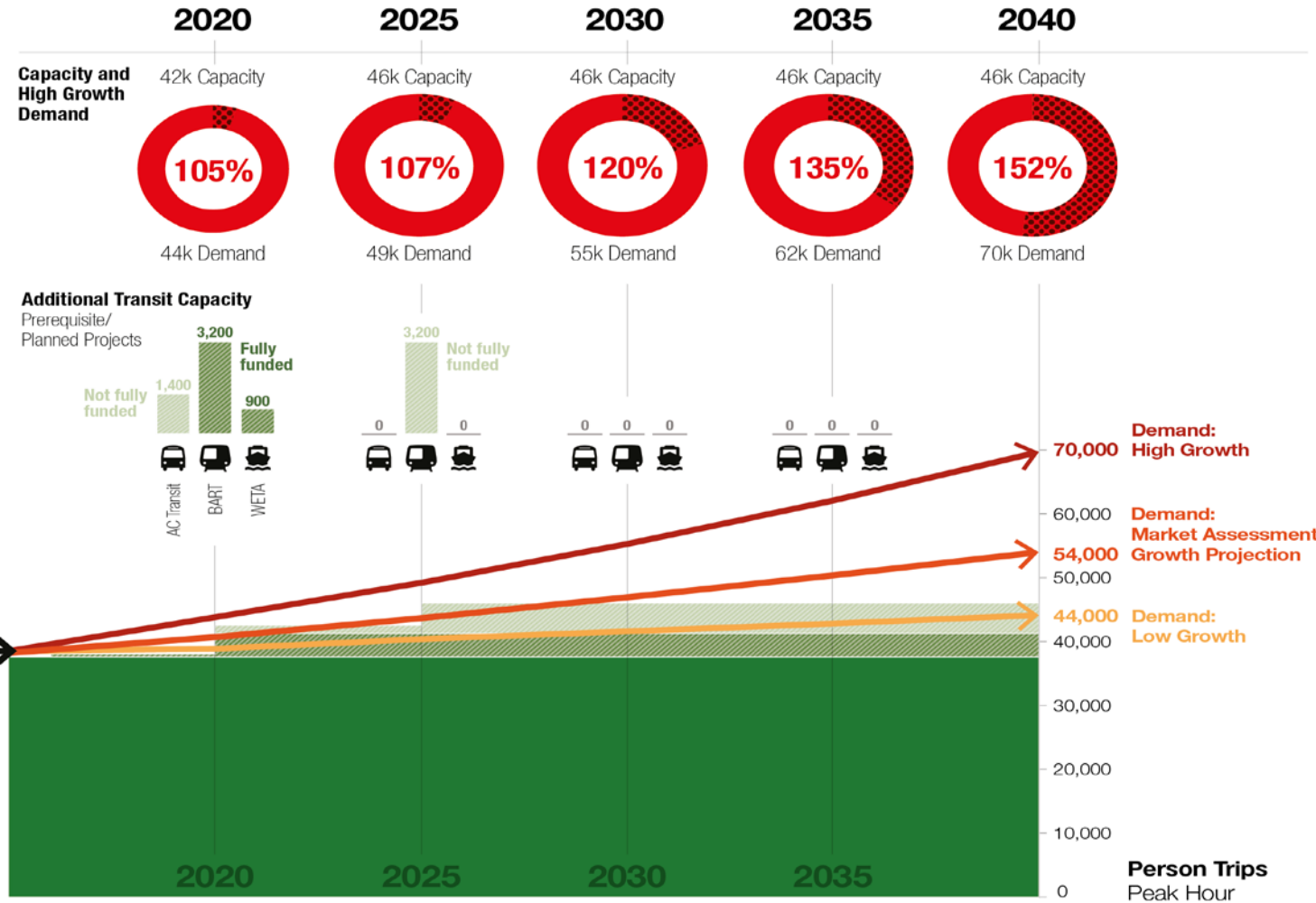
2,700 AC Transit & WestCAT bus
25,000 BART
1,300 WETA ferry

2015

37k Capacity

105%

39k Demand



Recommended Short/Mid Term Package

- Improvements include:
 - Higher auto tolls
 - Bus and Ferry service increases
 - 110 buses
 - 11 vessels
 - Infrastructure improvements
 - Direct ROW for buses to Bay Bridge (Mandela Tunnel, new flyover or similar)
 - Surface street transit priority lanes and park and ride lots in Oakland and elsewhere
 - New bus yard for AC Transit
 - New ferry terminals in Berkeley, Alameda and Mission Bay
- Optional supportive elements:
 - Higher toll in lieu of Mandela tunnel or similar improvement
 - Fare adjustments for demand management
 - Contraflow or Bus-Only/HOV Lane for additional reliability improvements


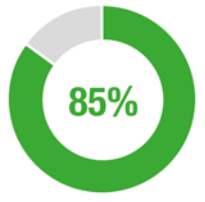

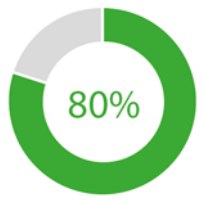

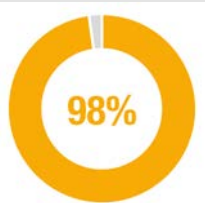
Recommended Package: Capital Costs

Unfunded Prerequisite Projects + Short and Medium Term Improvements		Unfunded Portion
AC Transit		
1	Fleet – 110 Buses	\$90M
2	West County Bus Facility	\$100M
3	Infrastructure - Park and Ride, Bus Transitway, Surface Street Transit Priority, Bus Tunnel	\$240M
4	Ferry feeder service	\$15M
Subtotal AC Transit		\$445M
WETA		
1	Fleet – 11 Boats	\$206M
2	Terminals - Alameda Main Street, Harbor Bay, Oakland (all enhanced) - Berkeley, Downtown North Basin, Mission Bay, Seaplane Lagoon (new)	\$168M
Subtotal WETA		\$374M






Recommended Package: Capital Costs

Unfunded Prerequisite Projects + Short and Medium Term Improvements		Unfunded Portion
BART		
1	Transbay Core Capacity Project (fleet, train control, traction power, HMC Ph2)	\$3.5B
2	BART Metro	\$362M
3	Other supportive projects - Montgomery & Embarcadero platform screen doors, vertical circulation - Glen Park pocket track	\$180M
Subtotal BART		\$4B
Subtotal AC Transit		\$445M
Subtotal WETA		\$324M
Subtotal BART		\$4B
Total All Projects		\$4.8B

Recommended Package: Total Fleet Needs and Capacity

Mode	Planning Capacity Goal	Total Fleet Needs
 Bus	 85%	110 Buses
 Ferry	 80%	11 vessels
 BART	 98%	306 railcars

Recommended Package: Changes in Mode Split

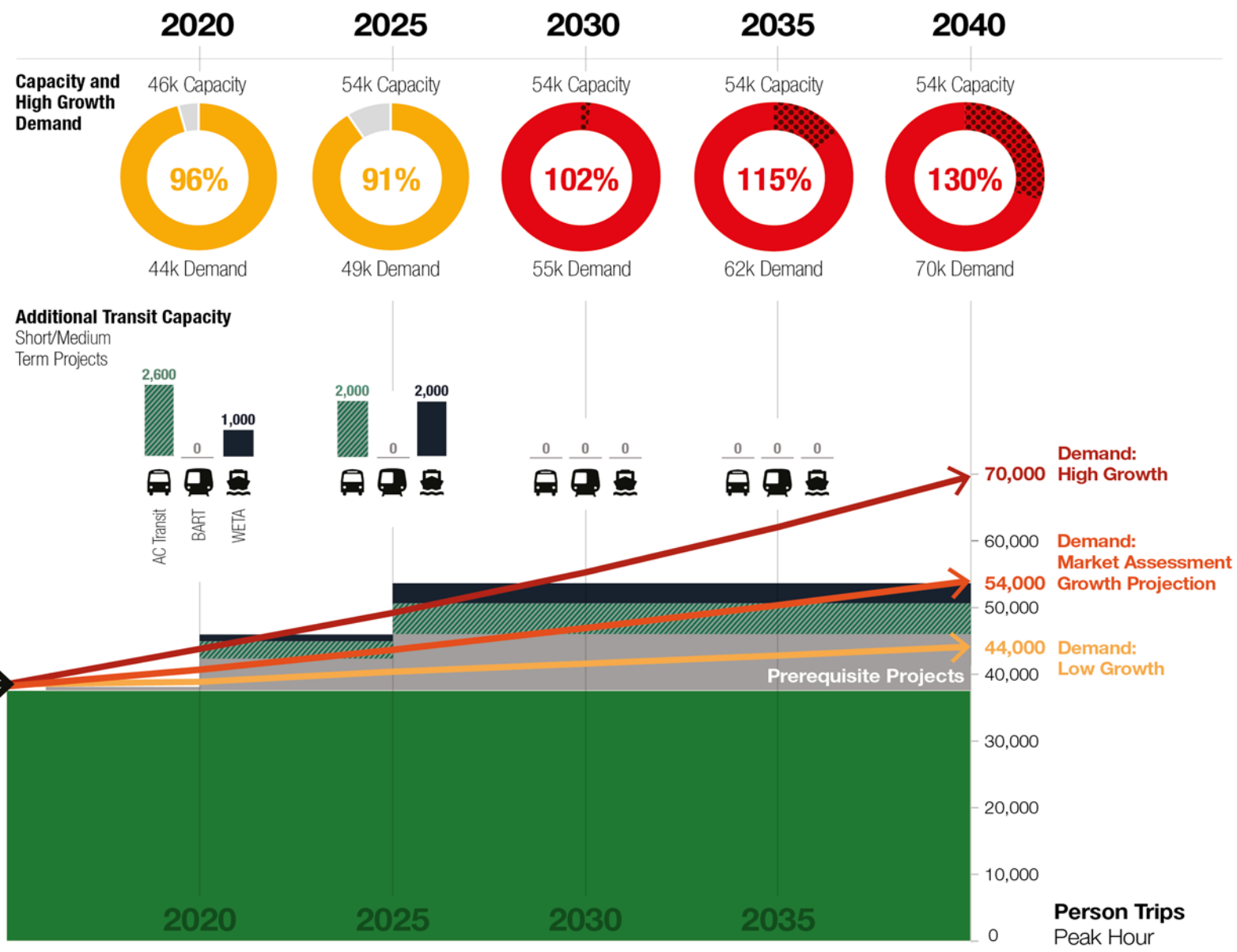
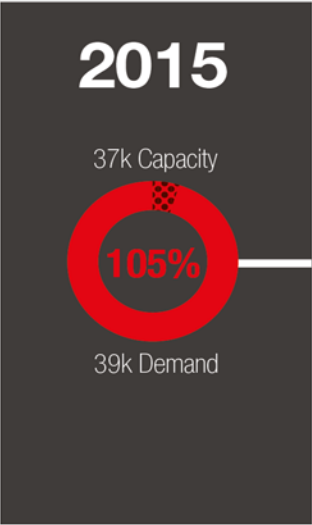
Mode	2030 Peak Hour Modeled Trips	2030 Modeled Package Trips	% Change
 Non HOV	10,900	10,200	-6%
 HOV	10,600	11,300	+7%
 BUS	3,800	7,700	+100%
 BART	31,700	30,600	-3%
 Ferry	1,900	4,200	+123%
Total Trips	58,900	64,000	9%

Transbay Capacity and Demand: Short and Mid-Term Improvements

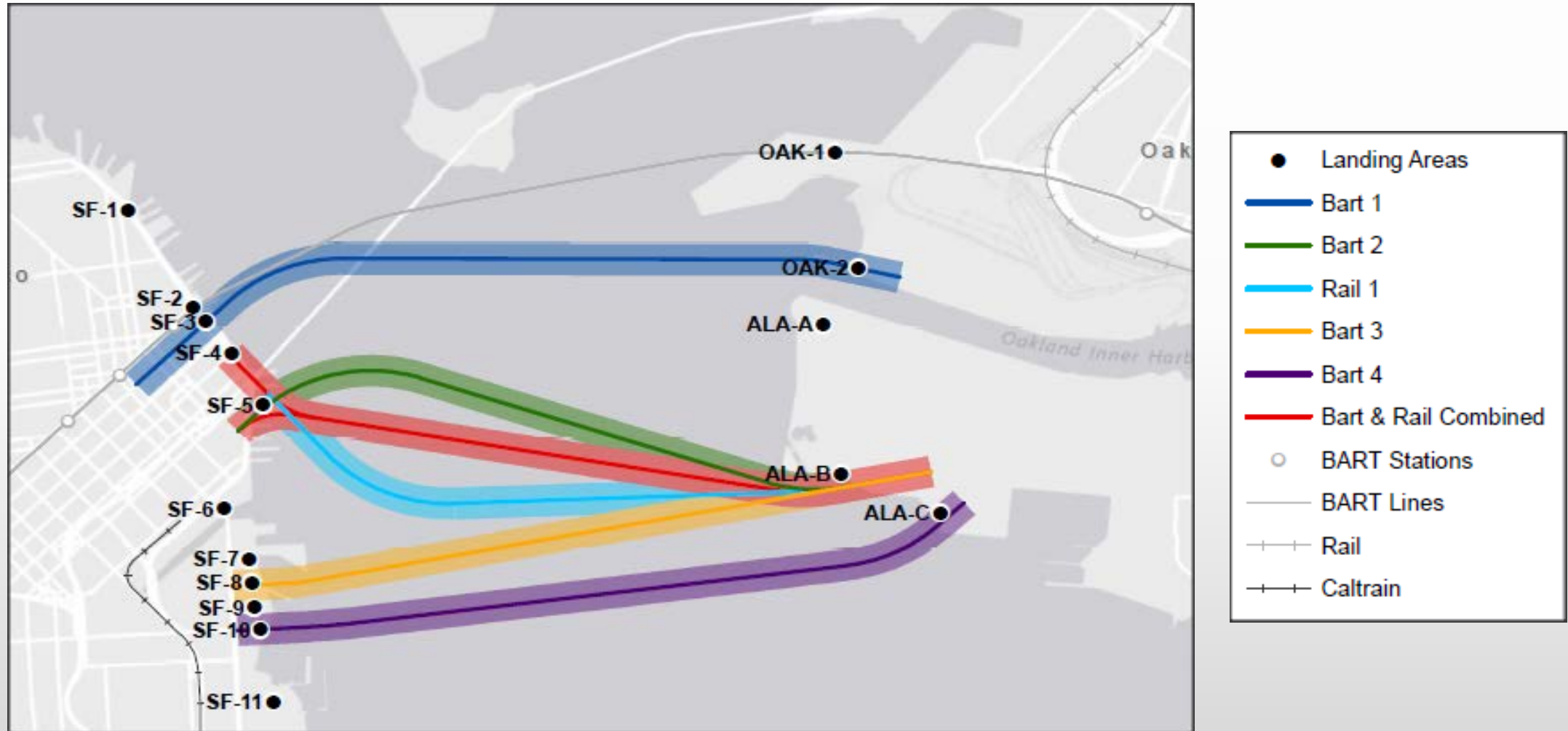
Transbay Corridor

Short and Medium Packages
Estimated transit capacity increases

- 10,000 People in Cars
- 29,000 Transit Trips
 - 2,700 AC Transit & WestCAT bus
 - 25,000 BART
 - 1,300 WETA ferry



Long-Term: Alignments Used for Comparison

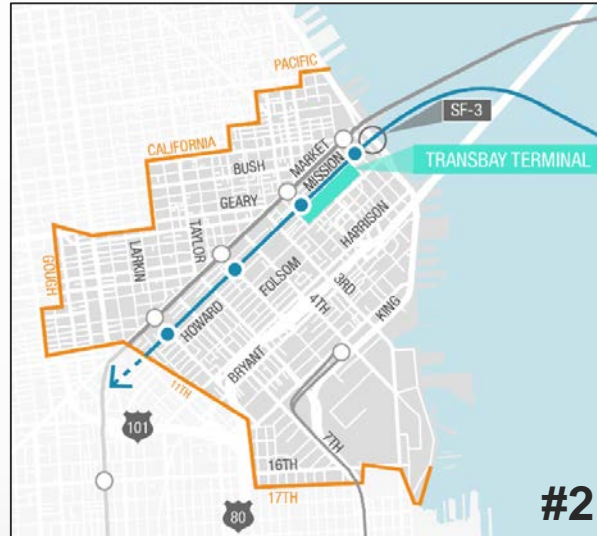


Long Term Options

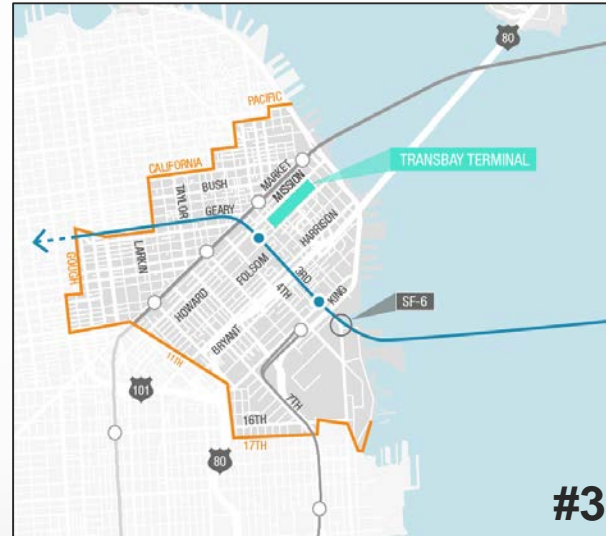
	Long Term Option	Capacity Estimate
1	More Bus and Ferry: Maximize Existing Assets - +125 buses - +6 ferries	+13,000
2	BART Independent Line (via Mission) -28 trains/hour	+30,000
3	BART Independent Line (3 rd St. Crossing) - 28 trains/hour	+30,000
4	BART Merged Line (SOMA/Mission Bay) - 12 to 24 trains/hour	+10,000 – 20,000
5	Greater Regional Rail Connection - 10 to 12 trains/hour	+12,000 – 18,000

Long Term Options – SF Alignments

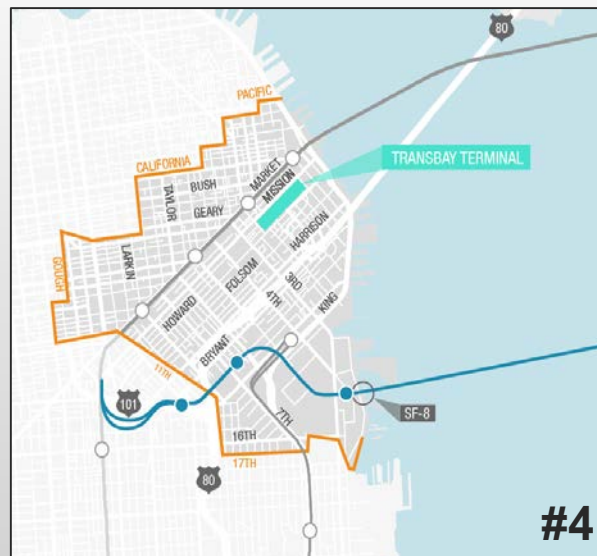
BART
Independent
Line – via
Mission St.



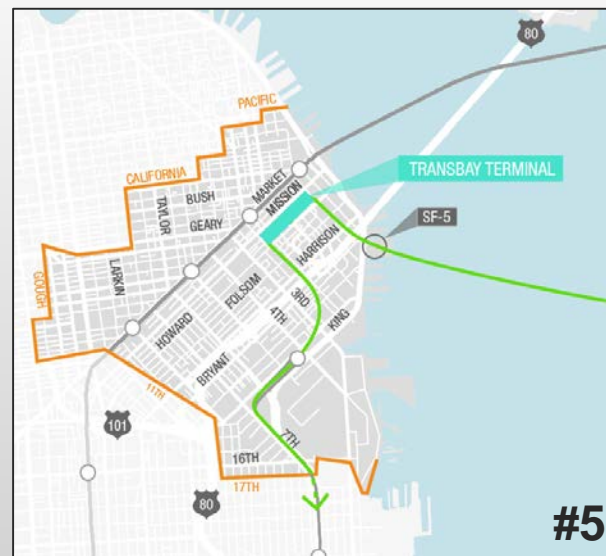
BART
Independent
Line – 3rd St.
Crossing



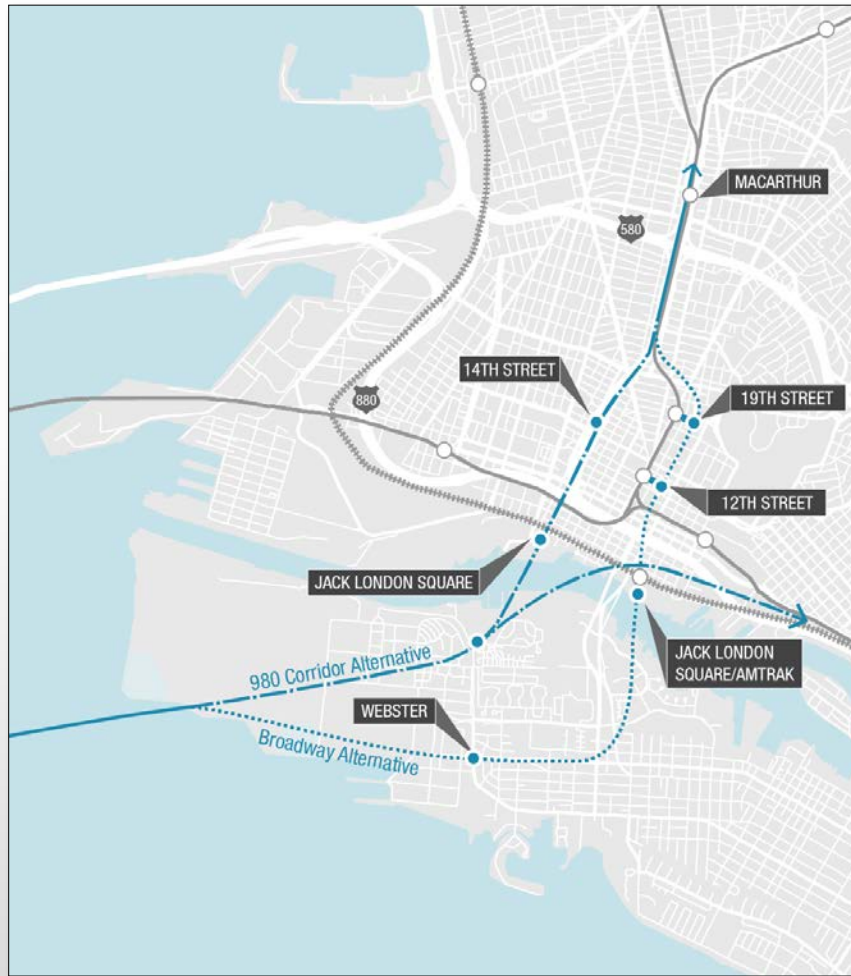
BART
Merged
Line – SOMA/
Mission Bay



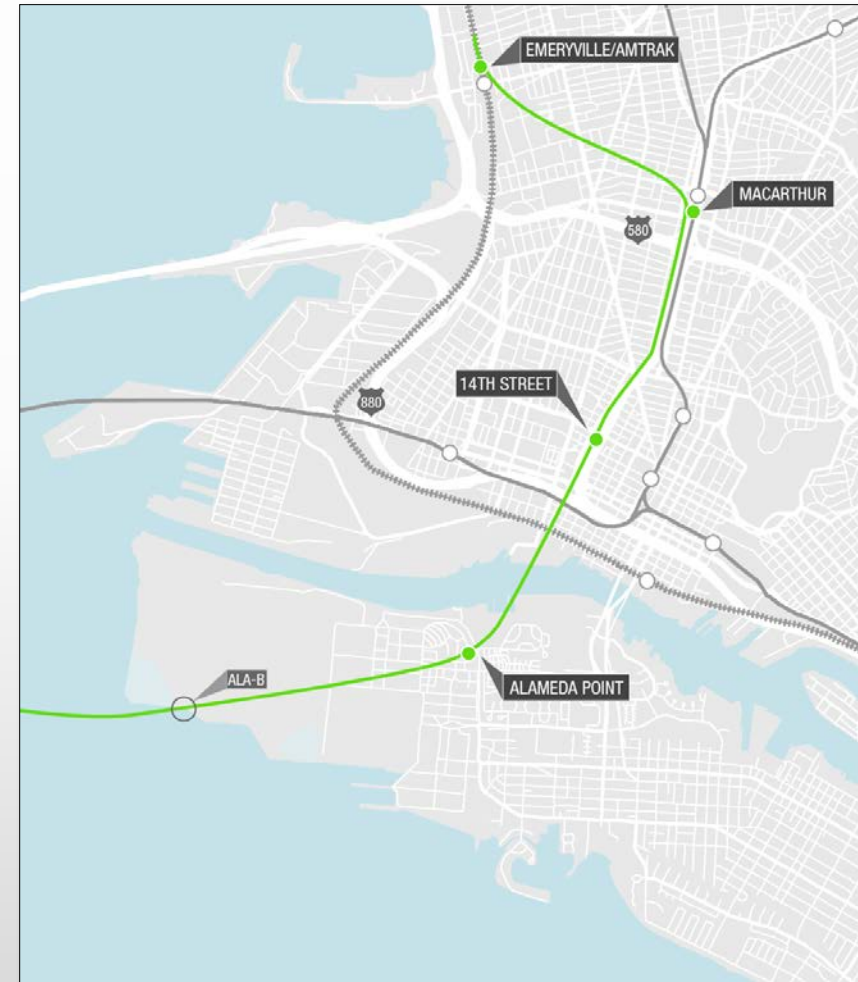
Greater
Regional
Rail
Connection



Long Term Options – East Bay Alignments



BART Alignments #2-4



Greater Regional Rail Connection

Transbay Capacity and Demand: BART + Conventional Rail

Transbay Corridor

Long Term Projects
Estimated transit capacity increases

10,000 People in Cars

29,000 Transit Trips

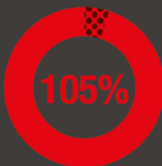
2,700 AC Transit & WestCAT bus

25,000 BART

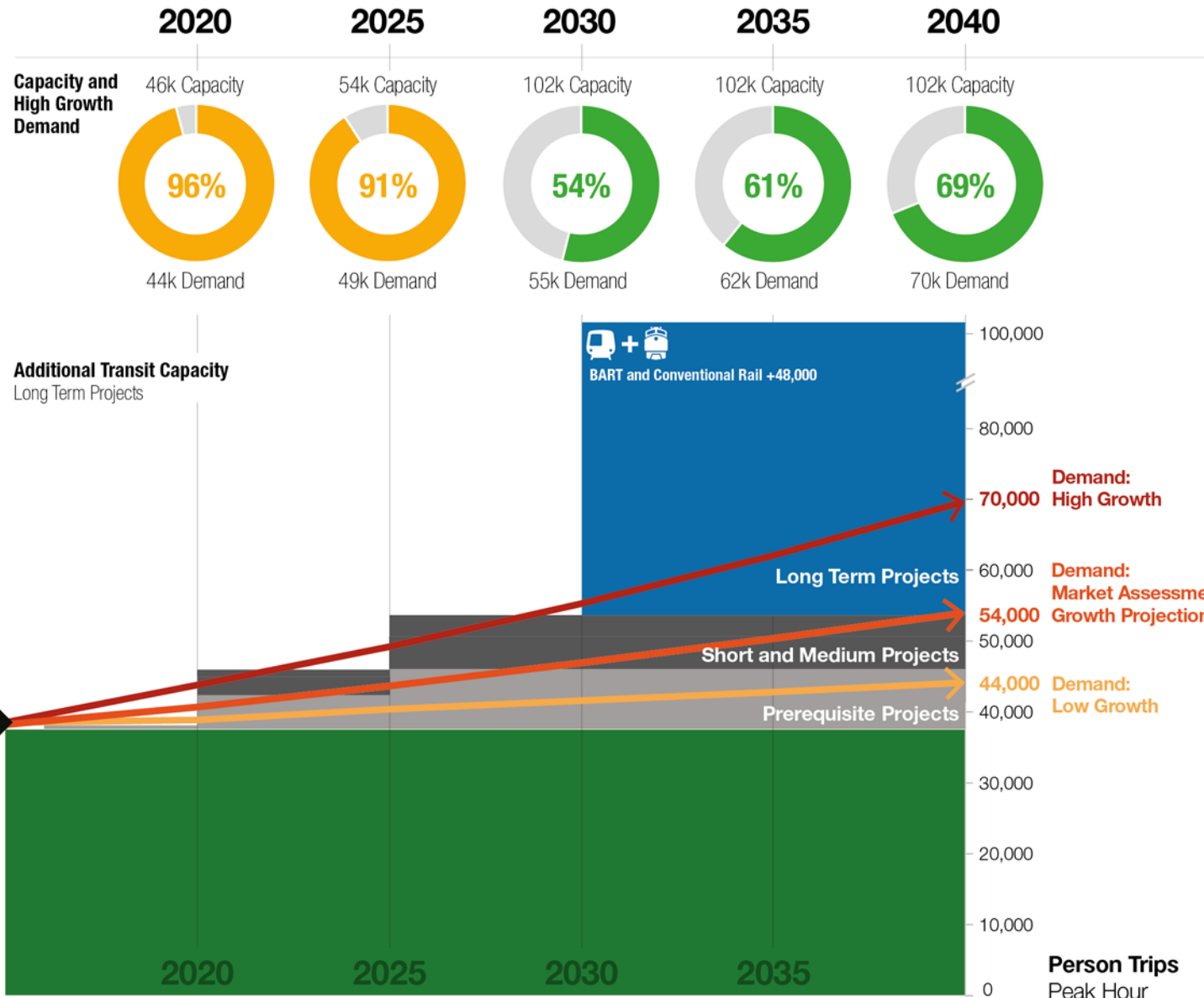
1,300 WETA ferry

2015

37k Capacity



39k Demand



Next Steps

- Final Report released today
- Second crossing continuation study
 - Includes BART and conventional rail option for analysis
 - Need to Identify study leaders
 - Identify program management role and who does it
 - BART will lead BART portion
 - Responsible entity to lead conventional rail portion needs to be identified/created
- Key scoping questions
 - Geographic scale: corridor, regional, mega-regional?
 - Institutional governance and other policy considerations
- A scoping effort is needed ASAP to develop a second crossing continuation study framework.