CORE CAPACITY TRANSIT STUDY

MEMORANDUM

To:	PMT
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Date:	April 13, 2016
Title:	Revised Transbay Corridor Problem Statement

1 Introduction

Since emerging from the 2008 recession, the San Francisco Bay Area has been a focal point in the rebounding national economy, experiencing surging growth in population and employment. This growth has translated to increasing transit ridership, especially trips to the San Francisco Core. In the Transbay corridor alone, demand for trips to San Francisco for the three main transit providers, AC Transit Transbay bus service, BART rail service, and WETA ferry service, has grown 42% in the AM peak hour between 2010 and 2015, an increase of 8,600 transit riders.

The current level of demand is placing significant strain on the transit network, in particular the systems that serve the San Francisco Core, with transit providers operating close to or above their (policy-stated) capacity levels. This limits their ability to be resilient in meeting customer needs, and creates a ripple effect throughout the entire system during incidents such as service delays and breakdowns.

The transit providers have been actively engaged in addressing these issues by focusing on planned improvements in the short and medium term that deliver more capacity. While some of the planned projects have full funding commitments, others have not identified funding or may be reliant on discretionary federal, state, or local sources that have not yet been committed to the projects. Securing the funding and delivering this first round of critical investments should be one of the region's highest priorities.

The planned short and medium term improvements will provide some relief but additional investments are needed to meet future growth in demand. The aim of the Core Capacity Transit Study (CCTS) is to identify what additional investments are needed to accommodate this future

growth. The study will also provide guidance on how future employment, residential growth, and policy choices can help to prioritize these investments.

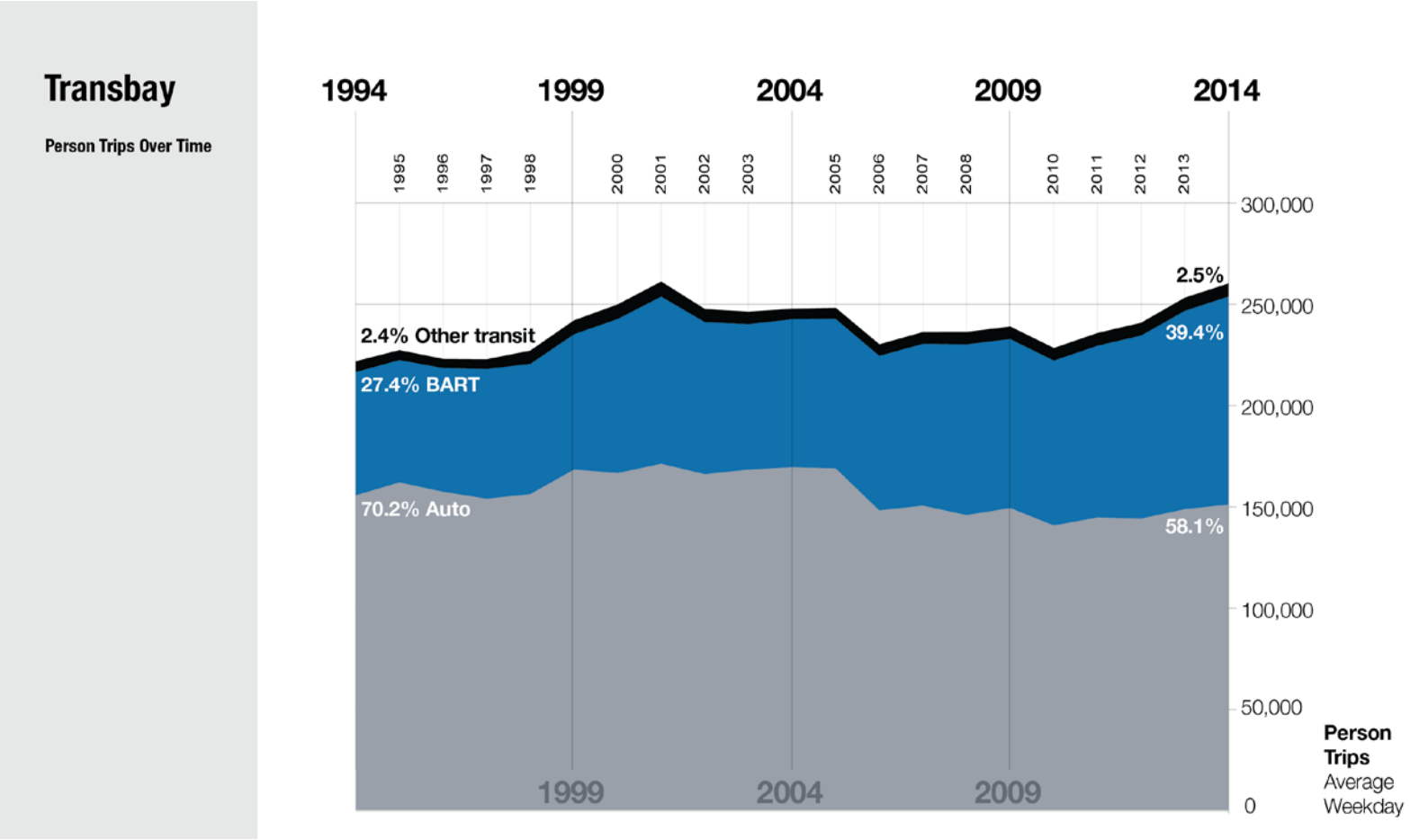
2 Present Conditions

Since 2010, the total number of morning peak-hour trips across the Transbay corridor has increased by more than 5% each year, or 8,950 trips. All of this increase has been in transit ridership with most of the increase on BART. BART provides 65% of total peak-hour Transbay trips and is operating at 110% over its capacity standard during peak hour.

The Bay Bridge continues to operate at capacity for vehicles in the peak hour, though there remains excess capacity (extra seats in both single, high-occupancy vehicles and buses on the bridge) in terms of the number of people that can travel the corridor.

Over the twenty year period 1994-2014, the number and share of total transit trips across the Transbay corridor has gradually increased while the number and share of automobile trips has decreased from 70% mode share and 155,000 daily trips to 58% mode share and 151,000 daily trips. Figure 1 shows the daily mode split of Transbay trips. Table 1 shows the 2015 peak hour occupancy levels of all modes for the Transbay corridor.

Figure 1: Share of Daily Transbay Trips by Automobile and Transit (Westbound Direction)[1][2]



[1] Auto is reflected as person trips, calculated by multiplying SOV occupancy rate against the daily vehicle trip totals. The occupancy rate is based on an average SOV rates over a ten year period (2002-2012).

[2] The average SOV occupancy rate is for the ten year period (2002-2012) is 1.15, using Caltrans Managed Lane reports from 2002-2012.

Table 1: Transbay Corridor 2015 Peak Hour Occupancy Levels by Mode

	2015 Morning Peak-Hour Westbound Travel (Person-trips)		
	Trips	**Capacity**	**Occupancy**
Total All Modes	**38,800**	**37,100**	**105%**
Auto	9,900	9,900*	100%
BART	25,000	22,700	110%
Bus	2,700	2,900	93%
Ferry	1,300	1,650	77%

*Assumes existing vehicle occupancy.

3 Forecasted Future Conditions

The most recent regional long range plan, Plan Bay Area, forecasted an estimate of 19% growth in demand for all modes for the Transbay Corridor between 2010 and 2040 in the AM peak hour, a forecast increase from 31,500 to 37,650 trips. However, 2015 current demand is 39,000 trips which already exceeds the 2040 projection.

3.1 Future Growth Projections

The CCTS developed a range of projections to capture the breadth of future growth in the AM peak hour for this corridor. The high growth scenario reflects both continued economic growth and continued imbalance between job and housing growth between sides of the Bay, which could accelerate need for Transbay capacity. The high growth scenario assumes that travel will, on average, grow by 2.35% per year, which is consistent with growth rates developed for Transportation 2035 – completed at a time when the regional economy was in a stronger position. The low growth scenario assumes that travel will, on average, grow at 0.6% per year, reflecting growth rates developed for Plan Bay Area in 2010 – a time when the region was only just emerging from a severe recession. Growth in this scenario suggests that the need for some major capacity increases could be delayed. .

Based on these rates the growth in person trips in the corridor is forecast to grow from a 2015 base of 39,000 trips to between 44,000 trips and 70,000 trips (a range between 1.9% and 2.4% total growth between 2015 and 2040).

Beyond these regional forecasts and past trends, the CCTS has also undertaken a market assessment of job growth in the Core between 2015 and 2040. The market assessment reviewed two scenarios for growth. Both scenarios projected 100,000 to 140,000 new jobs in the Core. These scenarios provide another reference to consider how travel demand may increase over time. Assuming that the share of employees using the Transbay corridor and the share of employees wishing to travel in the peak hour remains constant, these rates would translate directly into peak-hour travel demand. If this growth rate is used as an indicator of travel growth it would result in an increase in trips in the corridor of 15,000 trips, or 1.35% growth between 2015 and 2040, which is near the mid-point of the travel demand range referred to above.

Under these growth scenarios, transit would need to grow by 2.95% annually between 2015 and 2040 to meet the high demand growth projection, 1.6% to meet the market assessment growth projection, and 0.64% to meet the low growth projection.

3.2 Proposed transit improvements and investments

Transit providers are actively planning for improvements in capacity and operations. Some projects have achieved full funding commitments and are in stages of final design, construction and implementation in the short term (Tier 1 projects). Others projects have varying levels of funding commitments but are not yet fully funded (Tier 2 projects). **An underlying assumption of the CCTS is that as an outcome of this project, the region will need to commit that all the Tier I and Tier 2 projects will need to be funded and implemented as a first step in addressing the capacity needs in the corridor.** Not all Tier I and 2 projects add capacity; some are complementary projects needed to support the delivery of capacity increasing projects, so are included within the list. Table 4 details the specific projects within the Tier 1 and 2 classification.

Table 4: Prerequisite Tier 1 and 2 Transbay Projects

Tier	Timeframe	Sponsor	Project	Project Details
1	Short Term[3]	AC Transit	AC Transit Bus Ramp to Transbay terminal	Direct, dedicated bus-only ramp from Bay Bridge into Transbay Transit Center
1	Short Term	AC Transit	AC Transit Richmond Facility Reopening	Reopening of the Richmond bus facility to support current operations
1	Short Term	BART	BART Additional Cars – Fleet Transition	Additional BART cars to support Fleet Transition Plan. Shown as capacity increase on Figure 2 and 3.
1	Short Term	WETA	WETA Maintenance. Facilities Alameda, Vallejo	Construct maintenance facilities in Vallejo & Alameda
1	Short Term	WETA	WETA Richmond-SF Ferry Service	Implements ferry service from Richmond to San Francisco as identified in the Water Transit Authority's Implementation and Operations Plan. Shown as capacity increase on Figure 2 and 3.
1	Short Term	WETA	WETA SF Ferry Terminal Expansion	Expand Downtown San Francisco terminal by two floats, increase landside queuing and staging area.
1	Short Term	WETA	WETA Fleet Replacement and Expansion	Replacement and new vessels to support Richmond service and retire aging vessels.
1	Short Term	Caltrans	I-80 Integrated Corridor Mobility	ITS -- travel time reliability, congestion reduction.

[3] Short term is defined in the CCTS as the period from 2015-2020

Tier	Timeframe	Sponsor	Project	Project Details
1	Short Term	TJPA	Transbay Terminal (Phase 1)	At existing site (with Caltrain connection) or replacement bus terminal at Howard, Main, Beale Streets.
2	Short Term	AC Transit	AC Transit Fleet Expansion	Expands AC Transit's fleet by 40 high capacity buses. Shown as capacity increase on Figure 2 and 3.
2	Short Term	AC Transit	AC Transit West County Bus Facility	Relocation and expansion of AC Transit's Division 3 bus facility and redevelopment of the current site as a transit oriented development
2	Short Term	BART	BART Additional Railcars – Core Capacity	Core Capacity expansion of BART's railcar fleet, including: • Expansion fleet for train length (75 cars) approved as part of Core Capacity Challenge Grant Program, and included in BART's FTA Core Capacity Project • Expansion fleet (231 cars) for more frequent headways as part of BART's FTA Core Capacity Project
2	Short Term	BART	BART Hayward Maintenance Complex, Phase 1	Includes acquisition and use of four warehouses outside of the current west boundary of the yard. Enlarged vehicle Inspection area and additional connecting track, track crossovers, and switches.
2	Medium[4] Term	BART	BART Metro Program	Increased service: 12-minute peak period headways, express trains between Daly City and SFO Infrastructure: Glen Park turnback, Richmond crossover, Bayfair connector, Daly City tracking
2	Medium Term	BART	BART Traction Power System	Upgrade traction power system to support 30 TPH capability through Transbay Tube. Included in BART's FTA Core Capacity Project. Shown as capacity increase on Figure 2 and 3.
2	Medium Term	BART	BART Train Control System	New train control system to provide 30 TPH capability through Transbay Tube. Included in BART's FTA Core Capacity Project. Shown as capacity increase on Figure 2 and 3.
2	Medium Term	BART	Hayward Maintenance Complex Phase 2	Construct new eastside train storage facilities for the additional railcars purchased for capacity expansion. Included in BART's FTA Core Capacity Project.

[4] Medium term is defined in the CCTS as the period from 2020-2030

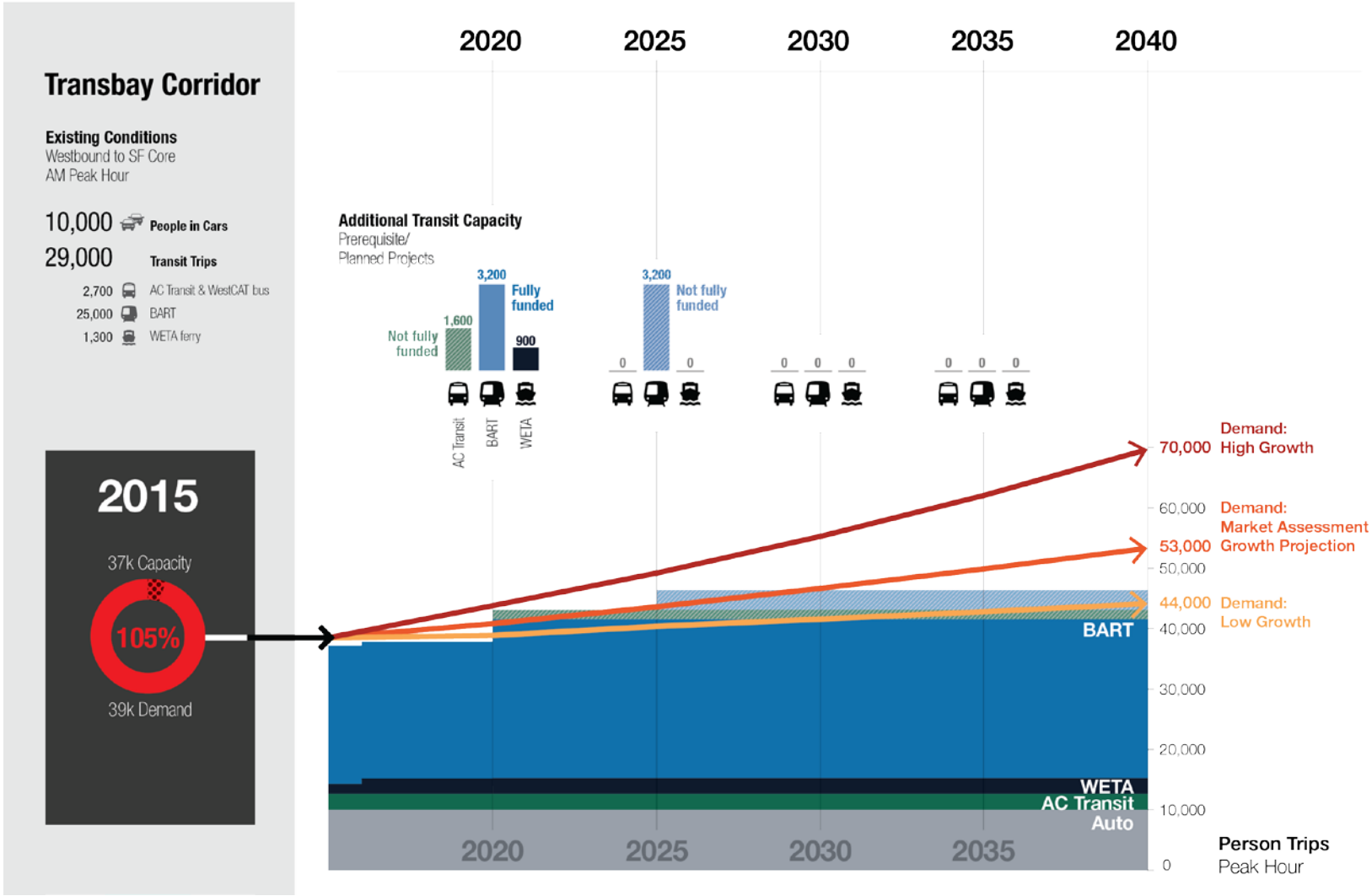
Figure 2 summarizes the distribution by transit provider of the Tier 1 and Tier 2 capacity projects as they are implemented over time.

3.3 Summary Demand and Capacity Conditions

Figure 2 summarizes the current Transbay capacity and shows the increases in capacity that will be achieved over time by adding the Tier 1 and Tier 2 projects. It also shows the increasing demand to 2040 as a range between high and low. While the analysis demonstrates an uncertain future, given the wide range in potential future growth, it suggests the following key points:

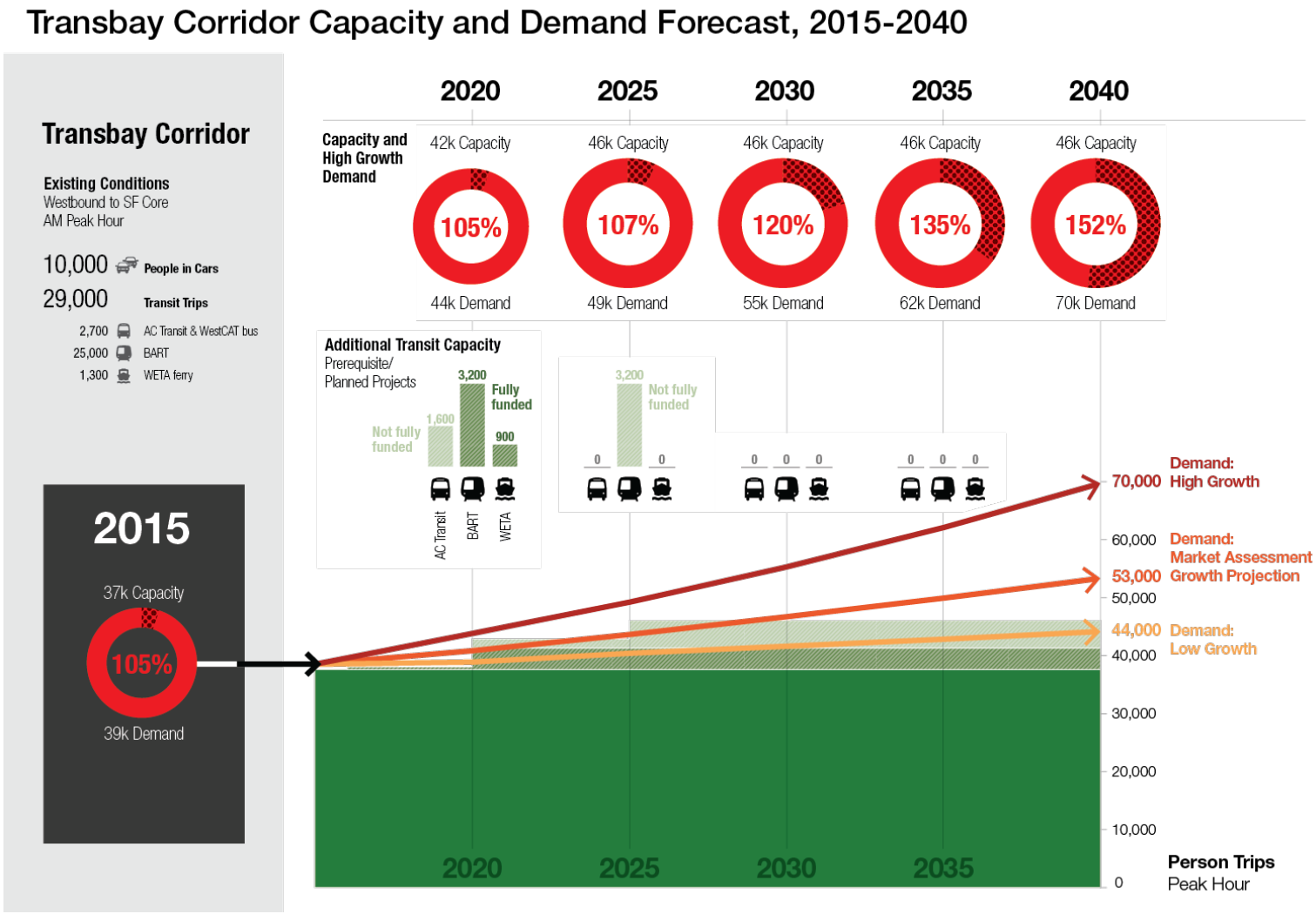
- The need to fund and implement the Tier 1 and Tier 2 prerequisite projects under all growth scenarios
- An increasing likelihood that growth in demand will outpace capacity
- The need for additional short, medium and long term investments in projects, programs and policies to address increasingly significant shortfalls in capacity
- Some modes may continue to carry a greater share of the Transbay demand, both today and in the future
- There are no planned prerequisite projects after 2025
- Without significant changes in mode share or vehicle occupancy, nearly all future growth would need to be met by transit. Under this scenario, transit would need to grow by 2.95% annually between 2015 and 2040 in order to meet the high demand growth projection shown in Figure 3

Figure 2: Tier 1 and Tier 2 Capacity Project distribution by transit provider[5]



[5] The demand projections are calculated by compounding the low (0.6%) and high (2.35%) growth projections to 2040. This is depicted as a slightly curved line.

Figure 3: Demand and Capacity Conditions for the Transbay Corridor[6]



[6] The demand projections are calculated by compounding the low (0.6%) and high (2.35%) growth projections to 2040. This is depicted as a slightly curved line.

4 Conclusion

Over the past five years, the Transbay Corridor has seen significant growth, placing unprecedented demand on the transit network. In that time, trips on the three main transit providers, AC Transit, BART, and WETA, have grown 42%, or about 8,600 new peak-hour transit riders. In 2015, travel in the corridor's peak hour reached 105% of its intended capacity.

Transit operators have a number of projects in development that will help to address capacity shortfalls over the next 5-10 years, and it is critical these "prerequisite" projects be supported and advanced. Effective Bay Bridge management is also key to managing capacity, since without significant changes in bridge mode share or vehicle occupancy, nearly all future growth will need to be met by transit.

Today, passengers are experiencing crowding, diminished reliability, and limited travel flexibility in the corridor. The transportation system struggles to resiliently withstand service disruptions, both man-made and natural. Even with the implementation of the prerequisite projects, demand is significantly likely to outpace capacity in the corridor without additional short, medium, and long term transit investments. To maintain corridor transportation capacity enough to meet demands in the future, the region must begin planning a coordinated path forward today.

This study will identify additional cost-effective transit investments and transportation policies that can address anticipated future growth beyond the capacity increases of the prerequisite Tier 1 and Tier 2 projects. The CCTS will also consider factors such as project timing and how transportation investment can support regional land use goals. The CCTS will help focus the regional discussion of these issues, by advancing concepts, informing policies, and analyzing tradeoffs between different priorities.