

RAIL ALIGNMENT AND BENEFITS (RAB) STUDY

PREVIOUSLY KNOWN AS RAILYARD
ALTERNATIVES & I-280 BOULEVARD STUDY



San Francisco
Planning

May 29, 2018

CONNECTING CALIFORNIA

4,300 LANE MILES + 115 AIRPORT GATES WOULD BE NEEDED
to create equivalent capacity of high speed rail

545 MILLION TRIPS BETWEEN REGIONS
In 2040. That is 50% more than 2010

California will grow
260,000 NEW RESIDENTS EVERY YEAR

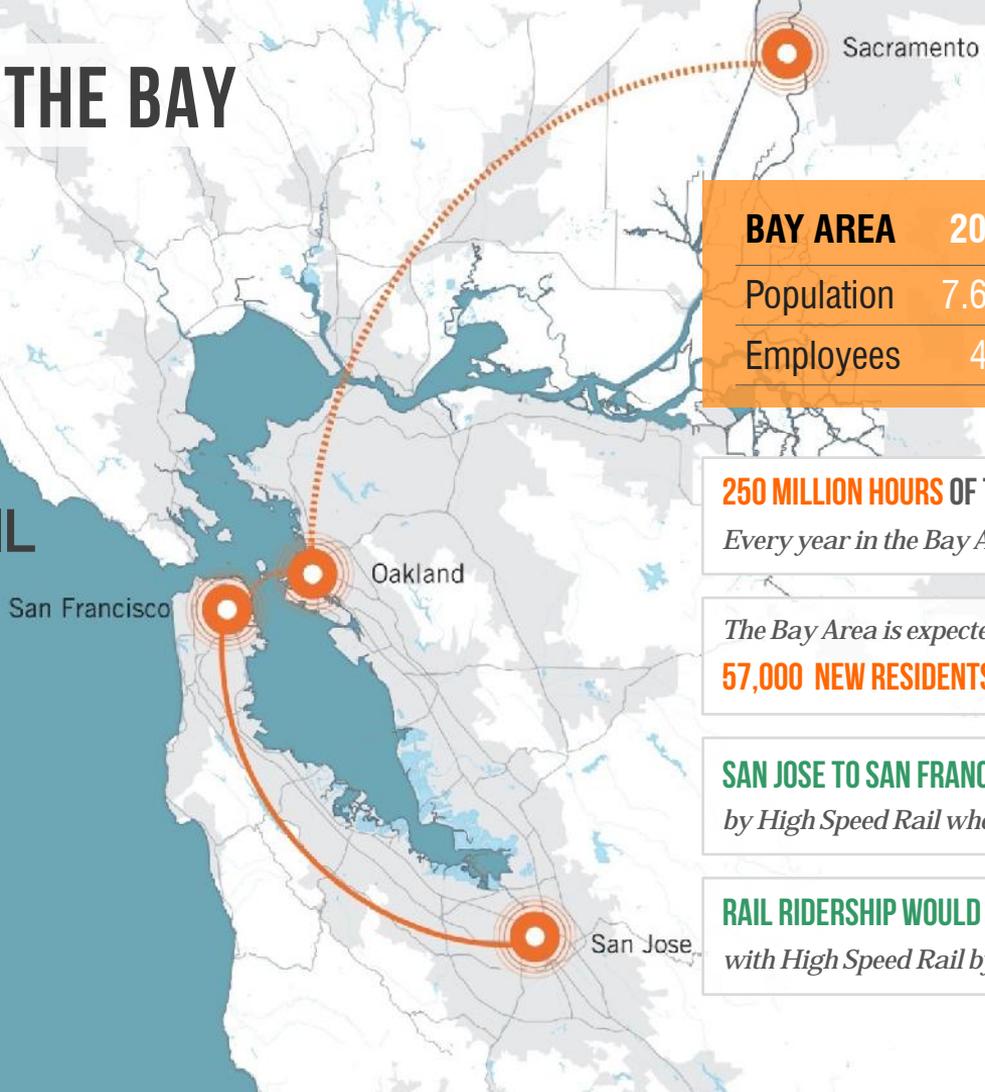


CALIFORNIA	2015	2065	GROWTH
Population	39 M	52 M	+ 33%
Employees	16 m	28 m	+ 77%

Option:
MAXIMIZE RAIL
OR
EXPAND AIRPORTS/HWYS

CONNECTING THE BAY

Option:
**MAXIMIZE RAIL
OR
EXPAND
I-80
I-280
US-101**



BAY AREA	2015	2065	GROWTH
Population	7.6 M	10.7 M	+ 41%
Employees	4 M	5.8 M	+ 44%

250 MILLION HOURS OF TRAFFIC DELAY

Every year in the Bay Area

The Bay Area is expected to grow by

57,000 NEW RESIDENTS EVERY YEAR

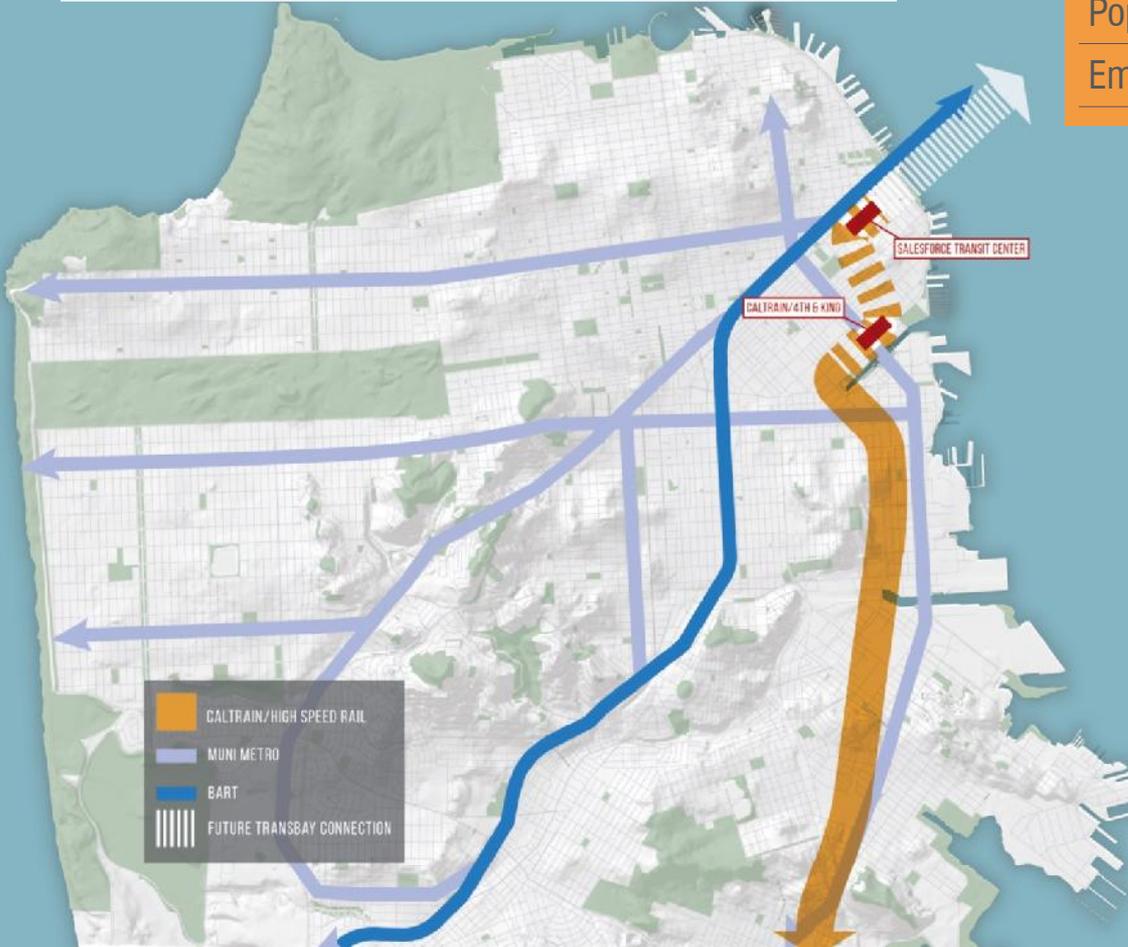
SAN JOSE TO SAN FRANCISCO WOULD TAKE 30 MINUTES

by High Speed Rail when in operation

RAIL RIDERSHIP WOULD INCREASE BY 1200 %

with High Speed Rail by 2040

CONNECTING SAN FRANCISCO



SF	2015	2065	GROWTH
Population	860,000	1,430,000	+ 66%
Employees	700,000	995,000	+ 44%

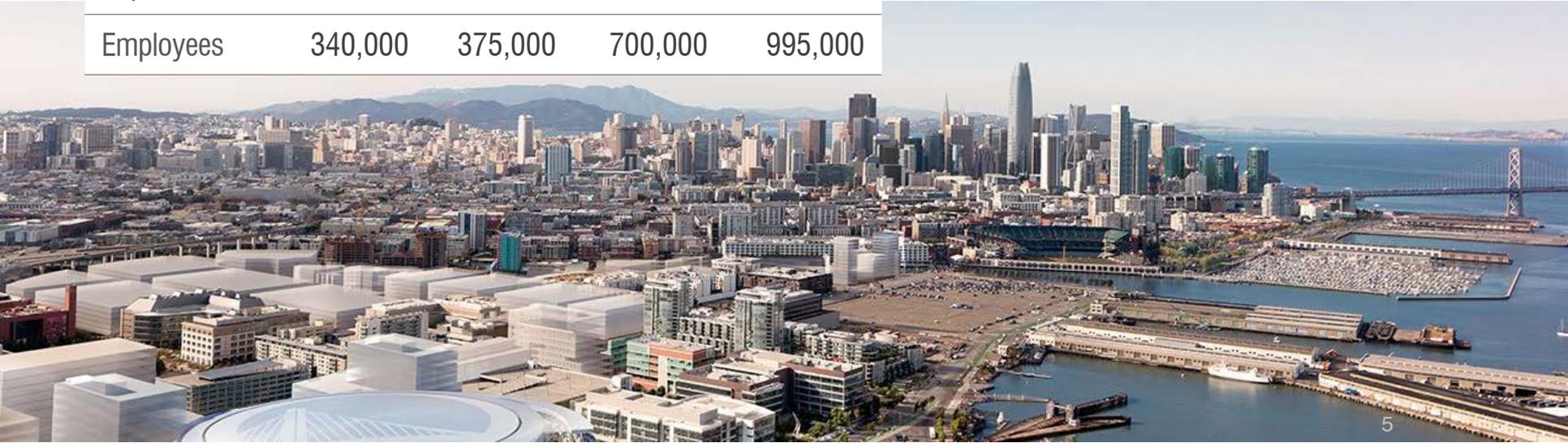
MUNI METRO DEMAND IS **124% CAPACITY**
during morning commute (2015)

San Francisco is expected to grow by
12,000 NEW RESIDENTS EVERY YEAR

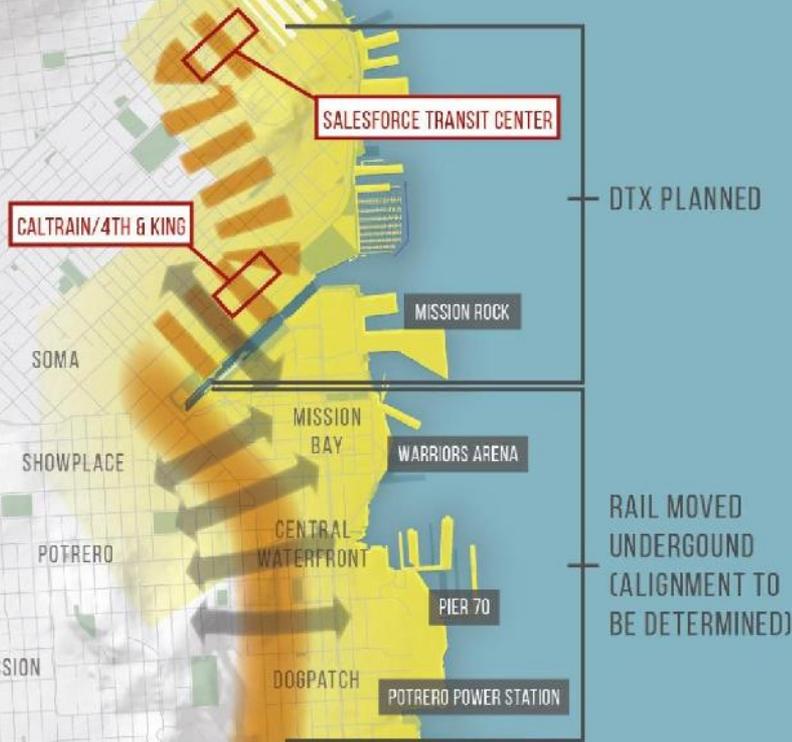
Option:
MAXIMIZE RAIL
OR
INCREASE
DEMAND ON
SF STREETS



SAN FRANCISCO	1950	1970	2015	2065
Population	700,000	715,000	860,000	1,470,000
Employees	340,000	375,000	700,000	995,000



CONNECTING NEIGHBORHOODS



FIDI, Mission Bay, SOMA, So. Bayfront	2015	2065	GROWTH
Population	87,000	257,000	194%
Employees	304,000	554,000	82%

20,000 NEW HOUSEHOLDS IN SOUTHERN BAYFRONT
are planned, from Mission Creek to Executive Park

35,000 NEW JOBS + 520 ACRES OF OPEN SPACE
are also planned in the Southern Bayfront

6 EAST-WEST ROADS COULD BE RECONNECTED
across Caltrain tracks

Option:
**UNDERGROUND RAIL
 OR
 NEIGHBORHOOD
 ISOLATION**

CONNECTING NEIGHBORHOODS



Three rail alignments under consideration:

FUTURE WITH SURFACE RAIL: DTX + TRENCHED STREETS

PENNSYLVANIA AVENUE: DTX + EXTENDED TUNNEL

MISSION BAY: MODIFIED DTX + 3RD STREET TUNNEL

Further engineering work required

UP TO 10 TRAINS PER HOUR PER DIRECTION

110,000 + CALTRAIN RIDERS PER DAY

2040 ridership projection

WHY DO WE NEED THIS STUDY?

- To coordinate state, regional and local infrastructure for generations of growth
- To connect neighborhoods while supporting Caltrain and High-Speed Rail operations
- Current plans require 16th St to be closed 20+ minutes every hour (during peak)



WHY NOW? MAJOR PLANNED NEW INFRASTRUCTURE

CALTRAIN ELECTRIFICATION



HIGH SPEED RAIL (HSR)

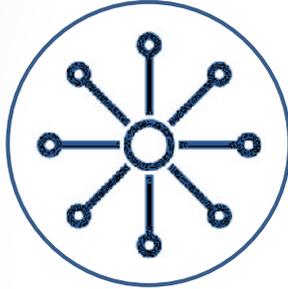


SALESFORCE TRANSIT CENTER



TRADE-OFFS TO CONSIDER

CONNECTIVITY



OPERATIONS, CAPACITY,
AND SAFETY OF ALL MODES



ADHERENCE TO EXISTING
PLANS/POLICIES



CONSTRUCTION SCHEDULES



POTENTIAL DEVELOPMENT
OPPORTUNITIES



COSTS



RAB STUDY COMPONENTS

Each component:

- Is independent of others
- Will affect San Francisco for 100+ years

1 Rail Alignment to Salesforce Transit Center

2 Railyard Reconfiguration/Relocation

3 Urban Form and Land Use Considerations

4 Transit Center (SFTC) Extension/Loop

5 Boulevard I-280

1 RAIL ALIGNMENTS TO SALESFORCE TRANSIT CENTER



OPTION 1:
FUTURE WITH SURFACE RAIL
 DTX + TRENCHED STREETS

OPTION 2:
PENNSYLVANIA AVE ALIGNMENT
 DTX + EXTENDED TUNNEL

OPTION 3:
MISSION BAY ALIGNMENT
 MODIFIED DTX + 3RD ST. TUNNEL

2

RAILYARD RECONFIGURATIONS / RELOCATION

What if Caltrain SEPARATED operations from staging and storage/maintenance?



3 URBAN FORM AND LAND USE CONSIDERATIONS



Restoration of street grid

Improved bike/ped connections

Eliminate rail hazards & noise

Housing

Open Space

Office/Retail

4th St

5th St

6th St

King St

Townsend St

4

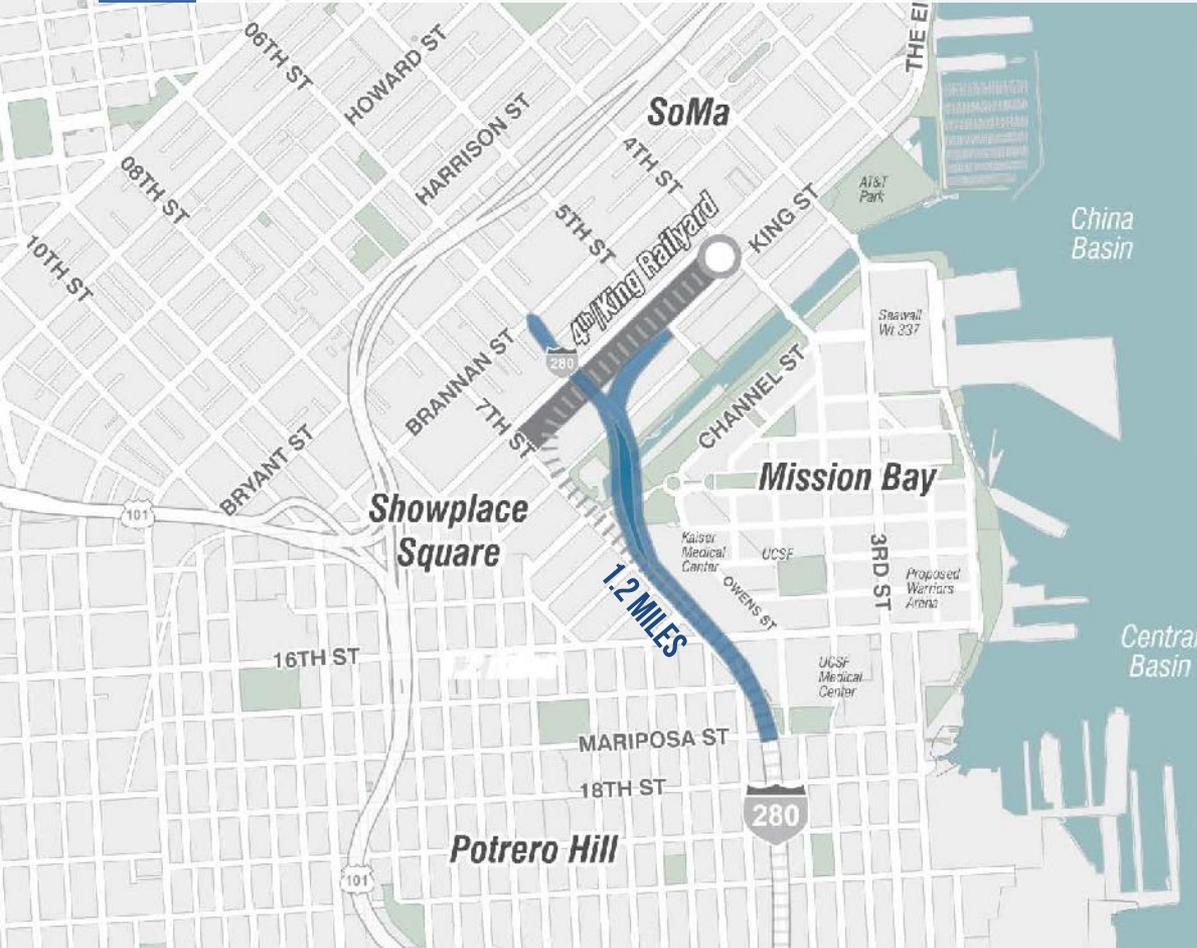
TRANSIT CENTER (SFTC) EXTENSION/LOOP



An extension or loop is not needed now but will be when more trains travel the corridor

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BOULEVARD I-280: DOES NOT IMPACT RAIL ALIGNMENTS



- Removing I-280 does not create new opportunities for rail
- No physical relationship to other components
- Removing I-280 requires much longer conversation with Caltrans

An aerial, grayscale photograph of a dense urban area. A multi-lane highway runs diagonally from the top left towards the center. To the right, a river flows through the city. A large stadium is visible on the right side. In the center, a white rectangular box contains the word "COSTS" in orange, bold, sans-serif capital letters. The overall scene depicts a complex city infrastructure.

COSTS

1 RAIL ALIGNMENTS TO SALESFORCE TRANSIT CENTER



OPTION 1:
FUTURE WITH SURFACE RAIL
 DTX + TRENCHED STREETS

OPTION 2:
PENNSYLVANIA AVE ALIGNMENT
 DTX + EXTENDED TUNNEL

OPTION 3:
MISSION BAY ALIGNMENT
 MODIFIED DTX + 3RD ST. TUNNEL

PRELIMINARY ESTIMATES OF PROBABLE COSTS AND SCHEDULES

ALIGNMENT	COST ¹	EXPECTED COMPLETION DATE ²
FUTURE WITH SURFACE RAIL: DTX + TRENCHED STREETS	\$5.1 Billion	2026
PENNSYLVANIA AVENUE: DTX + EXTENDED TUNNEL	\$6.0 Billion	2027
MISSION BAY: MODIFIED DTX + 3 RD STREET TUNNEL	\$9.3 Billion	2031

1. Includes construction costs, value capture, and impact costs
2. Completion date estimate if all money were available on January 1, 2017

Conceptual Level
Comparative Cost
Estimates

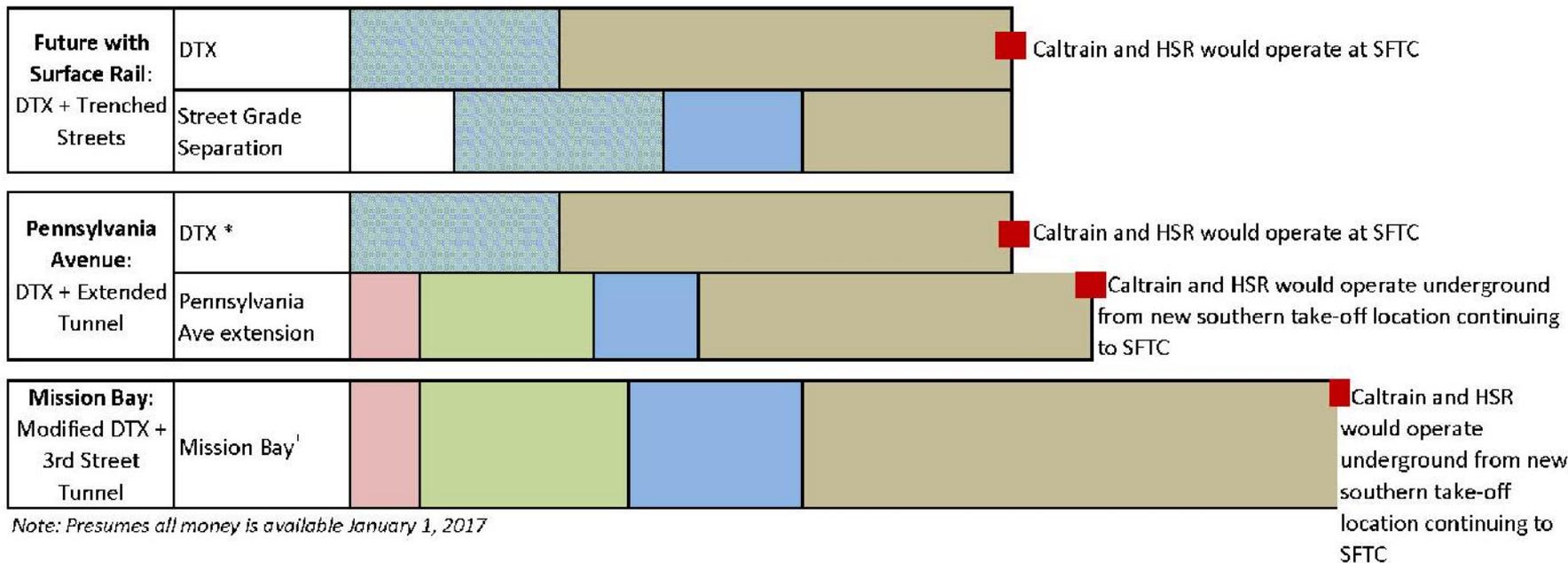
SUMMARY OF RAIL ALIGNMENT OPTIONS

	FUTURE W/ SURFACE RAIL DTX + TRENCHED STREETS	PENNSYLVANIA AVENUE DTX + EXTENDED TUNNEL	MISSION BAY MODIFIED DTX + 3 RD ST TUNNEL
Construction Cost	\$5.1 billion	\$6.0 billion	\$9.3 billion
Expected Completion Date	2026	DTX segment in 2026, extension in 2027	2031
Neighborhood Connectivity	Puts 16th Street into 0.6 mile trench	Reconnects over 1-mile of the city	Reconnects over 1-mile of the city
Vision Zero / Pedestrian Safety	Reduces pedestrian connections, increases walking distances	Improves safety and increases connections to Southeast Waterfront	Improves safety and increases connections to Southeast Waterfront
Surface Blocks Impacted By Construction along alignment	53+	12+	0+
Land use and affordable housing opportunities at 4 th /King	Railyard remains as currently used	Creates land use opportunities	Creates land use opportunities
22 nd Street Caltrain station	Remains in place	Creates opportunities to relocate, redesign or improve access	Creates opportunities to relocate, redesign or improve access
Resilience to Sea Level Rise	Trenches creates vulnerability to sea level rise	Tunnels can be designed for resiliency	
Access to SFTC	Not all trains	All trains	All trains

RAB ALIGNMENTS – POTENTIAL SCHEDULES



	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Known Partner Projects		♦ SFTC opens for bus ops				♦ Caltrain electrification					● Possible early ops of CHSRA to SF		♦ CHSRA from Central Valley to SF				♦ CHSRA from LA to SF



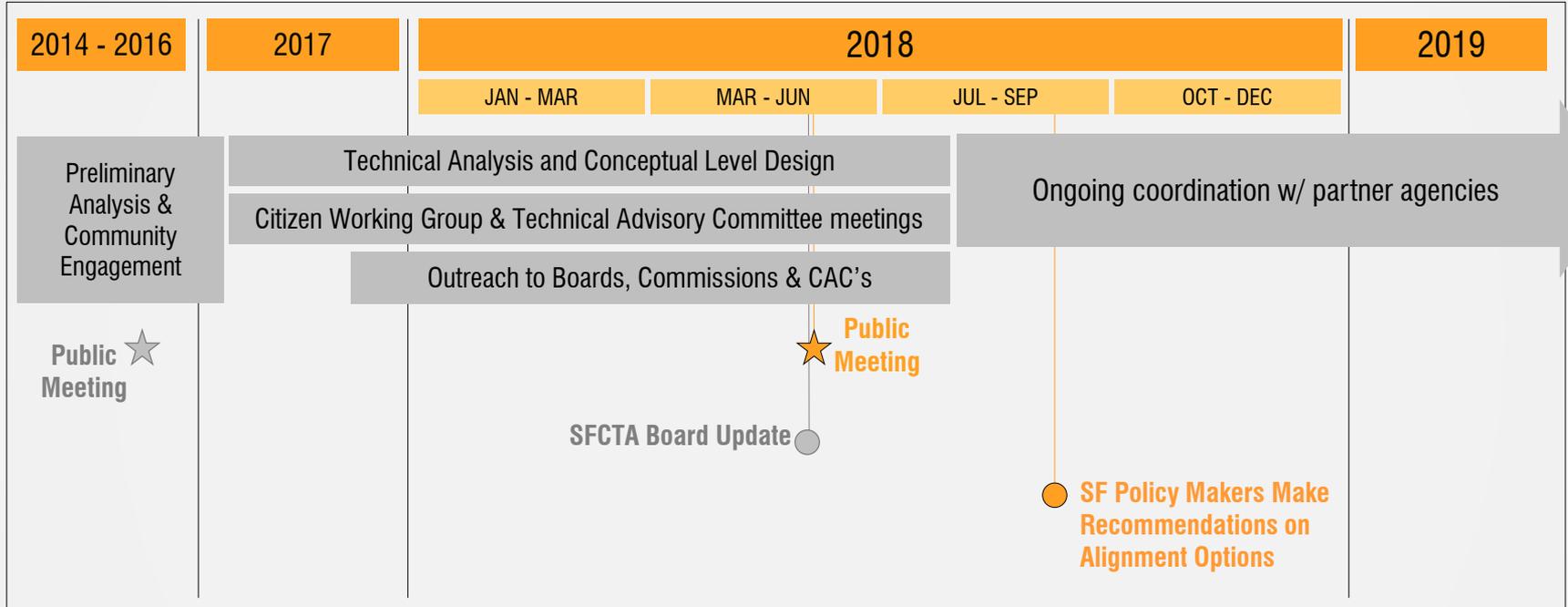
Note: Presumes all money is available January 1, 2017

¹ Coordinating the DTX project approach with boring of Pennsylvania Avenue Extension could save time.

NEXT STEPS

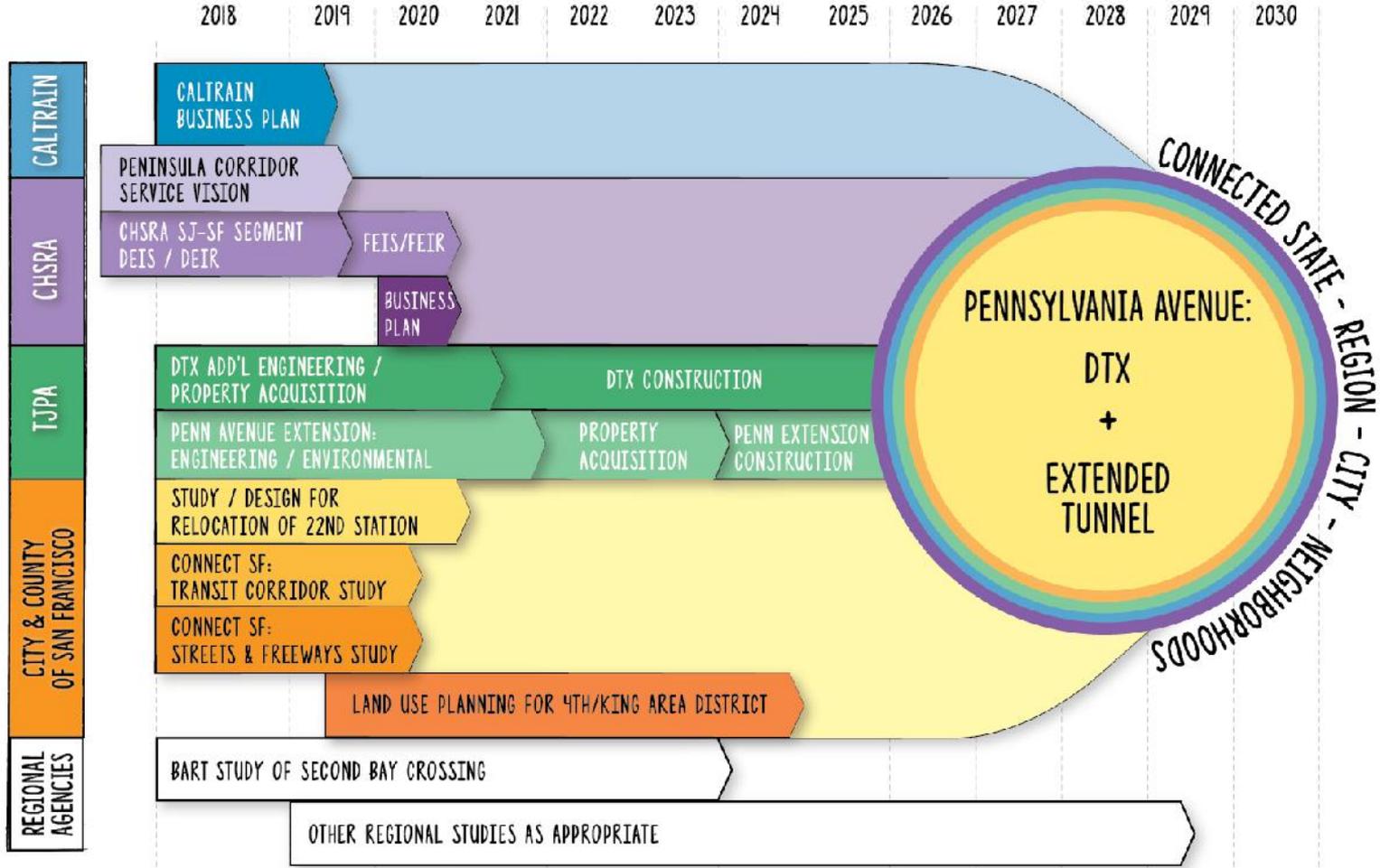


RAB TIMELINE



Dates subject to change

ONGOING COORDINATION TO CARRY RAIL PROJECTS FORWARD



THANK YOU

sf-planning.org/rab

Study Manager

Susan Gygi, PE



San Francisco
Planning