RAIL ALIGNMENT AND BENEFITS (RAB) STUDY
PREVIOUSLY KNOWN AS RAIL YARD ALTERNATIVES & I-280 BOULEVARD STUDY
Connecting California

<table>
<thead>
<tr>
<th>California</th>
<th>2015</th>
<th>2065</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>39 M</td>
<td>52 M</td>
<td>+ 33%</td>
</tr>
<tr>
<td>Employees</td>
<td>16 m</td>
<td>28 m</td>
<td>+ 77%</td>
</tr>
</tbody>
</table>

Option:
- MAXIMIZE RAIL
- EXPAND AIRPORTS/HWYS

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.
The Bay Area is expected to grow by 57,000 new residents every year.

<table>
<thead>
<tr>
<th>BAY AREA</th>
<th>2015</th>
<th>2065</th>
<th>GROWTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>7.6 M</td>
<td>10.7 M</td>
<td>+ 41%</td>
</tr>
<tr>
<td>Employees</td>
<td>4 M</td>
<td>5.8 M</td>
<td>+ 44%</td>
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</table>

250 million hours of traffic delay every year in the Bay Area.

Option:
MAXIMIZE RAIL
OR
EXPAND I-80
I-280
US-101
CONNECTING THE PENINSULA CORRIDOR

<table>
<thead>
<tr>
<th>Peninsula Counties</th>
<th>2015</th>
<th>2065</th>
<th>GROWTH</th>
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</thead>
<tbody>
<tr>
<td>Population</td>
<td>3.5 M</td>
<td>5.1 M</td>
<td>+ 43%</td>
</tr>
<tr>
<td>Employees</td>
<td>2.0 M</td>
<td>3.3 M</td>
<td>+ 47%</td>
</tr>
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</table>

**CALTRAIN IS THE 2ND DENSEST COMMUTER RAILROAD IN US**
nearly 20 million unlinked passenger trips per year

**SINCE 2010, CALTRAIN RIDERSHIP INCREASED NEARLY 75%**
compared to 30% for the US’s 10 largest rail systems

**SAN JOSE TO SAN FRANCISCO WOULD TAKE 30 MINUTES**
By future High Speed Rail service

Option:
MAXIMIZE RAIL
OR
EXPAND I-280 & US-101
WHY NOW? MAJOR PLANNED NEW INFRASTRUCTURE

CALTRAIN ELECTRIFICATION

HIGH SPEED RAIL (HSR)

SALESFORCE TRANSIT CENTER
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)
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
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
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
An extension or loop is not needed now but will be when more trains travel the corridor.
• 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
COSTS
# Preliminary Estimates of Probable Costs and Schedules

<table>
<thead>
<tr>
<th>Alignment</th>
<th>Cost 1</th>
<th>Expected Completion Date 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Future with Surface Rail:</td>
<td>$5.1 Billion</td>
<td>2026</td>
</tr>
<tr>
<td>DTX + Trenched Streets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pennsylvania Avenue:</td>
<td>$6.0 Billion</td>
<td>2027</td>
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<tr>
<td>DTX + Extended Tunnel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mission Bay:</td>
<td>$9.3 Billion</td>
<td>2031</td>
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<tr>
<td>Modified DTX + 3rd Street Tunnel</td>
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</tbody>
</table>

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

**Preliminary Preferred Alignment**

**Conceptual Level Comparative Cost Estimates**
## Summary of Rail Alignment Options

<table>
<thead>
<tr>
<th></th>
<th>Future w/ Surface Rail</th>
<th>Pennsylvania Avenue</th>
<th>Mission Bay</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>DTX + Trenched Streets</td>
<td>DTX + Extended Tunnel</td>
<td>Modified DTX + 3rd ST Tunnel</td>
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<tr>
<td>Costs</td>
<td>$5.1 billion</td>
<td>$6.0 billion</td>
<td>$9.3 billion</td>
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<tr>
<td>Expected Completion Date</td>
<td>2026</td>
<td>DTX segment in 2026, extension in 2027</td>
<td>2031</td>
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<tr>
<td>Neighborhood Connectivity</td>
<td>Puts 16th Street into 0.6 mile trench</td>
<td>Reconnects over 1-mile of the city</td>
<td>Reconnects over 1-mile of the city</td>
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<tr>
<td>Vision Zero / Pedestrian Safety</td>
<td>Reduces pedestrian connections, increases walking distances</td>
<td>Improves safety and increases connections to Southeast Waterfront</td>
<td>Improves safety and increases connections to Southeast Waterfront</td>
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<tr>
<td>Surface Blocks Impacted By Construction along alignment</td>
<td>53+</td>
<td>12+</td>
<td>0+</td>
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<tr>
<td>Land use and affordable housing opportunities at 4th/King</td>
<td>Railyard remains as currently used</td>
<td>Creates land use opportunities</td>
<td>Creates land use opportunities</td>
</tr>
<tr>
<td>22nd Street Caltrain station</td>
<td>Remains in place</td>
<td>Creates opportunities to relocate, redesign or improve access</td>
<td>Creates opportunities to relocate, redesign or improve access</td>
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<tr>
<td>Resilience to Sea Level Rise</td>
<td>Trenches creates vulnerability to sea level rise</td>
<td>Tunnels can be designed for resiliency</td>
<td>All trains</td>
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<tr>
<td>Access to SFTC</td>
<td>Not all trains</td>
<td>All trains</td>
<td>All trains</td>
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### Rab Alignments – Potential Schedules

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<td>SFTC opens for bus ops</td>
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<tr>
<td>Caltrain electrification</td>
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<tr>
<td>Possible early ops of CHSRA from Central Valley to SF</td>
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<tr>
<td>CHSRA from LA to SF</td>
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#### Future with Surface Rail:
- **DTX + Trenched Streets**
  - **Street Grade Separation**

- **Caltrain and HSR would operate at SFTC**

#### Pennsylvania Avenue:
- **DTX + Extended Tunnel**
  - **Pennsylvania Ave extension**

- **Caltrain and HSR would operate underground from new southern take-off location continuing to SFTC**

#### Mission Bay:
- **Modified DTX + 3rd Street Tunnel**
  - **Mission Bay**

- **Caltrain and HSR would operate underground from new southern take-off location continuing to SFTC**

*Note: Presumes all money is available January 1, 2017*

* Coordinating the DTX project approach with boring of Pennsylvania Avenue Extension could save time.*
NEXT STEPS
RAB TIMELINE

Dates subject to change

2014 - 2016

2017

2018

2019

Preliminary Analysis & Community Engagement

JAN - MAR

Ongoing coordination w/ partner agencies

Technical Analysis and Conceptual Level Design

MAR - JUN

Citizen Working Group & Technical Advisory Committee meetings

JUL - SEP

Outreach to Boards, Commissions & CAC’s

OCT - DEC

Public Meeting

Public Meeting

Public Meeting

SF Policy Makers Make Recommendations on Alignment Options

Dates subject to change
ONGOING COORDINATION TO carry rail projects forward

**CALTRAIN BUSINESS PLAN**

**PENINSULA CORRIDOR SERVICE VISION**

**CHSRA SJ-SF SEGMENT DEIS / DEIR**

**FEIS / FEIR**

**BUSINESS PLAN**

**DTX ADD’L ENGINEERING / PROPERTY ACQUISITION**

**DTX CONSTRUCTION**

**PENN AVENUE EXTENSION: ENGINEERING / ENVIRONMENTAL**

**PROPERTY ACQUISITION**

**PENN EXTENSION CONSTRUCTION**

**STUDY / DESIGN FOR RELOCATION OF 22ND STATION**

**CONNECT SF: TRANSIT CORRIDOR STUDY**

**CONNECT SF: STREETS & FREeways STUDY**

**LAND USE PLANNING FOR 4TH/KING AREA DISTRICT**

**BART STUDY OF SECOND BAY CROSSING**

**OTHER REGIONAL STUDIES AS APPROPRIATE**

**CONNECTED STATE - REGION - CITY - NEIGHBORHOODS**

**PENNSYLVANIA AVENUE: DTX + EXTENDED TUNNEL**

**REGIONAL AGENCIES**

**CITY & COUNTY OF SAN FRANCISCO**

**TJPA**

**CHSRA**

**CALTRAIN**
THANK YOU

sf-planning.org/rab

Study Manager
Susan Gygi, PE