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

May 29, 2018
CALIFORNIA 2015 - 2065 GROWTH
- Population: 39 M to 52 M (+33%)
- Employees: 16 m to 28 m (+77%)

Option:
- MAXIMIZE RAIL
- OR
- EXPAND AIRPORTS/HWYS

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

506 Million Trips between regions
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.

Every year in the Bay Area, 250 million hours of traffic delay are experienced.

**Option:**
- MAXIMIZE RAIL
- EXPAND I-80
- I-280
- US-101
San Francisco is expected to grow by 12,000 new residents every year.

Option:
MAXIMIZE RAIL
OR
INCREASE DEMAND ON SF STREETS

SF

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2065</th>
<th>GROWTH</th>
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</thead>
<tbody>
<tr>
<td>Population</td>
<td>860,000</td>
<td>1,430,000</td>
<td>+ 66%</td>
</tr>
<tr>
<td>Employees</td>
<td>700,000</td>
<td>995,000</td>
<td>+ 44%</td>
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Muni Metro demand is 124% capacity during morning commute (2015)
<table>
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<tr>
<th></th>
<th>1950</th>
<th>1970</th>
<th>2015</th>
<th>2065</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>700,000</td>
<td>715,000</td>
<td>860,000</td>
<td>1,470,000</td>
</tr>
<tr>
<td>Employees</td>
<td>340,000</td>
<td>375,000</td>
<td>700,000</td>
<td>995,000</td>
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</table>
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.

 CONNECTING NEIGHBORHOODS

FIDI, Mission Bay, SOMA, So. Bayfront

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<th>2015</th>
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<tbody>
<tr>
<td>Population</td>
<td>87,000</td>
<td>257,000</td>
<td>194%</td>
</tr>
<tr>
<td>Employees</td>
<td>304,000</td>
<td>554,000</td>
<td>82%</td>
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</table>
UP TO 10 TRAINS PER HOUR PER DIRECTION
110,000 + CALTRAIN RIDERS PER DAY
2040 ridership projection

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
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
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.
RAIL ALIGNMENTS TO SALESFORCE TRANSIT CENTER

1. FUTURE WITH SURFACE RAIL
   DTX + TRENCHED STREETS

2. PENNSYLVANIA AVE ALIGNMENT
   DTX + EXTENDED TUNNEL

3. MISSION BAY ALIGNMENT
   MODIFIED DTX + 3RD ST. TUNNEL
# Preliminary Estimates of Probable Costs and Schedules

<table>
<thead>
<tr>
<th>ALIGNMENT</th>
<th>COST (^1)</th>
<th>EXPECTED COMPLETION DATE (^2)</th>
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<tbody>
<tr>
<td><strong>Future with Surface Rail:</strong></td>
<td></td>
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<tr>
<td>DTX + Trenched Streets</td>
<td>$5.1 Billion</td>
<td>2026</td>
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<tr>
<td><strong>Pennsylvania Avenue:</strong></td>
<td></td>
<td></td>
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<tr>
<td>DTX + Extended Tunnel</td>
<td>$6.0 Billion</td>
<td>2027</td>
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<tr>
<td><strong>Mission Bay:</strong></td>
<td></td>
<td></td>
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<tr>
<td>Modified DTX + 3rd Street Tunnel</td>
<td>$9.3 Billion</td>
<td>2031</td>
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1. Includes construction costs, value capture, and impact costs
2. Completion date estimate if all money were available on January 1, 2017
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<tr>
<th></th>
<th>FUTURE W/ SURFACE RAIL DTX + TRENCHED STREETS</th>
<th>PENNSYLVANIA AVENUE DTX + EXTENDED TUNNEL</th>
<th>MISSION BAY MODIFIED DTX + 3RD ST TUNNEL</th>
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<tbody>
<tr>
<td>Construction Cost</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>
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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>
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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>
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<tr>
<td>22nd Street Caltrain station</td>
<td>Remains in place</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>
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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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<tr>
<td>FUTURE WITH SURFACE RAIL: DTX + TRENCHED STREETS</td>
<td>SFTC opens for bus ops</td>
<td>Caltrain electrification</td>
<td>Possible early ops of CHSRA to Central Valley to SF</td>
<td>CHSRA from LA to SF</td>
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<tr>
<td>Future with Surface Rail: DTX + Trenched Streets</td>
<td>DTX</td>
<td>Street Grade Separation</td>
<td>Caltrain and HSR would operate at SFTC</td>
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<tr>
<td>PENNSYLVANIA AVENUE: DTX + EXTENDED TUNNEL</td>
<td>DTX</td>
<td>Pennsylvania Ave extension</td>
<td>Caltrain and HSR would operate under ground from new southern take-off location continuing to SFTC</td>
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<tr>
<td>Mission Bay: Modified DTX + 3rd Street Tunnel</td>
<td>Mission Bay</td>
<td>Caltrain and HSR would operate underground from new southern take off location continuing to SFTC</td>
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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

2014 - 2016

Preliminary Analysis & Community Engagement

Public Meeting

2017

Technical Analysis and Conceptual Level Design

Citizen Working Group & Technical Advisory Committee meetings

Outreach to Boards, Commissions & CAC’s

2018

JAN - MAR

MAR - JUN

JUL - SEP

OCT - DEC

2019

Ongoing coordination w/ partner agencies

Public Meeting

SFCTA Board Update

Dates subject to change

SF Policy Makers Make Recommendations on Alignment Options
ONGOING COORDINATION TO CARRY RAIL PROJECTS FORWARD

2018
- CALTRAIN BUSINESS PLAN
- PENNSYLVANIA AVENUE: DTX + EXTENDED TUNNEL
- CONNECTED STATE - REGION - CITY - NEIGHBORHOODS

2019
- PENINSULA CORRIDOR
- SERVICE VISION
- CHSRA SJ-SF SEGMENT
- DEIS / DEIR
- FEIS / FEIR
- BUSINESS PLAN

2020
- DTX ADD'L ENGINEERING / PROPERTY ACQUISITION
- PENN AVENUE EXTENSION: ENGINEERING / ENVIRONMENTAL
- STUDY / DESIGN FOR RELOCATION OF 22ND STATION
- CONNECT SF: TRANSIT CORRIDOR STUDY
- CONNECT SF: STREETS & FREeways STUDY

2021
- LAND USE PLANNING FOR 4TH/KING AREA DISTRICT

2022
- BART STUDY OF SECOND BAY CROSSING

2023
- OTHER REGIONAL STUDIES AS APPROPRIATE
THANK YOU

sf-planning.org/rab

Study Manager
Susan Gygi, PE