BART Metro: Sustainable Communities Operational Analysis
Study Purpose

• Meet the transit needs for the region
  • Tailor service, schedules and investments to meet future ridership demands
  • Reduce vehicle miles travelled through land-use and transportation coordination

• Provide transit services that successfully and economically deliver the access required for the region’s future land use growth assumptions

• Allow the system to capture reverse commute trips and greater share of off peak travel

• Identify necessary service and operational improvements and associated capital program critical to implementation.
Travel Markets

Metro Core – All Day Trips
• Provide more “show up and go” service

Metro Commute – Heavy Peak Trips
• Maintain frequent base service
• Improve peak service to major destinations

All
• Maintain 95% on-time performance
• Contain operating costs
• Improve efficiency and comfort
Growth in PDA’s
Housing over 3/4
Jobs nearly 2/3

Ridership in 2025
• 560,000 daily average
• Rate of growth larger in off peak versus peak

BART System Map and Priority Development Areas
MTC / ABAG Priority Development Areas (May 2012)
8 service objectives to guide and evaluate service planning scenarios

- Safety
- Reliability
- Market Driven
- Forward Thinking
- Effectiveness
- Efficiency
- Customer Service
- Equity

Key Performance Indicators (KPI’s) used to measure service effectiveness

- Peak Fleet Requirement
- Revenue per vehicle mile
- Passengers per revenue vehicle mile
- Capacity Utilization (pax miles/seat miles)
- Annual CO² Reduction
- Total Fleet Size Required
- Cost per seat mile
- Farebox Recovery Ratio
- Peak capacity
- Annualized Cost per Passenger
Service Concepts Considered

- Skip Stop / Limited Stop
- Short Line
- Zone Based
- Coupling
- Service Re-configuration

- Express Service
- Reverse Express
- Leap-frog Express
- Timed Transfers
• **Key Investments**
  - *Fleet expansion, future automatic train control (FATC), power supply upgrades, station expansion, yards and shop expansion, etc.*

• **3 Tiers of Investment**

• **Projects provide the following function**
  - *Increase in off peak railcar storage capacity (predominantly in the West Bay)*
  - *Improve service turn-back locations to tailor service to demand*
  - *Increase track operating capacity*
  - *Increase operating speeds in key locations*
  - *Minimizing non revenue car miles/hours*
  - *Match passenger load with car miles (i.e. BART’s capacity utilization ratio of 35%)*
Phase 1 – SCOA Study Recommendations

- 15 minute base service peak and midday
- 20 minute base service nights and weekends
- 24 trains Transbay, peak hour, peak direction
- Additional peak period service on Yellow and Green Lines
- Extend Red and Green Line service nights and weekends

Phase 2 - SCOA Study Recommendations

- 12 minute base service peak
- 15 minute base service midday, nights and weekends
- 27 trains Transbay, peak hour, peak direction
- Coupling of Blue / Green service evenings and weekends, Bay Fair to Daly City

Phase 3 – BART (Future BART)

- Findings from BART Metro Vision Study
Phase 1 Service Plan
Evenings and Weekends

Legend
3.8
Segment headway in minutes
16
Segment trains per hour

San Francisco International Airport (SFO)
Millbrae Shuttle Service

PENINSULA
## Total Fleet Size Required
- **Baseline**: 669 revenue vehicles
- **Phase 1**: 900 revenue vehicles
- **Phase 2**: 880 revenue vehicles

## Average Passengers per Car (peak hour/Transbay direction)
- **Baseline**: 105 passengers per car
- **Phase 1**: 112 passengers per car
- **Phase 2**: 100 passengers per car

## Headways during the Peak Period
- **Baseline**: 15 minutes
- **Phase 1**: 15 minutes
- **Phase 2**: 12 minutes

## Trains per Hour/Peak Direction – Transbay
- **Baseline**: 23 trains
- **Phase 1**: 24 trains
- **Phase 2**: 27 trains

## Decrease in Total Annual Car Miles Compared to 2025 Baseline
- **Phase 1**: 11 percent
- **Phase 2**: 5 percent
## Capital Projects Phasing

<table>
<thead>
<tr>
<th>BART Metro Phase</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
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</thead>
<tbody>
<tr>
<td>Timeline</td>
<td>Short Term</td>
<td>Medium Term</td>
<td>Future Term</td>
</tr>
<tr>
<td>Peak Period Base Headways</td>
<td>15 minutes</td>
<td>12 minutes</td>
<td>10 minutes</td>
</tr>
<tr>
<td>Service Innovations</td>
<td>Optimization of Current System - additional Turnbacks, more direct Transbay service nights and weekends in urban core</td>
<td>SCOA Vision - Peak period frequency increases, high frequency night and weekend service, potential express services in commute markets</td>
<td>Split service between two tubes and new downtown San Francisco stations</td>
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<tr>
<td>Fleet</td>
<td>880</td>
<td>980</td>
<td>1000+</td>
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<tr>
<td>Ridership level</td>
<td>Up to 500,000</td>
<td>500,000 to 750,000</td>
<td>Beyond 750,000</td>
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</tbody>
</table>

### Component Projects

<table>
<thead>
<tr>
<th>Turnbacks</th>
<th>24th/Mission, Richmond Crossover, S. Hayward* &amp; Pleasant Hill*</th>
<th>Glen Park Turnback, Bay Fair Connection**</th>
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</thead>
<tbody>
<tr>
<td>State of Good Repair (SOGR)</td>
<td>Traction power and cabling renovation**, communication system upgrades**</td>
<td>Traction power capacity upgrade</td>
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<tr>
<td>Train Control</td>
<td>Initial phases of FATC</td>
<td>Full system wide FATC</td>
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<tr>
<td>Stations</td>
<td>Downtown SF additional platform elevators &amp; AFC, Bay Fair Connection (3rd Platform)**</td>
<td>Downtown San Francisco and Oakland platform expansions, fire/life safety improvements at high volume suburban stations</td>
</tr>
<tr>
<td>Train storage</td>
<td>Millbrae** and Dublin tail track extensions</td>
<td>Hayward Eastside Yard, Lafayette Pocket Track Upgrade,</td>
</tr>
<tr>
<td>Trackage / ROW</td>
<td>Dublin Line I-580 Barrier, high speed SB crossover Daly City-Colma</td>
<td>Downtown Oakland 4th track and station upgrades</td>
</tr>
<tr>
<td>Maintenance Facilities</td>
<td>HMC shop &amp; track work</td>
<td>Expansion of Millbrae transportation facilities Daly City maintenance siding extension</td>
</tr>
</tbody>
</table>

*Project in place  **Potential funding identified
Federal

- Substantial investment in existing fixed guideway corridor
- “Project” must:
  - Corridor at or over capacity within five years
  - Increase capacity by 10%

Regional

- MTC “Fund High Performers:” $660 million in New Starts/Small Starts reserve
Next Steps

• Analyze Phase 2 service plans using Rail Traffic Controller simulation
• Outreach with key agencies / stakeholders on Concept Service Plans
• Undertake peer review with expert panel of rail industry experts
• Develop implementation plan for prioritizing key infrastructure needs
• Prepare Draft / Final Report summarizing findings