



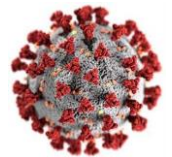
SFMTA

Next Generation Customer Information System

Presentation to Budget & Finance Committee
September 2, 2020

Background

- In 1999, San Francisco piloted the first U.S. real-time information system
- Since then, the technology and transportation landscape has rapidly evolved
- Signs have reached the end of their useful lives and are not replaceable
- Planned with these changes in mind, the Customer Information System is also flexible to meet the challenges of the COVID-19 crisis and recovery



200

202

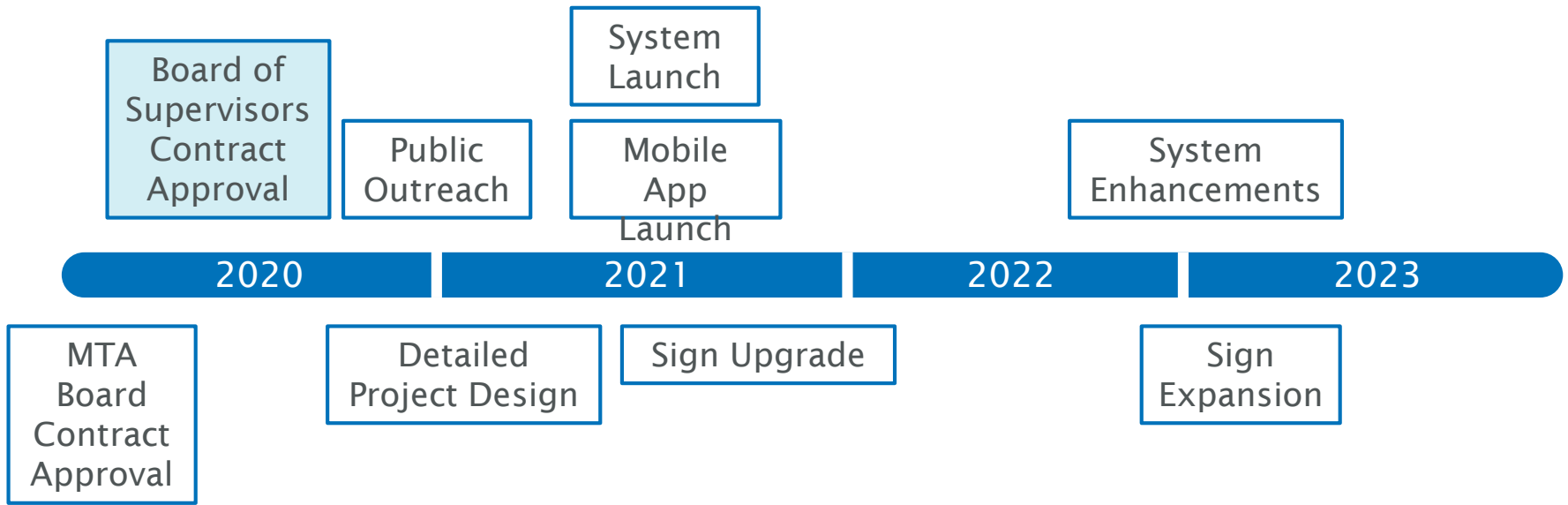
NEXTbus



Project Goals

- 1 Ensure a positive customer experience
 - 2 Increase equitable access to information
 - 3 Reduce waiting and total travel time
 - 4 Shift people towards more sustainable transportation options
 - 5 Help customers make better travel decisions, particularly when faced with service disruptions and gaps
 - 6 Rebuild transit ridership as San Francisco recovers from the COVID-19 crisis and increase discretionary travel over the long-term
-

Project Milestones

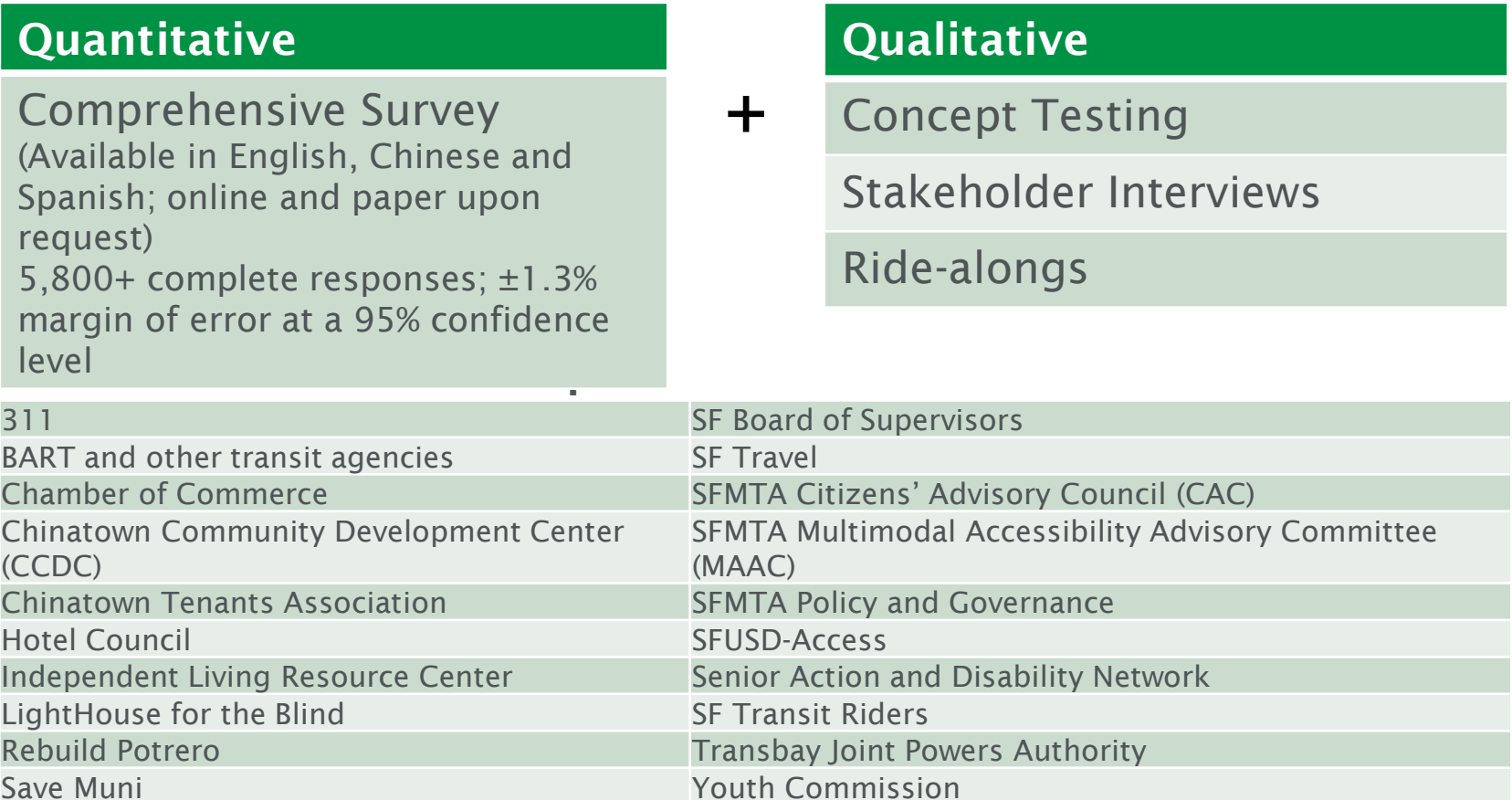


Proposer	Score
Cubic	902.88
Intersection Parent	543.74
B&C Transit Inc	506.55
Pulsar	472.68
Strategic Mapping	446.20
DoubleMap	369.62

**Phase I
(1-for-1 replacement)**

**Phase II
(Enhancements)**

Shaping the Project through Public Outreach



- The SFMTA conducted extensive quantitative and qualitative research to identify customer requirements for the new system
- The SFMTA will continue outreach efforts in project design and implementation

Flexibility to Meet COVID-19 Crisis and Recovery

Service Awareness

- Communicates rapidly-changing transit service plans
- Shows dynamic maps on signs indicating temporary routes and vehicle locations
- Displays nearby alternative routes on signs at temporarily-discontinued stops
- Promotes seamless regional connectivity by displaying predictions for partner transit agencies

Public Safety

- Indicates vehicle occupancy levels to encourage social distancing
- Implements double-sided shelter signs to allow customers to view information from a distance outside the shelter
- Communicates alerts and public safety announcements in multiple languages

Responsive Planning

- Offers MuniMobile customer survey and incident reporting capabilities to receive public feedback on service changes
- Provides an Analytics Platform to monitor ridership patterns and determine how to restore routes and close service gaps
- Improves spacing between vehicles by providing field supervisors with a mobile tool showing vehicle positions



Element 1: System Software

New and Improved Customer Information

- More accurate vehicle arrival predictions
- Vehicle locations
- Transfer connection predictions
- Alternative routes
- Vehicle occupancy
- Accessibility information
- Real-time service detours and delays
- Regional transit connections
- Public announcements in multiple languages

The screenshot displays a transit application interface. At the top left, there is a logo and the time '08:16 PM' with weather information '58° Cloudy Sat, Dec 29'. Below this is a map of San Francisco showing a blue route line. To the right of the map is a vertical list of stops for the '1-California' route: California & 4th, California & 6th, California & 8th, California & 10th (with a warning triangle icon and '10 more stops'), and Geary & 33rd. At the bottom left, a section titled 'Next three buses' shows arrival times: 08 min, 17 min, and 24 min, each with a corresponding bus icon. At the bottom right, a red banner with a warning triangle icon states: 'Accident at California & 10th Expect delays until 09:12PM'.



Element 2: Stationary Digital Signs

- Provide sign hardware, installation and maintenance services
- Ensure uninterrupted service during transitions
- Ensure full ADA-compliance, including text-to-speech

Existing System

Light Emitting Diode (LED) screens



Next Generation System

Over 5 times larger, Liquid Crystal Display (LCD) screens display:

- Graphics
- Maps with the real-time vehicle positions
- Maps with directions to nearby routes
- Letters and characters in other languages



Up to one-third of signs may be double-sided to improve visibility

Durable to elements and resistant to vandalism

Shelter Sign Size Comparison

Existing NextBus Sign



1 California
8 min & 17 min

Next
Generation
System Sign



08:16 PM 58° Cloudy Sat, Dec 29

1-California

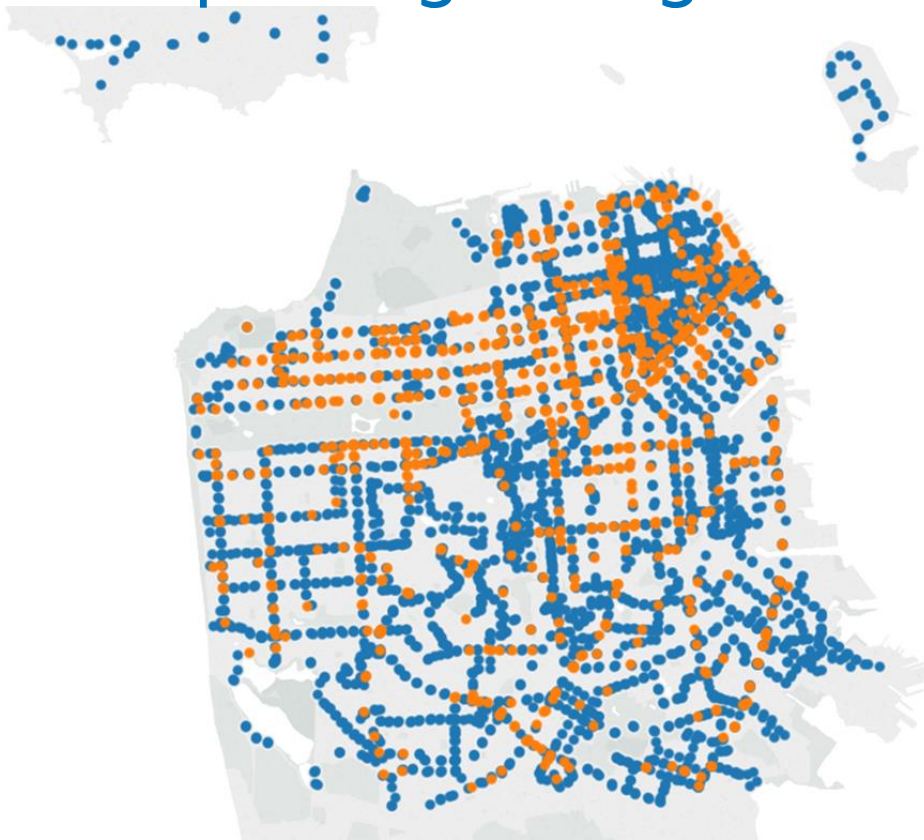
- California & 4th
- California & 6th
- California & 8th
- California & 10th (10 more stops)
- Geary & 33rd

Accident at California & 10th
Expect delays until 09:12 PM

Next three buses

08 min	17 min	24 min

Increasing Equitable Access to Information by Expanding the Sign Network to Unpowered Stops



Existing Powered Signs

- Shelter with Existing Sign (~750)
- Candidate for future Solar-Powered Sign



Future Solar-Powered Signs

- Up to 800 new locations, including:
- Equity Neighborhoods and other historically-underserved communities
 - Lower-frequency routes where vehicle arrival predictions are essential to minimizing wait times

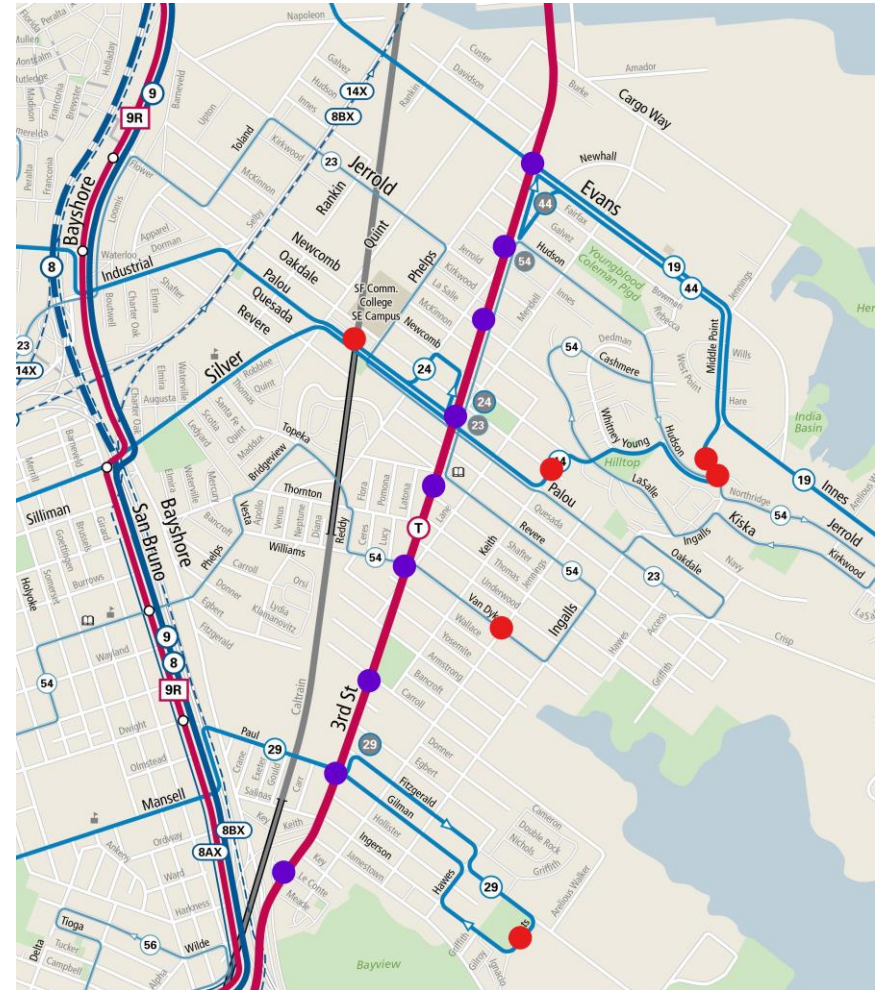
Bayview Signage Expansion



● New signs for tentative shelter locations identified in the Priority Projects for the Bayview Community Based Transportation Plan

● New double-sided outdoor T Third rail platform signs

*All stops without shelters will be candidates for Alternatively Powered Signs





Element 3: On-Board Digital Sign Software

1. Sign Content

- Generate customer information (e.g., reroutes, transfer connections) for display on future signs

2. Text-to-Speech Functionality

- Enable vehicle's public announcement system to voice customer information

3. Integration with Future On-Board Signs

- Able to push content to future on-board signs, including those on the pilot battery electric buses





Element 4: Mobile Platform & Website

1. Trip Planner

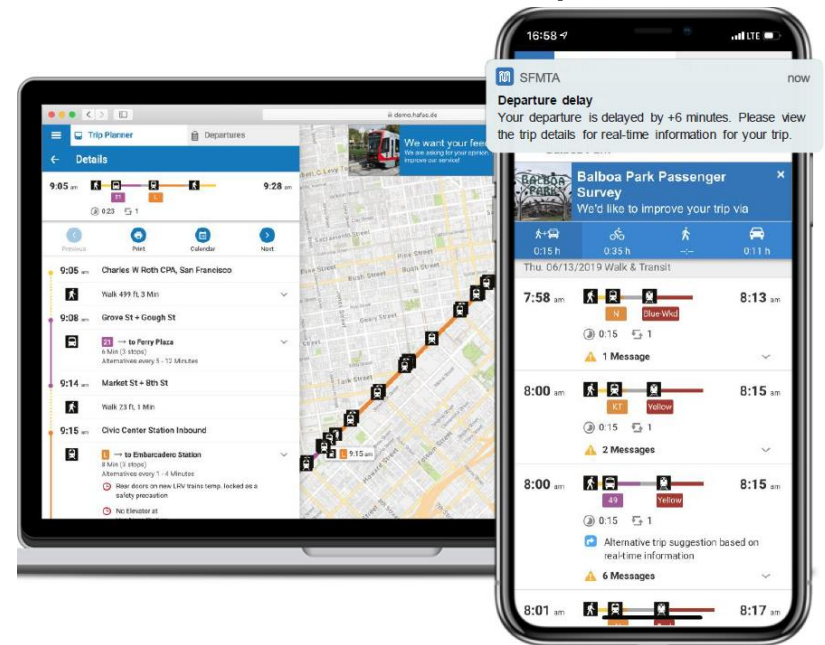
- Point-to-point directions, vehicle arrival times and other new customer information
- Live trip tracking to inform customer of changes in journey
- Opt-in features for customers to save trips and profile
- Customer configurable for language, a

2. Upgraded MuhiMobile App

- Provides all-in-one mobile ticketing and trip planning functionality for transit and multimodal services
- Reflects real-time service changes
- Facilitates opt-in two-way communications with customers

3. Website Integration

- Integrate trip planning functionality into SFMTA website





Element 5: Analytics Platform

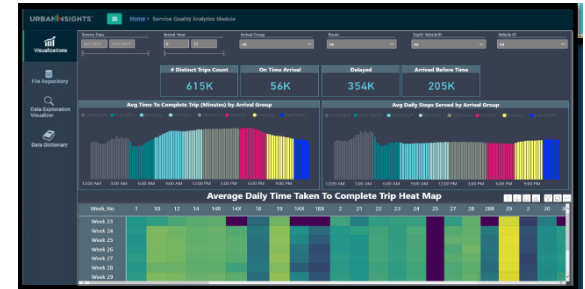
Provide insights and continual improvement of SFMTA services

1. Analytics Platform

- Create reporting tools and dashboards

2. Data Interpretation

- Analysis will help improve service quality and reliability to enhance the customer experience



Performance Management

- On-Time Performance
- Vehicle Travel Time Variation
- Predictions Accuracy
- Interval Reliability
- Stop-to-stop travel times

Customer Engagement

- Usage
- Satisfaction
- A/B Testing

Service and Operational Planning

- Service Interventions Effectiveness
- Transfer Reliability
- Network Connectivity
- Stop Consolidation Impacts

Customer Experience

- Wait Times
- Crowding
- Travel Time Reliability
- Mode Choice
- Internal and External Transfers
- Unserved or Underserved Travel Needs

Accessibility Features

System Software

- Accessibility information for stops and vehicles
- Planned or real-time elevator and escalator outages

Stationary Digital Signage

- LCD screens accommodate larger text
- Push-to-talk

On-Board Digital Signage

- Accessibility information for upcoming transit stops and connecting routes

Mobile Platform & Website

- Personalized trip planner enables configuration of accessibility preferences (e.g., elevator access, ramps, maximum grade)
- Itineraries provide accessible trips configurable to customer needs



Projected Costs

Item	Total Capital Costs (millions \$)	Total Operating Costs (millions \$)			Total Capital & Operating Costs (millions \$)
		Initial Term	1st Optional Extension	2nd Optional Extension	
Base System	\$18.8	\$12.6	\$17.9	\$19.1	\$68.2
System Options	\$4.4	\$2.0	\$2.9	\$3.4	\$12.7
Total with 10% contingency	\$25.4	\$16.1	\$22.8	\$24.7	\$89.0

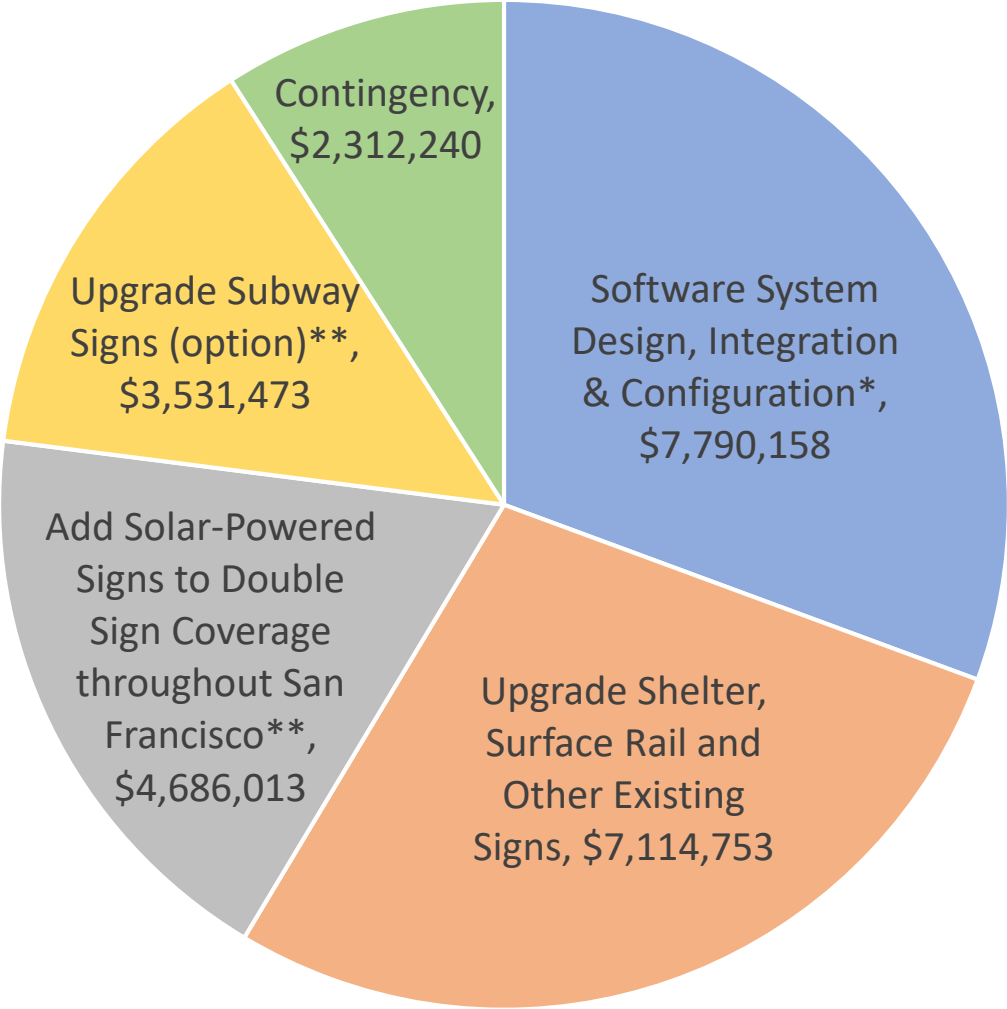
Capital Costs

- \$25.4 million, including sales tax, options and 10% contingency

Operating Costs

- Incremental \$47,274 monthly cost compared to existing system
- \$63.5 million for initial term and subsequent optional five-year contract extensions; total contract duration corresponds to the expected lifespan of signs
- Contract ensures cost containment by preventing future software subscription fees and operations and maintenance costs from escalating beyond inflation
- Contract includes warranty covering all parts and consumables for the equipment lifecycle

Capital Costs



*Includes \$808,237 in options for enhanced software features

**Discretionary based on cash flow and funding availability

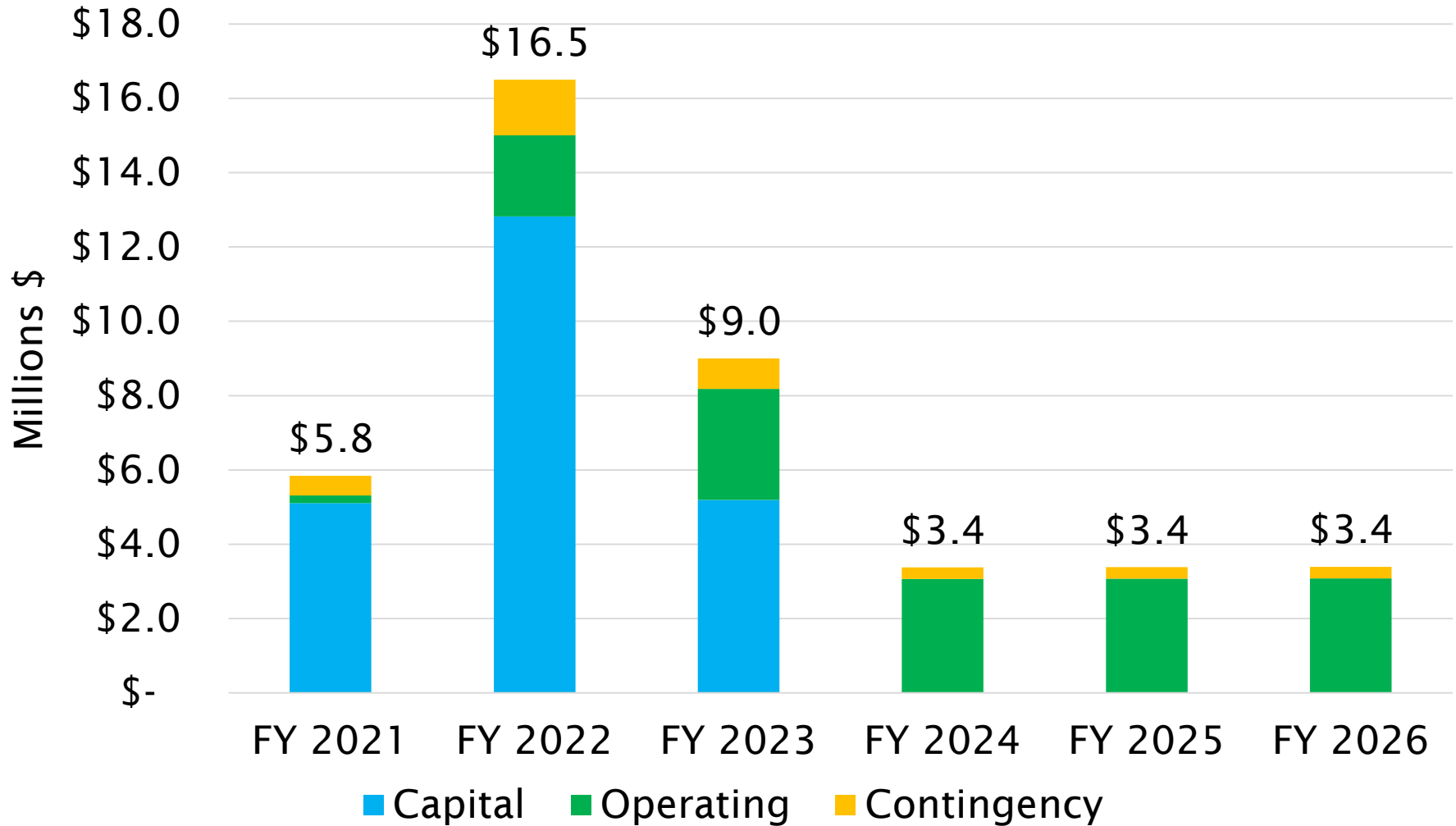
Operations & Maintenance Cost Comparison

Comparison of Operations & Maintenance Costs – Existing vs. Upgraded System				
Service		Existing System Monthly Fee	New System Contract Monthly Fee	Monthly Difference for Upgrades and Enhancements
Software Subscription Services				
System Software (more accurate predictions, route alternatives, transfer connections, real-time service changes and accessible itineraries)	Improved	\$73,900	\$37,508	\$8,242
Mobile Platform & Website Trip Planner Software	New	Not provided	\$27,031	
Analytics Platform	New	Not provided	\$17,603	
Sign Maintenance & Communications				
Shelter & Outdoor Rail Platform Signs** (larger and more visible signs including graphics)	Improved	\$25,843	\$65,967	\$39,033
Underground Station Signs	Improved	\$2,875	\$1,784	
Monthly Total		\$102,619	\$149,892	\$47,274
** Assuming one-for-one replacement of current 748 shelter signs. The above cost comparison excludes signage network expansion or options.				

Difference in operations and maintenance costs between the existing system's software and signs and its 1-for-1 upgrade in the Next Generation System: \$47,274 monthly (\$567,292 annually)

Projected Contract Expenditures by Fiscal Year

Projected Contract Cash Flow



System Upgrade Provides Great Value to San Francisco

System Features	Current	Future
System Software		
Predictions Engine	✓	✓ (improved)
Crowding Level Alerts	✗	✓
Alternative Route Suggestions	✗	✓
Real-Time Temporary Service Changes	✓ (limited)	✓
Connections with other systems	✗	✓
Stationary Digital Signage		
Powered Shelters	✓ (LED)	✓ (LCD)
Unpowered Shelters & Stops	✗	✓
On-Board Digital Signage (back-end)		
Stop Announcements	✓	✓
Connection Times	✗	✓
Service Delay & Reroute Alerts	✗	✓
Mobile Platform & Website		
Mobile App	✓ (primarily mobile ticketing)	✓ (enhanced capabilities)
Accessible Itineraries	✗	✓
Analytics Platform		
Usage Trends & Analytics	✓ (limited)	✓ (enhanced capabilities)