

Update on Sunday Revenue Service

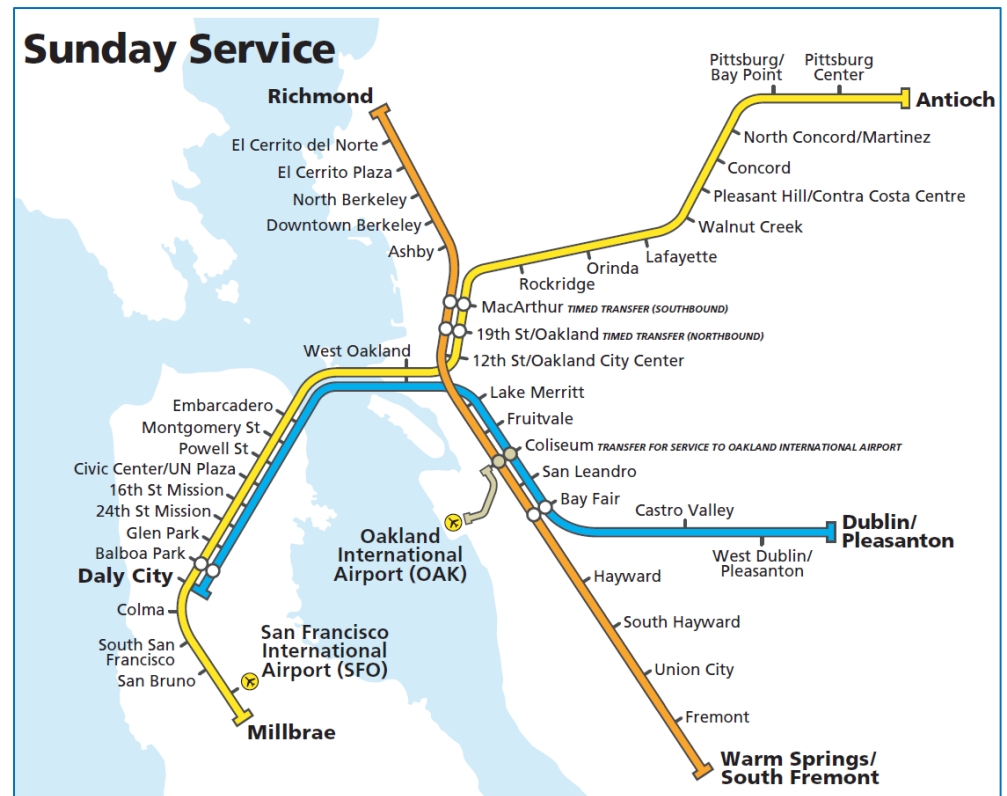


Context of Sunday Service



2018

- 3 Line Service
- 20 minute headways



Sunday Service plan enables the M-Line 34.5kV Cable Replacement Project

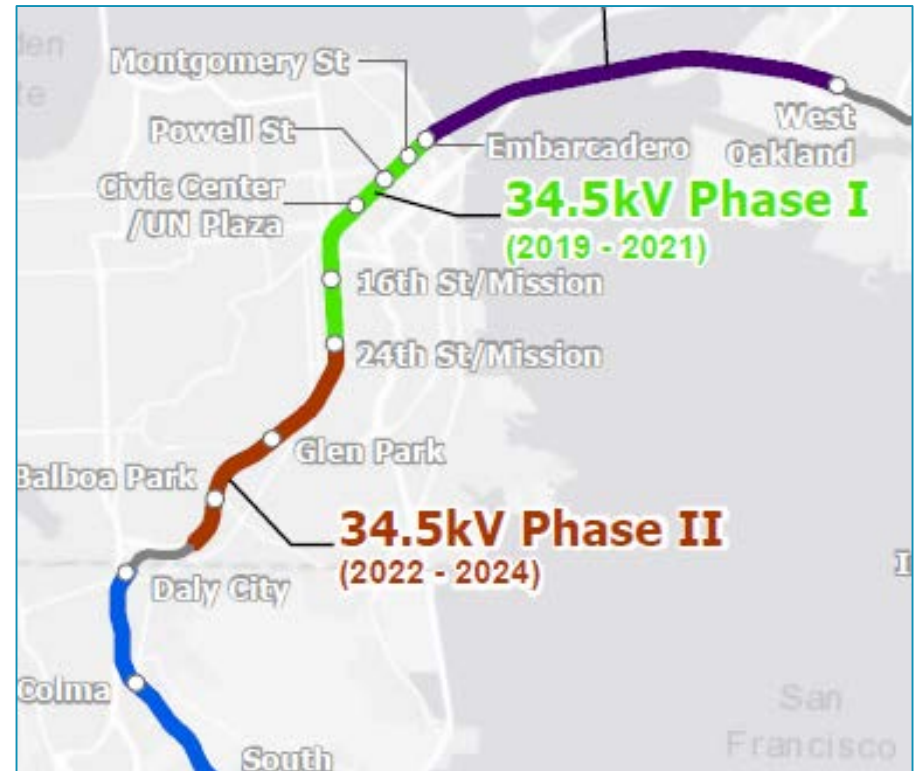


Phase I:

- **UNDERWAY**
- Requires Sunday single-tracking from Embarcadero to 24th Street
- Scheduled 2019 – 2021
≈28 Sundays/year (53%)

Phase II:

- Requires Sunday single-tracking from 24th Street to Balboa Park
- Scheduled 2022 – 2024
≈28 Sundays/year (53%)



M-Line 34.5kV Cable Replacement Project



Project Background:

- 34.5KV Cable System distributes critical AC Power to Traction Power Substations (TPSS) to run trains.
- Most are original PIPE Cables and are beyond service life
- Signs of aging and degrading performance, with recent circuit failures that impacted traction power for train operations.

Key Project Goals:

- Improve reliability and flexibility of M-Line Cable System between TPSS MBP (Balboa Park) to MTW (Transbay Tube West)
- Allow for future Substations at Montgomery and Civic Center for Core Capacity Improvement
- Allow for new CBTC System Operations with Fleet of the Future cars

Major Scope Items:

- Replacement of 34.5 kV cable circuits between TPSS MBP to MTW, with new EPR Cables: State of the art, more robust, and longer life
- Installation of new fiber optic cables and conduits for remote monitoring, control, and communications systems
- Installation of new District Furnished Isolating Disconnect Switches
- Testing and Commissioning



Contract Amount: \$79.2M
Project Duration: 60 Months
Total Track Circuit Length:
~ 14 Miles (both Tunnels)

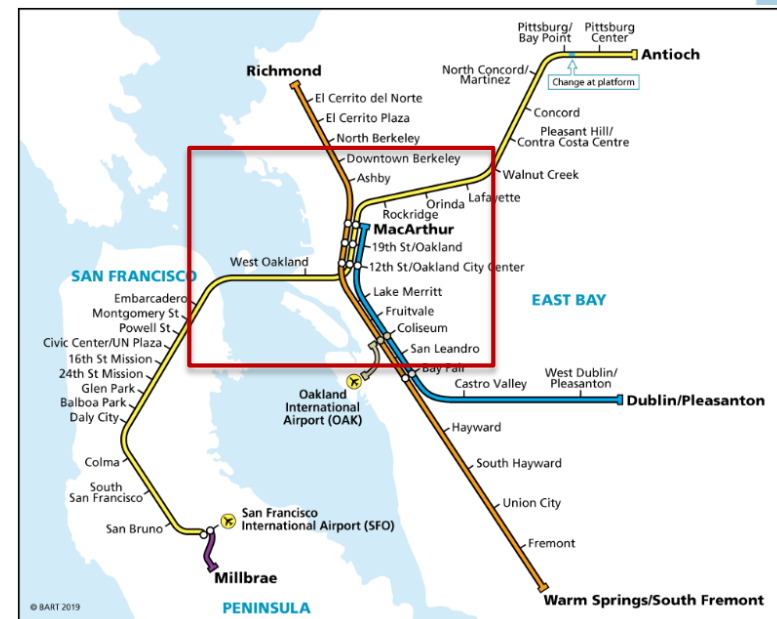
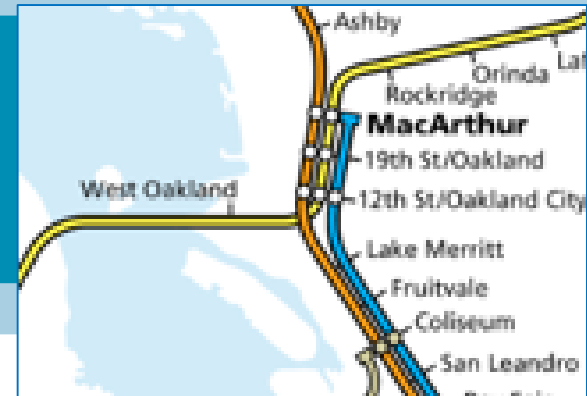
Sunday M-Line Single Tracking 2018 PLANNING

Analyzed and modeled roughly 20 different service options

- *20, 24, 30 minute headways*
- *One and two route service into SF*
- *Skip stop plans*
- *Train control modifications*
- *Addition of select trains*
- *All options assumed one track available between M17-M55 interlockings*

Selected current service plan

- *Strong bias to maintain 20 minute frequency system-wide*
- *Understood the risk for cascading delays & reliability risk*



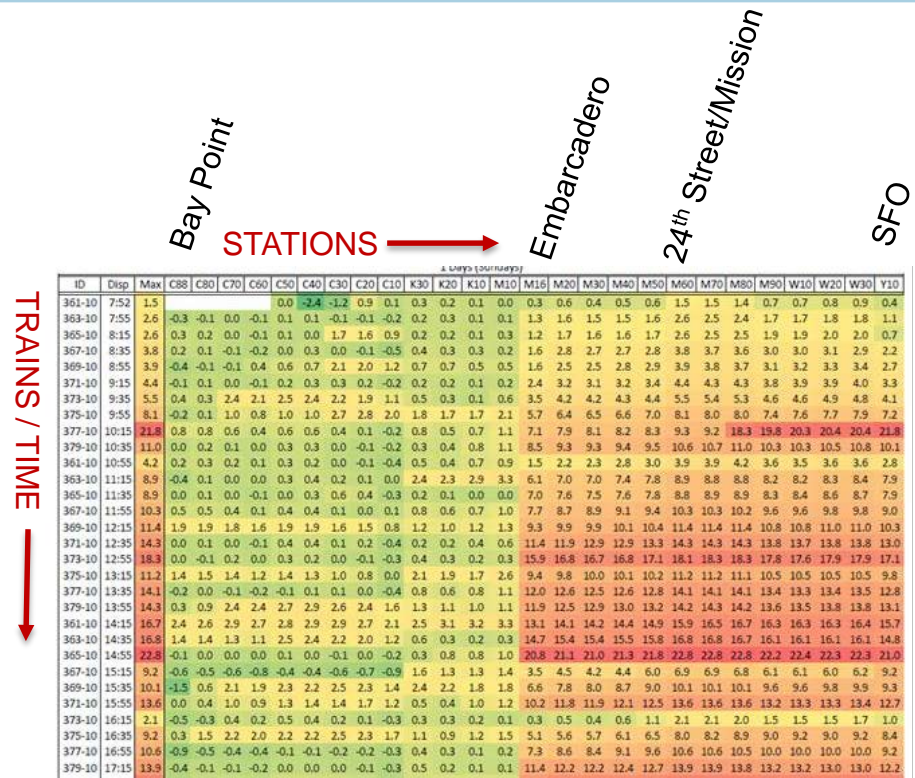
**Result was 20-minute,
one-route SF service
with Blue Line turning
at MacArthur**

Sunday M-line Single Tracking 2019 PERFORMANCE



In practice:

- Current plan works only with no delay events on Yellow Line
- Once delay events occur
 - *Difficult to recover*
 - *Delays compound until OCC can short-turn a train to reset timing*
- Impact to Customers
 - *Unreliable Service*
 - *Delays of 15-20 minutes*
 - *Missed timed connections between routes*



Delay Heat Map
Southbound

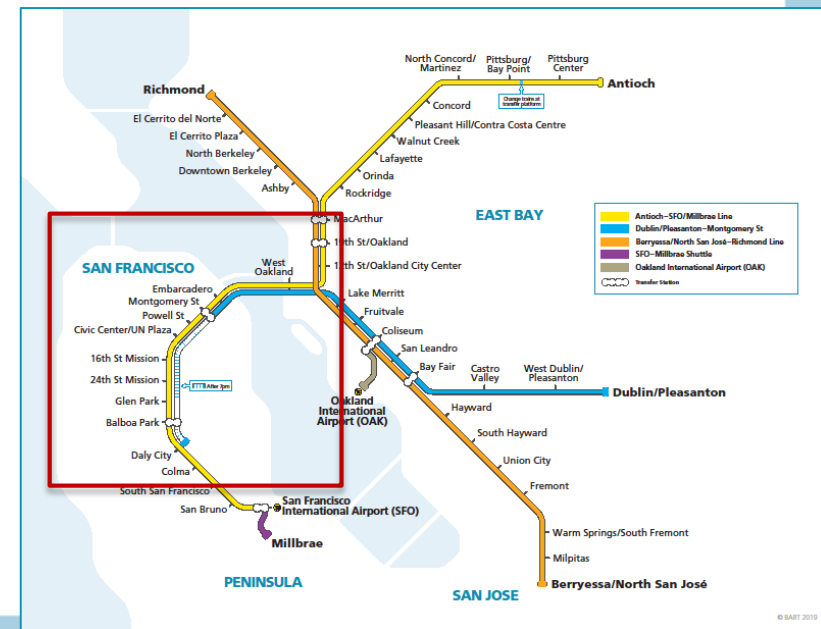
Sunday M-Line Single Tracking 2020 Proposal

2020 Sunday Service Proposal

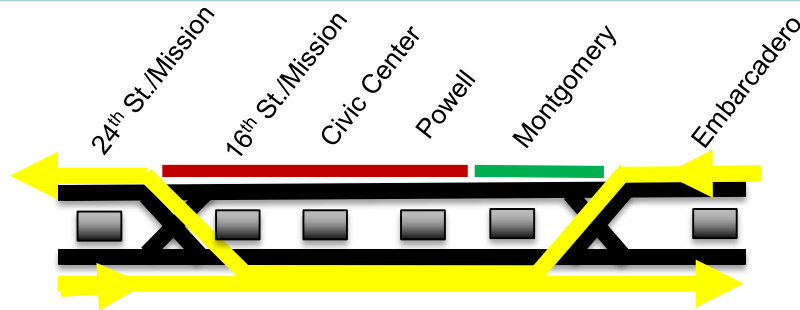
- 24 minute headways to maintain single-tracking schedule
- Provide two track service at Montgomery; enables two-line SF service
 - 2 Line Service into **Montgomery** (8:00am-7:00pm) during single-tracking
 - 2 Line Service into **Daly City** (7:00pm-01:00am) and all-day non-single tracking Sundays

Benefits

- Stable, reliable service, including transfers between lines
- Cross-platform transfers to Blue Line and Yellow Line at Montgomery
- Closer to traditional 2018 Sunday service



Two-Route SF Single Tracking Service *Visualizing the Plan*



Requirement.

- Need power to both tracks at Montgomery

