



**Massachusetts Bay
Transportation Authority**

Orange Line Customer Capacity Update

Fiscal & Management Control Board

November 7, 2016



Orange Line Fleet and Infrastructure Projects

- Two major programs already underway
 - New Orange Line fleet procurement
 - Orange Line Infrastructure upgrades
- Together these projects will deliver significant customer service reliability improvements and allow for increased passenger capacity



Existing Orange Line Fleet

- 1979-1980, 120 vehicles we currently use today went into service, their design life reached in 2004-2005
- No mid life overhaul was performed on these vehicles
- Capital maintenance investments are underway to support vehicle reliability until replacement
- 96 vehicles are currently used for peak service, allowing for approximately 6 minute headways





New Orange Vehicle Investments

- Procuring 152 new vehicles - fleet will be fully available by 2022
- New trains will be in passenger service starting early 2019





New Orange Line Car Improvements

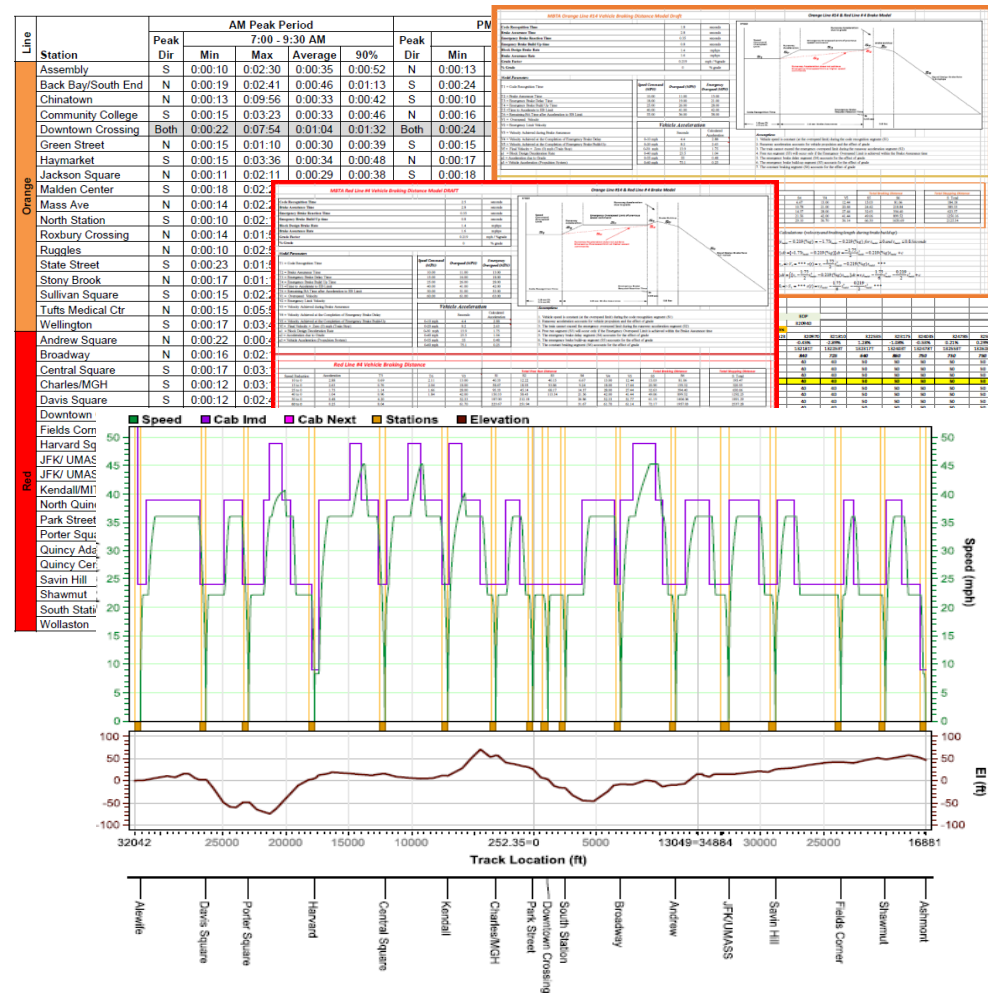
New Orange Line No. 14 Fleet

- Increased fleet size
 - Current Fleet 120 Cars
 - New Fleet 152 Cars
- Advanced Propulsion System
- Improved Trigger for Vehicle Signal Controller
- Improved Braking Control Technology



Capacity Simulations Review

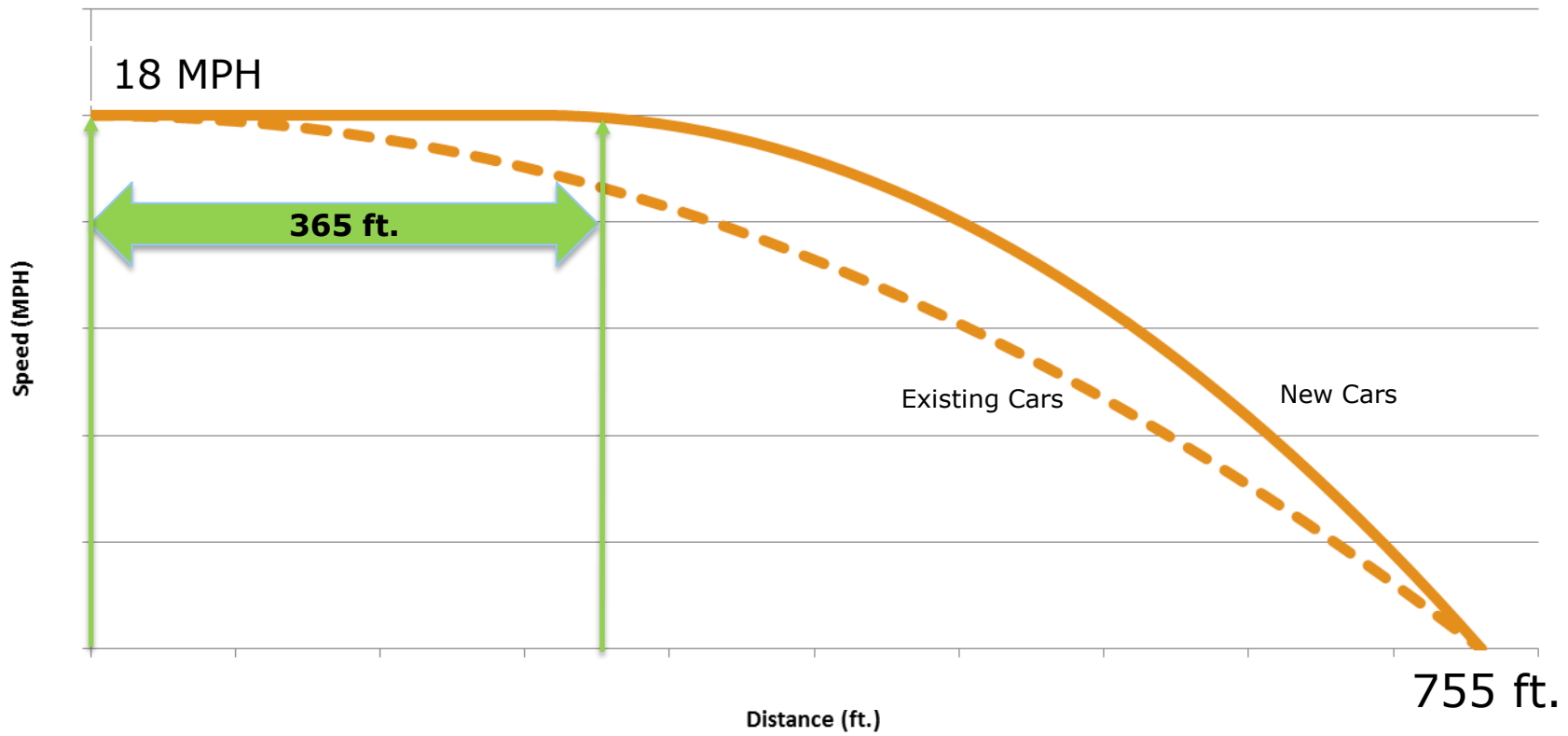
- Extensive Independent system capacity simulation on Orange and Red Lines conducted, utilizing:
 - Actual Service Data and Visual Observations
 - Actual Signals and Station Designs
 - Vehicle Performance Modeling
 - Specific Improvement Initiatives





New Car Improvements

- New cars will run faster for longer, increasing capacity





New Orange Fleet will Increase Capacity

- With the new vehicles' performance, and minor speed code changes, the Orange Line theoretical capacity increases from 10 to 14 trains per hour
- This increases passenger capacity from 12,300 to 17,220 customers per hour
- 40% increase in customers carried per hour (after delivery of the new fleet) compared to current capacity will accommodate substantial growth in Orange Line ridership



Orange Line Simulation: Existing vs. Expected 2023



Orange Line Simulation: Existing vs. New Fleet

01:15:44.000



01:15:59.000





Short Term Actions to Improve Capacity

- The analysis showed that we could improve capacity with operational improvements
- Operations is currently investigating short term actions to improve current capacity
 - Off peak train storage @ Oak Grove
 - Dwell time improvements
 - Drop backs at both terminus locations
 - Allowing us to reduce headways by 30 seconds
 - 5-10% Capacity Increase
 - Up to 1200 more customers per hour



Thank you
