Communications Based Train Control (CBTC) Briefing

Rider Experience and Operations Committee

4/2/2026

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Presentation purpose

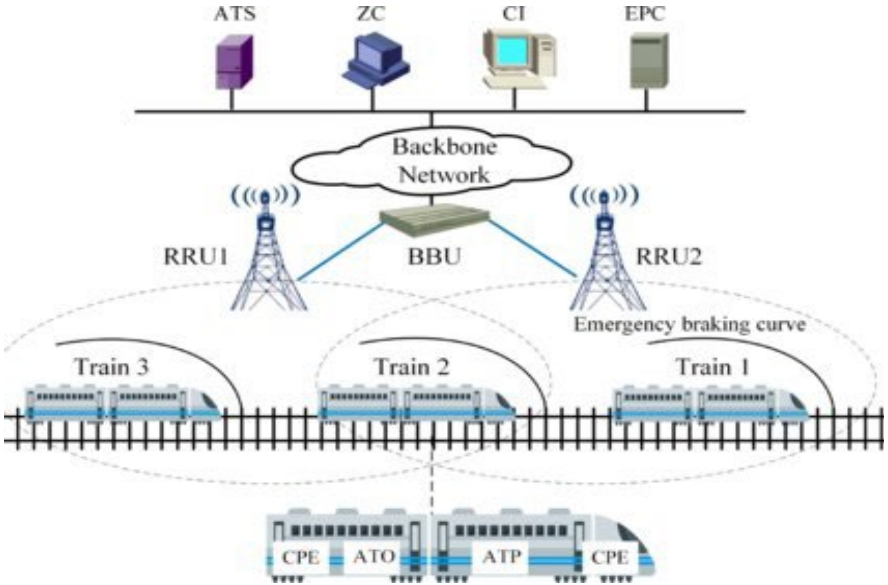
Why we are here

a) To provide an overview of Communications Based Train Control (CBTC) technology and its suitability for Link Light Rail.

b) Discuss preliminary opportunities and potential risks for implementing CBTC.

What is CBTC?

- CBTC is a **modern digital train control system** that uses continuous wireless communication between trains and track systems.
- Both existing Automatic Train Protection (ATP) and CBTC systems **ensure safe train separation** through enforced braking limits.
- **CBTC is superior** because it continuously manages train spacing in real time and **allows trains to run closer together safely, increasing capacity and reliability**.



Why CBTC?

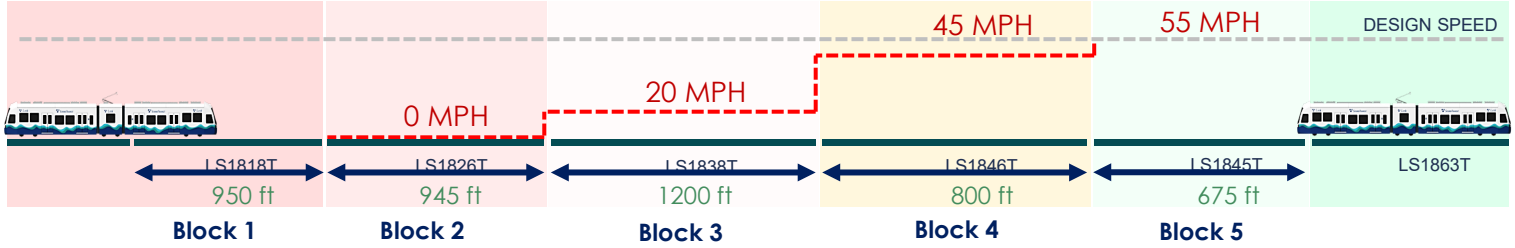
1. Current Automatic Train Protection (ATP) train control system could potentially reach obsolescence challenges in 15-20 years.
2. CBTC will allow Link to carry more riders, more reliably, on the same infrastructure – while preparing the system for future growth, automation, and resiliency.

Why now?

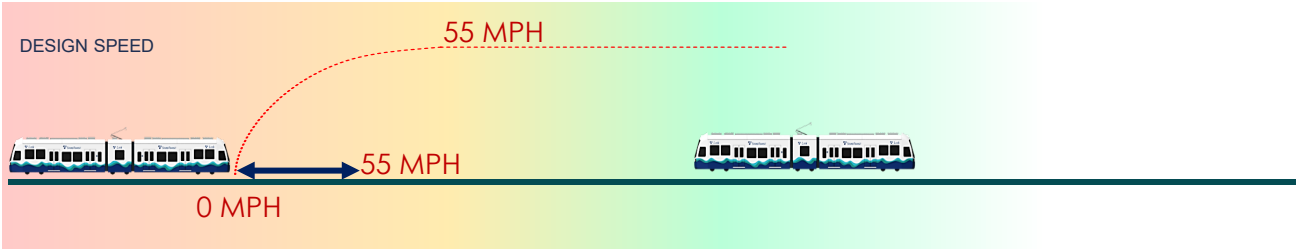
1. It takes 10-20 years to migrate to a new train control system from an existing system (Brownfield project).
2. ST3 and Series 3 LRV projects constitute ~50% of the fully built out Link Light Rail network. Also, it's relatively easier to start a new train control system with a new project (Greenfield project).

ATP vs CBTC: Train Acceleration

Current ATP Fixed-Block Signaling causes trains to accelerate in steps, as each “block” must clear sequentially, leading to slower build-up of speed.



CBTC Moving Block Signaling allows trains to accelerate smoothly and continuously - like a bus in open traffic-while maintaining safe separation in real time.



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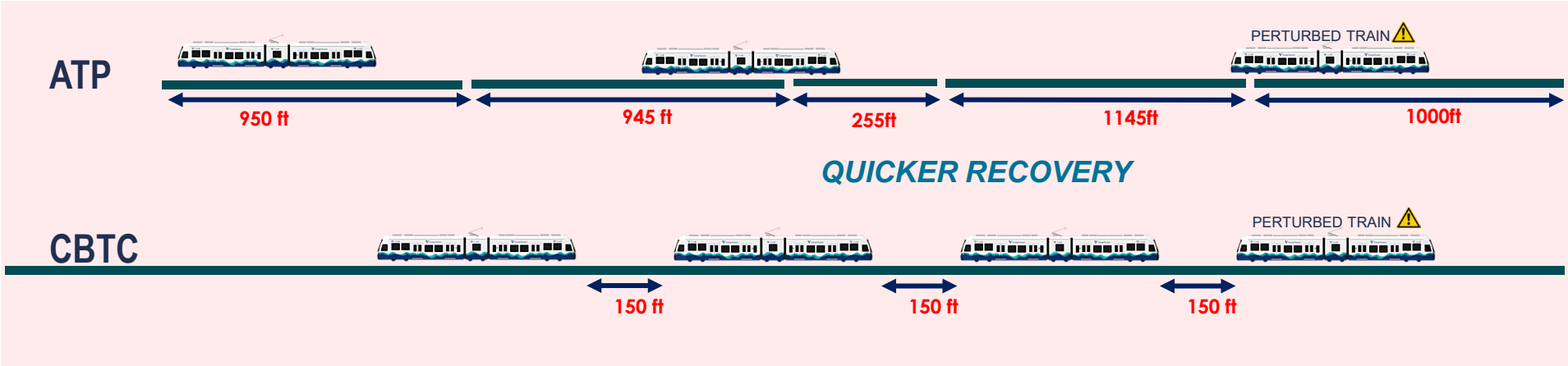
Recovery from Service Disruptions (Illustration)

CBTC enables closer train spacing than ATP and faster recovery from disruptions through real-time **safe** train regulation.



CBTC in Enterprise Initiative

Staff developed three potential options for implementation of CBTC to support Board decision-making related to the Enterprise Initiative, which were summarized in the transit operations opportunity register.

1) **No Change:** No consideration for upgrading to CBTC within the current Long-Range Finance Plan period.
2) **Opportunistic Implementation Approach**: CBTC is phased-in with ST3 build out, with full system implementation for the existing system kicking-off in 2047.
3) **Aggressive Implementation Approach**: CBTC is implemented across the full system with phase-in through ST3 build out and migration of the existing system to CBTC in 2036. This approach would require additional resources beyond what is currently assumed.

CBTC Status and Next Steps

Current status

- Two CBTC feasibility studies and preliminary industry engagement completed.
- Series 3 RFP language has the option to include CBTC technology in addition to ATP (dual technology necessary for the rolling stock during technology migration phases).
- Washington Congressional Delegation has secured $4M to initiate CBTC.

Next steps

- Based on Board decision-making with the Enterprise Initiative, we may **establish a CBTC Project Planning Phase** to:
  - » Procure technical consultant services to develop technical requirements for CBTC
  - » Procure program management consultant services for coordinating and overseeing CBTC contractor scope delivery
  - » Publish an RFP for a goods and services contract to select a CBTC vendor for CBTC design, equipment fabrication, and solution delivery.

Thank you.

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