



SFMTA

# Light Rail Vehicle (LRV4) Brakes Overhaul Phase 1 Vehicles

SFMTA Board of Directors

May 6, 2025

# LRV4 Brakes Overhaul

Staff is requesting SFMTA Board approval of a sole source contract with Wabtec Passenger Transit to overhaul the Brake System on 68 Phase 1 LRV4 vehicles.

## Summary

- Fleet Status – Procurement Update
- Overhaul Plan – System-Based Overhaul Approach
- Brakes Overhaul – Technical Brief
- Brakes Overhaul Contract – Sole Source



# LRV4 Fleet Status

- LRV4 Contract with Siemens, NTP September 2014
- On Schedule, On Budget
- 164 of 219 LRV4s Conditionally Accepted and in revenue service
- 55 Vehicles remaining, final delivery in early 2026
- Phase 1: 68 expansion vehicles 2017-2019
- Phase 2: 151 replacement vehicles 2021-2026
- Phase 1 LRV4s over 5 years old
  - End of base 5-year warranty
  - First overhaul interval
  - Trucks, Brakes, Couplers
- Development of LRV4 Overhaul Plan



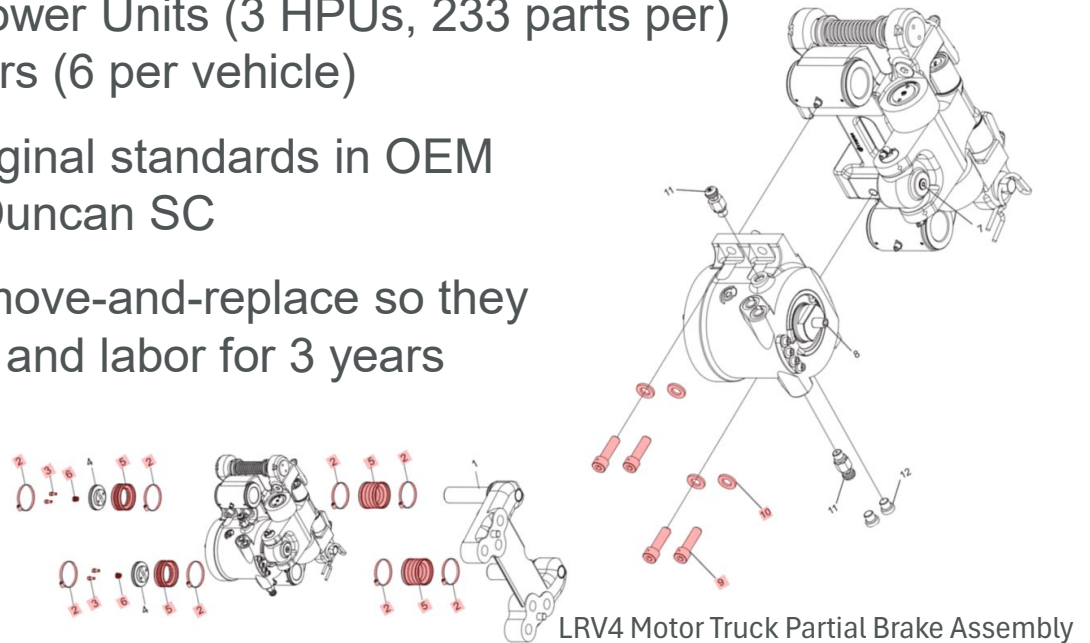
# LRV4 Overhaul Plan

- State-of-Good-Repair: SFMTA Strategic Plan Goal #9 “Fix things before they break . . .”
- Reliability Centered Maintenance (RCM) approach designed into modern LRV4 vehicle
- LRV4 follows system-based overhaul approach, not one big midlife
- Goal to achieve higher reliability/availability
- **Overhaul Plan** strategically aligns system overhauls, plans funding by “Quarterlife”
- First systems for overhaul
  1. Truck Overhauls – already started (in-house)
  2. Coupler Overhauls – planning phase (in-house)
  3. **Brake Overhauls** – due now (contracting to Original Equipment Manufacturer, Wabtec)

0100   VEHICLE SYSTEMS / HOW TO USE	+
0200   CARBODY	+
0300   COUPLER	+
0400   DOORS	+
0401   MOVEABLE STEP	+
0500   HVAC	+
0501   CAB HEATER	+
0600   LIGHTING	+
0700   PROPULSION	+
0701   MASTER CONTROLLER	+
0702   BRAKING RESISTOR	+
0800   PANTOGRAPH	+
0801   HSCB	+
0802   KNIFE SWITCH	+
0900   AUX. POWER	+
1000   DESTINATION SIGNS	+
1100   BATTERY	+
1200   TRUCKS	+
1201   WHEEL / AXLE ASSEMBLY	+
1202   TRACTION MOTOR	+
1203   AXLE GEAR UNIT	+
1204   GROUNDING CONTACT	+
1205   JOURNAL BEARING	+
1206   SANDING SYSTEM	+
1300   FRICTION BRAKE / LEVELING SYSTEM	+
1301   TRACK BRAKE	+
1400   COMMUNICATIONS	+
1500   EVENT RECORDER	+
1600   CCTV	+
1701   PASSENGER SEATING	+
1702   CAB SEAT	+
1703   WINDOWS / WINDSHIELD	+
1704   WINDSHIELD WIPER / WASHER	+
1705   HORN	+
1800   ATCS	+
1900   MDS	+
2000   FARE DEVICES	+
2100   CAD / AVL	+
2200   TWC	+
2300   APC	+

# Phase 1 Brakes Overhaul

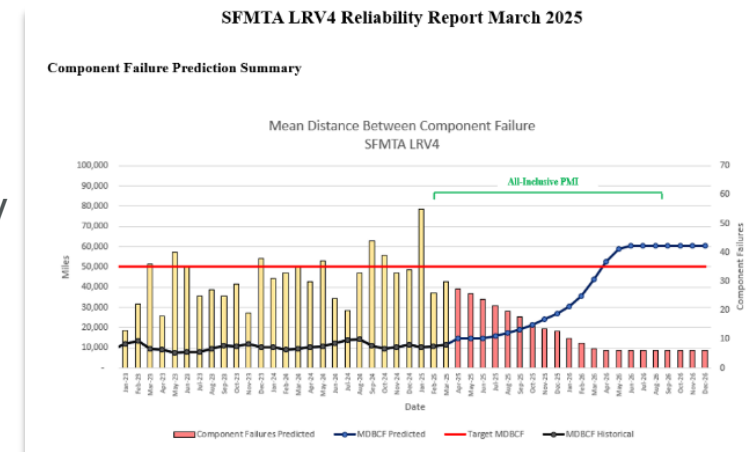
- All 68 Phase1 LRV4s due for Brakes Overhaul – 6 years
- To maintain warranty, SFMTA is obligated to keep system in state-of-good-repair per Siemens maintenance recommendations
- System Overhaul includes:
  1. Rebuild Calipers (10 Calipers per vehicle, 230 parts per MT caliper)
  2. Rebuild Hydraulic Power Units (3 HPU, 233 parts per)
  3. Replace Accumulators (6 per vehicle)
- Overhaul components to original standards in OEM factory clean room facility, Duncan SC
- Vendor performs on-site remove-and-replace so they can warrant all components and labor for 3 years



LRV4 Motor Truck Partial Brake Assembly

# Phase 1 Brakes Overhaul

- Phase 1 Overhaul simultaneous with corrective actions required to address warranty defects under the Siemens LRV4 contract
- No safety related brakes concerns – defects related to reliability, availability, and system life
- SFMTA has fully enforced all warranty obligations under the Siemens contract
- Negotiated favorable terms including no-cost removal and replacement, no-cost shipping, discounted parts, non-standard 3-year warranty
- Combining overhaul activities with corrective actions (one program) saves money and delivers efficiencies that increase vehicle availability
- Completing this overhaul ensures the continued enforceability of all warranties and maintains Siemens and Wabtec responsibility for ongoing system performance



# Brakes Overhaul Contract

- Sole source contract with Wabtec Passenger Transport
- Not to exceed \$15,527,933 – parts and labor
- 18-month project schedule – roughly 1 car per week
- Vendor is the Original Equipment Manufacturer (OEM)
  - Complex modern braking system, extensive software integration
  - Proprietary brake design (per rail industry norms)
  - Specialized components undergone extensive qualification testing
- Qualified, warranted parts cannot be procured from alternate supplier
- Contracting Overhaul to OEM maintains & extends warranty coverage
  - Continues original Siemens warranty on non-safety related fleet defects
  - Provides for 3-year Wabtec extended warranty on overhauled components

# Recommend Approval

**Staff recommends** Authorizing the Director of Transportation to execute Contract No. SFMTA2025-28-LOC: Phase 1 LRV4 Brake System Overhaul with Wabtec Passenger Transit to perform the scheduled overhaul of key components of the LRV4 brake system on 68 vehicles, for an overall amount not to exceed \$15,527,933, and a term not to exceed 2 years and 6 months.

