ZE Infrastructure Navigating Buildout and the Challenges of Keeping It Running

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San Diego Metropolitan Transit System

MTS Bus Overview

- MTS provides bus services throughout San Diego County directly or by contract with private operators.
    - Almost 100 fixed bus routes and ADA paratransit services.
    - Fixed route bus service includes, local, urban, express, premium express and rural routes
    - 300,000 weekday trips
    - Service area spans 3,240 total square miles

- Five Operating Divisions: 728 total buses in fleet (Mix of CNG, BEB, Propane, and Gas)
    - In-house
        - Imperial Ave Division (IAD) - 131 buses
        - Kearny Mesa Division (KMD) - 117 buses
    - Contracted (TransDev)
        - South Bay Division (SB) - 235 buses
        - El Cajon Division (EC) - 98 Buses
        - Copley Park Division (CP) – 147 Paratransit and Minibuses

MTS Zero Emission Bus (ZEB) Overview

- ZEB Pilot Program Initiated: October 2017 (pilot ended in 2021)
- Battery Electric Buses (BEB's) began service in December 2019
- Eight battery electric buses purchased for ZEB Pilot Program:
  - Six (40ft) New Flyer (466 kWh) 2019
  - Two (40ft) Gillig (444 kWh) 2020
- Additional BEB Purchases
  - 5 (40ft) Gillig (444 kWh) 2021
  - 12 (60ft) New Flyer (615 kWh) 2023
  - 13 (40ft) New Flyer (525kWh) 2024
  - 2 Electric Paratransit Vans
- 38 BEB's in total (over 2 million cumulative miles)
- Future BEB's:
  - 13 (40ft) New Flyer arriving mid 2028
- Mixed Fleet:
  - Transition includes incorporation of Hydrogen with BEB



ZEB Infrastructure

- **Pilot Program 12 Plugin ChargePoint Chargers**
  - Six Plugin chargers (IAD) Imperial Ave Division
  - Two Plugin chargers (KMD) Kearny Mesa Division
  - Two Plugin chargers (EC) East County Division
  - Two Plugin chargers (SB) South Bay Division



- **Overhead Charging system at scale**
  - SB Project built 2022-2023
    - 8 Heliox 180Kw charging Cabinets
    - 24 Schunk Pantographs
  - IAD Project built 2025 – Ongoing
    - 10 Heliox 180Kw charging Cabinets
    - 30 Schunk Pantographs
    - Expandable to 39 Pantographs



- **Charge Management System -Heliox**

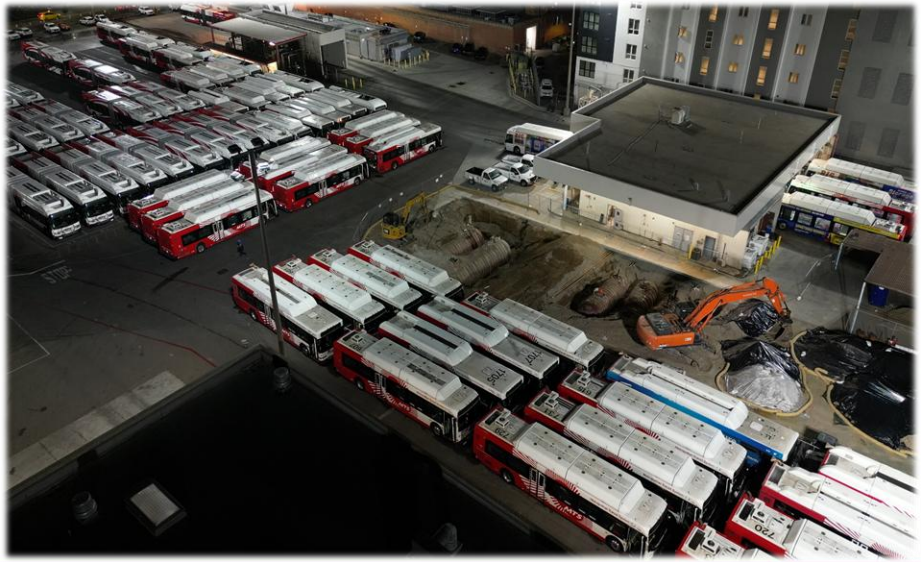
Navigating Buildout

- **Construction**
  - Utility coordination
  - Electrical upgrades
  - Design
  - Charger equipment selection
  - Commissioning





- **Operational Resilience During Construction**
  - Reorganization of buses to operate out of other bus yards
  - New approach to pull out
  - Off-site satellite lot; shuttled employees to and from lot to bus yard
  - Adjusted daily operations to accommodate construction phases
  - Minimized service impacts through proactive planning



Sustaining Operations & Maintenance

- **Charging stations**
  - Warranty and SLA agreements
  - Preventive maintenance
  - Facilities maintenance plan/oversight
  - Spare equipment/Parts
  - Charge management software
  - API keys



- **Operational Controls and Lessons Learned**
  - Restrict charging operations to trained maintenance personnel
  - Ensure proper bus alignment under the pantograph
  - Verify charger communication & charging successfully initiates
  - Hands-on oversight is critical for successful charging operations

Cost

- **South Bay Overhead Project**
  - Charging Equipment & Commissioning - $1,275,595
  - Construction & Design - $8,425,647
  - Total - $9,701,242
  - SLA 5 Year Agreement $224,745

- **Imperial Ave Division**
  - Charging Equipment & Commissioning – $2,452,640
  - Back up Generator – 2,402,020
  - Construction & Design - $21,844,358
  - Total - $26,699,018
  - SLA 5 Year Agreement $731,508

QUESTIONS?

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