

San Diego Metropolitan Transit System (MTS) Zero Emission Bus (ZEB) Pilot Project / California Innovative Clean Transit Rule (ICT)



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MTS Overview

MTS provides transit for San Diego and surrounding cities, rural parts of the County, and to the international border

- 3,200 square miles
- 300,000 passengers daily, 88 million annually
- Light rail / Trolley: Over 130 cars, 54 miles
- Bus: Nearly 100 bus routes, over 800 buses
 - Fixed route, BRT / RAPID, commuter, rural and paratransit
 - 40 ft. standard, 60 ft. articulated, over the road, cutaways and taxi's
 - Renewable natural gas (CNG) and propane
 - Battery electric buses (BEB) coming Summer 2019



MTS Emission Reduction Actions

Near Zero Emissions: Bus

- One of first transit systems to commit to CNG (early 2000's)
 - 100% RNG Fleet and a commitment to Low NOx engines
- Commitment to 100% propane for mini-bus and paratransit fleets
 - 200+ buses
 - 5.3 million lbs. annual GHG reductions

Zero Emissions: Trolley

- 43% of MTS ridership already on ZEV's
- Increasing service on existing rail lines
- Building an additional 11 mile rail line north to UCSD



California's Efforts to Further Reduce Emissions

- California Air Resources Board (CARB)
 - Clean Transit Fleet rule, 2000
 - Innovative Clean Transit rule (ICT), 2019
- ICT is the culmination of three (3) years of collaboration between MTS, California transit systems, CARB and many other groups to develop a zero emissions requirement for public transit
- As the ICT was being developed California transit including MTS began developing strategies for ZEB “real world” deployment



MTS ZEB Pilot Overview

- **Major components:**

- Six (6) to eight (8) battery electric buses (BEBs)
- Extended range depot charging (only)
- Hired Center for Transportation and the Environment (CTE) to assist with oversight, development, planning / implementation, monitoring, analysis and reporting
- Installing charging infrastructure at all four (4) operating facilities to maximize deployment capabilities
- Develop a transition and full deployment plan



MTS ZEB Pilot Overview

Costs:

- Buses
 - CNG = \$525,000
 - BEB = \$890,000
- Chargers and infrastructure
 - \$100,000 - \$115,000 per ZEB
- Electricity as a fuel
 - CNG cost per mile = \$0.28
 - Electricity cost per mile = \$ 0.53 (+ 89%)

Challenges:

- Operating Range
 - CNG = 350+ miles
 - BEB = 150 miles
- Facility Capacity ?
- Utility Grid ?

MTS full deployment today = \$290 million additional incremental costs
CA full deployment today = \$4 billion additional incremental costs



CARB's Innovative Clean Transit (ICT) Rule

- Replaces sections of the Fleet Rule for Transit Agencies (adopted in 2000)
- Final rule effective: January 1, 2019
- Applies to all public transit systems
 - Large systems immediate implementation
 - Small systems up to two (2) years deferred implementation



Major Components of ICT Rule

1. Transit fleets to be 100% Zero Emission Bus (ZEB) by 2040
2. ZEB purchase requirements beginning in either 2023 or 2025

% of new bus purchases

2023, 2024, 2025	25%
2026, 2027, 2028	50%
2029 and forward	100%

3. Smaller, cutaway and larger articulated buses: ZEB purchase requirements begin in 2026
4. No “benchmarking provisions” are included
5. Incentive funding is only available for early adoption or purchases that exceed requirements



Other Components of ICT Rule

- Each transit system must:
 - January 2020: Purchase Low NOx engines for CNG buses
 - January 2020: Purchase only renewable CNG
 - July 2020: Submit deployment plan to CARB
 - Annual compliance reporting and record keeping requirements
- CARB staff must report program readiness to the board one (1) year prior to purchase mandate implementation
(eg. state of the technology, infrastructure availability)



Questions ?

