MCTS BUS REPLACEMENT PROGRAM

MILWAUKEE COUNTY TRANSPORTATION AND TRANSIT COMMITTEE

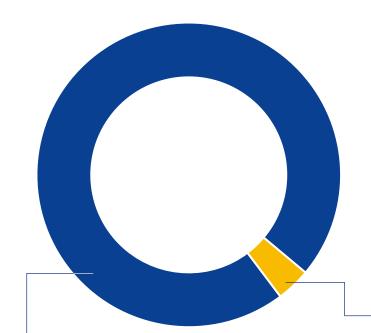


Current MCTS Fleet











11 Battery Electric Buses



Battery Electric Bus Performance





battery electric buses (BEBs).

due to manufacturing
delay when service
began. Due to
this, CONNECT 1 service
began with a mix of BEBs
and clean diesel buses.
Two bus batteries
required replacement
within two months.

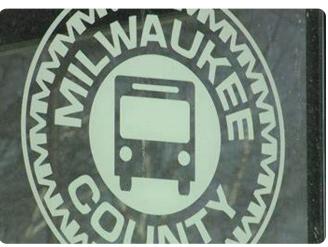
All BEBs were recalled.
CONNECT 1 remained in operation with clean diesel buses.

All 11 BEBs anticipated back in operation for CONNECT 1. Anticipated delivery of 4 remaining BEBs.

monitoring of BEB performance.

MCTS is committed to evaluating alternative fuel sources for the future.







MCTS Priorities For Future Bus Procurements

- Reliability
- Fiscally sustainable investment
- Market availability



Future Vehicle Options





Clean Diesel



Hybrid Electric



Battery Electric

U.S. Marketplace







With few manufacturers and a high volume of orders for battery electric and hybrid electric buses, agencies face a two-year wait or more for new orders.



Battery electric buses make up **29.0%** of total U.S new bus orders.



Hybrid electric buses make up **40.5%** of total U.S new bus orders.

Clean Diesel





Considerations

- Established technology
- Widely available
- Relies on fossil fuels
- Emits particulate matter, nitrogen oxides and other greenhouse gases
- \$650,000 approximate cost per bus (as of 2023)

Hybrid Electric





Considerations

- Emerging market with limited qualified manufacturers
- Fuel efficiency with reduced emissions
- Complex maintenance and repair
- Limited zero-emission range
- \$950,000 to \$1,000,000
 approximate cost per bus (as of 2023)

Battery Electric





Considerations

- Emerging market with very limited qualified manufacturers
- Zero emissions unless considering source of energy generation
- Near-term and long-term supply chain issues
- Range limitations
- \$1,200,000 approximate cost per bus (as of 2023) and expected to rise

MCTS Recommendation



Use 40-foot, right-door loading, clean diesel buses in the near-term for any bus purchase.



Why Clean Diesel

Fiscally responsible and sustainable option

Challenges related to battery electric bus fleets and volatility of the current battery electric bus market

Customer needs and reliability for riders

Federal mandates for enhanced diesel emission standards beginning in 2027

Thank You

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