



# METRO ELECTRIC BUS UPDATE TRANSPORTATION PLANNING & POLICY BOARD

11/1/2021



# WHY ELECTRIC?

- Goal of halving emissions by 2030 to combat climate change
- Improve local air quality
- Reduce long term operating costs
- Improve service quality

# OTHER OPTIONS



## Compressed Natural Gas

- Most common in the industry
- Fewer emissions than diesel
- Still a fossil fuel
- Requires significant storage and pressurization infrastructure



## Biodiesel

- 100% renewable, from plant stock
- Can be used in existing fleet
- Strong solvent that requires some modifications to fueling systems
- Poor cold weather performance
- May void warranties



## Renewable Diesel

- 100% renewable, from plant stock
- Can be used in existing fleet
- Requires no modifications to fueling systems
- Good cold weather performance
- Expensive

# ELECTRIC BUSES

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- Gaining significant market share
- Fewer moving parts
- Quiet
- No localized emissions
- Consistent Duty cycle
- Lower fuel cost



# ON-ROUTE CHARGING

- Top off at layover
- Smaller Battery
- Can run all day
- Add driver time on route
- Distributed infrastructure

# DEPOT CHARGING

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- Charge in garage
- Centralized infrastructure
- No driver time
- Larger batteries (\$)
- Can't run all day (yet)





# COST CHALLENGES

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- Not a “one to one” replacement
- Need more electric buses than diesel
- Cost is 50-75% higher than diesel per bus
- Capital expenditures likely 2x



# MAINTENANCE CHALLENGES

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- New technology that is less proven
- Many upstart, unproven, manufacturers
- Need to train new mechanic skills  
= more downtime in short term

# TRANSITION PLAN

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- Transition shouldn't degrade service
  - Most efficient bus is the one that people ride
  - Hedge risks to ensure no disruptions
- Use mixed strategy for BRT - 27 electric w/ on-route charging + 14 diesel
- Experiment with biofuels in short term
- Plan for all new buses to be electric starting in 2025
- Buses last up to 15 years, so 2040 for full transition
- Be flexible as technology and manufacturers mature (or doesn't mature)

# QUESTIONS & COMMENTS

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