

# METRO RIDE BUS ELECTRIFICATION



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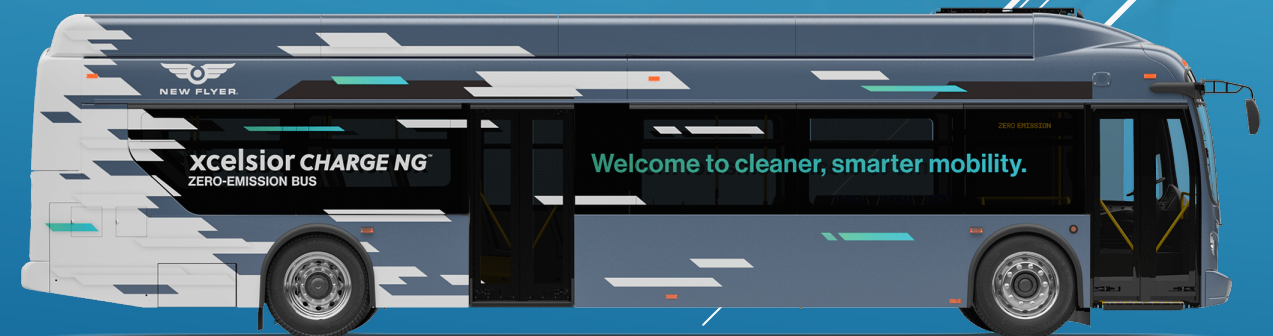
# HISTORY OF BUS ELECTRIFICATION



- ▶ Electric propulsion for buses is not a new idea, but storage of electricity has historically posed a challenge
- ▶ Merrill, WI is believed to be the first city in the United States to use electric buses
- ▶ Following WWII, most transit systems shifted away from mixed fleets to diesel

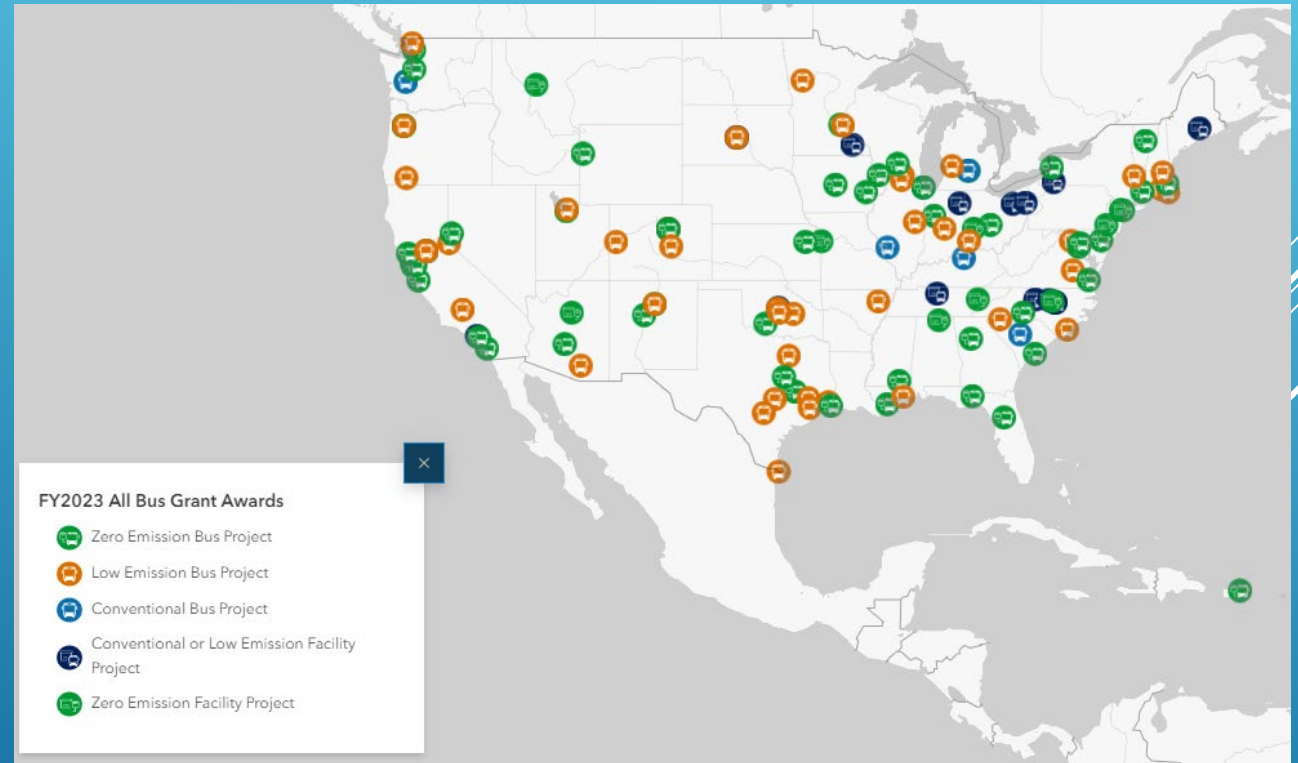
# ELECTRIC BUSES TODAY

- ▶ Starting in the early 2010s, rapid advancements in battery technology spurred many established manufacturers to offer electric buses along with newcomers to the bus industry
- ▶ Hybrid electric-buses (diesel engine that charges batteries) are being phased out in favor of pure battery-electric buses and fuel cell (hydrogen) buses



# FEDERAL FUNDING IMPLICATIONS

- ▶ Historically, the main source of funding for bus purchases has been the FTA's Bus & Facilities competitive grant program
- ▶ In FY23, the program funded over 1,300 buses, virtually all hybrid or battery-electric
- ▶ Future federal investment will continue to be steered away from conventional diesel buses



# PROS AND CONS OF BATTERY ELECTRIC BUSES

- ▶ No vehicle emissions
- ▶ Significantly decreased noise pollution
- ▶ Improved acceleration
- ▶ Less maintenance required
- ▶ Theoretical savings for energy consumption
- ▶ Range unreliability, especially in cold climates
- ▶ Battery degradation requires costly mid-life replacement
- ▶ Facility implications
- ▶ Significantly higher cost per vehicle, roughly doubling local match required
- ▶ While maintenance required is less frequent, it is more complex

# CURRENT FLEET CONDITIONS



- ▶ To date, Metro Ride has focused exclusively on diesel propulsion buses due to facility limitations and funding constraints
- ▶ With the exception of seven diesel buses purchased in 2022, the diesel fleet is becoming older, more expensive to maintain and less reliable
- ▶ There is no identified funding source to replace diesel buses with diesel buses



# CURRENT OBSTACLES TO ELECTRIFICATION FOR METRO RIDE

- ▶ The Metro Ride garage was constructed in 1979 when diesel was the only propulsion type being considered
- ▶ The facility is in a flood zone that may make it ineligible for federal investment
- ▶ The layout of the facility may not support charging infrastructure
- ▶ The electrical infrastructure in the area doesn't support electric bus charging





# ONGOING ELECTRIFICATION PROJECTS

- ▶ An application for a study to determine if the existing facility can be retrofitted to support battery-electric buses was submitted to WisDOT last week
- ▶ Next week, Metro Ride will receive a donated hybrid bus from the Duluth Transit Authority
- ▶ The hybrid bus will allow Metro Ride staff to become familiar with onboard battery technology



# QUESTIONS AND DISCUSSION

