TransIT Services of Frederick County Refurbished Electric Buses

5 buses received May 2016 in use in peak hour service ~

Electricity ~

Conduit for future 10 stations & generator capped off

New transformer and electric boxes

10 Charging Stations installed, with conduit ready for another 10

Plug/cord and boxes supplied by Complete Coach Works

Cost of Infrastructure for 10 buses was $175,000. Funded by FTA, MTA, County and Maryland Energy Administration Smart Energy Grant

Charging~

Fully charges in 4-6 hours. Able to run 8+ hours on a single charge. Battery technology rapidly advancing, range has increased dramatically.

Cost of refurbished all electric bus was $583,000,
Approximately $400,000 less that a new electric bus.
Costs have come down and a new 30-foot electric bus is comparable now.

Costs ~

Buses have been in service for over a year.

Real Life ANNUAL Cost Comparison Per Bus:

Diesel bus annual fuel =	$23,000	maintenance 1st year bus =	$8,600
Electric bus charging =	$ 4,400*	maintenance 1st year =	$1,500
Savings	$18,600		$7,100
Reduction	80%		82%

*Cost of charging has gone down to $4,200

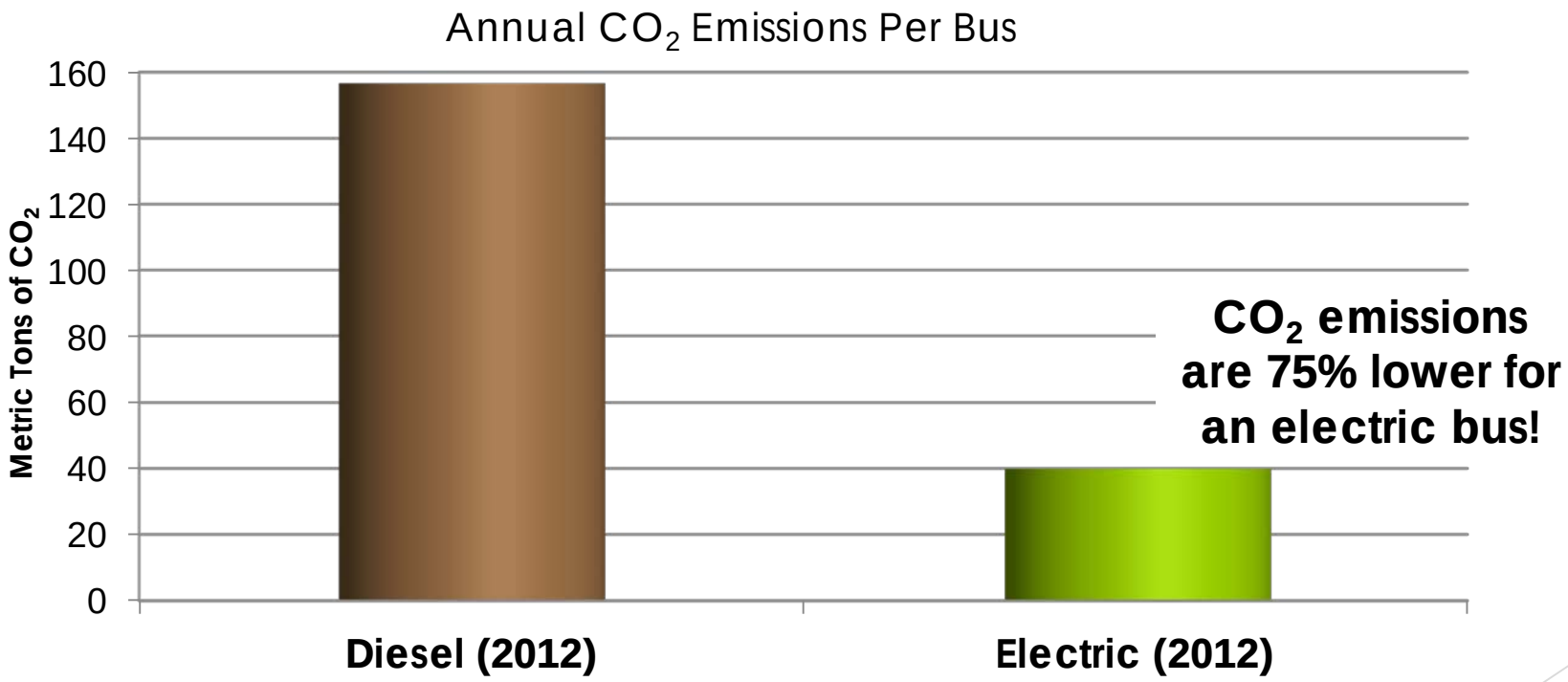
Savings as buses age expected to increase by $14,000 per bus annually

Annual and Lifetime Savings ~

Fuel	$18,600	
PM	$22,600	after year 1
TOTAL	$41,200	
	12	bus life
	$494,400	Savings over bus lifetime
	$530,000	Current cost new electric bus

CO_2 Emissions Are Significantly Lower for Electric Buses

CO2 from Electric Buses Comes from Production of Electricity at Power Plants



Source: CUTR, NTD, EIA, Florida Public Services Commission

Train First Responders ~

Lessons Learned ~

BUSES:

- On the road evaluation – determine proper turning radius, etc.
- Driver training – how to drive to maximize power efficiency. Expect & prepare for resistance to new technology
- Maintenance – require manufacturer to have someone on site for one year
- Plugs and "boxes" – require manufacturer to provide the box that connects the bus to the power source
- Manufacturer monitors buses remotely. Set bus to cycle on and off in extreme cold to keep coach and vehicle steady so start ups are easier and coach temperature is acceptable to customers.
- Train First Responders in how to extinguish a battery fire

INFRASTRUCTURE:

- Coordinate! Construction management, electric company, contractor
- Electrical Load Study first – determine load on property, prepared by electrical engineer. Assists with electric company permits and scheduling.
- Under cover: if possible, charging units should be protected


781
780
FREDERICK COUNTY, MARYLAND
1748