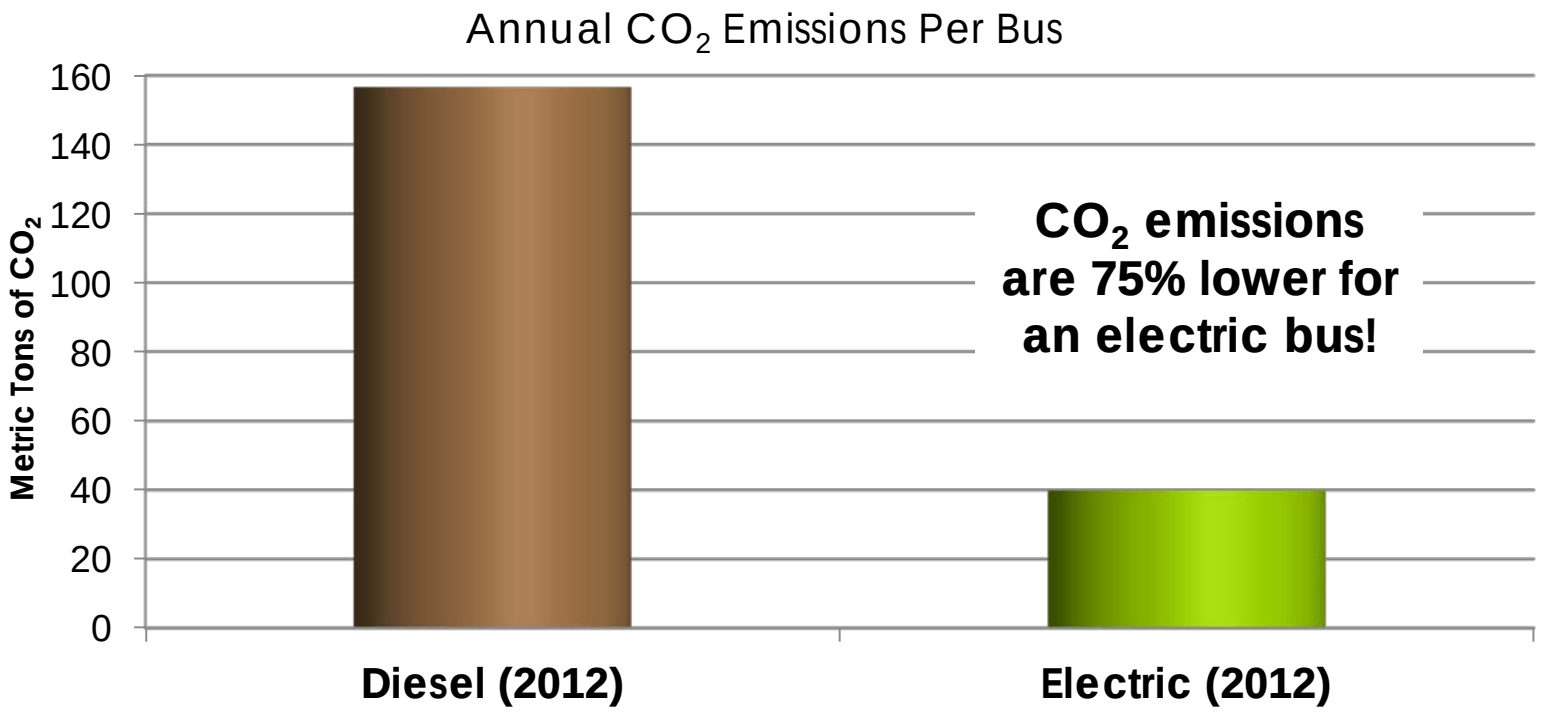
TransIT Services of Frederick County Electric Bus Program

Updated July, 2020

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

5 refurbished CCW electric buses received May 2016 are currently in use in peak hour service

1st brand new BYD bus received October 2019

3 brand new BYD buses just received (June 2020)

- Purchased with $1.5 Million LONO grant

Electricity ~

New transformer and electric boxes:

Conduit for future 10 stations & generator capped off

10 Charging Stations installed ~ (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, Frederick County and Maryland Energy Administration Smart Energy Grant

We are currently considering adding a generator to address power outages.

Solar ~

Frederick County Landfill Solar Array:

- Constructed by Tesla, 20-year agreement
- Covers 14 acres of landfill
- Generates 2 megawatts of power/day (under ideal conditions)
- Virtual net metering supplies nearly 20% of County government needs
- Will save the County $250,000 to $300,000
- TransIT is one of 7 county beneficiaries

Charging~

Buses fully charge in 4-6 hours; BYD buses run full shift (8+ hours/ ~100 miles of service) on a single charge.

Battery technology is rapidly advancing; range has increased dramatically.

Capital Costs ~

Cost of each refurbished CCW all electric bus: $583,000

New all electric BYD bus: $542,000

Annual Operating Costs ~

	Fuel:	Maintenance:
Diesel:	$23,000	$8,600
Electric:	$4,200	$1,500
Savings:	$18,800	$7,100
% Cost Reduction	**82%**	**83%**

Savings expected to increase by $14,000 per bus annually as diesel buses age out of the fleet

Annual and Lifetime Savings ~

Fuel:	$18,800	
Preventive Maintenance:	$22,600	after year 1
TOTAL:	$41,400	
	12	years of service
	$496,800	savings over bus lifetime
	$542,000	current cost of new electric bus

Lessons Learned ~

BUSES:

- On the road evaluation – determine proper turning radius, become familiar with characteristics of electric vehicle (for example, quiet operation).
- Driver training – expect & prepare for resistance to new technology. Train on driving to maximize power efficiency.
- Maintenance – require manufacturer to have someone on site for one year, and start training technicians IMMEDIATELY as electric propulsion systems are very different from diesel engines and there is a learning curve.
- Plugs and boxes – require manufacturer to provide more than just a plug - a box connecting the bus to the power source is necessary. Consider “smart charging.”
- Manufacturers monitor buses remotely. Communication during extreme changes in temperature and how to navigate those changes is important.
- Make sure local first responders know how to extinguish a battery fire.

INFRASTRUCTURE:

- Coordinate construction management team, electric company, construction contractor.
- Conduct an Electrical Load Study to determine load on property (prepared by electrical engineer, who can also assist with electric company permits and scheduling).
- Under cover: if possible, charging units should be covered.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