Environmental Defense Fund

Electric School Buses: The Economic Case

School districts around the country are making the choice to use electric school buses because they are more fuel efficient, cheaper on a lifetime basis, and above all, they are the safest option for children because they do not release direct tailpipe pollution.

Electric school buses will save Florida schools money. The fuel cost of $0.16 per mile is less than half of the cost of propane, CNG, or diesel.

Building a new energy system

Schools can now use funds from the Clean School Bus Program to invest in new cleaner fleets. While some districts are considering propane buses, compressed natural gas (CNG), or new "clean" diesel buses, it is clear that all-electric vehicles are the superior choice. There are numerous costs and operational advantages associated with electric school buses, such as reduced maintenance and lower fuel costs that offset their upfront sticker price. In addition, electric school buses emit no tailpipe pollution, which make them great candidates for addressing local air quality concerns, while also reducing noise and greenhouse gas pollution.

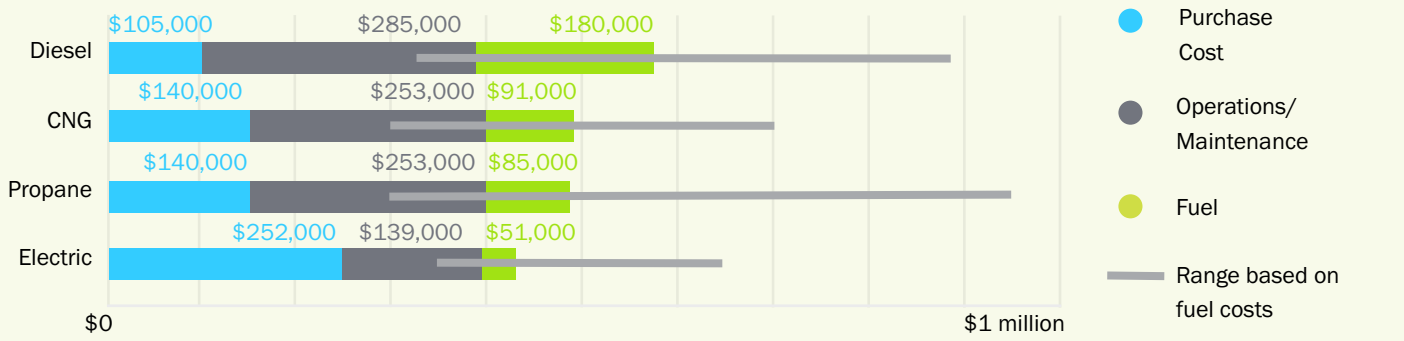
Electric buses provide higher value than other competitors

More fuel efficient. Electric school buses are cheaper to fuel. Electric school buses have a fuel cost of $0.16 per mile, less than half the cost of propane, CNG or diesel at $0.36, $0.28 and $0.90 per mile, respectively. When fuels like propane, diesel, and CNG are combusted energy losses are much higher than electric. Consequently, more petroleum fuel is needed to run the same number of miles making it more expensive than electric.

Lower total-cost-of-ownership. Electric school buses are cheaper when looking at the vehicle's lifetime's cost. Compared to propane, CNG or diesel buses, and not including fueling infrastructure, electric buses are 8, 10 and 30% cheaper, respectively. Including the cost of infrastructure, where CNG or propane storage systems can cost $600,000 or $300,000, respectively, compared to just $50,000 for electric charging, the lifetime ownership advantages of electric are even greater. Electric school buses have fewer moving parts, which require less maintenance and add to their cost advantage. While the purchase price is still higher for electric school buses, necessitating near-term incentives, the total cost of ownership is lower compared to propane, CNG and diesel – and upfront cost parity is likely in the coming years. This takes into consideration operations and maintenance, upfront vehicle purchase price, fuel, charging, and fuel storage infrastructure.

Safer. Propane, CNG and diesel are petroleum products that can explode. Odorant additives, such as ethyl mercaptan, make these fuels even more

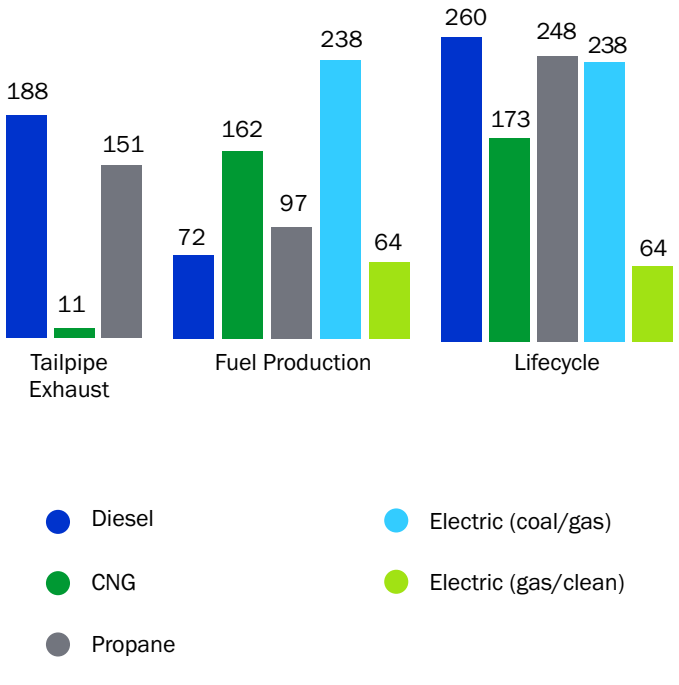
School Bus Lifetime Ownership Cost Comparison



flammable. Energy independence and price stability. Because petroleum is sourced from overseas, it is subjected to international petroleum price shocks making it the more financially volatile option. However, because electricity is sourced domestically and is rapidly becoming cleaner and cheaper via solar and wind, it is more reliable and stable.

No tailpipe emissions and low lifetime emissions. Propane and CNG bus tailpipe pollution is similar to diesel pollution in terms of health harming oxides of nitrogen and organic compounds, and there is no such thing as "clean" diesel because no diesel buses are clean burning. Electric buses have no tailpipes, and therefore no tailpipe pollution. Even where electricity is generated by a mix of coal and natural gas, electric buses have significantly lower lifetime greenhouse gas emissions than propane, CNG, or diesel. Switching to electric school buses would address the emissions that lead to poor air quality in communities and contribute to increasingly severe climate change impacts. Conversely, continued reliance on carbon-based fuels like propane would lock in harmful emissions for the 10-year average lifespan of a school bus. Propane buses cause more greenhouse gas emissions than either diesel or natural gas on a well-to-wheel basis, as well as emitting more carbon monoxide and hydrocarbons on some routes. Emissions plus leaks in the pressurized supply system mean that propane and CNG buses are more harmful to the climate than diesel or electric. Electric buses are the top choice to ensure healthy communities and healthy kids. The emissions from CNG, diesel, and propane buses pollute the air in communities where buses operate. Also, these emissions seep into the bus's cabin and directly affect the children sitting inside. The impact of these emissions on children's health is drastic. The emissions can trigger asthma symptoms and attacks, impact lung development and interfere with a child's ability to learn. Electric buses drastically reduce overall emissions in our communities.

NOx Emissions Comparison (kg)



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