



Electric Transit Bus

Cleaner, Cheaper, Ready



The transit bus, a class 7 vehicle, is a heavy-duty vehicle and an essential component of the country's public transport system. Bloomberg New Energy Finance estimates that by 2040, 80 percent of the world's city bus fleet will be electric.

There are numerous operational advantages associated with electric buses, such as reduced maintenance and lower fuel costs that can help offset their upfront sticker price. There are also incentives in the form of grants, which can lower the Total Cost of Ownership, making electric buses more cost competitive. And because electric buses eliminate tailpipe emissions, they have become an increasingly attractive choice among fleets and policymakers looking to address local air quality concerns, while also reducing noise and carbon pollution.

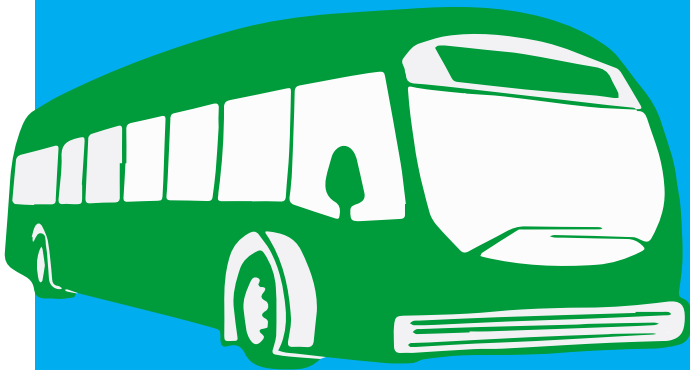
Electric transit buses have lower lifecycle costs than diesel

There are several reasons electric transit buses boast a lower TCO than their diesel equivalent, including:

- **More fuel efficient:** A diesel transit bus can drive 4.40 miles per gallon, whereas an electric one can drive 14.96 miles per diesel gallon equivalent — making them almost 70% more energy efficient.
- **Less maintenance:** Electric buses have fewer rotating and moving parts, requiring less maintenance, adding to their competitive cost advantage.
- **Higher annual savings:** Transit buses are a prime candidate for electrification because the more you drive, the more you save. With a driving average of 300 days per year (6 days of operation per week) at 150 to 250 miles of daily range, the upfront cost of switching to electric can be earned back in a short time.

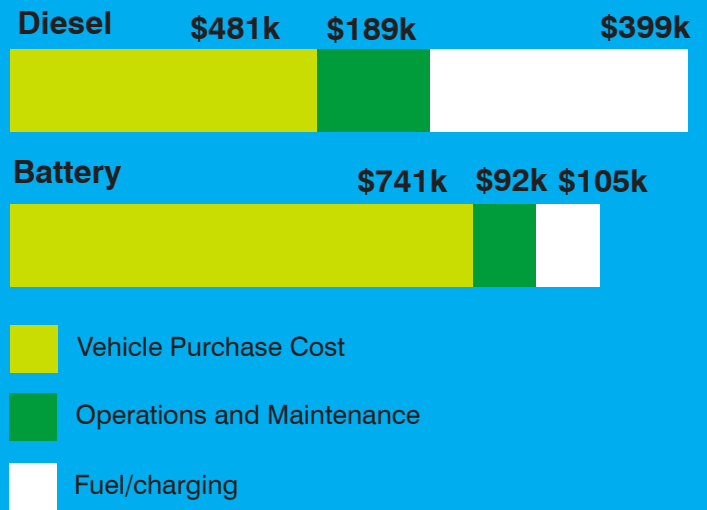
Environmental Defense Fund analyzed¹ the life cycle costs of a diesel versus battery electric transit bus and found that the TCO of one electric transit bus is 12% lower over that bus's 12-year lifetime.

This TCO is projected to fall further with advancements in batteries and other EV-related technologies.



Costs of Diesel vs. Electric Transit Bus

Based on 2018 prices



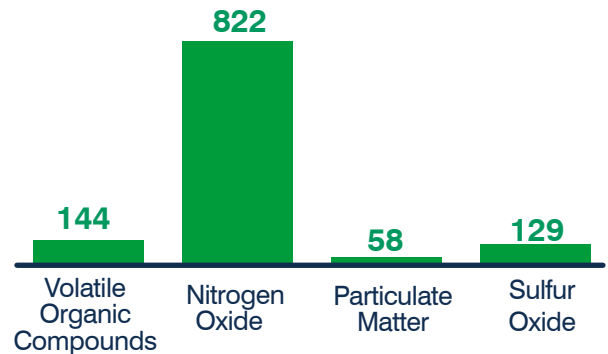
¹ The total cost of ownership component breakdown comparing a diesel and electric transit bus. The fuel costs and the O&M cost counterbalances the high upfront cost associated with an electric bus.

Public Health Benefits of Electric Buses



Each electric bus prevents
1266 metric tons
of climate pollution

**Emissions Avoided Per
Electric Box Truck (kgs)**



**U.S. Transit
Agencies
demonstrate electric
is the future**

**Transit agencies such
as Antelope Valley
Transit Authority in
California, the Chicago
Transit Authority and
the King County Metro
Transit of Seattle have
purchased battery
electric transit buses
from manufacturers like
Proterra, BYD and New
Flyer.**

Pollution from diesel-fueled transit buses causes serious harm to human health that can lead to higher rates of asthma, heart attacks and premature death.

The impact of this transportation pollution is usually concentrated in urban areas and major freight hubs, such as distribution centers and port facilities, which frequently border or are located in disadvantaged communities.

Moreover, poor air quality poses a serious risk to employee health — with coughs, sore throats, asthma attacks and more sick days likely to become frequent. This costs the global economy \$225 billion dollars every year in lost labor income. Cities that have severe air pollution problems will increasingly be seen as a less desirable place to work and live — thereby negatively impacting job recruitment.

Switching to electric buses would not only address the tailpipe emissions that lead to poor air quality in communities, it would also dramatically decrease the life cycle greenhouse gas emissions of transit buses, depending on the electricity generation mix.

EDF analyzed the life cycle emissions of replacing a single diesel transit bus with battery electric and found that the life cycle emission reductions are significant. Moreover, if the electric vehicle is charged with electricity generated completely by renewable energy, the life cycle pollutants and GHGs are almost negligible. This is significant, as these pollutants contribute to poor air quality that can cause serious health problems.