

# Electric Fleets

## Frequently Asked Questions



### The Essentials

100mi

120-150  
Mile range on  
a full charge



~3 hrs  
to fully charge



98%  
Battery capacity  
maintained after  
5 years



97%  
Fewer moving  
parts compared to  
a diesel engine



550  
lbs reduction  
in NO<sub>x</sub> per bus



240  
tons reduction  
in CO<sub>2</sub> per bus

### Buses

#### B1 What is an electric school bus?

An electric school bus is simply a school bus with an electric motor powered by a large bank of batteries. Electric school buses are built on the same chassis as internal-combustion buses, and by many of the same manufacturers, including Bluebird, Thomas Built, and IC.

#### B2 Is an electric bus structurally any different than a traditional bus?

No. Electric school buses are structurally identical to their traditional counterparts and meet all Federal Motor Vehicle Safety Standards (FMVSS) and Canadian Motor Vehicle Safety Standards (CMVSS).

#### B3 What are the health benefits of electric school buses?

Electric school buses eliminate students' exposure to diesel fumes, which have been linked to childhood asthma, respiratory illnesses, as well as absenteeism. These effects are often more severe in historically poor and underrepresented communities.

#### B4 Who supports electrifying school bus fleets?

A growing number of grassroots organizations support school bus electrification, including: Mothers Out Front, Moms Clean Air Force, 350.org community action groups, Climate Mayors, DOE Clean Cities Coalitions, and engaged members of your local school board.

### Cost

#### C1 How much do electric school buses cost?

Electric Fleet Subscriptions, like leases, distribute that cost over a contract term—usually 10-15 years. Combined with other cost-saving measures, this helps create affordability and budget-neutral electrification plans.

#### C2 How much does it cost to install charging equipment?

Depending on equipment specified and project scope, upfront charging equipment costs can range from a few thousand dollars to hundreds of thousands of dollars—or more. In addition, many districts find that construction and installation can have significant hidden costs that negatively impact budgets and deadlines. Electric Fleet Subscriptions include all equipment and installation costs, mitigating client risk.

#### C3 How complex is it to build an electric fleet?

Building an electric fleet's infrastructure and technology is a big project, including project planning, engineering, construction, utility interconnection & permitting, managed charging, demand response, vehicle to grid (V2G)—and more. Electric Fleet Subscriptions package all these elements into a turnkey solution with a fixed annual cost.

#### C4 If electric buses are getting cheaper and better, why should my community electrify now?

The best reason to upgrade your fleet now is to enable your community to enjoy the benefits of clean, reliable electric buses today. Additionally, districts that start now have the opportunity to thoughtfully plan their transition and a slate of shovel-ready projects that are often prioritized by today's federal and state incentives.



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### Batteries

#### B1 How far can a fully-charged bus travel?

Depending on the model, a typical electric school bus can travel 100-120 miles on a full charge. Electric school buses have a regenerative braking mode which enables them to partially recharge while they're being driven, and extend range.

#### B2 How long does it take to charge an electric bus?

With high-voltage conduit and DC fast chargers, an electric bus can fully charge in about three hours. Because plugging in an electric bus only takes a moment—and an entire fleet can charge at once—drivers and mechanics save valuable time compared to fueling up with diesel.

#### B3 What's the lifespan of electric school bus batteries?

Electric school bus batteries last 10-15 years on average, with only 2% degradation after five years. At the end of their useful lifespan in electric vehicles, they can be reused in industrial applications; after that 90% of a battery's components can be recycled.

#### B4 How do AC and heat affect bus range?

Electric AC and heat do reduce range, typically by 15% and 25%, respectively. If desired, optional fossil-fuel-powered heaters are available from some manufacturers which don't degrade range. Since the average bus route is 35-40 miles, proper route planning makes such reductions inconsequential.

#### B5 What is vehicle-to-grid technology?

Vehicle-to-grid technology (V2G) allows an electric school bus to both draw energy from the grid (when charging) and discharge energy back to the grid (when fully charged). This bi-directional charging infrastructure transforms an electric school bus into a valuable Distributed Energy Resource (DER)—effectively a big battery that utilities can draw on to cover peak demand. Utility companies pay V2G fleets for this storage, which can reduce the cost of electrification.

### Maintenance

#### M1 How do electric bus maintenance costs compare to diesel?

Electric school bus drivetrains have less than 3% of the moving parts compared to a traditional internal combustion engine. This translates to a lower total cost of ownership through maintenance cost savings. Typical savings are in the range of 30-50%.

#### M2 What is the warranty for the battery and electric drive motor? Is an extended warranty available?

Typical industry warranties cover eight years for the battery and drive motor with options to purchase extended warranties.