

Lion Electric Buses

Questions & Answers



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We want you here!

Dear Stockbridge Community,

We share the excitement that the electric bus opportunity presents for students and our school community. We also recognize that using electric buses is a change and want to make sure we answer as many questions as possible and share them with the entire community. To aide in this process, here is a list of common questions and answers that we have collected throughout the process:

How are we able to afford electric buses? The school district was awarded 3 grants. One was from Consumers Energy's Power MI Fleet program that enables the district to improve our electrical infrastructure. The second grant came from the Federal government's Clean Bus Rebate program to pay for part of the buses and charging units. The last grant came from the State of Michigan to cover additional costs of buses and the charging stations. Combined, the district was awarded over \$1,900,000. We believe that there will be no cost to the district to purchase these buses and their charging stations.

How long have electric school buses been in operation? In Canada, the first hybrid electric school buses were implemented in 2008. In the U.S., electric buses were first implemented in 2014. In Michigan several school buses were added in 2019.

How many miles will electric buses get per charge? The recommended buses will start with a 160 miles/charge.

Are the buses capable of handling my entire 120 mile route? Yes. With a 160 mile range, there should be more than enough power to get through your routes?

What are the financial benefits of electric buses to the district?

The recently quoted replacement cost of a new bus is \$164,000. Four new buses would cost the District's general fund \$656,000.

We must sell 4 buses that we are replacing. If each bus returned \$15,000. That is an additional \$60,000. Additionally, the reduced energy and maintenance costs are estimated to be approximately \$9,000/bus. Conservatively, this would be \$36,000 each year for the 4 new buses.

How long do batteries last? The recommended batteries from Lion have a 8 year warranty and our current data with regards to battery degradation shows less then 0.74% per year. Lion feels the batteries will outlive the bus life cycle at this time.

What are the costs of replacement batteries? Approximately \$17,000, the school bus market expects that eventually there will be state and federal grant programs to support replacement batteries on EV school buses.

Are electric buses safe in an accident? Yes, Lion has had 1 accident at Zeeland Community Schools where a car "T" boned the side of the unit. The school bus structure deflected the nose of the car down and did not advance to the battery box. Lion, per all of their deployments have not had any incidents where safety was compromised.

Are there additional fire hazards with the lithium ion batteries? No, this is the most popular and common technology used in EV transportation.

Has a deployed electric school bus ever caught on fire? The 1st fully mass produced EV school bus delivered into the US was 2017, between the 4 OEM's that have delivered in the US and Canadian regions there has not been 1 documented case of a fire.

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If there is a fire on an electric bus, is there less time to evacuate than on a gasoline bus? **NO**, the battery compartments are sealed along with each compartment having a heat sensor that will shut down the high voltage if an event occurs.

What kind of training does the vendor offer EMS? **At the time of delivery**, Lion Electric will invite all levels of EMS/Law enforcement personnel to attend a 90 minute session on our safety procedures.

Does high voltage from the batteries impact student/driver health? **No**, there are no health risks to people that ride or drive an EV unit, including personal transportation vehicles.

How does hot and cold temperatures affect the mileage of the buses? **The Lion buses operate in both cold and hot weather throughout the US**, our technology cools and heats the battery units for optimal charging and operational efficiency. The ability to monitor the temperature in the battery box is what separates Lion from other OEM's.

What is regenerative braking? **Regen braking is a method of driving that allows the EV traction motor to provide energy back into the batteries by allowing the traction motor to slow down the vehicle instead of the common method of braking.**

What kind of training do drivers need to be successful? **Driving an EV unit is no different than a combustion vehicle, in fact some drivers feel the unit handles better and provides better torque at "take off" than a combustion engine.**

Could we take our buses on longer trips and be able to charge them? **Yes**, the units are bi-directional equipped, compatible to level 3 & 2 charger systems.

Are there other school districts that have electric buses that we could play against and use their chargers? **Based on initial conversations with two other districts, this would be possible. Details and processes regarding how to bill one another for energy consumption during the charging time would have to be developed, but it is possible.**

When would the buses be here? **The ETA is Summer 2025. The charging infrastructure is the first step. We could do some test piloting during summer school to see how they work with and without air conditioning, give drivers a chance to practice regenerative braking, and capture student voices on any differences they notice.**

Thank you to all of the bus drivers, transportation director and community members who have taken the time to ask these questions. As additional questions come to our attention, we will be updating and adding to this document.

Sincerely,

Stephen J. Keskes

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