EPA CLEAN SCHOOL BUS

QUESTIONS TO ASK YOUR BUS DEALER

This list below includes common questions regarding electric school buses; these questions can be helpful to ask an electric school bus manufacturer or charging infrastructure manufacturer/dealer when considering different options. Importantly, EPA has partnered with the Joint Office of Energy and Transportation (JOET) to provide free technical assistance to Clean School Bus Program participants; contact JOET by emailing cleanschoolbusTA@nrel.gov for any additional assistance related to planning for, purchasing, and deploying new, clean school buses.

Topics included in this document are:

- Bus Range
- Maintenance, Warranties, and Service Options
- Infrastructure
- Purchasing and Financing
- Batteries
- Bus Heating
- Training
- Technology and Software

Bus Range

- What battery size (kWh) options does this bus model come with?
- What is the expected range for each battery pack size?
    - Note: JOET's route analysis tool can help with analyzing bus/charger requirements.
- What are the expected heating, ventilation, and air conditioning (HVAC) and weather impacts on range?
    - Visit JOET's Electric School Bus Forum to connect with other individuals considering or operating electric school bus fleets who may operate in similar climates and could share experiences with operations in your climate.
- What percent battery capacity does the warranty cover?
    - Lithium-ion batteries will degrade over time, resulting in a shorter range as the battery reaches the end of its useful life. More information on lithium batteries can be found on the EPA website.
    - For example, if the battery warranty is 8 years for 70% of initial usable capacity, will that lower capacity still meet route requirements under all weather conditions?

Maintenance, Warranties, and Service Options

- Does the dealer or Original Equipment Manufacturer (OEM) have local service options for maintenance and repairs? If not, how will warranty repairs be addressed in a timely manner?
- Are there local technicians capable of servicing components when they are not covered under warranty? If not, are there local service options capable of servicing electric school buses?
- Does OEM/dealer training for technicians provide them with the skills to be able to service all components on the bus? If not, what are the limitations of technician trainings provided by the OEM/dealer?
- What is the typical service response time for electric school buses for different types of repairs (e.g., bus body components such as doors vs. high-voltage powertrain components such as loose wires connecting a battery)?
- What is the average length of vehicle downtime when undergoing repairs (e.g., bus body components such as doors vs. high-voltage powertrain components such as loose wires connecting a battery)?
- What is the average lead time for repair parts (e.g., a broken door latch vs. a malfunctioning battery)?
- Does the dealer/OEM offer service level agreements that can incorporate repair response time or vehicle uptime into the procurement?
- What warranty options, including extended warranties, are available for different bus components?
- What components are not covered under any warranty or have a warranty length less than the 5-year service requirement of the Clean School Bus Program?

Infrastructure

- Is the bus model we're currently considering compatible with both Level 2 and DC Fast Chargers (DCFCs)?
- What Level 2 chargers are interoperable with the bus model we're currently considering? Have you conducted testing to confirm this EVSE is compatible? If so, provide references (e.g., contact information for school districts where the equipment is operational).
- Which DCFCs are interoperable with this bus model? Have you conducted testing to confirm this EVSE is compatible? If so, provide references (e.g., contact information for school districts where the equipment is operational).
- Do you sell compatible charging equipment? If so:
    - Do you offer charging equipment that meets the appropriate program requirements (such as, but not limited to: Build America Buy America, ENERGY STAR, NRTL)?
    - Do you provide warranty options for the chargers?
    - Do you offer service level agreements to guarantee repair response time or charger uptime?
    - Do you offer charger installation and commissioning services?
    - Do you offer charge management software?
    - Do you have partnerships with local EVITP certified electricians that can help with the site preparation for EVSE installation?

Purchasing and Financing: Applicable financing and business model options will be dependent on your fleet's local procurement regulations or requirements.

- What is the expected delivery timeline for the new bus(es)?
- Could we participate in collaborative purchases with other entities to increase order volume and decrease per bus costs?
- What financing methods for school buses do you offer?
- In addition to CSB funding, what other local funding, state funding, or tax credit opportunities are available?
    - JOET can help CSB stakeholders identify applicable sources.
    - The World Resources Institute's Clearinghouse of Electric School Bus Funding and Financing Opportunities provides a compiled list of several available funding opportunities in a single file, which contains information regarding type of funding, program eligibility, funding levels, and more.
    - The Alternative Fuels Data Center maintains a database of federal and state laws and incentives for alternative fuels and vehicles, air quality, fuel efficiency, and other transportation-related topics.
    - If you plan to pursue the IRA tax credit for any EV chargers and property integral to the EV charger (e.g., wiring and conduit), talk to your dealer.
        - For tax-exempt entities such as school districts, your dealer may be planning on claiming the 30C tax credit and *may* offer you a lower upfront cost as a result. You are still entitled to claim the credit yourself though, granted that you provide written notification of this intent to the dealer. Depending on your unique scenario the value of the credit may be different from any cost savings the dealer passes onto you.
- Do you have experience and opportunities with an electrification-as-a-service business model for buses and/or EVSE?

Batteries

- Do you offer extended battery warranty options?
- Can bus owners easily monitor their battery usage (kWh of throughput)?
- Can bus owners easily monitor battery health and degradation without contacting the OEM/dealer?
- What is the total cost for a non-warrantied battery replacement?
- What assistance do you offer customers with battery repurposing, recycling, or disposal?
    - What costs or incentives do you estimate customers will incur during battery disposal?
- Is the battery thermal management system covered under warranty and for how long?

Bus Heating

- What heating and cooling options are available for this bus model?
    - What is your recommended procedure for buses drivers to pre-condition the bus on hot and cold days?
- Do you offer multiple electric heating power options? Has electric heating alone been sufficient in this climate?
- Can the cabin be heated while the bus charges?
- Do you offer heated seats for the bus driver?
- Do you offer fuel fired heaters? If so, would you be able to provide the manufacturer's installation/operation and maintenance manuals?

Training

- Do you provide training for (i) drivers, (ii) technicians, (iii) fleet managers, (iv) first responders?
- What is the format of these trainings and associated costs?
- Are fleet technicians able to receive high-voltage training certification and service/repair high-voltage components without voiding the warranty?

Technology & Software

- Do you offer vehicle telematics software to analyze bus performance and driver behavior? Is there a cost?
- Is the bus capable of bidirectional charging and do you have experience with V2X projects?
- Is this bus compliant with ISO 15118-20?
    - See here for video on ISO 15118, Plug and Charge
- Can this bus model perform "smart charging" with all ISO 15118-2 conforming software?
    - See here for video on Smart Charging, V2G