# **Electric School Bus (ESB) Vehicle and Charger Commissioning Guide**

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# Overview

Commissioning is a quality assurance process of testing, verifying and documenting a new electric school bus (ESB) and its accompanying charging infrastructure to ensure it operates as intended. This guide includes a **Commissioning Procedures Checklist** that provides recommended commissioning activities for before and when the school bus arrives, and a **Commissioning Form** to be used for each vehicle and charger. Together, the checklist and form are intended to facilitate the adoption experience of new ESBs and their accompanying charging infrastructure and create a central record of important information regarding systems and electric vehicle supply equipment (EVSE).

They will help verify that upon delivery, vehicles and charging equipment:

1. Meet technical specs stated by manufacturers and vendors
2. Perform to standards and meet the needs of the school district
3. Perform safely prior to transporting students

This checklist and form are not exhaustive but are meant to provide guidance on relevant actions to take between ordering an electric school bus and transporting students. Steps are not always sequential, and school districts should determine the best course for their own testing procedures. Elements are broken down by those that should be done per school bus and those that should be done per procurement.

As local conditions, regulations and inspections vary, this template has been provided in Word (.docx) format. Users should add or remove rows and elements as needed or pull information into existing checklists or procedures already underway in their transportation departments.

**NOTE: The Appendix and in-line comments offer additional information on each consideration.**

To Print the Commissioning Checklist and Form without comments, go to File > Print > then under the drop down, “Print all Pages” (click down arrow), and uncheck “Print Markup.”

For more information on electric school buses and resources to help with planning for adoption, please visit: [electricschoolbusinitiative.org](https://electricschoolbusinitiative.org/). If you have suggestions on how to improve this resource, please email our team at [ESBinfo@wri.org](mailto:ESBinfo@wri.org).

# **Electric School Bus Commissioning Procedures Checklist**

## 

## Before the School Bus and Charger Arrive

Before the school bus arrives, prepare the physical space for the new ESB and its charger and assign roles and responsibilities, including identifying who will conduct trainings upon arrival.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tasks** | **Completed** | **Date Completed** | **Name** | **Notes** |
| **Per School Bus** | | | | |
| Configure/confirm parking and charging infrastructure for ESB |  |  |  |  |
| Conduct a route analysis and identify routes for the ESB(s) |  |  |  |  |
| Engage first responders |  |  |  |  |
| Assign roles for charging |  |  | **Responsible for plugging in after route**  Position Title:  **Responsible for monitoring charging**  Position Title:  **Responsible for unplugging/storing charger cable**  Position Title:  **Responsible during long breaks (summer/winter)**  Position Title:  **Responsible for managing charging to optimize charger performance and energy usage** (demand charges, peak charges, time-of-use charges)  Position Title:  **Back-up bus if ESB is not charged overnight or power outage.**  Bus #: | |
| Identify warranty and service agreement coverage |  |  |  |  |
| **Per Procurement** | | | | |
| Identify who will train ESB drivers and technicians |  |  |  |  |
| Designate the trainer(s) for “Train-the-Trainer” |  |  |  |  |
| **EVSE: Charger and Hardware Components** | | | | |
| Determine charging cord cable management system |  |  |  |  |
| Determine Wi-Fi connectivity for chargers |  |  |  |  |
| Incorporate IT protocols for system security |  |  |  |  |

## When the School Bus and Charger Arrives/Before Anyone Drives – Paperwork

Prior to operation, get all paperwork squared away. Some of these procedures may already be in place in your transportation department for any bus regardless of fuel type (title, DMV registration) while others will have new components to consider for electric models (safety guide, first responder guide).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tasks** | **Completed** | **Date Completed** | **Name** | **Notes** |
| **Per School Bus** | | | | |
| Complete commissioning form (pg7) |  |  |  |  |
| Acquire title |  |  |  |  |
| DMV registration (lessee/lessor)/ plating installed |  |  |  |  |
| Key handoff/key management |  |  |  |  |
| Vehicle Identification Number (VIN) documentation |  |  |  |  |
| Department of Transportation (DOT) inspection or registration stickers valid and on vehicle |  |  |  |  |
| Certificate of inspection by state/community completed |  |  |  |  |
| Certificate of insurance in vehicle |  |  |  |  |
| Owner’s manual reviewed and in vehicle |  |  |  |  |
| School bus labeling |  |  |  |  |
| **Per Procurement** | | | | |
| Executed lease agreement |  |  |  |  |
| Safety guide reviewed |  |  |  |  |
| First responder guide developed and available |  |  |  |  |
| Additional safety items (e.g., manual, stickers, warnings) |  |  |  |  |

When the School Bus and Charger Arrive/Before Passengers are On Board – Training  
Conducting proper training will help your drivers and technicians feel comfortable with the new school bus and fuel type before any route operations.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Potential Trainings to Conduct** | **Completed** | **Date Completed** | **Name** | **Notes** |
| **Per School Bus** | | | | |
| Aggregate videos and training material |  |  |  |  |
| Plugging in/ unplugging the ESB + cable storage |  |  |  |  |
| Powering ESB on/off |  |  |  |  |
| Regenerative braking |  |  |  |  |
| Performance on hills |  |  |  |  |
| Gradual acceleration techniques |  |  |  |  |
| Optional equipment (e.g., radios, cameras, child check, etc.) |  |  |  |  |
| **Per Procurement** | | | | |
| Powertrain assembly |  |  |  |  |
| Radiator, air compressor |  |  |  |  |
| Fluid locations and refill |  |  |  |  |
| Orange high voltage cables |  |  |  |  |
| 12-volt battery switch |  |  |  |  |
| High voltage battery | ☐ |  |  |  |
| Regenerative braking switch (*if applicable*) |  |  |  |  |
| Other sub-components |  |  |  |  |
| First Responder training |  |  |  |  |
| **EVSE: Charger and Hardware Components** | | | | |
| Establish charging procedures and best practices |  |  |  |  |
| Establish preventative maintenance procedures for chargers |  |  |  |  |
| Electric vehicle drive system explanation and trainings received/completed |  |  |  |  |

## 

## When School Bus and Charger Arrive/Before Passengers are On Board – Testing

Before the school bus begins running daily routes with passengers, test the bus under a range of conditions to understand how its performance is impacted. Convey any issues to the dealer or manufacturer.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tasks** | **Completed** | **Date Completed** | **Name** | **Notes** |
| **Per School Bus** | | | | |
| Identify main driver(s) for ESB(s) |  |  |  |  |
| Assign radio units and test function on both frequencies |  |  |  |  |
| Test drive for at least 200 miles and min. of two drivers |  |  |  |  |
| Identify nameplate and usable range |  |  |  |  |
| Track efficiency and performance (kWh/mile) |  |  |  |  |
| Set benchmark for number of problem-free days |  |  |  |  |
| Initial vehicle checks (see comment for examples): |  |  |  |  |
| **Per Procurement** | | | | |
| Establish procedures for  low-/no-charge |  |  |  |  |
| -In the yard |  |  |  |  |
| -In the field |  |  |  |  |
| **EVSE: Charger and Hardware Components** | | | | |
| Confirm charger/charger management software and vehicle interoperability |  |  |  |  |
| Confirm charger works for seven (7) days |  |  |  |  |
| Test charge time from 20% to 100% |  |  |  |  |

## When School Bus and Charger Arrive/Before Passengers are On Board – Maintenance

Technicians have fewer parts to maintain for electric school buses compared with their diesel-burning counterparts. High voltage (HV) maintenance will likely be handled by the OEM/dealer for the duration of the warranty.

The vehicle manufacturer will provide recommended preventative maintenance intervals and guidance. These intervals will vary and will need to be incorporated into existing internal documents such as daily vehicle inspection reports (DVIRs) and fleet maintenance software systems.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tasks** | **Completed** | **Date Completed** | **Name** | **Notes** |
| **Per School Bus** | | | | |
| Inspection sheets |  |  |  |  |
| * Daily inspection sheet |  |  |  |  |
| * Periodic inspection sheet |  |  |  |  |
| * Preventative maintenance checklist |  |  |  |  |
| * Dealer service chart |  |  |  |  |
| Regular school bus maintenance |  |  |  |  |
| * Fluids, filters, windshield wipers |  |  |  |  |
| * Brakes |  |  |  |  |
| Install after-market equipment |  |  |  |  |
| Confirm warranty contact info and procedures for service |  |  |  |  |
| **Per Procurement** | | | | |
| Personal protective equipment  location, procedures for use |  |  |  |  |
| Identify and disseminate emergency and standard operating procedures |  |  |  |  |
| Identify how to update operating systems |  |  |  |  |
| Understand cleaning procedures |  |  |  |  |
| **EVSE: Charger and Hardware Components** | | | | |
| Understand cleaning procedures |  |  |  | Cleaning? Yes | No  How: |
| Power shut off |  |  |  |  |
| Identify signs of wear and tear |  |  |  |  |

# 

# **Electric School Bus Vehicle and Charger (EVSE) Commissioning Form**

**Vehicle**

Today’s Date: \_\_\_\_\_\_\_\_\_\_ Date School Bus Received: \_\_\_\_\_\_\_\_\_\_\_ School Bus Number: \_\_\_\_\_\_\_\_\_\_\_\_

◯ # is on school bus ◯ not yet #ed

Chassis Manufacturer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_    Body Manufacturer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Build Type: ◯ Newly-Manufactured  ◯ Repowered ◯ Used

VIN: \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_\_\_\_    Model Year:  \_\_\_ \_\_\_ \_\_\_ \_\_\_

GVWR: \_\_\_\_\_\_\_\_\_\_    Odometer: \_\_\_\_\_\_\_\_\_\_    Capacity:  \_\_\_\_\_ children or \_\_\_\_\_ adults

Vehicle Dimensions (maximums): \_\_\_\_\_\_\_\_\_ length, \_\_\_\_\_\_\_\_\_\_\_ width, \_\_\_\_\_\_\_\_\_\_ height

Wheelbase: \_\_\_\_\_\_\_\_ Vehicle charging (accepts): ◯ L2 AC  ◯ L3 DC  ◯ Both

Charge Port Location: ◯ Front Nose/Grill  ◯ Front Driver’s Side ◯ Rear Driver’s Side

◯ Rear  ◯ Front Curbside ◯ Rear Curbside

Maximum kW Input Limit (charging speed): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Type: ◯ Type A  ◯ Type B  ◯ Type C  ◯ Type D  ◯ Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Wheelchair Lift:    ◯ no  ◯ yes Adjustable (ADA) seating: ◯ no  ◯ yes

Other Equipment (A/C, heater [diesel or electric], Wi-Fi, cellular): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Other After-Market Equipment (camera system, AVL): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

License Plate: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  State of Registration:\_\_\_\_\_\_\_

Registration Expiration Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Vehicle Title Owner:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Vehicle is Leased:    ◯ no  ◯ yes If leased, lessee:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

If leased, lessor:\_\_\_\_\_\_\_\_\_\_\_\_ Lease expiry:\_\_\_\_\_\_\_\_\_\_\_ Lease max mileage:\_\_\_\_\_\_\_\_

State Inspection:  ◯ not required  ◯ none  ◯  yes and expiration date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Last inspection date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Next inspection date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Defects:     ◯ no  ◯ yes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Other Inspection: ◯ not required  ◯ none  ◯  yes and expiration date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Fleet Management Software/Telemetry Platform:  ◯ none  ◯ unknown

◯  yes, platform: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Software License Number: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

GPS data logger Serial Number:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Radio:  ◯ none  ◯  yes and unit number: \_\_\_\_\_\_\_

List other Parasitic Loads (lights, cameras, internal components): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Minimum state of charge (SOC):\_\_\_\_\_ Battery Chemistry:\_\_\_\_\_\_\_\_\_\_\_\_ Battery Capacity (kWh):\_\_\_\_\_

Under hood 12V Battery size, chemistry, and age: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Electric Vehicle Supply Equipment (EVSE) – Charger and Hardware Components**

Today’s Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date Charger(s) Received: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Manufacturer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Model: \_\_\_\_\_\_\_\_\_\_\_\_ Serial Number: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

OCCP Compliance (list version): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Charger Supplier: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Type (Level 2/DC): \_\_\_\_\_\_ Power Level (kW): \_\_\_\_\_ Plug Type (J1772/CCS/CHAdeMO): \_\_\_\_\_\_\_\_\_\_

Number of Charging Ports (handles): \_\_\_\_\_ ◯ Simultaneous Charging ◯ Sequential Charging

Amperage: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Input Voltage: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Output Voltage: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Network Connection (None/Ethernet/Wi-Fi/Fiber/Cellular): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

IP Address: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Modem Model: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Series Compatible (Daisy-chain capable): ◯ no  ◯ yes

Type of Installation: ◯ Wall-mounted  ◯ Pedestal-mounted ◯ Pole-mounted ◯ Mobile charger

LED Screen: ◯ no ◯ yes UV Coating for LED Screen: ◯ no ◯ yes

Power Conditioning System/Controller: ◯ no ◯ yes Manual Control Buttons: ◯ no ◯ yes

Protective Equipment: ◯ Bollards ◯ Cable Management System ◯ Handle cradle

(check all that apply) ◯ Outdoor/NEMA housing rate ◯ Emergency shut-off button on charger

Power Shut-Off Points: ◯ Switch on charger ◯ Breaker panel ◯ Main disconnect ◯ Other(s) \_\_\_\_\_\_\_

Service Plan (# of months): \_\_\_\_\_\_\_\_\_ Service Technician Availability (# of hours): \_\_\_\_\_\_\_\_\_\_\_\_

Guaranteed spare parts availability: ◯ no  ◯ yes

Specialized Training Requirements (i.e., DCFC High voltage service): ◯ no ◯ yes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Is this charger shared with multiple vehicles? ◯ no, dedicated to this bus  ◯ yes, how many others \_\_\_\_

Can this charger be networked? ◯ no ◯ yes

If yes, is this charger equipped with managed charging capabilities? ◯ no  ◯ yes

If yes: ◯ software included in charger ◯ third-party managed charging platform

Name of software: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ID for vehicle in software: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Includes (check all that apply):

◯ Cloud access ◯ Customer management portal ◯ Portal dashboard

◯ Ability to program various rates (time-of-use/pricing variations)

◯ Historical data retention ◯ Downloadable data method (.cvs/.pdf/Word/other)

◯ Smartphone app/mobile control ◯ Remote reset capability

Customer Service Availability (hours of operation): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Includes (check all that apply):

◯ Customer service issue logging

◯ Issue resolution and completion logging and closure process

◯ Root cause analysis (RCA) to prevent recurrence of the same issues

Customer Notification Method(s): ◯ Text ◯ Email ◯ Phone ◯ Others: \_\_\_\_\_\_\_\_\_\_\_

Notifications include (check all that apply):

◯ Charger availability ◯ Charger malfunction ◯ Charger connection

◯ Active charging ◯ Plugged-in but not charging ◯ Real-time KW output

◯ kWh total output ◯ Charging session completed ◯ Load graphing

**Purchase Information**

Vehicle Purchase Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Vehicle Seller: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Vehicle Invoice Number: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

EVSE (Charger) Purchase Date: \_\_\_\_\_\_\_\_\_\_\_ EVSE (Charger) Seller: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

EVSE (Charger) Invoice Number: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Warranty Information**

Responsible Party – Battery: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Duration: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Responsible Party – 12V Battery: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Duration: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Responsible Party – Drive Train: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Duration: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Responsible Party – Chassis: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Duration: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Responsible Party – Charger: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Duration: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Responsible Party – Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Duration: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Attachments**

◯ Title ◯ Warranty ◯ Manual ◯ Invoice   ◯ State Inspection Certificate ◯ Use Requirements

◯ Replacement Plan ◯ Charger Maintenance Recommendations ◯ Charger Spare Parts List

◯ Single-Line Drawing for Electrical Connection  ◯Pictures of Final Installation

◯ Service Agreement (if any)

Vehicle Pictures: ◯ Front ◯ Left side ◯ Right side ◯ Rear ◯ Interior from front ◯ Interior from rear

**Open Issues**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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# **Appendix**

This Appendix provides image examples and links to additional tools and resources that highlight the respective sections and topics.

## **Electric School Bus Vehicle and EVSE Commissioning Form**

*Managed Charging resource page:* [All About Managed Charging and “Vehicle-to-Everything” or V2X](https://electricschoolbusinitiative.org/all-about-managed-charging-and-vehicle-everything-or-v2x?utm_medium=print&utm_source=tools&utm_campaign=commissioning_checklist)

*Types of EVSE installation*

A blue electric car charging station on a sidewalk

Description automatically generated Wall-mounted Pedestal-mounted [[1]](#endnote-2) Pole-mounted Mobile Charger [[2]](#endnote-3)

A blue and yellow gas station

Description automatically generatedA machine with a hose on it

Description automatically generated

## **Before the School Bus and Charger Arrive**

* [Electric School Bus Market Study](https://electricschoolbusinitiative.org/all-about-types-electric-school-buses?utm_medium=print&utm_source=tools&utm_campaign=commissioning_checklist)
* [8 Tips For Common Electric School Bus Charging Challenges](https://electricschoolbusinitiative.org/charging-tips)
* [Electric School Bus Technician Training Database](https://electricschoolbusinitiative.org/electric-school-bus-technician-training-database?utm_medium=print&utm_source=tools&utm_campaign=commissioning_checklist)
* Incorporate equity into route selection: [How School Districts Can Include Equity When Choosing Where to Deploy Electric School Buses First](https://electricschoolbusinitiative.org/how-school-districts-can-include-equity-when-choosing-where-deploy-electric-school-buses-first?utm_medium=print&utm_source=tools&utm_campaign=commissioning_checklist)
* Configure and confirm parking and charging infrastructure for ESBs: [Electric School Bus Facility Assessment Guide](https://electricschoolbusinitiative.org/sites/default/files/2022-10/ESB%20Facilities%20Assessment%20Guide-Digital-10.4.pdf?utm_medium=print&utm_source=tools&utm_campaign=commissioning_checklist)
* **Determine cable management system:**

*Blue arrow: cable management system. Green arrow:* *bollard*



## **When the School Bus and Charger Arrive/Before Anyone Drives – Paperwork**

## Establishing a Service Level Agreement (SLA) for ESBs and chargers to address issues with operations and maintenance: [All About Service Level Agreements (SLAs) for Electric School Buses and Chargers](https://electricschoolbusinitiative.org/all-about-service-level-agreements-slas-electric-school-buses-and-chargers?utm_medium=print&utm_source=tools&utm_campaign=commissioning_checklist)

## **When the School Bus and Charger Arrive/Before Passengers on Board – Training**

* Potential Trainings to Conduct: [Reskilling the Workforce: Training Needs for Electric School Bus Operators and Maintenance Technicians](https://electricschoolbusinitiative.org/reskilling-workforce-training-needs-electric-school-bus-operators-and-maintenance-technicians?utm_medium=print&utm_source=tools&utm_campaign=commissioning_checklist)
* Training opportunities for technicians: [Electric School Bus Technician Training Database](https://electricschoolbusinitiative.org/electric-school-bus-technician-training-database?utm_medium=print&utm_source=tools&utm_campaign=commissioning_checklist)
* Establish charging procedures and best practices: [How Electric School Bus Owners Can Maximize Battery Performance by Limiting Aging](https://electricschoolbusinitiative.org/how-electric-school-bus-owners-can-maximize-battery-performance-limiting-aging?utm_medium=print&utm_source=tools&utm_campaign=commissioning_checklist)
* Video guides on charging basics: [All About Charging Infrastructure](https://electricschoolbusinitiative.org/all-about-charging-infrastructure?utm_medium=print&utm_source=tools&utm_campaign=commissioning_checklist)

## **When the School Bus and Charger Arrive/Before Passengers on Board – Testing**

* Identify nameplate and usable range: [All About Range and Reliability](https://electricschoolbusinitiative.org/all-about-range-and-reliability?utm_medium=print&utm_source=tools&utm_campaign=commissioning_checklist)

## **When the School Bus and Charger Arrive/Before Passengers on Board – Maintenance**

* School bus: [Electric School Bus Maintenance: Key Similarities, Differences](https://www.schoolbusfleet.com/10139866/electric-school-bus-maintenance-key-similarities-differences)
* Battery recycling: [How Electric School Bus Fleet Owners Can Ensure That Their Used Vehicle Batteries Avoid the Landfill – and Reap Economic and Environmental Benefits](https://electricschoolbusinitiative.org/how-electric-school-bus-fleet-owners-can-ensure-their-used-vehicle-batteries-avoid-landfill-and?utm_medium=print&utm_source=tools&utm_campaign=commissioning_checklist)

1. [Photo](https://www.vecteezy.com/photo/7183853-charging-an-electric-car-battery) from vecteezy.com [↑](#endnote-ref-2)
2. Heliox, Mobile 50kW Charger [↑](#endnote-ref-3)