

Clean School Bus Webinar for Districts and Utilities

How to Successfully Add Electric
School Buses to Your Fleet

Southern Alliance For Clean
Energy and EPA Webinar
July 7, 2022



Overview of the Bipartisan Infrastructure Law Clean School Bus Program

Under **Title XI: Clean School Buses and Ferries**, the Bipartisan Infrastructure Law (BIL) provides **\$5 billion** over five years (FY22-26) for the replacement of existing school buses with clean school buses and zero-emission school buses.

These new clean school bus replacements will produce either zero or low tailpipe emissions compared to their older diesel predecessors.

School bus upgrades funded under this program will result in cleaner air on the bus, in bus loading areas, and in the communities in which they operate.

The first funding opportunity under this program is the 2022 Clean School Bus Rebates.

Funding Pools and Number of Applications

School districts applying directly for funds may only submit one application to replace up to 25 buses.

EPA will not fund multiple applications for bus replacements that will serve the same school district.

\$500 Million in Available Funding for 2022 Clean School Bus Rebates

Zero Emission Funding Pool:	Clean School Bus Funding Pool:
Applications exclusively requesting zero- emission buses	Applications requesting zero-emission, propane, and/or compressed natural gas (CNG) buses

The application deadline is August 19, 2022.

School Bus Replacement Funding

The maximum rebate amount per bus is dependent on:

- Bus Fuel Type
- Bus Size
- Whether the school district served by the buses meets one or more prioritization criteria

The table displays maximum funding levels. EPA will not disburse rebate funds in excess of the actual cost of the replacement bus **and any costs above the maximum funding level are the sole responsibility of the applicant/awardee.**

Maximum Bus Funding Amount per Replacement School Bus

School District Prioritization Status	Replacement Bus Fuel Type and Size					
	ZE – Class 7+	ZE – Class 3-6	CNG – Class 7+	CNG – Class 3-6	Propane – Class 7+	Propane – Class 3-6
Buses serving school districts that meet one or more prioritization criteria	\$375,000	\$285,000	\$45,000	\$30,000	\$30,000	\$25,000
Buses serving other eligible school districts	\$250,000	\$190,000	\$30,000	\$20,000	\$20,000	\$15,000

<https://www.epa.gov/cleanschoolbus/school-bus-rebates-clean-school-bus-program>

Infrastructure Funding

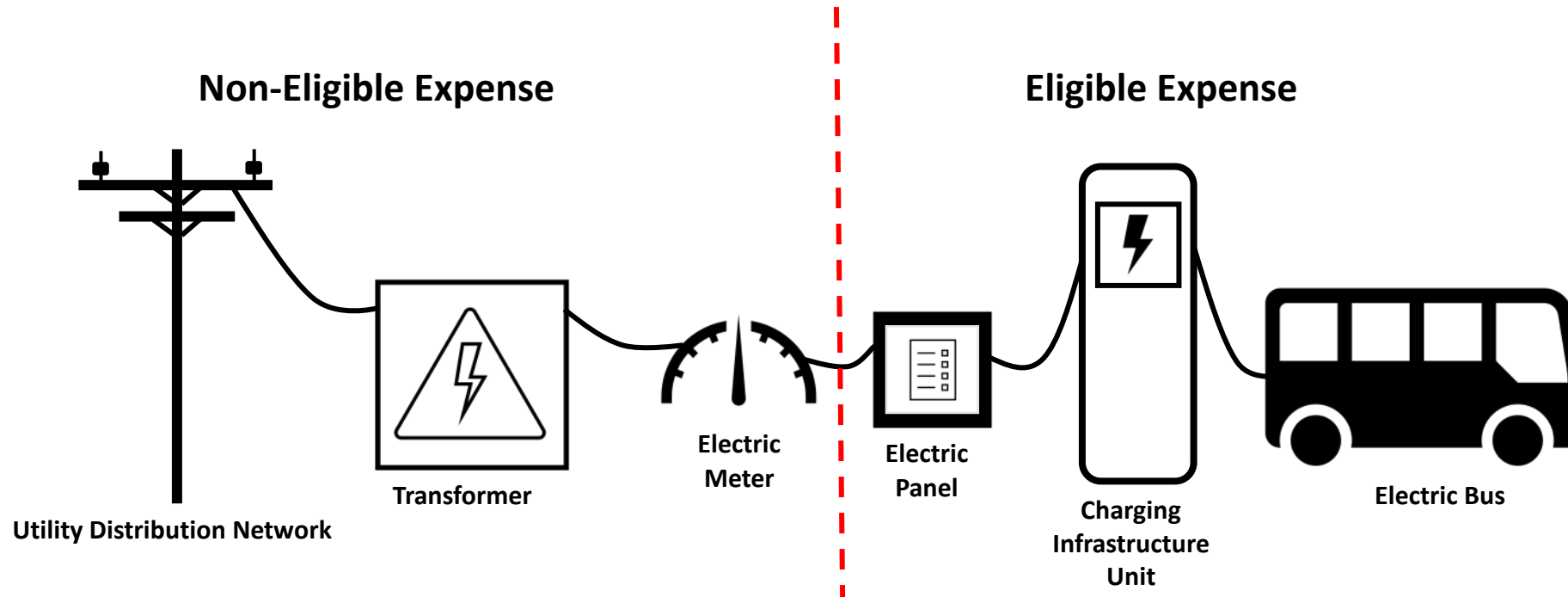
Talk to your utility now if you are interested in zero-emission, electric buses!

This table displays the maximum funding levels per ZE, electric bus. EPA will not disburse rebate funds in excess of the actual infrastructure costs.

School District Prioritization Status	ZE, Electric – Class 3+ Infrastructure Funding
Buses serving school districts that meet one or more prioritization criteria	\$20,000/bus
Buses serving other eligible school districts	\$13,000/bus

Infrastructure Funding Restrictions

- EPA funding for infrastructure is limited to the fleet's side of the meter (as shown on the right side of the diagram).
- All Level 2 charging infrastructure purchased under this program must be [EPA ENERGY STAR certified chargers](#).
 - EPA strongly recommends that all other charging infrastructure (for example DC Fast-Charge) purchased under this program be listed by a Nationally Recognized Testing Laboratory (NRTL).



Important! SAM.gov Registration

Check the Systems for Award Management ([SAM.gov](https://www.sam.gov)) to ensure your organization is *actively* registered as an entity

- An individual user account on SAM.gov is not the same thing as an organization's entity registration
- Review all SAM.gov entity registration information for accuracy, including bank accounts, addresses, the [Unique Entity Identifier \(UEI\)](#), and Points of Contact
- If your organization has no record of a SAM.gov registration, expired or active, and needs to create a new registration, the simplest entity registration type that can participate in the Clean School Bus Rebates is the "Federal Assistance Awards Only" registration.
- For help with SAM.gov, reach out to the Federal Service Desk at: <https://www.fsd.gov>

Only individuals with email addresses listed as one of the following Points of Contact (POC) under an *active* SAM.gov entity registration will have access to create, edit, save, and submit a Clean School Bus Rebate application for that entity:

- Electronic Business POC
- Alternate Electronic Business POC
- Government Business POC
- Alternate Government Business POC

Note: When entering the rebate application, applicants must use the same email as is listed in their POC information in SAM.gov. They will be prompted to sign-in to, or create, a free login.gov account.




2022 Clean School Bus Rebates

Sign up for the [Clean School Bus Listserv](https://www.epa.gov/cleanschoolbus/clean-school-bus-listserv) and continue to check www.epa.gov/cleanschoolbus for updated resources and information on additional webinars.

After reviewing the Program Guide, if you still have questions, please contact cleanschoolbus@epa.gov. Questions will be incorporated in an update to the Q&A document.

The application deadline is August 19, 2022.

Electric School Bus Technical Assistance



energy.gov | transportation.gov


AboutTechnical AssistanceData & ToolsNews & EventsWork with UsContact

News

Webinars

Find the latest news about the Joint Office of Energy and Transportation as well as updates on technical assistance, data, and tools to help states with deploying electric vehicle charging infrastructure.

EPA Announces Clean School Bus Funding



May 20, 2022

The first round of funding for the Environmental Protection Agency's (EPA) [Clean School Bus Program](#) is now available. Beginning today, the Joint Office will offer [technical assistance](#) to school districts on electric bus basics, charging equipment, utility connections, bus performance, and operational considerations like routing and

Clean School Bus Technical Assistance

NREL and the Joint Office of Energy and Transportation are partnering with the U.S. EPA to offer clean school bus technical assistance to school districts

Email: CleanSchoolBusTA@nrel.gov

driveelectric.gov/contact

Electric School Bus Education

Flipping the Switch on Electric School Buses

This technical assistance video series is for K-12 schools interested in implementing electric school buses

Watch the videos in order, or pick the topics most interesting or relevant

afdc.energy.gov/electric-school-buses

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Electric School Bus Education

These educational webinars and handouts provide information about the benefits of electric school buses and examples of their use. Explore the resources in this series called "Flipping the Switch on Electric School Buses" through these topics:


- [Electric School Bus Introduction](#)
- [Working with Electric Utilities](#)
- [Vehicle Requirements](#)
- [Charging Infrastructure](#)
- [Infrastructure Planning and Solutions](#)
- [Vehicle In Use Performance](#)
- [Driver and Technician Training](#)
- [Cost Factors](#)
- [More Resources](#)



Electric School Bus Introduction

This technical assistance video series is for K-12 schools interested in implementing electric school buses. The series kicks off with an introduction to Clean Cities and a discussion about how local Clean Cities coalitions can provide education and technical assistance throughout the implementation process, as well as an introduction to electric school buses, key decision factors, charging infrastructure, and vehicle availability.

Webinars



Clean Cities and Technical Assistance
Electric School Bus Introduction


Flipping the Switch on Electric School Buses Part 1

[Text version](#)

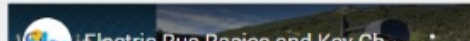
Clean Cities and Technical Assistance

This module introduces the Clean Cities Coalition Network and discusses how Clean Cities coalitions can assist school districts in learning about electric school buses and connect schools and their fleets with technical assistance.

Handouts



**Part 1:
Electric School Bus Introduction**



Electric Bus Basics and Key Challenges

Vehicle Acquisition



Infrastructure Development



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equals

Successful Electric School Bus Implementation

What Should I Consider When Adding an Electric School Bus?

What is my Range Anxiety?

How far can I drive?

What charging equipment is available?

What charging equipment do I actually need?

Should I use Managed charging versus unmanaged?

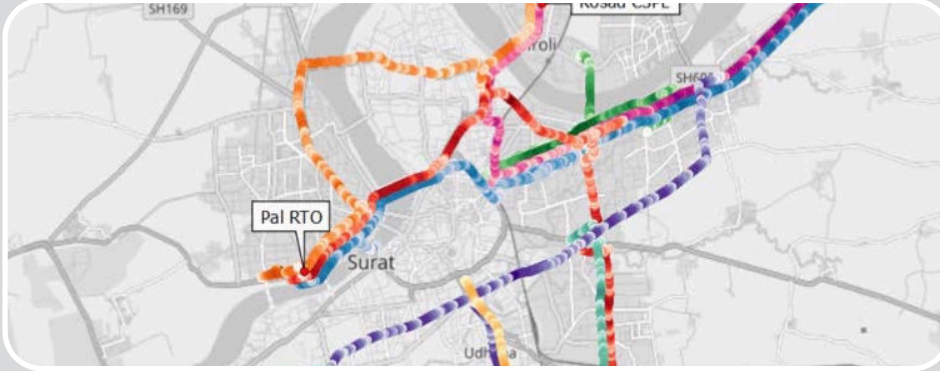
How long does it take to get the bus and charging station and how long to install?

Will my charging station work with telematics?

How long do batteries last?

What about maintenance?

Energy vs. Power



Energy Needs (kWh)

- Route requirements determined by:
 - Daily vehicle miles traveled
 - Speed
 - Vehicle operational efficiency
 - Auxiliary loads (heat, AC,...)
 - Environmental impacts
 - Load
 - Terrain

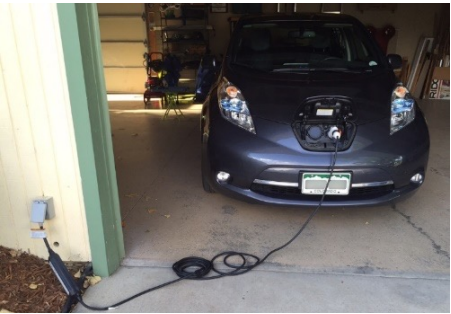


Charger Capabilities (kW)

- Power delivered to vehicle determined by:
 - EVSE type and rating
 - Number of buses
 - On-board charger
 - On-site electrical capacity
 - Dwell time
 - Time to recharge
 - Future plans

EV Charger = Electric Vehicle Supply Equipment (EVSE)

AC Level 1 – Portable 120



EVSE	Features	Chargers/Unit	Cost/Charger
Level 1	Non-networked	1	\$813
Level 1	Non-networked	2	\$596
Level 2	Non-networked max 19.2 kW	1	\$1,182
Level 2	Non-networked max 19.2 kW	2	\$938
Level 2	Networked max 19.2 kW	1	\$3,127
Level 2	Networked max 19.2 kW	2	\$2,793
DCFC	Networked 50 kW	1	\$28,401
DCFC	Networked 150 kW	1	\$75,000
DCFC	Networked 350 kW	1	\$140,000

AC Level 2 – 208-240 V



DC Fast Charging – 50-1,000 V



Managed Charging Solutions

How to mitigate equipment upgrades and reduce the cost to charge



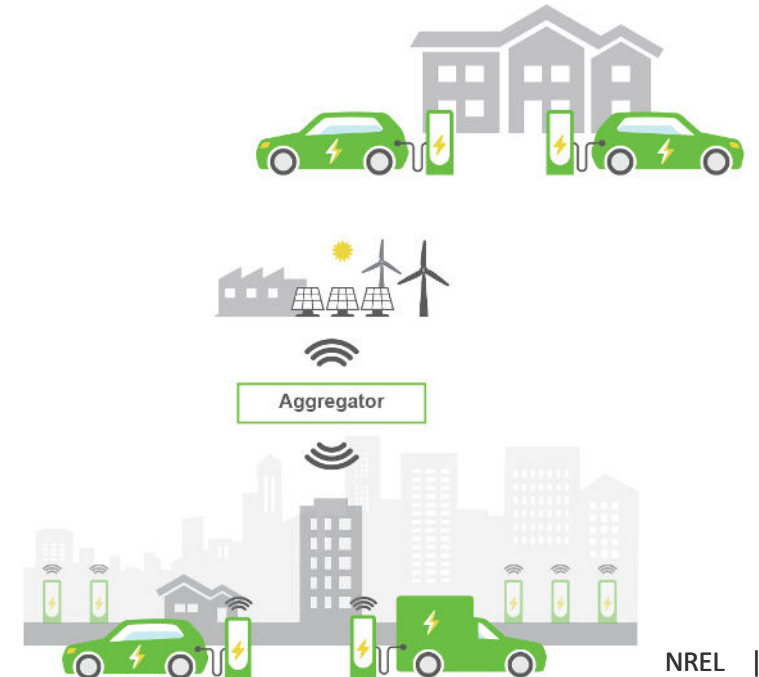
NREL – ESIF Vehicles Laboratory – Testing 300kw+ XFC Stations

- **Equipment upgrade mitigation**

- Set a power ceiling for site-wide EVSE and coordinate charging to reduce equipment upgrades.

- **Reduce electricity costs**

- Shift EV charging to periods with lower TOU rates
- Coordinate EV charging loads to reduce peak demand



Working with your Utility Partner

Preparation

- Number of Vehicles
- Daily Energy Needs
- Number of EV Chargers
- Current Infrastructure

Introduction

- Service Representative
- Create Partnership
- Making Connections

Discussion

- Site Drawings
- Vehicle Acquisition Plans
- Equipment Limitations
- Utility Upgrades/Interconnection
- Plan & Design

Implementation Plan for BEB Infrastructure



Vehicles

Choose BEB model for
fleet applications
Range, Capacity,
Charging



EVSE

Choose EVSE type and
quantity
SAE AC Level 2
SAE CCS/CHAdemo



Utility

Contact utility rep
regarding new load
Grid impacts
Transformer/Wiring



Analysis

Determine necessary
upgrades
Service Panel
Circuit Breakers

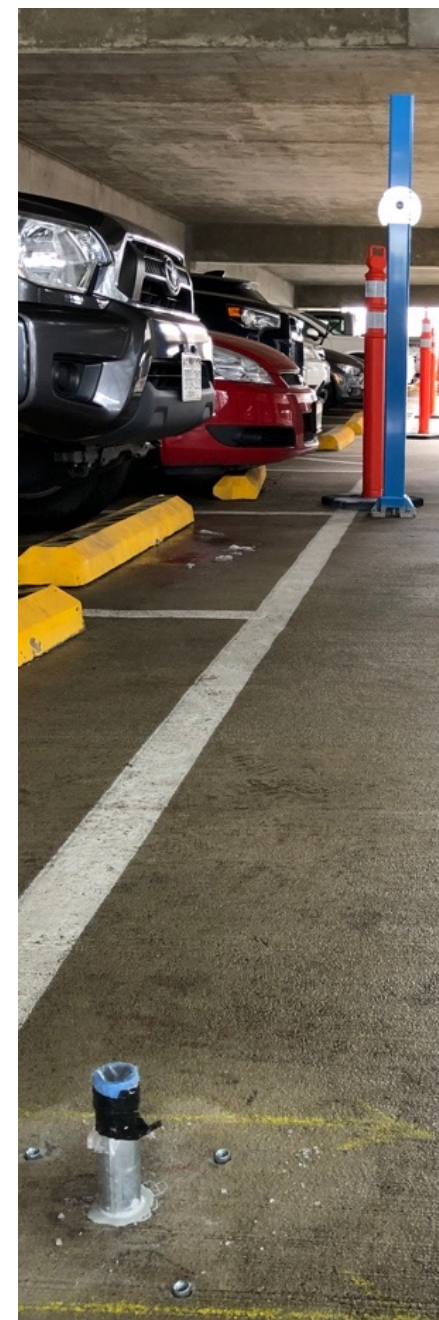
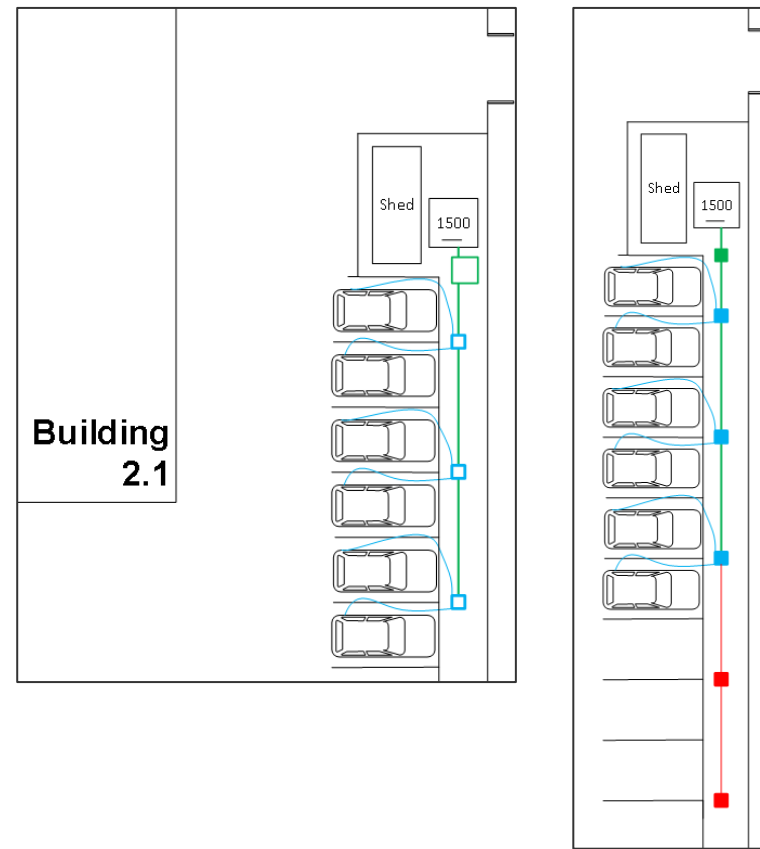


Construction

Install new
infrastructure
Breakers
Conduit/conductors
EVSE

Site Layout

- **Determine locations of:**
 - Parking, panel, interconnection
- **Minimize panel to EVSE distance:**
 - Shorter wiring and conduit run
 - Reduce trenching costs (~\$100/ft)
- **Consider future expansion:**
 - Install additional wiring/conduit
 - Stub-outs for future expansion
 - Minimize construction costs over time



EVSE Installation Costs

- Installation costs are primarily dependent on EVSE type and power.
- L2 pedestal units are common for fleets with a long dwell (8+ hours).
- Installation costs per port decrease as EVSE installations per site increase.



	1 Port/Site	2 Port/Site	3-5 Port/Site	6+ Port/Site
Labor	\$1,544	\$1,827	\$1,647	\$1,316
Materials	\$1,112	\$1,039	\$1,272	\$874
Permit	\$82	\$62	\$59	\$38
Tax	\$96	\$89	\$110	\$75
Total	\$2,836	\$3,020	\$3,090	\$2,305

2022 Clean School Bus Rebate Program

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Thank you!

Sign up for the [Clean School Bus Listserv](https://www.epa.gov/cleanschoolbus/clean-school-bus-listserv) and continue to check www.epa.gov/cleanschoolbus for latest program updates.

Visit STRIDECollaborative.org for electric School Bus Webinars and regional information

Region 4 Contacts:

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Submit feedback to cleanschoolbus@epa.gov. Please hold off on submitting questions until the Program Guide is published.

Questions?

