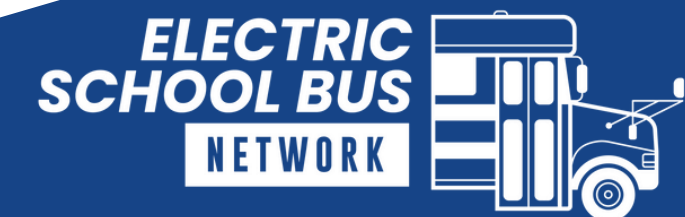


ELECTRIC SCHOOL BUS NETWORK CALIFORNIA FORUM

Workforce Training Programs

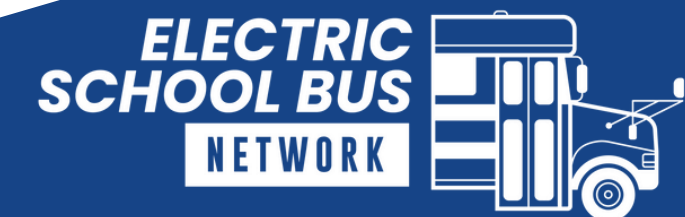
April 3, 2024



April 3, 2024

Forum Agenda

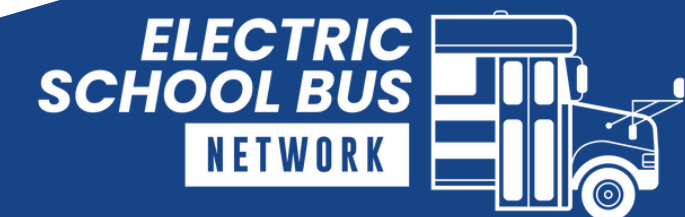
- 01.** Intro to the Electric School Bus Network
- 02.** Workforce Training Programs
- 03.** Q&A
- 04.** Summary and Closing





Electric School Bus Network

The Electric School Bus Network accelerates nationwide school bus fleet electrification through peer-to-peer networking and dialogue-driven forum meetings for school districts, advocacy organizations, government organizations, and industry representatives. The ESB Network provides access to educational tools, resources, and subject matter experts to help **support the electric school bus fleet transition.**



Meet the ESB Team



Rachel Chard
Deputy Director



Michelle Hanson
Program Manager



Ian Fried
Lead Project Manager



Alise Crippen
Lead Project Manager



Chrystal Ales
Lead Project Manager



Emily Gasca
Project Manager



Juan Espinoza
Project Manager



Liza Walsh
Project Manager



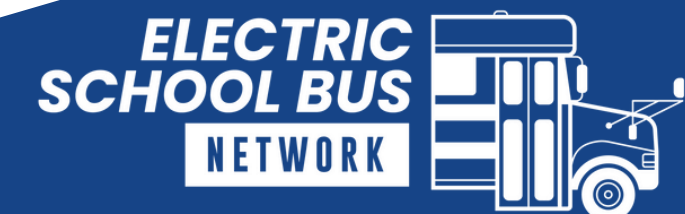
Katelyn Tomaszewski
Project Manager



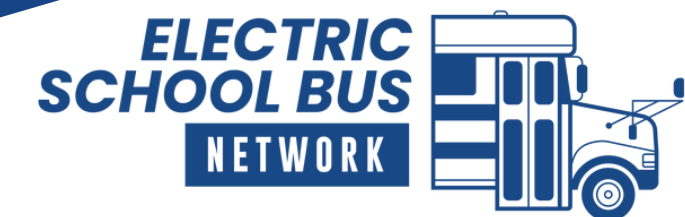
Skyler Potocek
Project Manager



Sarah Stalcup-Jones
Project Manager



WORKFORCE TRAINING PROGRAMS



**Electric
School Bus**
INITIATIVE

OPPORTUNITIES IN ELECTRIC SCHOOL BUS TRAINING

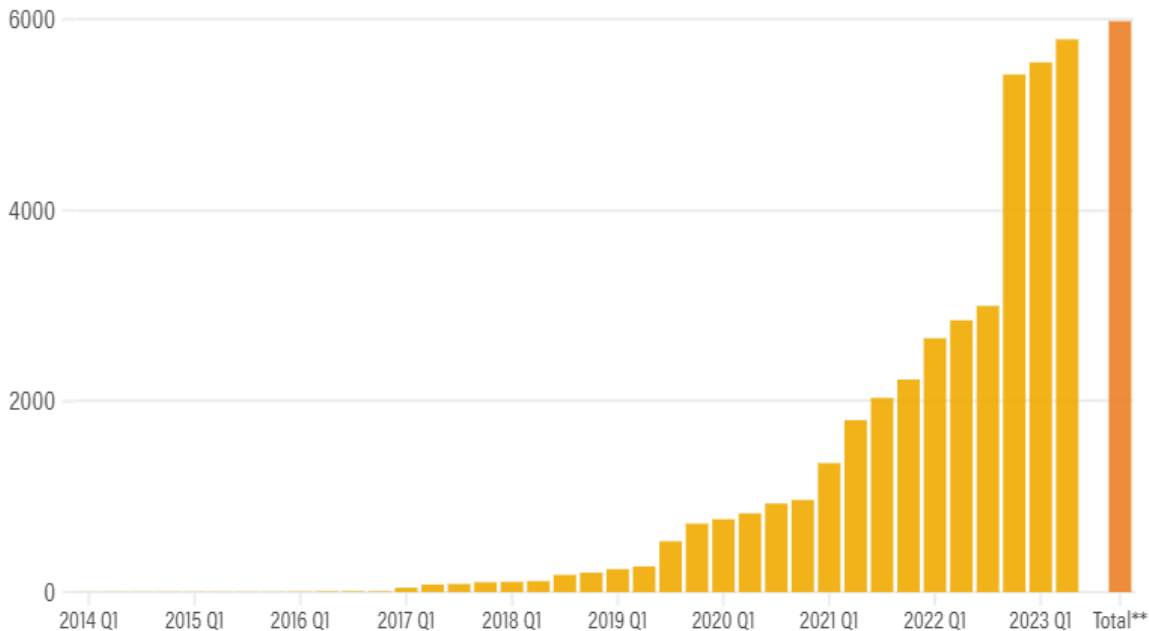
April 3, 2024 | ESB Network California Forum

OUTLINE

1. Unmet training need for electric school buses (ESBs)
2. ESB Training Standards
3. Existing resources & upcoming learning events

ESBs ARE GROWING EXPONENTIALLY

Total number of committed* ESBs



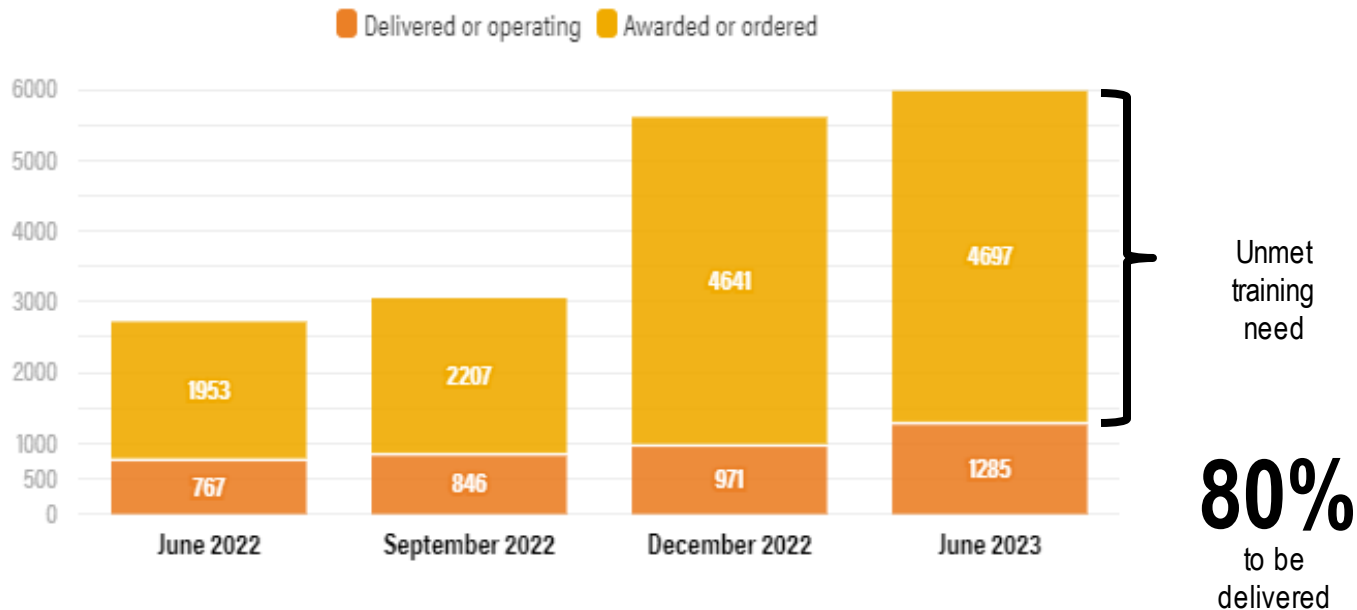
5,989 electric school buses committed

Source: Lazer & Freehafer, 2023. Data from June 2023.

*awarded, ordered, delivered, or in operation

MOST HAVE NOT BEEN DELIVERED

ESBs by adoption stage over time



Source: [Lazer and Freehafer, 2023](#) - Data as of June 2023

ESTIMATED UNMET TRAINING NEEDS

563

School districts &
fleets operators
waiting on their
ESB

54

Spread across 54
states & territories

4,646

Totaling over 4,500
ESBs to be
delivered

THE CURRENT OEM TRAINING MODEL IS COSTLY

\$1,740

estimate for one EV technician to travel to a school district for an 8-hour training

\$979,620

for this to be replicated at 563 school districts & fleet operators

\$31.9 million


if ESB training were needed by all 18,328 school districts

THERE ARE OTHER TRAINING CHALLENGES

We've learned about the following challenges among school bus industry stakeholders:

- **Various levels of training quality upon vehicle/charger delivery**
- **Lack of standardized training across OEMs**
- **Staff turnover at fleets and training new workers**
- **No accessible content for differing language and learning abilities**

MODELS EXIST FOR TRANSIT & LIGHT-DUTY




NCWE is an inclusive community of workforce professionals dedicated to sharpening skills, building networks and mentoring future growth.


Support the New Workforce Professionals Academy

About Annual Conference Sponsors & Partners Our Academy Our Projects Our Awards Members Only Join NCWE

National Green Jobs Advisory Council



INTERNATIONAL TRANSPORTATION LEARNING CENTER



Battery Electric Bus Familiarization Webinars



CALIFORNIA ENERGY COMMISSION

The California Energy Commission's Clean Transportation Program provides funding to support innovation and accelerate the development and deployment of advanced transportation and fuel technologies.

[Click Here to Read More](#)


THE ESB TECHNICIAN TRAINING SERIES! NOW ONLINE!

High Voltage Safety

This course is for technicians with some hands-on experience with school bus service, maintenance and repair.

Technicians will learn the fundamentals of electric school bus (ESB) high voltage safety including ESB systems and components, electrical fundamentals, dangers of high voltage, PPE, and high voltage safety procedures.

The first course in the Electric School Bus Technician Training Series is now available. And it's free! [Click here for more information and to sign up!](#)



Home About Us Training Manuals Members Projects Partners Become a Member

Contact Us Careers

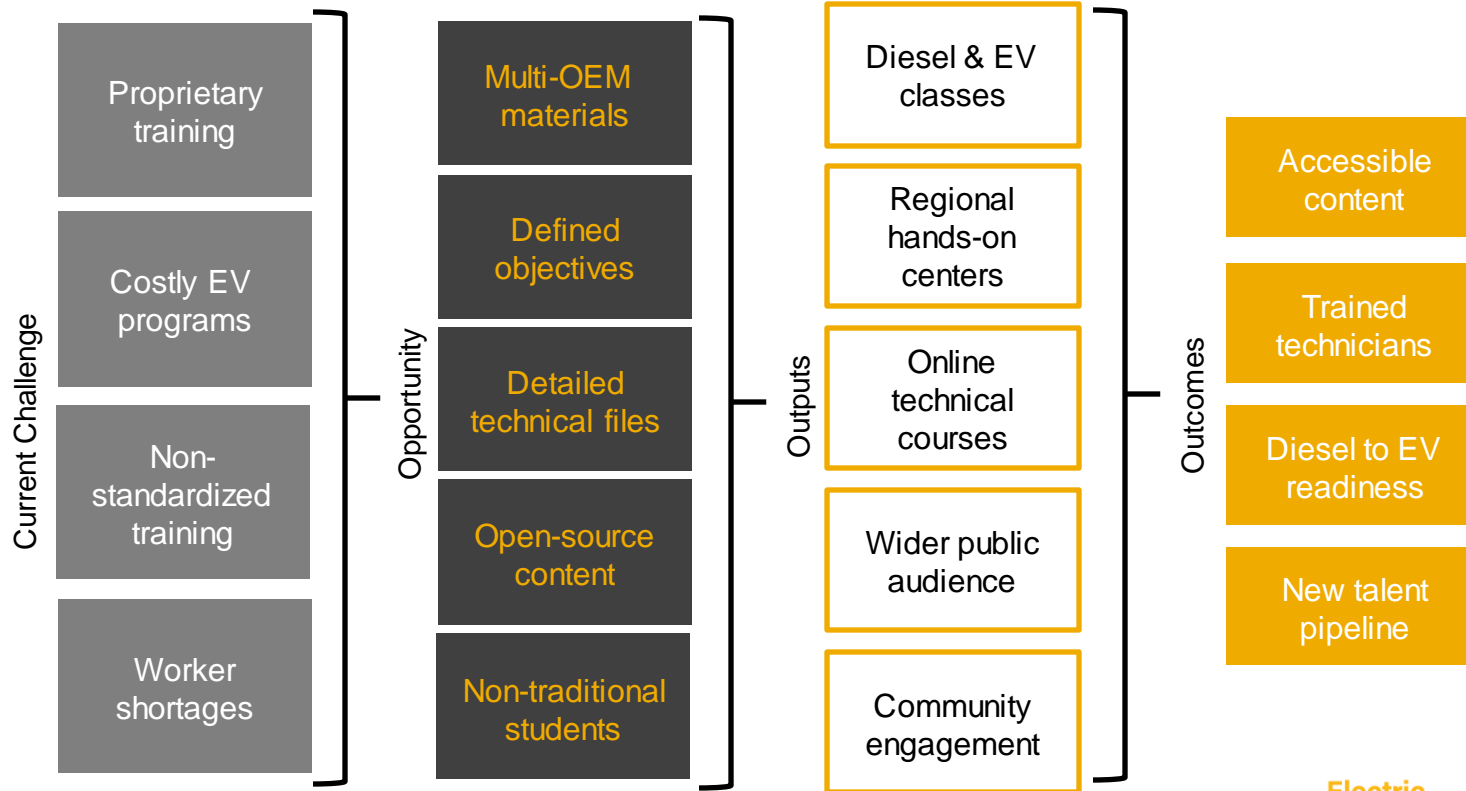
Electric Vehicle Safety -Online Course-

EV VEHICLE SAFETY: AN AWARENESS LEVEL TRAINING

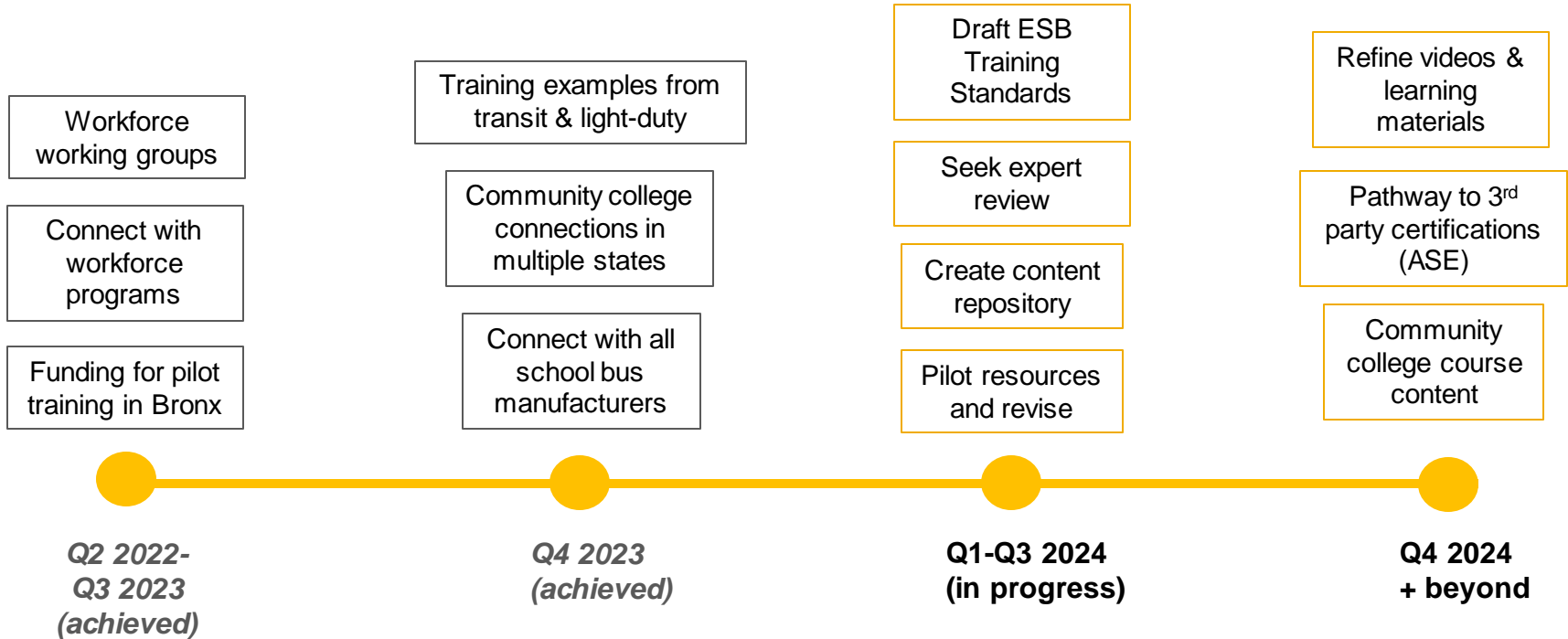
The NAFTC in collaboration with the NAFTC and the WVU Fire extension is proud to offer this 1-hour awareness course sponsored by General Motors. As the number of electric vehicles on the roadways increases, it is important for first responders to understand how a response involving these types of vehicles is different than those with an internal combustion engine. This course will introduce first responders to hybrid and electric vehicles, share data and resources, and equip the first responder with the knowledge and tools to respond more safely when a hybrid or electric vehicle is involved in an incident.

[ONLINE COURSE](#)

VISION FOR ESB TRAINING ACCESS



TIMELINE – ESB INITIATIVE ACTIVITIES



Electric
School Bus

INITIATIVE

ESB TRAINING STANDARDS

ESB TRAINING STANDARDS

Establishes learning outcomes for training on electric school buses



ESB TRAINING STANDARDS

Standard Levels

- Level 0: ESB Awareness
- Level 1: ESB Operation Basics
- Level 2: ESB Safety, Systems & Components
- Level 3: Advanced Diagnostics Troubleshooting



ESB TRAINING STANDARDS

Intended audience includes entities that are:

1. Developing training content

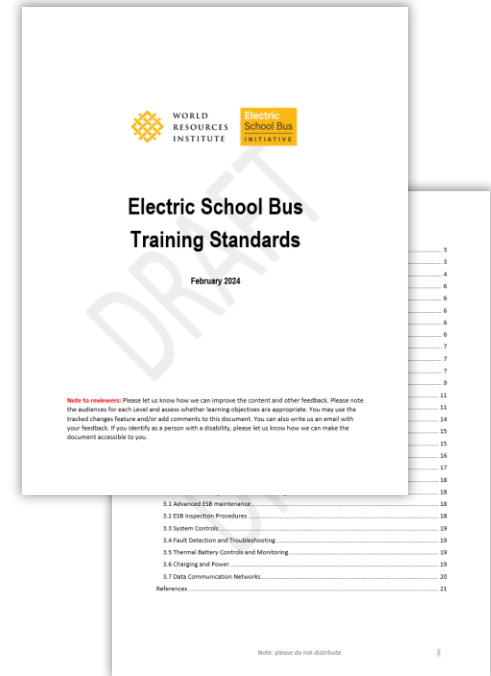
Community colleges, manufacturers, state pupil transportation orgs

2. Conducting training

Technical schools, dealers, manufacturers, private sector trainers

3. Receiving training

Drivers, technicians, depot staff, other school district staff



ESB TRAINING STANDARDS

Sample from Standards Level 1

Operating an ESB

- Demonstrate how to start the vehicle
- Demonstrate where key switches, buttons, and other interface points are located on the dashboard
- Describe the difference in start-up and operating noises between the ESB and fossil-fuel buses
- Explain how the fuel gauge will show battery state-of-charge (SOC)
- Define at what SOC the ESB will go into emergency shut-off mode
- Explain why gradual acceleration and deceleration are important
- Demonstrate gradual acceleration and braking



ESB TRAINING STANDARDS

Sample from Standards Level 2

Safe Workplace Practices

- Describe the types of labels, markings, or other symbology on an ESB to identify it as an electric vehicle
- Describe a safe ESB workspace environment including signs, labels, restricted areas
- Describe barricades or physical structures to prevent non-certified people from entering ESB work areas
- Describe lock boxes and storage of equipment to maintain LOTO procedures
- List specific workplace equipment needed to create safe working conditions
- List workplace equipment that is specific for working on ESBs
- Show where training and continuous training logs and documentation are located
- Show where standard operation procedures (SOPs) for handling of ESBs are located



ESB TRAINING STANDARDS

Timeline

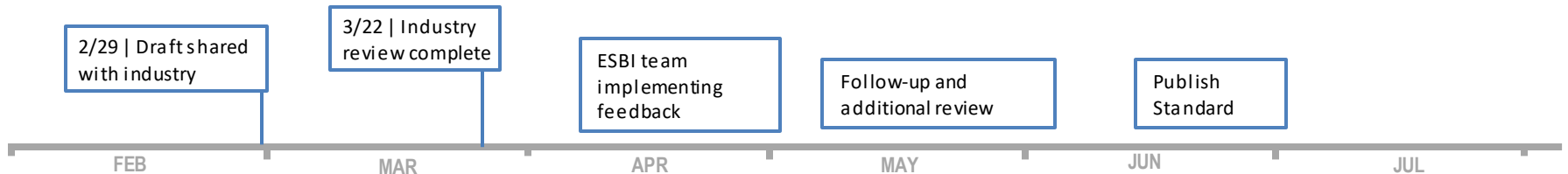
Feb 29 | Draft shared for industry review

Mar 22 | Industry review period concluded [reminder to review!]

Apr/May | Implementing feedback & seeking additional review as needed

May/Jun | Potential working groups

Jun/Jul | Publish Standard



ESB TRAINING STANDARDS

Industry Review



EXISTING RESOURCES & UPCOMING LEARNING EVENTS

EXISTING RESOURCE

ARTICLE | February 21, 2024

Electric School Bus Technician Training Database

Looking for training opportunities for electric school bus technicians? Our new database can help.



[Get the database](#)

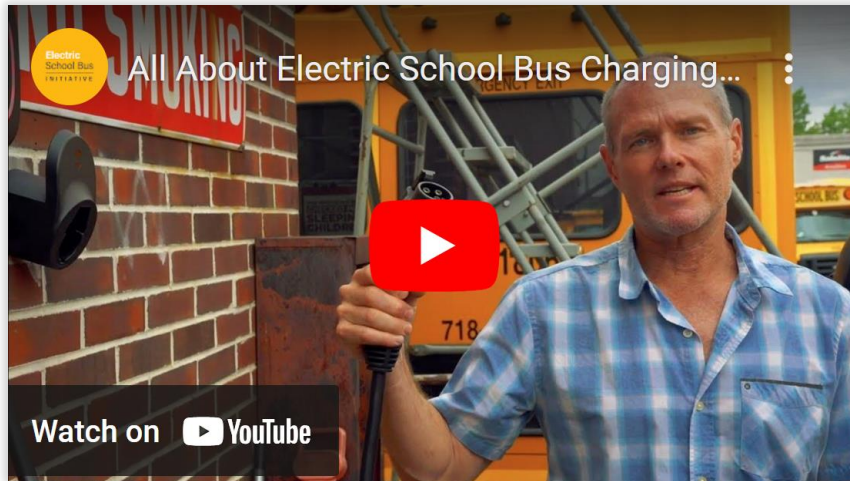
ESB Workforce Technician Training Programs



Link: [Technician Training Database](#)

EXISTING RESOURCE

Video Series: All About Charging Infrastructure



Video 1: Electric Utility Connections

Video 2: Power Connection on Your Site

Video 3: Electric Service Meters

Video 4: Electric Circuit Breaker Panel

Video 5: Optimizing Your Site for ESBs

Link: [All About Charging Infrastructure](#)

EPA CSBP WORKFORCE DEV. SITE



EPA CLEAN
SCHOOL BUS

WORKFORCE PLANNING RECOMMENDATIONS AND RESOURCES

EPA's Clean School Bus (CSB) program is enabling school districts across the country to purchase new, cleaner vehicles to transport kids to school every day. The successful deployment of clean school buses requires a workforce that is well-prepared to operate and maintain the buses. Worker preparedness, safety, empowerment, and job quality are thus top priorities in the transition to clean school buses. EPA strongly recommends that schools and school districts develop a workforce readiness plan, using resources such as those included in this document and on EPA's website, to support the transition to new buses. Funding from EPA's Clean School Bus program can be used for workforce development activities, which might include developing training materials, sending employees to training courses, and/or paying for services from a third-party workforce partner. Additional funds for workforce development may be available through state or local agencies, and school districts are encouraged to pursue partnerships with other districts and local education and training partners to fulfill their training needs.

This document outlines suggestions for how to prepare and empower your workforce for the transition to clean school buses. The specific needs of each school district will vary based on many factors, including the number of new buses, the number of workers operating and maintaining the buses and infrastructure, the current expertise of the workforce, and other similar considerations. The suggestions below provide general recommendations for workforce planning and districts are encouraged to adapt them to their own needs. Additional workforce development resources can be found on EPA's [Clean School Bus website](#).

Establish a Workforce
Readiness Team

1

2



Perform a skills gap
analysis

3

4

Identify the skills required to operate and maintain
the fleet and associated infrastructure

Identify training
resources and partners



Please contact cleanschoolbusTA@NREL.gov if you have any questions and visit epa.gov/cleanschoolbus to learn more about technical assistance (TA). TA for CSB [planning and deployment](#) is available to school districts participating in the EPA Clean School Bus Program.



Include training needs and specifics
in your purchase contracts!

UPCOMING EVENTS ON TRAINING



March 27 | Webinar: How to Develop a Training Plan and Where to get Certified Training [recording]



April 10 | Webinar series for school bus operators & technicians – OEMs presenting



May 20 | Workforce Development Forum

STNEXPO



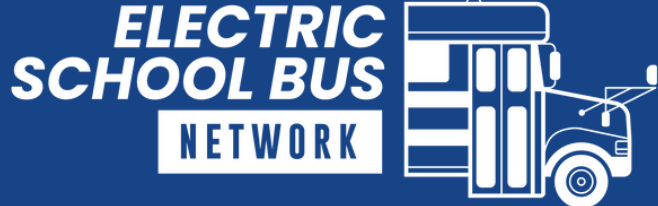
May 31 (Indy) | National School Bus Inspection Training
July 12 (Reno) |

QUESTIONS?

emmett.werthmann@wri.org
electricschoolbusinitiative.org

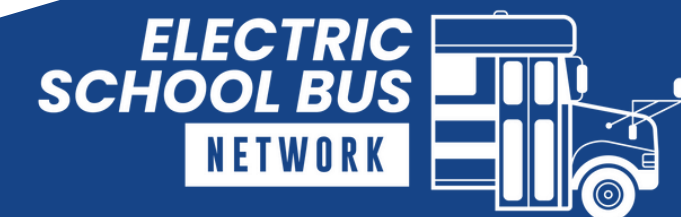
Any Questions?

Please raise your hand or type your questions for our speakers in the chat!



CARB and CEC Work Group Today!

- April 3, 2024, 1:00 PM PT
- SB 114 appropriated a **total of \$500 million** to CARB and CEC for the 2023-24 fiscal year to **fund zero-emission school buses and supporting infrastructure** through grants awarded to local educational agencies. CARB and CEC have named this new funding opportunity **“Zero-Emission School Bus and Infrastructure” (ZESBI) grants**.
- Staff will discuss legislative requirements, application timeline, award amounts, eligible costs, and priority applicants. Staff encourage the public to participate in the work group and provide feedback on program design prior to the ZESBI grant program’s application launch.



Save the Date!

- A follow-up email will be sent **Friday, April 5** with the following:
 - Recording of the meeting
 - Copy of the slide deck
- The ESB Network Newsletter will be sent on **Tuesday, April 9**
- Mark your calendars for the next ESB Network California Forum:
 - **Wednesday, June 5, 2024 from 11:00 AM–12:00 PM PT**
- Please email schoolbusteam@calstart.org with questions

