



Flipping the Switch on Electric School Buses

Part 1: Electric School Bus Introduction

Key Information and Resources

Electric school buses are a growing topic of discussion in the transportation industry, in part due to President Biden's robust clean transportation goals. To help inform schools about electric school buses, the U.S. Department of Energy (DOE) is providing a technical assistance program aimed at K-12 schools that are interested in implementing electric school buses into their fleets. The "Flipping the Switch on Electric School Buses" series is a multi-part technical assistance series. Each part contains several modules that discuss key topic areas about electric school buses. Modules can be watched in order, or viewers can choose to only watch those that are most applicable to them and their particular fleet.

Part one of the series is the electric school bus introduction. This part introduces DOE's Vehicle Technologies Office (VTO) Clean Cities Coalition Network, including how Clean Cities coalitions can assist school districts in learning about electric school buses and provide technical assistance throughout the project. In addition, this series introduces electric buses, including the current electric school bus market in the United States, pros and cons, and key challenges to be aware of.

Modules in this series include:

- Module 1: Clean Cities and Technical Assistance
- Module 2: Electric Bus Basics and Key Challenges

Key Resources and Highlights

A list of the key tools and resources provided during *Part 1: Electric School Bus Introduction* of the "Flipping the Switch on Electric School Buses" series are listed below.

Module 1: Clean Cities and Technical Assistance

Presented by Abby Brown and John Gonzales, National Renewable Energy Laboratory

- **Clean Cities Coalition Network:** cleancities.energy.gov/
 - Clean Cities coalitions foster the economic, environmental, and energy security of the United States by working locally to advance affordable, domestic transportation fuels, energy efficient mobility systems, and other fuel-saving technologies and practices.
- **Clean Cities Coalition Contact Directory:** cleancities.energy.gov/coalitions/contacts/
 - Clean Cities coordinators are the primary contacts for their coalitions. Coordinators work with local fleets to advance affordable, domestic transportation fuels and technologies in the cities, counties, and states they serve. Clean Cities coordinators lead more than 75 active coalitions covering nearly every state.
- **Technical Assistance:** cleancities.energy.gov/technical-assistance/

- The Clean Cities Coalition Network connects transportation stakeholders with objective information and experts to assist with alternative fuels, fuel economy improvements, and emerging transportation technologies.
- **Technical Response Service:** technicalresponse@icf.com
 - The Technical Response Service representatives are seasoned experts who will help you find key resources and answers to technical questions about alternative fuels, fuel economy improvement, idle-reduction measures, advanced vehicles, and Clean Cities and related resources.
- **Alternative Fuels Data Center (AFDC):** afdc.energy.gov
 - The AFDC provides a wealth of information and data on alternative and renewable fuels, advanced vehicles, fuel-saving strategies, emerging transportation technologies, and federal and state laws and incentives.
- **AFDC Tools:** afdc.energy.gov/tools
 - The AFDC offers a large collection of helpful tools. These calculators, interactive maps, and data searches can assist fleets, fuel providers, and other transportation decision makers in their efforts to advance alternative fuels and energy-efficient vehicle technologies.

Module 2: Electric Bus Basics and Key Challenges

Presented by Lauren Lynch and Jesse Bennett, National Renewable Energy Laboratory

- **AFDC Electricity Page:** afdc.energy.gov/fuels/electricity
 - Find information about electric vehicles and charging infrastructure, including benefits and considerations, vehicle types, infrastructure development, procurement, and incentives.
- **Charging Infrastructure Basics:** afdc.energy.gov/fuels/electricity_infrastructure
 - Find information about charging infrastructure terminology, the different types of charging equipment, and charging levels.
- **AFDC Vehicle Search Tool:** afdc.energy.gov/vehicles/search/
 - Find and compare alternative fuel vehicles, engines, and hybrid/conversion systems for light-, medium-, and heavy-duty vehicles.
- **National Renewable Energy Laboratory (NREL) Foothill Transit Agency Battery Electric Bus Progress Report:** nrel.gov/docs/fy19osti/72209.pdf
 - Read a summary of the results of a battery electric bus (BEB) evaluation at Foothill Transit, located in the San Gabriel Valley area of Los Angeles.
- **NREL National Park Service Bus Electrification Study: 2020 Report:** nrel.gov/docs/fy21osti/78012.pdf
 - Read a summary of important considerations for implementing BEBs detailing information about current buses at each fleet, BEB demonstration vehicles, and performance evaluations of BEBs in Zion, Bryce, and Yosemite.