

Flipping the Switch on Electric School Buses



Part 8: Cost Factors

Key Information and Resources

Electric school buses are a growing topic of discussion in the transportation industry. The U.S. Department of Energy (DOE) is providing a [technical assistance program](#) aimed at K-12 schools interested in implementing electric school buses into their fleets. “Flipping the Switch on Electric School Buses” is a multi-part technical assistance series. Each part contains several modules focused on key topic areas about electric school buses. Modules can be watched in order, or viewers can select just those most applicable to their needs.

The eighth part in the series focuses on electric school bus cost factors. This part provides information on bus capital and infrastructure costs, operational and maintenance costs, incentives and financing options, and how to have financing discussions.

Modules in this part include:

- [Module 1: Bus Capital Costs and Infrastructure Costs](#)
- [Module 2: Operational Costs](#)
- [Module 3: Maintenance Costs](#)
- [Module 4: Incentives and Financing Options](#)
- [Module 5: Financing Discussions](#)

Key Resources and Highlights

Below is a list of the key tools and resources provided during *Part 8: Cost Factors* of the “Flipping the Switch on Electric School Buses” series.

Module 1: Bus Capital Costs and Infrastructure Costs

Presented by Jesse Bennett, National Renewable Energy Laboratory

- **Alternative Fuels Data Center (AFDC) Charging Infrastructure Procurement and Installation:** afdc.energy.gov/fuels/electricity_infrastructure_development
 - This page provides a charging infrastructure development checklist, as well as information on considerations such as cost, compliance, permitting, inspection, ownership, signage, and working with utilities and partners.
- **AFDC Vehicle Search Tool:** afdc.energy.gov/vehicles/search/
 - Find and compare alternative fuel vehicles, engines and power sources, and hybrid systems for light-, medium-, and heavy-duty vehicles.
- **Federal Fleet Training EV Financial Considerations:** youtu.be/Xdi7T_rz75Q

- In this video, you'll learn how to calculate a vehicle's total cost of ownership and properly assess all the potential benefits and tradeoffs of adopting EV technology for your fleet.

Module 2: Operational Costs

Presented by Lauren Lynch, National Renewable Energy Laboratory

- **Report: Zero-Emission Bus Evaluation Results: County Connection Battery Electric Buses:** nrel.gov/docs/fy19osti/72864.pdf
 - This report presents the results from Central Contra Costa Transit Authority (County Connection) deployment of four battery electric buses (BEBs) in Concord, California.

Module 3: Maintenance Costs

Presented by Lauren Lynch, National Renewable Energy Laboratory

- **Report: Foothill Transit Agency Battery Electric Bus Progress Report:** nrel.gov/docs/fy19osti/72209.pdf
 - This report summarizes results of a battery electric bus (BEB) evaluation at Foothill Transit, located in the San Gabriel Valley area of Los Angeles.
- **Video: Electric School Bus Training Connections: Get to Know Your Instrument Cluster:** https://www.youtube.com/watch?v=xkp0p33xTPE&list=PLXMYyWlytjWp_Y7jx7Ee7L5K_yIkLyrhi
 - This video reviews the differences between instrument clusters on diesel and electric school buses.

Module 4: Incentives and Financing Options

Presented by Abby Brown, National Renewable Energy Laboratory

- **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, and emerging transportation technologies.
- **AFDC Laws & Incentives Database:** afdc.energy.gov/laws
 - Find federal and state laws and incentives for alternative fuels and vehicles, air quality, fuel efficiency, and other transportation-related topics.
- **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/
 - Clean Cities connects transportation stakeholders with objective information

and experts to assist with alternative fuels, fuel economy improvements, and emerging transportation technologies.

Module 5: Financing Discussions

Presented by John Gonzales, National Renewable Energy Laboratory

- **Technical Assistance:** cleancities.energy.gov/technical-assistance/
 - Clean Cities connects transportation stakeholders with objective information and experts to assist with alternative fuels, fuel economy improvements, and emerging transportation technologies.