

Flipping the Switch on Electric School Buses



Part 5: Infrastructure Planning and Solutions

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 fifth part in the series focuses on charging infrastructure planning and solutions. It provides information on interconnection challenges and solutions as well as an overview of vehicle-to-grid (V2G) technology, including barriers and opportunities.

Modules in this part include:

- [Module 1: Interconnection Challenges and Solutions](#)
- [Module 2: V2G Overview, Barriers, and Opportunities](#)

Key Resources and Highlights

Below is a list of the key tools and resources provided during *Part 5: Infrastructure Planning and Solutions* of the “Flipping the Switch on Electric School Buses” series.

Module 1: Interconnection Challenges & Solutions

Presented by Jesse Bennett, National Renewable Energy Laboratory

- **Report: Impacts of Increasing Electrification on State Fleet Operations and Charging Demand** nrel.gov/docs/fy22osti/81595.pdf
 - This report provides example analysis of the suitability of individual fleet vehicles for electric vehicle (EV) replacement and the aggregate charging demand across a fleet at increasing levels of electrification.
- **Federal Fleet Training EV Charging Infrastructure:** youtu.be/TjKwOhKBtNc
 - Adding electric vehicles to a fleet means installing more electric vehicle supply equipment, or EVSE. Planning for electric vehicles necessitates understanding EVSE compatibility, power ratings, and cybersecurity to properly assess EVSE installation and infrastructure requirements.
- **EV Champion Training Series:** wbdg.org/continuing-education/femp-courses/fempodw062
 - EV Champion Training is a virtual training series hosted by NREL that is designed to provide fleet managers with the skills and knowledge to become subject matter experts

in EV implementation. This four-part training serves as an introduction to EV technology and considerations for EVSE installation. This course focuses on the basics of EV technology and financial considerations important for fleets considering electrification.

Module 2: V2G Overview, Barriers, and Opportunities

Presented by Jesse Bennett, National Renewable Energy Laboratory

- **Case Study: National Renewable Energy Laboratory (NREL) Garage:** energy.gov/eere/femp/evse-upgrades-nrels-parking-garage-generate-financial-benefits
 - NREL installed 108 Level 2 EV charging units and incorporated power management software to minimize equipment upgrades.
- **Tool: Fleet EV Charging Planning Spreadsheet:** energy.gov/sites/default/files/2021-10/evse-installation-planning-form.xlsx
 - This spreadsheet tool allows users to input information about planned EV chargers, number of vehicles, and facility information to assist with planning for EV charging at a site.
- **Tool: EV Utility Finder (EV U-Finder):** energy.gov/eere/femp/articles/electric-vehicle-utility-finder-ev-u-finder
 - This database helps fleets connect to EVSE utility partners and identify active incentives within a specific ZIP code. Primary EV U-Finder outputs include the utilities operating within a ZIP code, contact information, and the incentives they currently offer.