



Municipal EV Readiness Toolkit 12-Week Program

Module 2: Electric School Buses

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Electric School Bus: Transportation Electrification Plan Foundational Insights

Why should you start planning now for a Transportation Electrification Plan?

- Connecticut passed statutes that requires a reduction of greenhouse gas (GHG) emissions 80 percent below 2001 levels by 2050 (Public Act 08-98), with an interim target of 45 percent below 2001 levels by 2030 (Public Act 18-82).
- Transportation makes up 38% of GHG emissions, the largest source of GHG emissions. In order to reach those goals, transportation will need to become zero-emission.
- For 2030 target: The [report](#) from the GC3 recommends reducing transportation emissions 29% from 2014 levels to stay on target.
- December 2015 – CT joined the [International zero emission vehicle \(ZEV\) alliance](#) that says: no later than 2050 – strive to make all new passenger vehicles in their jurisdictions ZEVs
- July 2020 – CT joined the [multi-state Medium and Heavy-duty ZEV memorandum of understanding](#) that commits states will work toward ensuring that: by 2050 – 100 percent of all new medium- and heavy-duty vehicle sales be ZEVs, with an interim target for 2030 having 30 percent ZEV sales

Considerations for electric school buses

- Electric school buses benefit children's health, and the whole community has cleaner air.
- Electric school buses are relatively new to the market, and there is little data to show how electric buses function in all climates and operating conditions. Plus, they're expensive. Upfront cost for a new electric bus is \$350,000; a new diesel bus costs \$85,000 to \$100,000.
- Still, electric buses are a compelling option for school administrators looking to reduce GHGs and keep students safer – if they can be proven to meet school transportation needs and can offset upfront costs with reduced fuel and maintenance expenses.
- There are several barriers to widespread adoption of electric buses: lack of awareness of electric buses and how they perform, lack of experience among school bus fleet managers with alternatively fueled vehicles, and cost.
- Electric school buses should be prioritized for routes in frontline EJ communities, and communities with students with high risk health vulnerabilities or special needs.
- Managing when and how long vehicles are charged is essential to reducing energy and fuel costs below current diesel spending levels.
- Dedicated training and technical/maintenance support would help keep buses on the road.
- The range of an electric school bus is approximately 100 miles between full charges.



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Innovative uses for electric school buses

School buses offer an ideal duty cycle for vehicle to grid (V2G) interactions, storing energy that can be put back into the grid during high demand times. After the morning route, the buses can come back to charge/discharge until the afternoon routes, and in the evening and night can again charge/discharge. They have regular schedules and routes, so it is easier to predict their energy needs.

In the summer months, about 85 percent of school bus fleets are dormant, where they can act as a mobile storage device and provide support to a grid based on intermittent renewables and distributed energy resources (DERs). The V2G option could become a revenue stream for the district to help offset the upfront costs of obtaining these vehicles. Using school buses for V2G applications is a promising viable business model.

Massachusetts recently completed a pilot project and the report, [Electric School Bus Pilot Project Evaluation](#), describes the outcome of the project.