



Renewable Communities

Massachusetts cities and towns
leading the way to 100% renewable energy

Concord, Amherst, and Cambridge: Electric school buses

Bright yellow school buses are a common sight in cities and towns across Massachusetts. Electric school buses offer a cleaner alternative to the standard diesel models.

A 2016 pilot program through the Massachusetts Department of Energy Resources (DOER) allowed three school districts – Amherst–Pelham, Concord–Carlisle, and Cambridge – to purchase and test an electric bus.¹ In Amherst, the electric bus was projected to save the district \$96,000 in fuel costs and a further \$14,000 in repairs over the course of 10 years.²

The buses offer a number of health benefits for drivers and riders. With zero tailpipe emissions, electric school buses protect students from diesel exhaust, improve air quality, and produce less noise while operating.³

The range of an electric school bus depends on the size of its battery pack. For each of the school districts participating in the pilot program, the range of their electric school bus well exceeded the bus's average daily miles traveled.⁴

Electric buses could function as energy storage systems, feeding power back into the grid at times of peak demand or providing backup electricity in the event of an outage.⁵ Although a “vehicle-to-building” (V2B) electricity exchange was not tested during the pilot, DOER estimated that V2B could save a school nearly \$4,800 in energy costs in a year.⁶

The school districts encountered some challenges in operating electric school buses, in part because the districts did not have access to on-the ground technical assistance.

Emissions from the buses were considerably lower than those from diesel buses, but the energy cost savings were less than expected. According to a report from DOER, school districts can realize greater energy and cost savings from electric buses through managed charging of their batteries.⁹

The buses in Cambridge, Amherst, and Concord were supplied by Lion, a Canadian firm. Thomas Built Buses, Blue Bird, and IC – three of the largest school bus manufacturers – have also developed electric models, signaling a growing interest in the technology.¹¹

1. “VEIC MA ELECTRIC BUS PILOT PROGRAM 18 01 04 FINAL 1,” Massachusetts Department of Energy Resources, 18 January 2018, <<https://www.youtube.com/watch?v=mnvEhN47xJ0>>.

2. “Electric school bus hits the road in Amherst,” Scott Merzbach, Daily Hampshire Gazette, 18 January 2017, <<https://www.gazettenet.com/First-electric-bus-picking-up-schoolchildren-in-Amherst-7548159>>.

3. “VEIC MA ELECTRIC BUS PILOT PROGRAM 18 01 04 FINAL 1,” Massachusetts Department of Energy Resources, 18 January 2018, <<https://www.youtube.com/watch?v=mnvEhN47xJ0>>. “Concord’s electric school bus is leading the clean energy charge,” Bill Griffith, Boston.com, 30 November 2016, <<https://www.boston.com/cars/cars/2016/11/30/concords-electric-school-bus-is-leading-the-clean-energy-charge>>.

4. *Electric School Bus Pilot Project Evaluation*, Vermont Energy Investment Corporation, 20 April 2018, <https://www.mass.gov/files/documents/2018/04/30/Mass%20DOER%20EV%20school%20bus%20pilot%20final%20report_.pdf>.

5. “VEIC MA ELECTRIC BUS PILOT PROGRAM 18 01 04 FINAL 1,” Massachusetts Department of Energy Resources, 18 January 2018, <<https://www.youtube.com/watch?v=mnvEhN47xJ0>>.

6. *Electric School Bus Pilot Project Evaluation*, Vermont Energy Investment Corporation, 20 April 2018, <https://www.mass.gov/files/documents/2018/04/30/Mass%20DOER%20EV%20school%20bus%20pilot%20final%20report_.pdf>.

9. Ibid.

11. “Electric School Buses Take to the Road: Real-World Results,” Nicole Schlosser, School Bus Fleet, 15 May 2018, <<https://www.schoolbusfleet.com/article/729730/electric-school-buses-take-to-the-road-real-world-results>>.