

Electric School Bus – Strategic Plan

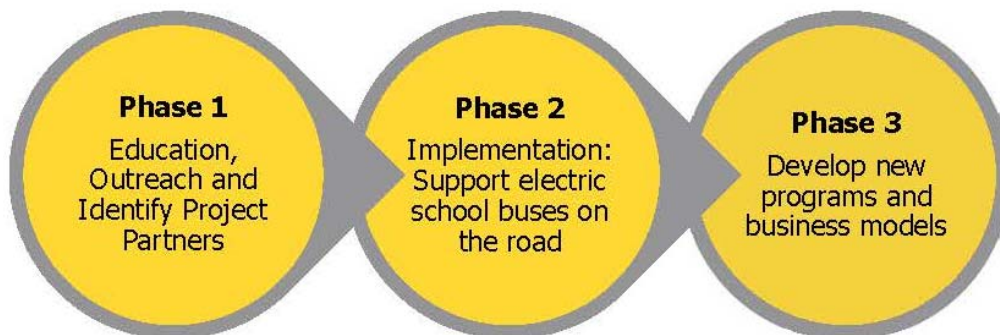
Our goal is to accelerate adoption of electric school buses.

School transportation is an attractive option for electrification. Each day, over 24 million children in the United States ride a bus to and from school. The school bus fleet includes some 450,000 buses, which combined consume over 900 million gallons of diesel fuel each year and emit over 9 million metric tons of greenhouse gases. Electrifying school transportation also creates an opportunity to impact public health; diesel emissions are linked to serious health risks, especially for children, including asthma, cancer, reproductive and developmental harm, and neurological damage. With vehicle technology now mature and the prospect of funding from the Volkswagen Settlement, there is an immediate opportunity to accelerate adoption of electric school buses.

The Vermont Energy Investment Corporation (VEIC) has been working to advance electric school bus technology for several years. We started examining electric school buses and ways buses could potentially interact with the electric grid in 2014 and evaluated the financial feasibility of the technology in 2015. These projects led to our current role managing an electric school bus demonstration project in Massachusetts. The Massachusetts project funded the deployment of four electric school buses and will test the technical feasibility of connecting the buses to buildings or the grid. Three buses in Massachusetts are already carrying students; these buses are the first fully manufactured electric school buses deployed in the U.S.

VEIC hopes to build on our experience – and the experience of school districts in California and Quebec Province – to accelerate adoption of electric school bus technology. We crafted an overarching strategy that consists of three progressive parts. The first involves spreading the word – educating and reaching out to stakeholders to make sure school districts and school transportation service providers understand what’s been done and what is available. As more school buses are deployed, we anticipate a need for technical assistance and a need to collect information on lessons learned and best practices. The final stage will involve convening stakeholders, including those who adopted the technology as well as those who did not so we can adjust program and funding models to appeal to a wider group.

This progressive strategy represents our proposal to encourage deployment of electric school buses. More detail is provided in the following section and we are available to discuss any part of it in more detail. Phase 1 is partially funded; we are actively seeking additional resources for Phase 2 and/or 3.



Phase 1: Education, Outreach and Identify Project Partners

Electric school bus technology has matured in the past several years and is ready for broader deployment. However, school districts have a difficult time justifying the higher purchase price of electric school buses. Volkswagen Settlement funds, however, create an immediate opportunity to replace diesel buses with electric school buses. By conducting outreach now, we can connect interested stakeholders with a viable funding source.

Our experience suggests that school district staff and school transportation service providers may know about electric school buses, but haven't had all of their questions answered. VEIC has received some funding to hold workshops in the northeast to increase awareness of electric school buses. Workshops will cover a range of topics from operations to funding, procurement and contracting. VEIC's experience in Massachusetts also means we can invite practitioners with hands on experience to share why they participated in an early pilot and what they've learned. One of the immediate goals will be to connect school districts with funding available through the VW settlement and show them how to access it.

Phase 2: Implementation, Technical Assistance and Evaluation

Education about electric school buses will generate interest and lead to more school districts who want to deploy these vehicles. VEIC has the experience and capacity to support this implementation phase by providing technical assistance to project partners. Technical assistance may include activities such as helping develop vehicle specifications; providing advice on siting and installing vehicle charging systems; and working with local utilities to keep electricity costs as low as possible.

Another important role for VEIC during this phase will be to monitor the experience of the demonstrations, collecting best practices and lessons learned and creating a collective source of information for stakeholders interested in learning more. We will draw on our experience supporting electric vehicle adoption, including our work with Drive Electric Vermont. The Drive Electric Vermont effort includes a website, quarterly stakeholder meetings, events and technical assistance. This model has been recognized nationally for its effectiveness in advancing the electric vehicle adoption.

Phase 3: Convene and Debrief/ Develop New Business Models

The Volkswagen Settlement funds represent an unprecedented opportunity to transition school bus fleets to cleaner, lower emission and modern vehicle technology. This funding opportunity is temporary, so it will be critical to maintain momentum by engaging new partners, creating business models and developing programs to keep electrifying the school bus fleet.

This juncture in adoption of electric school bus technology will be an important time to convene and share experiences among a larger set of stakeholders – early adopters and those who are interested in deploying the technology. VEIC suggests convening these stakeholders, to learn from school bus fleet managers, operators and school administrators, hear about their experiences with electric school buses and listen to what they want and need to continue to make progress. In addition, it will be important to create the next generation of business models and programming that will keep us on the path to cleaner fueled transportation.

Vermont Energy Investment Corporation

VEIC is a national leader on electrified transportation and well-versed on electric school bus technology. VEIC is currently managing an electric school bus demonstration project in Massachusetts, guiding deployment of four electric school in school districts across the state. This demonstration project is the first original equipment (i.e. not a rebuild) and the first cold weather electric school bus deployment in the United States. Our experience brokering and managing the deployment of the electric school buses in Massachusetts positions us as one of the leading experts on electric school bus in the United States.

VEIC also has decades of experience leveraging innovative financing mechanisms to accelerate adoption of efficient technologies. We launched Commons Energy, a Public Purpose Energy Services Company (PPESCO) in 2014, and continue to explore ways that financing can be used to overcome barriers to electric transportation. Through a combination of financing, VW funds, and government programs, such as the DERA Program (the Diesel Emissions Reduction Act), there is an enormous opportunity to replace diesel buses with cleaner electric vehicles.