

P.E.I.'s Electric School Bus Build-Up: Lessons from one of Canada's Leading Jurisdictions



Prince Edward Island (P.E.I.) is leading the charge in electrifying school bus fleets across Canada. By fall of 2022, the province will have procured 82 electric school buses, representing 25 per cent of its fleet of 322 buses. This fast-paced transition is the result of a clear mandate in 2020 from Premier Dennis King and determined public servants to work through the logistics of transitioning to electric transportation. P.E.I. faces the same challenges as other jurisdictions: high capital costs, installing charging infrastructure, changing weather patterns, and bus driver acceptance. Despite these challenges, the province continues to break down barriers and forge ahead with its goal of becoming the first in Canada with a fully-electric school bus fleet.

What drove change in P.E.I.?

In May 2020 Premier King announced that P.E.I. is “committed to moving our school buses to full electrification over the next few years and leading the county in this form of clean transit.” This came as a bit of a surprise for education and infrastructure officials in the province – involving a range of sectors and some were not sure of this new direction. It meant officials needed to shift their understanding of how to transition the diesel bus fleet to electric. After some initial trepidation, officials like Mike Franklin, logistics specialist for the Public Schools Branch, began supporting the switch to electric.

Adding electric school buses to the fleet requires a system change involving the buyer, the energy utility, infrastructure and transportation specialists, and community stakeholders. Electric school buses have higher capital costs than diesel buses requiring a clear mandate from government, including shifts in budget and priorities toward a green transportation sector. With clear direction, officials could focus on overcoming challenges to integrating electric buses into the fleet. Transportation staff had to solve technical and logistical challenges from a systems level and to answer many questions: Can we procure

enough buses? Where would we put charging infrastructure? Can we charge all at once? How can we ensure buses are charged every morning? How will weather affect bus range? Does our energy grid have the capacity to support more demand?

How is P.E.I. overcoming the capital costs of electric school buses?

The purchase price for an electric school bus with 150-kilometre range is \$340,000, compared to a standard diesel bus at \$130,000. Making the financial case to replace diesel with electric buses was difficult before government mandated the option.

P.E.I. is taking advantage of federal funding that supports fleet electrification to overcome the high capital costs of electric school buses. The province paid for half of the total costs, a total of \$6.3 million for the purchase of 35 buses, and charging infrastructure. The federal government covered the other half through the Green Infrastructure Stream of the Investing in Canada Infrastructure Plan. In addition to the reduced capital costs, the province is saving on operating costs because electric school buses have substantially lower maintenance and fuel costs than diesel.



How is P.E.I. charging its fleet in both rural and urban settings?

Many drivers of existing diesel buses park at home as it cuts down on travel time if they live on or near their route and they would like to continue doing so. To accommodate that need, Franklin says they are experimenting with individual agreements with bus drivers to install charging stations at their homes, with a power line connecting them directly to the electrical grid. This solution makes logistical sense as it saves bus drivers from having to drive their gasoline car to a charging station. In addition, the home chargers are the least-cost option when compared to the 12-bus charging stations they also installed. Home charging is not an option for all drivers, however, necessitating some charging depots. This combination of solutions raises its own set of challenges to solve, including higher costs than at-home chargers, grid capacity, and reliability in the event of outages.

One solution, according to Franklin, is to install all the 12-bus charging stations at once, even if the buses have not been procured yet. It is better to prepare for the next procurement and take advantage of [economies](#) of scale rather than doing it piecemeal.

Officials are also [installing](#) charging stations at individual schools to accommodate bus travel outside their usual routes, such as inter-school sporting events and field trips.

How did bus drivers feel about this transition?

Bus driver support and participation from the union is an important dimension of the electric school bus initiative. The drivers have the most exposure to and responsibility for the new buses. Significant pushback from drivers could have led to labour shortages from drivers not wanting to take part in the transition. Franklin reports that drivers were initially weary of the transition, but once they had hands-on driving experience, many of their concerns were resolved, with only one disliking the new bus experience. Jason MacKinnon, President of CUPE Local 1145 and school bus instructor for the Public Schools Branch, says that home charging is well-liked by drivers, is going smoothly, and that the overall reception among drivers has been positive, adding, “I’m proud of our province for taking the initiative in paving the way to electric.”

While the first few years of electric bus purchases have had a positive reception from drivers, parents, and students, there is still a learning curve the province needs to overcome, such as route planning and maintenance.

How has route planning and policy changed with the growth of the electric fleet?

Transportation engineers in P.E.I. are considering how electric buses with a range of 150-200km will fare in their rural province. Transportation officials are evaluating if electric buses can handle the routes that are farther than 100 km. P.E.I. uses heavy-duty traction tires, which are good for rural roads and winter driving, but reduce the bus range by around 15 per cent. The immediate solution is to prioritize electric buses for shorter routes in and around populated areas. Using electric buses in more populated areas also makes sense as they are better suited to stop-and-start [traffic](#) than fossil fuels buses.

To optimize route planning, the Public Schools Branch has a two-year subscription to LION Electric's data collection software which helps adjust driver behaviour to get the most out of a single charge.

Conclusion

P.E.I. is overcoming early-adopter challenges. As the only jurisdiction in the Atlantic region pursuing fleet electrification, P.E.I. is figuratively (and literally) on an island. Issues such as route planning, intricacies with charging, and maintenance have been solved. Maintenance, for example, was and is an aspect of electrification officials need help with as few of their mechanics have experience with electric buses. Franklin says the support from the supplier, LION Electric, was crucial in working through the early growing pains of training the mechanics and maintenance staff.

P.E.I. is a leading example of what is possible when a province has a clear commitment to a climate goal. Despite some early challenges to school bus electrification, the province is poised to have a 25 per cent electric school bus fleet, well on its way to full electrification in the next decade. Prior to switching to electric, P.E.I. procured school buses alongside the other Atlantic provinces through the Council of Atlantic Ministers on Education and Training (CAMET) to take advantage of joint purchasing rates. There is potential for the Atlantic provinces to pursue electric school buses through CAMET just as they do with diesel buses. The Atlantic provinces can follow in P.E.I.'s footsteps toward a cleaner environment and better health for students and drivers.



Conservation Council of New Brunswick

T. (506) 458-8747

E. info@conservationcouncil.ca

www.conservationcouncil.ca

180 St. John Street

Fredericton New Brunswick

Canada E3B 4A9



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[/cc_nb](https://twitter.com/cc_nb)

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