Conservation Council of New Brunswick
Conseil de conservation du Nouveau-Brunswick
www.conservationcouncil.ca

Report: Electric School Bus Roundtable

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The Conservation Council of New Brunswick is working to ramp up the adoption of electric school buses in New Brunswick (N.B.). The campaign is funded by the Echo and Trottier Foundations and is part of a national network of similar campaigns called the Canadian Electric School Bus Alliance (CESBA).

As part of its work, in April 2022, the Conservation Council hosted a roundtable discussion with 13 school bus stakeholders to gain understanding of the challenges and opportunities with respect to provincial adoption of electric buses. Parents, teachers, bus drivers, health advocates, transportation experts, and government officials participated. The two teachers who attended presented their students' feedback.

Key Takeaways

- Switching to electric school buses shows a clear commitment to a sustainable future and socializes the next generation of climate conscious residents – **Parent Stakeholder**
- 60 per cent of school buses in New Brunswick can be electrified under current technology – **Government Official**
- The *Zero Emissions Transit Fund* funds 50 per cent for e-bus purchases and 80 per cent for feasibility studies – **Government Official**
- Switching to electric school buses will eliminate dangerous health pollutants to which students are regularly exposed – **Health Expert**
- Diesel buses create noise pollution that affects the driver's ability to pay attention to the road. Noise pollution also poses a long-term threat to hearing – **Bus Driver**
- Electric school buses are cheaper over time due to the reduced fuel and maintenance costs and the federal grants – **Student Stakeholder**

- The health and environmental costs will be higher than the cost of electric buses. Investments now will save money in the future – **Teacher Stakeholder**
- Charging infrastructure is a logistical challenge but not a major barrier – **Government Official**
- New Brunswick is a leader on installing charging infrastructure and can carry that momentum to electric school buses – **Government Official**

Context

School buses are the largest emitter of the greenhouse gas carbon dioxide (CO_2) in New Brunswick's transportation fleet. The more than 1,250 buses are largely fueled with diesel, a high CO_2 and air pollution emitter, contributing approximately 22,500 tons of greenhouse gas emissions (GHGs) per year and contributing to a range of health concerns including: childhood bronchitis and asthma, as well as cardiovascular disease and hearing loss among bus drivers.

In 2020, the Department of Education and Early Childhood Development (EECD) conducted an *Alternative Fuels Assessment* (2020) to determine the feasibility of fuel options. The study concluded that gas- and propane-powered buses offer similar reliability to diesel and produce fewer emissions. As a result of this study, the province procured 74 gasoline and 16 propane school buses. Two electric school buses were also procured as part of a pilot project.

Since 2020, electric school bus demand and funding programs have ramped up significantly. Prince Edward Island (P.E.I.), British Columbia (B.C.), and Quebec have already committed to transitioning their fleet to electric. P.E.I. has already purchased 82 buses with the help of the *Investing in Canada* stream of *the Canada Infrastructure Plan*. Likewise, Quebec has set a target for electric school buses of 65 per cent of its fleet by 2030 and school districts in B.C. have procured 18 electric school buses and plans to purchase 280 more with the help of the *Canada Infrastructure Bank*.

Summary

Generally, round table participants are in favor of electrifying N.B.'s school bus fleet over time. They are aware of the financial challenges that need to be overcome for the upfront capital cost of buses and are curious about how the government can find funding to transition the fleet. All members understand the benefits of improving the health of students and bus drivers, improving road safety, significantly reducing associated CO_2 emissions, and lower maintenance costs. The challenges of building out charging infrastructure and battery range in N.B. driving conditions are of less concern for the participants.

Throughout the discussion, the participants addressed the challenges and potential solutions.

Health and Safety

The health impacts of diesel buses are the most compelling reasons to urge government to convert the school bus fleet to electric. One participant, a health advocate, argues that

children's lungs (15 and under) are less developed and that it is a "really critical time to take the opportunity to give them cleaner air, especially on their way to school – you set them up for success." High school students, who provided feedback through their teachers who were present, identified health effects as one of the motivations for why they favour electric school buses. Another participant argues that there needs to be "full-cost accounting and the holistic view of how an investment in this department would save in other areas that government is interested in," and that it is "hard to put a dollar figure of children's health and long-term chronic conditions."

Another argument in favour of electric school buses is that increased costs from switching to electric will be made up in time by reduced public health expenses as a significant source of childhood air pollution would be eliminated. The participants unanimously agree that diesel pollution represents a significant health threat to the well-being of children. In addition to children's health concerns, school buses can affect drivers' health, including cardiovascular effects. Round table participants believe the health and safety benefits of switching from diesel to electric school buses outweigh the associated costs of the switch.

In addition to health effects, safety is a benefit of electric school buses. One participant, a bus driver in N.B., reports that while school buses are safe vehicles, they could be safer by reducing excessive noise pollution coming from the engine. This participant notes that electric buses are quieter and allow more time listening to the students instead of looking at them and that it allows for more time spent focusing on their surroundings.

Carbon Emissions

In addition to the health and safety benefits of switching to electric school buses, climate change benefits are also a motivating factor for round table participants. A school bus official in the Department of Education and Early Childhood Development estimates that approximately 60 per cent of school buses in New Brunswick could be electrified under current technology and based on their current route. This would prevent 13,458 tons of CO_2 from being emitted in New Brunswick—emissions that contribute to the worsening effects of climate change such as droughts, wildfires, flooding, and biodiversity loss.

Participants argue that similar to health effects, there are hidden costs to carbon emissions that are not accounted for. One of the teachers in the round table notes that "making decisions based on dollar signs have been going on too long. Reducing carbon and improving health will have economic benefits in the future." Others believe that school buses are "a very public symbol of government. Switching to electric shows a clear commitment to a sustainable future and will socialize the next generation of climate conscious residents."

The discussion on climate change benefits of school bus electrification also addressed the need to decarbonize the electricity grid. One participant raises the upcoming federal Clean Electricity Standard (CES) that "will push our electricity grid to be clean by 2035 – the sooner we start to invest in this we will see significant greenhouse gas reductions." Another participant points out

that the electricity grid needs to continue to be decarbonized alongside electric school bus buildout to reduce carbon emissions for school bus charging.

High Capital Costs and Financing Options

The high capital cost for electric school bus procurement is a barrier that round table participants feel can be overcome. The purchase-price of electric school buses in the Maritime provinces is estimated to be four times higher than diesel. Buying electric buses within the current provincial budget is difficult because one electric school bus costs the same as four diesel buses that could otherwise replace older, less safe buses.

Despite the high upfront capital cost of electric school buses, participants feel that it is a worthwhile investment and that "in general, the green solution costs less in the end – add on the environmental and health benefits afterwards." Participants also note that the province can recoup some of the cost difference through fuel and maintenance savings of electric school buses and available federal grants and loans to help bridge the financing gap. The *Zero Emissions Transit Fund* is a federal grant that funds 50 per cent of the capital cost for electric school buses and 80 per cent of feasibility studies. The participants also note these funds likely will not be available forever, so it is important for the province to take advantage of opportunities now. In addition, a participant notes that jurisdictions have little to lose by conducting a feasibility study as they are covered 80 per cent by the grant.

Range Anxiety

Range anxiety is one of the challenges with school bus electrification, with the concern that electric school buses are not suited to long rural routes, especially in the winter.

Although enthusiastic about electrification, participants agree that electric school bus build out needs to strategically replace diesel buses with shorter routes in urban areas instead of long rural routes. Inner-city routes are short range and predictable with readily accessible charging infrastructure making them prime candidates for electrification. Bus drivers can complete their morning routes and charge the bus before the afternoon, eliminating any range concerns. Replacing the entire fleet will depend on the buses ability to reliably complete their route in rural settings. One school bus official is optimistic, however, elaborating that:

> Performance-oriented arguments from naysayers are common. Based on N.B. usage, we have significant opportunities to replace a large percentage of our buses with electric. We expect performance from these vehicles to increase. It's not a matter of if, but when we go electric. We need to be at the forefront and investing in this. N.B. is typically a leader in school bus technology adoption – other provinces look to N.B. quite often when it comes to school buses.

Participants report there is no need to wait for the technology to improve and that the routes that can go electric should go electric.

Charging Infrastructure

Participants also recognize the logistical challenge of installing the necessary charging infrastructure to support full electrification.

While charging infrastructure is a logistical challenge, it is not seen as a major barrier to electrification. Participants recognize that installing charging infrastructure is a necessary component of transportation electrification. Of the solutions discussed, at-home charging and depot charging emerge as viable methods to ensure access to charging. Many bus drivers in New Brunswick live on or near their bus route so they can park at home. Some fear that the switch to electric will force them to drive to a central charging depot which would cost them time and money. Installing a charger at their home would remedy this fear. PEI is currently experimenting with this solution. The other option, suitable for inner-city routes, are central charging stations at depots for bus drivers who neither want, nor cannot, accommodate a charger at their home.

There is optimism that New Brunswick can lead on the electric school bus fleet conversion front. “N.B. is doing great on charging infrastructure,” one participant said. “This is a natural next step. N.B. can actually be a leader on this front.”

Conclusion

The round table on electric buses in New Brunswick gave stakeholders an opportunity to share their opinions and help inform the Conservation Council’s campaign. The results from this round table will help inform future outreach activities such as webinars. We will be conducting a survey of bus drivers to better understand their perspectives on school bus electrification. As a primary stakeholder, the views of bus drivers are an essential component of our advocacy. In addition, we will continue to meet with government officials and decision makers to present the results of our stakeholder outreach and to make school bus electrification a top priority for the government.

Participants are enthusiastic about the possibility of building out New Brunswick’s electric school bus fleet. They see health, climate, social, and monetary benefits from switching to electric from diesel. They are, however, also aware of the challenges that come with electric buses, such as the range limitations, charging capacity, and high capital costs. Participants see electric school bus build-out happening over time. “This is not an all or nothing situation,” one participant said. “Every bus that we replace with an electric bus is an incremental step toward cleaner air for our kids.”

The sooner the province starts replacing diesel buses with electric, the better. The round table is the first stakeholder engagement event the Conservation Council will host on electric school bus fleet transformation in the province. Participants see value in stakeholder input. Decision makers need to “listen to bus drivers and parents,” when they decide which buses to buy.