



*Written Submission for the Pre-Budget Consultations in Advance of
the Upcoming Federal Budget by the Canadian Urban Transit
Research and Innovation Consortium (CUTRIC)*

Canadian Urban Transit Research and Innovation Consortium (CUTRIC)

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Recommendations

1. That the government mandate neutral feasibility studies as a mandatory prerequisite for zero-emission buses (ZEB) procurements which use federal funds. To roll-out these feasibility studies on a national basis, we recommend that the government make \$10 million in new funding available to the Canadian Urban Transit Research & Innovation Consortium (CUTRIC) for a nation-wide “**Zero Emission Bus (ZEB) Roll Out Stimulus Program**,” which will fund neutral feasibility studies to analyze the performance of zero-emissions buses (ZEB)--including both battery electric and hydrogen fuel cell electric buses, and their allied charging and hydrogen fuelling systems--within the next six to 12 months.
2. That the government invest \$30 million in the **National Hydrogen Fuel Cell Electric Bus (FCEB) Demonstration & Integration Program** with CUTRIC's transit agency members Canada-wide, starting in 2020.
3. That the government allocate funding in the amount of \$10 Million to the CUTRIC-led **ACES Big Data Trust initiative** to digitize all transit bus data and feed it in real-time into a new national cloud platform for sharing city-to-city. This will encourage cheaper ZEB products in the short-term, saving taxpayers hundreds of millions of dollars in the long-term. As part of the ACES Big Data Trust initiative, the Government should mandate the inclusion of loggers, and the collection of real-time data for any ZEB procurements as part of federally-funded procurements to ensure nation-wide equivalently calibrated data streams that assess how ZEB buses and charging/fuelling systems are performing over time.



About CUTRIC

The Canadian Urban Transit Research and Innovation Consortium (CUTRIC) appreciates the opportunity to participate in the Standing Committee on Finance's pre-budget consultation process. The recommendations we set forth for consideration will lay the groundwork for a green economic recovery from the COVID-19 pandemic for Canada, specifically through investments in clean public transit.

The Canadian Urban Transit Research and Innovation Consortium (CUTRIC) is a non-profit association that focuses on designing and delivering technology projects in low-carbon smart mobility. CUTRIC's work generates solutions that decrease fuel consumption, reduce emissions, eliminate redundancies, reduce congestion, improve quality of life for mobility customers and transit riders. CUTRIC has over 100 members across the country, including Nova Bus, New Flyer, Siemens, ABB, Thales, Ballard Power Systems, Fortis BC, Enbridge Gas, OPG, Toronto Transit Commission, Translink, BC Transit and various provincial and municipal transit agencies.

Our Recommendations

1. The government should mandate neutral feasibility studies as a mandatory prerequisite for zero-emission buses (ZEB) procurements which use federal funds. . To roll-out these feasibility studies on a national basis, we recommend that the government make \$10 million in new funding available to the Canadian Urban Transit Research & Innovation Consortium (CUTRIC) for a nation-wide **“Zero Emission Bus (ZEB) Roll Out Stimulus Program.”**

Neutral feasibility studies typically cost between \$30,000 and \$500,000 per system depending on the size, complexity, service area and ridership of the fleet being simulated and assessed. These relatively low-cost predictive and analytical studies will ensure that any procurements of ZEBs are planned and best positioned for success at the least possible cost to taxpayers over the long-term.

CUTRIC's **“ZEB Roll Out Stimulus Program”** would fund such neutral feasibility studies across the country and spur ZEB procurements across Canada's transit agencies to help achieve 5,000 electric buses on Canadian roads by 2025. This ensures the lowest cost ZEB systems recommendations are made available to cities and regions and local transit agencies as part of immediate ZEB procurement efforts over the next 12 month period, leading to more accurate and efficient strategic procurement and saving Canadian taxpayers money in the long-run. This program would support neutral and non-competitive feasibility assessments performed under the umbrella of non-profit transparency, thereby ensuring no preference is given to any



one particular commercial interest or ZEB product manufacturer in the assessment process on a per city basis.

CUTRIC can ensure that non-profit research teams perform these studies on behalf of transit agencies across Canada that have piloted or demonstrated ZEBs already and which are ready to procure substantial fleets of ZEB procurements in 2020-2022.

2. That the government invest \$30 million in the **National Hydrogen Fuel Cell Electric Bus (FCEB) Demonstration & Integration Program** with CUTRIC's transit agency members Canada-wide, starting in 2020.

A **National Hydrogen Fuel Cell Electric Bus (FCEB) Demonstration & Integration Program**, valued at approximately \$30 million, would immediately deploy and demonstrate the feasibility of FCEBs in Canada in 2020. To date, no FCEBs have been deployed by Canadian transit agencies since 2010, even though the vehicle systems are made-in-Canada and deployed globally as Canadian-made technologies. An FCEB deployment and demonstration program would support Canada's transition to innovative, cleaner modes of public transit and is well-aligned with the federal government's upcoming national hydrogen strategy and broader environmental and innovation objectives.

FCEBs have the potential to reduce GHGs locally and improve local air quality. They also have the potential, in provinces with excess generational capacity, to provide a means for the generators to store energy, and create an ecosystem and jobs in the delivery of the clean fuel. With increased consumption and as adoption of these systems increase, the fuel and the technology has the ability to achieve price parity with Diesel, thereby reducing costs while also achieving environmental goals, with the final important benefit being local job creation. Hydrogen fuel cells are a Canadian developed technology, with some of the world's largest manufacturers, Ballard and Hydrogenics (now a part of Cummins), being based out of Canada and North America's largest manufacturer of transit buses, New Flyer International (who also has a fuel cell electric bus) based out of Canada as well, leading to local job creation with the adoption of these technologies.

3. The government should allocate funding in the amount of **\$10 Million to the CUTRIC-led ACES Big Data Trust initiative**, which incorporates the cities and transit agencies of Greater Montreal, Greater Toronto, Greater Vancouver, Calgary, Edmonton and Winnipeg in a move to digitize all transit bus data and feed it in real-time into a new national cloud platform for sharing city-to-city.

This would enable taxpayer benefits nationally by ensuring performance data associated with buses, chargers, shuttles and other transit assets adopted by transit agencies are shared in



real-time, and it would ensure the sharing of operational knowledge and best practices between systems. This will allow agencies to generate insights and develop operational improvements through the power of Big Data which further benefits transit systems by supporting evidence-based ZEB procurements over the short and long-term. Critically, this initiative would support ongoing job creation in Canada within the growing domains of Big Data and Artificial intelligence, both of which are booming sectors globally.

The Government should mandate transit systems share their ZEB operational performance data through the Big Data Trust for any ZEBs and ZEB equipment procured using federal funds to ensure knowledge transfer across all Canadian transit systems with regards to these new and innovative technologies and their performance capabilities. This sharing will support lower cost taxpayer supported ZEB procurements in the future.

As part of the ACES Big Data Trust initiative, the Government should mandate the inclusion of loggers, and the collection of real-time data for any ZEB procurements -- both buses and fuelling systems -- as part of federally-funded procurements to ensure nation-wide equivalently calibrated data streams that assess how ZEB buses and charging/fuelling systems are performing over time. These logger systems would enable the automated tracking of data, enabling that performance of the assets is tracked and verified. It would also allow the data to be uploaded, to a cloud based platform, such as the ACES Big Data Trust Initiative, allowing for the federally funded ZEB procurements to benefit other systems and their learning across the nation.

Conclusion

CUTRIC thanks the Members of the Standing Committee on Finance for their consideration of our pre-budget submission. CUTRIC would be pleased to provide the committee Members with further details on any of the proposed projects outlined above and are available upon request. We know that the recommendations we've set forth will contribute to Canada's economic recovery from the COVID-19 pandemic in the short-term, and in the long-term position Canada as a world-leader in innovative and clean public transit.

The COVID-19 pandemic has demonstrated that public transit is an essential service to Canadians in communities across the country. The 2021 federal budget is an opportunity for the federal government to build transit back better, in line with the government's broader environmental objectives and commitment to reach net-zero emission by 2050.

