School District #75 (Mission)

Special Public Meeting of the Board of Education

Agenda

June 1, 2021, 6:00 pm

Zoom Meeting

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Pages

1. CALL TO ORDER

   The Board Chair will acknowledge that this meeting is being held on Traditional Territory.

2. ADOPTION OF AGENDA

3. DELEGATIONS/PRESENTATIONS

4. UNFINISHED BUSINESS

   4.1. Electric Bus Business Case — Action — 1 - 6

5. STAFF REPORTS

6. NEW BUSINESS

7. MINUTES OF PREVIOUS MEETINGS

8. INFORMATION ITEMS

9. CORRESPONDENCE

10. COMMITTEE MINUTES/LIAISON REPORTS

11. ANNOUNCEMENTS

12. QUESTION PERIOD

    Questions asked must be related to items discussed on the Agenda. Labour, Land, and Legal issues will not be discussed.

13. ADJOURNMENT

ITEM 4.1 **Action** **File No. 11200.20.2021/2022**

TO: Board of Education
FROM: C. Becker, Secretary Treasurer
SUBJECT: Electric Bus Business Case

Recommendation

THAT School District No. 75 (Mission) purchase an electric school bus to replace school Bus #1751 for the purchase price of $389,210.00, plus an additional cost of $10,000 for charging infrastructure;

AND THAT Mission Public Schools apply for the following grants and funding to support the purchase:

$116,668 from Clean BC

$ 30,000 from Ministry of Education supplemental bus funding

$ 50,000 from CNCP funding

AND THAT the balance of $24,094 after the Ministry of Education's Core funding of $178,448 be funded from local capital.

1. **Summary:**

   At the May Board of Education Meeting, while approving the Capital Plan Bylaw for 2020/2021, the Board requested a business case for an Electric School Bus. The attached report summarizes the findings of the review, and recommends purchasing an electric school bus, rather than a diesel school bus.

2. **Background:**

   The business case supports purchasing an electric school bus, with an estimated life cycle cost savings of approximately $100,000.

   The purchase of electric bus comes at a significantly greater capital investment than the diesel bus, however, there are significant financial incentives to support the purchase.

   There are a few risks with the purchase – the most significant would be the reduced capacity for students – a loss of eight student seats.

3. **Options:**

4. **Analysis and Impact:**

   a. Strategic Plan Alignment
   b. Enhancement Agreement
   c. Funding Guidelines, Costing, & Budget Impact
   d. Policy, Legislation, Regulation
   e. Organizational Capacity

f. Risks
    i. Organizational
    ii. Reputational
    iii. Strategic

g. Benefits
    i. Organizational
    ii. Reputational
    iii. Strategic

5. Public Participation:

6. Implementation:

7. Attachments:

a. Business Case - Electric Bus Purchase, May 31, 2021.

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Business Case – Electric Bus Purchase

May 31, 2021

Executive Summary

Mission Public Schools must replace an existing diesel bus, based on criteria pre-determined by the Ministry of Education. The bus order must be placed by June 15, 2021 to ensure availability of the bus for the start of the 2021-22 school year.

The two options available to the school district include the purchase of a replacement diesel bus or a first-time purchase of an electric bus.

Significant funding options for electric bus purchases are currently available from the provincial government due to government initiatives targeting the reduction of greenhouse gas. Funding sources currently include the Core Bus Replacement and Carbon Neutral capital programs offered through the Ministry of Education, and the CleanBC program offered through the Ministry of Energy, Mines and Low Carbon Innovation.

Much of the supplemental funding available is considered temporary and may not be available in future years. However, the opportunity is available to take advantage of the funding for the current bus replacement decision.

The district has completed a review of the two options based on information from internal sources, the Ministry of Education, and the Association of School Transportation Services of BC (ASTSBC). The review considers capital and operating costs, funding availability, and the feasibility of operating an electric bus in our school district environment.

Based on the review, the purchase of the electric bus is the recommended option.

In addition to the significant projected environmental benefits, the provincial funding currently available allows the district to purchase an initial e-bus without any substantial school district capital commitment. The projected operating savings from an e-bus versus a diesel bus provide further financial incentive. The ability of the e-bus to meet the operating demands of the school district transportation environment is a key concern, and this will have to be closely monitored over the course of the 2021-22 school year.

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Introduction

Options for purchasing a replacement bus include:

Diesel bus – 84 passenger type D bus

Electric bus – 76 passenger type C bus

Currently, the school district fleet consists entirely of diesel buses.

The capacity of the school district to pursue carbon reduction opportunities across various operational areas is highly dependent on provincial funding, given limited additional revenue sources.

Significant funding options are currently available through a variety of provincial government initiatives, allowing the school district an opportunity to determine if the purchase of an electric bus is feasible from both an operating and financial perspective.

Funding Analysis

Diesel Bus - Regular (diesel) bus replacement funding is provided by the Ministry of Education based on the pre-determined criteria of age and mileage:

Bus - Type D (80 passenger)	Cost/Funding Source
178,448.00	Bus cost estimate
(178,448.00)	Core BUS Funding via EDUC (diesel spec funding provided)
-	**School District Payable**

Electric bus - In addition to the regular (diesel) bus replacement funding provided by the Ministry of Education, provincial government funding is currently available through the CleanBC initiative from the BC Ministry of Energy, Mines, and Low Carbon Innovation.

Bus - Type C (76 passenger)	Cost/Funding Source
389,210	Bus cost estimate (including tax)
10,000	Charging infrastructure
(116,668)	CleanBC Funding via EMLI/ASTSBC (33% of pre-tax cost of e-bus)
(178,448)	Core BUS Funding via EDUC (diesel spec funding provided)
(30,000)	Supplementary BUS Funding via EDUC (additional funding per e-bus)
(50,000)	Core CNCP Funding via EDUC (one time funding per school district)
24,094	**School District Payable**

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Cost Analysis

The following analysis is based on conservative estimates, and the use of a modeling tool provided by the Ministry of Education. Operating expenditure rates provided are based on Ministry supplied estimates, including the values for maintenance which were taken from the *Cost Effectiveness Model Battery Electric School Buses* from the California Energy Commission.

Annual km	20,000

	Electric Bus	
Capital Expenditures		
Vehicle MSRP	389,210	$
Charging infrastructure	10,000	$
Educ investment	258,448	$
Government Incentive	116,668	
Vehicle Lifetime	12	Years
Battery Replacement	28160	$
Battery Lifetime	12	years
Operating Expenditures		
Electricity Cost	0.125	$/kWh
Energy Use	0.88	kWh/km
Heating Diesel Use	2	L/100km
Maintenance	0.5	$/km

	Diesel Bus	
Capital Expenditures		
Vehicle MSRP	178,448	$
Educ investment	178,448	
Fueling Infrastructure	0	$
Lifecycle	12	Years
Operating Expenditures		
Diesel	1.25	$/L
Fuel Use	40	L/100km
Maintenance	0.72	$/km

Costs	**First Year**	**Year 2 - Life**
Vehicle and Infrastructure	24,094	0
Fuel Costs	2,700	31,024
Maintenance Costs	10,000	120,517
Loan Payments	0	0
Total	36,794	151,541

Costs	**First Year**	**Year 2 - Life**
Vehicle and Infrastructure	0	0
Fuel Costs	10,000	114,904
Maintenance Costs	14,400	140,931
Total	24,400	255,834

School District Summary - Diesel vs Electric

Costs / Savings	**First Year**	**Year 2 - Life**
Vehicle and Infrastructure	19,392	0
Fuel Costs	-7,300	-83,880
Maintenance Costs	-4,400	-20,414
Loan Payments	0	0
Total	7,692	-104,294

Electrical capacity at the bus garage has been reviewed, and there is currently adequate capacity for one, and possibly two, double-headed charging stations. Electrical capacity will have to be further reviewed, and likely expanded, to facilitate any future e-bus additions, given the increased load from the e-bus fleet, and also considering the diesel bus block heater load requirements during the winter months.

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Benefits

- Investment in an e-bus aligns with the district goal of promoting environmental stewardship and sustainability under the school district strategic priority of future orientation.
- Opportunity for the school district to make an initial foray into carbon reduction technology in the transportation environment at limited initial capital cost.
- Opportunity to realize operating cost savings over the life of the electric bus, compared to a diesel bus.
- Given the provincial funding currently available, additional financing is not deemed to be required for this purchase. However, it is noteworthy that an e-bus financing program is available through the Canada Investment Bank (CIB), which is partnering with the ASTSBC to provide a solution for school districts to buy zero-emission buses. Payments due from school districts under the program are sourced from savings generated by the lower cost of operating ZEBs compared to the higher cost of operating diesel buses. Future year availability of this financing program is uncertain.

Risks/Concerns

- The electric bus has 76-passenger capacity compared to the 84-passenger capacity of the diesel bus, resulting in a loss of 8 student seats, which is a concern considering that we generally operate our buses at full capacity.
- Performance of the e-bus in the winter/snow is a concern, considering the lack of weight in the rear compared to a diesel. A spare bus is available on a temporary basis in the event the e-bus is not able to operate in more severe winter conditions; however, spare buses are not permitted on a route in a regular capacity – only on a temporary basis.
- The electric bus has different maintenance and service requirements. Our understanding is that there is currently no shop in the lower mainland with mechanics trained to repair the electric bus model under consideration (Western Canada IC Bus Inc.). The company has indicated that they will consider investment in local servicing/training location(s) once more electric buses are operational in the area. The company would still provide support for repairs, but this may involve sending a technician from Kelowna. Western IC has indicated they would provide one day of training for our mechanic.
- Although not applicable for the current decision, supplemental funding for e-bus purchases may not be available in future years. Given the reliance on provincial government funding for all school district operations, and the need to meet the transportation requirements of the district within the funding parameters provided, this may be a concern for the future.