

---

**TO:** Transit Select Committee                      **MEETING:** June 20, 2018

**FROM:** Brandon Miller  
Superintendent, Fleet & Transit  
Service Delivery                      **FILE:** 8770 20 Fleet

**SUBJECT:** Fleet Update – Future Innovations

---

## **RECOMMENDATION**

That the Board receive the Fleet Update – Future Innovations report for information.

## **SUMMARY**

The Regional District of Nanaimo (RDN) in partnership with BC Transit is continually searching for innovative and sustainable improvements to the transit system. Right-sizing of the fleet, electric buses and 3-position bike racks are topics that are currently being examined.

## **BACKGROUND**

### **Right-Sizing of Fleet**

BC Transit has four classifications of buses: high capacity, heavy duty, medium duty and light duty. Attachment 1 provides a detailed breakdown of each classification including seating capacity and lifespan.

The RDN fleet currently consists of 50 New Flyer, 40 foot, Compressed Natural Gas (CNG) heavy-duty buses and 18 ARBOC, 30', diesel light-duty buses. The majority of the conventional transit routes in the RDN are being serviced by heavy-duty buses, with the exception of the #88, #97, and #98 (Parksville-Qualicum Beach), and the #25 (Departure Bay Ferry Shuttle) which are being serviced by light-duty buses. Additionally, all of the custom transit (handyDART) routes are being serviced by light-duty buses.

The real-time technology and automatic passenger counters (APC's) that were installed on the RDN fleet in May 2018, capture and analyze passenger boarding's and alighting's. This data will be used to help make better informed future decisions on fleet size, routing, run-times, and bus stop locations.

## **Electric Buses**

BC Transit has initiated an electric bus trial program. The program consists of five phases; preparation, discovery, testing service, revenue service, and report. The learning objectives from the trial are current state of e-bus technology, range of bus and time required to charge the bus, required infrastructure, and operational implications.

The trial will be taking place in Victoria and will be completed by end of the year 2018. The electric bus that is being trialed is powered by a 324 kilowatt-hour battery and is able to travel approximately 120 – 250 kilometres on a single charge. The two types of charging methods for electric buses are on-route and off-route.

On-route charging details:

- Small amount of battery capacity
- Shorter range (40 - 60 kilometres)
- Energy supplied while in service via overhead pantographs or road embedded chargers
- Fast charge (5 - 10 minutes)

Pros	Cons
Open protocols	Expensive infrastructure
Battery investment	Complex route planning and city infrastructure
Bus weight	Electricity requirements on grid's peak loading times
	Bus range

Off-route charging details:

- Large amount of battery capacity
- Longer range (120 - 250 kilometres)
- Energy supplied while parked at depot
- Slow and fast charge options (2 - 8 hours)

Pros	Cons
Less complex fleet deployment	Closed protocols
Less complex charging infrastructure	Requires depot upgrades
Electricity requirements on grid's off-peak times	

The current notable challenges and considerations for electric bus technology are capital costs, range management, charging strategies, and transit operations. Electric buses have made great progress in the last few years, but are not yet commercially viable on a large scale due to:

- Upfront capital costs are prohibitive without special funding
- Industry preference for bus type and charging strategy has not been solidified
- Lack of North American industry charging standards
- Uncertainty surrounding performance and total cost of ownership
- Lack of parts continuity due to rapid technological advancements

The transition of fleet propulsion technology typically aligns with replacement timelines, which is approximately every 13 years. The RDN is in year three (3) of its current CNG investment cycle; therefore, the consideration of electric buses is approximately 10 years away and puts the RDN in a favorable position to transition to electric buses if the technology meets the standards.

As transit service expands, the size of the fleet will also need to increase. Therefore, other fleet propulsion technologies could be explored as transit service is increased.

### **3-Position Bike Racks**

BC Transit in conjunction with RDN Transit is conducting an evaluation on a 3-position bike rack to be used in the RDN Transit System. Currently the RDN utilizes a 2-position bike rack on the conventional fleet, which allows for two bicycles to be placed on the bus. The 3-position bike rack evaluation began in early 2018 and is scheduled to conclude in July 2018. The 3-position bike rack assessment process includes:

- Ensuring the bike rack does not contravene the BC Motor Act or the Canadian Motor Vehicle Safety Standard (CMVSS)
- Ensuring the bike rack does not impede the brightness of the front headlights
- Ensuring the bike rack does not adversely affect the turning radius of the bus

If the results of the BC Transit evaluation proves to be positive and there are no safety issues; RDN Transit could implement this new technology which will accommodate the increase of active transportation customers and enhance customer service.

### **ALTERNATIVES**

1. That the Board receive the Fleet Update – Future Innovations report for information.
2. That alternate direction be provided.

### **FINANCIAL IMPLICATIONS**

At the time of this report there are no financial implications. If the 3-position bike rack evaluation is successful and the RDN agrees to implement this technology, the expense of the new bike racks would be cost-shared with BC Transit through the Annual Operating Agreement.

## STRATEGIC PLAN IMPLICATIONS

The current fleet supports the Focus on Service and Organizational Excellence – “*The RDN will deliver efficient, effective and economically viable services that meet the needs of the Regional District of Nanaimo*”.



---

Brandon Miller  
[bmiller@rdn.bc.ca](mailto:bmiller@rdn.bc.ca)  
June 20, 2018

Reviewed by:

- D. Marshall, Manager, Transit Operations
- D. Pearce, Director, Transportation & Emergency Services
- P. Carlyle, Chief Administrative Officer

Attachment:

1. Classification of Buses