Fraser Valley Regional District

CORPORATE REPORT

To: CAO for the Fraser Valley Regional District Board
From: Marina Richter, Environmental Policy Analyst

Date: 2019-04-25
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Subject: Corporate Fleet and Electric Vehicle Suitability Assessment

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INTENT

This report is intended to advise the Fraser Valley Regional District Board of information pertaining to the Fraser Valley Regional District (FVRD) corporate fleet and electric vehicle suitability assessment conducted in 2017-2018. Staff is not looking for a recommendation and has forwarded this information should members want more clarification to discuss the item further. This report has been revised since being presented to Regional and Corporate Services Committee at its meeting on April 9 for added clarity.

STRATEGIC AREA(S) OF FOCUS

Support Environmental Stewardship
Support Healthy & Sustainable Community

PRIORITIES

Priority #2 Air & Water Quality

BACKGROUND

The FVRD takes continuous action to expand the use of zero-emission vehicles in the region. In 2017-2018, the FVRD participated in a study looking at the FVRD's vehicle fleet to assess its suitability and identify future opportunities. The study was supported by the Fraser Basin Council's BC Fleet Champions Program at no cost to the FVRD.

Onboard diagnostic devices were installed in each of the FVRD's 25 fleet vehicles, including three Electric Vehicles (EVs), to collect data on fleet efficiency, suitability of existing EVs, potential for adopting more EVs, and to understand FVRD driver behaviours. Based on the data analysis, recommendations were developed to reduce both costs and emissions for the FVRD fleet.

DISCUSSION

Fleet baseline data

Metrics monitored during the assessment included details of driving cycles, such as speed, distance and time driven, driving patterns, and energy demands from the vehicles for trips made in 2017 and part of 2018. Despite the size of the region, results show that short and middle-distance trips were quite common for FVRD fleet vehicles. Out of the entire fleet, 32% of vehicles traveled less than 50 km daily, and 67% of vehicles traveled less than 150 km daily. Average drive distance was longer for conventional gasoline vehicles, both annually (+35%) and daily (+61%) compared to EVs. Gasoline vehicles also made18% more trips per car than EVs (Table 1). However, the EVs were driven for more days than gasoline vehicles during the year (+56%).

Overall, the results of the fleet assessment show that EVs were vehicles of choice for the shorter trips. It also means that the EVs have been fully utilized by FVRD drivers and have been well incorporated into FVRD driving routines on a daily basis.

Table 1. FVRD fleet utilization in 2017-18

	Gasoline vehicles	EVs
FVRD vehicles monitored*	**22**	**3**
Average distance per year driven by a single vehicle (km/year)	**8,231**	**5,324**
Average distance per driving day driven by a single vehicle (km/day)**	**92**	**36**
Average number of driving days per year for a single vehicle (days/year) ***	**88**	**137**
Average number of trips per year for a single vehicle (trips/year)	**612**	**502**

Notes:
* Only 2015 vehicle models and older were monitored during the assessment.
**Values have been corrected from the previous version of the Corporate Report.
*** Lower averages for gasoline vehicles could be partially attributed to a few older underutilized vehicles which have already been replaced by newer models.

Fuel efficiency

Use of EVs by FVRD staff has improved the overall fuel efficiency of the fleet by 11%. This represents savings of 5,000 litres of gasoline per year and a reduction of almost 12,000 kg of CO_2 from being emitted into the atmosphere (Table 2).

Table 2. The FVRD fleet fuel efficiency in 2017-18

	Without EVs	With EVs	Difference
Fuel efficiency (L/100km equivalent)	12.84	11.53	11%
Total fuel economy from the EV usage			4,972 liters
Total GHG economy from the EV usage			11,660 kg CO2

The potential for fleet electrification

The EV suitability assessment used the existing vehicle baseline data as a benchmark and provided recommendations regarding further electrification of the FVRD fleet. The report recommended replacing up to nine existing gasoline vehicles from the FVRD fleet with battery or plug-in EVs. In that scenario, total savings in greenhouse gas emissions could be as high as 260 tonnes of CO_2 and a reduction in fuel consumption of up to 85,500 litres of gasoline per year (24% reduction).

Driving behaviour

The results of the study show that FVRD drivers, in general, have good driving habits. 91% of drivers remained below the hard acceleration threshold of 15% (as a percentage of total acceleration events) and 68% of drivers remained below the 15% hard braking threshold (as a percentage of total braking events). Of some concern however is that 25% of engine-on time within the fleet vehicles is currently spent idling. Reducing this could save up to 3,600 L of fuel annually. Staff are currently discussing an appropriate idle-reduction strategy to help address this matter.

COST

The FVRD EV Suitability Assessment was funded in full by the Province of British Columbia through the Fraser Basin Council and its Fleet Champions Program.

CONCLUSION

The study conducted of the FVRD's fleet helped to evaluate overall fleet efficiency and provided recommendations for further adoption of EVs. It identified opportunities to improve the efficiency of the FVRD fleet, reduce costs, and cut greenhouse gas emissions. These results will be taken into consideration with new fleet purchases or replacements and will be incorporated into orientations provided to new employees.

COMMENTS BY:

Stacey Barker, Director of Regional Services

Reviewed and supported.

Mike Veenbaas, Director of Financial Services

Reviewed and supported.

Paul Gipps, Chief Administrative Officer

Reviewed and supported.