



CORPORATE REPORT

To: CAO for the Regional and Corporate Services Committee

Date: 2019-04-09

From: Marina Richter, Environmental Policy Analyst

File No: 9050-20-018

Subject: Corporate Fleet and Electric Vehicle Suitability Assessment

INTENT

This report is intended to advise the Regional and Corporate Services Committee of information pertaining to the Fraser Valley Regional District (FVRD) corporate fleet and electric vehicle (EV) 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.

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 the FVRD's 25 fleet vehicles, including the FVRD's three 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

The 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, the 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. The average drive distance was longer for conventional gasoline vehicles, both annually (+35%) and daily (+61%) than EVs. Gasoline vehicles also made 18% 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 showed that the EVs were vehicles of choice for the shorter trips in 2017-2018. It also means that the EVs have been fully utilized by FVRD drivers and incorporated into FVRD driving routines on a daily basis.

Table 1. The FVRD fleet utilization in 2017-18

	Gasoline vehicles	EVs	Difference
Vehicles monitored	22	3	
Average distance driven (km/car/year)	8231	5324	35% more for gasoline vehicles
Average distance per driving day (km/car)	46	18	61% more for gasoline vehicles
Number of days driven (days/car/year)	88	137	56% more for EVs
Number of trips (trips/car/year)	612	502	18% more for gasoline vehicles

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 CO₂ 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 CO ₂

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 up to 260 tonnes of CO₂ and in fuel consumption up to 85.5K liters of gasoline (24% reduction).

Driving behaviour

The results of the study show that FVRD drivers, in general, are good drivers with 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). However, of some concern 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 FVRD corporate fleet assessment and EV suitability study 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.