The Corporation of the District of Central Saanich

STANDING COMMITTEE REPORT

For the Parks and Environment Committee meeting on Thursday, November 2, 2023

Re: 2022 Corporate Energy and Emission Inventory

PURPOSE

The purpose of this report is to present the latest corporate inventory (2022) and emissions reduction path forward to 2030.

BACKGROUND

The District's Climate Leadership Plan has a goal to reduce greenhouse gas (GHG) emissions by 100% by 2050 at both the community and municipal scales with an interim target of 45% by 2030. The Plan also outlines a second goal for the community's energy source to be 100% renewable energy by 2050. The Plan identified this possible scenario to reach municipal operations goals:

1. Convert 100% of light duty fleet to electric by 2030 (where technology is available)
2. Convert remaining fleet to natural gas or biodiesel by 2035; and to all renewable fuels by 2050
3. 100% conversion of heating and hot water systems to zero emissions systems (i.e., electric)

On February 27, 2023 the 2021 corporate emissions inventory was presented to Council and staff was directed to develop a corporate energy and emissions strategy focusing on reducing emissions in fleet and some key municipal buildings.

DISCUSSION

2022 Corporate Energy and Emissions Inventory

The District currently operates over 100 vehicles and unlicensed equipment, and owns and manages 31 buildings, which include halls, concession stands, public washrooms, cultural centre and works yard. The District also manages the community's lighting (e.g., streetlights, traffic lights) and water and wastewater services (e.g., pump stations). The District annually monitors energy consumption and emissions under these four corporate asset classes. Fleet consumption and emissions data excludes Police Services, as the police function isn't considered in-scope.

The District's total GHG emissions for its latest inventory in 2022 is 281 Tonnes CO_2e. (see Table 1). Compared to the baseline year, emissions have decreased by 76 Tonnes or 15% and by 22 tonnes from 2021. This drop in emissions from the baseline year is largely attributed to a decrease in the emissions intensity factor (for electrical generation) in 2021[1].

[1]In a hydroelectric-based power system, GHG emissions from electricity generation can vary significantly from year to year. The Province updated the methodology for determining the electricity emission intensity factors in 2021 to more accurately reflect the carbon intensity of electricity consumed in B.C.

Table 1. Energy consumption and GHG emissions by asset class for baseline year (2007), 2021 and 2022

Asset Class	Energy Type/Unit	Sector Total $CO_2e(T)$	Consumption	CO_2e (T)	Class Total $CO_2e(T)$	Consumption	CO_2e (T)	Class Total $CO_2e(T)$		Overall % Change GHGs
		2007	2021			2022				2007 - 2022
Municipal Buildings	Elect (kWH)	67	972,301	9	30	955,237	11	32	41	
	Nat Gas (GJ)		413	21		417	21			
	Propane (L)		81	0		0	0			
Outdoor Lighting	Elect (kWh)		487,110	5	5	417,745	5	5		-38.8%
Water & Wastewater	Elect (KWh)		326,309	3	3	326,258	4	4		
Vehicle Fleet	Diesel (L)	265	40,625	103	265	34,819	89	241		-9.2%
	Gasoline (L)		74,068	162		69,189	152			
Total GHGs		332	303			281				-15.3%

Municipal Buildings Asset Class

Building-related emissions represent a small portion of the District's corporate emissions (11%). Emissions have decreased significantly by 45% from the baseline year; the drop mostly related to the change in emissions intensity factor as mentioned above. Building-related electrical consumption has decreased since the baseline year and again over the last year (by 17,000 kWh). Although electrical consumption for buildings decreased over the last year, emissions went up slightly from 9 to 11 tonnes in 2022 because of a slight increase in the emission intensity factor in 2022. Emissions resulting from natural gas consumption by both Fire Hall #1 and municipal yard buildings remained the same (21 Tonnes).

It should also be noted that the building-related data is not normalized to climate conditions therefore variability in natural gas and electrical consumption (and emissions) for air space heating may occur from year to year depending on weather conditions.

Outdoor Lighting Asset Class

Consumption of electricity by lighting decreased slightly from 2021. This is related to a drop in consumption by overhead street lighting being switched to LED. Variability in annual electrical consumption can also be attributed to increases or decreases in operating hours at various facilities in the District.

Water and Wastewater Asset Class

Consumption of electricity for this asset class remained about the same between 2021 and 2022. Factors such as weather conditions can also contribute to annual variation in energy consumed for this asset class.

Municipal Fleet & Equipment Asset Class

The District's Fleet asset class represents the largest portion of corporate emissions (86%) at 241 T CO_2e. Although fleet has grown slightly over the years, emissions have shown a notable decrease in 2022 by 24 tonnes or 9% from 2021. This drop could be related to a return to more regular service after increased use of vehicles during the pandemic and the conversion of some of the District's combustion powered

vehicles (and equipment) to electric. Factors such as weather conditions can also contribute to annual variation in fuel consumption (e.g., years having more snow events lead to increased use of road maintenance vehicles).

Actual and Projected GHG Emissions Reduction Outcomes

Figure 1 below illustrates an actual and projected GHG reduction future outcome from 2007 (baseline year) to 2030. In order to reach the 2030 target of 183 T CO_2e corporate emissions per year, the District will have to reduce emissions by a further 98 tonnes. Given fleet represents 86% of corporate emissions, the District will focus on GHG reduction measures in this area.
The anticipated conversion of 9 light duty fleet vehicles (not including police) to electric within the next 5 years is estimated to reduce the District's carbon footprint by approximately 44 tonnes CO_2e/year (Figure 1 - dashed line). However, this level of emissions reduction will be verified and a deeper analysis undertaken to determine strategies/opportunities the District could take within its fleet and buildings in order to help meet municipal operations emissions goals.

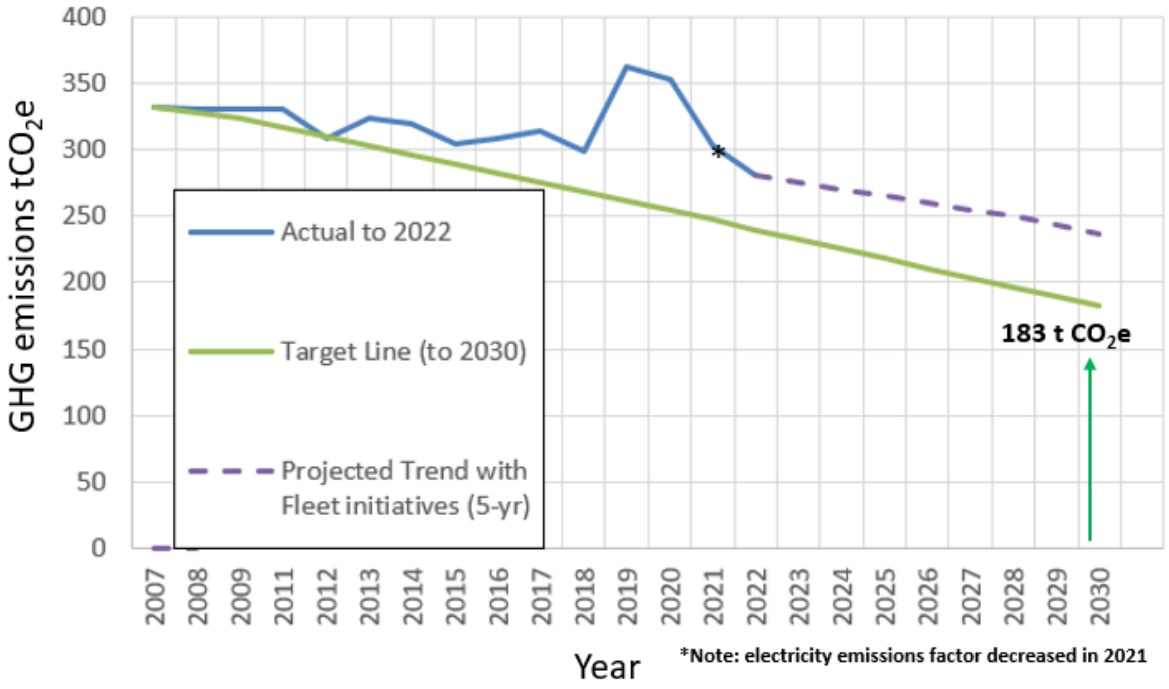

Figure 1. Actual and Projected GHG emissions reduction outcomes, 2007-2030.

NEXT STEPS

The District will continue to track emissions annually in order to monitor progress towards its Climate Leadership Plan targets. The District is currently in the process of acquiring a building and fleet professional (energy consultant) to help chart a path forward over the next 7 years and present strategies that could be implemented corporately to help meet the 2030 GHG emissions target.

IMPLICATIONS

Strategic
Monitoring emissions annually and developing a municipal operations energy and emission strategy supports Council's 2024 – 2027 Strategic Plan priority to "Champion Climate Adaptation, Mitigation, and Preparedness" and continue to demonstrate climate leadership.

Financial/ Resource
Implementing projects to reduce emissions and energy use by municipal assets will reduce fuel and electricity costs to the District.

CONCLUSION

An updated corporate energy and emission inventory and outcome scenario is presented in this report which shows progress being made towards the Climate Leadership target of 45% reduction from baseline levels by 2030. A deeper investigation will be undertaken and a strategy developed, focusing on fleet, to provide a more accurate path forward to reduce municipal operations emissions to 2030.

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