Annual Greenhouse Gas Emissions Inventory

FY 2022

WHALE & WILDLIFE WATCHING
EAGLE WING TOURS

Eagle Wing Tours

December 1, 2021 to November 30, 2022

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Completed	22/9/2023

synergy

Executive Summary

Eagle Wing Tours (EWT) is a carbon neutral whale watching company based in Victoria, BC. The company has one small office space at Fisherman's Wharf, one company vehicle, and four boats. EWT demonstrates a strong commitment to environmental stewardship and sustainable tourism and are committed to operating as a carbon neutral business by monitoring, reducing, and offsetting their carbon footprint since their first day of operations in 2005.

This report measures carbon emissions associated with Eagle Wing Tours' operations for FY 2022. Total emissions were 984 tCO_2e, a 6% decrease compared to their baseline year for target setting (2019). 94% of these emissions came from fuel use, with staff commuting being the only other emissions source contributing more than 1% of the total (3.2%). Shipping, business travel, waste, work from home, paper, and water together contributed the remainder.

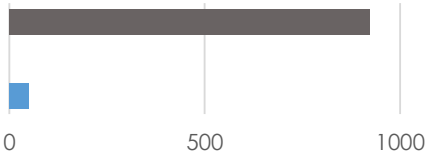
FY 2022 saw a return to more normal business operations, with EWT running 986 trips. Although the total trips were still fewer than 2019 (1,246 trips), the average passenger volume per trip increased from 29.6 to 35.6. As a result, there were only about 1,700 fewer passengers in 2022 compared to 2019. More passengers per trip meant that emissions per passenger reached the lowest that they have ever been for EWT. At 28.0 $kgCO_2e$, emissions per passenger in FY 2022 were 39% lower than in 2011, the first year this statistic was tracked.

Inventory Information

Company Name	Eagle Wing Tours		
Contact Information	Brett Soberg	info@eaglewingtours.com	(250) 384-8008
Company Description	One office/reception space, four boats (*Serengeti* , *Goldwing* , *4 Ever Wild* & *Wild 4 Whales*), one company vehicle		
Reporting Period	December 1, 2021 to November 30, 2022		
Inventory Boundary	**Scope 1 (Direct Emissions) -** Gasoline, Marine Diesel		
	Scope 2 [Indirect Emissions from Purchased Electricity (BC Hydro/Bullfrog)**]**		
	Scope 3 (Indirect Emissions from Other Sources) - Water, Waste, Stationery, Paper Products, Company Travel, Shipping, Staff Commuting, Work From Home		
Scope 2 Approach	Location Based Emissions Calculation		
Consolidation Approach	Operational Control: Accounting for 100% of emissions from operations over which the company has operational control.		
Primary Measurement	Carbon Dioxide Equivalent (CO_2e)		
Reporting Guidelines	Aligned with those defined in *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, Revised Edition (The GHG Protocol, www.ghgprotocol.org)* . Emissions factors reviewed & approved by Ostrom.		

Carbon Footprint by Scope

	tCO_2e	
Scope 1 (Direct)	**922.1**	94% of total footprint
Scope 2 (Indirect)	**N/A**	of total footprint
Scope 3 (Indirect)	**50.5**	5% of total footprint
Biogenic Carbon	**11.4**	1% of total footprint
TOTAL EMISSIONS	**984.0**	Scope 1, 2, 3, & biogenic
NET EMISSIONS	**972.6**	Scope 1, 2, & 3

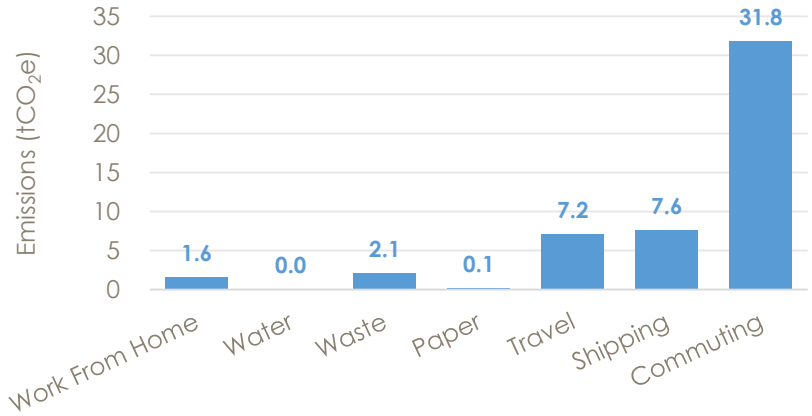


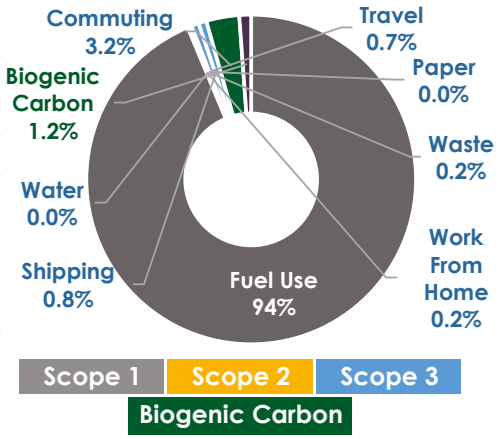
Summary of Results

Total Emissions	Offset Total	Emissions per Pax
984.0 tCO_2e	972.6 tCO_2e	28.0 $kgCO_2e$

Carbon Footprint By Activity

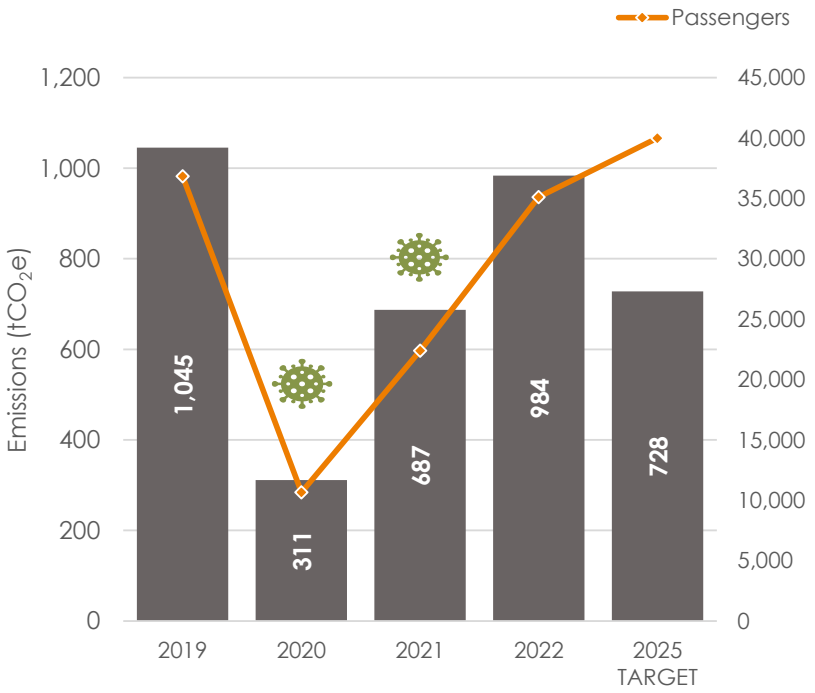
Minor Emissions by Activity





Carbon Footprint Year Over Year

Annual Emissions and Passengers



	Combined tCO_2e	Change since 2010	
		tCO_2e	Percent
'05-'09	1,345.6*		
2010	317.7		
2011	408.7	91.0	29%
2012	421.9	104.2	33%
2013	496.0	178.4	56%
2014	638.8	321.1	101%
2015	726.2	408.5	129%
2016	840.8	523.1	165%
2017	952.2	634.5	200%
2018	1,124.6	806.9	254%

Reduction Target Baseline (2019)		Change since Baseline	
		tCO_2e	Percent
2019	1,045.2		
2020	311.4	-733.8	-70%
2021	687.1	-358.1	-34%
2022	984.0	-61.3	-6%
TARGET	728.3	-316.9	-30%

**Note: In 2022, emissions were calculated and offset using historical data for operations from 2005-2009 to take responsibility for all emission generated since company creation.*

Emission Reduction Targets

Over 2019 baseline

Reduction Target	30% by 2025

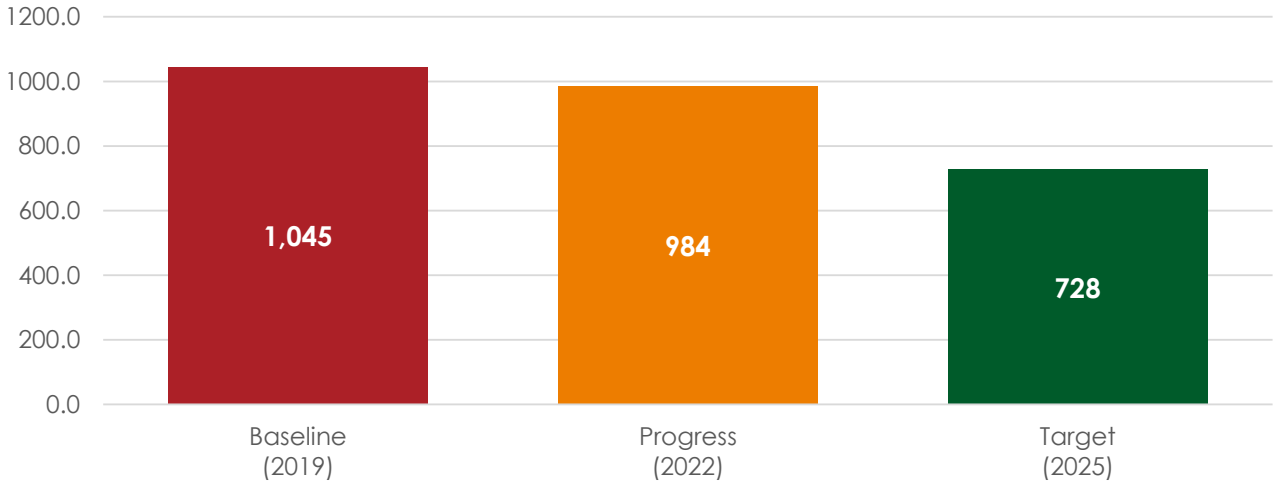
Reduced to Date	6% 2022

Eagle Wing Tours has committed to reducing emissions by 30% by 2025 based on 2019 levels. An additional 8% reduction per year will be required to meet their 2025 target.

Emissions Source	Baseline (2019)	Progress (2022)	Target (2025)
Gasoline	tCO_2e 137	tCO_2e 40.3	tCO_2e 95.6
Marine Diesel	tCO_2e 853	tCO_2e 882	tCO_2e 623
Business Travel	tCO_2e 15.6	tCO_2e 7.15	tCO_2e 7.15

Overall Progress

Emissions (tCO_2e)

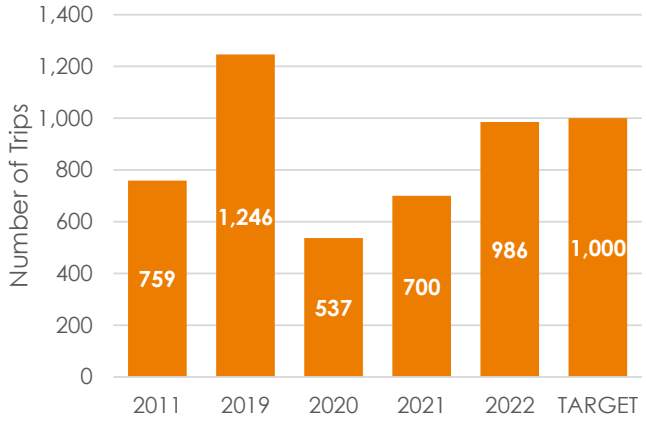


Notes on Targets

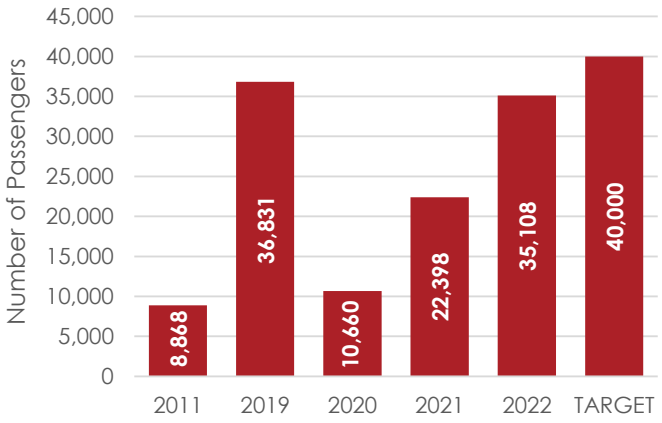
The identified have been selected because they are the most likely pathway EWT can take to achieve their reduction target of 30% by 2025. Without reducing either the volume of fuel used or the carbon intensity of the fuel used (i.e., using a biodiesel blend), EWT will be unable to achieve their reduction target while maintaining similar or increased operational levels.

Intensity Metrics

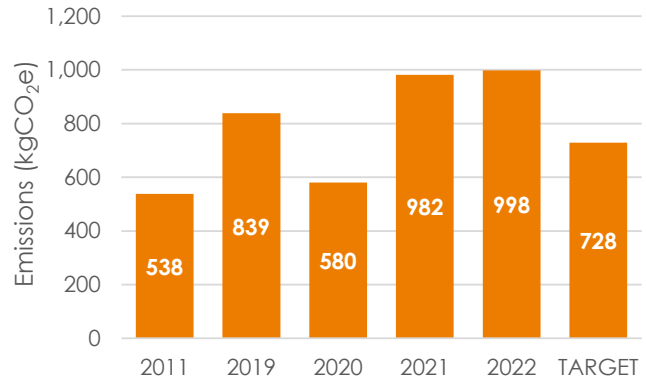
Total Trips



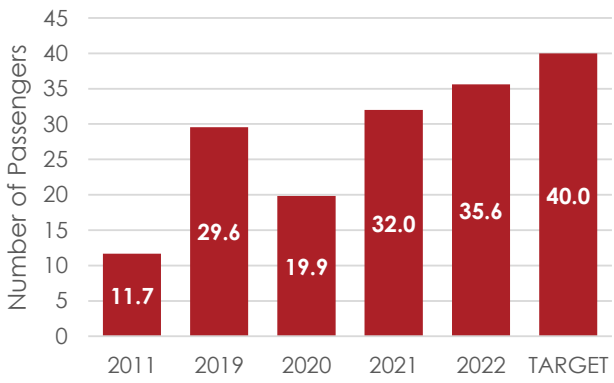
Total Passengers



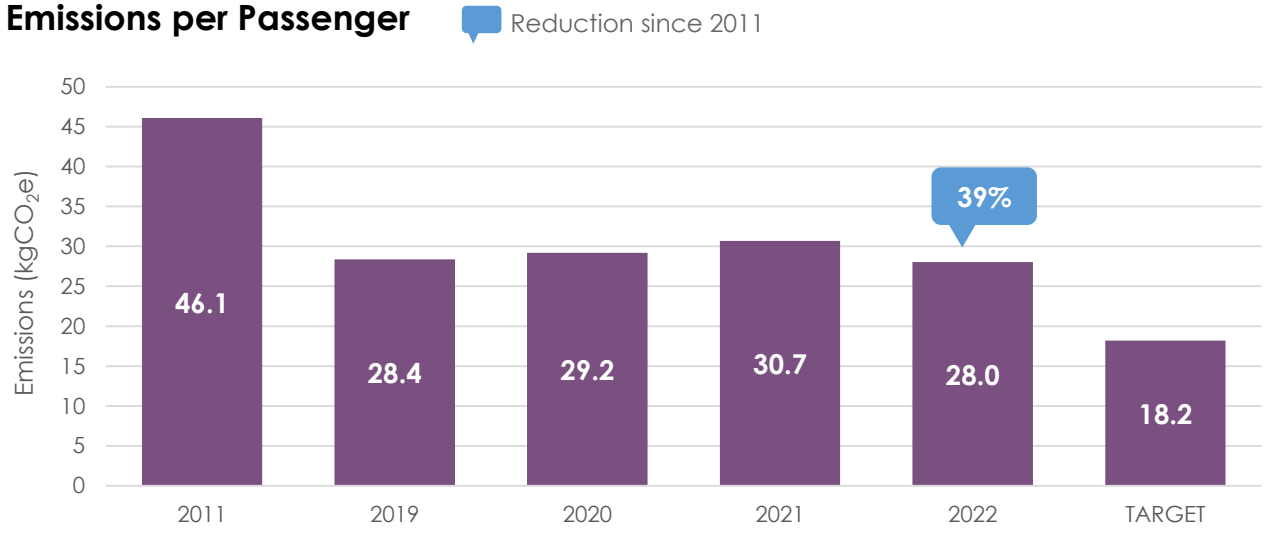
Emissions per Trip



Passengers per Trip



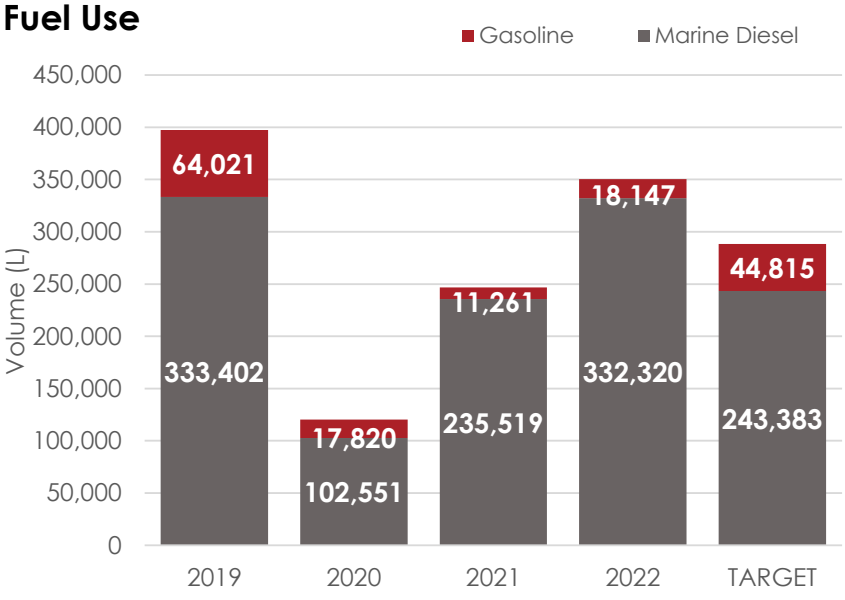
Emissions per Passenger



KPIs	2011	2019	2020	2021	2022	TARGET
Total Trips	759	1,246	537	700	986	1,000
Total Passengers	8,868	36,831	10,660	22,398	35,108	40,000
Passengers/Trip	11.7	29.6	19.9	32.0	35.6	40.0
Emissions/trip ($kgCO_2e$)	538	839	580	982	998	728
Emissions/pax ($kgCO_2e$)	46.1	28.4	29.2	30.7	28.0	18.2

Fuel Use

Fuel Use

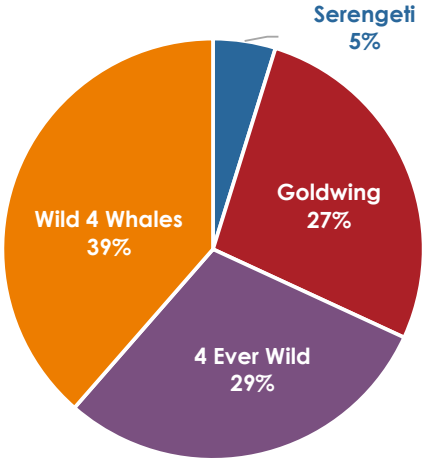


Analysis

2022 saw trip activity increase to levels much closer to those in 2019. As a result, diesel consumption was nearly identical to that of 2019. Gasoline consumption in the *Serengeti* vessel decreased by nearly 72% due to 154 fewer trips taken in 2022. A small volume of gasoline was also used in one company vehicle.

Total emissions from fuel were 922 tCO_2e, 94% of the 2022 footprint. Diesel use accounted for 96% of vessel fuel emissions (882 tCO_2e*), a 3% increase compared to 2019.

Fuel Use by Vessel



2022 Emissions per Vessel

Vessel	L	tCO_2e
Serengeti	16,757	37
Goldwing	94,552	251
4 Ever Wild	103,126	274
Wild 4 Whales	134,642	357

Emissions per Trip & Passenger ($kgCO_2e$)

Vessel	Trip	Passenger
Serengeti	1,197	110.8
Goldwing	919	40.4
4 Ever Wild	724	18.0
Wild 4 Whales	1,175	26.7

4 Ever Wild was the most commonly used vessel in 2022, accounting for 38% of all trips and 43% of all passengers. It also had the lowest emissions per passenger rate of 18 $kgCO_2e$/pax, 31% below the 2022 average. *Wild 4 Whales* consumed the most fuel (39% of the total), with per passenger emissions 2% higher than the average. Both *Serengeti* (330% higher) and *Goldwing* (50% higher) had per passenger emissions much higher than the average, driven largely by lower passenger volume on these vessels (11 and 23 passengers per trip compared to 40 and 44 for *4 Ever Wild* and *Wild 4 Whales*, respectively).

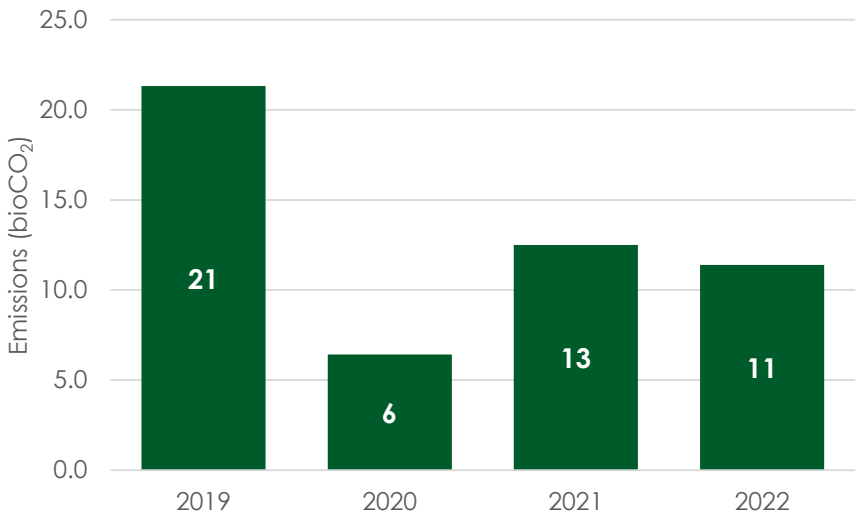
Hydrofoil equipment was installed on *Wild 4 Whales* part way through FY2022. It is expected that fuel consumption in 2023 will decrease appreciably in this vessel over a full operational year.

** Note: Despite diesel emissions increasing, total diesel consumption decreased slightly from 2019 to 2022. This was caused by a change to the emissions factor for marine diesel.*

tCO_2e	922	% of Total	94%	$kgCO_2e$/pax	26.3	965.6 $kgCO_2e$ / Trip

Biogenic CO_2

Biogenic Carbon



Analysis

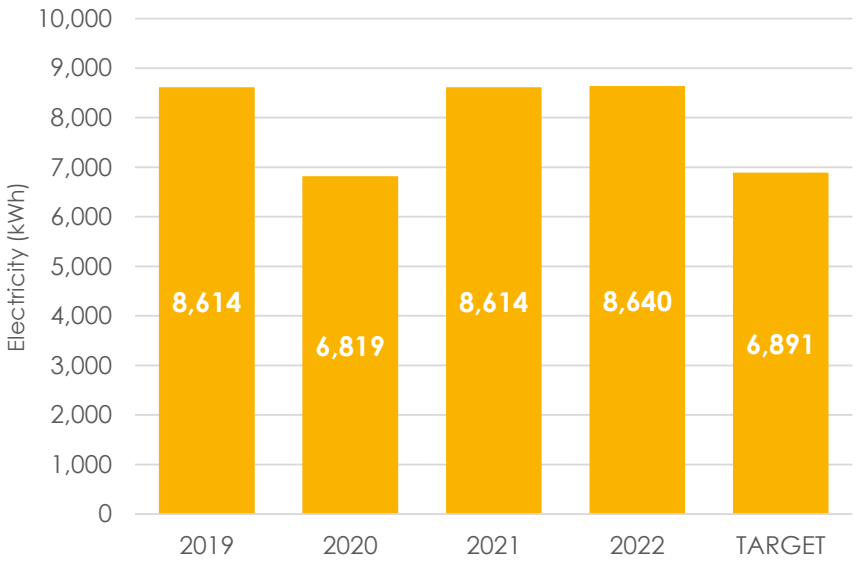
Biogenic carbon emissions are generated by EWT's fuel. These emissions come from natural sources that already existed in the carbon cycle and are being re-emitted through the combustion of biofuel.

Increasing biogenic emissions while reducing non-biogenic emissions will reduce the total amount of new carbon released into the atmosphere and is a positive step towards reducing carbon emissions.

Bio-tCO_2	% of Total	Total Litres	
11.4	1.2%	7,554	3.2 Cars / Year

Electricity

Electricity Consumption



Analysis

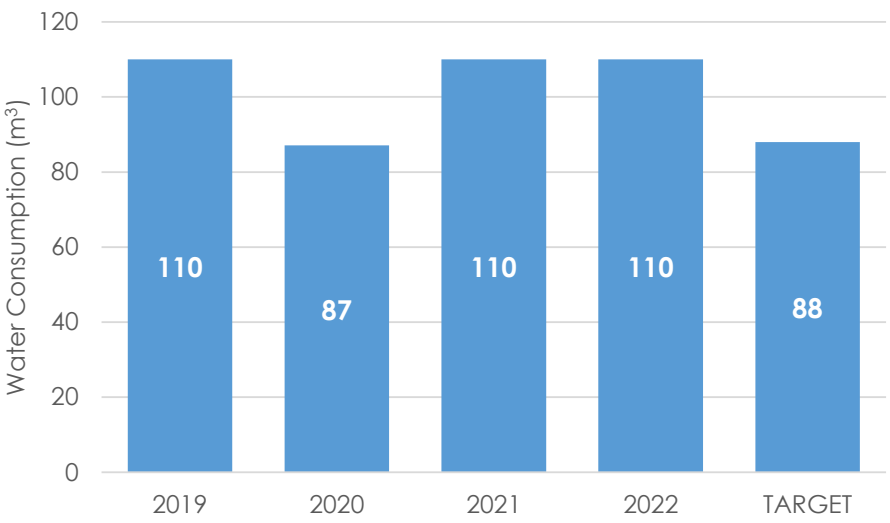
EWT's electricity consumption has remained stable at their Fisherman's Wharf location since 2019.

For FY 2022, EWT continued purchasing renewable energy certificates from Bullfrog Power. This purchase guarantees zero-carbon power in the electricity grid mix equivalent to EWT's electricity consumption. As a result, there are no associated greenhouse gas emissions.

tCO_2e	% of Total	kWh / ft^2	
0.0	0%	18	0.8 Houses

Water

Water Use



Analysis

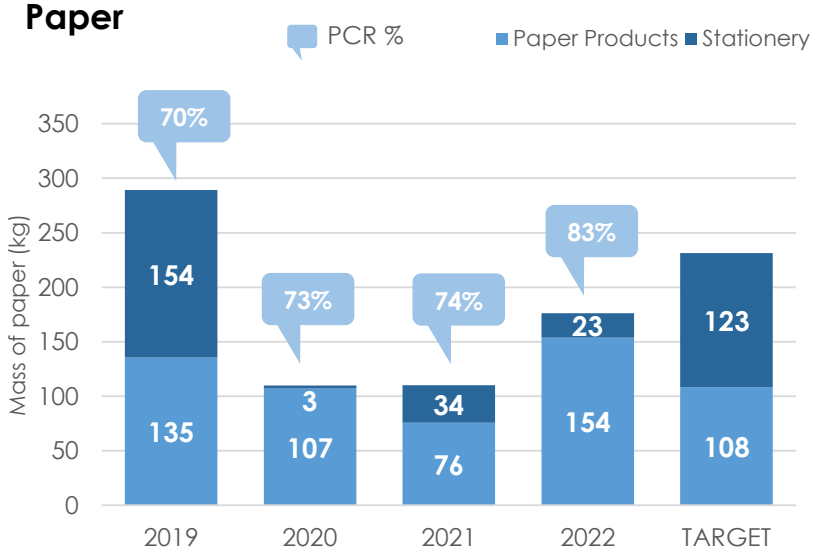
Water consumption at EWT is estimated at 110 m^3 annually based on the size of their office on Fisherman's Wharf.

One of the primary sources of water consumption is their refillable water bottle station. This station helps reduce single use plastics used for disposable water bottles by encouraging staff and guests to bring refillable bottles.

tCO_2e	0.05	% of Total	0.005%	m^3 / ft^2	0.229	501 Baths (50gal)

Paper

Paper



Analysis

EWT continues to address their paper use both in terms of total volume used and the recycled content of the products they choose.

FY 2022 saw a 13% increase in recycled content percentage and a 39% reduction in total paper use compared to 2019.

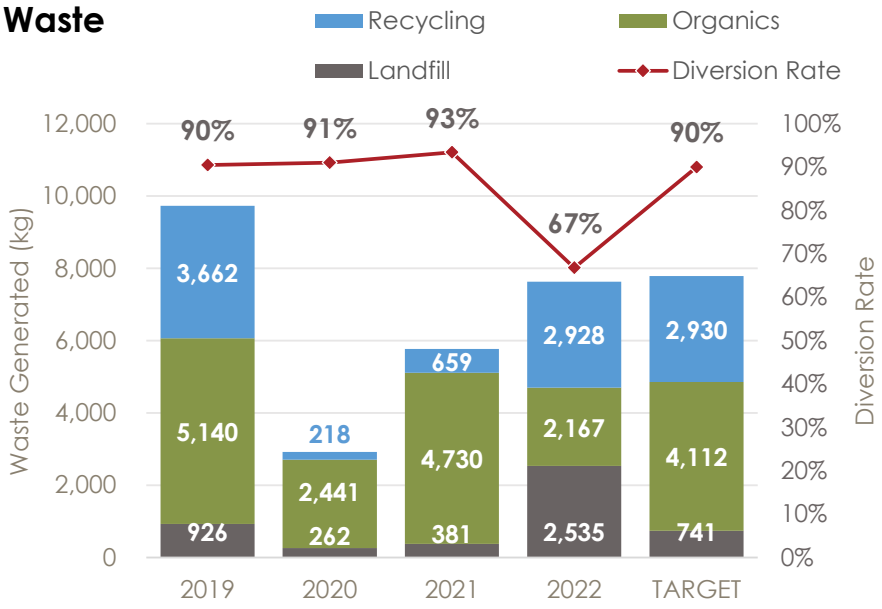
A switch to digital waivers decreased stationery use by 85% compared to 2019.

** Note: Improved factors have been applied to calculate the emissions from paper. These improved factors may cause a decrease in emissions per kg of paper used.*

tCO_2e	0.1	% of Total	0.01%	Treeless Content	83%	0.8 Trees / Year

Waste

Waste



Analysis*

Over 7,500 kg of waste were produced by EWT in FY 2022, a decrease of over 2,000 kg compared to 2019*.

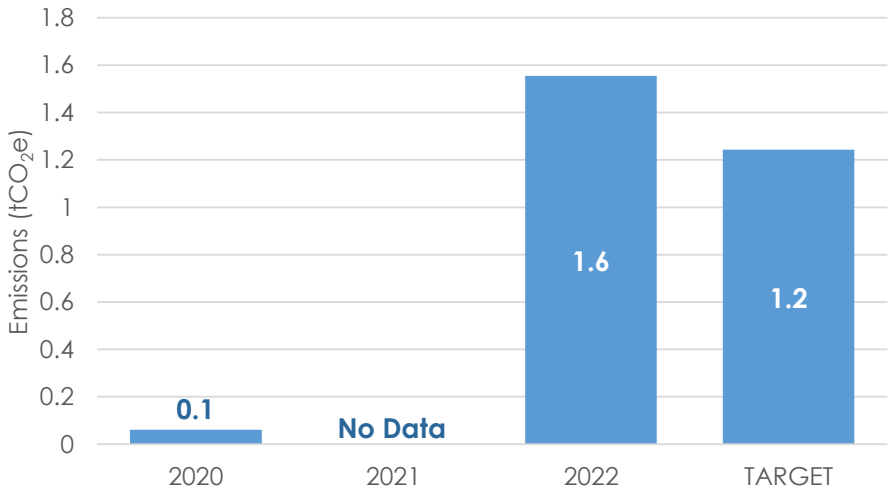
Landfill waste production more than doubled, while recycling and compost decreased by 20% and 58%, respectively. Total emissions from waste were 2.1 tCO_2e (<1% of the total), four times higher than in 2019.

** Note: Both the emissions factors and volume-to-weight conversions for waste have changed significantly due to improved methodology for measuring waste and its emissions. Due to this change, the volume, emissions, and diversion rate from waste in 2022 may change.*

tCO_2e	2.1	% of Total	0.2%	kg / Day	21	67% Diversion Rate

Work from Home

Work from Home Emissions



Analysis

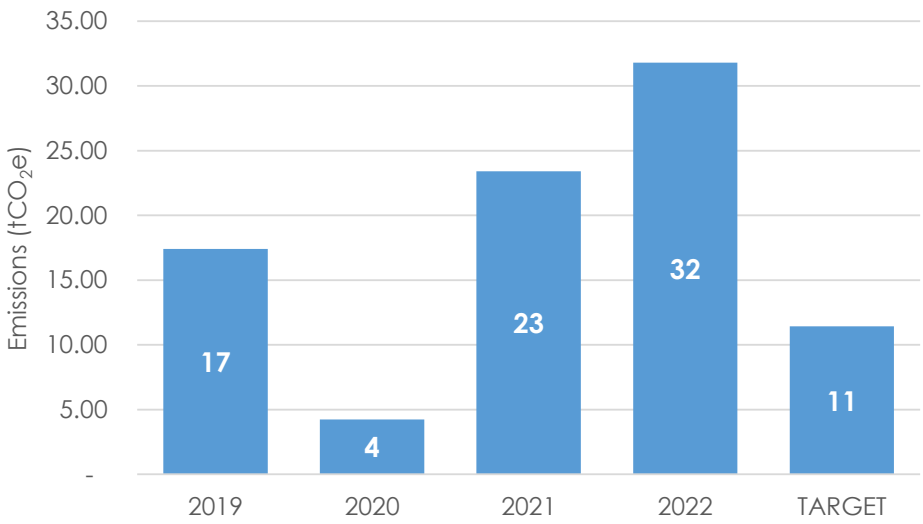
FY 2022 saw an increase in work from home activity, with an estimated 247 total weeks worked from home across all employees.

Emissions from home working contributed <1% of the total footprint.

tCO_2e	1.6	% of Total	0.2%	$kgCO_2e$/ WFH FTE	222	0.4 Cars / Year

Commuting

Commuting Emissions

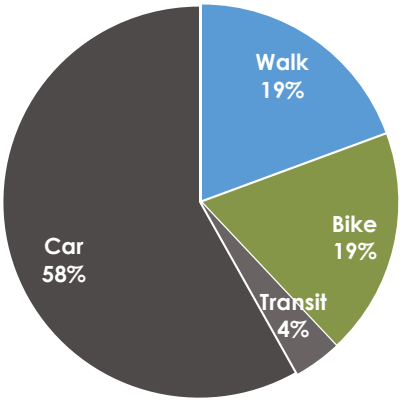


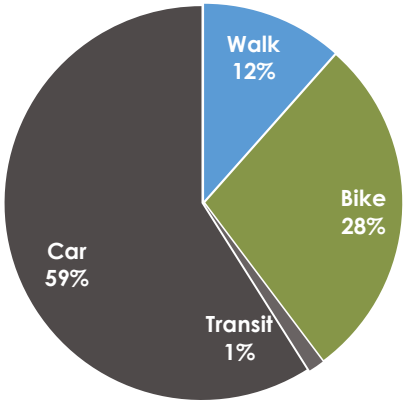
Analysis

With business operations returning to more normalized levels, staffing levels in FY 2022 increased. Staff commuting emissions increased by 28% compared to 2021 and 47% compared to 2019.

Commuting emissions in FY 2022 were the highest they have ever been for EWT, accounting for 3% of the total.

Commuting Percentages by Method per Day





Baseline (2019)

Average $kgCO_2e/km$	0.19
Low-Emission Commuting %	42%

Current (2022)

Average $kgCO_2e/km$	0.24
Low-Emission Commuting %	41%

Analysis (Breakdown)

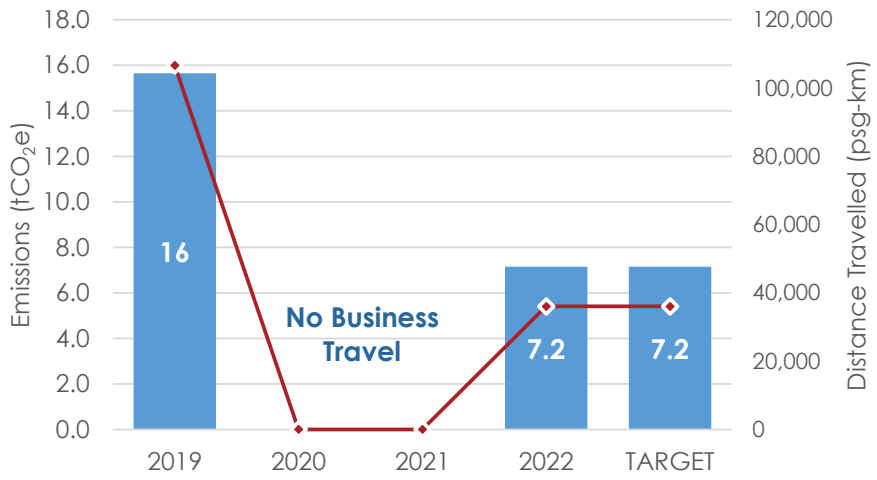
FY 2022 saw changes in commuting habits across all major commuting methods. Commuting by personal vehicle increased by 1%, transit use decreased by 3%, biking increased by 9%, and walking decreased by 7%.

Overall, staff commuting in FY 2022 was more carbon intensive per km travelled, increasing by 21% compared to 2019. Much of this increase was due to a couple of staff members commuting long distances in carbon intensive vehicles like pick up trucks.

tCO_2e	31.8
% of Total	3%
tCO_2e / FTE	0.99
9.0 Cars / Year	

Travel

Travel Emissions and Distance



Analysis

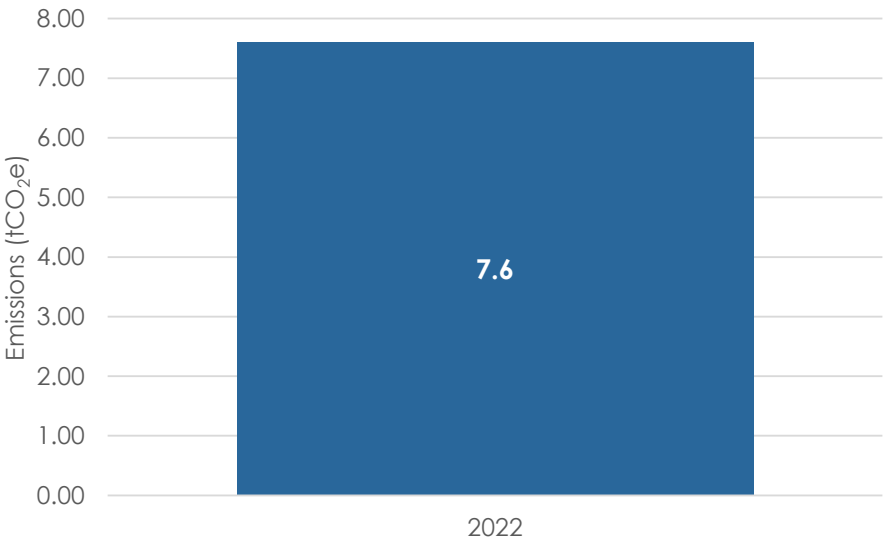
Business activities in FY 2022 resulted in a return to business travel, accounting for <1% of total emissions.

Moving forward, EWT should work to keep travel emissions at or below FY 2022 emissions to help them achieve their emission reduction goals.

tCO_2e	7.2	% of Total	0.7%	tCO_2e / FTE	0.2	2.0 Cars / Year

Shipping

Shipping Emissions



Analysis

In FY 2022, EWT took possession of their new vessel, *Wildcat 4* . The vessel was shipped using ocean freight from Bermuda to Victoria via Florida, resulting in shipping emissions of 7.6 tCO_2e.

The only other EWT shipment was for the hydrofoil components installed on *Wild 4 Whales,* which resulted in emissions of 4 $kgCO_2e$. All shipping accounted for <1% of the total footprint.

tCO_2e	7.6	% of Total	0.8%	$kgCO_2e$ / t-km	0.06	2.2 Cars / Year

Carbon Reduction Strategy

FY 2022 marks the 13th successive year that EWT has measured, reported, and offset their greenhouse gas emissions. They have also measured and offset their emissions from business activities back to 2005 when the company began, making them carbon neutral since day one of operations.

Coming out of the COVID-19 pandemic, EWT saw a return to much more normal business operations in FY 2022. Like in previous years, their emissions profile is dominated by fuel used in their vessels, which accounted for 94% of all emissions. Supplementary sources of emissions included staff commuting, business travel, shipping, and fuel used in vehicles. Waste, work from home, paper use, and water together accounted for <1% of total emissions.

Focusing on reducing emissions in vessel operations is the only path forward for EWT to achieve their emission reduction target of 30% by 2025. Diesel fuel consumption will need to decrease by 50% compared to 2019, which will require continual improvements in fuel economy coupled with the use of biofuel blends wherever possible.

Achievements

- Have measured, reported, and offset their greenhouse gas emissions footprint back to company inception - congratulations!
- Achieved their lowest ever emissions per passenger.
- Have reduced their absolute emissions by 6% compared to the 2019 baseline.

Moving Forward

- Continue to optimize existing vessels with innovations that reduce total fuel consumption.
- Continue to pursue alternatives to diesel such as biofuel blends.
- Continue to address tertiary emission sources, such as staff commuting, vehicle fuel use, and business travel.

Data Collection & Methodologies

Emission Source	Data Type	Data Quality
Fuel Use	Financial Records	Very Good
Electricity	Invoices	Very Good
Work From Home	Staff Survey	Good
Water	Estimate	Fair
Waste	Estimate	Fair
Paper	Financial Records	Very Good
Travel	Financial Records	Very Good
Shipping	Estimate	Fair
Commuting	Staff Survey	Good

This table details the type of data received from Eagle Wing Tours to generate this report. Data quality is assessed on five categories: technology, time, geography, reliability and completeness. The purpose of this table is to provide further information on the values in this report and what sources were used to calculate them.

Information on Inventory Uncertainty

* Fuel use was estimated based on the total annual cost of fuel. These estimates are likely to be reasonably accurate, however, since fuel is 94% of the total footprint, EWT should record total volumes of fuel purchased/used for future reporting years.

Emissions References

1. 2021 B.C. Best Practices Methodology for Quantifying Greenhouse Gas Emissions
https://www2.gov.bc.ca/assets/gov/environment/climate-change/cng/methodology/2021-best-practices-methodology.pdf

2. Environment Canada's National Inventory Report (1990-2019); Part 2 & 3.

https://www.canada.ca/en/environment-climate-change/services/climate-change/greenhouse-gas-emissions/inventory.html

3. Department for Environment, Food & Rural Affairs (UK) Carbon Factors 2021
https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-

4. Intergovernmental Panel on Climate Change (Global Warming Potentials)
http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html

All emissions factors are reviewed and approved by Ostrom Climate Solutions (https://ostromclimate.com/) on an annual basis.

Policy for Base Year Recalculation:
Base year emissions, and other previous emissions, shall be retroactively recalculated if a change in organizational structure or data quality is expected to exceed a significance threshold of 10% of base year emissions. These changes may arise from structural changes such as mergers, acquisitions, divestments, outsourcing or insourcing, changes in calculation methodology and improvements in accuracy, or discovery of significant errors.

Glossary of Terms

Term	Description
Carbon Neutral	Companies are carbon neutral when they remove GHG emissions equivalent to all their scope 1, 2 and material (>5%) scope 3 emissions, usually by purchasing carbon offsets.
Biogenic	Carbon emissions generated from sources naturally occurring in the carbon cycle (i.e. organic matter), rather than the result of fossil fuel combustion.
Emissions Factor	The volume of emissions created by an emissions producing activity (i.e. fuel combustion), calculated based on the amount of the activity (volume, distance, etc.).
GHG	**Greenhouse Gas (emissions):** Atmospheric gasses contributing to the greenhouse effect, including Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O), etc.
kWh	**Kilowatt-Hour**: Common unit for measuring electrical consumption
m^3	**Cubic Meter**: Unit of measurement equal to 1,000 Litres
Net-Zero	Companies with a zero-emission carbon footprint, usually achieved by minimizing outputs and negating the remaining emissions through carbon removal activities.
PCR%	**Post-Consumer Recycled Content** (as a percentage)
psg-km	**Passenger-Kilometer**: Unit separating total emissions between passengers per km
tCO_2e	**Tonnes of Carbon Dioxide Equivalent**: a combined term capturing the emissions from various GHGs.
t-km	**Tonne-kilometer**: A unit of measurement used in shipping

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Completed	22/9/2023

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