ZENITHJET

2022 CARBON ACCOUNTING REPORT

MARCH 2023

CARBON NEUTRAL ZENITH JET 2022 zzera

ZENITHJET

YOUR BUSINESS AVIATION EXPERTS

A message from our Founder

At Zenith Jet we are committed to reducing our environmental impact as it relates to our day-to-day operations. Since we began reporting in 2021, we have offset 200% of our carbon emissions through the purchase of verified carbon offset projects in support of various initiatives worldwide.

Recently, we expanded our service offering to include sustainability services to customers both within and outside of aviation and take great pride in being able to assist companies in reaching their environmental goals through an understanding of their climate impact and how targets can be successfully met though GHG accounting and GHG inventory reporting.

I'd like to challenge all business leaders to take action to reduce emissions resulting directly from operations as well as indirect value chain emissions. Together we can make a difference.

Nick

CARBON NEUTRAL ZENITH JET 2022

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Executive Summary

This report outlines the greenhouse gas (GHG) emissions footprint associated with ZenithJet's operation for the year 2022. The organizational boundary selected for the accounting followed the operational control approach, and the operational boundary included Scopes 1 and 2, and scope 3 emissions.

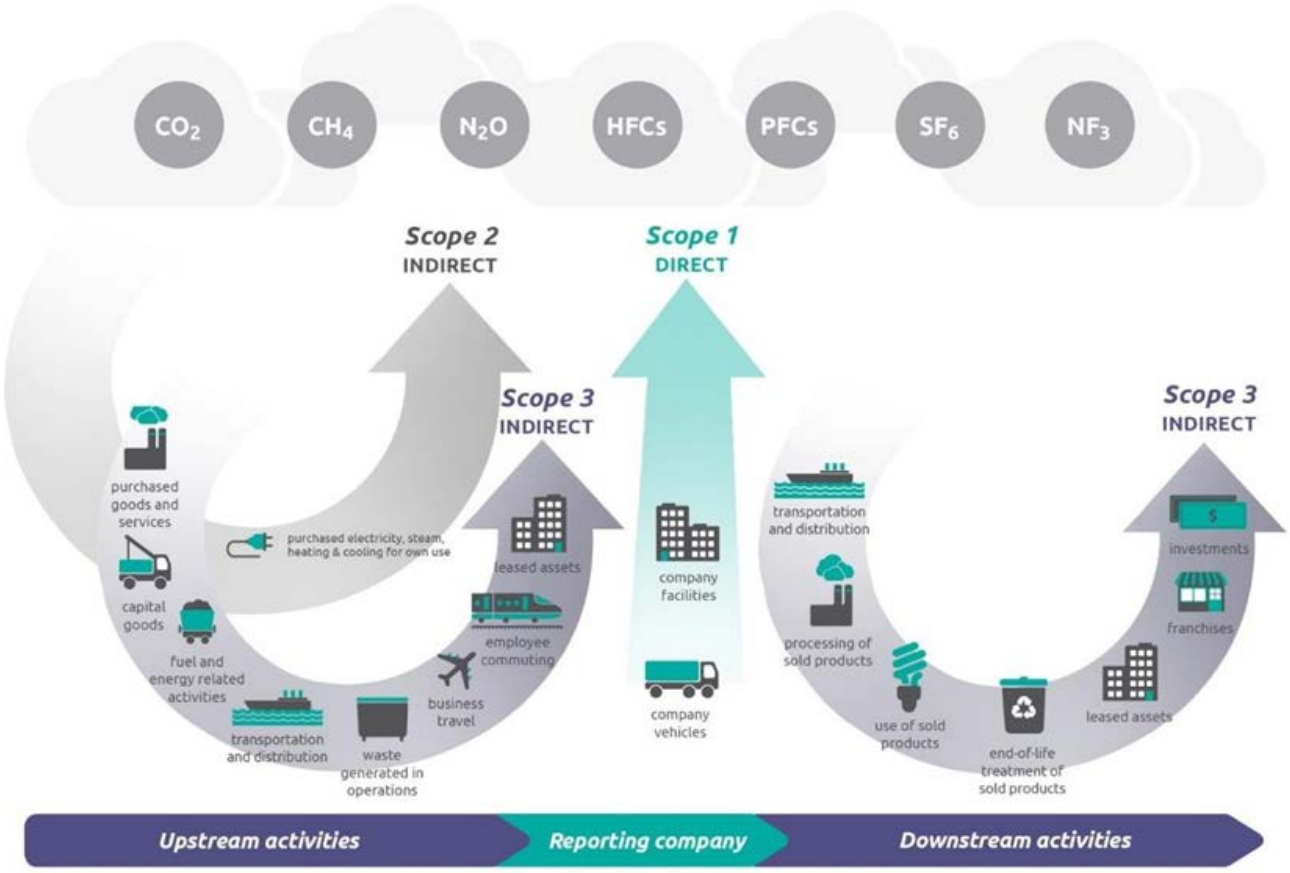


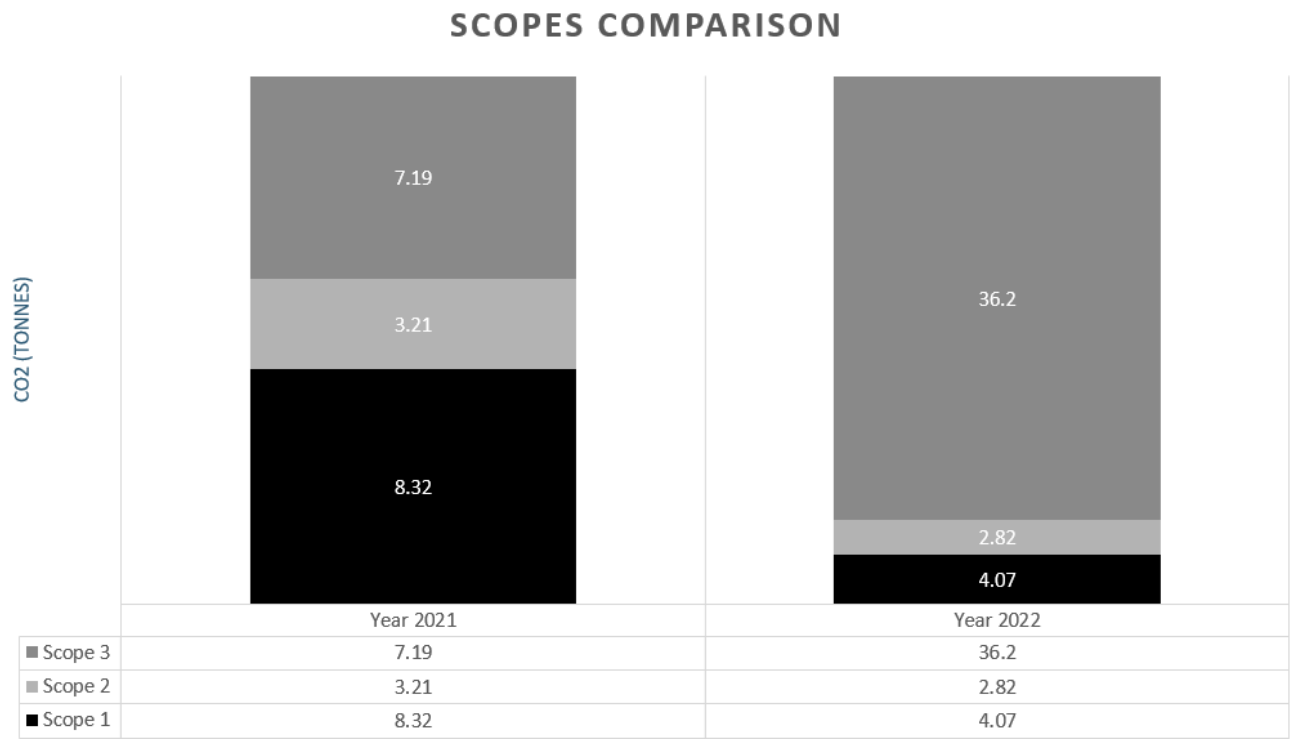
Figure 1: Overview of greenhouse gas emissions from each scope

The total GHG emission footprint was calculated to be 43.09 tonnes of carbon dioxide equivalent (tCO2e). The breakdown of the footprint by scope is summarized in table 1 below:

Source	Total CO2e (tonnes) in 2021	Total CO2e (tonnes) in 2022	%Decrease/Increase
Scope 1: Direct Emissions	8.32	4.07	↓ 51.08
Scope 2: Indirect emissions from purchased electricity	3.21	2.82	↓ 12.14
Scope 3: Other indirect emissions	7.19	36.20	↑ 403.47
Total	18.72	43.09	↑ 130.18

Table 1: GHG footprint summary

To better visualize the contribution of the GHG emissions of each scope towards ZenithJet's footprint, figure 1 below illustrates the breakdown by scope.



	Year 2021	Year 2022
Scope 3	7.19	36.2
Scope 2	3.21	2.82
Scope 1	8.32	4.07

Figure 2: The comparison of scopes

Scope 3 had the highest contribution to GHG emissions, accounting for 84% of the total footprint. Conversely, scope 2 had the least contribution with just 6.5% of the total footprint.

1. Introduction

ZenithJet is the leading technical services consulting firm for business aircraft owners, operators, and corporate flight departments. Founded in 2008, Zenith Jet has been providing technical and operations expertise to help clients manage their aircraft more efficiently. In 2021 Zenith Jet expanded its services into environmental offerings with GHG measurement to companies looking to better understand their emissions.

ZenithJet is committed to reducing its environmental impact by taking mitigation measures and using carbon offsetting for unavoidable emissions. In 2021 ZenithJet purchased carbon offsets that offset the emissions from 2021 by 200%. ZenithJet will do the same for its measured emissions for 2022.
ZenithJet will move its business forward by looking at ways to reduce its environmental footprint while helping clients and companies to undertake their own projects while at the same time promoting environmental initiatives.

As an example, ZenithJet will add a section to all its customer technical reporting outlining environmental impacts from manufacturing and aircraft operations to outline potential environmental impacts and help educate / assist clients in understanding the emissions of their aircraft. The goal will be to help clients understand further where most emissions come from in the aircraft lifecycle.

The second GHG Inventory Report comes as an effort in understanding, managing, and communicating climate change impacts resulting from the organization's activities. The organization's details along with the reporting period are found in Table 2 below:

Website	https://zenithjet.com/
Business Sector	Business Aviation Technical & Completions Oversight
Reporting Period	1st January 2022 to 31st December 2022

Table 2: Company Information

2. Methodology

Generally accepted GHG accounting principles exist to provide a standard basis for reporting a faithful, true, and fair account of a company's GHG emissions. ZenithJet calculated its reported GHG emissions in accordance with the World Business Council for Sustainable Development (WBCSD) and World Resources Institute (WRI) Greenhouse Gas Protocol (GHGP): A Corporate Accounting and Reporting Standard" (2004). The GHGP is the most widely used international carbon calculation methodology compatible with other GHG standards such as the ISO 14064, which also allows for direct integration with national and international GHG registries.

For Scope 1 and 2 emissions reporting, ZenithJet utilized the GHG Protocol Corporate Standard.

• Scope 1 is defined as direct GHG emissions occurring from sources that are owned or controlled by ZenithJet.

• Scope 2 Indirect GHG emissions result from the generation of electricity, heat, or steam generated off site but purchased by ZenithJet.

For Scope 3 emissions reporting, ZenithJet utilized the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard. Scope 3 includes indirect GHG emissions from sources not owned or directly controlled by Zenith Jet but related to their activities.

While GHG accounting and reporting principles continue to evolve, ZenithJet used principles derived in part from generally accepted financial accounting and reporting principles, including relevance, completeness, consistency, transparency, and accuracy:

• Relevance: the GHG inventory must convey the GHG emissions of the organization in an appropriate manner and serves the decision-making needs of internal and external users.

• Completeness: Ensure that all sources of emissions and activities within the chosen boundary are reported. Any exclusions should be appropriately justified.

• Consistency: The application of accounting approaches, inventory boundaries and calculation methodologies that are consistent is necessary to allow for meaningful comparisons of GHG data over time.

• Transparency: All the report content should be presented in a factual and coherent manner. Any relevant issues and/or assumptions should be addressed clearly.

• Accuracy: The data, GHG measurements, estimates, or calculations should all be as precise as possible, producing information that is credible with reasonable level of assurance.

Scope 1 and 2 emissions are calculated for two sites within ZenithJet's operational control. Emissions from Zenith's owned transportation is reported in Scope 1.

GHG emissions not within ZenithJet's operational control were accounted for in Scope 3 emissions; these emissions were related to transportation in the reporting year (that is, emissions related to employee commuting or business travel in the reporting year).

Scope 1 comprised of two emission source categories; the first category was natural gas used by the building for heating purposes at the office building that Zenith rent office space in. The second category was mobile emissions refer to the Zenith Jet-owned on-road vehicles that generate GHG emissions through the combustion of gasoline which was estimated by collecting data on the amount of fuel consumed and relevant emission factors.

For scope 2 the amount of total electricity purchased and consumed during the reporting period in kWh provided was based on the Hydro Quebec bills received from the landlord, Epic Quebec. Metered electricity consumption record was for the entire building and divided by the square footage of Zenith Jet's office space.

For scope 3 there were two main sources of GHG emissions: employee commuting and business travel. For employee commuting the distance – based method was used for calculating emissions from employee commuting which involved collecting data from employees on commuting patterns (e.g., distance travelled per day, and mode used for commuting) through a survey and applying appropriate emission factors for the modes used. Automobile, bus, train, plane, and bicycle are different modes of transport used by employees.

In business travel category includes emissions from commercial air travel and rental car but excludes emissions relating to hotel stays since the data is currently not available. Emissions from transportation in vehicles owned by ZenithJet are accounted for in Scope 1 (for fuel use). Distance – based method, which involves determining the distance and mode of business trips was selected to calculate scope 3 emissions from business travel.

3. GHG Inventory Design and Development

3.1 Organizational Boundary

Boundaries are imaginary lines encompassing the emissions to include in a company's GHG inventory.

In setting organizational boundaries, a company selects an approach for consolidating GHG emissions and then consistently applies the selected approach to define those businesses and operations that constitute the company for the purpose of accounting and reporting GHG emissions.

For corporate reporting of GHG emissions, two distinct approaches can be taken: Equity Share Approach and Control Approach. The equity shares approach accounts for emissions based on financial ownership or economic interest in an operation. The control approach accounts for emissions based on operational or financial control of an operation.

ZenithJet has chosen to use the operational control for the purposes of consolidating and reporting GHG emissions. The reason for choosing this approach is the full responsibility that Zenith Jet takes for the GHG emissions from operations and facilities over which it has operational control. These facilities include the head office located in Montreal, Canada and another office located in Atlanta, US.

Using this approach, this Carbon Footprint Report includes emissions from the following operations:

Facility Name	Facility Address	Area (m^2)	Headcount
Zenith Jet Head Office	7575 Trans Canada Route #620, Saint-Laurent, Québec H4T 1V6	102	6
Atlanta Office	1715 McCollum Parkway, NW Bldg. 700 2nd Floor Kennesaw, GA. 30144	42	1
Total		**144**	**7**

Table 3: Facility Information

3.2 Operational Boundary

Operational boundaries are defined by "scopes", which categorize the emissions resulting either directly or indirectly from the company's operations and activities. ZenithJet operational boundaries includes all activities involving fuel combustion (natural gas and gasoline).

There are three scopes of emissions that can be reported:

Scope 1: Direct GHG Emissions from company owned or controlled assets.

Scope 2: Indirect GHG Emissions from purchased electricity or steam.

Scope 3: Other indirect GHG Emissions from the operation of the company.

According the GHG Protocol Corporate Reporting Standard, Scope 1 and Scope 2 emissions must be reported. Scope 3 emissions are voluntary depending on the availability and reliability of data.

The emitting activities covered in this carbon footprint report for 2022 includes fuel burned in stationary source, fuel burned during transportation, and emissions from purchased electricity as well as other indirect emissions. A summarized list of the emission sources and activities ae presented in Table 4:

Scope	Emission Category	Emission Source
Scope 1	Stationary Combustion	Fuel combustion for generating heat
Scope1	Mobile Combustion	Vehicles owned by the company
Scope 2	Electricity	Purchased Electricity
Scope 3	Transportation	Employee Commute
Scope 3	Transportation	Business Travel

Table 4: Emission Categories and sources

3.3 Reporting Period and Base Year

This assessment report details the scope, data, and results from Zenith Jet's GHG inventory for calendar year 2022, from January 1 – December 31, 2022. In conformance with the GHG Protocol, Zenith Jet must select an inventory base year to allow for like-to-like comparisons over time and allows tracking progress to a given target. However, since 2021 was ZenithJet's first inventory, it was decided that 2021 would be the selected base year that was severely impacted by the pandemic which resulted in very little travel taking place due to public health regulations. Therefore, the emissions in 2021 were more than likely under representative of what might be expected in a "normal" year.

4. Calculation Methodology

According to the GHG-P and ISO Standard 14064-1 Section 4.3.3, GHG emissions can be calculated based on GHG activity data multiplied by appropriate GHG emission factors:

GHG Activity Data x GHG Emission Factor = GHG Emissions

This methodology yields a considerable level of certainty as accurate emission factors are available in National Inventory Report and the activity data are available from reliable sources.

Other approved methodologies such as use of a model, mass balance approach or continuous measurement were considered cost intensive and not practical for the project.

For reporting purposes, ZenithJet GHG emissions were reported in metric tonnes of carbon dioxide equivalents (mtCO2eq)

4.1 Global Warming Potential (GWP)

As required by best practice in organizational GHG accounting and the chosen WBCSD/WRI GHG Protocol, all seven Kyoto Protocol greenhouse gases have been included where applicable and material. Global warming potentials (GWPs) are factors describing the radiative forcing impact of one unit of a specific greenhouse gas (e.g., methane) relative to one unit of carbon dioxide. They are used in GHG accounting to convert individual GHG emissions totals to a single standardized unit useful for comparison – carbon dioxide equivalent, or CO2e.

Basic equation for estimating emissions:
GHG Emissions x Global warming potential (GWP) = carbon dioxide equivalent (CO2eq)

Global warming potential values were sourced from the Intergovernmental Panel on Climate Change's (IPCC) Fifth Assessment Report (AR5), the most recent IPCC report available at the time of assessment.

The Kyoto Protocol GHGs (or categories of GHGs) and their respective GWPs are listed in the table 5.

GHG common name	Chemical Formula	GWP values for 100-year time horizon		
		Second Assessment Report (SAR)	Fourth Assessment Report (AR4)	Fifth Assessment Report (AR5)
Carbon Dioxide	CO_2	1	1	1
Methane	CH_4	21	25	28
Nitrous oxide	N_2O	310	298	265
Nitrogen trifluoride	NF_3		17,200	16,100
Sulfur hexafluoride	SF_6	23,900	22,800	23,500

Table 5: Global warming potential (GWP) values relative to CO2 (IPCC, AR5 2013)

4.2 Sources of Emissions Factors

Emissions factors are used to convert an activity (such as purchased electricity in kilowatt-hours) to GHG emissions (in metric tons CO2 eq). ZenithJet utilized the most accurate emissions factors where available and feasible. Priority was given to supplier emissions factors and then regional emissions factors as defined by the US Environmental Protection Agency or International Energy Agency (IEA).

5. Results

The results for the GHG emissions associated with ZenithJet were calculated and summarized in the table 6. Please note that due to rounding of numbers, the figures may not add up exactly to the total provided. It is also important to note that the scope 2 emissions total were reported Market-Based and Location-Based approach.

Source			CO_2-eq (tonnes)	Total CO_2-eq (tonnes)	% of total
Scope 1	Stationary Combustion	Natural Gas	0.94	4.07	2.18
		Diesel	0.00		0.00
		Refrigerant	0.00		0.00
	Mobile Combustion	Gasoline	3.13		7.26
Scope 2	Electricity	Purchased Electricity	2.82	2.82	6.55
Scope 3	Transportation	Employee Commute	2.33	36.20	5.40
		Business Travel	33.87		78.60
Total			**43.09**	**43.09**	**100**

Table 6: Detailed overview of GHG emissions

The total GHG emissions associated with ZenithJet's operation and activities was estimated to be 43.09 tonnes CO2-eq.

The calculations of emissions from electricity usage and natural gas consumption revealed that the scope 1(stationary combustion) and scope 2 emissions decreased from 2021 to 2022 because of the reduction of ZenithJet office space in Montreal by 59%. In 2022, purchased electricity emissions accounted for 6.55% of the emissions which illustrates about 0.5 tonnes decrease compared to 2021. Mobile combustion (scope1) which includes the consumption of gas for company's cars was reduced by 70% in the US as during 2021 there was a lot more travel by car to various projects around the country due to the decline in air travel because of the pandemic. Total emissions associated with gasoline combustion decreased from 6.6 tonnes CO2-eq in 2021 to 3.13 tonnes CO2-eq CO2 in 2022.

As the pandemic ended, business travel picked up substantially in 2022 resulting in a very large increase in travel and higher emissions in scope 3.

Figure 2 below shows the breakdown of emissions by scope. Scope 3 emissions were the most representing approximately 84% of total emissions, followed by scope 1 emissions which were 9%, and the least emissions were the scope 2 emissions.

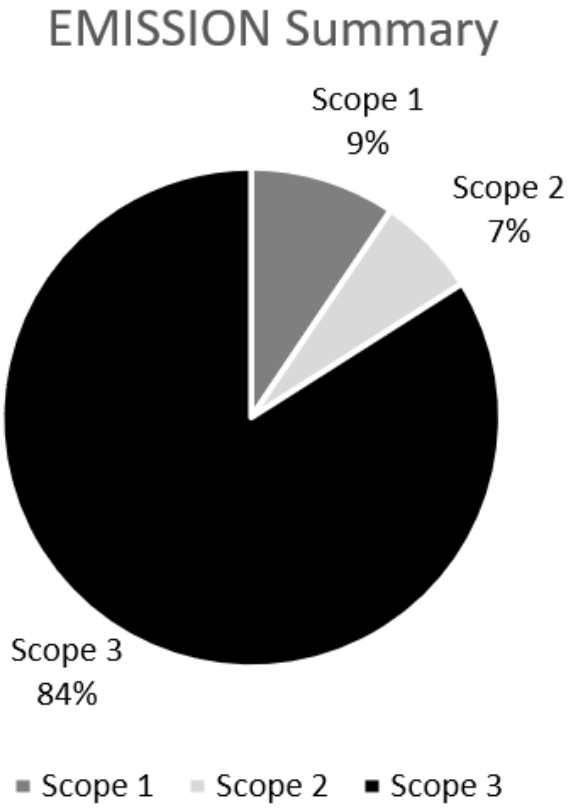


Figure 3: Emission breakdown by scope

Figure 3 below illustrates the breakdown of the emissions by category. Fuel's heating value (stationary), direct GHG emissions from mobile sources (ZenithJet's cars), and indirect emissions from the generation of purchased electricity (scope 2) declined year over year from 2021 for 2 main reasons – firstly a reduction in office space in Montreal by 59% which resulted in less combustion of natural gas in stationary combustion equipment and total electricity consumption for a smaller office space. The second reason was less company-owned cars usage as flights replaced driving as a mode of transport in the US since covid restrictions were removed.

Almost 80% of the total emissions were associated with business travel with around 34 tonnes CO2-eq emissions. The large increase in business travel was related to travelling to support customer projects and some travel related to attending trade shows that did not happen in 2021 to the same level hence the growth in emissions from scope 3.

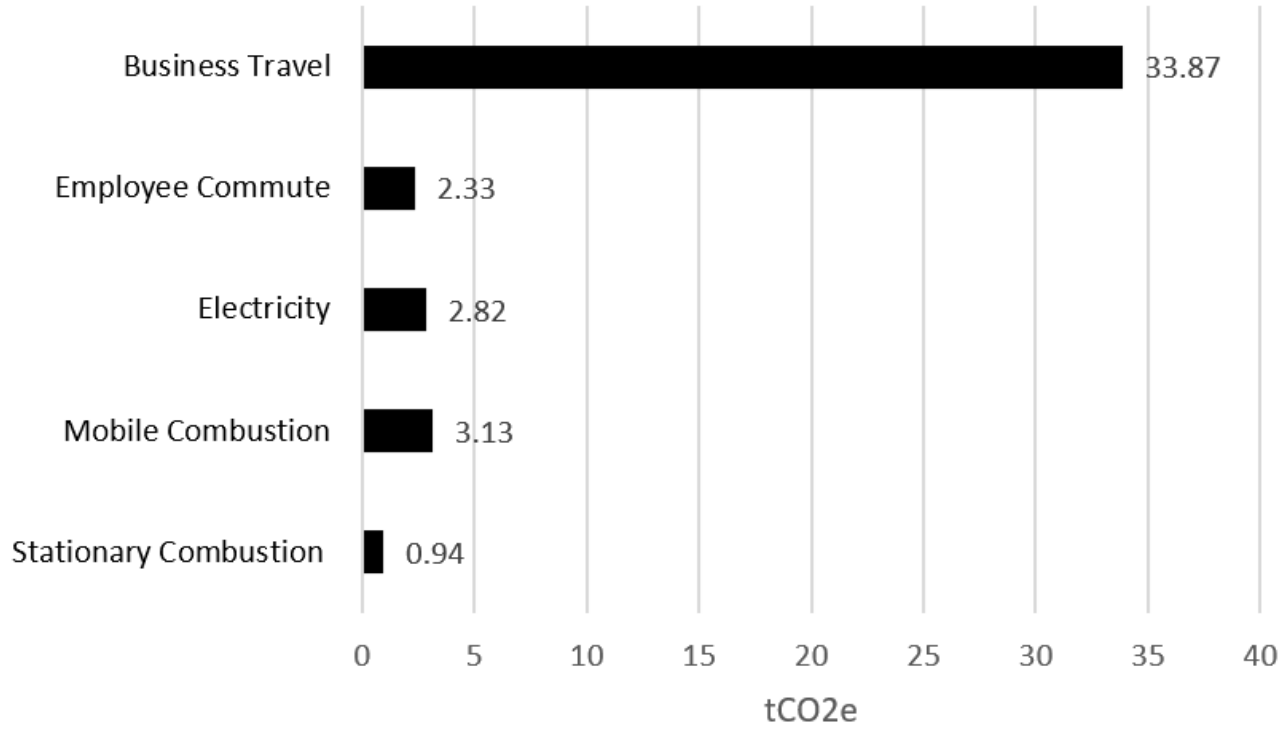


Figure 4: Emission breakdown by category

6. Conclusion and Recommendation

6.1 Conclusion

This report presents the process of calculating the 2022 GHG emissions Zenith Jet was completed in conformance with the GHG protocol standard. ZenithJet has gone to all reasonable lengths to ensure the accuracy of this report. The main sources of GHGs emissions as well as their amount were determined through collected utility bills, financial data, and questionnaires. However, in other cases when some data was missing, a conservative approach was followed to make extrapolations or justified assumptions (refer to Annex).
The methodology for emission assessment was in alignment with the GHG Protocol Corporate Accounting and Reporting Standard.

The results showed that total GHG emissions were around 43 tonnes CO2-eq in 2022. The largest emission contributor was business travel, with emissions of 34 tonnes CO2-eq, accounting for 79% of the total emissions. GHG emission from scope 3 was the highest contributor to total GHG emissions among the three scopes. Moreover, purchased electricity accounted for the smallest portion of total emissions in 2022 because of reducing overall size of Montreal's offices.

In 2022, scope 1 emissions which include stationary combustion and mobile combustion decreased by half compared to 2021 due reducing Zenith's office size from 2645 ft2 to 1091 ft2 and moving to a remote working model for some employees.

The emissions associated with electricity consumption had a reduction from 3.21 to 2.82 tonnes CO2-eq largely due to the reduction in office space in Montreal. There was a significant increase of emissions from the scope 3 with 84% of total in comparison with the 38% of base year, due to the end of pandemic period and lifting travel restrictions leading to more travelling to support customers' projects.

6.2 Recommendation

Using the accepted methodology (Greenhouse Gas protocol) in the present report, the GHG emissions from the different categories were assessed. Based on the results, business travels had the highest percentage of emissions.

In 2022 some actions were taken to reduce GHG emission. The first action was to reduce office space in Montreal. The pandemic was a big contributor to this decision as it was clear that we did not need as much office space and certain employees could move to a remote working model which a) reduced the requirement for office space and b) reduced the commuting impact.

There are some mitigation measures to reduce the amount of business travel such as encouraging employees to have video conferencing and web-based meetings as an alternative to in-person meetings, more efficient travel, and lower- emitting modes of travel (e.g., car or rail instead of plane) which can be taken in the current year.

Mobile combustion was the second largest emission contributor among the activities in the reporting year with emissions of 3.13 tonnes CO2-eq, accounting for 7.26% of the total emissions. Shifting to electric vehicles, switching to low-carbon fuels such as biodiesel, and improving vehicle efficiency are some of the appropriate strategies to mitigate GHG emissions from combustion of fuels associated with employee transportation.

ZenithJet's goal is to focus on reducing their GHG emissions and contribute to a greener future but at the same time they will attempt to educate their clients by adding a section to each report regarding the impact of the aircraft they are buying or operating providing information on lifecycle impact and GHG emissions per hour, and opportunities to reduce emissions.

Annex 1
Emission Factors

Emission Activity	Emission Factor Source
Stationary Combustion	- Canada NIR 2022 - https://unfccc.int/documents/271493 - (part 2, from various tables for each region) - - EPA, "Emission Factors for Greenhouse Gas Inventories https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors_apr2021.pdf
Mobile Combustion	- Canada NIR 2022 - https://unfccc.int/documents/271493 - (part 2, from various tables for each region) - EPA, "Emission Factors for Greenhouse Gas Inventories https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors_apr2021.pdf
Electricity	- Canada NIR 2022 - https://unfccc.int/documents/271493 - (part 3, from various tables for each region) - EPA, "Emission Factors for Greenhouse Gas Inventories https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors_apr2021.pdf
Employee Commute	- EPA, "Emission Factors for Greenhouse Gas Inventories," Table 8 Business Travel and Employee Commuting, April, 2022 (https://www.epa.gov/climateleadership/center-corporate-climate-leadership-ghg-emission-factors- hub).
Business Travel	- EPA, "Emission Factors for Greenhouse Gas Inventories," Table 8 Business Travel and Employee Commuting, April, 2022 (https://www.epa.gov/climateleadership/center-corporate-climate-leadership-ghg-emission-factors-hub). - UK DEFRA, Business Travel - air, 2021

Table 7: Emission Factor Sources

Annex 2

Data Assumptions and Extrapolations

Due to the absence of sub-metering system in the facility 1 office building, an assumption was made to allocate the energy consumption for facility 1 based on the office space area. The total area of the building was 82014.33 ft2, and the office space area for facility 1 was 2645 ft2 from January until end of August 2021. Starting September, the office space was reduced to 1091 ft2. As a result, a factor was calculated to resemble Zenith Jet's energy allocation as a percentage of the total energy consumption. The percentage was calculated to be 2.59% using the formula shown below:

$$\left(\frac{2645}{82014.33}\times \frac{8}{12}\right)+\left(\frac{1091}{82014.33}\times\frac{4}{12}\right)=2.59\%$$

In a similar manner, an extrapolation was made to estimate the energy consumption in facility 2. A proxy for energy consumption was calculated by office area and extrapolation was used based on the office area in facility 2 which was 447.7 ft2.

Zenith Jet was not able to provide the exact mileage driven during 2022, thus a conservative estimate was made by each employee along with the fuel efficiency of each car and the fuel consumption was estimated for mobile combustion and distance in km for employee commute categories.

According to the building owner, no refrigerants were refilled during the 2022 year, consequently an assumption was made that no refrigerant leaks were available.