Greenhouse Gas Inventory Report

Responsible Investment Association (RIA)

2020 Greenhouse Gas Emissions Inventory

February 25, 2021

Carbonzero
250 Yonge Street Suite 2201
Toronto, ON M5B 2L7
Canada

Photo Credit: Krzysztof Kowalik

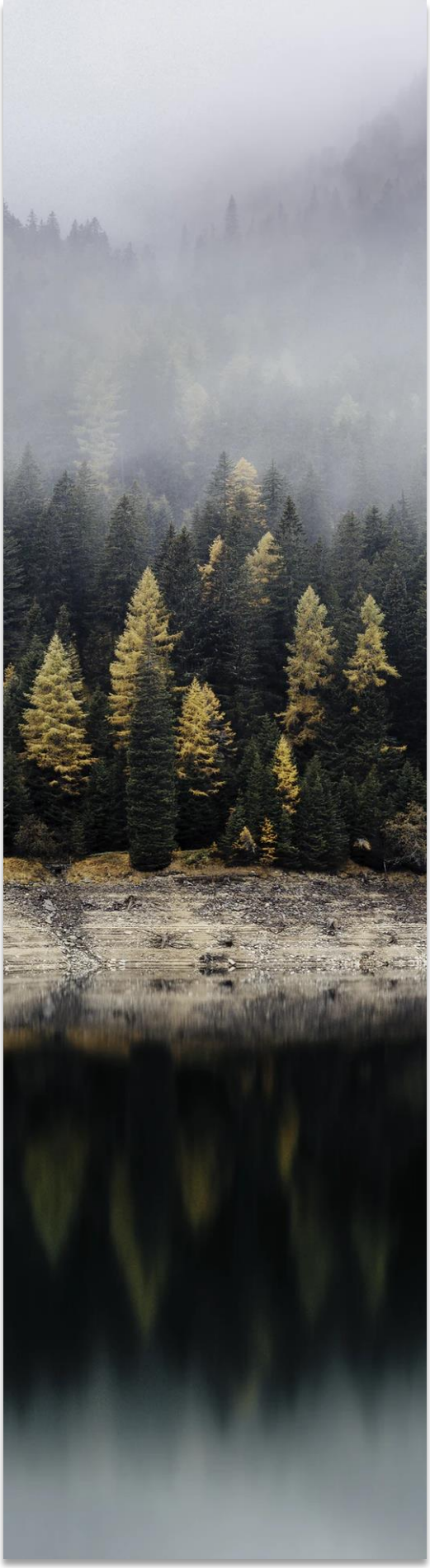

Table of Contents

Carbonzero
250 Yonge St. Suite #2201
Toronto, ON
M5B 2L7

– – –

Responsible Investment Association
111 Peter Street, Suite #700
Toronto, ON
M5V 2H1

February 25, 2021

Dear Mr. Buccheri,

We are pleased to present the 2020 Greenhouse Gas (GHG) Emissions Inventory Report to the Responsible Investment Association (RIA). This report outlines the details of the RIA's Calendar 2020 corporate greenhouse gas inventory, which has been compared against the organization's initial emissions inventory from 2019.

As a separate item to the RIA's GHG Inventory, the report also provides a greenhouse gas emissions estimate associated with the hosting of the RIA's two largest virtual events from 2020.

Within our report is an overview of the GHG emissions assessment process, the data used in the emissions quantification process, and a summary of results.

We look forward to a continued relationship with the RIA.

Best Regards,

Liam Conway
VP, Advisory Services
Carbonzero

1.0 Overview

Carbonzero is pleased to deliver the 2020 Greenhouse Gas (GHG) Emissions Inventory Report to the RIA, which outlines the organization's 2020 corporate GHG emissions. The 2020 GHG inventory marks the second consecutive year that the RIA has undergone a corporate greenhouse gas emissions measurement exercise with the support of Carbonzero.

This report contains an overview of the greenhouse emissions quantification process, as well as a summary of the results of the assessment.

2.0 Scope

2.1 Organizational Description

The Responsible Investment Association (RIA) is Canada's industry association for responsible investment (RI). The RIA aims to drive the growth and development of RI in Canada, with a vision to align capital with sustainable and inclusive development as codified in the Paris Agreement and the UN Sustainable Development Goals.

Its members include asset managers, asset owners, advisors, and service providers who support these objectives. The RIA operates out of a corporate head office in downtown Toronto, Ontario Canada.

2.2 GHG Accounting Standards

For the completion of the corporate GHG inventory, Carbonzero aligns its assessment with the methodology document published by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD. The **Greenhouse Gas Protocol Corporate Accounting and Reporting Standard (GHG Protocol)** provides guidance on carbon accounting with respect to the completion of GHG inventories. The GHG Protocol is aligned to key principles associated with accounting and reporting of greenhouse gases, as outlined below:

- **Relevance** – appropriate reflection of the reporting entity emissions.
- **Completeness** – appropriate selection of emissions sources within the boundary.
- **Consistency** – methodologies allow for meaningful comparisons over time.
- **Transparency** – disclosure of assumptions and methodologies.
- **Accuracy** – achieve sufficient accuracy to ensure integrity and good decision making.

2.3 Organizational & Operational Boundaries

The RIA 2020 GHG Inventory has been completed using the Operational Control approach as outlined in the GHG Protocol. **Figure 1** provides an outline of the boundaries associated with the 2020 GHG Inventory.

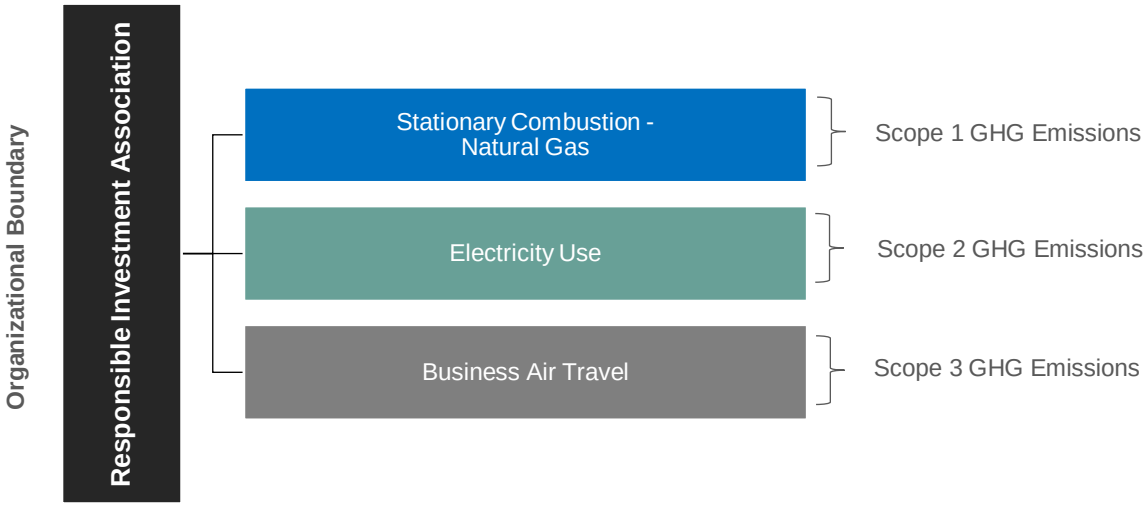

Figure 1: GHG Inventory Boundaries – the RIA 2020

Within **Figure 1**, Scope 1 emissions sources included in the RIA's corporate GHG Inventory are indicated in blue, Scope 2 emissions sources are indicated in green, and Scope 3 emissions sources are indicated in grey.

Carbonzero has not identified any notable sources of Scope 1 or Scope 2 emissions that have been excluded from the greenhouse gas emissions inventory that would warrant further disclosure. Carbonzero notes that the RIA has demonstrated consideration of its Scope 3 emissions sources and that its most significant Scope 3 GHG emissions source has been included in the organization's GHG Inventory boundary.

2.4 GHG Emissions Sources

The GHG emissions sources that are included in the RIA's 2020 GHG Inventory are referenced below in **Table 1**. Additionally, an explanation of the source and its role in generating greenhouse gas emissions are provided.

Table 1: GHG Emissions Sources –RIA 2020 GHG Inventory

Scope 1 – Direct GHG Emissions	
GHG Emissions Source	**Description**
Stationary Combustion – Natural Gas	The RIA has an operational lease for an office space that uses natural gas for space heating, water heating, and other processes. The combustion of fuel in natural gas consuming equipment generates greenhouse gas emissions.
Scope 2 – Electricity Indirect GHG Emissions	
GHG Emissions Source	**Description**
Electricity Use	The generation of electricity on provincial electricity grids generates greenhouse gas emissions at a rate proportional the amount of carbon-intensive generation sources featured on the grid.
Scope 3 – Other Indirect GHG Emissions	
GHG Emissions Source	**Description**
Business Air Travel	The combustion of kerosene and aviation gas used in passenger airplanes generates greenhouse gas emissions, which are assigned on a per-passenger basis for specific flight legs.

2.5 Reporting Period

The reporting period for the 2020 GHG inventory spans from January 1, 2020 to December 31, 2020. The scope of the greenhouse gas emissions inventory in 2020 has not changed relative to the GHG inventory completed in 2019.

In its reporting, Carbonzero has not re-stated any of the RIA's past GHG emissions inventory totals. This practice is periodically required as a result of revised methodologies or alterations to emission factors, though it is not relevant for this particular report.

3.0 Quantification Methodology

Carbonzero's assessment aligns with the emissions quantification methodology that is developed by the WRI and WBCSD through the GHG Protocol. The following equation is used for calculating the GHG emissions associated with the RIA's 2020 greenhouse gas inventory.

Activity Data x Emission Factor = GHG Emissions

The activity data, its sources, and the emission factors used in the GHG Inventory are summarized in the subsequent sections of this report. For each of the emission generating activities included in this report, calculations have been made to two decimal places in units of metric tonnes of CO_2-equivalent (1 metric tonne is equal to 1,000,000 grams) unless otherwise noted. Please note that with all calculations, totals may vary from the sums of the components due to rounding.

3.1 Data Quality Parameters

For the emissions generating activities included in the RIA's 2020 GHG Inventory (as outlined in **Table 1** and **Figure 1**), activity data was sourced from the RIA and its partners to support the completion of the project. Activity data used in the assessment is evaluated for data quality using the following criteria as outlined by Carbonzero. Note that any data referenced as "Data Quality – E" is generally of a quality that it should not be used in a GHG Inventory until it is improved upon.

- **Data Quality - A:**
  - Activity data is thorough, well-documented and validated through a review of metered or measured primary data at the source.
- **Data Quality - B:**
  - Activity data is thorough, well-documented and maintained by the reporting entity without a review of metered or measured primary data at the source.
- **Data Quality - C:**
  - Activity data is generated via the extrapolation of incomplete however thorough and well-documented data.
- **Data Quality - D:**
  - Activity data is estimated using other corporate indicators that help to reasonably inform data-related assumptions.
- **Data Quality - E:**
  - Activity data is estimated freely without consideration of other indicators.

3.2 Activity Data Quality

Employees at the RIA provided Carbonzero with data and details associated with all sources of emissions generating activities included in the 2020 GHG Inventory.

Table 2 outlines the details of the activity data with respect to its source and quality.

Table 2: Activity Data Summary – RIA GHG Inventory 2020

Scope 1 – Direct GHG Emissions				
Emissions Generating Activity	**Data Format**	**Unit**	**Source**	**Data Quality**
Stationary Combustion – Natural Gas	Extrapolation	Cubic metres (m^3)	Sq-Ft Estimate (803 sq ft)	D
Scope 2 – Electricity Indirect GHG Emissions				
Emissions Generating Activity	**Data Format**	**Unit**	**Source**	**Data Quality**
Electricity Use	Extrapolation	Kilowatt hours (kWh)	Sq-Ft Estimate (803 sq ft)	D
Scope 3 – Other Indirect GHG Emissions				
Emissions Generating Activity	**Data Format**	**Unit**	**Source**	**Data Quality**
Business Air Travel	Spreadsheet	p-kms	Corporate Travel Records	B

3.3 Activity Data

Table 3 outlines the numerical details associated with the activity data that has been used by Carbonzero in the 2020 GHG Inventory.

Table 3: Activity Data – Numerical Details – RIA GHG Inventory 2020

Scope 1 – Direct GHG Emissions			
Emissions Generating Activity	**Activity Data**	**Unit**	**Acceptable Data Quality?**
Stationary Combustion – Natural Gas	1,210	m^3	Yes
Scope 2* – Electricity Indirect GHG Emissions			
Emissions Generating Activity	**Activity Data**	**Unit**	**Acceptable Data Quality?**
Electricity Use	21,917	kWh	Yes
Scope 3 – Other Indirect GHG Emissions			
Emissions Generating Activity	**Activity Data**	**Unit**	**Acceptable Data Quality?**
Business Air Travel – Short Haul	13,381	pkm	Yes
Business Air Travel – Med Haul	1,968	pkm	Yes
Business Air Travel – Long Haul	0	pkm	Yes

3.4 Emission Factors

Greenhouse gas inventory quantifiers source emission factors from well-recognized agencies and their publications when completing greenhouse gas inventories. When used in a corporate greenhouse gas inventory, emission factors specify the amount of greenhouse gas emissions that are generated per a single unit of a specific activity.

Table 4 describes the emission factors used in the RIA 2020 greenhouse gas inventory. Note that Provider-specific emission factors for Market-Based Scope 2 measurements were not published by Toronto Hydro, and as a result, Scope 2 electricity totals reflect both Location and Market-Based totals but are formally reported as Location-Based metrics.

Table 4 – Emission Factors - RIA 2020 GHG Assessment

Scope 1 – Direct GHG Emissions			
Emission Factor Application	**Emission Factor**	**Unit**	**Source**
Stationary Combustion – Natural Gas	1,898.31	gCO_2e/m^3	Canada – NIR (2020)
Scope 2* – Electricity Indirect GHG Emissions			
Emission Factor Application	**Emission Factor**	**Unit**	**Source**
Electricity Use	30.00	gCO_2e / kWh	Canada – NIR (2020)
Scope 3 – Other Indirect GHG Emissions			
Emission Factor Application	**Emission Factor**	**Unit**	**Source**
Business Air Travel – Short Haul	244.30	gCO_2e / pkm	UK DEFRA (2020)
Business Air Travel – Med Haul	155.53	gCO_2e / pkm	UK DEFRA (2020)
Business Air Travel – Long Haul	190.85	gCO_2e / pkm	UK DEFRA (2020)

**Note that Scope 2 electricity GHGs are reported via the Location-Based method. Reporting Market-Based scope 2 electricity emissions yields the same figure as an accepted market-based emission factor is not available.*

3.5 Limitations & Assumptions

Disclosure of the limitations and assumptions associated with a greenhouse gas inventory supports the transparency and accuracy principles of the Greenhouse Gas Protocol. In certain instances, assumptions can be used to help inventory quantifiers establish or extrapolate activity data when data gaps exist, however it is best practice to disclose what and how those assumptions have been used.

Table 5 describes the limitations and assumptions that are notable for the RIA's 2020 corporate GHG inventory.

Table 5 – Limitations & Assumptions – the RIA 2020 GHG Assessment

Scope 1 – Direct GHG Emissions	
Emissions Generating Activity	**Disclosure of Limitations / Assumptions**
Stationary Combustion – Natural Gas	It is assumed that natural gas consumption at the RIA's 111 Peter St. office in Toronto, Ontario aligns with the provincial average for offices as outlined by the Natural Resources Canada Comprehensive Energy Use Database (CEUD). Due to building occupancy changes resulting from the COVID-19 pandemic, total suite heating demands via natural gas was assumed to be reduced by 15% for approximately 75% of the year.
Scope 2 – Electricity Indirect GHG Emissions	
Emissions Generating Activity	**Disclosure of Limitations / Assumptions**
Electricity Use	It is assumed that natural gas consumption at the RIA's 111 Peter St. office in Toronto, Ontario aligns with the provincial average for offices as outlined by the Natural Resources Canada Comprehensive Energy Use Database (CEUD). Due to building occupancy changes resulting from the COVID-19 pandemic, total suite electricity use was assumed to be reduced by 15% for approximately 75% of the year as a result of decreased plug load and cooling requirements.
Scope 3 – Other Indirect GHG Emissions	
Emissions Generating Activity	**Disclosure of Limitations / Assumptions**
Business Air Travel	It is assumed that passengers flew economy class for all flight legs.

3.6 Global Warming Potentials (GWPs)

In instances where greenhouse gas specific emission factors are converted from a particular gas to a CO_2-equivalent, the Intergovernmental Panel on Climate Change Fifth Assessment Report is used for determining Global Warming Potentials of non-CO_2 greenhouse gases.

4.0 GHG Inventory Results

Carbonzero has quantified the total annual greenhouse gas emissions associated with the RIA's 2020 calendar year operations to be **5.52** tonnes of CO_2-equivalent (tCO_2e). This emissions total reflects the scope of the GHG Inventory as outlined in Section 2.3.

Table 6 displays the totals associated with the RIA's Calendar 2020 GHG inventory grouped by Emissions Generating Activity.

Table 6 – Summary of GHG Emissions: RIA 2020 GHG Inventory

Scope 1 – Direct GHG Emissions	
Emissions Generating Activity	**GHG Emissions**
Stationary Combustion – Natural Gas	2.30 tCO_2e
Scope 2 – Electricity Indirect GHG Emissions	
Emissions Generating Activity	**GHG Emissions (tCO2e)**
Electricity Use	0.66 tCO_2e
Scope 3 – Other Indirect GHG Emissions	
Emissions Generating Activity	**GHG Emissions (tCO2e)**
Business Air Travel	2.56 tCO_2e

Figure 2 below displays the RIA's 2020 greenhouse gas emissions by individual emissions generating activity. Due to travel restrictions stemming from the COVID-19 pandemic, the RIA participated in very limited amounts of business air travel relative to its flight volumes in 2019.

As a result, a significant emissions reduction has been observed in the organization's Scope 3 business air travel category. Total air travel emissions amounted to 46% of total 2020 GHG emissions. Natural gas use at the 111 Peter St. office was the second greatest contributor to the organization's GHG Inventory (42%), followed by the office's electricity use (12%).

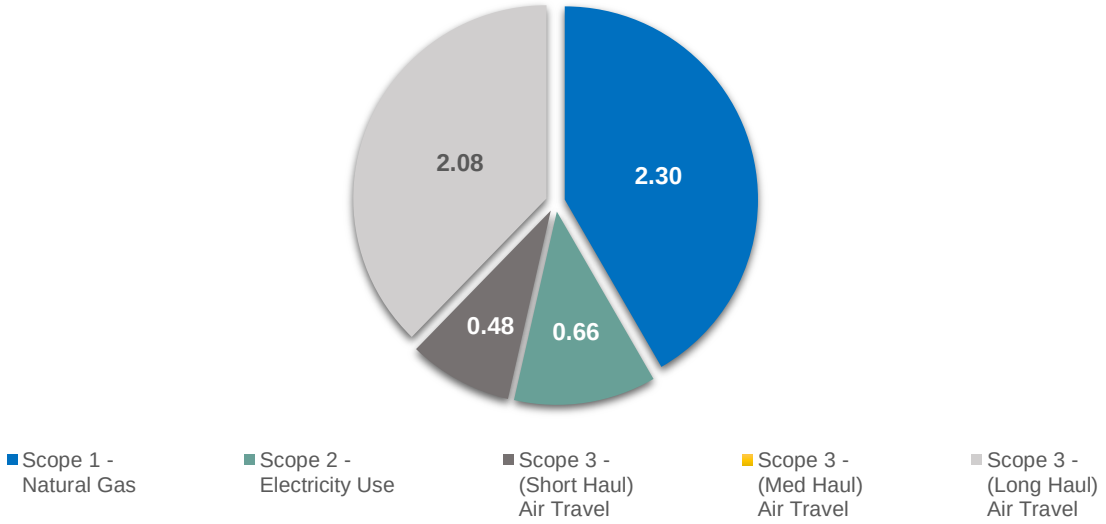

Figure 2: RIA Greenhouse Gas Emissions (tCO_2e) (2020)

4.1 Scope 1 GHGs

In 2020, the RIA's Scope 1 GHG emissions amounted to 2.30 tCO_2e with details outlined in **Figure 3** below. The organization's office located at 111 Peter Street in Toronto, Ontario is the organization's only source of Scope 1 emissions, as it does not have any other owned or controlled assets that release greenhouse gas emissions.

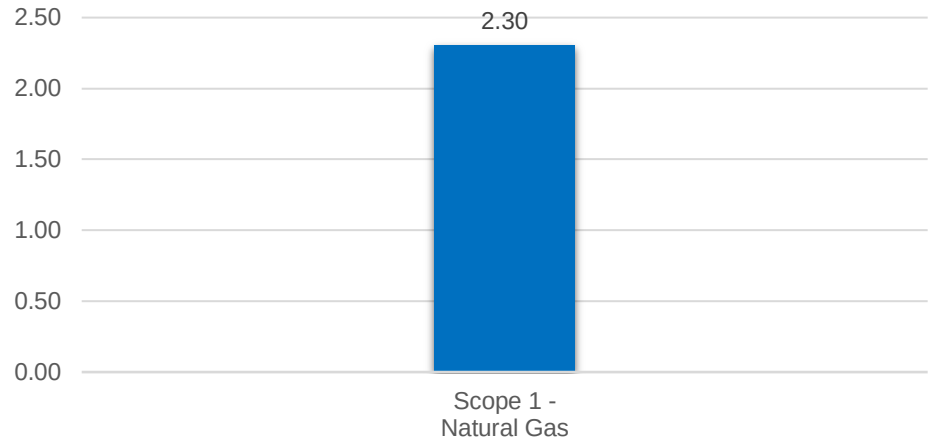

Figure 3: RIA 2020 – Scope 1 GHG Emissions (tCO_2e)

Total natural gas use at the RIA's office is assumed to have decreased relative to 2019. While raw activity data is not available for sub-metered utilities, natural gas was assumed to have declined in accordance with Section 3.5 due to decreased occupancy and heating demand resulting from COVID-19.

Figure 4 highlights the year-over-year changes associated with the RIA's Scope 1 greenhouse gas emissions.

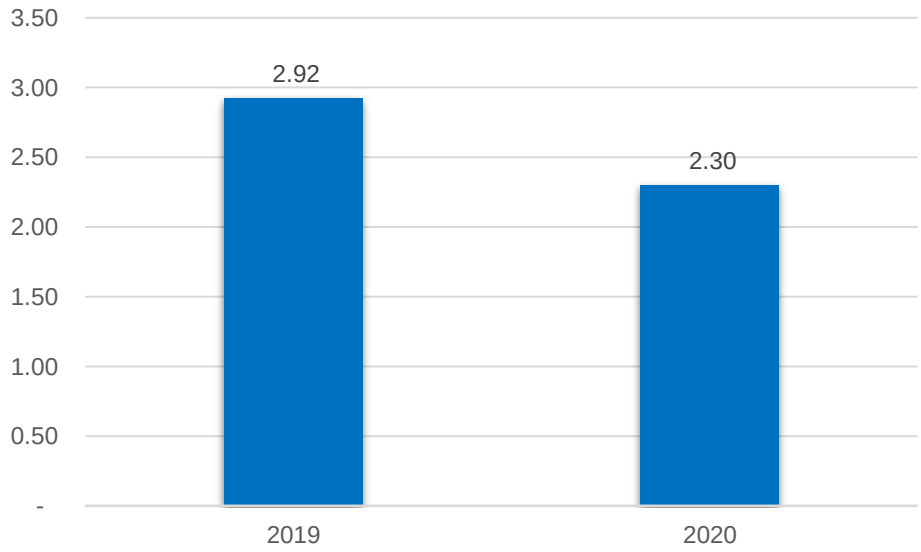

Figure 4: RIA – Scope 1 GHG Emissions (tCO_2e): Natural Gas (2019-2020)

4.2 Scope 2 GHGs

Scope 2 GHG emissions associated with the RIA's 2020 GHG Inventory were limited to 0.66 tCO_2e from grid electricity use at the organization's Toronto office. For reporting purposes, Scope 2 electricity emissions are calculated using the Location-Based method.

Figure 5 displays the RIA's 2020 Scope 2 electricity use emissions.

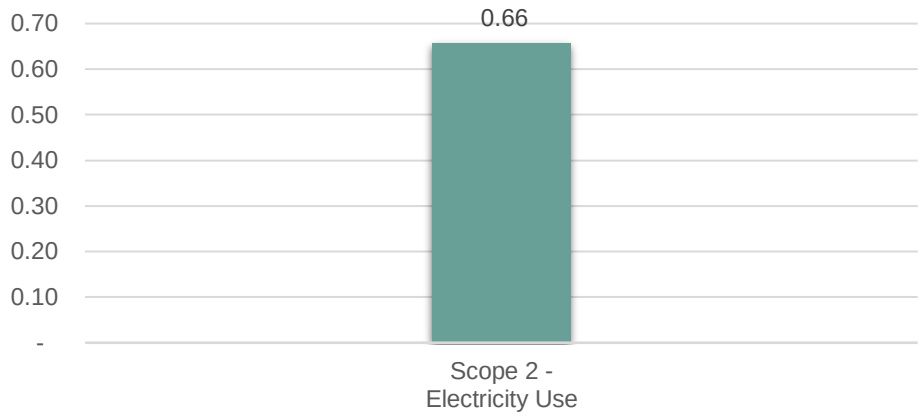

Figure 5: RIA 2020 – Scope 2 GHG Emissions (tCO_2e)

Total Scope 2 emissions from grid electricity use in 2019 and 2020 is shown in **Figure 6.** Despite electricity consumption decreasing in 2020 relative to 2019, emissions increased slightly due to the use an updated and more carbon-intensive emission factor now used for Ontario consumption.

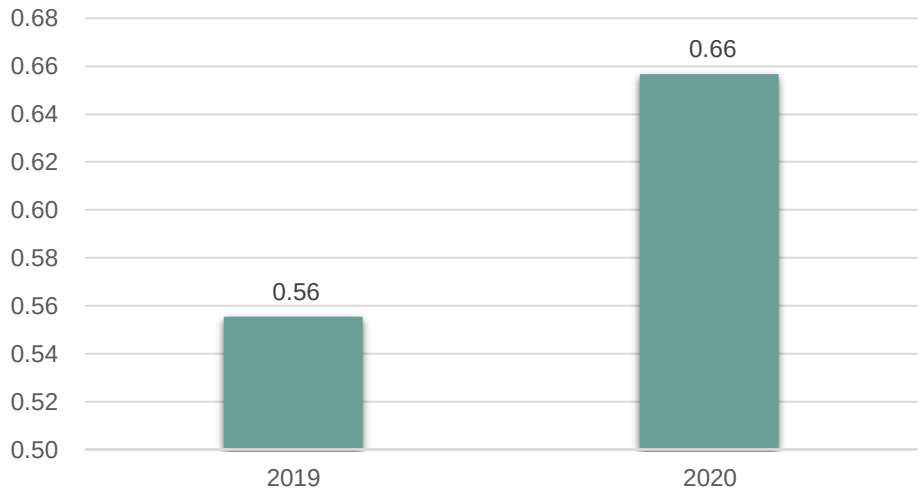

Figure 6: RIA – Scope 2 GHG Emissions (tCO_2e): Electricity (2019-2020)

4.3 Scope 3 GHGs

The RIA's Scope 3 emissions sources have historically been the most significant climate impact area for the organization as a result of its business air travel activities. In 2020, COVID-19 limited the organization's business travel, however it is important to note that the organization was on track to significantly lower its greenhouse gas emissions even if pandemic-related travel restrictions had not been put in place by various governments.

Figure 7 displays the RIA's 2020 Scope 3 greenhouse gas emissions totals.

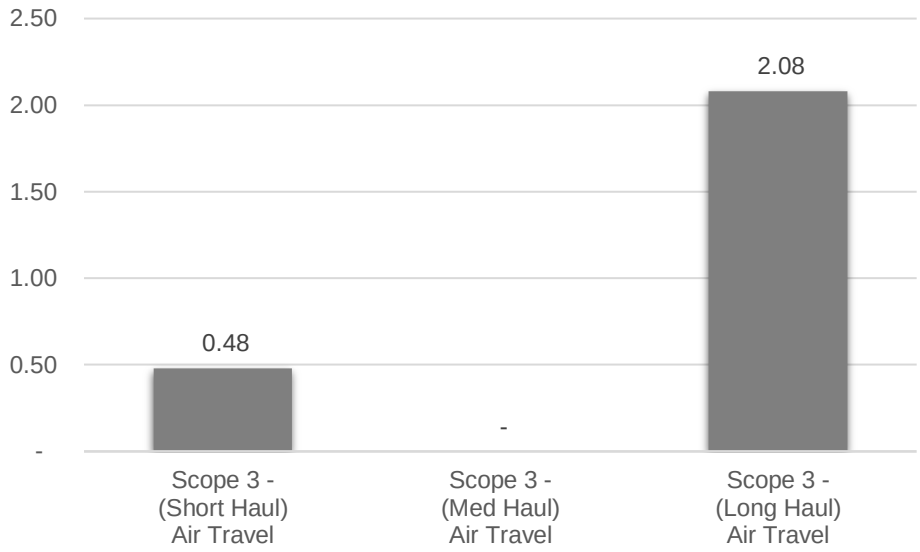

Figure 7: RIA 2020 – Scope 3 GHG Emissions (tCO_2e)

Figure 8 highlights the RIA's Scope 3 business travel emissions from 2019 and 2020. While minor reductions in emission factor intensities were observed in 2020 compared to 2019 factors, absolute emissions reductions were predominantly driven by the organization's efforts to decrease travel from January through March, as well as by travel restrictions caused by the COVID-19 pandemic.

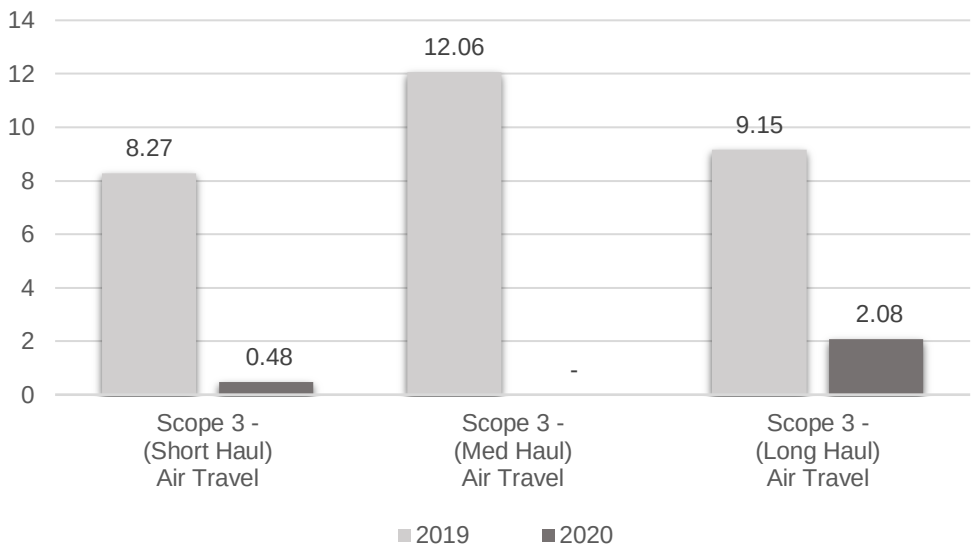

Figure 8: RIA Scope 3 GHG Emissions (tCO_2e) – Business Air Travel (2019-2020)

In 2020, from January 1 through March 15, the RIA booked just four return-travel trips, logging approximately 15,350 passenger-km of travel; this time period represents approximately 20% of the calendar year. Through extrapolation and by accommodating for an increase in Spring and Autumn travel, it is reasonable to project that the RIA was on track to log approximately 75,000 - 100,000 passenger-km of travel in 2020 had COVID-19 not restricted flights. Had this outcome materialized, it would have represented a considerable decrease in total passenger-km traveled relative to 2019 (133,646 p-km).

5.0 Virtual Events – GHGs

As a separate initiative to the organization's corporate GHG Inventory, Carbonzero has produced an estimate of the greenhouse gas emissions associated with the RIA hosting its two largest virtual events of the year – the two events were the RIA Conference 2020 and Diversity & Inclusive (D&I) Week 2020. This measurement builds on the organization's practices of measuring the carbon footprint of its events, which was restricted in 2020 due to COVID-19.

5.1 Virtual Events Methodology

Greenhouse gas emissions estimates were produced for both the server electricity use required to stream the event through Amazon Web Services (AWS) as well as attendee home office utility use (natural gas/heating oil and electricity). To calculate the server requirements of data transfer associated with video conferences, Carbonzero uses benchmark figures of 1.3 GB/person-hour of bandwidth (Taraspan) for

Video Conferencing and 5.12 kWh/GB of data transmission (EnerNoc). Note the 5.12 kWh/GB figure is reduced by a factor of 72% for AWS server usage based on an energy efficiency assessment on AWS servers performed by an external consultant. Carbonzero notes these figures represent estimates and that is has not received any specific AWS server level data estimates from Amazon or its partners.

State-level location-based electricity emission factors have been sourced for AWS server CoLo locations based on publicly available AWS server location data. Public data suggests that within the United States, 62% of server CoLo locations are in North Virginia; 13% in San Francisco; 13% in Washington; and 11% in Oregon. The weighted electricity grid location-based emission factor for these locations is 257 gCO_2e/kWh which has been used to calculate server-related electricity use.

Home office electricity and stationary combustion utility consumption was assumed to be representative of utility consumption averages for a 120-sq ft office in each province and was accounted for throughout the full itinerary of each event. Due to limited attendee counts and in following principles of materiality in GHG accounting, non-specified international locations in Tables 7 and 8 were assumed to have exhibited similar utility consumption rates per-day as those from Canadian provinces and exhibit similar electricity grid intensities as those seen in the United States, which is considered a moderately carbon-intense grid.

5.2 RIA Conference 2020

The RIA Conference had approximately 940 total attendees, with average session attendance totaling 530 people. In total, the event featured approximately 21.25 total session hours, which required an estimated total server electricity requirement of 20,989 kWh.

The majority of event attendees were from Canada (673) and were assumed to be distributed across each province/territory based on provincial populations. Other attendees were from Ireland (98), the United Kingdom (11), and a remaining few attended from other international locations. **Table 7** highlights the estimated GHG emissions associated with the conference's server electricity use and attendee home offices.

Table 7: RIA Conference 2020 – Server & Home Office GHG Estimates

RIA Conference 2020 – Estimated GHG Emissions		
Emissions Generating Activity	**Activity Data**	**GHG Emissions (tCO2e)**
Server Electricity Use	29,989 kWh	5.40 tCO_2e
Home Office Utilities (Canadian Attendees)	673 attendees	0.85 tCO_2e
Home Office Utilities (Ireland Attendees)	98 attendees	0.19 tCO_2e
Home Office Utilities (USA Attendees)	135 attendees	0.29 tCO_2e
Home Office Utilities (United Kingdom Attendees)	11 attendees	0.02 tCO_2e
Home Office Utilities (Other International Attendees)	11 attendees	0.03 tCO_2e
Total GHGs (tCO_2e)		**6.78 tCO_2e**

5.3 D&I Week 2020

Diversity and Inclusion Week had approximately 715 total attendees, with average session attendance totaling 175 people. In total, the event featured approximately 21.50 total session hours, which had an estimated server electricity requirement of 7,012 kWh.

Most event attendees were from Canada (622) and were assumed to be distributed across each province/territory based on provincial populations. Other attendees were from the USA (79), the United Kingdom (3), with the remaining few attending from other international locations. **Table 8** highlights the estimated GHG emissions associated with the conference's server electricity use and attendee home offices.

Table 8: D&I Week 2020 - Server & Home Office GHG Estimates

D&I Week 2020 – Estimated GHG Emissions		
Emissions Generating Activity	**Activity Data**	**GHG Emissions (tCO2e)**
Server Electricity Use	7,012 kWh	1.80 tCO_2e
Home Office Utilities (Canadian Attendees)	622 attendees	0.79 tCO_2e
Home Office Utilities (USA Attendees)	79 attendees	0.18 tCO_2e
Home Office Utilities (United Kingdom Attendees)	3 attendees	0.01 tCO_2e
Home Office Utilities (Other International Attendees)	11 attendees	0.03 tCO_2e
Total GHGs (tCO_2e)		**2.81 tCO_2e**

6.0 GHG Inventory Data Improvements

In order to produce an accurate and complete greenhouse gas inventory each year, attention should be paid to improving the quality of activity data when quality shortcomings are present. In the case of the RIA GHG Inventory for 2020, data quality improvements are generally limited to the measurement of office utilities at the Peter St. office, specifically for natural gas and electricity. Using a pro-rata method, which has been the case for the RIA since 2019, is seen as a necessary approach when sub-metering is unavailable, however it is a downgrade in data quality versus sub-metered utility data.

In the future, in the event of an office move, Carbonzero encourages the RIA to explore offices that offer sub-metered utilities for electricity and/or natural gas, which will help improve overall Scope 1 and 2 data quality. Nevertheless, Carbonzero recognizes this is not a near-term consideration for the RIA and as such acknowledges that this data quality improvement may be challenging to accomplish.

7.0 GHG Reduction Areas

To realize GHG emissions reductions in the future, the RIA should consider tactics and strategies that will help reduce the most significant sources of emissions across the organization and shift its focus to areas where the organization has adequate control over potential interventions.

Due to the nature of the RIA's GHG Inventory, and due to limitations expressed in Section 6.0, the RIA is best positioned to achieve GHG Reductions from its Scope 3 business air travel activities. **Table 9** provides recommendations for GHG reductions associated with the RIA's business air travel activities, which build on previously submitted recommendations in 2019.

Table 9 – GHG Emissions Reduction Recommendations

GHG Emissions Reduction Recommendations	
Business Air Travel	Using their experiences throughout COVID-19, engage the RIA staff and leadership team to better understand the benefits and challenges of replacing business air travel with video conferencing solutions. Consider drafting a set of parameters that either promote or discourage business travel to various sites depending on the particular reason for the visit, which may eventually form a **Business Air Travel Policy**. Business air travel represents the greatest potential area of GHG reductions for the RIA – however Carbonzero notes that the RIA had made considerable progress in reducing its 2020 Q1 flights before the COVID-19 pandemic further restricted air travel, as outlined in Section 4.3.

8.0 Future Reporting

Through the delivery of this report, Carbonzero has completed the measurement and reporting for the RIA's 2020 GHG Inventory as well as the organization's 2020 virtual events. As the RIA looks ahead to its 2021 GHG Inventory assessment, Carbonzero encourages the organization to consider some of the emissions reduction tactics outlined in this report. The next reporting period for the RIA's GHG Inventory will cover the period from January 1, 2021 to December 31, 2021.

9.0 Conclusion

The 2020 GHG Inventory for the RIA has been completed by Carbonzero, with emissions totals amounting to **5.52 tCO_2e**. Further, the RIA has estimated the GHG emissions associated with the 2020 RIA Conference and D&I Week, which produced an additional **6.78 tCO_2e** and **2.81 tCO_2e**, respectively.

In support of its alignment to the Paris Agreement goals, the RIA is offsetting 145% of both its corporate GHG Inventory and its virtual events carbon footprint. In total, the RIA is offsetting **22.00 tCO_2e** of greenhouse gas emissions through Carbonzero projects, with the RIA's offsets being retired on the Carbonzero Registry and issued via a digital carbon offset certificate. Upon delivery of the certificates from Carbonzero, the RIA can make claims surrounding carbon neutrality relative to the scope of the assessment covered in this report.

We look forward to continuing our work with the RIA.

References

Data Center Dynamics - WikiLeaks publishes list of AWS data center locations, colo providers (2018)

EnerNoc Utility Solutions - The Megawatts behind Your Megabytes: Going from Data-Center to Desktop (2012)

Environment Canada – Submission to the UNFCCC: Canada National Inventory Report (2020)

Natural Resources Canada – Comprehensive Energy Use Database – Offices (2016)

UK DEFRA Carbon Conversion Factors – Condensed Set (2020)

US EIA – State Energy Profiles (OR, CA, WA, VA) (2020)

Taraspan - Bandwidth Requirement for HD Video Conferencing in 2020 (HD/FHD/4K)

The Carbon Reduction Opportunity of Moving to Amazon Web Services – Commissioned by AWS; 451 Research (2019)

WBCSD & WRI - The Greenhouse Gas Protocol – Corporate Accounting & Reporting Standard (revised version), (2013)