



Firefly

2020

**Carbon Footprint and
Climate Commitment**



Executive Summary

Firefly GHG Consulting is a specialist GHG consultant based in Calgary, AB, Canada. This is our second annual carbon footprint report, and covers our activities for the calendar year 2020. We are proud to have been become a carbon-neutral business in 2020, offsetting all of the emissions that we released. We continue to work to understand and reduce our own footprint and to help our clients to do this too.

Our 2020 greenhouse gas emissions inventory was prepared in line with ISO 14064-1:2018, the international standard for organizational GHG inventories.

Our footprint in 2020 was 0.97 tonnes CO₂e, of which over 80% came from our office (heating, lighting, power and hot water). Our travel impact was greatly reduced in 2020, due to COVID-19 travel restrictions. This, together with the ongoing “greening” of the Alberta electricity grid, contributed to a lower level of emissions activity in 2020.

In addition, the impact of emission reduction initiatives undertaken in 2019 - such as switching from an internal combustion engine vehicle to a battery electric vehicle for most local business trips - helped reduced our footprint. We also installed a solar PV system in

late 2020 that contributed additional reductions by allowing us to use our own clean electricity for our office and vehicle. **These actions reduced our footprint by at least 0.07 tonnes CO₂e in 2020** and we expect the impact of this measure to be much greater in 2021 and future years.

In addition, we purchased 100% ECO Logo certified green electricity, exported surplus clean electricity to the grid, and funded tree planting to **offset our remaining footprint and become carbon neutral.**

For more information on Firefly GHG Consulting and how we can help you understand and reduce your carbon footprint, please visit us online at www.fireflyGHG.eco.



About Firefly

Firefly GHG Consulting is a specialist greenhouse gas management consultancy based in Calgary, AB, Canada.

Climate change is probably the greatest environmental problem that humanity has faced; we envision a future where our children can be proud of the actions that we took to be a part of the solution.

Firefly was founded in 2016 and offers professional support to organizations to reduce their carbon footprint through services such as: greenhouse gas inventories, reduction and offset projects, grant applications, market assessments, validation/pre-verification screening and GHG training.

Our **mission** is to help you be a proud part of the climate change solution.

Our **vision** is that, working with our clients, we will identify >1 million tonnes CO₂e (carbon dioxide equivalents) of viable emission reductions by the end of 2021, and work to support their implementation.

Firefly has three core **values**:



Respect is our foundation. We will conduct all of our activities with respect. This means respect for ourselves, through looking after health, wellbeing

and family and refusing to compromise on our ethics; respect for our clients, by always providing professional, honest and competent work and advice; and respect for our environment, by always working with its best interests at heart.



We will add value. We will engage only in projects where we believe that our contribution will make a difference. We will choose to work with clients who genuinely want to effect change.



We will walk the talk. We will be the change we want to see. We will understand our own carbon footprint and take actions to minimize it.

We currently have one full-time employee, and are a home-based business.

Our Carbon Footprint

To manage and reduce our greenhouse gas emissions it is essential that we understand them; what activities are contributing to our footprint, and in what proportion. This understanding provides the foundation for an effective, targeted plan of action. This is our second greenhouse gas inventory and is compared against our 2019 baseline.

Firefly's carbon footprint has been calculated following our *Corporate Greenhouse Gas Inventory Methodology Document of May, 2019*. In accordance with best practice, this is based on international standard ISO 14064-1:2018 ('the ISO standard'). The following summarises the key components of our quantification approach:

- Natural gas and electricity consumption volumes are calculated from invoices, apportioned for floor area.
- Car travel is tracked and distances are converted into fuel volumes.
- Emission factors for fuel consumption and electricity use are taken from Canada's *National Inventory Report (2020)*.
- Fuel heating values are from the National Energy Board.

- Vehicle fuel efficiencies are from the US EPA (www.fueleconomy.gov).
- Bus emissions intensity is from Canada's Office of Energy Efficiency.
- Air travel emissions are calculated using the International Civil Aviation Organization (ICAO) Carbon Emissions Calculator.
- 100-year Global Warming Potentials are from the most recent IPCC publication (the 5th Assessment Report).

Our key emission sources are:



Our office. Direct emissions are created by combusting natural gas for space and water heating. Indirect emissions are created when electricity is consumed for lighting, power and secondary space heating.



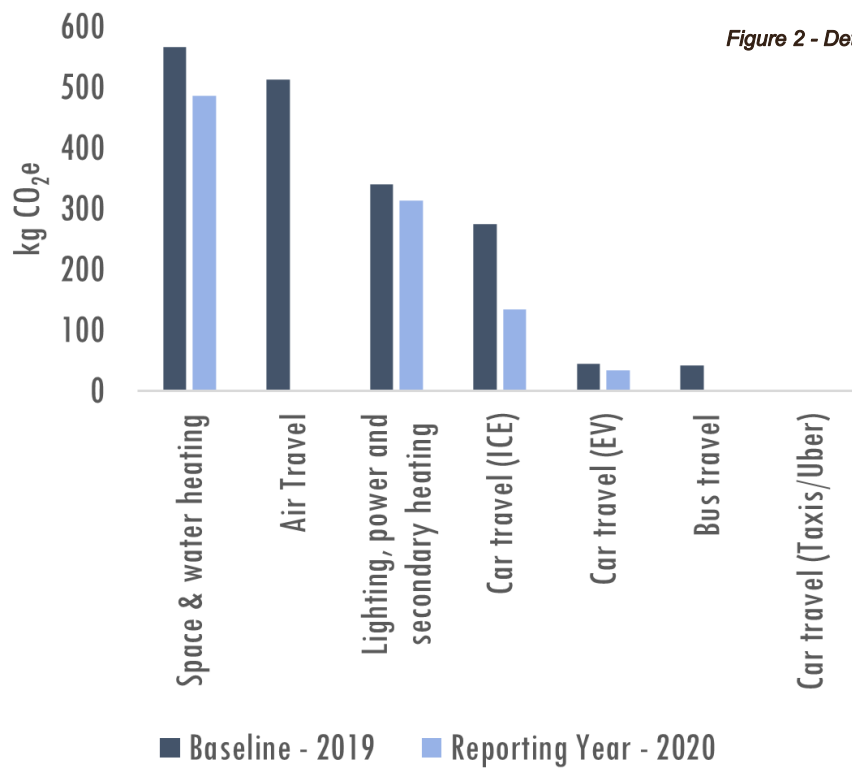
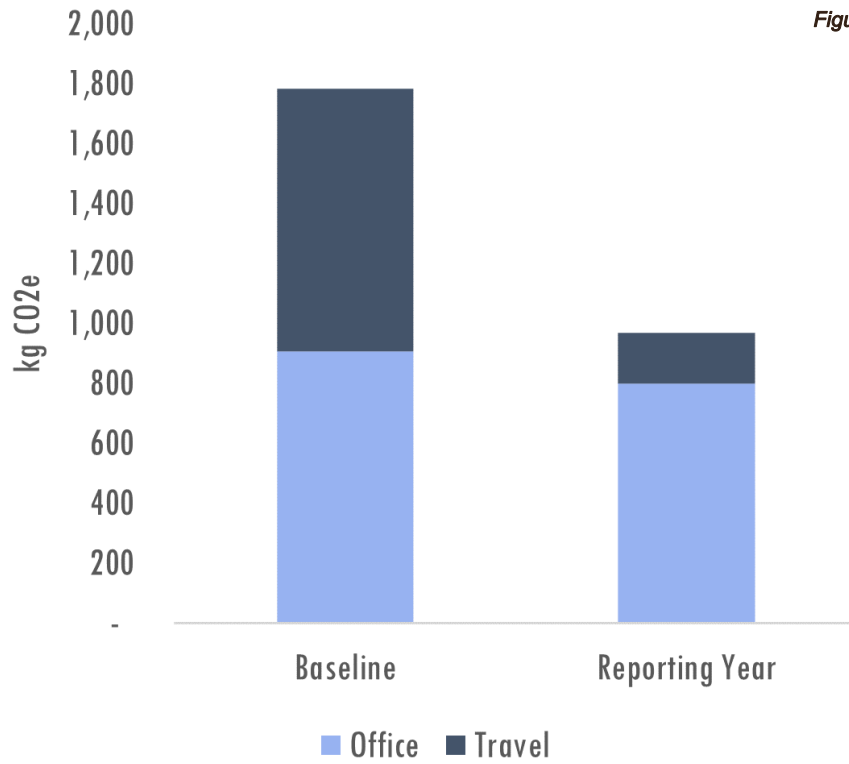
Our corporate travel. Direct emissions are created when an employee travels using their own car, and indirect emissions when using a taxi, bus or airplane to meet clients, attend conferences or to go on-site. In 2019 we purchased a BEV (**battery electric vehicle**) - this has a maximum range of ~120km and is used for local travel.

The results of our 2020 inventory are shown in Figure 1 and Figure 2 on the next page, compared against our 2019 baseline. Our 2020 carbon footprint was 0.97 tonnes CO₂e (or 969 kg CO₂e). This was 46% lower than 2019's footprint of 1.78 tonnes CO₂e (1,784 kg CO₂e).

As shown, the largest reduction was in our travel footprint, which was greatly reduced due to travel restrictions related to COVID-19. Our travel related emissions fell from 876 kg CO₂e in 2019 to only 168 kg CO₂e in 2020. No flights or long-haul bus trips were taken in 2020, and the majority of local travel was replaced with video conferencing.

Emissions from our office also fell, however, from 908 kg CO₂e to 801 kg CO₂e. Emissions associated with heating were reduced, and emissions from electricity also fell, due mainly to the “greening” of the provincial grid - the emissions intensity of which fell from 800 kg CO₂e/kWh to 680 kg CO₂e/kWh between 2019 and 2020.





Our Emission Reductions & Offsets

Firefly implemented a number of projects to directly reduce our carbon footprint, without which our footprint would have been 7% larger in 2020. In addition, we voluntarily purchased 100%, ECO Logo-certified green electricity, exported solar power and funded tree planting sufficient to reduce our net footprint to 0 tonnes CO_{2e}. In other words, our 2020 operations achieved a **net zero emissions footprint**.

Avoided Emissions

We have taken several actions that have directly avoided emissions being released in 2020 (note that details relating to actions taken from previous years are included in those years' reports).

- #1 - 2019 - *Energy efficient office retrofit* and #2 - 2019 - *Reduced hot water tank temperature setpoint*. The impact of these measures is not quantified as the office is not sub-metered.
- #3 - 2019 - *Use of Battery Electric Vehicle* - In total, 242 business kms were travelled in the BEV in 2020, avoiding 50 kg CO_{2e}.
- #4 - 2020 - *Installation of 8.04kW solar PV system*. In late September 2020, we energised a solar PV array comprising 24 individual solar PV

panels. 817 kWh of solar electricity was generated in 2020, with 348 kWh used internally and 469 kWh exported to the grid. Not all of this can be attributable to Firefly, as this is shared on the same basis as our other utilities. For 2020, therefore, 59.84 kWh is attributable to Firefly, avoiding 17.3 kg CO_{2e} (internal consumption). As this system was installed near the end of 2020, and shortly before the onset of winter, the impact of this action is significantly lower in 2020 than will be the case for future reporting years.

Purchased Reductions and Offsets

- #5 - *Purchase of 100% green electricity* - Firefly pays a premium to purchase 100% ECO Logo-certified green electricity. This further offset all of our electricity imports, reducing our footprint by 314 kg CO_{2e}.



- #6 - *export of clean energy* - when excess electricity is being generated by our solar PV system, this clean energy is exported to the provincial grid for consumption by other users. This offset another 23 kg CO₂e in 2020.
- #7 - *tree planting* - Firefly partnered with Canadian based social enterprise, TreeEra (<https://treeera.com>), to directly fund the planting of 267 mangrove trees in Madagascar by Eden Reforestation. These are anticipated to remove 20 tonnes CO₂e over their lifetime.

The net impact of these actions is summarised in Figure 3 (next page).



Firefly



Funded the planting of 267 trees in 2020 with  TreeEra.

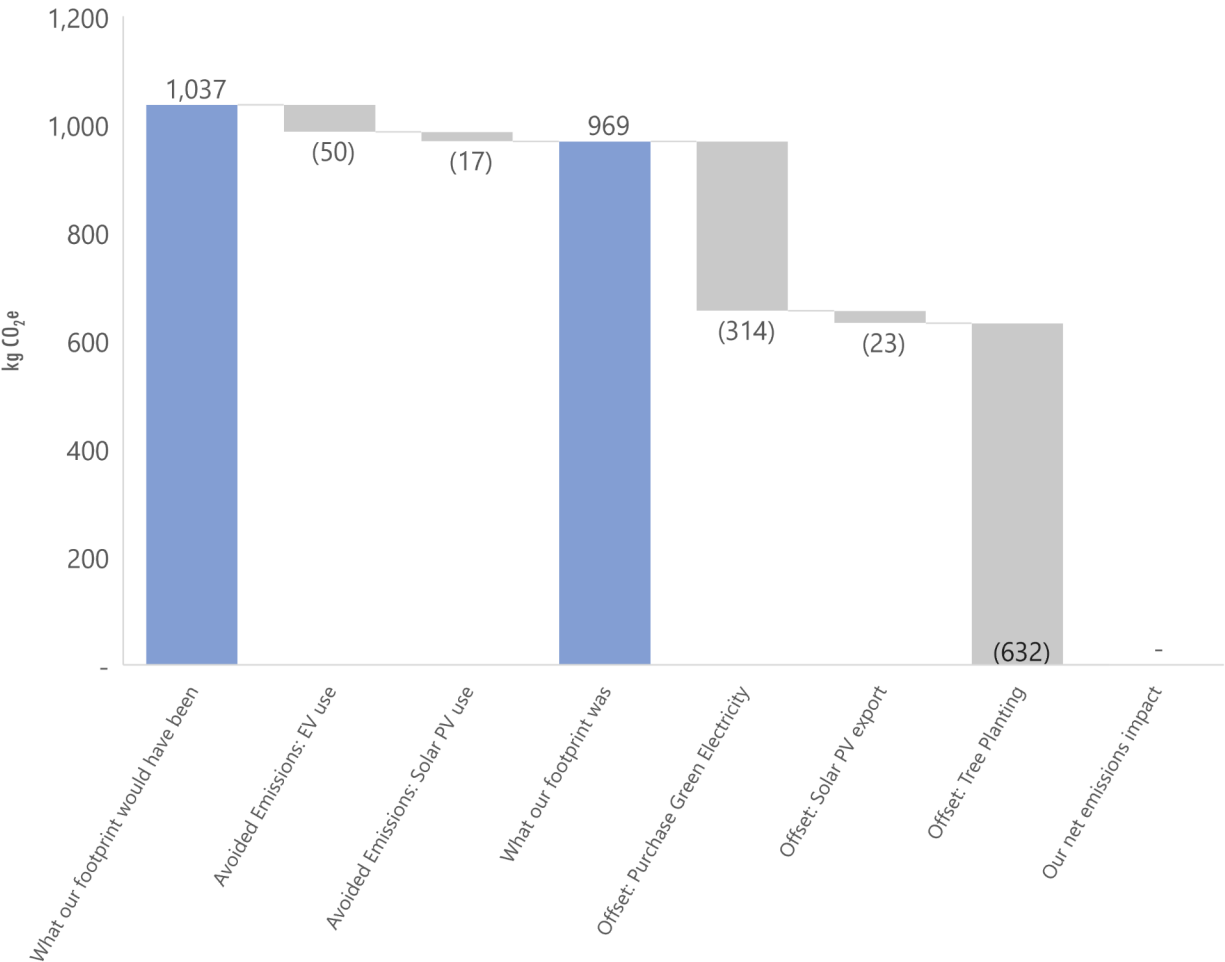


Our 2020 footprint was 0.97 tonnes CO₂e.

Without the actions we took, our footprint would have been 1.04 tonnes CO₂e.

We offset our footprint to achieve our goal of 0 tonnes CO₂e (net zero emissions).

Figure 3 - How We Got To Net Zero Emissions



Our Climate Commitment & Action Plan

We firmly believe that the issue of Climate Change can only be solved by collective action. This means that we all need to play our part, no matter how big or how small our impact is. Firefly is determined to do our part by “walking the talk” on emissions reporting and reductions: **we commit to releasing an annual carbon footprint report and operating as a net zero emissions business.**

We continue to seek ways to minimize our carbon footprint. During 2021, we intend to:

- *Avoid and/or reduce travel-related emissions* - 2020 has shown how we can exercise control over our travel footprint. We will continue to choose video conferencing over long-distance travel, and to choose low or no carbon travel options (our EV, long-haul bus travel, bicycles) where travel is required.
- *Use green electricity* - we will continue to purchase 100% ECO Logo certified green electricity, ensuring that all of our imported electricity consumption is matched by 100% green electricity production, and
- *Purchase high-quality emission offsets* - for emissions that we cannot reduce we will continue to purchase high-quality emissions offsets.



We also intend to expand the scope of our carbon footprint to include ‘Scope 3’ (or ‘value chain’) emissions sources such as the purchase/use of office paper, IT equipment and sub-consultants. Our 2021 inventory will report on these Scope 3 emission sources for the first time.





Firefly

+1 (403) 402-8993

www.fireflyGHG.eco

graham@fireflyGHG.eco

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