

2023
Geelong
Business
Excellence
Awards



A Geelong Chamber of Commerce initiative

Carbon Footprint Estimation

**2023 Geelong Business Excellence
Awards Presentation Event**

Carbon Footprint Report

Carbon Footprint Estimation



September 2023

Carbon Footprint



The Kyoto Protocol has identified six greenhouse gases that are contributing to Climate Change. Human activities release these gases to the atmosphere.

As the greenhouse effect is different for each gas, the concept of carbon dioxide equivalent ($\text{CO}_2\text{-e}$) was created. The Greenhouse gases (GHG) are:

Carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

$\text{CO}_2\text{-e}$ signifies the amount of CO_2 which would have the equivalent global warming impact. It allows us to combine emissions from different gases into a single number



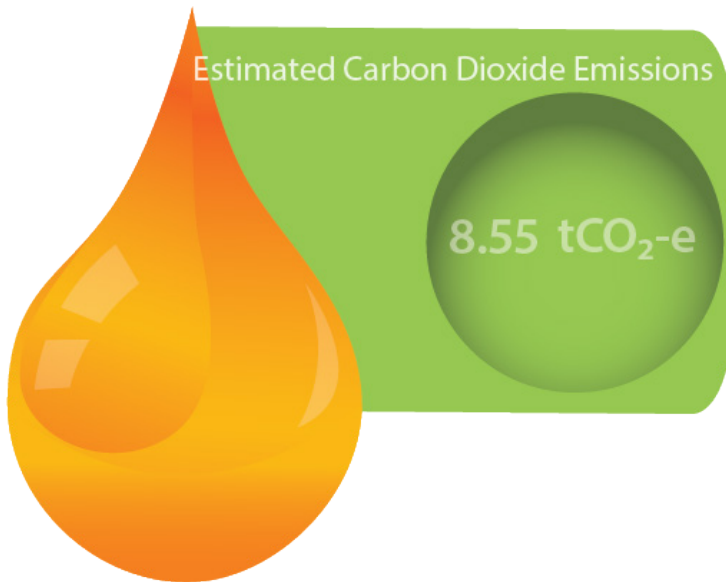
Limiting
Temperature
Increase to
 1.5°C

Greenhouse Gases Emissions

Organisational Boundaries

The event is organised by the Geelong Chamber of commerce and its purpose is to recognise and celebrate the finalists and winners of the 2023 Geelong Business Excellence Awards.

The event will take place at GMHBA Stadium, Presidents Room, Level 2, Brownlow Stand, Geelong 3220.



8,550 kg CO₂-e

Expected emissions for the event.

790 Attendees

790 attendees are expected and 20 people will work at the event.

4.5 Hours

Expected duration is 4.5 hours, however, the calculations were based on a eight hours window, to consider pre and post-event activities

The Profile Of Our Emissions

An Australian household generates in 173 days a similar amount of carbon as our event: 8.55 tonnes of CO₂-e

Emissions generated by the event come from several sources: car travel to the event from participants and staff, meals, waste sent to landfill, heating and cooling of the event room, and promotional materials.

Each Australian household releases 18 tonnes of carbon each year (EPA Victoria 2021).





3.00 tCO₂

Participants and Staff Travel

It was considered 650 participants will travel in private car a distance of 8.5 km in average. It was estimated that 116 participants will use car pooling, taxi, or car share to attend to the event. Finally, it was estimated that 40 participants will travel a distance of 41 km to attend to the event. The average distances for participants was estimated using the Climate Active Events Calculator (www.climateactive.gov.au).

Petrol combustion generates three greenhouse gases from the Kyoto protocol: carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O). The emissions were calculated using the Australian



0.16 tCO₂

Staff Travel

It was considered 20 staff will work on the event. The distance travelled by each staff member is 8.5 km one way.

The emissions were calculated using the Australian National Greenhouse Accounts Factors (Australian Government 2020).



0.29 tCO₂

Dinner - Entrees

570 vegetarian entrees were estimated to be prepared and served during the event. In order to calculate carbon dioxide emissions, each entree was considered to have 200 grams of vegetables and 50 grams of dairy products (cheese, cream, butter).

The emissions to produce fresh produce and ingredients were calculated using the study 'Systematic review of greenhouse gas emissions for different fresh food categories' (Clune et al., 2017). Cooking emissions were calculated using the study 'Impacts of home cooking methods and appliances on the GHG emissions of food' (Frankowska et al., 2020).



3.86 tCO₂

Dinner - Mains - Beef

545 mains containing beef were estimated to be prepared and served during the event. In order to calculate carbon dioxide emissions, each main was considered to have 226 grams of beef and 300 grams of vegetables.

The emissions to produce the beef were calculated using the study 'Carbon footprint for Australian agricultural products and downstream food products in the supermarket' (Eady et al., 2011). The beef cooking emissions were estimated using the study 'Carbon footprint of organic beef meat from farm to fork: a case study of short supply chain' (Vitali et al., 2020)

The emissions to produce fresh produce and ingredients were calculated using the study 'Systematic review of greenhouse gas emissions for different fresh food categories' (Clune et al., 2017). Cooking emissions were calculated using the study 'Impacts of home cooking methods and appliances on the GHG emissions of food' (Frankowska et al., 2020).



4.00 tCO₂

Dinner - Mains - Vegan and Vegetarian

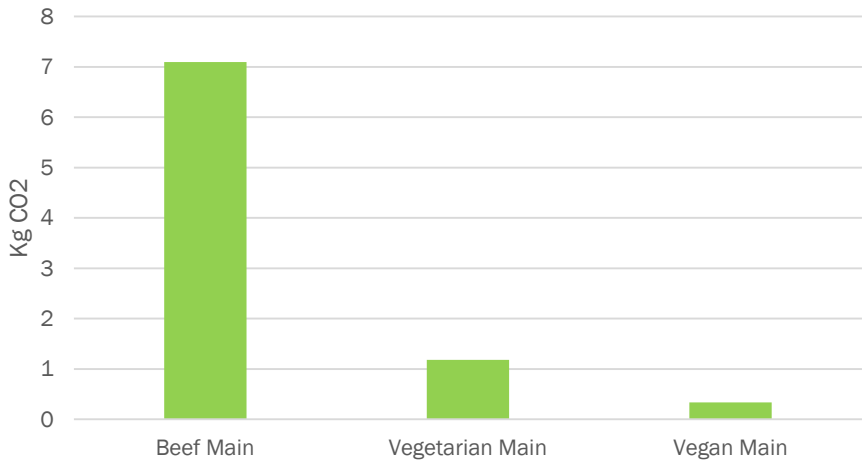
20 vegetarian, 10 vegan and 780 meat mains were estimated to be prepared and served during the event. The entrée is vegetarian and we estimated 810 vegetarian entrées for the event. We also estimated 2 drinks per person in average. The emissions were calculated using the Climate Active Events Calculator (www.climateactive.gov.au)

The estimated emissions are:

- Vegan: 15 kg CO₂-e
- Vegetarian: 1,463 kg CO₂-e
- Meat: 1,618 kg CO₂-e
- Drinks: 941 kg CO₂-e



GHG Emissions per serve





0.28 tCO₂

Dinner - Desserts

565 vegetarian desserts and 5 vegan desserts were estimated to be prepared and served during the event. In order to calculate carbon dioxide emissions, each vegetarian dessert was considered to have 25 grams of eggs, + 50 grams of flour, 50 grams of cream, 35 grams of sugar, and 50 grams of fruits. Each vegan main was considered to have 150 grams of fruits, 50 grams of coconut milk, 10 grams of nuts, and 20 grams of blueberries.

The emissions to produce fresh produces and ingredients were calculated using the study 'Systematic review of greenhouse gas emissions for different fresh food categories' (Clune et al., 2017). Cooking emissions were calculated using the study 'Impacts of home cooking methods and appliances on the GHG emissions of food' (Frankowska et al., 2020).



0.21 tCO₂

Drinks

500 cups of tea and coffee and 200 bottles of wine were estimated to be consumed during the event. The water consumed during the event was considered to be tap water, therefore, its emissions are irrelevant.

Wine emissions were calculated using the study 'Getting it Straight: Exact Carbon Emissions From One Bottle of Wine' (Buehner, 2012). Emissions from tea and coffee were calculated using the study 'Greenhouse Gas Emissions and the Australian Diet—Comparing Dietary Recommendations with Average Intakes' (Hendrie et al., 2014). Tea and coffee preparation emissions were calculated using the study 'Impacts of home cooking methods and appliances on the GHG emissions of food' (Frankowska et al., 2020).

0.42 tCO₂

Waste

Waste related emissions include emissions from disposal and treatment of waste generated during the event. This category includes emissions from disposal of solid waste. Wastewater emission were considered irrelevant for the event. We have used Waste-type-specific method, which involves using emission factors for specific waste types and waste treatment methods. The emissions were calculated using the Greenhouse gas (GHG) Inventory and management plan 2019–2020 (EPA Victoria 2020) and the Climate Active Events Calculator.

We have considered recycled waste as having zero net emissions.

It was considered that only a small portion of the food goes to landfill - 35% of a 240 litres bin is filled with food waste. The emissions factor is 1.9 kg CO₂-e/kg³. Therefore, the emissions are 0.042 tCO₂-e.



0.21 tCO₂

Promotional Materials

Promotional material emissions are related to the production and disposal of promotional material. 20 glass trophies will awarded during the event. Each trophy weigh 0.9 kg.

There will be 400 Presentation Booklet of 20 pages. The estimated weight of each booklet is 0.2 kg. The event organiser will use a media wall whose weight is 3.3 kg. Finally a banner will be reused, just the skin of banner will be replaced. The estimated weight 0.47 kg.

Paper emissions were calculated using the Greenhouse gas (GHG) Inventory and management plan 2019–2020 (EPA Victoria, 2020). The emissions factor is 2.8 kg CO₂-e/kg.

Glass production emissions were calculated using the study 'Getting it Straight: Exact Carbon Emissions From One Bottle of Wine' (Buehner, 2012). The emissions for glass is calculated 39% of the bottle of wine emissions. We have considered the weight of an empty bottle 0.5 kg. The glass emissions factor is $EF = 0.39 * 1.2144 / 0.500 = 0.95 \text{ kg CO}_2/\text{kg}$.

Waste emissions were calculated using the Greenhouse gas (GHG) Inventory and management plan 2019–2020 (EPA Victoria 2020). We have estimated that 50% of the paper goes to landfill. The emissions factor for cardboard and paper which have gone to landfill is 2.9 kg CO₂/

kg.





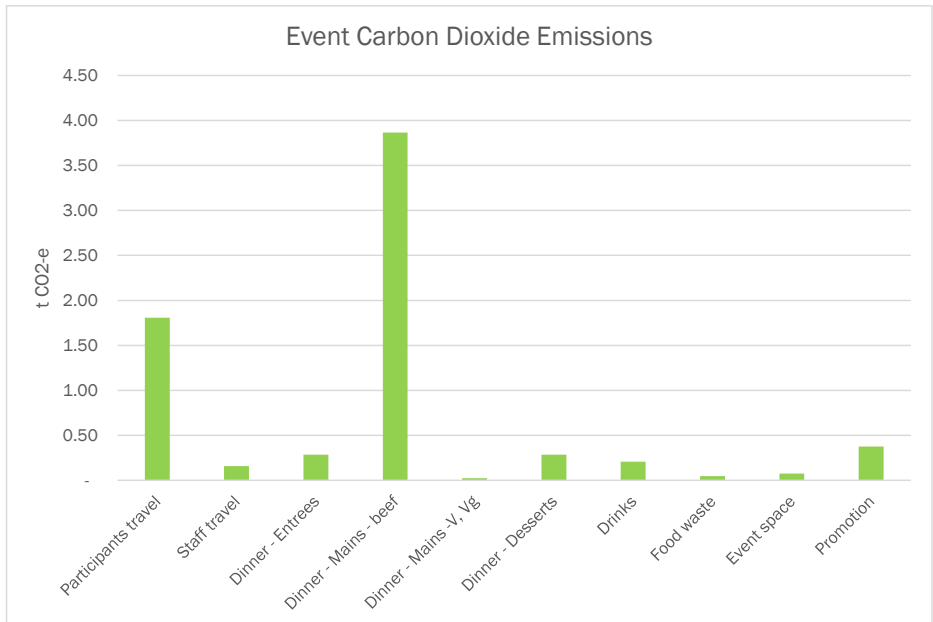
Event Space

Under Event Space we calculate the carbon footprint resulting from powering and temperature-controlling the event space.

It was considered that area of the room was 600 m² -standard area to host 500+ people. The emissions intensity is 138 kg CO₂-e/m² per year (ClimateWorks Australia, 2013). We considered the duration of temperature control as 8 hours. Therefore, the emissions are 0.08 tCO₂-e.



Event CO₂ Emissions





0.09 tCO₂

Electricity

Generating electricity and heat by burning fossil fuels – coal, oil, or gas – causes a large amount of the greenhouse gases, such as carbon dioxide and nitrous oxide. Most electricity in Victoria is still generated by burning fossil fuels, but cleaner sources of energy are gaining ground.

Electricity emissions mainly produce scope 2 emissions. We estimated that the event will use six hour of electricity for lighting and temperature control on a room of 600 sqm.

The emissions were calculated using the Australian National Greenhouse Accounts Factors (Australian Government 2020) and the Climate Active Electricity Calculator, Location based approach (www.climateactive.gov.au). A location-based method reflects the average emissions intensity of grids on which energy consumption occurs (using mostly grid-average emission factor data)



0.63 tCO₂

Uplift

An uplift factor is used to increase the estimated emissions from an activity, usually by a risk-adjusted proportion or percentage. Uplifts help to reduce the risk of emissions being underestimated in the carbon account. The uplift applied are:

- Higher number of attendees - 2% uplift
- Uncertainty on distance travelled - 2% uplift
- Food emissions - higher weight of meat per meal - 2% uplift
- Event Preparation - 2% uplift

below 1.5°C - Paris Agreement target

We **aim at** Limiting Temperature rise **Well Below 2°C And Preferably to 1.5°C**

Keeping the global mean temperature increase below 1.5 °C, in accord with the Paris Agreement, would require prompt and substantial reductions in greenhouse gas emissions on a global scale

A collective effort from the whole society is required to identify, reduce and offset Greenhouse gas emissions to achieve carbon neutrality

Geelong Chamber of Commerce



Recommendations

Reducing carbon dioxide emissions requires changes to our processes and operations. At the same time significant savings can be achieved by a better use of energy and resources.



Less Meat

- Reduce the amount of meat on the meals. Consider using vegan proteins. Minimise the utilisation of dairy products. Vegan dishes save up to 90% of emissions (UN News, 2018)



Green travel

- Organise and promote carpooling for participants and staff. e.g <https://car-poolorganiser.com/>
- Encourage the use of bikes or electric vehicles
- Organise couch travel when possible



Carbon Neutral Paper

- Use Carbon Neutral paper when printing: Carbon Neutral paper adds no carbon dioxide to the atmosphere. There are brands in the market certified as Carbon Neutral



Going Digital

- When possible use QR-codes for event related information and promotional material
- Minimise the amount of printed material produced for the event



Sustainable Options

- Avoid single-use items as a way to reduce emissions and avoid harming wildlife
- Minimise the use of plastic: plastics are made from fossil fuels
- Consider using living plants for the event



Tap Water

- CO₂ emissions to produce a standard 335ml of water in a plastic bottle are 5,000 higher than the emissions released to produce the same amount of tap water - 214 gr vs 0,043 gr CO₂ (TAPP Water, 201), (Alter, 2021)
- Use tap water during the event

The Impact Of Our Emissions

10 Hectares

of Tropical Forest

we need 10 hectares of mature tropical forest to absorb 8.55tCO₂-e (Phillips and Brienen 2017).

880 Kg of CO₂

per hectare

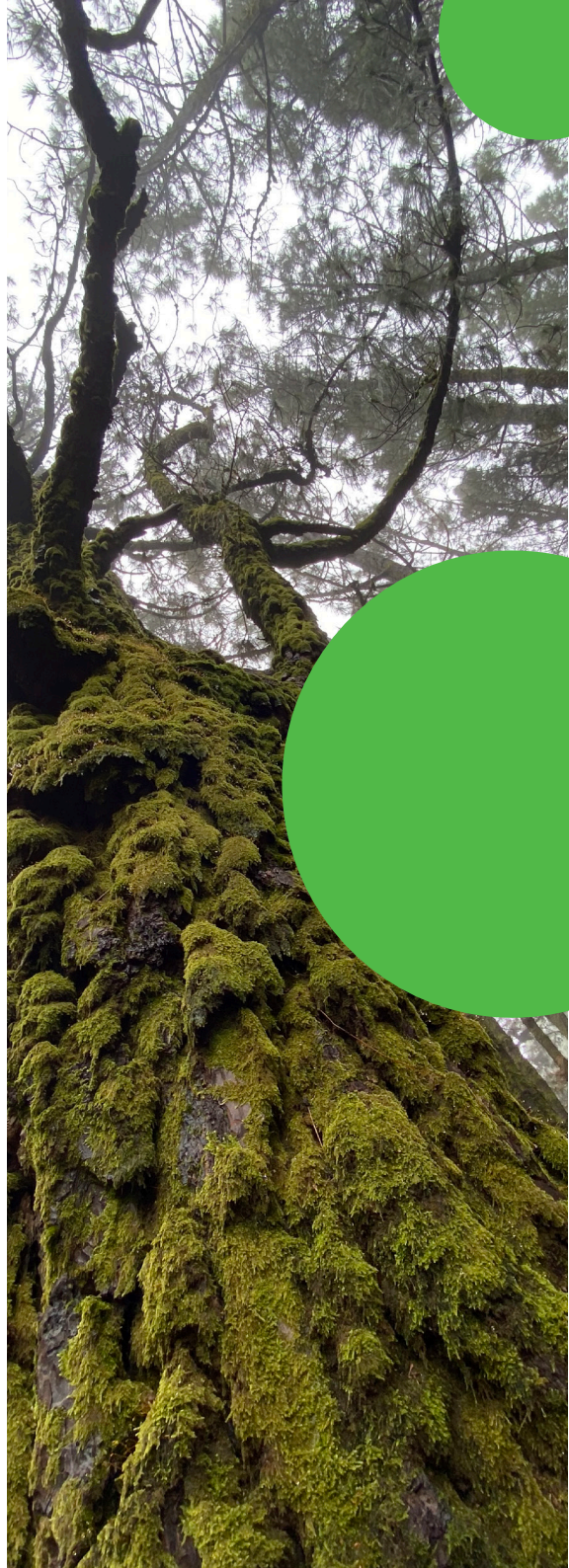
An hectare of mature tropical forest absorbs 880 Kg of carbon per year.

2030

Carbon Neutrality

A collective effort from the whole society is required to identify, reduce and offset Greenhouse gas emissions to achieve carbon neutrality by 2030.

ClimateSociety



Method to calculate Our Emissions



GHG Protocol

A comprehensive global standardized frameworks to measure and manage greenhouse gas (GHG) emissions

GHG Protocol

Corporate Accounting and Reporting Standard

The GHG Protocol is considered by to be the most widely used in the reporting of carbon at all corporate levels. The protocol works with industry to provide a robust methodology to enable the effective calculation of carbon for business (WRI and WBCSD).

Reducing Our Waste- age



Our food wastage is very low. The ability to use food across multiple areas in the stadium gives us a big advantage.

Our methods of reducing our wastage for an events such as the Excellence Awards include:

- Food purchased and not used on the night will be used in producing specials in the Charles & Co. Café
- Separated food bins when disposing of food items
- Multiple use of food items, for example making stocks
- Food items donated to local charity or used for staff meals
- Food will be used for Staff and player meals
- Food will be used on Conference and Events

Offsetting Our Emissions



How we offset emissions? There are international and local projects that either avoid or reduce carbon dioxide emissions and provide carbon credits.

The Carbon Offset Platform (<https://offset.climateutralnow.org/AllProjects>)(United Nations, 2021) allows to choose the project where we can invest in carbon credits -called Certified Emission Reductions (CERs)- to offset emissions.

There are also Australian projects that provide carbon credits:

- Australia's Carbon Marketplace (<https://marketplace.carbonmarketinstitute.org/>)
- Carbon Offsets Australia (<https://carbonoffsets.online/>)
- Tasman Environmental Market (<https://www.tasmanenvironmental.com.au/>)

Offsetting projects: replacing use of fossil fuels, reducing energy consumption or capturing carbon from the atmosphere by reforestation and forest generation

All Starts With a Pledge



CARBON NEUTRAL PLEDGE

United Nations

The pledge is our commitment to make the efforts to achieve carbon neutrality. We commit ourselves to working for reduction and avoidance -where possible- of carbon emissions. It is a pledge to next generations that will have a profound impact on our planet.

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Clever. Creative. Connected.