



THE CO₂ BREAKDOWN

**CALCULATING YOUR
CORPORATE CARBON
FOOTPRINT**

PREPARED BY

VG Verdical Group

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THE CARBON PROBLEM

Carbon absorbs heat and re-releases it back toward the planet's surface, raising the global surface temperatures.

Carbon dioxide—often referred to in the climate discussion as simply “carbon,” despite being just one compound of the building block of life—is a crucial subject of study and debate in the 21st century. Carbon dioxide is a vital greenhouse gas within Earth’s atmosphere, absorbing heat and re-releasing it back toward the planet’s surface, which raises the global surface temperature and contributes to global climate change. The gas also dissolves into the world’s oceans much like it would into a can of your favorite soda, reacting with seawater to form an acid that lowers the ocean’s pH levels and causes ocean acidification. Global temperatures have varied throughout Earth’s history with natural fluctuations of carbon dioxide concentrations in the atmosphere—but since the Industrial Revolution, human activity has contributed to skyrocketing levels of carbon dioxide in the atmosphere. Carbon dioxide levels in the modern age are higher than at any previous point in human history due to the burning of fossil fuels such as coal and oil; in 2022 alone, humans were responsible for emitting an estimated 36.6 billion tons (gigatons) of carbon dioxide.

The last time earth had as much carbon dioxide in the atmosphere as there is currently was during the prehistoric era known as the Mid Pliocene Warm Period. During this era, the global surface temperature was 4.5-7.2 degrees Fahrenheit (2.5-4 degrees Celsius) warmer than

it was before the Industrial Revolution, and sea levels were anywhere from 16 feet to 82 feet higher than they were in 1900.

To avoid the worst climate scenario, nations are beginning to adopt the goal of limiting warming to 1.5 degrees Celsius (2.7 degrees Fahrenheit) by 2100. Achieving this target would not reverse or prevent all negative impacts of climate change, but it is believed that limiting warming to 1.5 degrees Celsius would help to fight off the most severe climate consequences that would have disastrous impacts for all life on the planet. For example, increasing ocean temperatures have become a major threat to the survival of coral reefs. At 1.5 degrees Celsius of warming, it's anticipated that 70 to 90% of coral reefs will die off worldwide, with only a small fraction of corals thriving in a place of thermal refuge that allows for recovery in between heat bleaching events. At 2 degrees Celsius of warming, however, roughly 99% are lost, with little to no ability to recover.



At projected rates of warming (1.5-2 degrees Celsius), between 70 and 99% of coral reefs will be lost.

Natural disasters and weather events such as hurricanes, flash flooding, tsunamis, and tropical storms will become more frequent and more powerful as the air warms and sea levels rise; but limiting warming to 1.5 degrees could reduce sea level rise by up to 50% from the current levels that are anticipated in 2100.

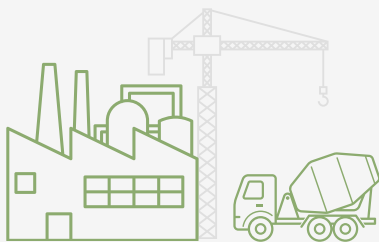
Staring down a slew of dire consequences, 97% of scientists agree that humans are causing global warming and climate change. Since fossil fuels account for over 75% of global greenhouse gas emissions and nearly 90% of all carbon dioxide emissions, we're in the midst of a massive global transition to renewable energy. An important step in this process is identifying major emitters and finding ways to reduce and offset their negative impacts on the climate. This requires organizations and entities to take a hard look at how their operations contribute to carbon emissions, and what can be done to reduce the contribution. Ideally, to limit the global temperature increase to 1.5 degrees Celsius above pre-industrial levels and avert the worst consequences of climate change, companies would achieve net zero carbon emissions, cutting their carbon emissions to as close to zero as possible. To do this, an organization

must calculate the operational and embodied carbon emissions (Figure 1) of its scope 1, 2, and 3 activities and make an actionable plan to reduce, eliminate, or offset those emissions.

In 2021, Verdical Group officially reached net positive carbon emissions across scopes 1, 2, and 3, offsetting its entire carbon footprint back to its founding in 2012, plus an additional 10%. This accomplishment was the culmination of many hours of careful calculations, decision-making, and considerations of both people and planet.

After all, Verdical Group is a B Corp, a member of the B Corp Climate Collective and The Climate Pledge, a 1% for the Planet member company, and was founded upon the mission to create an equitable, net zero future for all people. As a B Corporation and registered California Benefit Corporation, our team transparently reports on our positive social and environmental impact each year in a public effort to seek continuous improvement over time. And as a sustainability consulting firm working to solve the climate crisis, the achievement of net positive status, though momentous, was a natural target for our operations.

Figure 1. Types of Carbon in Buildings



Embodied Carbon

The emissions from the manufacturing, transportation, and installation of building materials.



Operational Carbon

The emissions from a building's energy consumption, such as the energy used to warm and cool, ventilate, light, and power a building.

As humans, we have a compelling reason to care about solving the climate crisis: we all live here. Climate change threatens our collective global future. Consumers are responding, and demanding companies account for their emissions, or else they will find someone who does. In response to this, Environmental, Social & Governance (ESG) reporting is continuing to gain steam. According to research done by the [Harvard Business School](#), 86% of S&P 500 firms regularly released some type of ESG report in 2021, compared to 35% of publicly traded companies in 2010. Another study conducted at [Oxford University](#) “found that 88% of companies reviewed with robust sustainability practices demonstrate better operational performance, which ultimately translates into cashflows.”

Public carbon reporting is fairly new, but it is here to stay. The more accurately and thoroughly tracked your company's carbon emissions are, the more it can reduce. Every company must start somewhere as long as it makes a commitment to track and improve—but ultimately, aligning your company's carbon reduction commitment with science-based targets is vital, both to the climate and to

stakeholders. Consumers are demanding companies demonstrate a true commitment to people and the planet, and not greenwashed claims. There is a new factor at play, requiring companies to compete for the more significant or transparent environmental and social impacts, creating a macroeconomic driver for ESG and carbon reporting.

Calculating, reducing, and potentially offsetting your organization's carbon emissions can appear to be a daunting or unapproachable task, but it need not be. Verdical Group's internal team conducts an annual carbon footprint calculation for our company's scope 1, 2, and 3 emissions and advises operations staff on strategies to reduce carbon emissions, as well as the total amount of emissions needing to be offset for each year. **In this document, we have provided an overview of our team's method for calculating our emissions. This is intended not as a one-size-fits-all guide for reaching net zero, but as a general introduction to carbon reporting and reduction to help provoke your organization's consideration of what steps it can take next to work towards a healthier, cleaner climate and future.**

“Ideally, to limit global temperature increase to 1.5 degrees Celsius above pre-industrial levels and avert the worst consequences of climate change, companies would achieve net zero carbon emissions, cutting their carbon emissions to as close as zero as possible.

To do this, an organization must calculate the carbon emissions of its scope 1, 2, and 3 activities and make an actionable plan to reduce, eliminate, or offset those emissions.”

ESTABLISHING A BASELINE

A Carbon Footprint Calculation Case Study to walk you through the process of calculating scope 1, 2 and 3 emissions to determine your organization's baseline carbon footprint.

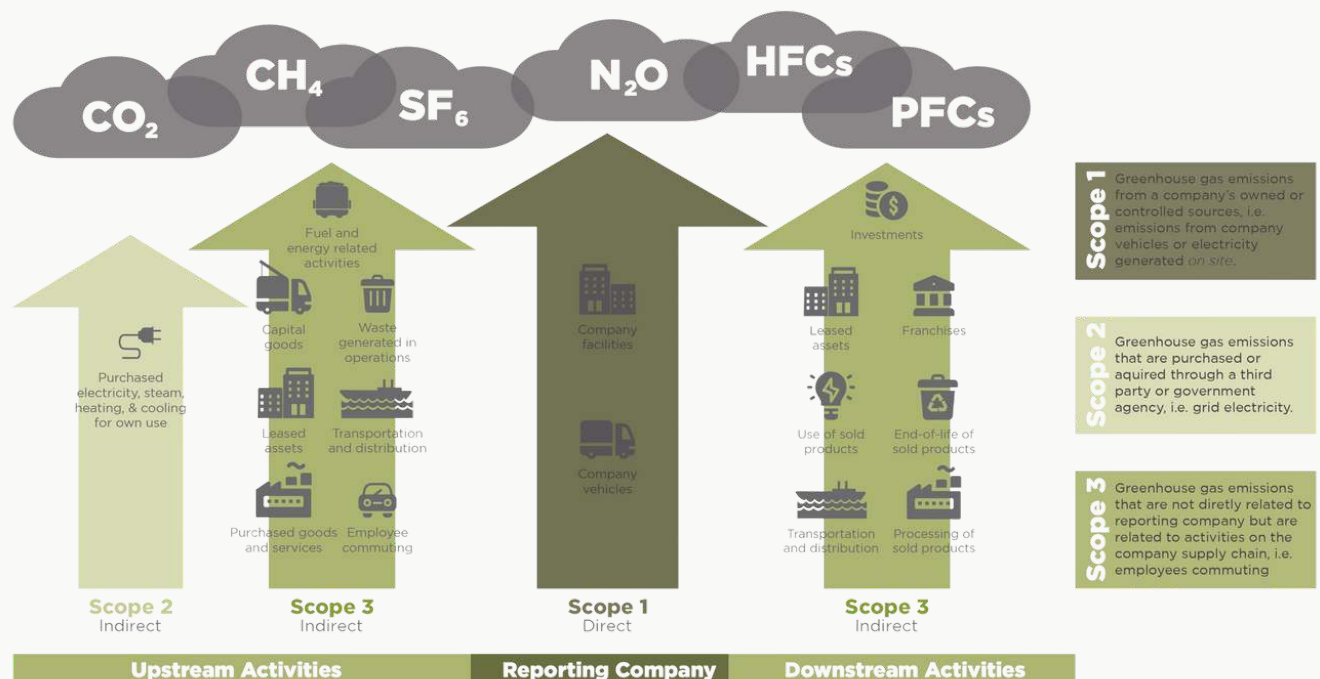
The process of categorizing carbon emissions into scope 1, 2 and 3 emissions was developed by the Greenhouse Gas Protocol, a partnership between World Resources Institute and the World Business Council for Sustainable Development. This protocol differentiates emissions into groups based on their source relative to an organization's operations and structure (Figure 2).

Scope 1 emissions are those directly created by an organization operating resources that it

owns or controls, such as on-site fossil fuel combustion for energy or the use of machinery to manufacture a product. Scope 2 emissions are created by the production of energy that is purchased by an organization to power their operations and is not generated directly on-site.

Scope 3 emissions often make up the largest percentage of an organization's emissions, and are also typically the most difficult to calculate and reduce. Scope 3 emissions include indirect

Figure 2. Scope 1, 2, and 3 Emissions



emissions, from purchasing supplies from outside vendors, to employee commutes, to the use of a company's product by the consumer.

Tackling the process of addressing scope 3 emissions is complicated due to the influence of factors beyond an organization's direct control, but it is a crucial step to reducing emissions—scope 3 can often account for over 70% of an organization's carbon footprint.

To best walk through the process of calculating scope 1, 2 and 3 emissions to determine your organization's baseline carbon footprint, we will utilize Verdical Group's carbon footprint calculations as a case study and demonstration. Please note that these calculations were performed by hand by Verdical Group's internal team without the use of reporting software or third-party verification. While we are confident in the integrity of our internal QA/QC peer review process, it is a goal of ours to achieve a third party verification of our net zero status—learn more about our commitment to ongoing improvement in our [annual impact report](#).

Scope 1 Calculations

As a sustainability consulting firm, Verdical Group's products are our services, so our emissions calculations look different than a company that manufactures a physical product that is sold on a shelf. Additionally, our firm was much smaller in size during the time period considered during these calculations. Please take these factors into account when considering how our team's numbers might compare to your own company's square footages, staff counts, and carbon emissions.

Our calculation of our scope 1 emissions includes only on-site fuel combustion at our office locations. At the time of our initial



Because we are a service provider, our emissions calculations look different than a company that manufactures a physical product.

baseline carbon footprint calculations in 2019, Verdical Group had two physical office locations in Downtown Los Angeles and Pasadena. Note that in 2019, a few of our team members worked a slightly hybrid schedule, spending most of their time in either the Los Angeles or Pasadena offices, but occasionally working from their home offices. Home office energy is not accounted for in our scope 1 emissions, since most staff worked in-office the majority of the time in 2019 but is a priority for future reporting. Supplies for home office setups will be accounted for later on, in our scope 3 calculations.

To calculate the scope 1 emissions associated with each office space, we first needed to establish basic data regarding on-site methane gas (also commonly referred to as natural gas, a common greenwashed term that attempts to cover up the highly polluting nature of methane) combustion at each location.

In 2019, the total methane gas consumption for our Downtown Los Angeles (DTLA) office was 5,437 therms. This value was calculated in an energy study Verdical Group prepared for the Los Angeles Department of Water and Power

(LADWP) in 2020. This study also factored in the size of our DTLA office: 59,700 square feet. To estimate Verdical Group's share of office space square footage, we referenced the National Fire Protection Association (NFPA) 101 Life Safety Code, which specifies an Occupant Load Factor of 150 square feet per person for general business use.

The data for the Pasadena office's total therms was unavailable, so the team developed an alternative method utilizing the DTLA office data. The boilers at the Pasadena office are 80% efficient, while the DTLA boilers are 92%

efficient. Therefore, the assumption was made that the Pasadena office would use 12% more methane gas per square foot than in DTLA. Under this assumption, the therms per square foot value consumed at the Pasadena office was found to be 0.10 therms per square foot.

Our team totaled the number of desks in Verdical Group's space to establish the employee count for the Pasadena location. The NFPA Occupant Load Factor of 150 square feet per person was then multiplied by the number of employees at the office to determine Verdical Group's share of office space.

Figure 3. On-Site Methane Gas Combustion at Verdical Group's Offices (2019)

	Downtown LA Office	Pasadena Office
Number of Employees	4	2
VG Share of Office Space (sqft)	4 employees x 150 sq ft/employee = 600	2 employees x 150 sq ft/employee = 300
Facility Total Therms	0.0911 therms/sqft x 600 sq ft = 5437	n/a
Therms per Square Foot	0.0911 therms/sq ft x 600 sqft = 0.091	12% more methane gas per square foot than DTLA 0.102
Occupant Load Factor (sqft/person)	150	150
VG Share of Methane Gas in Therms	0.0911 therms/sqft x (150x4) sq ft = 544.643	0.102 therms/sqft x (150x2) = 30.600
VG Share of Methane Gas in mmBTU	54.643 therms x 0.1 mmBTU/1 therm = 5.464	30.600 therms x 0.1 mmBTU/1 therm = 3.060
CO2 Factor	53.06 kg CO2/mmBTU	53.06 kg CO2/mmBTU
Total Carbon Emissions (kg)	289.937	162.365
Total Scope 1 Carbon Emissions (kg)	452.302	

The team then estimated Verdical Group's share of methane gas use. We multiplied the therms per square foot at each location by Verdical Group's share of office space at each location. The methane gas use was then converted from therms to MMBtu, which is necessary in order to utilize the United States Environmental Protection Agency (EPA) Emissions Factors for GHG Inventories. The methane gas consumed at our DTLA office was found to be 5.46 MMBtu, which was then multiplied by 53.06 kg CO₂ per MMBtu, the EPA's CO₂ emissions factor for methane gas.

The total carbon emissions were found to be 289.94 kg CO₂ for the DTLA office and 162.37 kg CO₂ for the Pasadena office, for a grand total of 452.302 kg CO₂ in scope 1 emissions.

Scope 2 Calculations

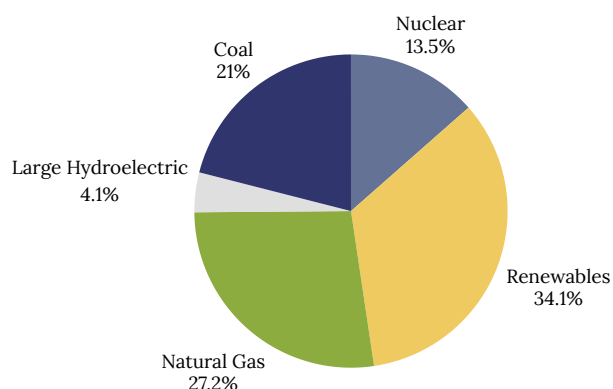
Procured energy can be generated from a variety of sources. It is recommended to research your organization's local power mix based on information available from your utility provider. The DTLA office is in LADWP's service area, so the team utilized the LADWP 2019 Power Content Label to estimate the blend of renewable energy, fossil fuel combustion, and other sources such as nuclear and hydroelectric power (Figure 4).

The LADWP energy study used for Scope 1 calculations was also referenced by the team to determine that the total energy use for the Downtown Los Angeles office in 2019 was 948,382 kWh. This number was divided by the total square footage of 59,700 square feet, supplying the estimate of 15.89 kWh per square foot of energy usage. Our team then calculated Verdical Group's share of office space by multiplying the NFPA Occupant Load Factor of 150 square feet per person by the number of employees at the facility. The kWh per square

foot was multiplied by Verdical Group's share of office space; this product was then converted from kWh to MMBtu in order to be compatible with the EPA's Emission Factors for GHG Inventories. Therefore, Verdical Group's share of purchased electricity was 32.52 MMBtu.

Taking this number into account, the team then recorded LADWP's 2019 power mix source percentages as decimals. For instance, the 2019 Power Content Label listed 21% coal and 34% renewable energy as major components. Each source percentage decimal was multiplied by Verdical Group's share of electricity use to obtain the MMBtu of energy derived from each of the power sources. Those values were then multiplied by the EPA's relevant CO₂ emissions factors for each power source to determine the kg CO₂ emissions per source. Renewable, nuclear, and large hydroelectric sources have a CO₂ emissions factor of 0, so energy derived from these sources did not contribute to emissions and were removed from the calculation. Ultimately, 637.08 kg CO₂ were emitted by energy derived from coal, and 469.38 kg CO₂ were emitted by energy derived from methane gas. These were then added together to find the final total emissions from Verdical Group's office space at DTLA, which were 1,106.46 kg CO₂.

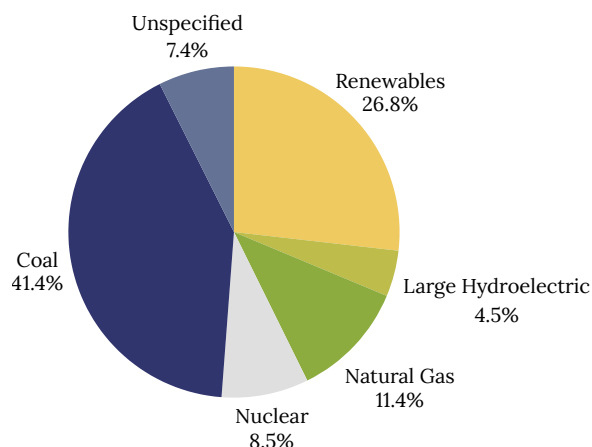
Figure 4. LADWP Power Mix (2019)



For our Pasadena office, the team estimated a 20 kWh per square foot electricity usage and multiplied it by the number of employees in the office for a total of 6,000 kWh in 2019. This was multiplied by the kWh to MMBtu conversion factor of 293.07 kWh for 1 MMBtu to establish Verdical Group's share of electricity at 20.47 MMBtu. Using the local utility provider Pasadena Water and Power Content Label source percentage decimals for 2019 (Figure 5), the team multiplied the total electricity usage by the decimal value for each power source to determine the power source breakdown in MMBtu. These values were then multiplied by their respective CO₂ emissions factors to determine that power sourced from coal emitted 782.98 kg CO₂ and power sourced from methane gas emitted 119.49 kg CO₂.

Additionally, "unspecified" sources made up 7% of the power label and contributed 133.68 kg

Figure 5. PWP Power Mix (2019)



CO₂ using the emissions factor for coal, which assumes the worst-case scenario value (coal) for the unknown power source to make a conservative calculation. These values add up to total emissions of 1,036.15 kg CO₂ for the Pasadena office. This means that altogether, Verdical Group's scope 2 emissions for 2019 were 2,142.61 kg CO₂.

Figure 6. Purchased Electricity at Verdical Group's Offices (2019)

	Downtown LA Office	Pasadena Office
Number of Employees	4	2
VG Share of Office Space (sqft)	4 employees x 150 sq ft/employee = 600	2 employees x 150 sq ft/employee = 300
VG Share of Electricity in kWh	15.886 kWh / sqft x 600 = 9531.477	20 kWh / sqft x 300 = 6000
VG Share of Electricity in mmBTU1 (mmBTU = 293.07107 kWh)	9531.477 kWh / 293.07107 = 32.523	6000 kWh / 293.07107 = 20.473
CO₂ Factor	93.28 kg CO ₂ /mmBTU coal 53.06kg CO ₂ /mmBTU methane gas	93.28 (Coal) 53.06 (Methane Gas)
Total Carbon Emissions (kg)	1106.460	1036.151
Total Scope 2 Carbon Emissions (kg)	2,142.612	

Scope 3 Calculations

Of the three scopes, scope 3 emissions are typically the most difficult and cumbersome to calculate—and they also often make up the largest percentage of an organization’s carbon footprint. For Verdical Group’s 2019 calculations, scope 3 emissions included waste generation, employee commute, and procurement.

Note that as a small consulting firm, our scope 3 emissions considerations are very different from those of many other companies of varying sizes and industries. Determining what falls within the boundaries of scope 3 emissions can be an unclear and confusing task, and organizations will need to carefully consider the categories that make up their scope 3 emissions in order to accurately track, measure, and report these emissions. Your company may consider examining the scope 3 emissions protocol of a comparable peer to identify the types of categories that other similar operations are including in their scope 3 reporting. For example, real estate developers may look to the impressive example of our friends at Lendlease, a company much larger than Verdical Group that published [this Scope 3 Emissions Protocol](#) outlining their rigorous path to clearly defining their company’s scope 3 boundaries.

Waste Generation

To calculate average waste generation in Verdical Group facilities, the team used diversion rates from the 2006 “[Targeted Statewide Waste Characterization Study: Waste Disposal and Diversion Findings for Selected Industry Groups](#)” prepared for the California Department of Resources Recycling and Recovery. This study estimates 1,998 pounds of waste generated per 1,000 square feet of office space, which is equivalent to an

annual rate of 1.998 pounds of waste per square foot of office space. To estimate Verdical Group’s share of office space square footage, the team again used an Occupant Load Factor of 150 square feet per person. The team therefore multiplied Verdical Group’s share of office space in square feet by the waste generation rate. With 600 square feet in DTLA and 300 square feet in Pasadena, this resulted in an estimate of 1,198.8 pounds and 599.4 pounds of waste, respectively. To estimate the carbon emissions associated with the company’s waste generation, the team used the [U.S. EPA Waste Reduction Model \(WARM\) Excel-Based Tool](#). This tool required that the pounds of waste be converted into short tons, equivalent to 2,000 pounds. Verdical Group’s share of waste was then represented by 0.599 short tons and 0.299 short tons, respectively.

Figure 7. Waste Disposal Emissions (2019)

	DTLA	Pasadena
Number of Employees	4	2
VG Share of Office Space (sqft)	600	300
Annual Waste / sqft (lbs)	1.998	599.4
VG Share of Waste Generated (short tons)	0.599	0.299
CO2 Factor	310 kg CO2/short ton of waste	310 kg CO2/short ton of waste
Total Carbon Emissions (kg)	185.814	92.907
Total Waste-Related Carbon Emissions	278.721	

In the “Analysis Inputs” tab of the EPA WARM calculator, the team input 1.00 short tons of Mixed Municipal Solid Waste (MSW) in the “Tons Landfilled” column. This amount of Mixed MSW resulted in 0.31 MTCO₂e, as summarized in the “Summary Report (MTCO₂E)” tab of the EPA WARM calculator. They then converted the resulting CO₂ Factor from MT CO₂ to kg CO₂ to maintain consistency with units. The final CO₂ Factor came out to 310 kg CO₂/short ton of MSW.

The short tons of waste for each office were then multiplied by the 310 kg CO₂ factor to produce the estimates of 185.81 kg CO₂ for the DTLA office and 92.91 kg CO₂ for the Pasadena office. By adding these two together, the team estimated that Verdical Group’s total waste emissions were 278.72 kg CO₂.

Since the team did not have access to waste hauler reports or waste audit results showing the actual breakdown of the generated waste, they assumed that all waste generated by Verdical Group was Mixed Municipal Solid Waste (MSW) sent to landfill. Assuming that all waste is landfilled, mixed MSW is very likely a “worst case scenario,” since common office waste such as paper and cardboard is likely recycled. However, the lack of specific, real-world waste stream breakdowns necessitated use of the average worst-case assumption in their calculations.

Employee Commutes

To determine commute-related emissions, the team conducted a survey to collect commuting data for Verdical Group employees. The survey included questions about daily commute to either of the company’s office locations, as well as site visits, conferences, and other travel instances. All data responses consistently used the unit of ‘miles’ and took

into account the following modes of transport: airline, bus, train, gasoline vehicle, and electric vehicle (EV).

The team also factored in former employees who worked at any point during 2019. To estimate the average monthly commute for individuals who were no longer employed at Verdical Group, the team completed the following process:

1. Determine the most frequently used mode of transport in the available data set from the survey. In this case, 62.5% of employees used a gasoline vehicle to commute.
2. Sum up annual mile data for employees who worked all twelve months in 2019. Take an average of this data and divide the average by 12 to determine a monthly average commute.
3. Multiply this result by the number of months worked out of the year for each employee whose data is not available (for example, if a former employee left in September, the result was multiplied by nine to account for only the nine months they commuted).

Our team then utilized a proprietary internal calculator to input the total number of miles traveled by each method during the year 2019. Certain scenarios were calculated differently. For instance, hybrid or electric vehicles have different average emissions than gas vehicles and were calculated separately. Carpool scenarios were accounted for by dividing total emissions by 2, assuming that the carpool vehicle was shared by a minimum of two people.

An [online calculator](#) was used to determine the miles traveled per flight by team members who traveled by plane.

Procurement

Finally, the team calculated the emissions associated with procurement for 2019. They obtained a list of products purchased by Verdical Group in 2019, factoring in everything from paper and plastic to computer equipment and even our company's website server. Once all products and quantities had been identified, the team located life-cycle assessments (LCA), carbon footprint studies, and carbon footprint calculators for each unique product to help guide their analysis. Because this list was somewhat lengthy and calculations were repetitive, this document will not closely examine the process of calculating the carbon emissions of each and every purchased product.

As one example, however, consider the purchase of printer paper. As a generally paperless company, Verdical Group purchased one ream of 100% recycled content office paper in 2019. The team used the [Environmental Paper Network's Paper Calculator 4.0](#) to determine the emissions

associated with the specific brand and quantity of paper. The calculated emissions came out to 19 pounds of CO₂ per ream of 100% recycled paper. This was then converted from pounds to kilograms to give a final emissions estimate of 8.9 kg CO₂. Methods of calculation varied between products depending on the availability of carbon emissions data. Some products' data was readily available, while others had to be estimated based on the calculations for a similar product from a different supplier. Another example was the emissions associated with Verdical Group's web traffic. The company used one website server in 2019 and used the online [Website Carbon Calculator tool](#) to calculate the associated emissions. The team entered the Verdical Group website link into the calculator to determine that there was an estimated 0.01 kg CO₂ per page view in 2019. This was multiplied by the total of 34,010 page views in 2019 for a final total of 279.90 kg CO₂ for the website server in 2019.

Other factors to consider under scope 3 emissions might include branded company merchandise, food and drinks purchased at company outings, the emissions associated with shipping purchased products, Uber rides at off-site events, and more. As a consulting firm with a small staff, Verdical Group's operations have limited upstream and downstream implications. The same cannot always be said for other types of companies. For instance, a general contractor would likely see a much higher emissions rate in procurement of building materials, and a property management firm's emissions would be heavily impacted by their tenants' consumption of resources. It is important to closely examine the variety of ways in which your company's unique operations may be generating emissions.

The screenshot shows the 'Paper Calculator 4.0' interface. It includes fields for 'Name Your Paper' (filled with 'VG 100% Recycled Content Office Paper'), 'Select a Paper Grade' (filled with 'Uncoated Freesheet (copy paper)'), and 'Enter Quantity and Select Unit of Measurement'. Under 'Enter the number of sheets or reams here to find the weight of your paper...', there are input fields for 'Sheets of Paper' (500) and 'Reams of Paper' (1). Below these, 'Equivalents' are listed: 500 sheets, 1 reams, 0.1 cartons, 0.003 pallets, 0.003 U.S. short tons, and 5 pounds. A 'Calculate Weight' button is present. At the bottom, there is a field for 'Enter the Percentage (%) of Recycled Content' (filled with 100) and a unit dropdown set to 'Pounds'.

Source: Paper Calculator v4.0, Environmental Paper Network.

HOW TO REDUCE YOUR COMPANY'S CARBON FOOTPRINT

Actionable steps to reduce your carbon emissions.

Once calculations have been completed, you will have established a baseline carbon footprint for your organization. This is your company's data point zero; the next hurdle comes with determining actionable steps to reduce and offset your carbon emissions so that future calculations will show decreased emissions.

Notice that "reduce" is listed before "offset." It is a best practice to use your company's baseline carbon footprint as a diagnostic tool to determine areas from where its highest emissions originate and take steps to reduce its emissions in those areas.

Perhaps one of the simplest ways to achieve lower carbon emissions is to limit procurement: when possible, buy nothing at all. Scrutinize purchases to determine whether they are true necessities for the function of your organization, remembering that the purchase of new products is a large source of carbon emissions. From sourcing raw materials through manufacturing and shipping the finished product, over-purchasing is a fast way to keep your emissions on an upward trend. Rather than ordering new supplies, check to see if existing ones can be reused.

Buy Smart

If new items are a true necessity, implement sustainable purchasing and waste management policies to reduce the carbon footprint of your organization's procurement activities. Purchase only as much as is required to meet the needs of your organization. Research your vendors and products from a sustainability angle before purchasing. Consider whether the product has a high recycled material content, and what the respective percentages of post-consumer and pre-consumer content are.

Pre-consumer materials are generated during the manufacturing process and are diverted from the waste stream prior to the product reaching the end-use consumer. Post-consumer materials are finished materials that would normally be disposed of in the form of solid waste, having reached the end of their intended life cycle; these are the cardboard boxes and sheets of paper you place in the recycling bin.

Post-consumer recycled content is generally considered to have a higher environmental benefit, because post-consumer waste is more likely to have been diverted from a landfill than pre-consumer waste. Post-consumer recycled

materials have been used for their designed purpose and would otherwise be thrown away as garbage, while pre-consumer waste being reused by manufacturers as scrap materials is a common practice that would likely take place either way. Seek out products with a higher percentage of post-consumer recycled content when possible.

Beyond the products themselves, give preference to vendors who are making measurable efforts to prioritize sustainability. Research suppliers who have committed to a reputable climate pledge, such as Amazon's Climate Pledge or, better yet, who are certified B Corporations striving to use the power of business to positively impact people and the planet—Patagonia, Ben & Jerry's, and The Body Shop come to mind. Purchasing products from B Corporations or other vendors who have sustainable processes in place can help prevent your organization from absorbing a vendor's carbon footprint into its own.

Verdical Group is committed to equitable local economic and community development by procuring products and services from small, local, independent businesses. Verdical Group uses our purchasing power to stimulate local

economic development, create local employment, redistribute wealth, and to build thriving communities. We have set a policy to purchase a minimum of 10% of all goods and services, as determined by total dollars spent, with small, local independent businesses. In addition, we have set a policy to purchase a minimum of 5% of all goods and services, as determined by total dollars spent, with certified Minority-Owned Businesses, Women-Owned Businesses, Service-Disabled Veteran-Owned Businesses, certified B Corps, JUST labelled Businesses, or Worker Cooperative Businesses.

Additionally, location is an important factor for consideration. Whenever possible, give preference to local companies. In addition to the financial benefits of stimulating the local economy, shopping locally can also reduce your company's carbon footprint by reducing shipping distances. A product purchased from overseas will travel a much greater distance and utilize multiple modes of transportation, including international shipping, an industry which contributed 667 Megatons of global CO2 emissions in 2021. Even purchasing an item from a different state will likely mean a trip by plane, train, and/or truck as it makes its way



to your organization's front door. These emissions quickly add up and can turn a sustainably-made product into a massive carbon generator.

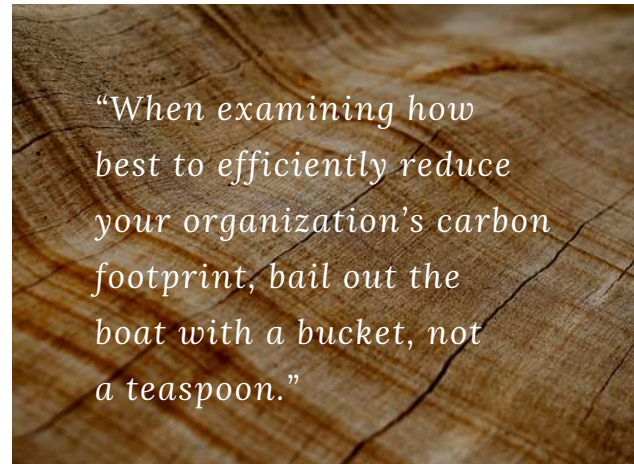
Once a product has reached the end of its useful life, sustainable waste policies should be in place to ensure that you are limiting your carbon impact where possible. "Reduce, reuse, and recycle" is a helpful mantra, but it is important to note that recycling is the last step in that process for a reason. As mentioned previously, reducing your company's purchases and reusing existing items whenever possible should always be prioritized. When those steps are no longer possible, dispose of items properly, and responsibly recycle anything you can.

Focus on the Big Fish

When examining how best to efficiently reduce your organization's carbon footprint, bail out the boat with a bucket, not a teaspoon. Establishing a baseline carbon footprint essentially gives your organization a diagnostic report of the most impactful areas of its emissions. With that knowledge in hand, analyze the areas of highest emissions for your organization to take advantage of potential "low-hanging fruit" that will make a real impact in reducing your carbon footprint.

For many organizations, the area of highest emissions will likely be found under scope 3. There are a wide range of factors that your organization may be able to adjust in order to get its carbon emissions under control.

For instance, employee commutes may comprise a large portion of your organization's scope 3 emissions. By shifting to a hybrid workplace model and reducing the frequency



"When examining how best to efficiently reduce your organization's carbon footprint, bail out the boat with a bucket, not a teaspoon."

at which employees are required to commute to the office, many companies have capitalized on a substantial reduction in scope 3 emissions.

In fact, recent research suggests that hybrid or remote work has the potential to decrease carbon emissions by as much as 87% in U.S. cities. If options like public transit or commuting via electric vehicles are not available to your team, reducing the number of days per week that employees make the trip into the office can lower your organization's scope 3 emissions—although we recognize that this may not be the best option for every business or every city.

Keep Things Accountable

Decarbonization on the scale necessary to affect meaningful climate action requires a whole-hearted commitment to real, tangible change. In addition to formally adopting policies within your organization that promote sustainability and reduce emissions, consider using your organization's available resources to bring visibility and momentum to the net zero movement.

This might look different for each organization and its unique capabilities, but there are a

handful of ways that Verdical Group has approached this effort as a small team of under 25 staff members.

In 2022, Verdical Group officially divested from a number of industries that run counter to our core values, including the fossil fuel industry. Our company's investment account was spread primarily across a variety of mutual funds, many of which included stocks for oil and gas companies like Exxon Mobil or BP. All holdings for investments in companies that generate revenue from company-owned reserves, including oil, coal, and methane gas reserves, were eliminated from our portfolio. In their place, the company bought holdings in ESG and sustainability-focused mutual funds which screen out environmentally and socially harmful companies. Divestment is an important component in voting with your dollar. Having your company's resources and investments tied up in fossil fuels lends continued financial support to an industry that actively campaigns against renewable energy and other solutions for decarbonization. By removing your

organization's financial support from fossil fuels, you demonstrate that the future is net zero and renewable.

Your organization might also consider becoming a signatory for a net zero commitment, such as [Amazon's Climate Pledge](#), which asks that participants aim to achieve net zero annual carbon emissions by 2040. By joining such a pledge, signatories commit to regularly measuring and reporting their greenhouse gas emissions, implementing decarbonization strategies that align with the Paris Agreement, and neutralizing remaining carbon emissions through the purchase of quantifiable and credible carbon offsets.

Beyond making a commitment to net zero, in order to start measuring and reporting reductions, there are also a number of third-party systems in place to verify carbon neutrality by earning a recognition, such as certifications like [CarbonNeutral](#), reporting platforms like [CDP](#), and goal-setting tools like the [Science Based Targets initiative](#). These rating systems help to set a common, global standard for carbon neutrality and provide a framework for consistent, meaningful climate action. They hold participants to a rigorous standard for achieving and maintaining carbon neutrality while requiring transparency with stakeholders.

Verdical Group is a proud member of Amazon's Climate Pledge. The firm is also recognized as a certified B Corporation, a Benefit Corporation, and a 1% for the Planet member company. All of these commitments help provide a framework for our company to scale up our positive impact while continuing to maintain our net zero emissions status.



Verdical Group is a proud B Corp and was thrilled to provide sustainable event consulting for the 2019 B Corp Champions Retreat in Los Angeles, pictured below.

CARBON OFFSETS

Prioritize reduction first and foremost, but if you have remaining emissions, the right carbon offsets can help get your organization to net zero.

There is a high probability that your organization will not be able to achieve net zero carbon emissions simply by reducing your carbon footprint. Although many policy changes and decisions can be made to get your team closer to your goals, the reality is that some emissions, whether they are from purchasing the materials necessary to do your work or from keeping the lights on at your office, are simply unavoidable.

When you have reduced your carbon footprint as much as is realistically achievable and cannot possibly cut it any further, the next step in achieving net zero emissions is to purchase carbon offsets.

Carbon offsets essentially reduce or remove greenhouse gases from the atmosphere to compensate for carbon emissions elsewhere, typically by funding projects that mitigate or remove carbon from the atmosphere.

There are many carbon offsets available on the market, but they are not all equally trustworthy. It is important to carefully select a carbon offset provider to ensure that they are reputable and dependable. A quality carbon offset must guarantee permanence, meaning that emissions that are removed or reduced through purchasing the offset must remain removed for at least 100 years in order to make a measurable impact on the climate.

The offset method must also avoid leakage, which is when emissions are simply shifted away from one industry or activity into another to provide the appearance of reduced emissions without actually reducing emissions at all. For instance, a company may seek to outsource high-emitting activities to a different country in order to avoid reporting it in their home country—which also carries disastrous implications for environmental justice in countries treated as carbon dumping grounds. Additionally, the carbon offset should protect biodiversity and enrich the lives of community members that may be impacted by it.

There are a few select carbon offset provider registries that have been vetted and approved by Climate Neutral, a third-party framework for climate reporting. These include Climate Action Reserve, Verra, American Carbon Registry, and Gold Standard. Researching a provider or speaking to a consultant can help you find the provider that is the best match for your organization's mission and needs.

An additional layer of incentive exists for those companies which have joined the 1% for the Planet initiative and donate 1% of their annual revenue to environmental nonprofits. If carbon offsets are purchased through an approved 1% for the Planet provider, this purchase is eligible to be counted toward an organization's

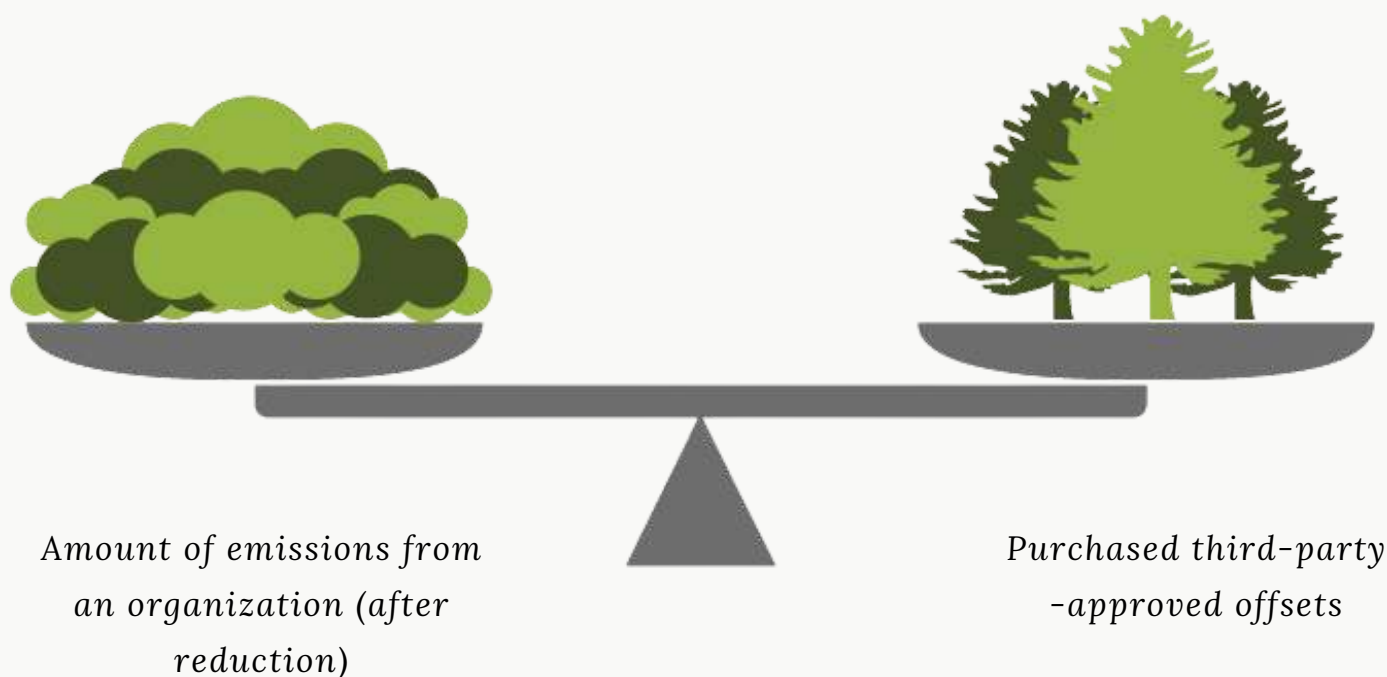
1% for the Planet annual donations. Most recently, Verdical Group purchased our offsets through Bonneville Environmental Foundation, whose offsets support the goals of 1% for the Planet, B Corp, Climate Neutral Certification, and the UN Sustainable Development Goals.

It is important to remember that a carbon offset is not a purchased license to pollute. Carbon offsets should be considered a final option; all feasible steps should be taken to reduce your greenhouse gas emissions as much as possible before resorting to the purchase of offsets. Buying carbon offsets is a valuable tool to help your organization reach net zero and contribute to a quicker climate solution, but they should be used to supplement active steps toward reducing your emissions and should not replace a carbon reduction action plan.

“It is important to remember that a carbon offset is not a purchased license to pollute.”

Carbon offsets should be considered a final option; all feasible steps should be taken to reduce your greenhouse gas emissions as much as possible before resorting to the purchase of offsets.”

Figure 8. Explaining Carbon Offsets



WE'RE HERE TO HELP

Verdical Group is a highly-qualified sustainability consulting firm ready to support your organization's ESG reporting process every step of the way.

Measuring, tracking, reporting, and reducing emissions can be a daunting task to take on, especially when the process is new to your company. New policies and procedures will have to be drafted, implemented, and monitored. Large amounts of information will need to be gathered and analyzed, then synthesized into meaningful data that can be used to make an impact. Simply deciding where and how to begin can be a significant challenge, and some outside assistance can help smooth out this process and ensure that your carbon reporting effort stays on track and follows industry best practices.

Verdical Group is a highly-qualified sustainability consulting firm with projects and clients across the United States and worldwide. Amongst our many other service offerings, our team is ready to support your organization's ESG reporting process every step of the way. We have developed and refined a multi-step process to help companies establish their ESG initiatives, create a roadmap to define their metrics and achieve their goals, and share with their clients and partners the ways in which they are working to achieve their social and environmental goals.

Our team utilizes a proprietary internal carbon footprint calculator tool to measure scope 1, 2, and 3 emissions, and our Subject Matter Experts are knowledgeable in the strategies

that can help to advance your organization closer to its net zero emissions targets. Whether your goal is to establish a corporate ESG strategy to publish for stakeholders, to create a carbon reduction plan for a campus or site, or to reduce the carbon emissions of an event, our team has the expertise to help you get there.

Our team also brings to the table an extensive background in sustainable buildings and decarbonization of the built environment. Our projects include a variety of net zero energy buildings, designed and constructed with cutting-edge technologies that enable a building to consume as little energy as possible and to generate what is needed on-site through renewable sources.

Green buildings also contribute to lowering your company's carbon footprint. By consuming less energy and utilizing resources more efficiently through green building principles, you can lower emissions across your building portfolio, which translates into a smaller carbon footprint company-wide.

In fact, across our expansive portfolio of projects that have earned or are currently pursuing third-party certifications including LEED, WELL, or Fitwel, each building is actively contributing toward the effort to solve the climate crisis, even in the case of projects

that do not include net zero energy goals. Each project that pursues a green building certification is designed and constructed with sustainability in mind, resulting in a finished building that makes a positive impact on people and the planet while simultaneously adding value for stakeholders and generating a substantial return on investment.

Verdical Group has contributed to hundreds of green building projects, and is a net positive company; we offset our entire carbon footprint

plus 10%, so that we are not only neutralizing our emissions, but contributing positively to the global fight against climate change. Our company's bylaws and core values prioritize the use of business as a force for good.

There is no better way to push toward a net zero future than to lead by example. Verdical Group's goal is to do just that by continuing to calculate and reduce our emissions, and we can't wait for your team to join us in securing an equitable, net zero future for all!



**NEED HELP
GETTING STARTED?
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