



Commercial Production Calculator Explanations

Updated September 29, 2006

This section explains the calculations and assumptions made on the *Commercial Calculator* tab.

1. The total tons figure is the sum of all the individual calculation of the tons of CO₂.
2. The cost to offset is the total tons multiplied by Carbonfund.org's price of \$5.50 per ton.

Production Vehicles

1. Crew is the total number of crew on location for each stage of production.
2. Total mileage of all cars is the total mileage of all cars driven during that stage of production.
3. Tons CO₂ for the Production segment represents the miles driven (based on average US mpg multiplied by a conversion factor (8.87) to convert lbs CO₂ into kilograms and then into metric tons).

Talent Vehicles

1. Estimated Miles/Day is the estimate of the miles each car is driven each day (this could be an average).
2. Tons CO₂ for the Talent Vehicles segment represents car-related emissions (based on the number of cars and their average daily mileage times the number of days and then calculated on an average US mpg multiplied by a conversion factor (8.87) to convert lbs CO₂ into kilograms and then into metric tons).

Production Vehicles

1. This refers to all production vehicles others than cars driven. This would be on-road and off-road production vehicles. Note: it is likely that all vehicles used in production are not captured here. If your vehicle is not included, please contact Ramsay Huntley at rhuntley@carbonfund.org for more details.
2. The emissions factor is either 8.87 or 10.15 – 8.87 is the number of kilograms of CO₂ produced when a gallon of gasoline is burned and 10.15 is the number of kilograms of CO₂ produced when a gallon of diesel fuel is burned.
3. Because these vehicles may idle a substantial amount, it is likely that their MPG may be reduced significantly.
4. Tons CO₂ for the Production Vehicles segment represents the following: vehicle emissions (number of vehicles times number of days times daily mileage times the appropriate emissions factor to convert to metric tons of CO₂).

Electricity Usage for the Entire Shoot

1. Electricity usage would be for any electricity used on a sound stage, etc. – any location where the electricity is *not* provided by a generator.
2. Generator information is based on the amount of gasoline that is burned per hour the generator runs. The number of gallons is then multiplied by 8.87 to convert to kilograms of CO₂.

Film Processing

This is based on the number of kilowatt-hours used to develop 400 feet of film, then a conversion factor is used to determine the amount of CO₂ that is produced by generating that electricity.

Air Travel

Average 1-Way Flight is the average of all flights taken by all crew other than talent. If this value is 280 miles or less, this is a short-haul flight and the emissions factor used is .24 kg CO₂ per passenger mile (cell B2 on 'Emissions Factors'). If the value is between 280 and 992 miles, this is a medium haul flight and the emissions factor is .19 (cell B3). If the average value is greater than 992 miles, the emissions factor is .18 (cell B4). This is based on information from the World Resources Institute's GHG Protocol program.

Hotel

The hotel calculations utilize the number of people, the number of days in the hotel, and then uses emissions factors to determine the total number of tons of CO₂.

Shipping

Shipping calculations are based on work that Carbonfund.org has done with Carnegie Mellon University. Note: this work is still ongoing so these calculations may change over time. It is unlikely that shipping will represent a significant piece of the calculations.

Emissions Factors Explanation

This section explains the calculations and assumptions made on the *Emissions Factors* tab.

1. The air travel emissions factors are courtesy of the World Resources Institute.
2. Natural gas emissions are based on information from the Energy Information Agency and then converted to kilograms of CO₂.
3. Source: *Fleet Owner* magazine June 2006. This is not exact and refers to heavy-duty trucks, not medium-duty. Therefore, it is likely this is an overestimation of emissions and therefore conservative (i.e. trucks actually get better mileage than noted here). It is important to note that a truck that idles frequently will get significantly lower mileage and this average value may need to be adjusted accordingly.
4. Since most cube trucks are based on standard models, this data is for city mileage for 2006 GMC Sierra/Chevy Silverado V8 2WD. The fuel economy data is available from www.fueleconomy.gov.

5. These are state-level emissions factors provided by the Energy Information Agency. The factors have been converted from pounds to kilograms.
6. The source for the food information is Wired magazine. Any improvements on this data would be appreciated.