

How to Measure, Track, and Report Your Impact

Workshop Exercise – Completed Answer Sheet

Step 1. Baseline

If you made no change to your behaviour, how much GHG would you produce?

Activity: Driving a Ford Edge to or from school 28 times

Distance between house and school	= 3.9 km
Total Driven Distance	= 3.9km x 28 times
Total Driven Distance	= 109.2 km

Energy Intensity: from Attached Research

Ford Edge	= 14.4 L/100km
Ford Edge	= 0.144 L/km

Emissions Factor: From Workbook

Gasoline Vehicles	= 2317 g CO ₂ e/L
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Number of days during study period: 15 (includes PA day)

Baseline GHG Emissions = Activity x Energy Intensity x Emissions Factor
= 109.2km x 0.144L/km x 2317 g CO₂e/L
= 36,434 g CO₂e

For the 15 day baseline 36,434 grams CO₂e were emitted.

Step 2. Scenario

When you implement your program, how much GHG will you produce?

Activity - Walking: Walked to or from school 2 times.

Walking distance (from Exercise Instructions) = 3 km a trip

Activity - Transit: Taking the bus to or from school 22 times.

Bus distance (from Attached Research) = 5.7 km a trip

Average people on the bus:

Recorded number of people on 20 of 22 trips (from Attached Research).

On 20 of the trips the average number of the bus are:

$$\begin{aligned} \text{Average} &= \\ &= (15+30+11+20+20+12+13+20+20+22+30+23+28+21+23+18+23+15+21+35)/20 \\ &= 21 \text{ people/trip} \end{aligned}$$

Assume that for all 22 trips there are 21 people on the bus.

Activity - Driving: Walked to or from school 2 times.

Driving distance = 3.9 km a trip

Energy Intensity: From Workbook

Mode	Energy Intensity
Walking	= 0
Bus	78.4 L/100km = 0.784 L/km
Driving	14.4 L/100km = 0.144 L/km

Emissions Factor: From Workbook

Mode	Emissions Factor
Driving	2317 g CO ₂ e/L
Bus (Heavy Duty Diesel Vehicle)	2748 g CO ₂ e/L
Walking	0

Scenario GHG Emissions

Number of days during study period: 15 (includes snow and sick day)

Mode Emissions = Activity x Energy Intensity x Emissions Factor

Walking Emissions	= 0 g CO ₂ e
Bus Emissions	$= 5.7 \text{ km} \times 0.784 \text{ L/km} \times 2748 \text{ g CO}_2\text{e/L}$ $= 12,280 \text{ g CO}_2\text{e}$ <p>Divide by average number of people on the bus</p> $= 12,280 \text{ g CO}_2\text{e} / 21 \text{ people}$ $= 584.7 \text{ g CO}_2\text{e}$ <p>Multiply by number of trips</p> $= 585 \text{ g CO}_2\text{e} \times 22 \text{ trips}$ $= 12,865 \text{ g CO}_2\text{e}$
Driving Emissions	$= 3.9 \text{ km} \times 0.088 \text{ L/km} \times 2317 \text{ g CO}_2\text{e/L}$ $= 1,301.2 \text{ g CO}_2\text{e}$ <p>Multiply by number of trips</p> $= 1,301.2 \times 2 \text{ trips}$ $= 2,602.4 \text{ g CO}_2\text{e}$

Total Scenario Emissions = Walking Emissions + Bus Emissions + Driving Emissions

Total Scenario Emissions = 0 g CO₂e + 12,865 g CO₂e + 2,602.4 g CO₂e

For the 15 day scenario 15,467 grams CO₂e were emitted.

Step 3. Impact

What is the difference between the baseline and the program GHG totals?

Impact GHG emissions = Baseline GHG – Scenario GHG

Impact GHG emissions = 36,434 g CO₂e – 15,467 g CO₂e

Total GHG savings from the commitment to drive less is 20,967 g CO₂e.