**Pass phrase: gothwal ritu**

**Gallons of gasoline consumed**

In the preamble to the joint EPA/Department of Transportation rulemaking on May 7, 2010 that established the initial National Program fuel economy standards for model years 2012-2016, the agencies stated that they had agreed to use a common conversion factor of 8,887 grams of CO2 emissions per gallon of gasoline consumed (Federal Register 2010). For reference, to obtain the number of grams of CO2 emitted per gallon of gasoline combusted, the heat content of the fuel per gallon can be multiplied by the kg CO2 per heat content of the fuel.

**Calculation**

**8,887 grams of CO2/gallon of gasoline = 8.887 × 10-3 metric tons CO2/gallon of gasoline**

|  |  |  |  |
| --- | --- | --- | --- |
| 1 gallon | 126.833 MJ | Gasoline | Gasoline |
| 1 gallon | 144.945 MJ | Diesel | Diesel Fuel and Heating oil |
| 1 MJ | 0.001 GJ |  |  |
| 1 GJ | 277.77778 kWh |  |  |
| 1 kWh | 0.001 MWh |  |  |
| 1 lb | 0.00045359 Tonnes |  |  |
| 1 Gg | 1000 tonnes |  |  |

**CDP Approach for biodiesel:**

**Step 1: Having the basic parameters**

Biodiesel volume is 1 gallon

Net Calorific Value of biodiesel is 27 TJ/Gg

Biodiesel density is 7lb/gal

**Step 2: Convert Volume to Mass**

Mass = Volume \* density

Then convert mass of biodiesel in tonnes.

**Step 3: Calculate Energy**

Energy = Mass X NCV

**Step 4: Convert TJ to MW**

**To do plan:**

Objectives:

1. First develop the EF tool for Market based S2:

* Create a database for the Utility providers and their Raw emission factors.
* For Example: Ecel Energy, Pacific Gas & Electricity, Seattle Light & Power etc.
* Is it based on the region? I mean ask if there is list of private utility companies with the regions.
* Should I keep the same option for output units as in the location-based tool?
* How to convert the electricity emissions **lb/MWh into mtCO2e/lbs** or **mtCO2e/MWh into mtCO2e/lbs**?

1. Then, work on Scope-1 emissions:

**Examples of Scope 1 emissions include:**

* **Fuel combustion**: Emissions from burning fossil fuels (e.g., natural gas, diesel, gasoline) in equipment like boilers, furnaces, and generators.
* **Company-owned vehicles**: Emissions from company-owned or controlled vehicles, such as trucks, cars, or aircraft.
* **Fugitive emissions**: Leaks of GHGs from processes or equipment, such as refrigerants from air conditioning systems or methane from natural gas pipelines.
* **On-site industrial processes**: Emissions from chemical reactions during production, such as in cement manufacturing, steel production, or refining processes.

Natural Gas, Gasoline, diesel, Liquid Natural gas, Propane,

In scope-2

Category Fuel:

* 1. Total Gallons used in transportation multiply it with the Raw factors/GWP to convert it into CO2e.

Raw Factors.

1. So, the Raw factors are in kg/gal

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Fuel Source** | **CO2 (kg/gal)** | **CH4 (g/mile)** | **N2O (g/mile)** |
| Van | Gasoline | 8.78 | 0.0079 | 0.0012 |
| Sedan | Gasoline | 8.78 | 0.005 | 0.0014 |

* Should I give options to choose the car type?
* And should I give the option to choose the EF output units? (mtCO2e/gal, or what else?)

Category Fuel Combustion:

* 1. The monthly values are in therms
  2. Change the therms into mmBTU by dividing the total with 10 (1 mmBTU = 10 therms).
  3. Convert it into EUI by dividing the total therms with square footage of the building (mmbtu/sq ft).
  4. And compare it with the CBECS EUI for a check.
  5. Next, step is to calculate the emissions (mt CO2e).
  6. Now to calculate the emissions just multiply the total mmbut units with raw emission factor for Natural Gas.

|  |  |  |
| --- | --- | --- |
| **Raw Factors** | | |
| **CO2 (kg/MMBtu)** | **CH4 (g/MMBtu)** | **N2O (g/MMBtu)** |
| 53.06 | 1 | 0.1 |

* 1. Now, multiply it with GWP to obtain the Applied Factors.
* And should I give the option to choose the EF output units? (mtCO2e/gal, or what else?)