Energy Emission

Source: EPA eGRID2022, January 2024 (Summary Tables - Table 1. Subregion Output Emission Rates)
https://www.epa.gov/system/files/documents/2024-01/egrid2022_summary_tables.xlsx

eGRID Subregion Acronym	eGRID Subregion Name	CO_2 Factor ($lb\ CO_2$ / MWh)
US Average	US Average	823.1

Conversion to kg/kWh: divide by 2204.6 = 0.373355710786

https://climatestudiodocs.com/docs/emissionFactors.html

Fuel Name	Fuel Type	PE	CO2 [kg/MWh]	Price [cent/kWh]
Natural Gas	NatralGas	1.09	309	4.088
Coal	Coal	1.05	405	2.03
Diesel	Diesel	1.19	324	6.927

1 MWh = 1000 kWh
Conversion to kg/kWh:Divide by 1000

https://www.cowi.com/news-and-press/news/2023/comparing-co2-emissions-from-different-energy-sources/

- Hydropower: approximately 4 g CO2e/kWh
- Wind power: approximately 11 g CO2e/kWh
- Nuclear power: approximately 12 g CO2e/kWh
- Solar power: around 41 g CO2e/kWh

Conversion to kg/kWh:Divide by 1000

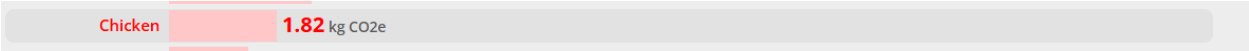
Transport Emission

https://ourworldindata.org/travel-carbon-footprint

Mode	Value in Code (kg)	Why this value?
Car	**0.170**	Based on an **average petrol car** (approx. 40 mpg). If you drive a massive SUV, this goes up to **0.250**. If you drive a small hybrid, it drops to **0.100**.
Bus	**0.097**	This assumes an "average" occupancy. A bus is only efficient if it has passengers; if a bus is empty, it's worse than a car. If it's full, it's as low as **0.030**.
Train	**0.035**	This is the UK/EU average for **National Rail**. Electric trains are much lower, while older diesel trains are higher.
Cycle	**0.000**	We ignore "fuel" (food) for the human because people have to eat anyway!

Food Emission

Poultry meal:
https://www.co2everything.com/co2e-of/chicken#:~:text=One%20serving%20(100g)%20of%20cheese%20is%20equivalent%20to%202.79kg,serving%20(100g)%20of%20Fish.



Vegetarian meals:

https://link.springer.com/a

Within vegetarian meals, the median is 0.8 kg CO_2eq,

Vegan and Beef Meals:
article/10.1007/s11367-023-02161-1

approximately 0.42 kg CO_2 per kWh (varies by region), and food choices range from 0.5 kg CO_2 for a vegan meal to 3.3 kg CO_2 for a beef-based meal. Students are free to research and choose their own emission factors, but they must document their sources.