Carbon Footprint of Electricity Use

CO_2 emissions from electricity use with your grid emission factor, per year and per unit of product, by the location-based Scope 2 method.

Method: Scope 2 (location based): CO_2 = kWh × grid factor (GHG Protocol)

Input parameters

Unit system: SI

Parameter	Value	Unit
Electricity used per year	12,000	MWh
Grid emission factor (kg CO_2 per kWh) From your national grid authority for the year.	0.72000	
Production per year (0 to skip)	50,000	

Calculated results

Parameter	Value	Unit
CO_2 per year	8,640.0	t
CO_2 per unit of product (kg)	172.80	

Notes for this case

- Transmission and distribution losses are not added: if your grid factor is for generation, raise the electricity by the loss share first.

Formula and method

$$m_{CO_2} = E \cdot EF$$

Variables

E	Electricity used per year	J
EF	Grid emission factor (kg CO_2 per kWh)	-
P	Production per year (0 to skip)	-
m_{CO_2}	CO_2 per year	kg
e_p	CO_2 per unit of product (kg)	-

Method and standards

Emission factor method.

Assumptions and limits

- Annual average factor; the per-unit figure is shown only when a production is entered.
- No transmission and distribution loss factor is applied.

References

- Scope 2 (location based): CO_2 = kWh × grid factor (GHG Protocol)

Report details

Report reference	FCC-DPWZ-PCQ7 (the same inputs always give the same reference)
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Release checks	2 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/environmental/carbon-energy/grid-electricity-footprint

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.