



NATIONAL GRID EMISSION FACTOR

The National Grid Emission Factor (NGEF) measures the per grid standard amount of carbon dioxide (CO₂) emissions per unit of electricity generated in a grid, expressed in tons of CO₂ per megawatt-hour (tCO₂/MWh). It is primarily used under the Clean Development Mechanism (CDM) to quantify corresponding Certified Emission Reduction (CER) credits from energy-related projects.

It is computed based on (1) identification of relevant electricity systems; (2) qualification for inclusion of off-grid power plants based on capacity; and (3) selection of appropriate method to determine the operating margin. Once identified, the following parameters are calculated for the relevant electricity systems:

1. **Operating Margin (OM)** - emission factor that refers to the group of existing power plants whose current electricity generation would be affected by the proposed CDM project activity.
2. **Build Margin (BM)** - emission factor that refers to the group of prospective power plants whose construction and future operation would be affected by the proposed CDM project activity.
3. **Combined Margin (CM)** – emission factor that refers to the weighted average of an operating margin (OM) and a build margin (BM) emission factor

The grid characteristics and methodological assumptions applied in calculating the 2019–2021 NGEF remain applicable for the subsequent 2020–2022, 2021–2023, and 2022–2024 NGEF calculation, as outlined below:

- Only grid-connected power plants are considered, as off-grid power plants account for less than 10.0 percent of the total system capacity; and
- Since the low-cost/must-run resources constitute less than 50.0 percent of the average grid generation (excluding electricity generated by off-grid power plants) over the past five (5) most recent years, the Simple Operating Margin (OM) approach is applied in computing the OM emission factor.

The table below shows the computed 2020–2022, 2021–2023, and 2022–2024 grid emission factors using DOE's Power Statistics.



National Grid Emission Factor for 2020-2022

Parameter	Luzon-Visayas Grid ^{d,e} in t-CO ₂ /MWh	Mindanao Grid ^{d,e} in t-CO ₂ /MWh
Operating Margin Emission Factor^a (EF_{OM})		
EF _{OM}	0.7080	0.8518
Build Margin Emission Factor^b (EF_{BM})		
EF _{BM}	0.8144	0.8386
Combined Margin Emission Factor^c (EF_{CM} or NGEF)		
EF _{CM} (Wind and Solar Projects)	0.7346	0.8485
EF _{CM} (Other Projects)	0.7612	0.8452

National Grid Emission Factor for 2021-2023

Parameter	Luzon-Visayas Grid ^{d,e} in t-CO ₂ /MWh	Mindanao Grid ^{d,e} in t-CO ₂ /MWh
Operating Margin Emission Factor^a (EF_{OM})		
EF _{OM}	0.7220	0.8516
Build Margin Emission Factor^b (EF_{BM})		
EF _{BM}	0.8240	0.8109
Combined Margin Emission Factor^c (EF_{CM} or NGEF)		
EF _{CM} (Wind and Solar Projects)	0.7475	0.8414
EF _{CM} (Other Projects)	0.7730	0.8312

National Grid Emission Factor for 2022-2024

Parameter	Luzon-Visayas Grid ^{d,e} in t-CO ₂ /MWh	Mindanao Grid ^{d,e} in t-CO ₂ /MWh
Operating Margin Emission Factor^a (EF_{OM})		
EF _{OM}	0.7310	0.8519
Build Margin Emission Factor^b (EF_{BM})		
EF _{BM}	0.7855	0.7427
Combined Margin Emission Factor^c (EF_{CM} or NGEF)		
EF _{CM} (Wind and Solar Projects)	0.7446	0.8246
EF _{CM} (Other Projects)	0.7582	0.7973

^a Operating margin (OM) emission factor covers the group of existing power plants whose current electricity generation would be affected by the proposed CDM project activity.

^b Build margin (BM) emission factor covers the group of prospective power plants whose construction and future operation would be affected by the proposed CDM project activity.

^c Combined margin (CM) emission factor is the weighted average of the OM and BM emission factors.

^d Only power plants connected to the grid were included in the calculation for both Luzon-Visayas and Mindanao grids because the total capacity of off-grid power plants is less than 10% of the total capacity of grid power plants in the electricity system.

^e The low-cost/must-run resources constitute less than 50% of the total grid generation (excluding electricity generated by off-grid power plants) in average of the five most recent years; therefore, simple OM approach was used to calculate the OM emission factor.