

Briefing Note – Derivation and Use of Primary Energy Factors in SBEM

19 January 2021

The following tables present the proposed revised fuel factors for the 2021 National Calculation Methodology for non-domestic buildings (SBEM). The emission factors for the fuels are in terms of kgCO₂e/kWh gross calorific value, and the primary energy factors are in terms of kWh primary/kWh delivered.

The methodology used to obtain the fuel factors is described in more detail in a further document: *S10TP-15 CO2 AND PRIMARY ENERGY FACTORS FOR SAP*¹.

¹CO2 AND PRIMARY ENERGY FACTORS FOR SAP https://files.bregroup.com/sap/S10TP-15_-_CO2_and_Primary_Energy_factors_for_SAP_v1_1_10_1.pdf

Fuel type	kgCO₂/kWh	kWh/kWh
Natural gas	0.210	1.126
LPG	0.241	1.141
Biogas	0.024	1.286
Fuel oil	0.319	1.180
Coal	0.375	1.064
Anthracite	0.395	1.064
Manufactured smokeless fuel (inc. Coke)	0.366	1.261
Dual fuel (mineral + wood)	0.087	1.049
Biomass	0.029	1.037
Grid supplied electricity	Table 2	Table 2
Grid displaced electricity	Table 3 for PV; Table 2 otherwise	Table 3 for PV; Table 2 otherwise
Waste heat	0.015	1.063

Table 1: Fuel CO₂ emission and primary energy factors for non-domestic buildings

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
kgCO₂/kWh	0.163	0.160	0.153	0.143	0.132	0.120	0.111	0.112	0.122	0.136	0.151	0.163
kWh/kWh	1.602	1.593	1.568	1.530	1.487	1.441	1.410	1.413	1.449	1.504	1.558	1.604

Table 2: CO₂ emission and primary energy factors for grid-supplied electricity and grid-displaced electricity EXCEPT that generated by PV systems

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
kgCO₂/kWh	0.196	0.190	0.175	0.153	0.129	0.106	0.092	0.093	0.110	0.138	0.169	0.197
kWh/kWh	1.715	1.697	1.645	1.567	1.478	1.389	1.330	1.336	1.405	1.513	1.623	1.718

Table 3: CO₂ emission and primary energy factors for grid-displaced electricity by generation from PV systems