

# **CATERING FOR A SUSTAINABLE FUTURE GROUP**

## **ENERGY BENCHMARKS FOR CATERING FACILITIES**

### **Cafeteria Restaurant:**

The restaurant forms part of a larger facility and has closely grouped seating with wide aisles. The menu is limited in choice and changes daily using mainly convenience food.

### **Cafeteria Energy Consumption Mix**

**42% Environmental & 58% Operational**

### **Area required for 100 seats:**

Seating area	100 x 1.4m <sup>2</sup> = 140m <sup>2</sup>
Servery area	100 x 0.4m <sup>2</sup> = 40m <sup>2</sup>
Production	100 x 0.4m <sup>2</sup> = 40m <sup>2</sup>
Cloakrooms etc	100 x 0.15m <sup>2</sup> = 15m <sup>2</sup>

**Total area required 235m<sup>2</sup>**

### **Seating Turnover:**

**3.5 Times per Day**

### **Number of Meals**

Number of seats x Daily Turnover per seat x Trading Days = Number of Covers

**100 x 3.5 x 365 = 127,750 meals.**

### **TYPICAL:**

### **Total Energy Consumption per Year**

Fossil Fuel 235m <sup>2</sup> x 1250 Kwh - m <sup>2</sup> - per year	=	293,750 Kw
Electricity 235m <sup>2</sup> x 730 Kwh - m <sup>2</sup> - per year	=	171,550 Kw
<b>Total 235m<sup>2</sup> x 1750 Kwh - m<sup>2</sup> - per year</b>	<b>=</b>	<b>465,300 Kw</b>

### **Environmental Energy Consumption per Year**

Fossil Fuel 293,750 Kw x 42% = 123,375 Kw (525 Kwh/m <sup>2</sup> )
Electricity 171,550 Kw x 42% = 72,051 Kw (307 Kwh/m <sup>2</sup> )

**Total 465,300Kw x 42% = 195,426 Kw (832 Kwh/m<sup>2</sup>)**

### Operational Energy Consumption per Year

Fossil Fuel 293,750 Kw x 58% = 170,375 Kw

Electricity 171,550 Kw x 58% = 99,499 Kw

**Total 465,300Kw x 58% = 269,874 Kw**

### Operational Energy Consumption per Meal

Energy Consumption ÷ Number of Covers

Fossil Fuel 170,375 Kw ÷ 127,750 = 1.33 Kw per meal

Electricity 99,499 Kw ÷ 127,750 = 0.78 Kw per meal

**Total 238,525 Kw ÷ 127,750 = 2.11 Kw per meal**

### Annual CO<sub>2</sub> Emission Levels

Environmental Emissions

Fossil Fuel 123,375 x 0.19 = 23,441 kg CO<sub>2</sub>

Electricity 72,051 x 0.43 = 30,982 kg CO<sub>2</sub>

Operational Emissions

Fossil Fuel 170,375 x 0.19 = 32,371 kg CO<sub>2</sub>

Electricity 99,499 x 0.43 = 42,786 kg CO<sub>2</sub>

Total Emissions 129,580 kg CO<sub>2</sub> (35,375 Kg Carbon)

**129,580 kg CO<sub>2</sub> ÷ 127,750 = 1.01 kg CO<sub>2</sub> per meal  
(0.277 kg Carbon per meal)**

### GOOD PRACTICE:

#### Total Energy Consumption per Year

Fossil Fuel 235m<sup>2</sup> x 1100 kWh - m<sup>2</sup> - per year = 258,500 Kw

Electricity 235m<sup>2</sup> x 650 kWh - m<sup>2</sup> - per year = 152,750 Kw

**Total 235m<sup>2</sup> x 1750 kWh - m<sup>2</sup> - per year = 411,250 Kw**

#### Environmental Energy Consumption per Year

Fossil Fuel 258,500 Kw x 42% = 108,570 Kw (462 Kwh/m<sup>2</sup>)

Electricity 152,750 Kw x 42% = 64,155 Kw (273 Kwh/m<sup>2</sup>)

**Total 411,250 Kw x 42% = 172,725 Kw (735 Kwh/m<sup>2</sup>)**

### Operational Energy Consumption per Year

Fossil Fuel 258,500 Kw x 58% = 149,930 Kw

Electricity 152,750 Kw x 58% = 88,595 Kw

**Total 411,250 Kw x 58% = 238,525 Kw**

### Operational Energy Consumption per Meal

Energy Consumption ÷ Number of Covers

Fossil Fuel 149,930 Kw ÷ 127,750 = 1.18 Kw per meal

Electricity 88,595 Kw ÷ 127,750 = 0.69 Kw per meal

**Total 238,525 Kw ÷ 127,750 = 1.87 Kw per meal**

### Annual CO<sub>2</sub> Emission Levels

Environmental Emissions

Fossil Fuel 108,570 x 0.19 = 23,441 kg CO<sub>2</sub>

Electricity 64,155 x 0.43 = 30,982 kg CO<sub>2</sub>

Operational Emissions

Fossil Fuel 149,930 x 0.19 = 28,487 kg CO<sub>2</sub>

Electricity 88,595 x 0.43 = 38,096 kg CO<sub>2</sub>

Total Emissions 114,798 kg CO<sub>2</sub> (31,340 Kg Carbon)

**114,798 kg CO<sub>2</sub> ÷ 127,750 = 0.9 kg CO<sub>2</sub> per meal  
(0.245 kg Carbon per meal)**

***The annual reduction in carbon by adopting Good Practice for this facility is 4,035 kg Carbon (11.4%)***

***By using Good Practice and a mixture of fossil fuel and electricity this facility will discharge 114,798 kg CO<sub>2</sub> /Kwh per year and this would increase to 176,838 kg CO<sub>2</sub> /Kwh per year, a 54% increase if it was run only on electricity supplied from the national grid.***

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