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PROJECT: 34 KINGSLEY PLACE

CLIENT: D HAYHURST

DATE: MARCH 26

SOFTWARE USE: N/A

CALCULATION BY: Ian Folkard IRF Energy Ltd

PURPOSE OF CALCULATION

Calculation of unregulated energy and carbon from cooking & electrical appliances.

METHODOLOGY:

Follows methodology in SAP 10.2 Document appendices L2 and L3- see extracts overleaf

DATA

Floor areas measured from supplied construction plans

CALCULATIONS- SEE OVERLEAF

RESULTS:

Total unregulated energy use=3322kwh/year (30.7 kwh/yr/m²)

Total unregulated carbon emissions =609 kg/yr (5.6 Kg/y/m²)



METHODOLOGY

Extracts from SAP 10.2 Document:

L2 Electrical appliances

The initial value of the annual energy use in kWh for electrical appliances is:

$$E_A = 207.8 \times (TFA \times N)^{0.4714} \quad (L13)$$

where TFA is the total floor area in m² and N is the assumed number of occupants (see Table 1b).

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The appliances energy use in kWh in month m (January = 1 to December = 12) is

$$E_{A,m} = E_A \times [1 + 0.157 \times \cos(2\pi (m - 1.78) / 12)] \times n_m / 365 \quad \text{kWh} \quad (L14)$$

Then re-calculate the annual total as the sum of the monthly values:

$$E_A = \sum_{m=1}^{12} E_{A,m} \quad (L15)$$

Table 1b: Occupancy

Assumed number of occupants
if TFA > 13.9: $N = 1 + 1.76 \times [1 - \exp(-0.000349 \times (TFA - 13.9)^2)] + 0.0013 \times (TFA - 13.9)$
if TFA ≤ 13.9: $N = 1$
N is the assumed number of occupants, TFA is the total floor area of the dwelling.



L3 Cooking

Internal heat gains in watts from cooking:

$$G_c = 35 + 7 N \quad (L18)$$

When lower internal heat gains are assumed for the calculation,

$$G_c = 23 + 5 N \quad (L18a)$$

CO₂ emissions in kg/m²/year associated with cooking:

$$(119 + 24 N) / TFA \quad (L19)$$

where TFA is the total floor area in m² and N is the assumed number of occupants (see Table 1b).

Equation (L18) or (L18a) is used for the heat gain from cooking in Section 5 of the calculation. Equation (L19) is used where an estimate is required of the annual CO₂ emissions for cooking. For example, this was formerly used in relation to Level 6 of the Code for Sustainable Homes and Stamp Duty Land Tax.

Cooking electricity consumption:

$$E_{cook} = 138 + 28 \times N \quad (L20)$$

CALCULATION:

Figures below calculated following above methodology:

			L2 ENERGY APPLIANCES				L3 COOKING		TOTALS L2 + L3	
			OCCUPANTS							
UNIT	NO	TFA	N	ENERGY E(A)	ENERGY-ADJ E(A)	CO2	ENERGY	CO2	ENERGY	CO2
		M2	TABLE 1B	per unit	per unit	per unit	per unit	per unit	KWH/yr	kg/yr
				KWH	KWH/yr	kg/yr	KWH/yr	kg/yr		
34 KINGSLEY PLACE	1	108.18	2.80	3073.2	3105.6	422.4	216.5	186.3	3322.1	608.6
/M2									30.71	5.63

NOTES/CAVEATS

This document should only be used for the purpose for which it was commissioned. The author shall not be liable for the consequences of using this document for other projects or purposes.

The calculation of unregulated energy is generic and based upon typical usage. More accurate estimates could be made by including actual appliance energy demand e.g. In PHPP.