Assessing Energy Statements Part 1

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Hotchester Council SPD

- “The development must achieve a 10% reduction in CO2 emissions through the installation of low or zero carbon (LZC) energy supplies, compared to the Buildings Emissions Rate (BER) without the LZC technologies, where this BER at least achieves the Target Emissions Rate (TER) specified in the current Building Regulations. This policy will remain in force until the Building Regulations require a TER of at least 50% less than the 2006 Building Regulations. ”

- What data do you need?
- What units would you like it in?

Data Needed

Part L Energy Consumption - Electricity	kWh or MWh
Part L Energy Consumption - Gas	kWh or MWh
Part L Energy Consumption – Total	kWh or MWh
CO2 Emissions - Electricity	Kg or T CO2
CO2 Emissions - Gas	Kg or T CO2
CO2 Emissions - Total	Kg or T CO2
Target CO2 from LZC Technologies	Kg or T CO2
Buildings Emissions Rate BER	Kg CO2/m2
Target Emissions Rate TER	Kg CO2/m2
Heating Fuel	
CO2 emissions factors used	KgCO2/kWh
Floor Area (useful but not essential if other data provided)	m2
Energy Produced by LZC Technology	kWh or MWh
CO2 saved by LZC Technology	Kg or T CO2

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- Which of this data is given in the application?
- Can you calculate the baseline data from the information given?
  - Energy Demand
  - CO2 Emissions
  - Target Emissions Saving from LZC technologies
- If so, show your calculation and the answer
- *Hint: You may need to know CO2 emissions factors*
  - *Gas 0.206 kg/kWh*

Data Needed

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Baseline Energy & Emissions

Data	Given	Calculation?	Quantity
Energy Consumption - Electricity	No	= kWh/m2 x floor area = 35 x 2000	70,000 kWh
Energy Consumption - Gas	No	= 105 x 2000	210,000 kWh
Energy Consumption – Total	No	= Gas + Elec = 210,000 + 70,000	280,000 kWh
CO2 Emissions - Electricity	No	= 70,000 x 0.591 Need to know conversion factor	41,370 kg
CO2 Emissions - Gas	No	= 210,000 x 0.206 Need to know conversion factor	43,260 kg
CO2 Emissions - Total	No	= 41,370 + 43,260	84,630 kg

What Can't You Work Out?

- Building Emissions Rate (BER)
  - This is based on Building Regulations Part L regulated emissions and is not the same as the total emissions as it omits any power used via sockets
- Target Emissions Rate (TER)
  - A standard calculation based on Building Regulations Methodology and dependent on the building type
- Target Reduction from LZC technologies
  - Calculated from BER which you don't know.

Contribution from LZC technologies

Data	Given	Calculation?	Quantity
Solar Panel Output			
Gas consumption required to provide solar panel output assuming 90% boiler efficiency			
Solar Panel CO2 Savings			
Solar CO2 savings %			

Contribution from LZC technologies

Data	Given	Calculation?	Quantity
Solar Panel Output	No	= 10% x 280,000 (Total Energy)	28,000 kWh
Gas consumption required to provide solar panel output assuming 90% boiler efficiency	No	= 28,000 kWh/ 0.9	31,111 kWh
Solar Panel CO2 Savings	No	= 31,111 kWh x 0.206 kg/kWh (Need to know conversion factor)	6,409 kg
Solar CO2 savings %	No	= 6,409/84,630	7.6%

What assumption underlies these figures?

Does it answer whether the development will meet your target?

And Finally…

- What more information would you ask for?

- What's the most important error (of the many) in the Energy Statement?

Questions?