Energy in the Building Regulations

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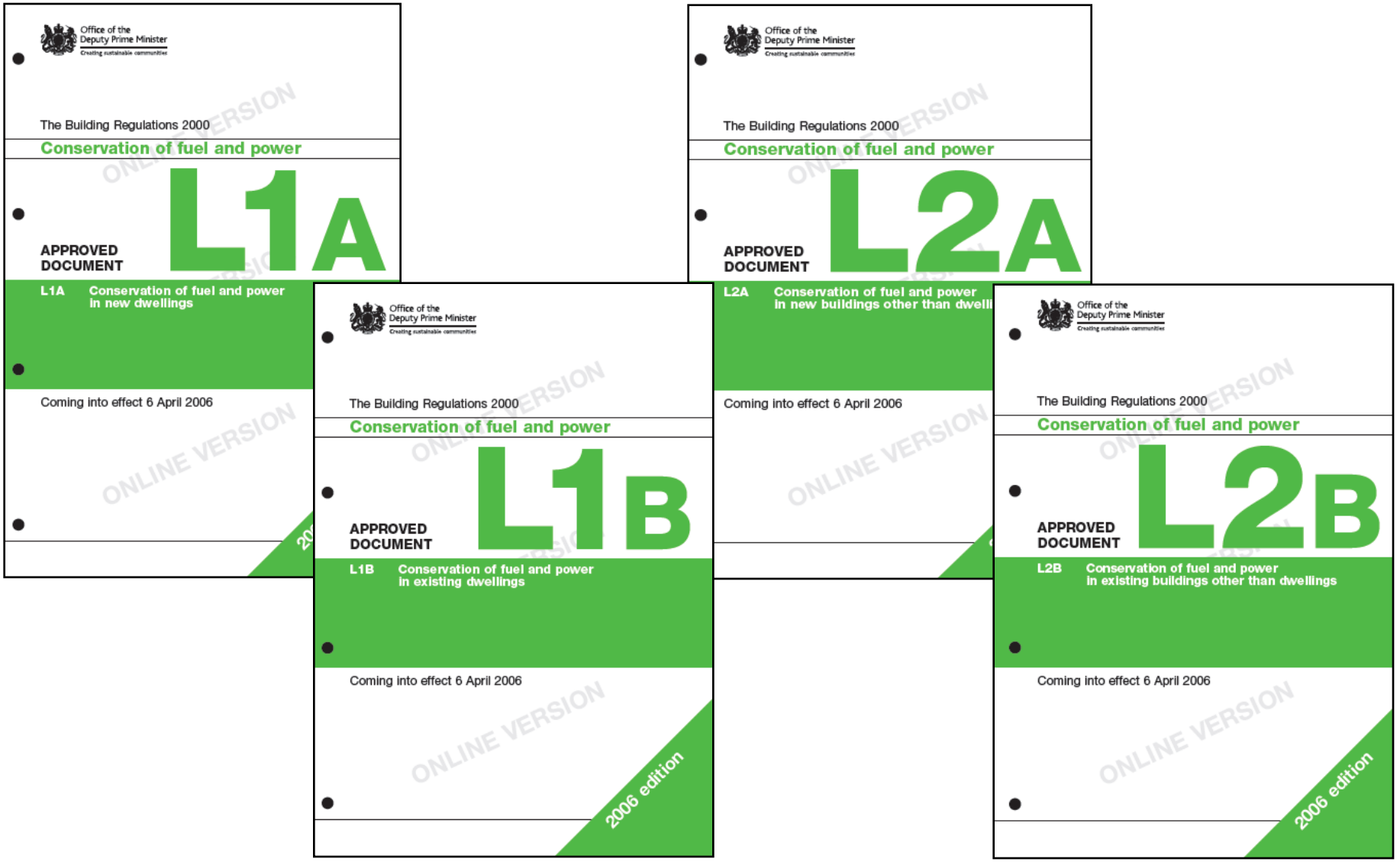
Delivered by:

nwIEP north west improvement and efficiency partnership | CLASP. Environlink Quantum AECOM

Part L – New and existing buildings

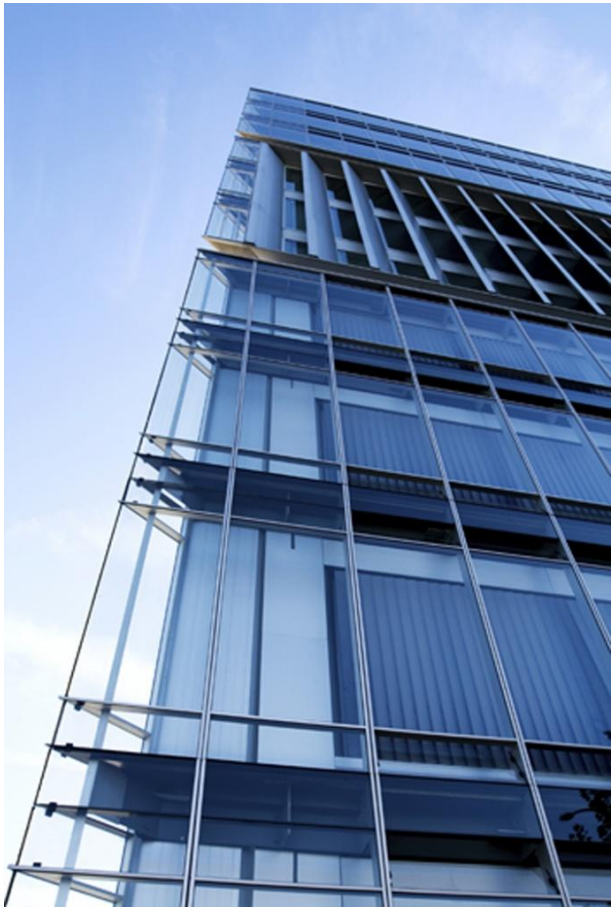


Part L – Key Criteria

- Criterion 1: Predicted carbon dioxide emissions from the proposed building do not exceed the target emissions rating
- Criterion 2: The performance of the building fabric and the building services systems should be no worse than the design limits
- Criterion 3: Limits on solar gains
- Criterion 4: Quality of construction and commissioning. The performance of the building, as built, is consistent with the building emissions rating

Part L 2010 – Key changes from 2006

- Achieving 25% improvement
  - Domestic: Straight 25% CO_2 reduction
  - Non-domestic: Aggregate 25% reduction
- Design Stage Calculation
  - To be submitted to BC before construction starts
  - Software to provide list of critical design features
- CO_2 emissions factors…



Changes to CO_2 emissions factors

Fuel:	2006 $kgCO_2/kWh$	2010 – $kgCO_2/kWh$	Change
Mains Gas	0.194	0.198	+2%
Heating Oil	0.265	0.274	+3%
Wood Pellets	0.025	0.028	+12%
Grid Electricity	0.422	0.517	+23%
Displaced Elec.	0.568	0.529	-7%

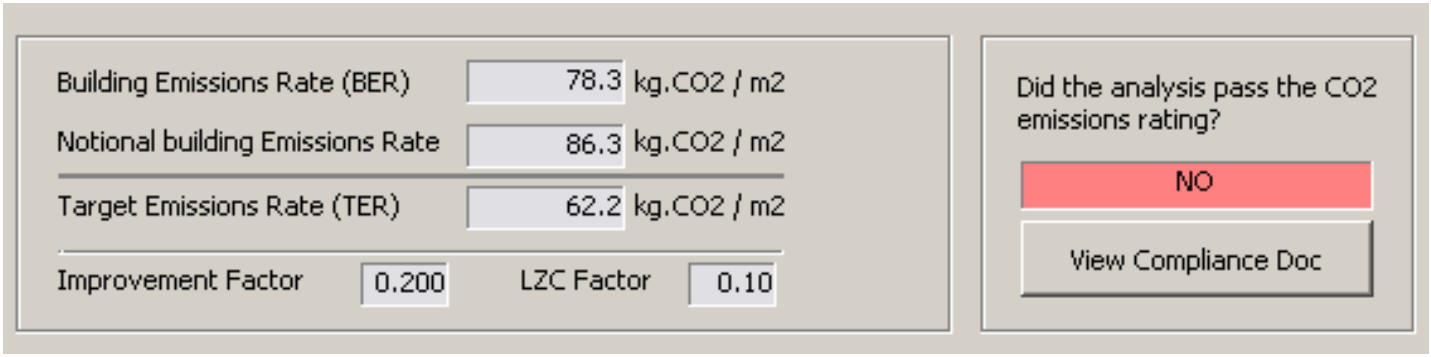
Future National Buildings Targets

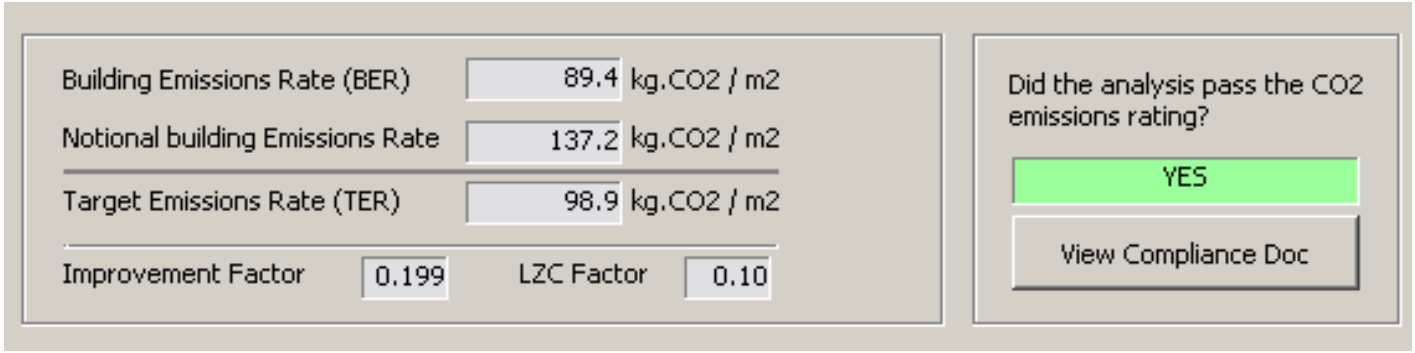
- Zero Carbon timeline through revisions of Part L in 2010, 2013 and beyond:
- Housing: 2016 (2013 for social housing)
- Commercial: 2019 (2018 for public buildings)

	CO_2 Reduction Target over 2006 Compliant Building			
Year	**Residential (Social)**	**Residential (Private)**	**Non-Domestic (Public)**	**Non-Domestic (Private)**
2006	25%	0%	0%	0%
2010	44%	25%	25%	25%
2013	Zero Carbon	44%	44%	44%
2016	Zero Carbon	Zero Carbon	100%	100%
2018	Zero Carbon	Zero Carbon	Zero Carbon	100%
2019	Zero Carbon	Zero Carbon	Zero Carbon	Zero Carbon

What does a developer have to do?

- Demonstrate compliance with Part L criterion 1 (CO_2 emissions), using SBEM or SAP
  - Building Emissions Rate (BER)
  - Dwelling Emissions Rate (DER)
  - Target Emissions Rate (TER)
  - Part L pass if BER<TER





SAP results page

BRUKL Output Document

HM Government

Compliance with England and Wales Building Regulations Part L

Project name

STROMA Simulation Bu

As built

Date: Tue Nov 30 16:55:37 2010

Administrative information

Building Details

Address: LONDON,

Certification tool

Calculation engine: SBEM

Calculation engine version: v3.5.a.0

Interface to calculation engine: iSBEM

Interface to calculation engine version: v3.5.a

BRUKL compliance check version: v3.5.a.0

Owner Details

Name: Not available

Telephone number: Information not provided by the user

Address: Information not provided by the user, Information not provided by the user, Information not provided by the user

Certifier details

Name: Felix Stockmann

Telephone number: 01423 541 133

Address: 11 Scriven Road, KNARESBOROUGH, HG5 9EQ

Criterion 1: Predicted CO2 emission from proposed building does not exceed the target

1.1	Calculated CO2 emission rate from notional building	37.6 KgCO2/m2.annum
1.2	Improvement factor	0.18
1.3	LZC benchmark	0.1
1.4	Target CO2 Emission Rate (TER)	27.8 KgCO2/m2.annum
1.5	Building CO2 Emission Rate (BER)	26.7 KgCO2/m2.annum
1.6	Are emissions from building less than or equal to the target?	BER =< TER
1.7	Are as built details the same as used in BER calculations?	Separate submission

Criterion 2: The performance of the building fabric and the building services systems should be no worse than the design limits

2.1 Are the U-values better than the design limits? Better than design limits

Element	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Limit}$	$U_{i\text{-}Calc}$	Surface where this maximum value occurs*
Wall**	0.35	0.27	0.7	0.27	z0/01/ne
Floor	0.25	0.15	0.7	0.22	z0/05/f
Roof	0.25	0.25	0.35	0.25	z2/01/c
Windows***, roof windows, and rooflights	2.2	2.08	3.3	2.08	z0/01/ne/g
Personnel doors	2.2	0	3	0	"No heat loss personnel doors"
Vehicle access & similar large doors	1.5	0	4	0	"No heat loss vehicle access doors"
High usage entrance doors	6	0	6	0	"No heat loss high usage entrance doors"

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [W/(m2K)] $U_{i\text{-}Limit}$ = Limiting individual element U-values [W/(m2K)]

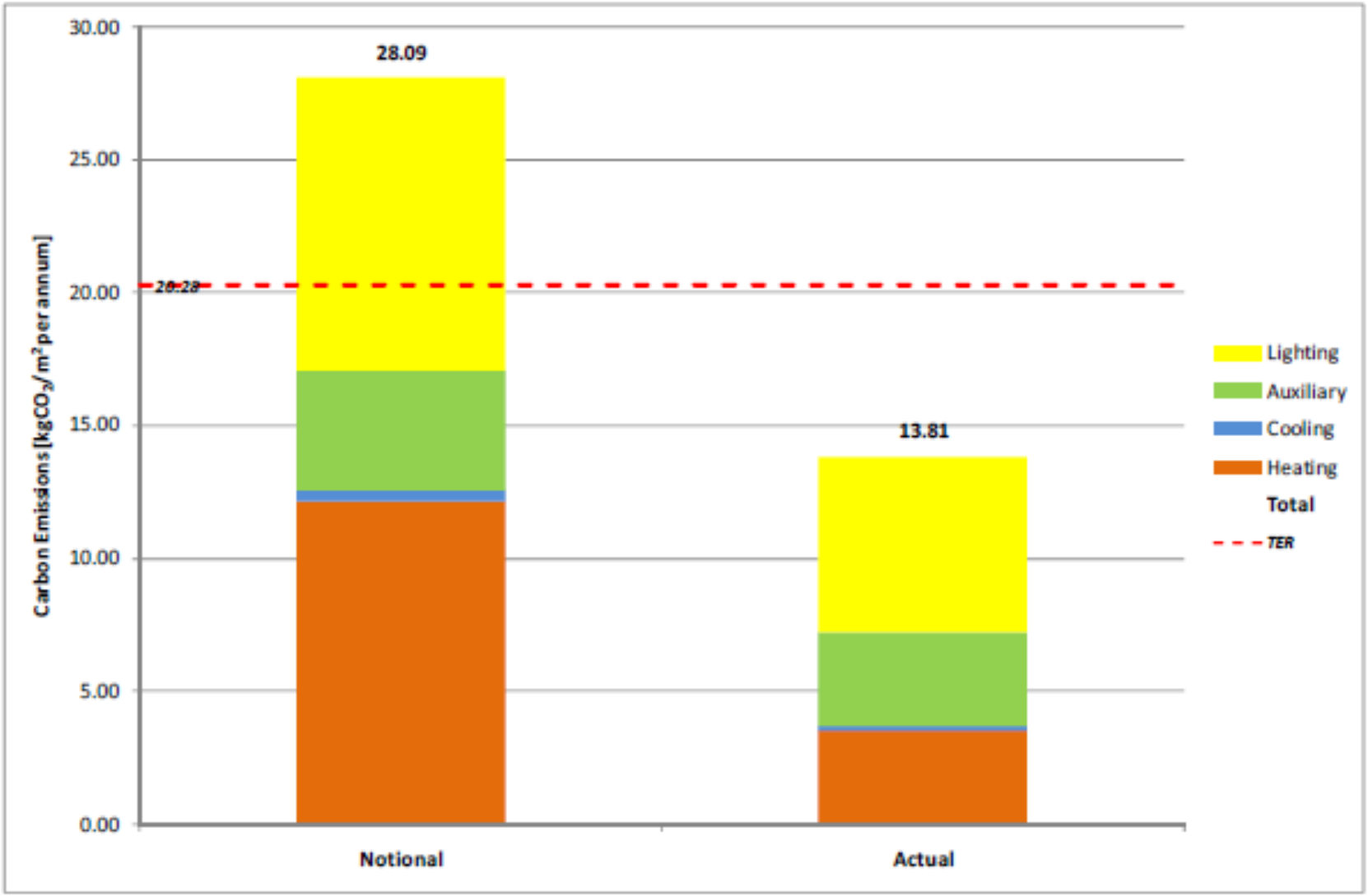
$U_{a\text{-}Calc}$ = Calculated area-weighted average U-values [W/(m2K)] $U_{i\text{-}Calc}$ = Calculated individual element U-values [W/(m2K)]

* There might be more than one surface exceeding the limiting standards

** Automatic U-value check by the tool does not apply to curtain walls whose limiting standards are similar to those for windows.

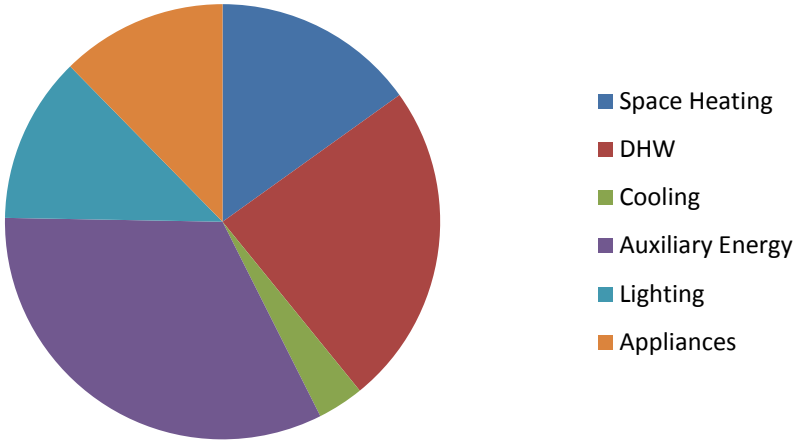
*** Display windows and similar glazing are not required to meet the standard given in this table.

West Derby School: Part L Result

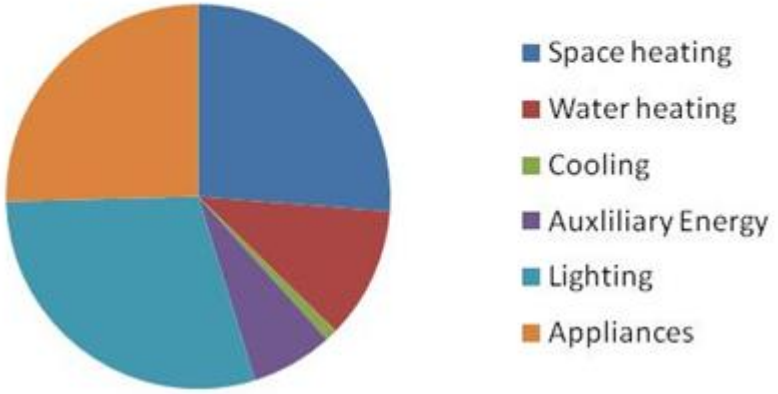


CO_2 Breakdown by End Use

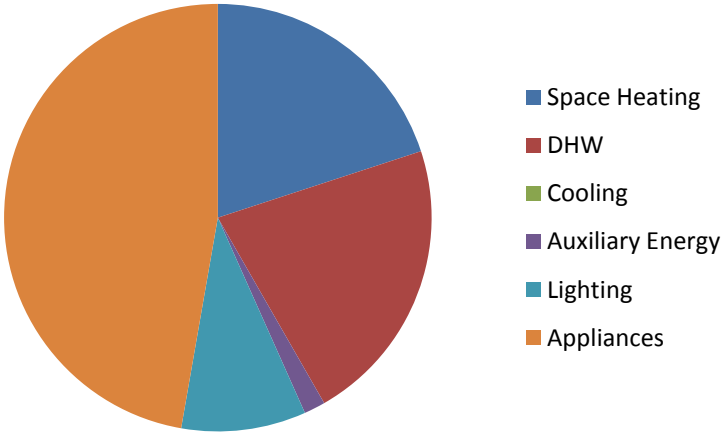
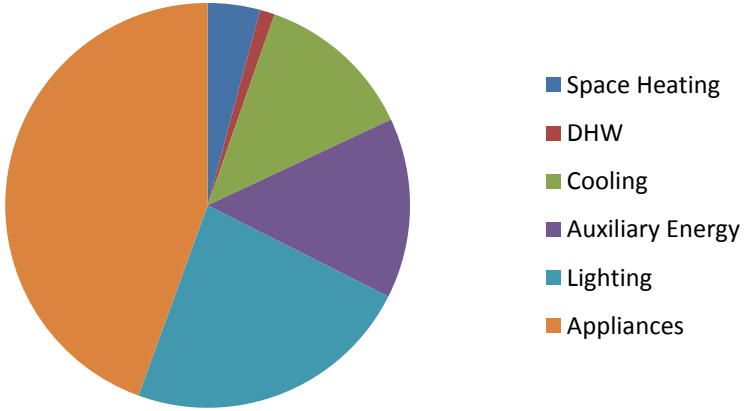
Hotel



CO_2 Emissions Breakdown For Typical Secondary School



End terrace



Office