
Putting Policy into Practice

Renewable Energy Agency Northwest

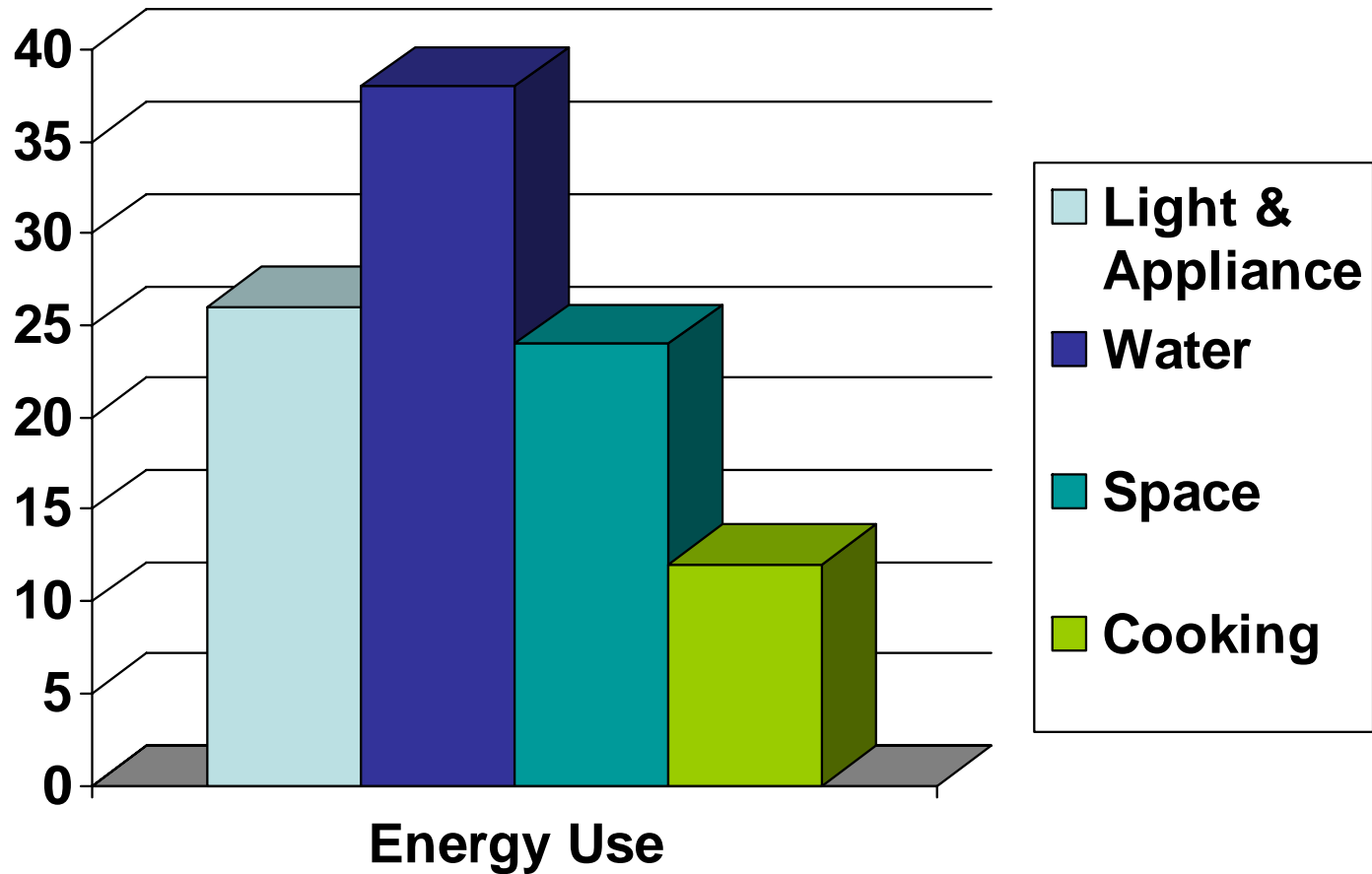
Reminder of the Terms

- Carbon v Carbon dioxide
 - 1kg Carbon = 3.7kg CO₂
- Power and Energy
- Electricity .47kg/kwh
- Gas .19kg/kwh
 - 5100 kwh Electricity is
 - 25000 kwh Gas is

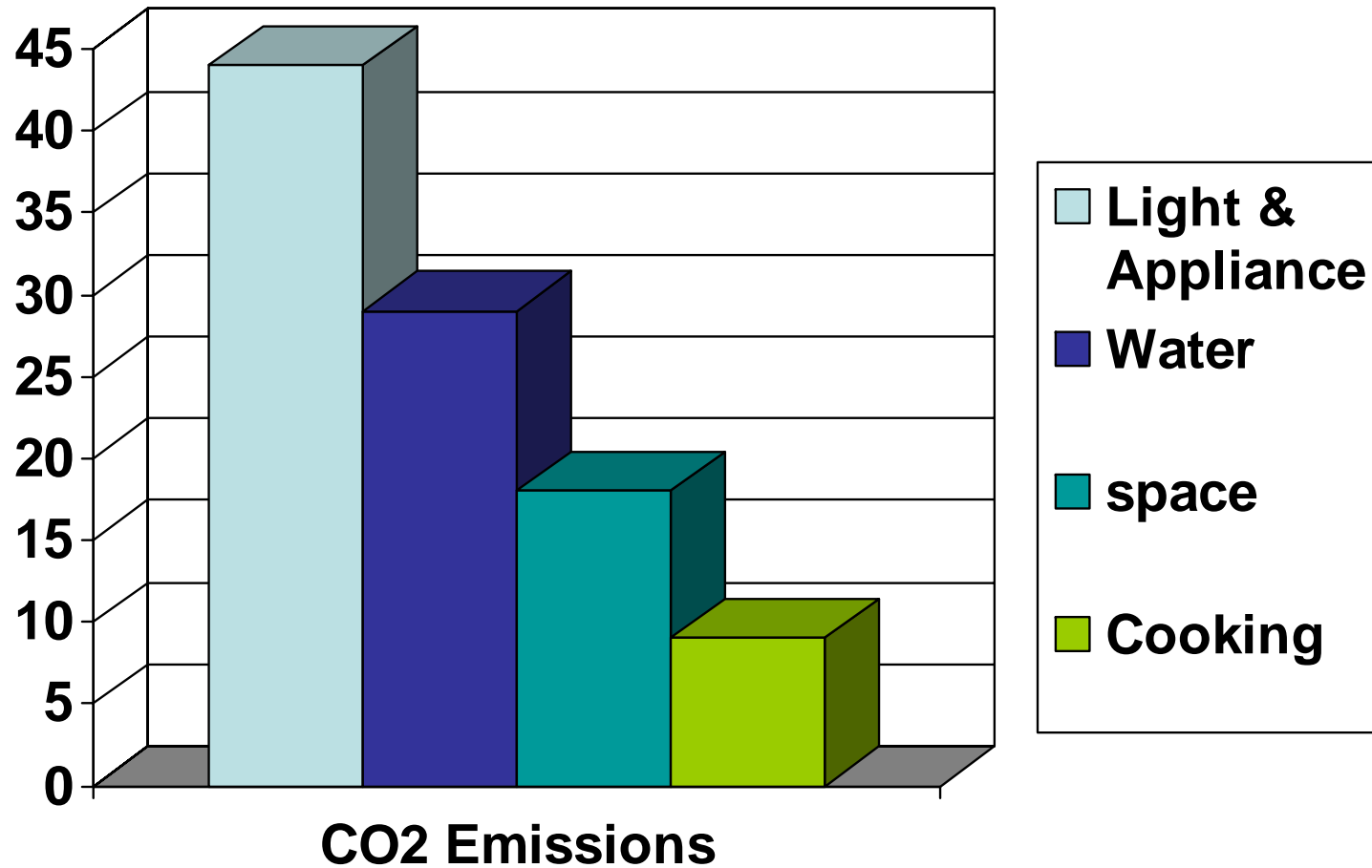
Energy Use in Buildings

- Heating
 - Water Heating
 - Space Heating
 - Process Heat
- Lighting and Appliances
- Cooling
 - Comfort Cooling
 - Air Conditioning
 - Refrigeration
- Cooking

New Mid Terrace



New Mid Terrace



Heating with Biomass

- Organic materials replacing gas for Space and Water heating. Can do 100% replacement.
- Process
- Communal and Individual
- Storage, Flue, delivery, cleaning and ash
- 15kw domestic from £4,500 Plus 3p/kwh for pellets – Compare to 3p/kwh Gas Price

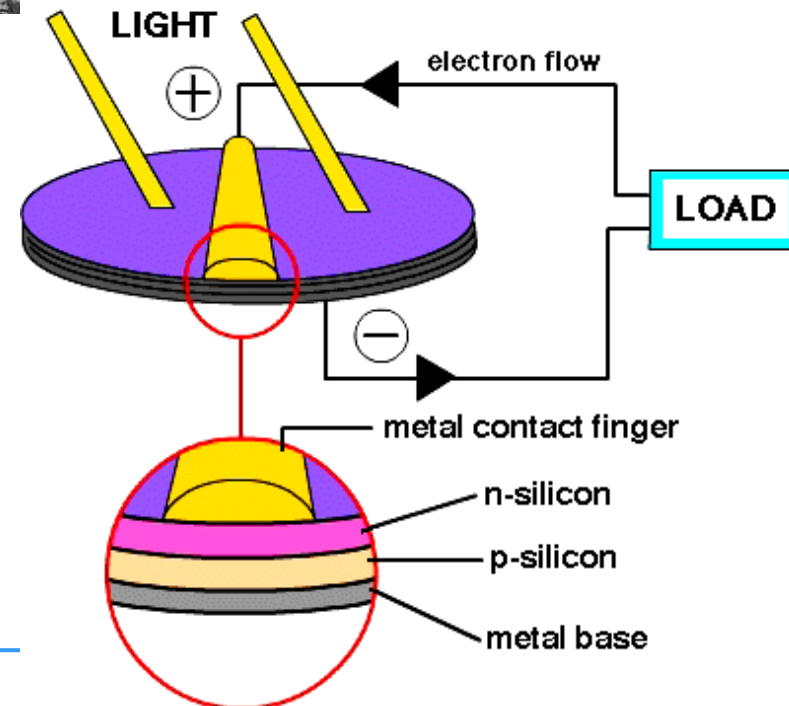
Heating with Solar

- Uses energy from Sun to heat water
- Requires hot water storage – Conflict with Combi
- 50% hot water demand – 10% CO2 saving
- £2,500 installation - Grants

Heating with Ground Source

- Constant 12 degrees
 - Space and Water heating potential to 100% of requirement
 - Electric Pump to run 4 to 1 ratio
 - Vertical or horizontal system
 - No real issues on visuals – needs plant room
 - Horizontal system £800 to £1000 per KW plus electric running cost
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Photovoltaic and Solar





Electricity - Solar

- Sunlight into direct current
- 2kw = 18m² capacity would produce 1500 KWh
- Cost £5,000 per KW
- Shading of any panels is an issue
- Roof orientation
- Permitted development

Electricity - wind

- Horizontal and vertical axis
- Building mounted or free standing
- £2,000 for 1kw capacity
- Production 700 KWh
- Unproven claims from Manufacturers
- Main production between November and March – When demand is highest
- Visual, Noise, Structural, vibration



Combined - CHP

- Micro scale is run on gas – Not renewable
- Buckshaw village
- Some questions over the pattern of Gas use
- Operationally in tune with demand

Practical Applications

- Roof angle property orientation
- Space for fuel storage
- Communal heating
- Discuss renewables early
- Assess the energy requirements of the housing
- Design in using less – TV sockets, Lighting, passive heating, insulation, appliances

Baseline

- Transparent is critical
- Calculations already being carried out in compliance with Part L
- Benchmark data available eg London Toolkit
- $9.05\text{kgC/m}^2/\text{yr} = 33\text{kgCO}_2/\text{m}^2/\text{Yr}$

checklist

- Have all the assumption been clearly used in calculating energy/carbon emissions
- Full details of energy efficiency been shown – with impact
- Have community options been explored
- The questions to be asked
 - Sockets, appliances rating, light arrangements, spread across the year.

