

# Energy Management across Worcestershire County Council

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# Presentation overview

- Where is energy typically used within schools and office buildings?
- The Energy Hierarchy
- The Spend-to-Save Fund:
  - Eligibility
  - Types of project that may be supported fitting in with the CMP
  - Assessing projects and calculating payback periods
  - The loan and repayment mechanism
- Worcestershire's AMR strategy
- Renewable Heat Incentive and Feed in Tariffs



# Where is energy used within a typical school?

Figure 1a Schools – percentage of energy use

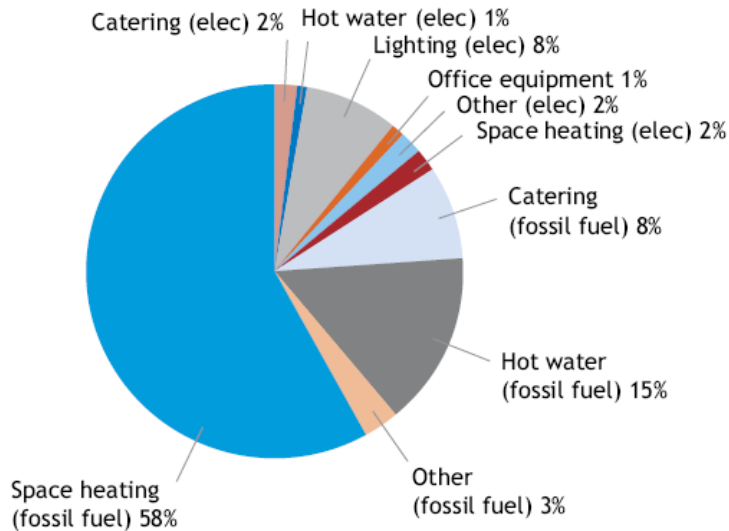
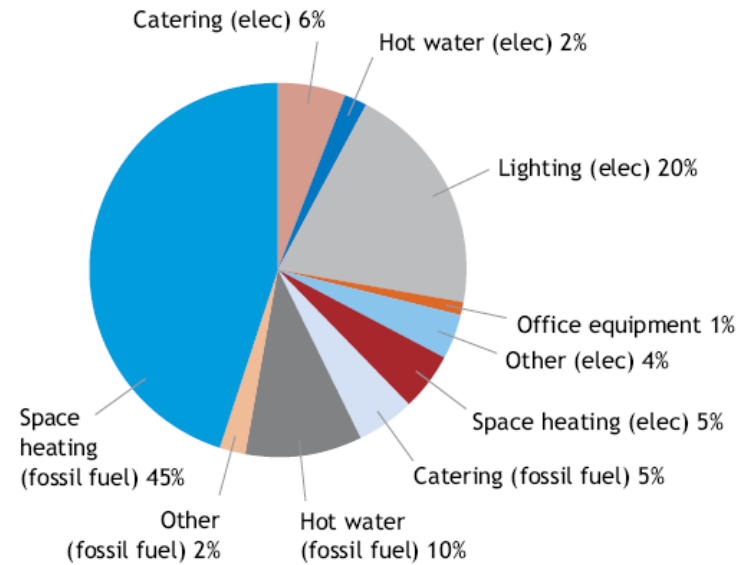


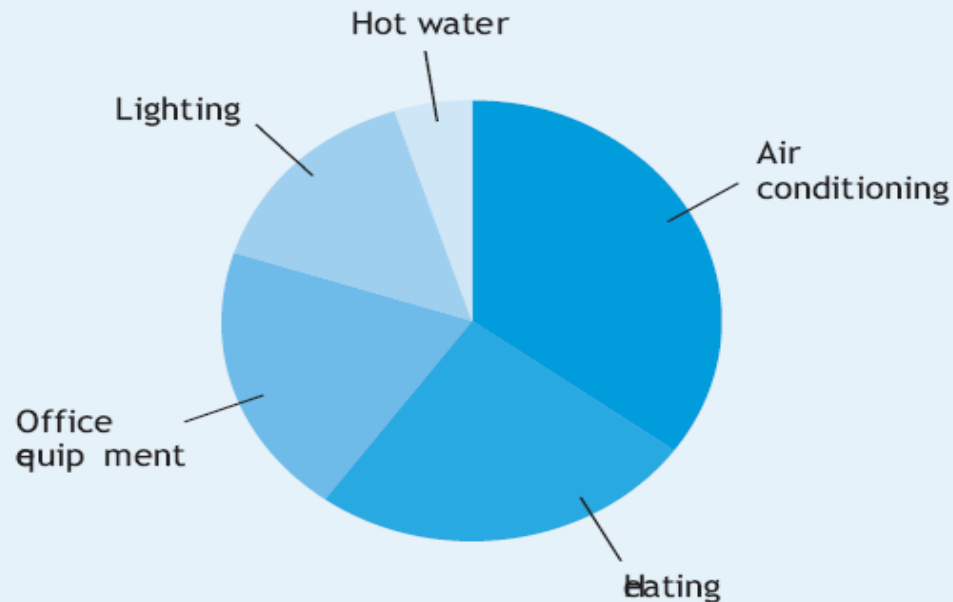
Figure 1b Schools – percentage of energy cost



Source: Carbon Trust Publication: CTV019

# Where is energy used within a typical A/C office building?

*Breakdown of energy use within a typical air-conditioned office*



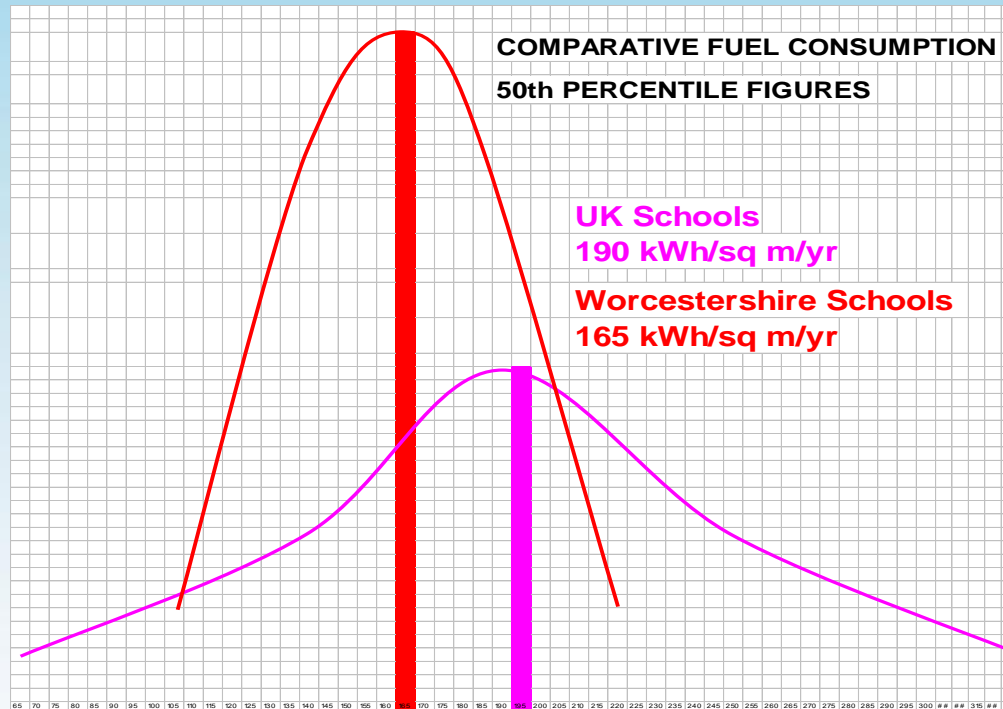
Source: Carbon Trust Publication CTV 007

# The Energy Hierarchy

- 1) Behaviour change, reduce the need for energy (e.g. reduce temperatures, switch off equipment when not needed).
- 2) Improve air tightness and reduce heating losses: Insulate and draught proof.
- 3) Use energy more efficiently (e.g. fit energy saving light bulbs, buy more A-rated electrical appliances)
- 4) Any continuing use of fossil fuel should be clean and efficient (e.g. condensing gas boilers)
- 5) Use renewable energy (in order of effectiveness, e.g. biomass, ground source heat pumps, solar thermal).



# Benefits of BEMS and energy control



In 2005, based on 2002-3 DCSF benchmarks, Worcestershire schools were, on average, **15% more energy efficient than the UK norm**

In 2009, based on DEC scores, Worcestershire schools are, on average, **25% more energy efficient than the UK norm**

***Achieved through BEMS and effective liaison with schools***

# Renewable technologies for schools



Biomass (wood-chip) boiler



Wind turbine



[Image courtesy of Energy Savings Trust]

Ground source heat pump

Solar PV

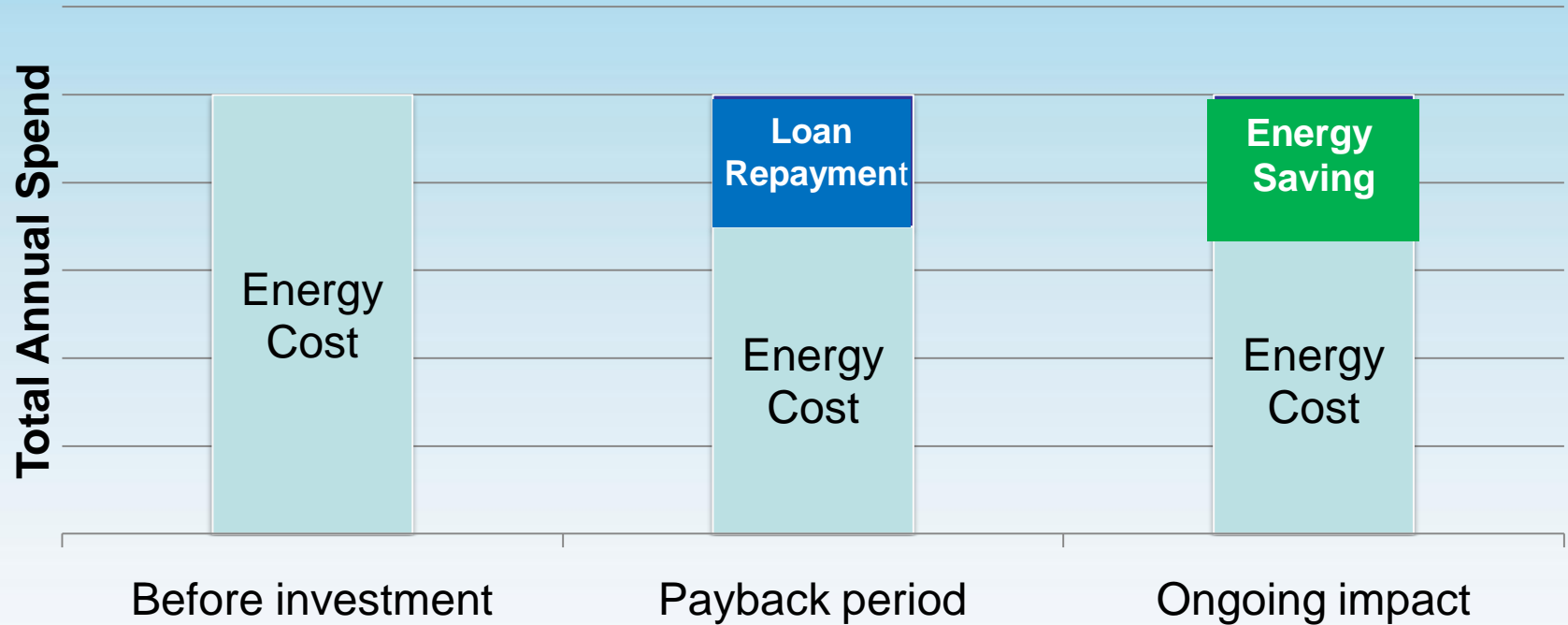


# Energy Efficiency Spend to Save Fund

- £1m capital fund over 3 years approved by Council
- Fund is a form of interest free loan
- Investment is repaid annually from the energy savings obtained
- Maximum payback period is 10 years – more flexible than Salix
- Schools keep the ongoing savings once investment is paid back



# Revenue Budget impact



# Spend to Save Fund – Projects

- Projects that may be eligible include:
  - Lighting upgrades
  - Cavity wall, loft insulation and draught proofing
  - Photovoltaic panels (solar) and Biomass boilers in some cases
- The fund is less likely to support
  - Wind turbines
  - Double glazing
  - Ground source heat pumps

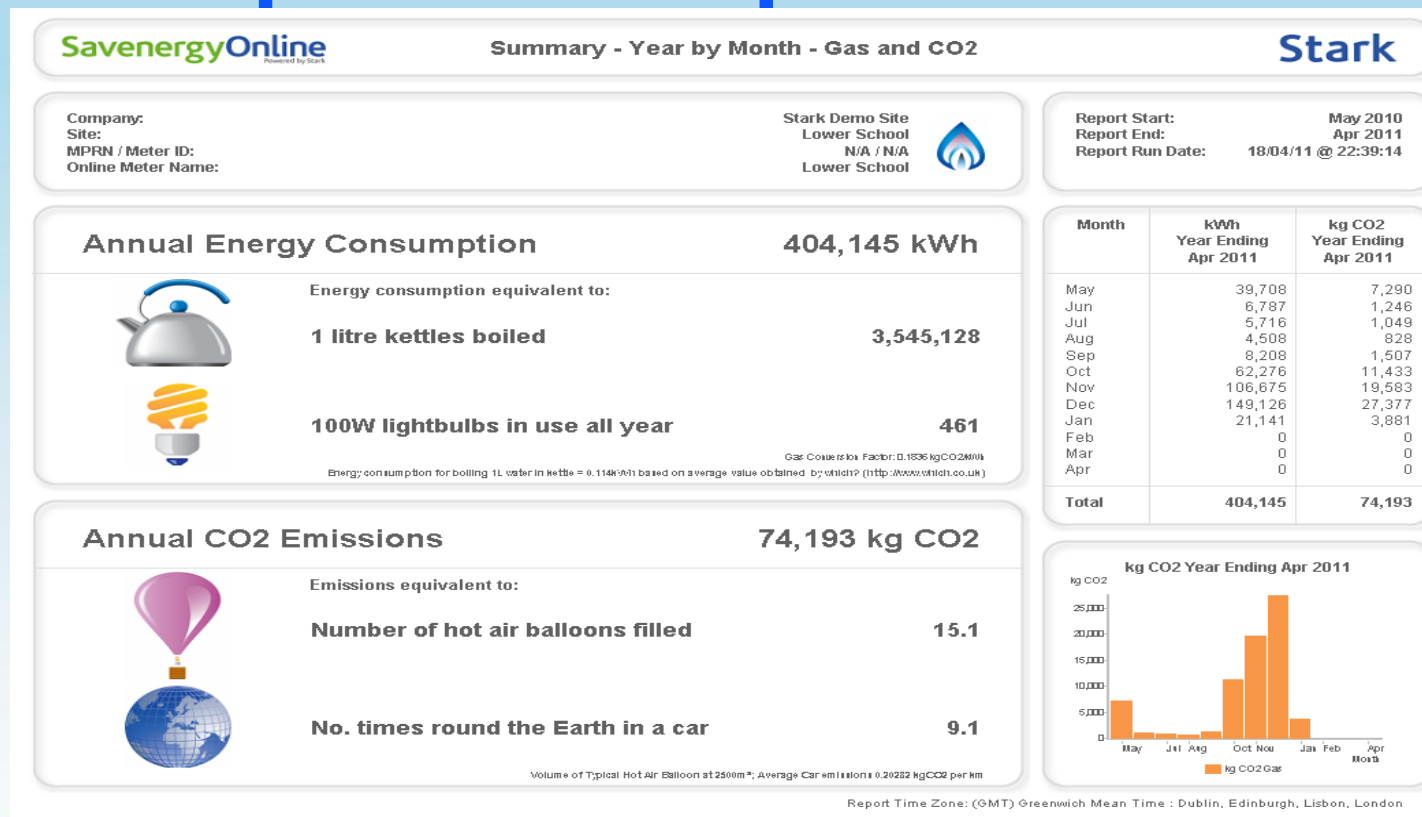


# Worcestershire's AMR strategy

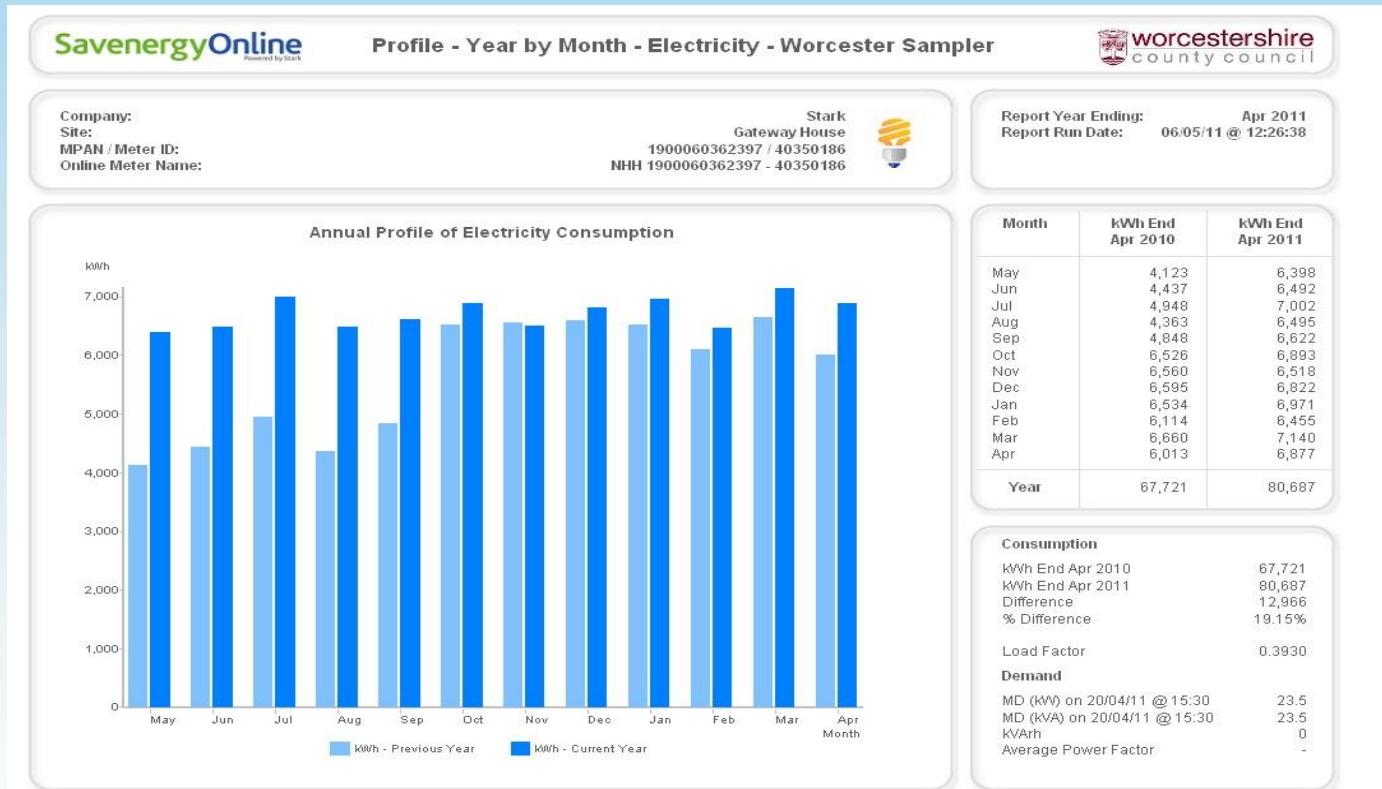
- Installing automated gas and electricity metering (AMR) across the entire school and corporate estate
- Achieved approval for project through COMB and Head's forum
- The OGC Buying Solutions tender platform was used to source a competitive provider
- Multiple reasons why: Accurate energy/carbon emissions reporting, accurate billing and most importantly the ability to monitor, manage and reduce our gas and electricity consumption
- Bespoke reports provided to enable schools and building occupiers to intuitively monitor and reduce consumption



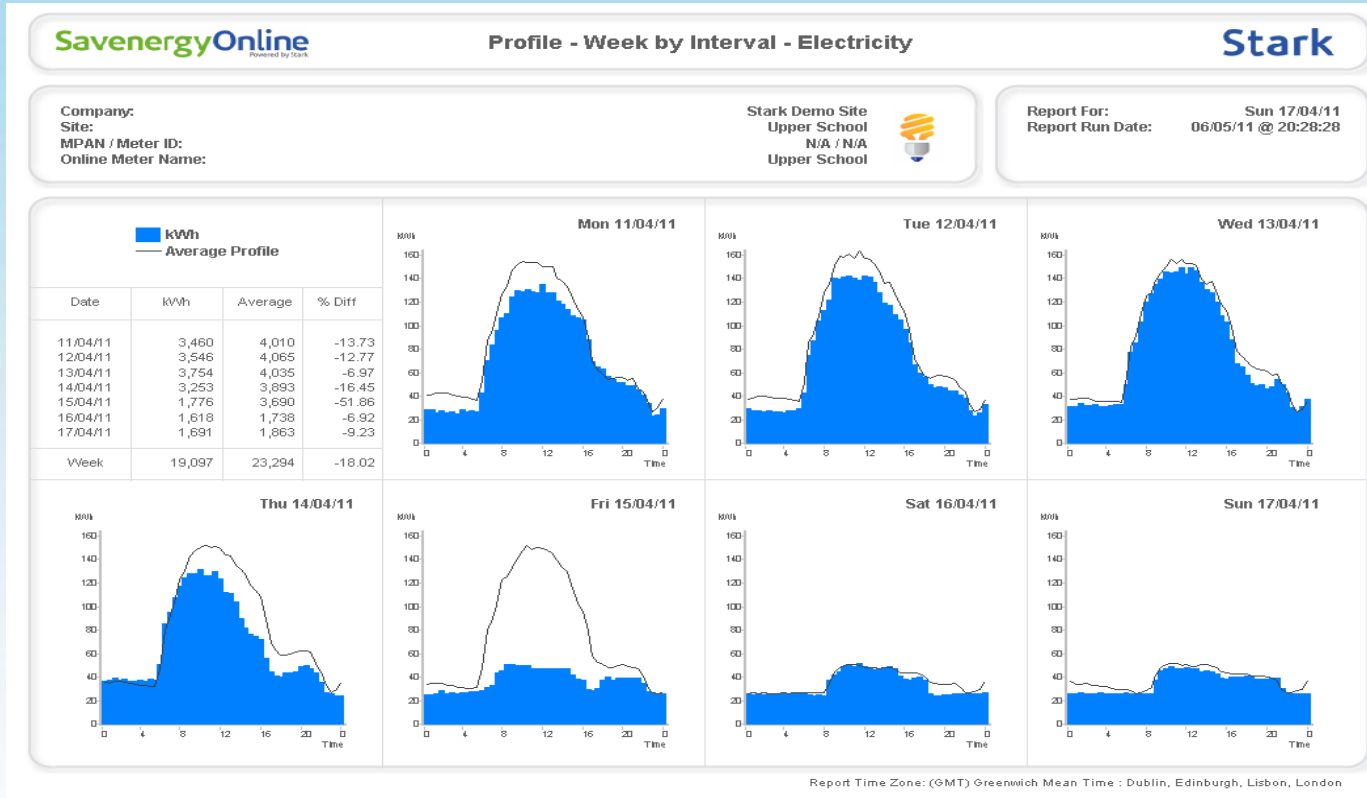
# Example AMR reports:



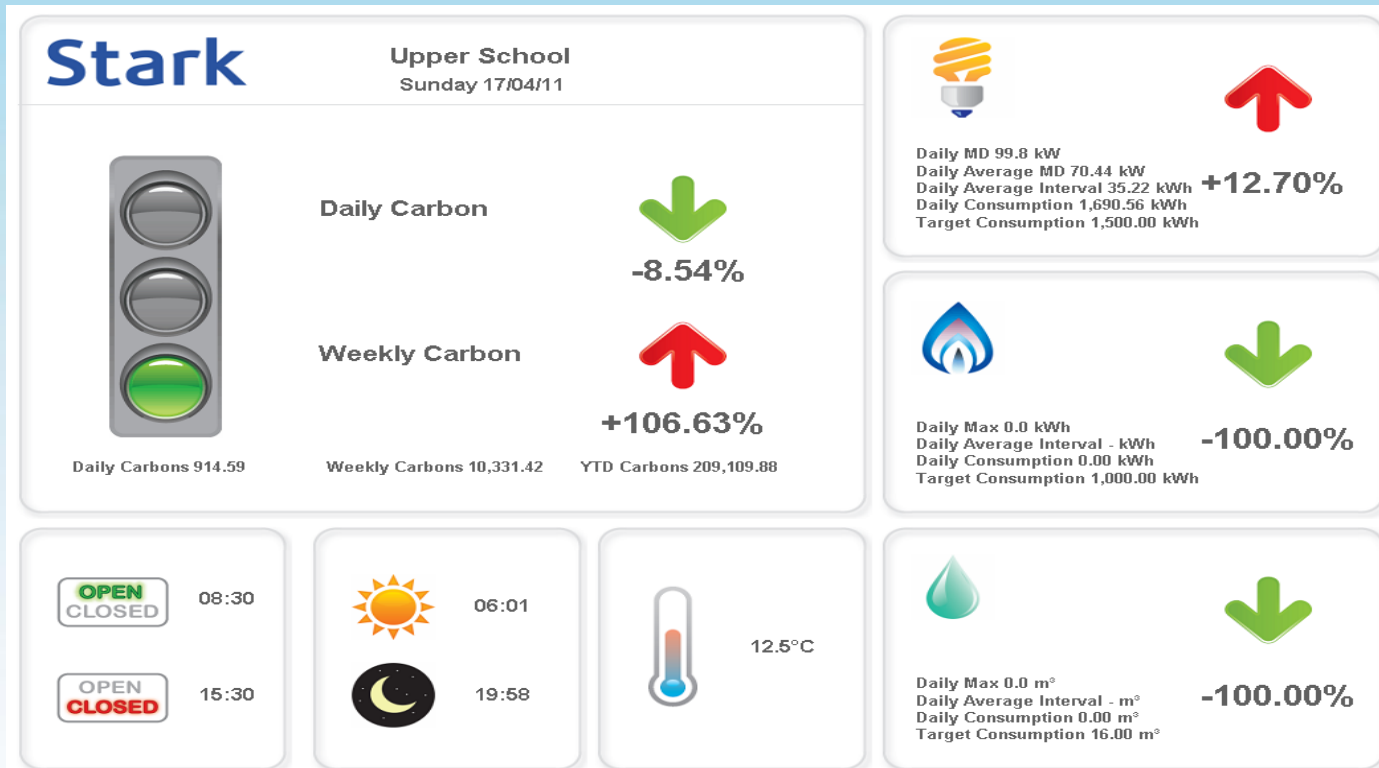
# Example AMR reports



# Example AMR reports



# Example AMR reports



# Carbon Management Plan

- Many projects currently feed into our Carbon Management Plan, with an aspirational 30% reduction in carbon emissions over the next 5 years
- Lighting, cavity wall and loft insulation, the installation of Solar PV, energy awareness and AMR training are currently all active projects within the CMP with significant carbon savings associated with their successful implementation, many of which are going ahead due to the availability of the Spend to Save fund.



# Renewable Heat Incentive (RHI)

- The RHI tariff scheme commences in July 2011 and provides tariff payments for heat generated by those installing technologies such as biomass boilers, heat pumps and solar thermal.
- Makes investment in these technologies much more financially viable, reducing payback periods significantly – rates 1.9 – 7.6 p/kWh for biomass and 8.5 p/kWh for solar thermal
- Open to the non domestic sector initially
- Community projects will be eligible too, provided that more than one house is benefiting from the heat produced by a single installation
- Tariffs are available to eligible technologies installed after 15th July 2009, and are payable for 20 years.
- Equipment and installers need to be certified under the Microgeneration Certification Scheme (MCS) or equivalent



# Feed in tariffs

- Designed to incentivise investment in micro-generation, a tariff is paid per kWh (unit) generated and guaranteed for 25 years
- Small-scale low-carbon electricity technologies eligible for FITs are:
  - Wind; Solar photovoltaics (PV); Hydro; Anaerobic digestion; and Domestic scale micro CHP.
- An example of a FIT payment is between 32.9p/unit and 43.3p/unit for Solar PV
- Any surplus energy can be exported back to the grid attracting a reduced rate, this is 3.1p/kWh
- Significantly reduces payback periods down to around 10 years for Solar PV
- Installers and providers need to be MCS accredited
- Many organisations claim to install Solar PV free of charge, BEWARE! Terms and conditions need to be carefully reviewed. County Council analysis clearly demonstrates that it is more cost effective if it is possible to self finance the installation and claim the FIT.



# Useful resources:

- The Bursars guide to energy savings:

<https://www.education.gov.uk/publications/standard/publicationdetail/page1/DFES-00375-2007>

- Carbon Trust Publications:

<http://www.carbontrust.co.uk/publications/pages/home.aspx>

- The Energy Saving Trust: links to funding and FIT/RHI guidance:

- <http://www.energysavingtrust.org.uk/cafe> (No longer updated)

- <http://www.energysavingtrust.org.uk/>



# Worcestershire County Council

## Further information:

[www.worcestershire.gov.uk/spendtosave](http://www.worcestershire.gov.uk/spendtosave)

[www.worcestershire.gov.uk/beacon](http://www.worcestershire.gov.uk/beacon)

[www.worcestershire.gov.uk/climatechange](http://www.worcestershire.gov.uk/climatechange)

[www.worcestershire.gov.uk/cms/community-and-living/property-services.aspx](http://www.worcestershire.gov.uk/cms/community-and-living/property-services.aspx)

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