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The English Household Electricity Study 2010-11

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Methodology

cruitment:

os Mori recruited English
useholds representative on the
sis of:

- Number of occupants
- Lifestage (eg families, pensioners etc.)
- Social grade (eg professional workers, manual workers etc.)
- Age of property

is study focussed on owner-
cupiers only (70% of UK
pulation at the time).

All appliances were listed, photographed and categorised for monitoring:

1. High priority, very frequently used e.g. col appliances, wet appliances, cookers
2. Medium priority, smaller demands, but frequently used, e.g. radios, toasters ,iron
3. Low priority, rarely used.

Lighting was also assessed (number, type an wattage of bulbs per room).

Appliances were monitored individually with a resolution of 2 minutes (winter), 10 minutes (summer). Lighting and overall circuits also monitored.

26 houses were monitored all year.
The remainder were monitored for 1 month on a rolling basis.

96% of sample used gas as main fuel, 4% used electricity. 10% of households with gas also use electric heating to top up in cold weather.

Households ow
between 13 and
appliances. Mos
30-40.

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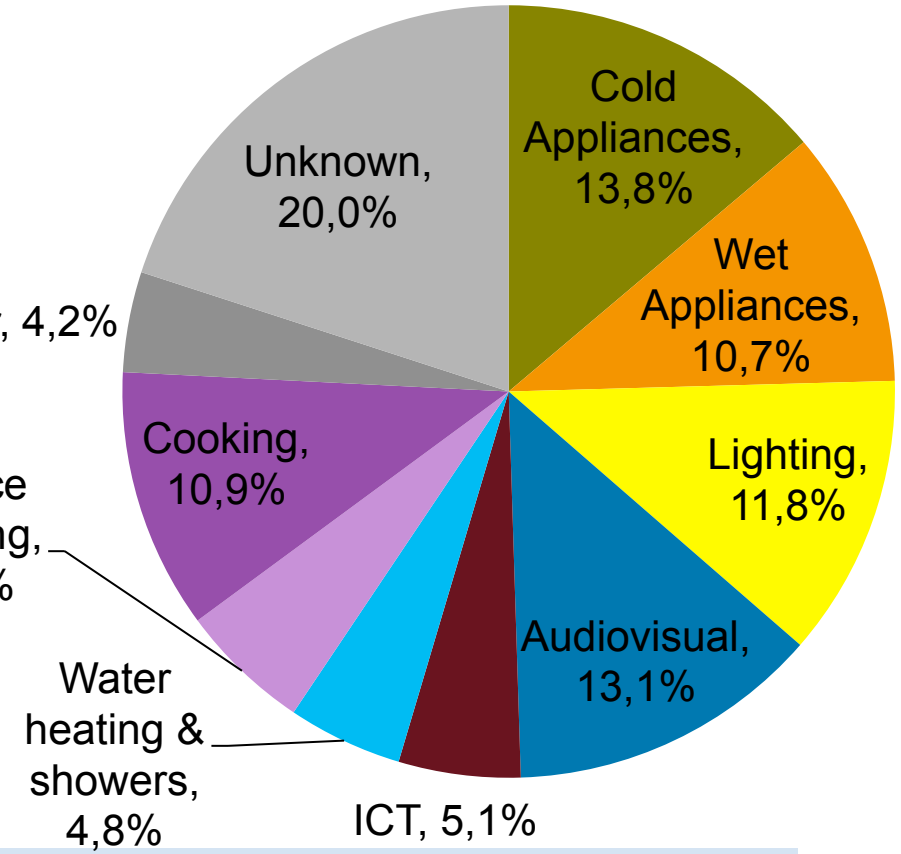
Breakdown of average electricity use in the study



	English Household study (2010-11)	Remodece (2006-2008)	Swedish (typical (2009)
Cold Appliances	20%	**29%**	17%
Wet Appliances	15%	16%	15%
Lighting	17%	18%	**26%**
Audiovisual	19%	10%	12%
ICT	7%	12%	11%
Cooking	16%	11%	10%
Other	6%	3%	9%
Overall kWh (excluding space heating, cooling and water heating)	2851	2646	**8416**

ercentage of unknown electricity use
ty in monitoring all appliances in all
, particularly showers and some built in
pliances).

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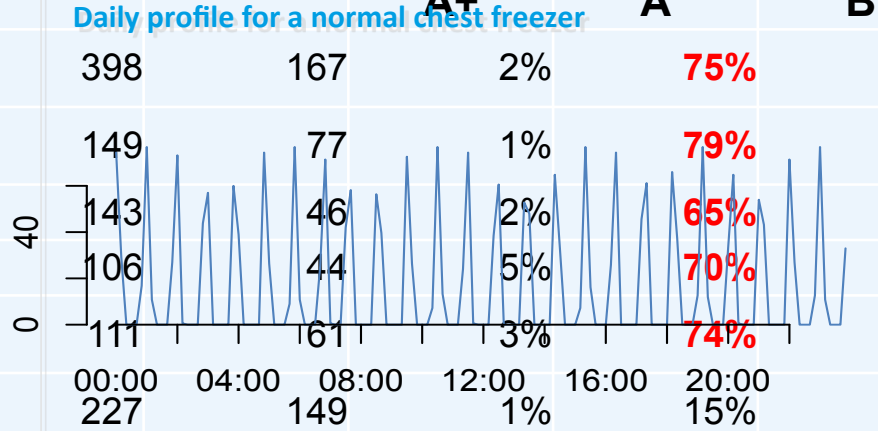
Some results

Actual versus calculated electricity consumption by class of appliance

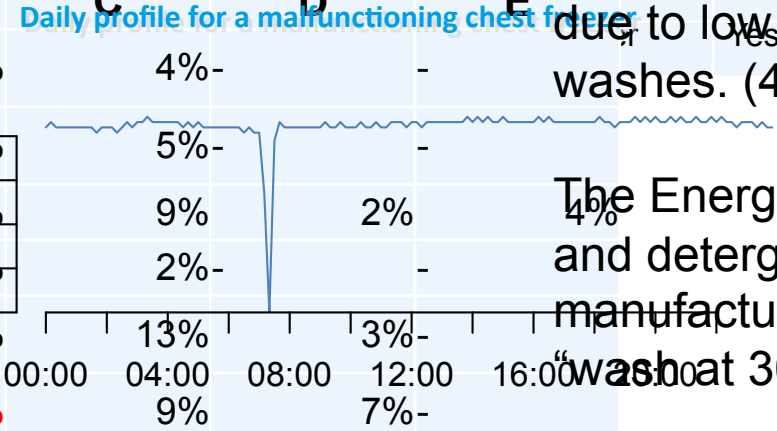
Rated annual energy consumption Measured annual energy consumption

Appliance type	Number of appliances in HES sample	Number of appliances with an energy rating	Percentage of appliances according to energy label					
			A+	A	B	C	D	E
All cold appliances	398	167	2%	75%	18%	4%	-	-
Fridge-freezers	149	77	1%	79%	14%	5%	-	-
Freezers	143	46	2%	65%	17%	9%	2%	4%
Refrigerators	106	44	5%	70%	23%	2%	-	-
Dishwashers	111	61	3%	74%	7%	13%	3%	-
Washing machines	227	149	1%	15%	68%	9%	7%	-
Tumble dryers	111						13%	3%

Daily profile for a normal chest freezer



Daily profile for a malfunctioning chest freezer



Appliance	Sample Size	Proportion malfunctioning	Extra electricity consumption for malfunctioning appliances kWh/ year
Fridge	99	**2%**	180
Freezer	129	**9%**	331
Fridge-freezer	148	**4%**	120

Trends in rising size can offset efficiency improvements…

Appliance type	Rising trend in size/capacity?	Stren trend
TV	Yes	Mec
Washing machine	Yes	Low
Tumble dryer	Yes	Mec
	No	L
	Yes	Mec
	Yes	Low
	Yes	Low

The lower than expe consumption of wash machines is believed due to low temperatu washes. (40ºC or les

The Energy Saving T and detergent manufacturers ran a "wash at 30" campaig

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Potential savings

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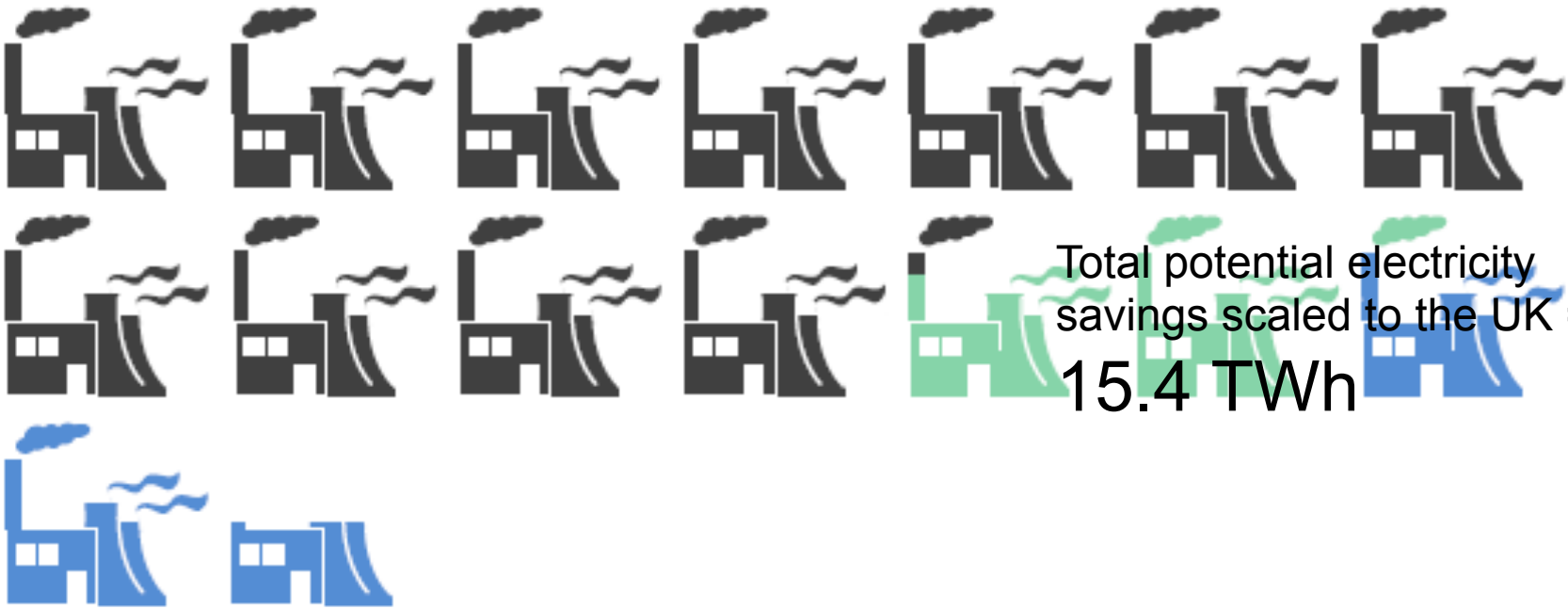
voiding the use of supplementary electric heating in houses
ith gas



Total potential electricity savings scaled to the UK =

15.4 TWh

Total potential electricity savings scaled to the UK =

13 TWh

This study took place in 2010.

Some of the savings identified have already been realised, for example: Ecodesign for lamps and EU standby directive.

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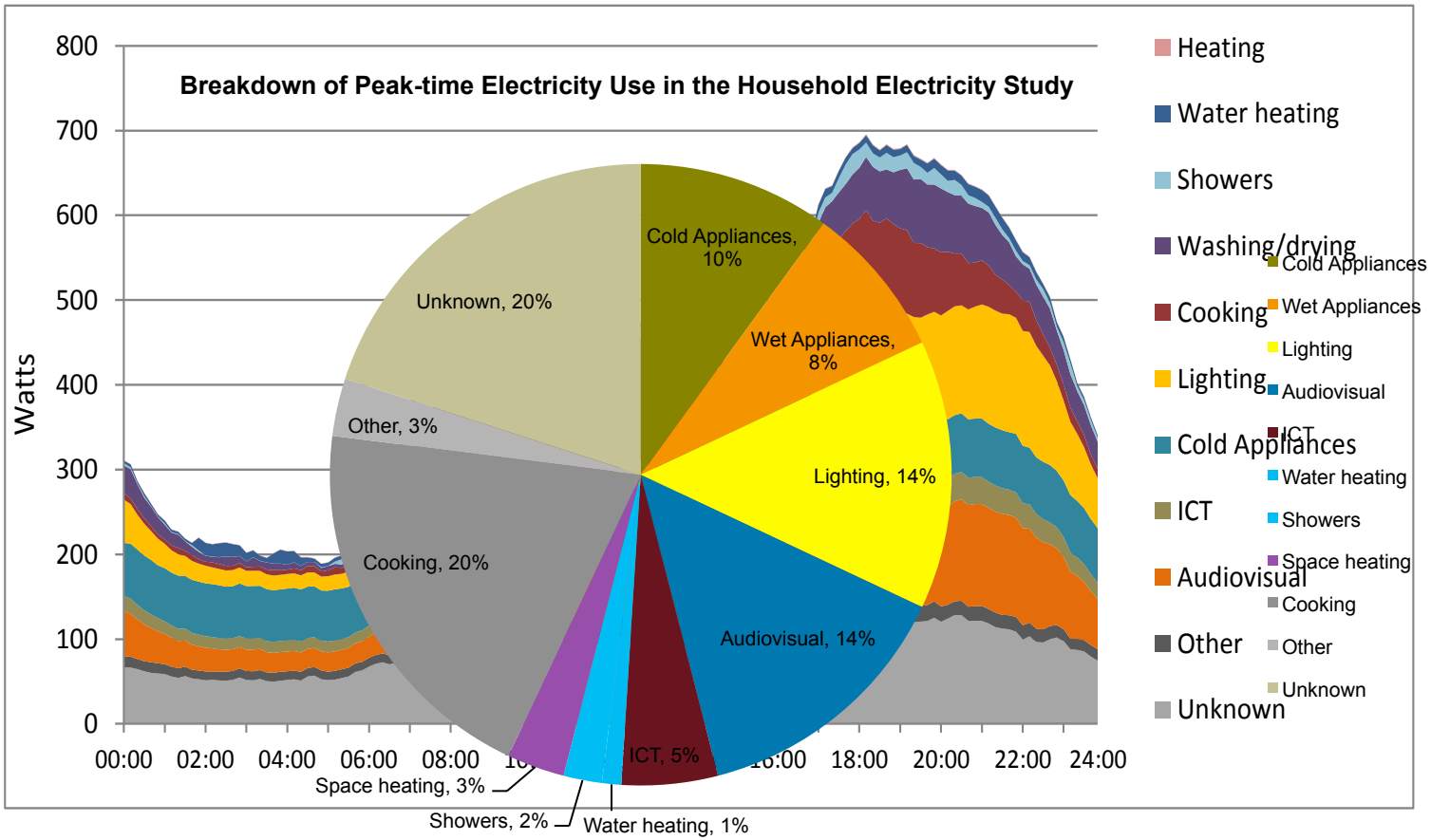
Typical daily profile of household electricity demand



Appliances that can be rescheduled (wet appliances) = approx 1.3 GW nationally.

Household peak demand occurs 17:00-19:00

Significant proportion of "unidentified load"

BUT Cooking peaks at around 18:00-19:30

Lighting peaks at 20:30-22:30

Audio-visual use peaks at around 20:00-22:00.

Washing and drying appear to take place throughout the day.

Improving efficiency of appliances has greater potential for reducing the peak load than re-scheduling appliances.

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Thank you for your attention!

https://www.gov.uk/government/collections/household-electricity-survey

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