Workshop 2d

Delivering renewable heat: the perfect balance

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Chaired by: Stephen Chalmers

Room: Norfolk

National Housing Maintenance Forum

NHMF Maintenance Conference 2019

Transforming the Housing Technology Mindset

Delivering Renewable Heat
The perfect balance

Stuart Bell

MITSUBISHI ELECTRIC | ecodan® Renewable Heating Technology

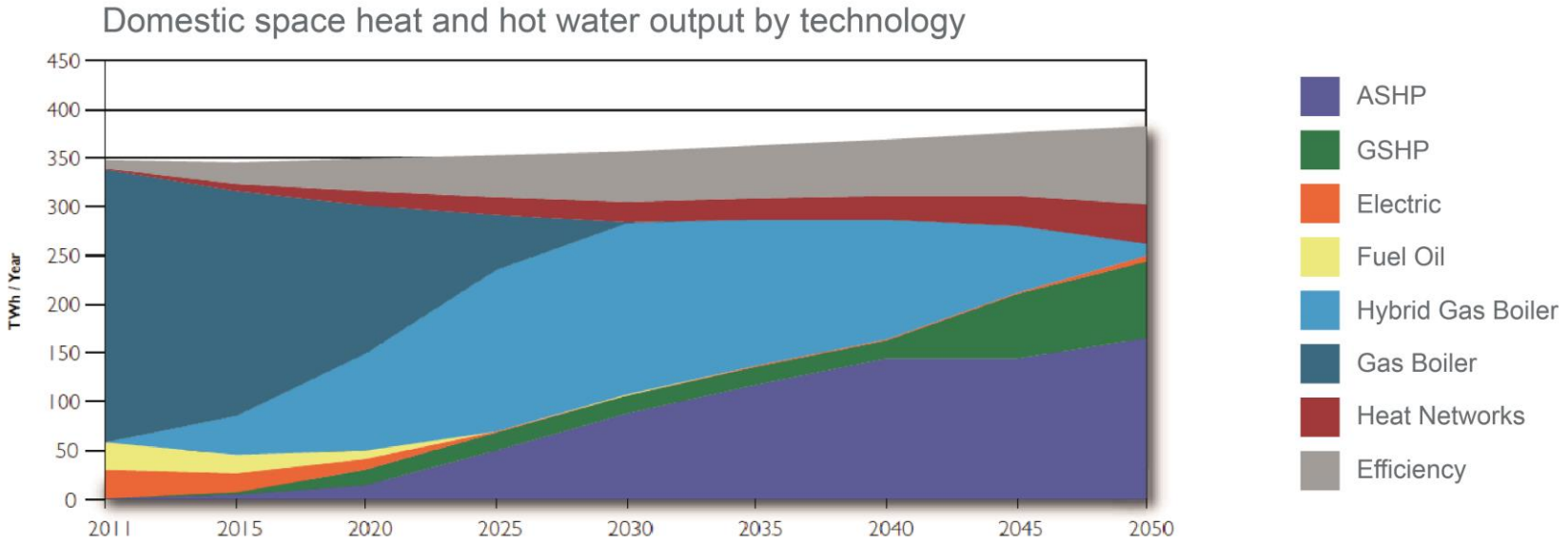
Opportunity for change…

Which are we looking at focusing on?

Maintain	Transform	Convince
How many people came today wanting to support the notion of ASHP as a long term solution?	How many people feel they have already made up their mind that ASHPs are not for you?	Finally how many people WANT to be convinced?

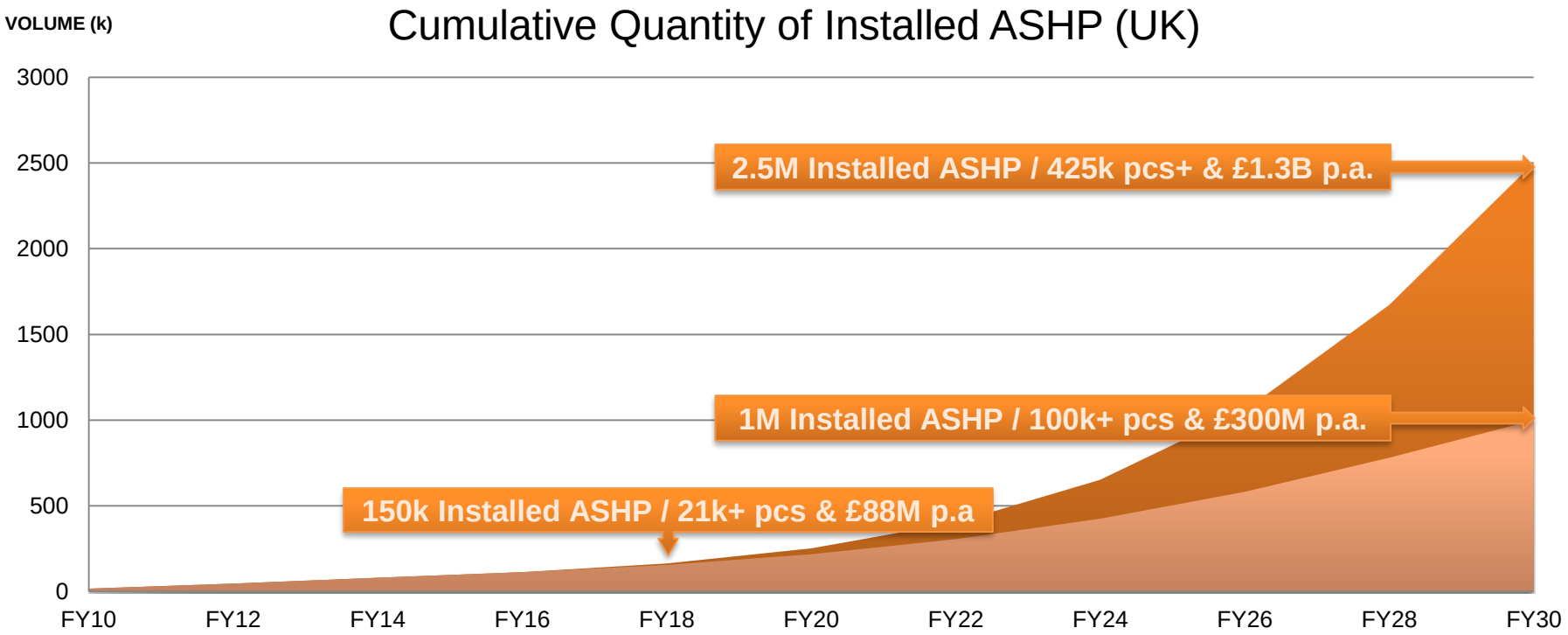
The Carbon Plan

- Published Government Strategy

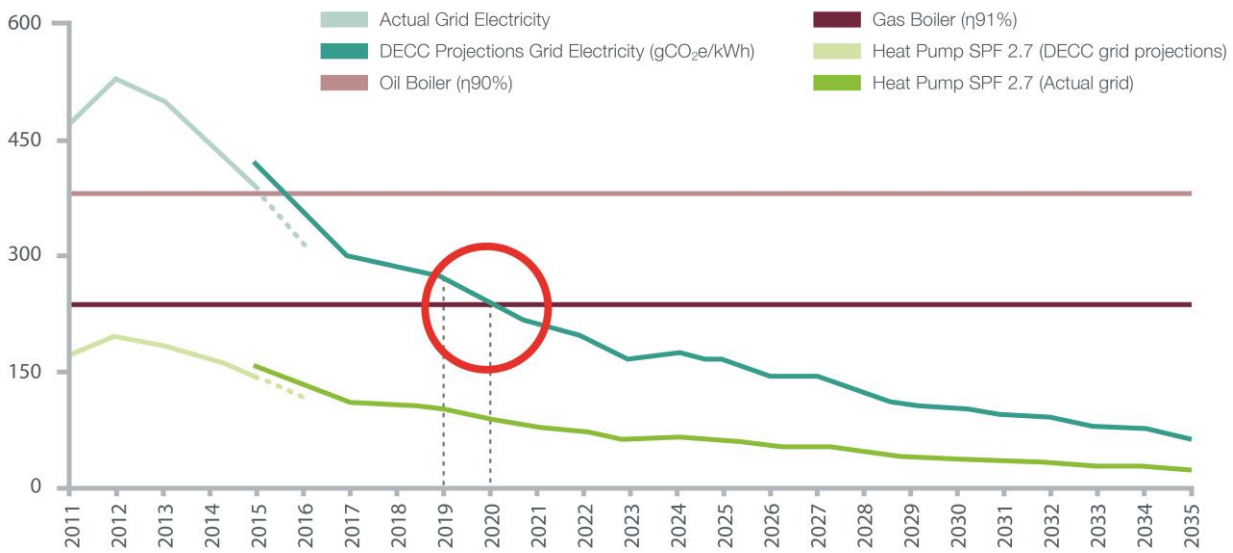


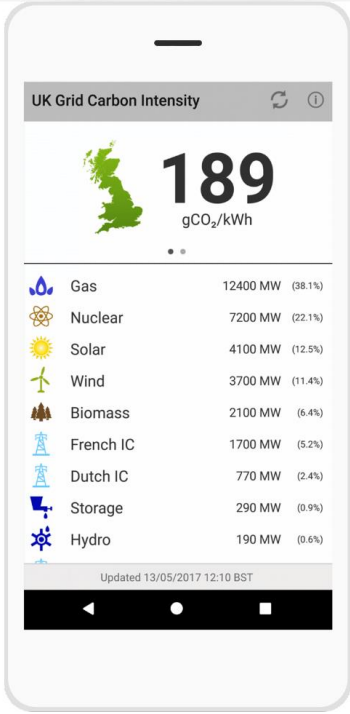
Meeting the Challenge (Source: DECC)

Market predictions



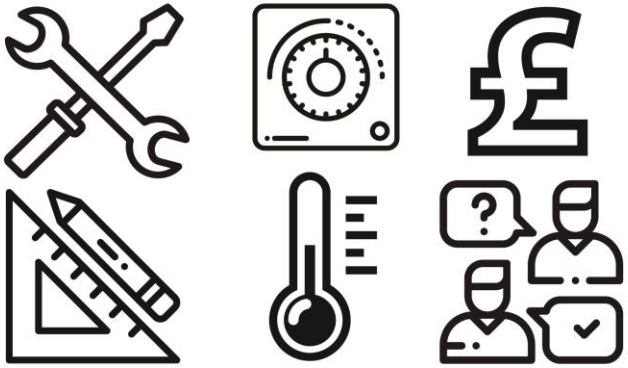
Changing Emissions





Grid electricity, DECC projections, gas and heat pumps

It was all about the box



Box

Delivery

Successful Delivery

Client

Manufacturer

Installer

End User

Successful Delivery

- Design & MCS Standards - All applications
- Trained Installers - unsung heroes…
- Education & Handover
- Support & Maintenance

Install requirements Ecodan ASHP






Install requirements Ecodan ASHP

- Outside
- Condensate Removal
- Single Phase Electric Supply
- Insulate Pipes
- Isolator - Electricity
- Isolator – Pipework + TW
- Vibration Pads
- Position / (airflow)
- Air Outlet Guide Extra
  reduce to 500mm in front

Trained Installers - Unsung Heroes

- Ecodan Part 1
  Design & Application (ED&A)
- Ecodan Part 2
  Installation & Commissioning (EI&C)
- Ecodan Part 3
  Fault Finding & Maintenance (F&M)

Successful Delivery

Retro Drivers

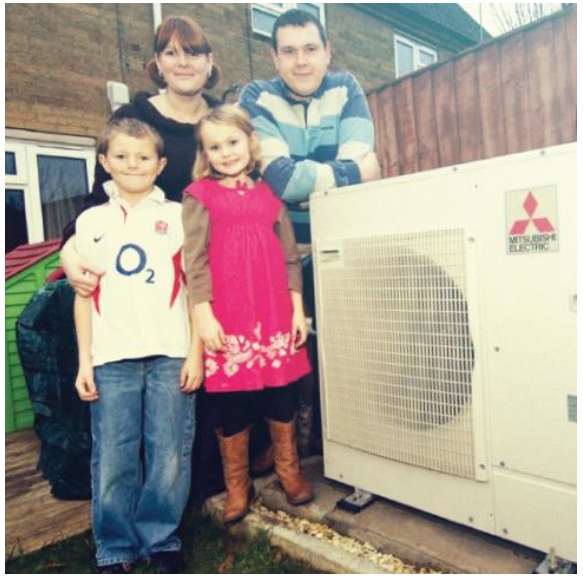
- Off gas no alternatives
- Inconsistent delivery of Heat Storage Radiators
- Delivery of fuel inconvenient
- Fuel Poverty - Easy to budget
- Environmental Impact
- EPC improvement
- Maximum control - Home or Away
- Renewable Heat Incentive

New Build Drivers

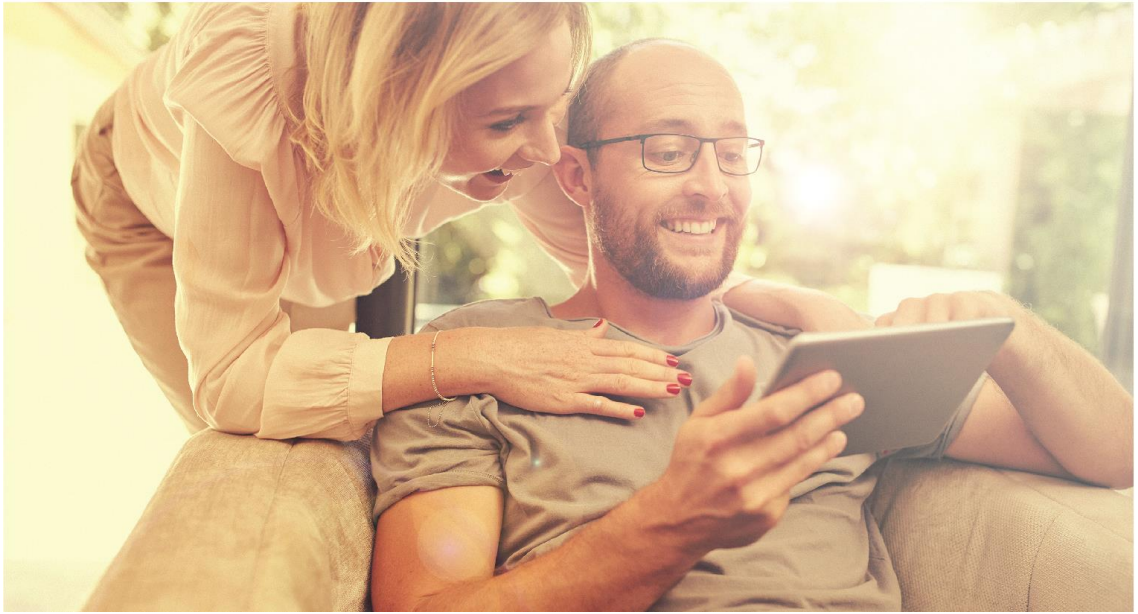
- One utility to site
- Renewable - aspirational to end user
- Renewable energy contribution on site
- Exceeds SAP requirements TER - DER
- Environmental impact
- EPC improvement
- Maximum control & Support - Home or Away
- Renewable Heat Incentive - Self build only
- Improved Safety - no combustible fuel In property

Social Housing Retrofit

- Electrical 6.56 tonnes of CO_2 per year
- Solid fuel coal 2.89 tonnes of CO_2 per year
- Total Carbon footprint: 9.45 tonnes of CO_2
- Carbon reduction of 65% - 3.3 tonnes of CO_2
- Heating Running Costs
  Before: **£765** I After: **£384**
- Installed 250 Heat Pumps - Ongoing



Domestic Renewable Heat Incentive



Domestic Renewable Heat Incentive

Energy Performance Certificate

HM Government

1, Hilltop Road, BERKHAMSTED, HP4 2HL

Dwelling type:	Ground-floor flat	**Reference number:**	0188-5027-6286-5835-6920
Date of assessment:	08 June 2015	**Type of assessment:**	RdSAP, existing dwelling
Date of certificate:	09 June 2015	**Total floor area:**	47 m²

Use this document to:

- Compare current ratings of properties to see which properties are more energy efficient
- Find out how you can save energy and money by installing improvement measures

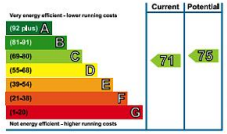
Estimated energy costs of dwelling for 3 years:	**£ 1,539**
Over 3 years you could save	**£ 249**

Estimated energy costs of this home

	Current costs	Potential costs	Potential future savings
Lighting	£ 186 over 3 years	£ 99 over 3 years	You could save £ 249 over 3 years
Heating	£ 1,092 over 3 years	£ 930 over 3 years	
Hot Water	£ 261 over 3 years	£ 261 over 3 years	
Totals	**£ 1,539**	**£ 1,290**	

These figures show how much the average household would spend in this property for heating, lighting and hot water and is not based on energy used by individual households. This excludes energy use for running appliances like TVs, computers and cookers, and electricity generated by microgeneration.

Energy Efficiency Rating



The graph shows the current energy efficiency of your home.

The higher the rating the lower your fuel bills are likely to be.

The potential rating shows the effect of undertaking the recommendations on page 3.

The average energy efficiency rating for a dwelling in England and Wales is band D (rating 60).

The EPC rating shown here is based on standard assumptions about occupancy and energy use and may not reflect how energy is consumed by individual occupants.

Top actions you can take to save money and make your home more efficient

Recommended measures	Indicative cost	Typical savings over 3 years
1 Floor insulation (solid floor)	£4,000 - £6,000	£ 174
2 Low energy lighting for all fixed outlets	£40	£ 75

To find out more about the recommended measures and other actions you could take today to save money, visit www.gov.uk/energy-grants-calculator or call **0300 123 1234** (standard national rate). The Green Deal may enable you to make your home warmer and cheaper to run.

1, Hilltop Road, , , BERKHAMSTED, HP4 2HL
09 June 2015 RRN: 0188-5027-6286-5835-6920 **Energy Performance Certificate**

Summary of this home's energy performance related features

Element	Description	Energy Efficiency
Walls	Cavity wall, filled cavity	★★★★☆
Roof	(another dwelling above)	–
Floor	Solid, no insulation (assumed)	–
Windows	Fully double glazed	★★★☆☆
Main heating	Boiler and radiators, mains gas	★★★★☆
Main heating controls	Programmer, room thermostat and TRVs	★★★★☆
Secondary heating	None	–
Hot water	From main system	★★★★☆
Lighting	Low energy lighting in 11% of fixed outlets	★★☆☆☆

Current primary energy use per square metre of floor area: 233 kWh/m² per year

The assessment does not take into consideration the physical condition of any element. 'Assumed' means that the insulation could not be inspected and an assumption has been made in the methodology based on age and type of construction.

Low and zero carbon energy sources

Low and zero carbon energy sources are sources of energy that release either very little or no carbon dioxide into the atmosphere when they are used. Installing these sources may help reduce energy bills as well as cutting carbon. There are none provided for this home.

Your home's heat demand

For most homes, the vast majority of energy costs derive from heating the home. Where applicable, this table shows the energy that could be saved in this property by insulating the loft and walls, based on typical energy use (shown within brackets as it is a reduction in energy use).

Heat demand	Existing dwelling	Impact of loft insulation	Impact of cavity wall insulation	Impact of solid wall insulation
Space heating (kWh per year)	4,631	N/A	N/A	N/A
Water heating (kWh per year)	1,659			

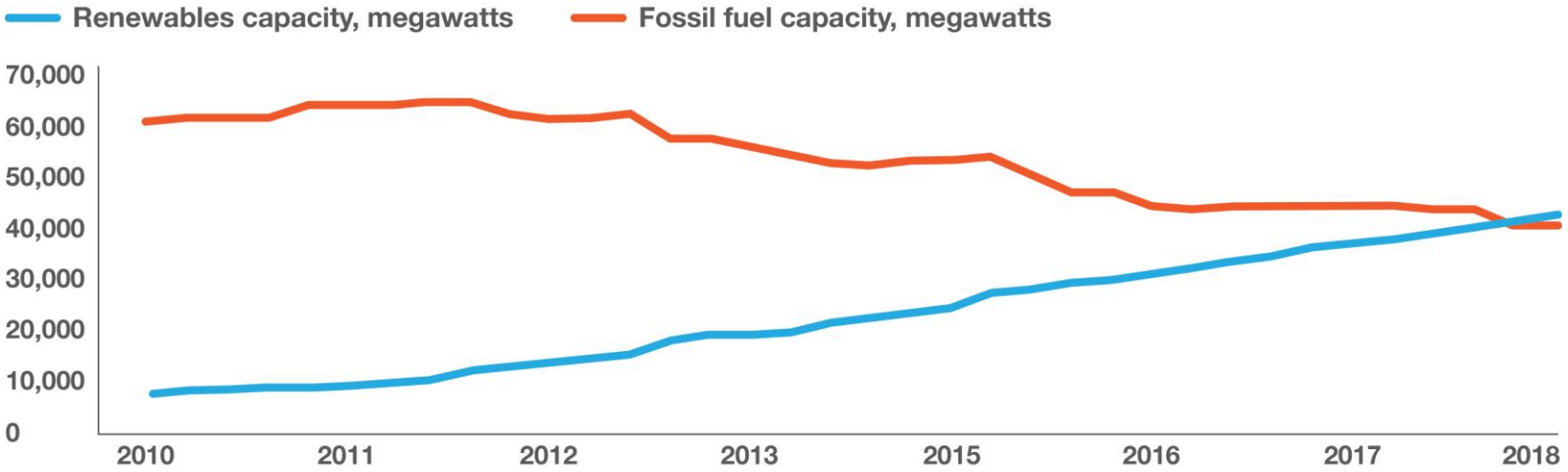
You could receive Renewable Heat Incentive (RHI) payments and help reduce carbon emissions by replacing your existing heating system with one that generates renewable heat, subject to meeting minimum energy efficiency requirements. The estimated energy required for space and water heating will form the basis of the payments. For more information, search for the domestic RHI on the www.gov.uk website.

Domestic Renewable Heat Incentive

- The amount you can earn from the RHI depends on how much energy your home uses Energy Performance Certificate (EPC)
- Your RHI payments will be dependent on the efficiency of the heat pump
- An optional Metering and Monitoring Service Package (MMSP) will increase RHI by £1610 over the term of the RHI.

Property type	Space heating load kWh	DHW load kWh	Total kWh	Annual RHI payment 10.49p assuming SPF of 3.55 (EPC total x(1-1/SPF)) *0.1049	Total payment over 7 years	Optional MMSP payment	Total over 7 years including MMSP payments
2 Bed Flat (1960)	4631	1659	6290	£473.96	£3,317.69	£1,610.00	£4,927.69
3 Bedroom Terrace (1970)	7923	2593	10516	£792.39	£5,546.72	£1,610.00	£7,156.72
4 Bed Semi (1950)	11983	2876	1459	£1,119.64	£7,837.45	£1,610.00	£9,447.45
5 Bedroom Detached (1980)	16055	2847	18902	£1,321.88	£9,253.16	£1,610.00	£10,863.16

Renewable energy capacity has overtaken fossil fuels in the UK



Guardian Graphic. Source: Imperial College London / Drax

The journey continues

RHI 2018

- Incentivised Growth
- 33% tariff increase
- Assignment of Rights

SAP UPDATE

- Compliance Growth
- Effective in 2018
- 55% reduction in grid emissions

The journey continues

55% Reduction In Grid

Change in CO_2 emissions factors

	Emissions kg CO_2e per kWh		
	SAP 2012	Draft SAP 2012	Draft SAP 10
Mains Gas	0.216	0.2077	0.210
Electricity	0.519	0.398	0.233

The SAP 10 emission factors for electricity are a three-year projection for 2018-2020. They are now closer to figures for grid electricity published by other official bodies, such as the Government GHG Conversion Factors figure of 0.283 for CRC reporting, and the BRE projected figure for 2019/21 of 0.302.

Energy Flows

Energy Flows

The history of home heating

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Questions & Answers

Ultraquietecodan.co.uk