

Residential Heating & Ventilation

Heat pumps

A no-Brainer for the UK and off grid homeowners? – You decide.

Your presenter today



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Agenda

- The view from the CCC
- The future of the UK electricity grid
- UK off Gas homes introduction
- Costs of replacing an oil boiler system
- Oil prices and trend
- Opex costs comparison
- Carbon savings of heat pumps
- Other issues to consider
- Q & A



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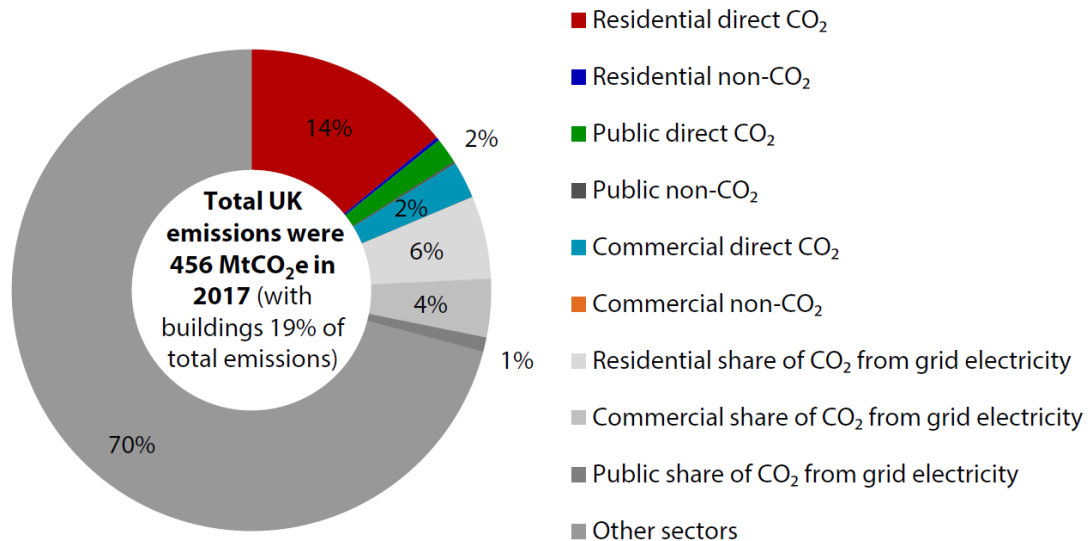
Committee for Climate Change

- CCC have indicated the important role that heat pumps will play towards Net Zero
- By 2050 19 million heat pumps will be needed in homes in order to meet the target.
- 1 million installs per annum by mid 2030s.
- All heating installations to be low-carbon generating by 2035, with no new gas connections to new builds by 2025.



UK emissions - buildings

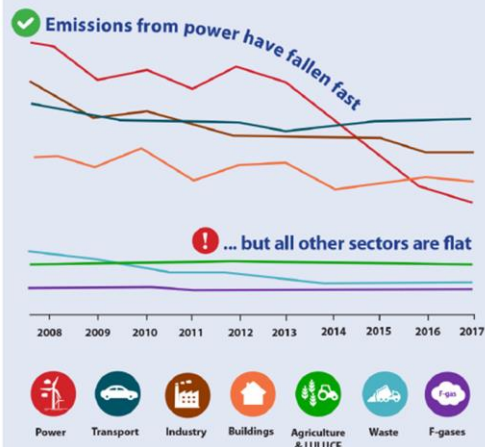
Committee on Climate Change, 2020 Progress Report to Parliament



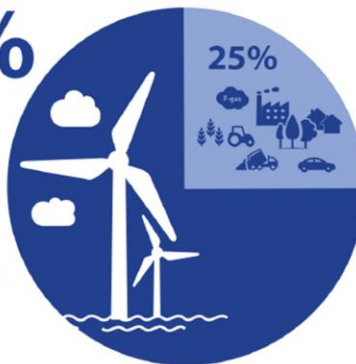
Committee for Climate Change

Excellent progress in reducing emissions from electricity generation masks failure in other sectors

The UK's greenhouse gas emissions have reduced by 43% compared to 1990 levels, on the way to a target of at least an 80% reduction by 2050.



75%
of emissions
reductions
since 2012
have come
from the
power sector



Clear goals, ambitious strategy and well-designed policies have been effective. These lessons must now be applied to other sectors

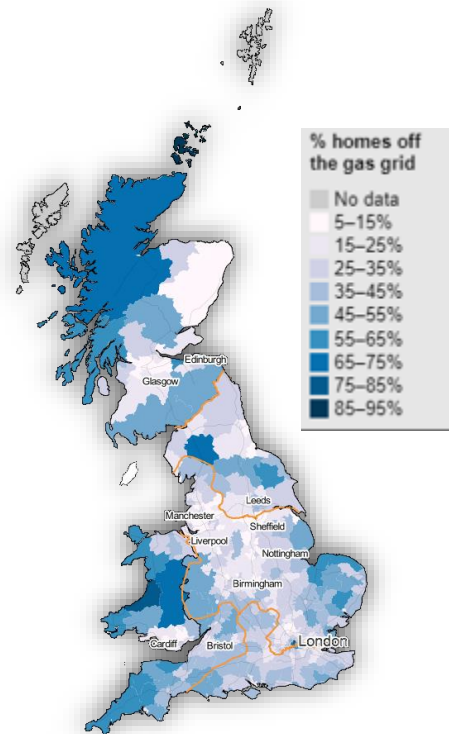
The UK's vision

- A low carbon electricity grid
- Home heating not reliant on
- Oil, LPG and ultimately Gas
- Heat pumps as a key solution
- We are making great strides
- Focus on eliminating the highest carbon fuels



Homes off the gas grid

- An easy quick win?
- Currently 1.6 million homes use fuel oil.
- 70,000 new oil boilers installed each year
- Producing 8 MtCO₂e
- Government wants oil the dirtiest fuel to stay in the ground



The history of home heating



New Oil Boiler Replacement Vs New ASHP



Oil Boiler Installation Cost - considerations

- New Oil Tank
 - Strict compliance for replacement tanks
 - Many oil tanks cannot be changed without additional works
- Must be by OFTEC Approved Engineers





Oil Boiler Installation Cost - considerations

- Requires more control (weather compensation, TRV's, timeclock)
- Mandatory to install a Condensing boiler (lower flow temp)
- Full power flush cleanse & fresh inhibitor



Approx. Costs of a new Oil boiler installation vs heat pump

	Details	Average cost £
Oil Central Heating System	Includes boiler, oil storage tank, water tanks, radiators, piping, and labour	5,000

	Details	Average cost £
ASHP Heat Pump System	Includes ASHP, water storage tank, radiators, piping, and labour	9,000



A home needing 15,000kWh with a SCOP of 3.2 would receive annual payments of £1,081 or £7,567 over the 7 years

Cost of running an Oil Boiler

Existing Oil Boiler

- 60% efficient
- 52 pence per litre
- 8.5p per kWh



New Oil Boiler

- 92% efficient
- 52 pence per litre
- 5.7p per kWh

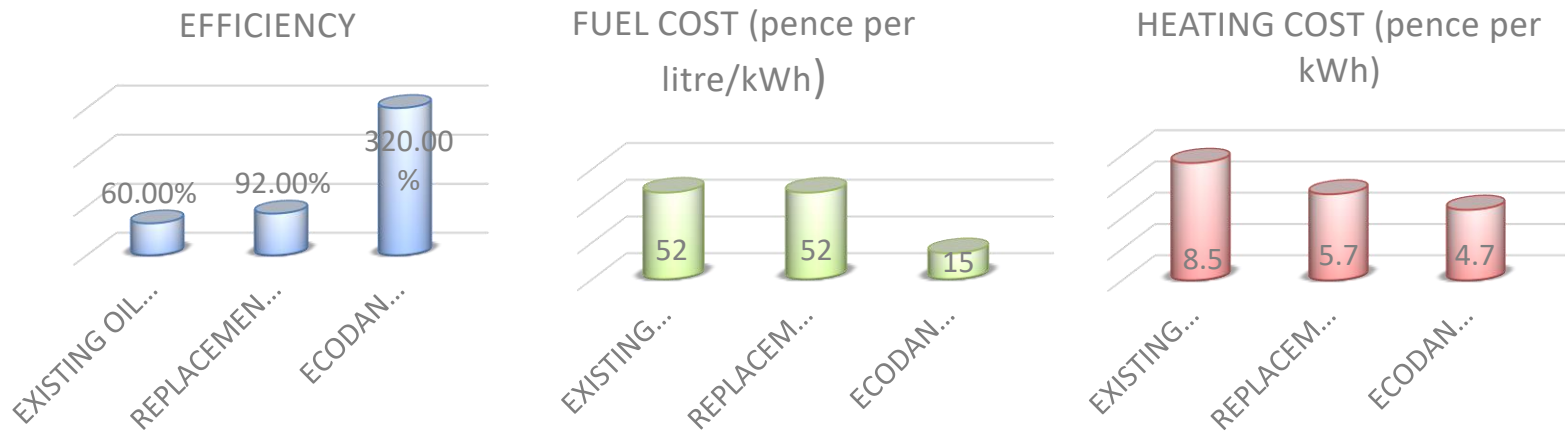


ASHP System

- 320% efficient
- 15 pence per kWh
- 4.7p per kWh

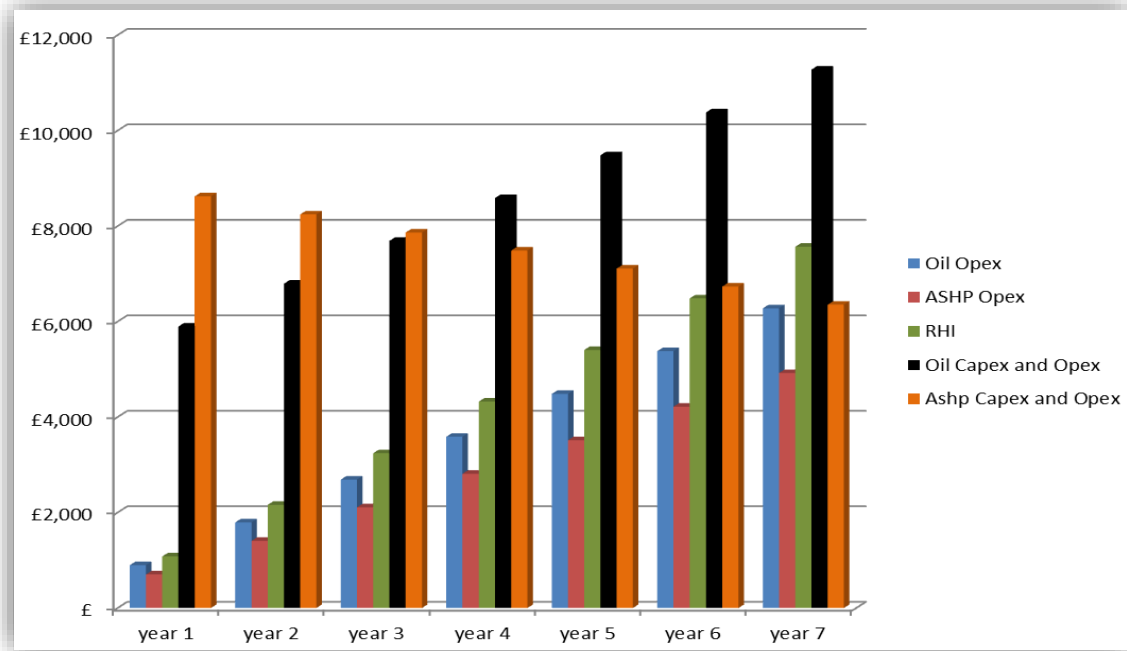


Cost of running an Oil Boiler



Ecodan = 44% cheaper than Existing Boiler & 17% cheaper than a new boiler

OPEX & CAPEX



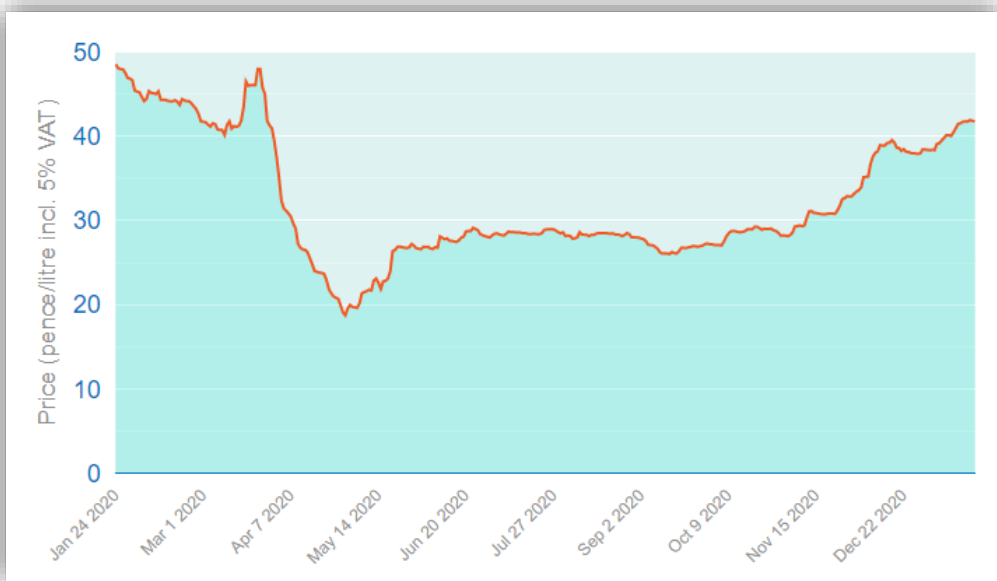
Oil Delivery and Cost

- Typical 2-3 fills per year
- The fewer deliveries a tank will make...
- Uncertain times approaching.....?



Current Oil Prices & Trend

- Covid 19 caused huge slump in demand
- Oil prices predicted to keep rising beyond pre Covid level



Carbon Savings (average)

- Oil Boiler – 314g CO₂ekWh
- Grid Electricity – 233g CO₂ekWh
- Ecodan – 78g CO₂ekWh

75% reduction



Headline: ASHP vs Oil

- 1.6 million homes
- Average of 12,500k/Wh required each
- Currently that is 3.9 tonnes of CO2 per house
- Heat pump would be 0.97 tonnes of CO2
- 4.69 million tonnes of CO2 saved
- PER ANNUM!!! – 2% of UK

Headline: ASHP vs Oil

- Assume 14 million homes swapped
- Average of 12,500k/Wh required each
- Currently that is 2.8 tonnes of CO2 per house
- Heat pump would be 0.97 tonnes of CO2
- 27 million tonnes of CO2 saved
- PER ANNUM!!! - 6%

Carbon Saving

- 3 Bed property using 12,500kWh per annum
- Carbon Reduction of 3,660kg CO₂e/kWh

Like flying from London to Tokyo

And Back Again!



Environmental Damage

- Just 2 litres of oil could seriously pollute the volume of fresh water needed to fill an Olympic-size swimming pool
- Oil Boiler owners need specific insurance to cover the full cost of clean up
- Clean ups £20 - £50k



Oil Theft

- 51% increase in 6 years
- Approx. 10,000 domestic cases reported each year
- £4 million stolen in an average year!



Heat pumps in a nutshell

- A Heat pump upgrades freely available heat energy from the air and transfers it inside the home to provide hot water and heating for your radiators or underfloor heating.
- Receive an average of £7,000 in payments over 7 years with the Government's Renewable Heat Incentive (RHI) scheme.



- Replace your oil system and say goodbye to:
Oil price rises, oil smells, leaks and oil theft.
- Heat pumps are low maintenance, easy to install,
and only require electric and water connections
- Government wants a move away from high carbon
fuels and have embraced heat pump technology



Oil Boiler Replace Case Study

“George Clarke Heat pumps”



 YouTube



Residential Heating

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Renewable Heating Technology



Thank You

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