

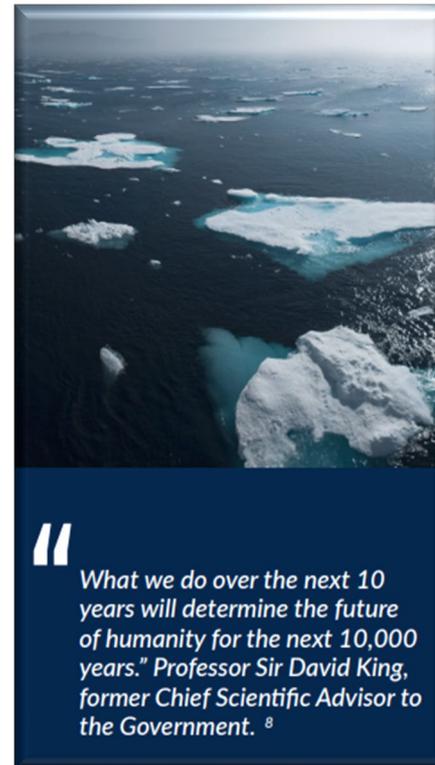
Electrification of Heat & the Road to Net Zero

Presented by

Ian Heron – Residential Specification Manager - Scotland

The Netzero challenge

- June 2019 NetZero passed into law
- 80% reduction from 1990 levels
- Immediate and widespread action
- The way we heat buildings must change



“

What we do over the next 10 years will determine the future of humanity for the next 10,000 years.” Professor Sir David King, former Chief Scientific Advisor to the Government. ⁸

What are the drivers?

- New build is essential for the growth of the heat pump market over the next few years, which looks like it will be driven by the Building Regulation changes.
- Following this, to meet the 600,000 units per year across the UK target deployment increase will need to come through retrofit of existing homes also.
- Research by the CCC showed heat pumps can be cost-comparable to gas boilers in new build already.
- Avoids the need for costly-retrofit at a later date.
- Quickly increase the deployment of low-carbon heat and combined with the retrofit market will help build the scale needed for net zero.



A report for the Committee on Climate Change

The costs and benefits of tighter standards for new buildings

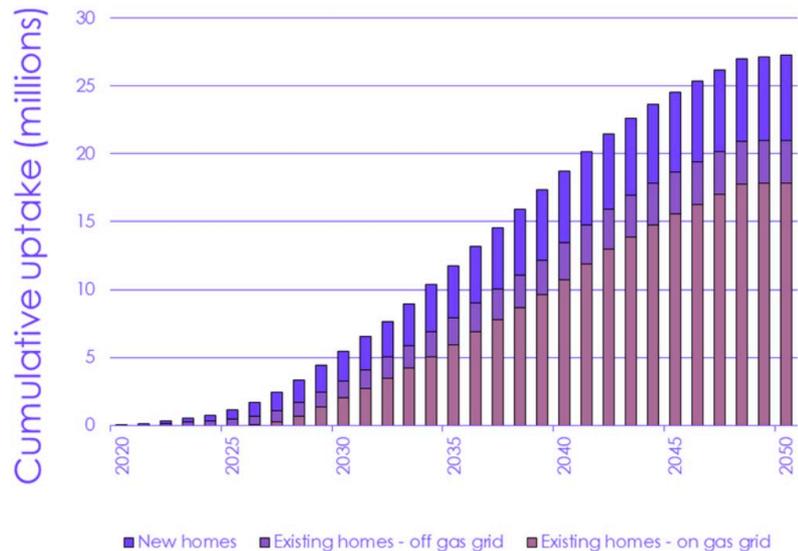
Final report

2019

 Currie & Brown

CCC sees heat pumps as main solution

Figure 3.2.c Uptake of heat pumps in residential buildings



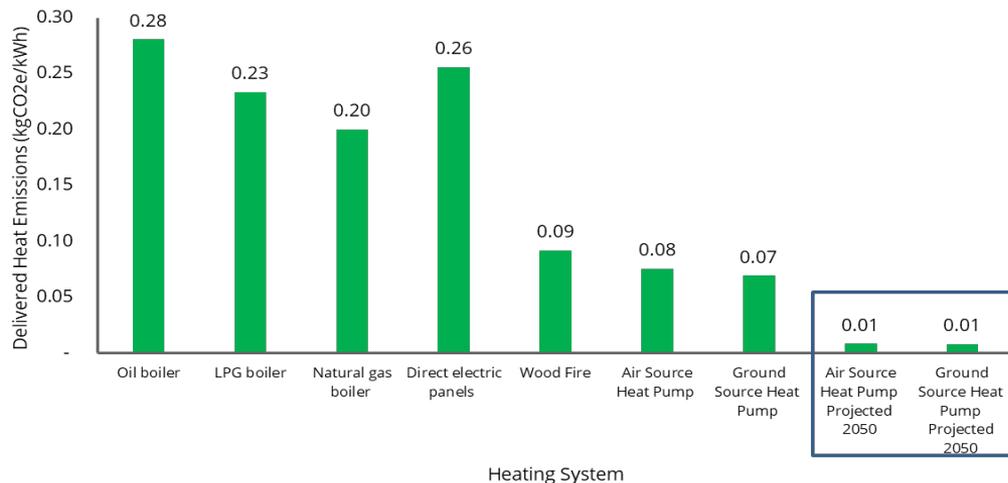
Source: Element Energy for the CCC (2020) Development of trajectories for residential heat decarbonisation to inform the sixth carbon budget.



Why heat pumps?

- Heat pumps offer huge carbon savings now, around 65% versus a natural gas boiler.
- Huge potential for further reductions as the grid continues to decarbonise. Projected savings vs. a gas boiler would be ~95% by 2050.

The Carbon Savings from Heat Pumps



Roadmap for heat pump deployment

- 2020: 35000 heat pumps installed
- 600k installs annually by 2028!
- CCC say 19 million required by 2050
- Trajectory of change...



Heat pump policy landscape

- 600,000 heat pumps per year by 2028 as part of Ten Point Plan for Green Industrial Revolution.
- Heat and Buildings Strategy published – firm commitment to the use of Heat Pumps.
- New Build Heat Standard coming into force in Scotland in 2024 – “Zero direct emissions” to meet heat demand.



Market Drivers - Legislation

- Heat in Buildings Strategy
 - Pathway for cutting greenhouse gas emissions within Scotland by more than two thirds
 - Over a million homes and the equivalent of 50,000 non-domestic buildings need to convert to zero emissions by 2030
- Climate Change Emission Reduction Targets (Scotland) Act 2019
 - Legally binding target to achieve net zero emissions by 2045
 - Interim target 75% reduction by 2030
 - 90% by 2040

Building Regulations are changing....

- Currently set by The Building (Scotland) Regulations 2004/Amendment Regulations 2016
- Section 6 (Energy – Conservation of Fuel & Power) & Section 7 (Sustainability)
- **Future** – New Build Heat Standard (Scotland) 2024

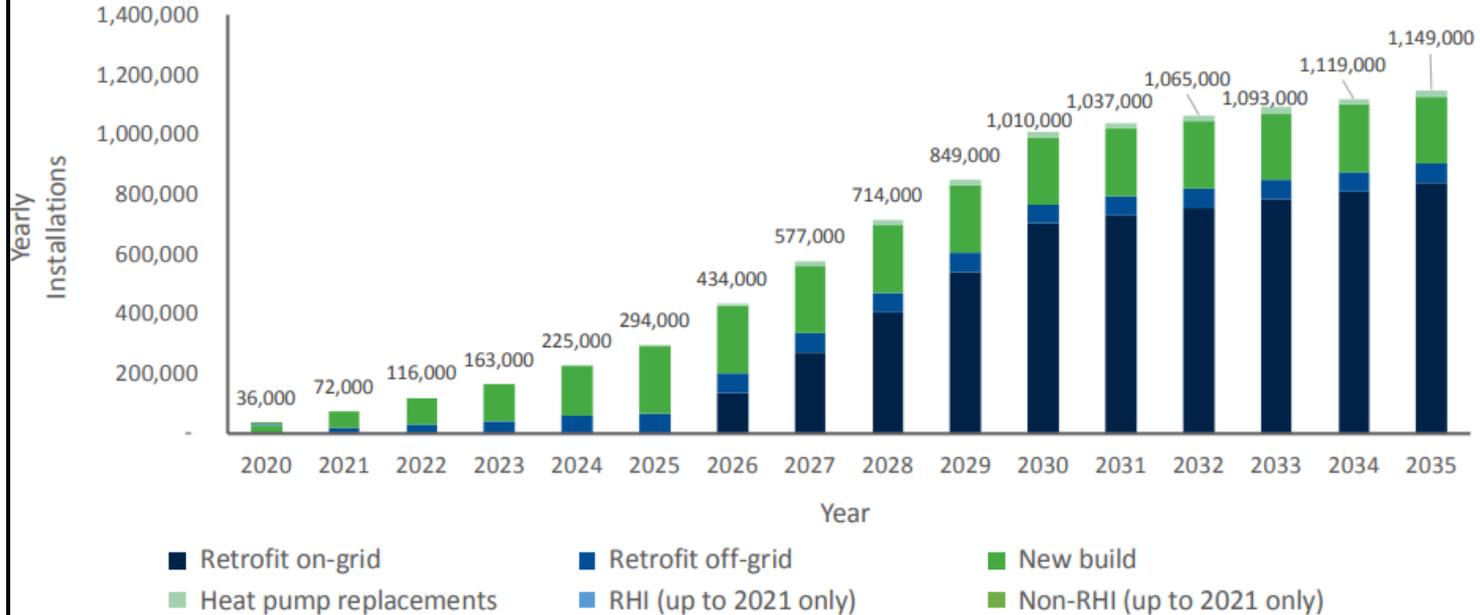
Building Regulations compliance – SAP

- Currently SAP 2012
 - Scotland (Section 6, Scottish Building Standards 2016) – 21% improvement on 2009 baseline
- Future under SAP 10
 - Scotland – finished consultation, Scottish Building Reg's compliance will move to SAP 2010 by October 2022, as will England & Wales

Market Drivers - Scotland

- At current rates, around 3 to 4,000 households per year install low and zero emissions heating
- Growth will be rapid...
 - At least 64,000 per year in 2025
 - Peak at over 200,000 per year in late 2020's
 - Heat Pump Sector Deal Expert Advisory Group – Formed to drive change, to help Scotland meet the challenge
- Scottish Government MCS certification scheme fund for heat pumps
 - The grant pays 75% up to a maximum of £1000, of the certification fees
 - For heating engineers with an interest in installing heat pumps (either air, ground or water source)
 - Runs until the end of March 2022 or whenever the fund runs out

Heat Pump Installations per Year



Heat Pump Solutions



**GROUND SOURCE
HEAT PUMPS**



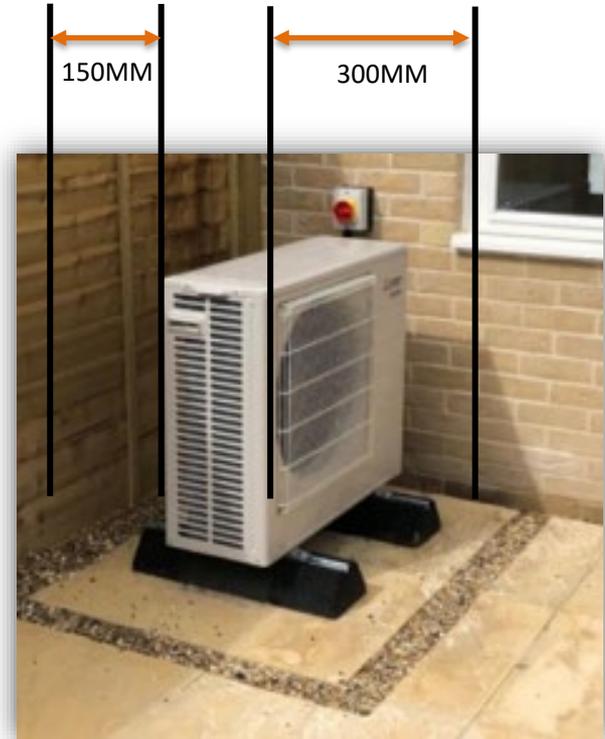
**AIR SOURCE
HEAT PUMPS**

When & where can you use a heat pump: Retrofit



Basic Install requirements

- Outside
- Distance between indoor & outdoor
- Cylinder location
- Condensate Removal
- Single Phase Electric Supply
- Insulate Pipes
- Isolator – Electricity & Pipework
- Anti Vibration Blocks
- Position / (airflow)



Heat pump solutions for all housing types...

Air Source Heat Pumps

- Majority of heat pump installs
 - Suitable for all new builds
- Small amount of space required outside for unit
- Work well for individual heating systems for each home
- Not quite as efficient as ground-source



ASHP's in New Build Social Housing – All across Scotland



Heat pump solutions for all housing types...

Ground Source Heat Pumps

- Require large amount of external space for a borehole or ground array
- Could work well sharing the ground-works across new build developments
 - Very efficient
- Higher upfront cost due to ground-work need



Retrofit – Communal Application





Communal Air Source Heat Pumps – NG Homes, Glasgow



Scottish Manufacturing



Mitsubishi Electric are proud to be recognised as a UK manufacturer for both heating and air conditioning products

Our UK factory is based in Livingston, Scotland. We offer regular factory tours to our corporate clients. This is an opportunity to visit with a group of corporate clients or on a bespoke trip to the facilities and witness first-hand the manufacturing and assembly of heating and air conditioning units and our R&D facilities. You will be able to see examples of the lean manufacturing procedures which are used throughout all of Mitsubishi Electric's factories worldwide.



Organise a tour

To find out more about our factory tours and to learn about upcoming tour dates [please contact us](#)

Manufacturing and R&D for Europe in Livingston

22



Easy to use controls & instructions



1: Activate Register now to activate your Mitsubishi Electric Homeowner Guarantee and enjoy total peace of mind from the protection this FREE cover offers. Activate today		2: Connect Easily pair your Ecodan to the internet via its wi-fi adaptor, download the MELCloud app and enjoy remote control & monitoring of your Ecodan at home or on the move from your smartphone, tablet or PC.  	3: Benefit Once connected, you can also enjoy the benefits of MELConsole which provides remote maintenance & technical support reducing the need of a visit from an engineer.  24/7 Technical Support		
Product Details		Operational Settings		System Performance	
Savings Example		Homeowner in need		Developer Support	

Public awareness & tenant engagement

George Clarke

Ecodan brand ambassador

The way we design, build, heat, power and recycle our homes needs to change and change quickly and renewable heating is an important part of our future.

"I'm therefore delighted to associate myself with the market-leading brand of heat pumps which are built here in the UK and which can help reduce energy bills and lower emissions for almost any home."

George Clarke
TV presenter, architect, lecturer and writer



Residential Heating

ecodan[®]
Renewable Heating Technology



Thank You

T: 07850 517647

E: lan.Heron@meuk.mee.com

W: ecodan.co.uk

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