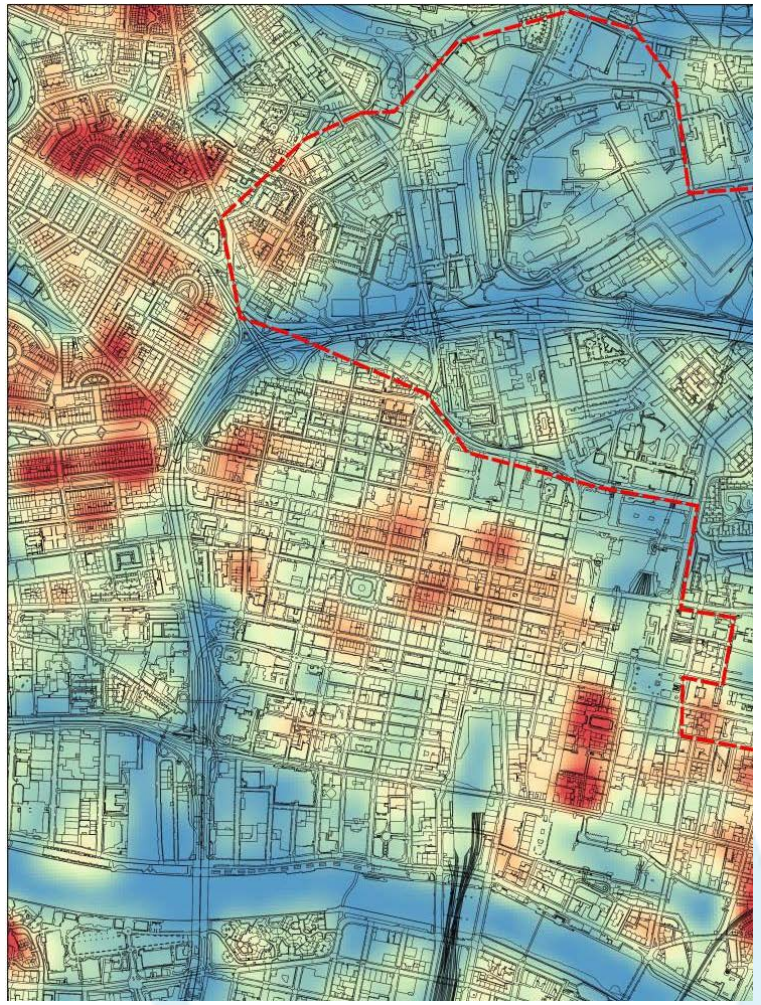
Switching to Low Carbon Heat

Drew Murphy
Zero Waste Scotland
drew.murphy@zerowastescotland.org.uk

zerowastescotland.org.uk
@zerowastescot

Overview

- ZWS Low Carbon Heat
- Policy context
- What is low carbon heat?
- Drivers, challenges and support
- Case studies



Low Carbon Heat

Industrial Decarbonisation

- Measurement and quantification
- Feasibility studies

Technical Evaluation

- High level opportunity assessment
- Feasibility studies

Capacity Building

- Strategy development support
- Stakeholder engagement

Expert Guidance

- Thought leadership
- Heat Network Partnership & LCITP
- districtheatingscotland.com

Why low carbon heat?

Scottish Government

2009 Climate Change Act (Scotland)

2013 District Heating Action Plan

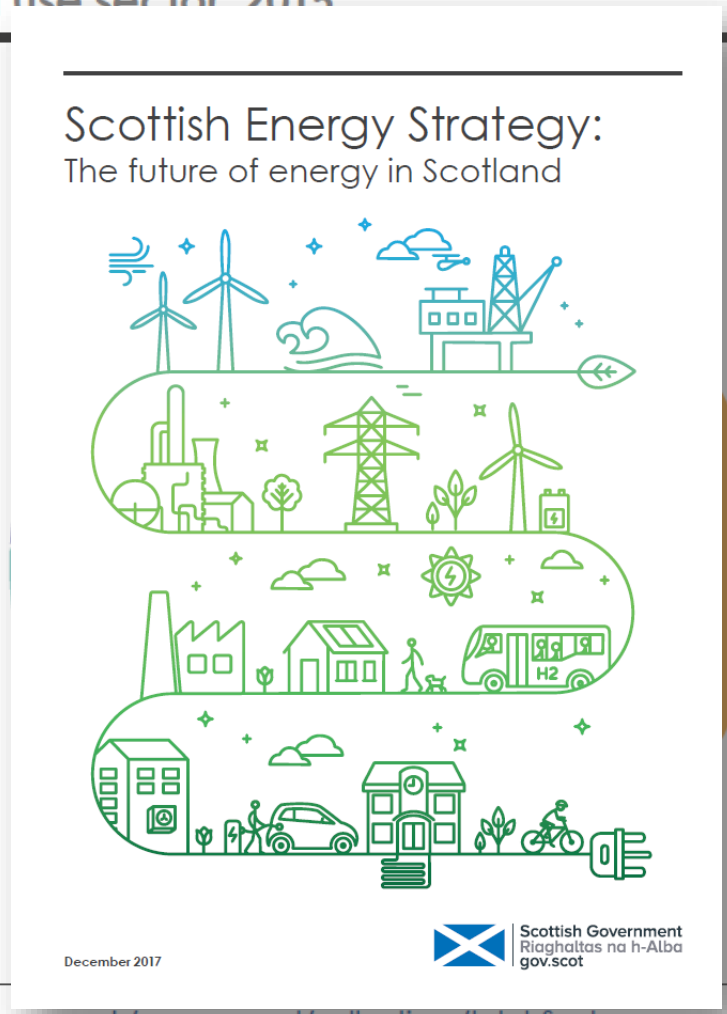
2015 Heat Policy Statement

2017 Scottish Energy Strategy

2018 Climate Change Plan

2018 Energy Efficient Scotland

Final Energy Consumption –
split by end use sector, 2015



Heat
Transport
Electricity

Source https://www.gov.uk/government/collections/total-final-energy-consumption-at-sub-national-level

“By 2032, 35% of domestic buildings’ heat will be supplied using low carbon technologies, where technically feasible.”

Climate Change Plan 2018

LHEES

- Local Heat and Energy Efficiency Strategies (LHEES)
- Strategic driver for Energy Efficient Scotland
- Local authority area wide strategies for
  - Energy efficiency
  - Heat decarbonisation
- 20 year lifespan
- Statutory duty for local authorities?
- Stakeholder involvement key

The question of gas

- Gas is (relatively) cheap
- Challenged as ‘low carbon’ by decarbonisation of the electricity grid
- Risk of a ‘stranded asset’ in the gas grid
- BEIS to decide on future of the gas grid by 2021
  - Biogas?
  - Hydrogen?
- ‘Low regrets’ opportunities:
  - Off-gas grid
  - High density urban

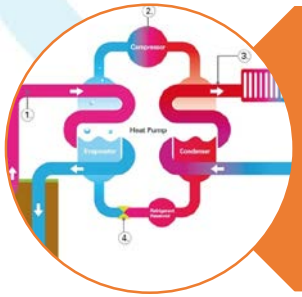
Low carbon heat

- '**Technologies**' and '**systems**' to provide lower carbon heat to homes, businesses, industry and the public sector

- '**Technologies**' include low/zero carbon and traditional forms of heat generation

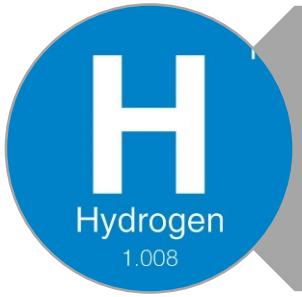
- '**Systems**' support delivery of heat such as district heating networks

Technologies



Heat Pumps

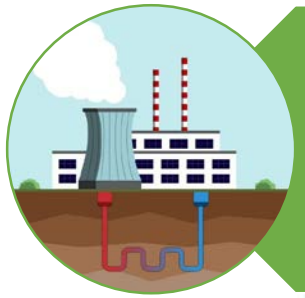
Waste Heat



Hydrogen

Anaerobic Digestion

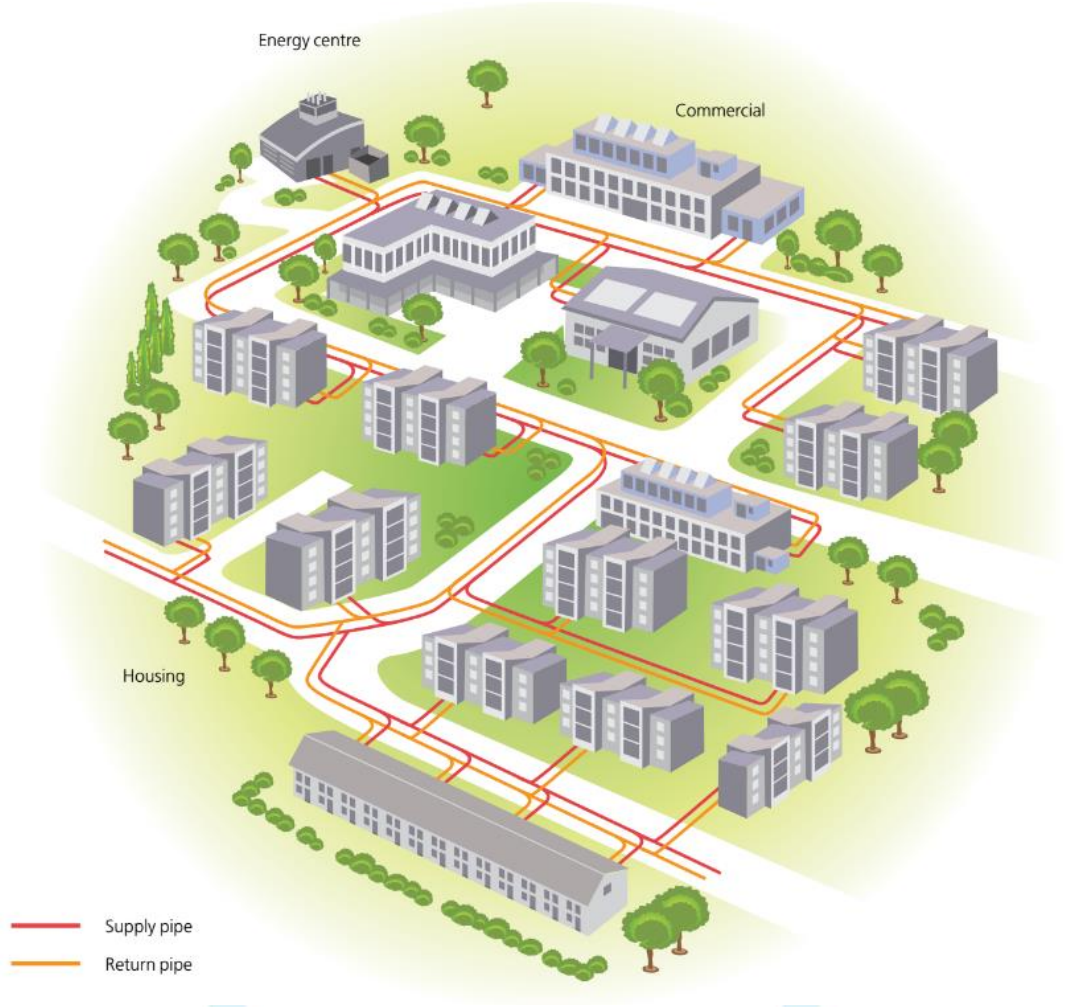
Biomass



Geothermal

District Heating

- Centralised heat source supplying a network of buildings
- Can use a variety of heat sources (individually and combined)
- Technologies include:
  - Traditional fossil fuels
  - Combined Heat and Power
  - Renewable heat: heat pumps, solar thermal, biomass, anaerobic digestion, geothermal, waste heat
- Choice of technology will impact on heat network and internal heating circuit
- Enables future diversification opportunities (technology agnostic)



Drivers for social housing

Policy

- Meeting standards (e.g. EESSH2)

Social

- Fuel poverty reduction
- Energy security

Environmental

- Reduced CO_2 emissions
- Reduced air pollution

Economic

- Reduced fuel cost
- Income generation
- Job creation

Challenges and solutions

Challenge	Solution
Choosing a heat technology	Low regrets principle, connect to existing networks, LHEES/DH zoning, feasibility support
Ensuring a fair/low heat price, consumer protection	Regulation, Heat Trust, CIBSE CP1, monitoring system performance
Heat network ownership, operation, metering & billing	RSL/local authority heat suppliers? Scottish Government energy company, commercial heat supply companies

Support

- District Heating Loan Fund
  - Low interest unsecured capital loans
  - 10 or 15 year repayments
  - Since 2011 offered over £10 million to 40+ projects
  - Feb 2015: First £1 million loan to Aberdeen Heat & Power
- Low Carbon Infrastructure Transition Programme (LCITP)
  - £60 million Low Carbon Innovation Funding
  - Scotland wide, cross-sector project development unit
- Energy Investment Fund
- Community and Renewable Energy Scheme

Heat Trust

- Independent customer protection scheme.
- Sets customer service standards and protection in district heating.
- Provides access to the Energy Ombudsman.
- Aims to assure a dependable heat supply and excellent customer service.

HEAT TRUST

Heat Supply agreements	Complaints procedure and Energy Ombudsman	Faults and interruptions
Vulnerable customers & PSR	Billing and payments	Customer communications
~~Pricing~~	~~Contract length~~	~~Supplier of last resort~~

Case Studies

Case Study: Aberdeen Heat & Power

- Gas CHP district and communal heating systems
- Not-for-profit heat supply company
- Supplying 43 tower blocks and 19 public buildings
- Fuel poverty driver: costs per household reduced by 20-50%
- 40% carbon saving compared to electric storage heating*

*Won’t be the case in future!

Case Study: Dunfermline Community Energy Scheme

- 1.4MW landfill gas CHP
- Owned and operated by Fife Council
- Supplies heat to 200+ homes and public buildings, also generates electricity
- £15.5m total project cost
- Potential annual CO_2e saving of 7,200 tonnes

Case Study: Queens Quay

- 2x 2MW water source heat pump from the River Clyde
- Heat for 1000+ homes and public/commercial buildings
- Under construction
- £12m total project cost
- 64% CO_2e savings compared with individual gas boilers

Thank you.

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