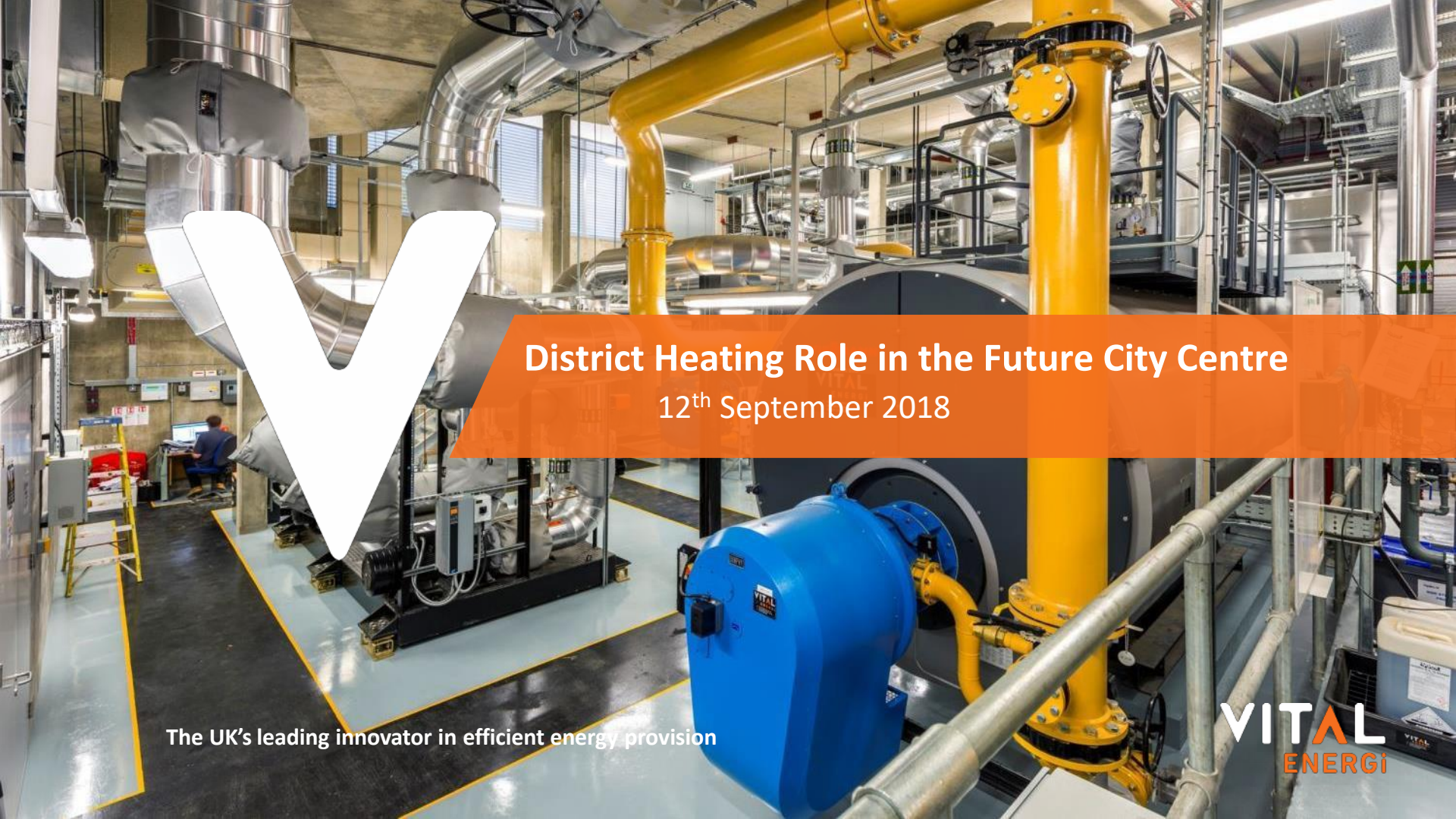

District Heating Role in the Future City Centre

12th September 2018

The UK's leading innovator in efficient energy provision

VITAL ENERGI

Introductions and content

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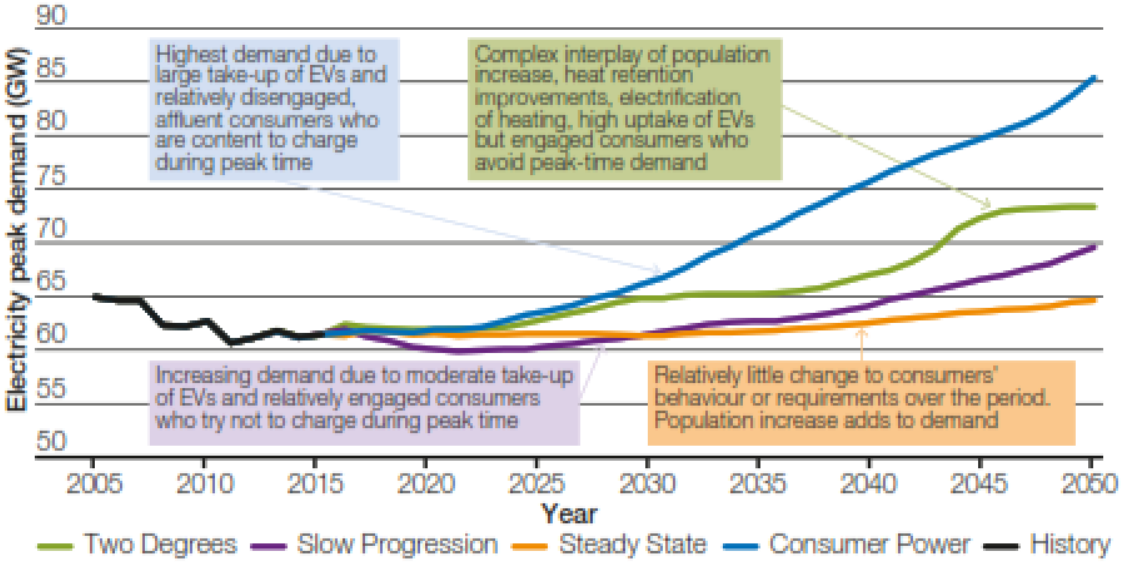
- *Presentation Content*
- *Energy Demand Predictions*
- *Energy Networks in Future Cities*
- *What Vital Energi Does*
- *Case Study – Leeds City Wide Energy Network*

Energy Demand Predictions

Figure 3.2
Electricity peak demand

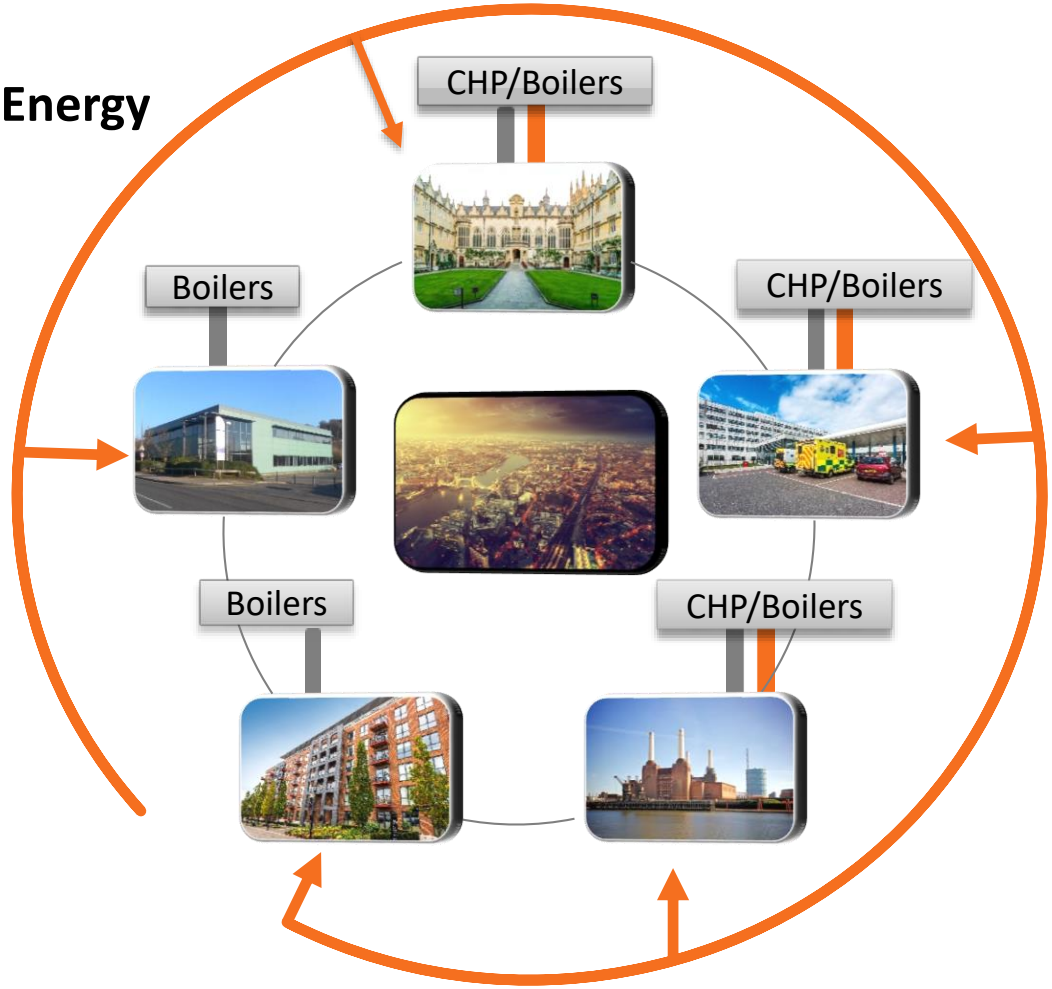


Source: National Grid – Future Energy Scenarios

Typical Buildings in a City Centre

Traditional Energy Supply

Electricity Grid



Energy Market Drivers

Fuel Poverty

Growth of Energy from Waste Plants

Volatility of Wholesale Electricity Cost

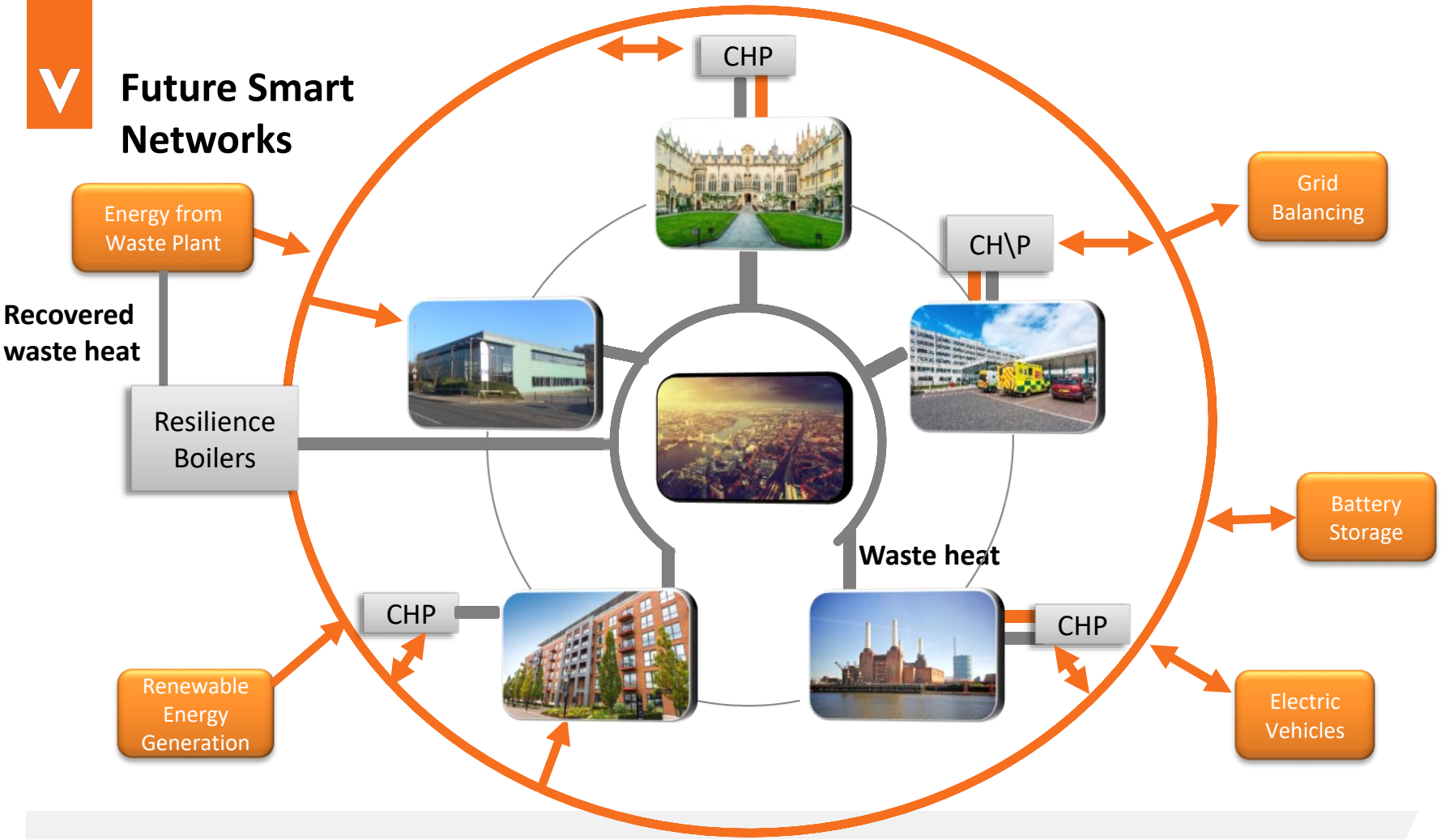
Air Quality Improvement

Reduced Cost for Battery Storage

Renewable Energy Generation

Growth of EV Charging

Future Smart Networks



Market Outlook

Growth Drivers Summary

£320m of HNIP funding / £60m LCITP Fund

HNDU Towns & Cities Pipeline

RE:FIT & NDEE Frameworks

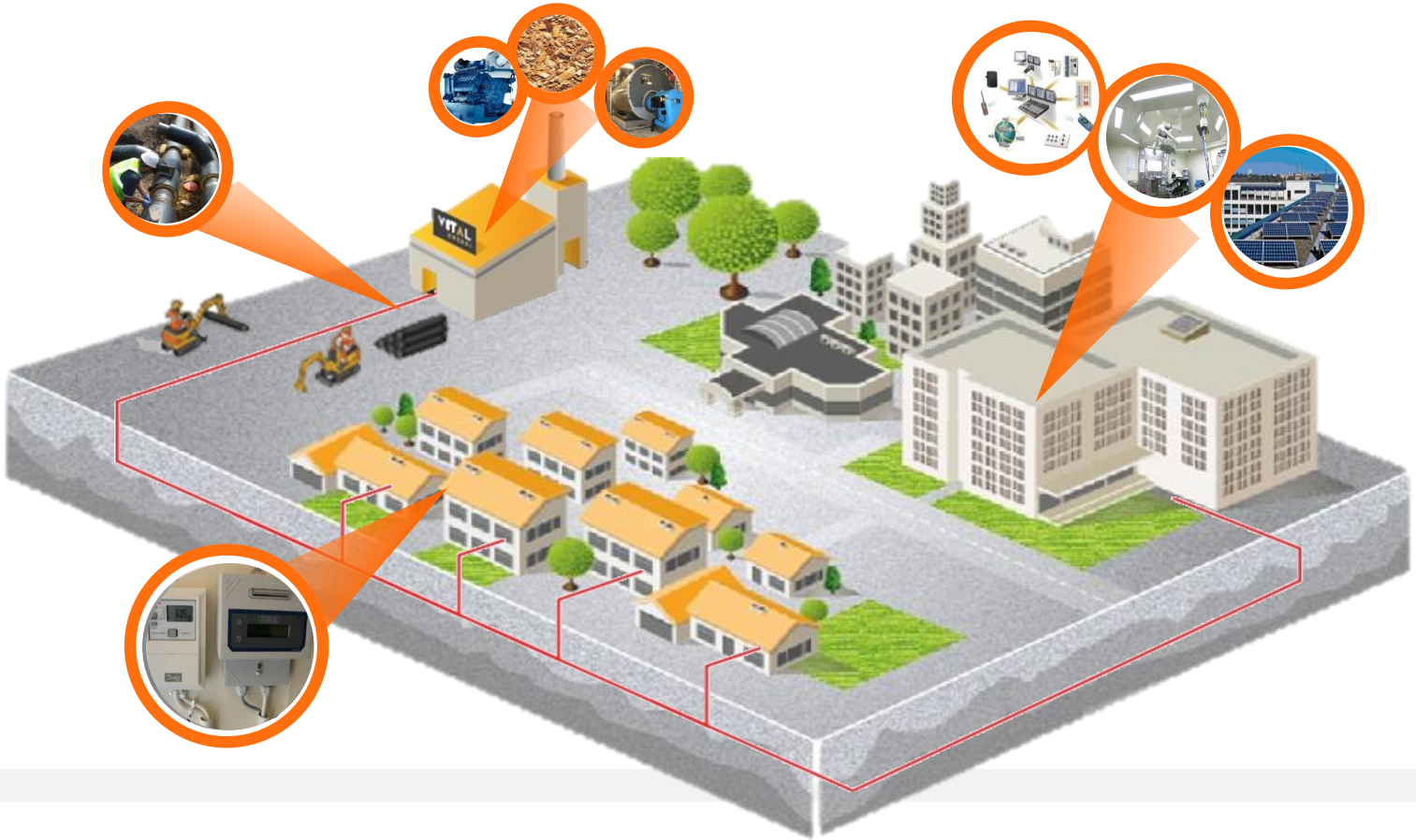
ESCo funding

Air Quality & Climate Change Acts

Incentives & RHI

Housing Shortfall

What Vital Energi does?



Approach and Capabilities

University of Strathclyde Glasgow

Nottingham City Council

MANCHESTER CITY COUNCIL

Leeds CITY COUNCIL

Case Study – Leeds City Wide Heat Network

Project Overview

- Flagship green infrastructure;
- RERF - centralised, low carbon heat source;
  - 13MW heat guaranteed, with potential for 20MW;
- 33MW Peak Load;
- Energy Centres – full DHN resilience;
- 6.5km underground pipework;
- Growth opportunity – 100 GWh;
- DHN has 60 year design life;
- Vital Energi selected as long term partner for DBOM.

Case Study – Leeds City Wide Heat Network

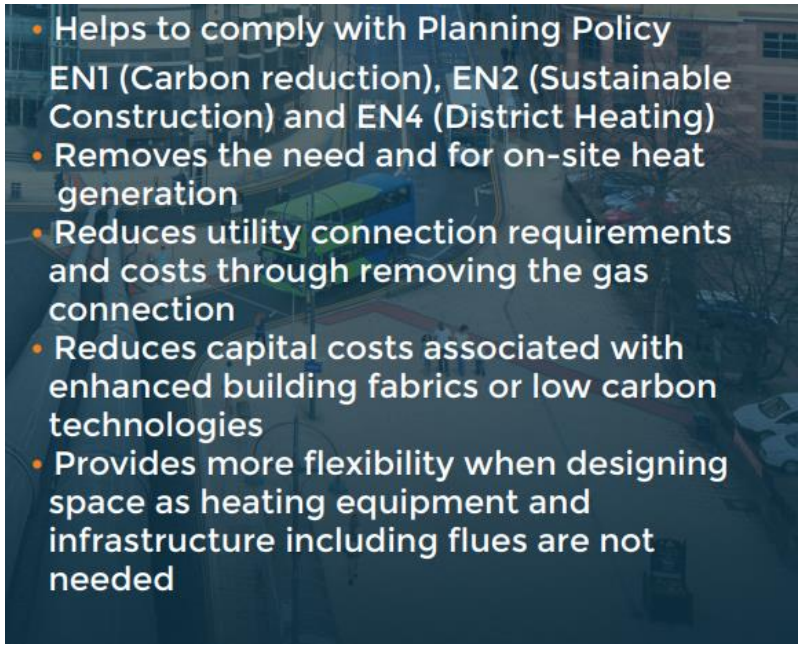
Project Outcomes & Key Benefits

Utilise available low carbon heat from Recycling and Energy Recovery Facility (RERF)

City benefits:

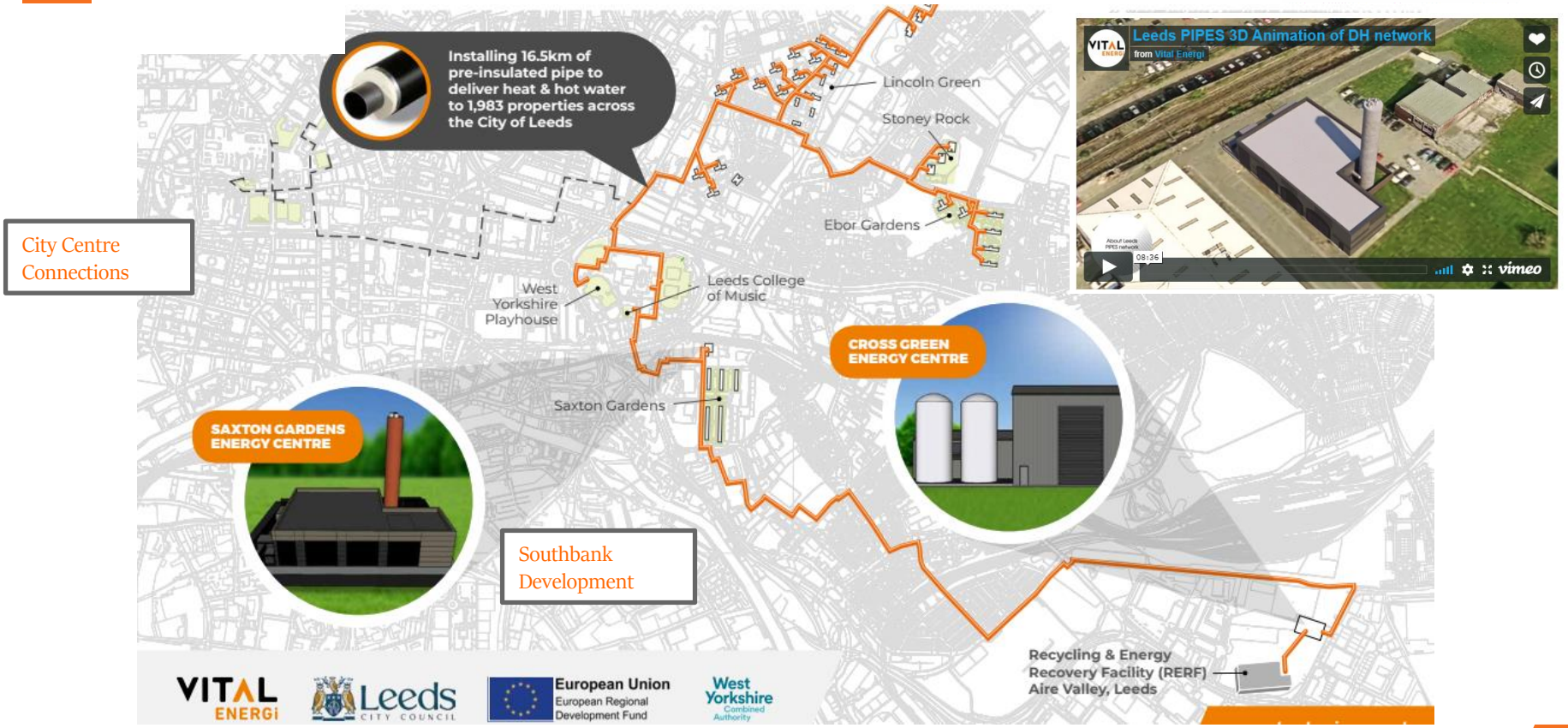
1. Promoting sustainable & economic growth
2. Contribute to citywide reduction in CO_2 emissions & improve air quality
3. Reduce fuel poverty & lower energy bills
4. Provide employment & educational opportunities

Developer benefits:



Case Study – Leeds City Wide Heat Network

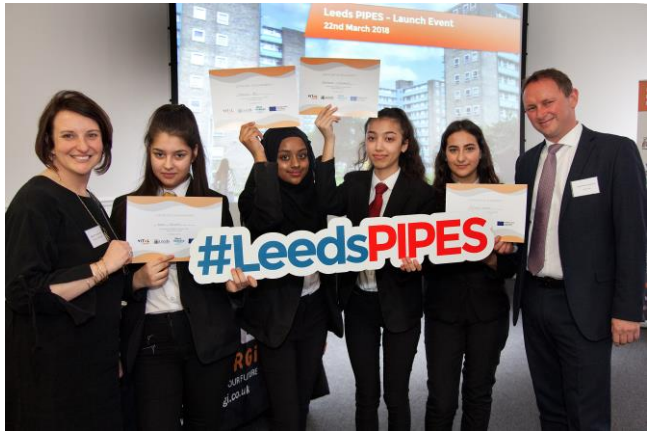
Leeds PIPES: district heating for a low carbon future



For more information - http://www.leeds-pipes.co.uk/

Case Study – Leeds City Wide Heat Network

Employment & Local Engagement Opportunities




Thank you for listening
Do you have any questions?
The UK's leading innovator in efficient energy provision
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Future of District Heating

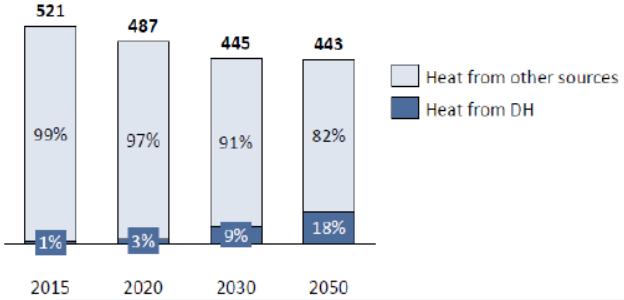
		Pathway 1: Electricity	Pathway 2: Hydrogen	Pathway 3: Emissions removal
Non-industrial business and public sector	Emissions ($MtCO_2e$)	3	1	1
	Share of district heat use in heating (per cent)	17%	24%	18%
	Share of electricity use heating (per cent)	83%	13%	80%
	Share of hydrogen use in heating (per cent)	0%	56%	0%
Industrial business	Emissions ($MtCO_2e$)	58	59	48
	Share of electricity use (per cent)	33%	23%	30%
	Share of hydrogen use (per cent)	0%	32%	28%
	Share of bioenergy use (per cent)	20%	15%	9%
	Captured emissions from industrial businesses ($MtCO_2e$)	0	165	37
Homes	Emissions ($MtCO_2e$)	8	6	19
	Share of district heat use in heating (per cent)	17%	17%	17%
	Share of electricity use in heating (per cent)	76%	14%	60%
	Share of hydrogen use in heating (per cent)	0%	62%	0%

Source: BEIS Clean Growth Strategy

Evolving Heat Generation Technologies

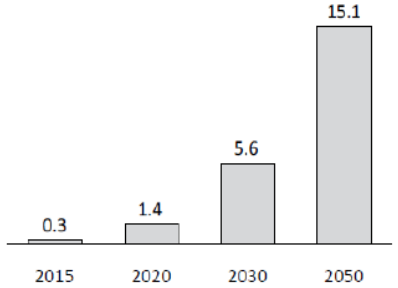
District heating deployment in the Central scenario

Heat supply in the domestic and non-domestic sectors* (TWh)



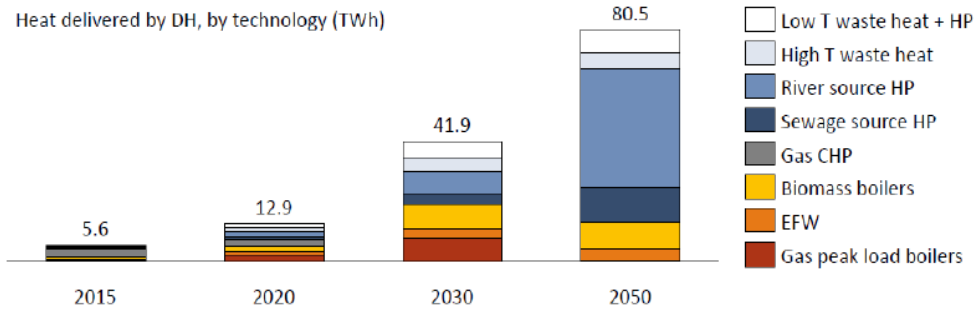
Associated CO_2 abatement

CO_2 emissions abatement from DH ($MtCO_2$)



Technology mix in the Central scenario

Heat delivered by DH, by technology (TWh)



Source: BEIS