**#THEPERFECTSTORM** 

# Welcome

# The Perfect Storm What to do with your existing buildings



#### **#THEPERFECTSTORM**

## **Your hosts**

Connect with your hosts on LinkedIn by scanning the QR codes below.



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Existing Buildings – Reducing costs for residents and cutting carbon through improved performance

Ian Allan, Head of Market Strategy

### Webinar Objective

Building owners and asset managers can no longer ignore poor performing heat networks.

This webinar will explore why efficiency needs to be your priority, in the face of the rising cost of gas and impending regulations.



Energy Prices Review Existing Buildings with Heat Networks Common issues and the three levels of intervention

What's in it for you? The paybacks

Funding?



### The Heat Network Tsunami

Why the energy crisis and impending regulation have caused a paradigm shift in heat network management

#### What is happening in the energy market?

#### Energy bills likely to rise by £800 in October, says Ofgem chief

Jonathan Brearley tells MPs price cap due to rise to about £2,800, blaming soaring cost of wholesale gas and electricity



Home UK World Politics US Climate Science & Tech Business Ents & Arts Travel Offbeat.

PM cold on scrapping 5% VAT rate as ministers feel heat over impact of soaring energy bills UK energy market crisis: what caused it and how does it affect my bills?

UK wholesale energy markets have hit record highs in recent weeks. Here's what you need to know



#### British households face record 54% energy bill rise as price cap is raised

Move by Ofgem means millions likely to be driven into fuel poverty unless government acts to ease cost of living crisis



### Energy price cap to hit £2,800 in October – what it means for you in 2022

The energy regulator has warned bills could rise by another 42pc

### UK energy bills to rise by over 50% in April as regulator announces hike

PUBLISHED THU, FEB 3 2022+6:12 AM EST | UPDATED FRI, FEB 4 2022+8:09 AM EST





Energy crisis talks fail to reach deal as household bills could double

#### Gas price rises and the price cap

- The cost of gas has increased by over 5x, from 2p/ kWh to between 7 and 8p/kWh
- Gas is bought at commercial rates for heat networks
- Historically, this has been half the domestic rate
- Commercial rate does not benefit from a price cap



= Wholesale gas

= Commercial

= Retail price cap

Source for wholesale gas price: cliffordtalbot.co.uk

#### **Regulating Heat Networks**

Regulation to protect customers on heat networks

**Regulated technical standards for better heat networks** 

Department for Business, Energy & Industrial Strategy





Heat Networks: Building a Market Framework

Government Response

Why are building owners in this position?



Gas price rises



Poorly maintained heat networks Lack of regulation and protection for residents

#### How does this affect your residents?



#### What can you do about it?





Common issues and the three levels of intervention

How operators and asset managers can improve efficiency - examples from Switch2 HNES surveys

#### **Property Issues – Common problems**









#### **Energy Centre Issues**

**Poor control** 

Fixed speed pumps

Plate heat exchangers

Mixing arrangements

Thermal store connections

High temperatures

Water treatment







#### 65°C Σ Boiler or Heat Generator 70°C HIU HIU HIU 10 AT 10 Tertiary Tertiary Tertiary Network Network Network

#### HIU Return Temperatures – The Not so Good



#### What does CP1 say about this?

The following is the methodology for calculating the average  $\Delta T$  between two periods of time using energy meter data

Reading 1		Reading 1		
900	m <sup>3</sup>	00100	MW∙h	
Reading 2		Reading 2		
01450	m <sup>3</sup>	00120	MW·h	



Cubic metre consumption in period: 1450 - 900 = 550 m<sup>3</sup>

Energy consumption in period: 120 - 100 = 20 MW·h

 $\frac{\Delta T \text{ calculated as follows:}}{\frac{MW \cdot h}{m^3} \times 860 = \text{cooling in }^{\circ}\text{C}$ 

The 860 is a constant, and is defined as the quantity in m<sup>3</sup> of water that will be heated by 1 °C by 1 MW·h

So in this example the  $\Delta T$  calculation is as follows:

 $\frac{20}{550}$  × 860 = 31.27 °C

The average  $\Delta T$  in this example is therefore 31.27 °C In this CIBSE CP1 example the Volume to Energy Ratio = 0.036

We are using the first part (the significant bit) of the calculation!

Figure 46 Method for establishing the average temperature difference from two heat meter readings

ADE CIBSE CP1 2020 page 137



#### Reporting





#### **Cumulative Volume**



Analysis of Volumes recorded at each apartment





## What's in it for you? The paybacks

Why now is the optimum time to make improvements to your heat network.

Efffic Based 3500 k Assum	ciency and on a scheme of 3 Wh per annum, p nes residents bill	Gas Pric 00 residential 0 s oer pr ed using heat mo lot 32	hjs scenario efficiency we etween £74 er year – you of hprove 4 fi⁄at	improving ould save k and £93K can fund a fients with !	Aftern Intern 65%	asicons
er k	0.060	£120,000	£93,333	£76,364	£64,615	Post
ce p	0.080	£160,00	£1fi4jen44e	d <b>£101,818</b>	£86,154	energy
Pen	0.100	£200,000	£155,556	£127,273	£107,692	crisis



## **Preparing for funding**

The next round of HNES funding opens in early 2023 and the pot is limited

You need to have completed an Optimisation survey before you can apply for the 50/50 capital funding



Running a heat network properly – what you need

based on paybacks

to make improvements

tomer meters



### Heat Network Efficiency Scheme (HNES) Overview

Katie Adams HNES Main Scheme Design Manager



Department for Business, Energy & Industrial Strategy

## Why are heat networks important?







## Heat Network Transformation Programme





Department for Business, Energy & Industrial Strategy

## **HNES** development





## **HNES** Demonstrator aims and objectives

Deploy funding to improve performance of existing District and Communal networks





## HNES Demonstrator – funded measures

#### Revenue grants •Optimisation studies Identifying issues, recommending solutions Capital grants •Delivery/installation of measures Plant room Primary / secondary network Tertiary network Controls & metering Excluding technology switch



TERTIARY heat network



Department for Business, Energy & Industrial Strategy

## Pathways for existing networks

Complementary schemes developing route for existing heat network projects

https://www.gov.uk/government/publications/green-heat-network-fund-ghnf





Department for Business, Energy & Industrial Strategy

## **Project applicants**







# HNES geographical breakdown



## Project issues at application stage



- High heat tariff
- High carbon content of heat
- Overheating of common areas
- Frequent service interruptions
- Low heat generation efficiency
- High pumping energy consumption
- Low delivery efficiency (losses) primary
- Low delivery efficiency (losses) secondary
- Low delivery efficiency (losses) tertiary
- High bypass flow secondary
- High bypass flow HIU/ heat substation
- High hot water delivery time
- Poor flow temperature stability
- Poor water quality



## Targeted benefits at application



- Reduction in network carbon emissions
- Reduction in fuel use (gas)
- Reduction in fuel use (electricity)
- Reduction in distribution losses
- Reduction in cost of delivered heat (p/kWh)
- Reduction in overheating
- Reduction in service interruptions
- Improved accuracy of billing
- Improved information provision



## **Funded** activities



Secondary network **Primary network Energy centre / plant room** 



## **HNES** aims and objectives

Deploy funding to improve performance of existing District and Communal networks





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## HNES Demonstrator / Main

	HNES Main	HNES Demonstrator
Budget:	Capital grants – £30.00m (confirmed) Revenue grants – £2m (confirmed)	Capital grants – £3.68m Revenue grants – £1.54m
Number of projects funded:	Capital – TBC Revenue – TBC	Capital – 37 Revenue – 73
Delivery period (FY):	2023/24 and 2024/25 (2 years) Grant funding drawn down before FY-end	2021/22 (4-5 months)
Timings:	Scheme launches Spring 2023 Scheme closes end of March 2025	Scheme launched October 2021 Scheme closed end of March 2022
Funding rounds:	Multiple	Single



### **HNES Main next steps**





## Please contact <u>hnes@beis.gov.uk</u> to register for updates



Department for Business, Energy & Industrial Strategy

# The Perfect Storm: Impending regulation and the energy crisis

30 June 2022

### Webinar 2 – Existing Buildings



# Presenting



#### James Wood-Robertson

#### Partner

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# **Existing buildings – Introduction**

#### Last session

- Importance of experience and expertise in design, build and operation
- Rationale for outsourcing or subcontracting
- Contractual structure of outsourcing model
- Key issues in Concession Agreement

#### This session

- Context for existing buildings
- Likely contractual arrangements
- Key issues most pertinent to existing buildings

# **Alignment of Priorities & Contract Structure**

#### Building owner (Client) priorities

- Improving efficiency and reliability of existing infrastructure
- Outsourcing responsibility and risk for operation and maintenance and customer interface
- Having an experienced, skilled and robust operator
- Operator priorities
  - Operating an efficient and reliable energy system
  - Assuming and managing risks that it is best placed to manage
  - Having a happy client and happy customers
- **End-user (Customer) priorities** 
  - Efficient and reliable supply of energy
  - Visibility and security of energy costs
- Contractual structure
  - Concession Agreement long term outsourcing agreement between Client and Operator
  - Supply Agreements governing supply of heat (and electricity, if relevant) by Operator to Customer
  - Other agreements Leases (between Clients and Customers) and Management Company agreements

# Key issues for existing buildings

- Handover & Defects
  - Surveys and handover process
  - Responsibility for defects in existing system
- Improvements to energy system
  - Responsibility for works
  - > Costs of works and recovery from tenants (including LTA considerations)
- Debt management and risk historic and future debts
- Cost and energy pricing controls
  - Factors causing increases in standing charges and unit prices
  - Ability to limit or restrict increases gas cost comparator & Heat Trust
- Management and sufficiency of sinking fund
  - Transfer of responsibility to operator but what if funds insufficient?
  - Protection of sinking funds between schemes
  - Change in Law risk particularly an issue with net zero

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