

Session 1. Led by David Somervell, Clean Heat Edinburgh Forum (CHEF)




Clean Heat Edinburgh Forum - Prospects for heating the city in the 2030s

Johanna Carrie, CHEF co-founder, Fairmilehead Community Councillor

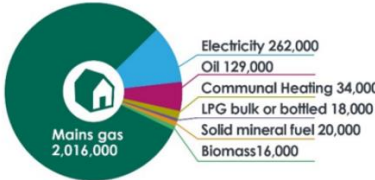
A group of around 250 individuals from civil society, universities and energy firms working to promote the concept of clean heat networks.

CHEF made a direct contribution to the Local Heat and Energy Efficiency Strategy (LHEES) drawn up by Edinburgh Council, as part of a Scot Gov undertaking.

Decarbonising Heat



- Scotland has a legal target to reach 'net zero' greenhouse gas emissions by 2045
- There is no way to meet our legal obligation to reach net zero without changing the heating systems in the vast majority of our buildings
- By the end of 2045, all building owners will need to have ended their use of fossil fuel heating systems.




Domestic heating by fuel type in Scotland

[Heat in Buildings Bill: Consultation](#)

Core part of Scotland's commitment is to reduce the amount of polluting heating systems that we use, industrial and residential.

Direction of Travel for Scotland



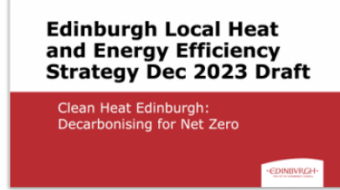
- Heat Networks currently provide just under [2% of Scotland's heat](#). They could grow to [17% - 32%](#) of delivered heat
- Scotland's Heat Network Fund (SHNF) is a [£300 million fund](#) available to support the development and roll out of Heat Networks across Scotland
- [Heat in Buildings Bill: Consultation](#) proposed providing local authorities and the Scottish Ministers with powers to require buildings in a Heat Network Zone to end their use of fossil fuel heating systems (by a certain date, and with a minimum notice period).

At the moment, around 100 small and large heat networks across the Edinburgh, providing around 2% of the heating requirement in buildings. That could grow to around 33% by 2045. That is part of the plan being mapped out under the LHEES.

Local Heat and Energy Efficiency Strategies (LHEES)



- [Local Heat and Energy Efficiency Strategies \(Scotland\) Order 2022](#)
- required each local authority to publish a Strategy and a Delivery Plan for 2024-28 by end of 2023
- One of the required outputs of each LHEES was identification of prospective Heat Network zones.



[Draft Edinburgh LHEES Dec 2023](#)

Access the Climate Action Map



(KR: Here is a direct link: [Climate Action Map \(arcgis.com\)](#) Begin by following the short Climate Action Map video at the bottom left hand side.)

Now watch this short video from Dr Kira Myers, University of Edinburgh Geographic Information System (GIS) Mapping researcher and CHEF member.

<https://www.youtube.com/watch?v=QsPEv2YLRnI>

Handover to Hilary Blackman, Energy Officer at CEC LHEES Team.

Edinburgh LHEES: Towards a Delivery Model for Heat Networks

**Edinburgh Association of
Community Councils 27 June 2024**

Hilary Blackman, Energy Officer

LHEES@edinburgh.gov.uk



What is an LHEES?

- A long-term (20-25 years) plan for decarbonising heat in buildings and improving energy efficiency across Edinburgh that:
 - Sets out how each segment of Edinburgh's building stock needs to change.
 - Identifies "strategic zones" for heat decarbonisation within Edinburgh and sets out "pathways" for reducing the emissions of buildings in each zone.
 - Prioritises areas for delivery.
- Draft LHEES & Delivery Plan published Dec 2023, followed by public consultation.

Now moving on the first steps for establishing a framework for heat network delivery in Edinburgh.

Key targets / regulations

- Decarbonise the heating of **all** buildings in Scotland by 2045
- All homes in Scotland to use zero emissions heating systems by 2045
 - Prohibiting the use of direct emissions heating systems in new buildings in Scotland from 1 April 2024
 - All publicly owned buildings to use zero emissions heating systems by 2038.
- All residential properties to achieve a minimum EPC rating 'C' by 2033
 - All privately-rented homes in Scotland to achieve a minimum EPC rating 'C' by 2028 (2025 for homes marketed to new tenants)
 - All social housing to achieve a minimum EPC rating of 'B' by 2032.
- To achieve decarbonisation of heat, 229,798 homes in Edinburgh will need their existing fossil fuel-based heating systems replaced, the vast majority of them (227,550) homes currently heated using gas boilers.

This slide is important. It illustrates the scale of change envisaged and in train for residential properties.

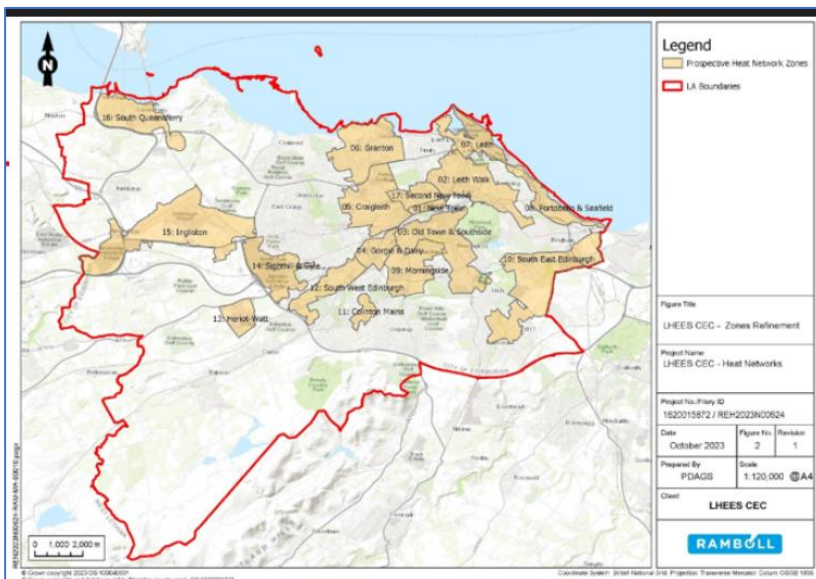
“230, 000 homes’ is a huge challenge. But one of the benefits of district heating and heat networks is that they are a large-scale solution. And so, when they are installed, you can make street level progress as opposed to individually installing a heat pump at individual properties.” (HB).

(KR: You are talking, in terms of these key targets / regulations, essentially of a ‘mobilisation’ within the city and of a markedly bigger one across the country as a whole. The funding and logistical and resource acquisition challenges are massive.)

Heat Network Zones

- 17 Zones are identified as having the greatest potential for heat networks
- Selected on the basis of demand analysis, with refinements to reflect practical considerations such as railway lines.

• New Town	• Leith	• Heriot-Watt
• Leith Walk	• Portobello & Seafield	• Sighthill & Gyle
• Old Town & Southside	• Morningside	• Ingliston
• Gorgie & Dalry	• South East Edinburgh	• South Queensferry
• Craigeith	• Colinton Mains	• Second New Town
• Granton	• South West Edinburgh	



(KR: Here is the link to the CEC LHEES page:

[Local heat and energy efficiency strategy \(LHEES\) – The City of Edinburgh Council](#))

Granton Waterfront

- Financial viability – the project is self-supporting with a positive NPV and IRR although it is recognised that the project will require capital grant funding to be investable.
- The cost of heat supplied would be in line with both gas and low carbon alternatives – relatively affordable to consumers.
- No or very limited Council funds are required (except potentially Scottish Government grant funding) in the delivery of the network.
- Funding may still be required from the Council and its public sector partners as customers to meet connection charges.
- As the project is being facilitated by the Council and public sector partners, the intention would be to ensure that returns are capped with surpluses beyond this cap are used to offer cheaper heat tariffs to customers, or to support community initiatives.

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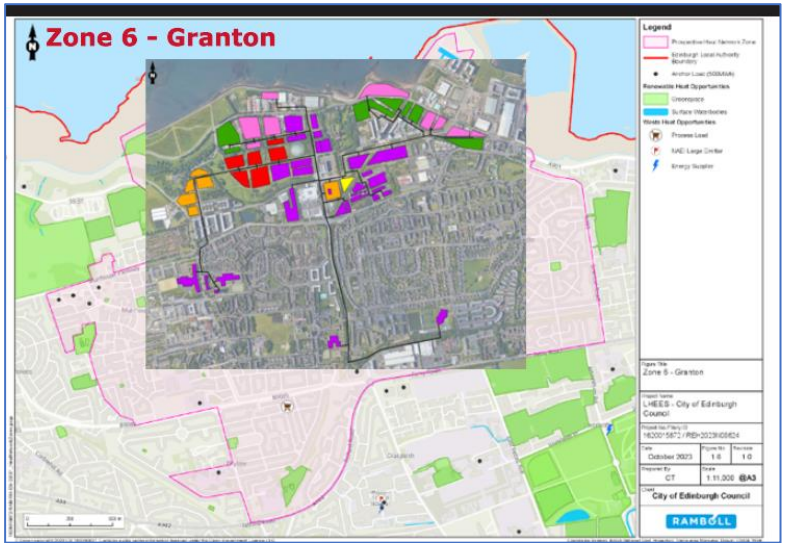
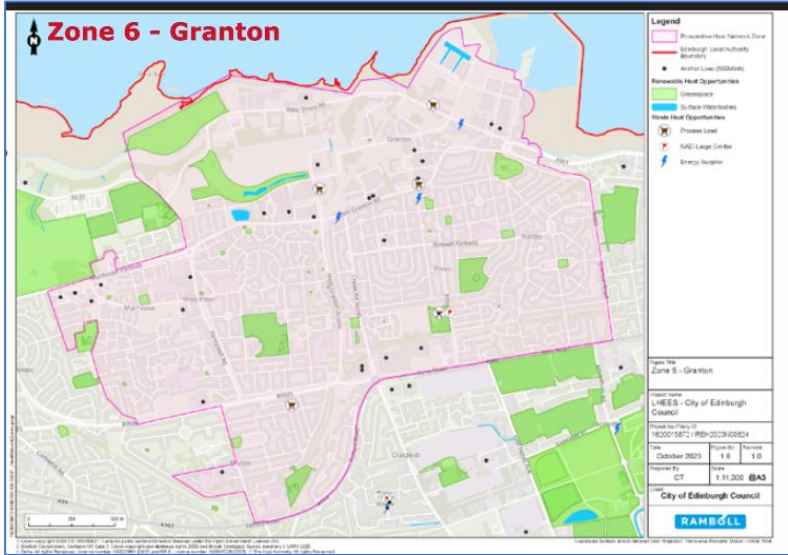
Focus on Granton as a project zone where most progress has been made.

That is in good part because of the scope to start from scratch, to install the heat network system as other energy efficient, high insulation development and build takes place around and over it.

It also is easier for public and private sector partners to work together on both project delivery and on funding.

In the case of Granton, Scot Gov capital grant funding has been made available and it is only with that funding that the project has become self-supporting and investable. Circumstances elsewhere will differ.

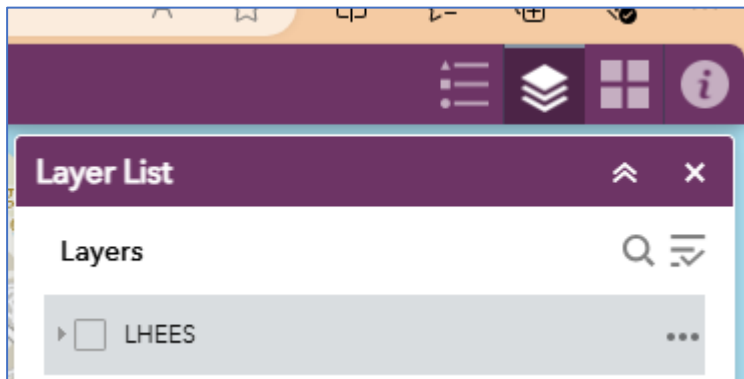
“One of the challenges that may arise is the burden on customers to connect to a heat network, which is why it is still under consideration that the Council, as well as the Heat Network Support Unit, could step in to help meet the connection charges and because the infrastructure is initially expensive to install, and requires quite a bit of disruption to the roads around the properties. But then once in place, it almost ‘an edit and forget it’ solution.” (HB)
(KR: Sounds too simple, no?)



The city can be mapped with deep, deep precision. ‘Imagining’ the networks is quite straightforward, when in the hands of experts.

The LHEES team is working closely with Edinburgh climate Change Institute (Kira Myers) to identify the arterial reach of heat network 'spinal pipe' that could serve a city-wide area or link multiple networks as they develop.

*(KR: At this point, here is a link to the LHEES interactive mapping facility. [LHEES \(arcgis.com\)](https://arcgis.com)
On opening the map, go to the second of the four items at the top RHS of the title bar to get the 'Layer List'.*



On the Layer List, select 'LHEES' and then click the grey > pointer to the left of the tick box.

Nine 'parent layers' then appear.

Select the last, 'Edinburgh Local Authority Boundary'.

Select the first, 'Heat Network Zones and Heat Sources'; click the grey > pointer to the left of the tick box.

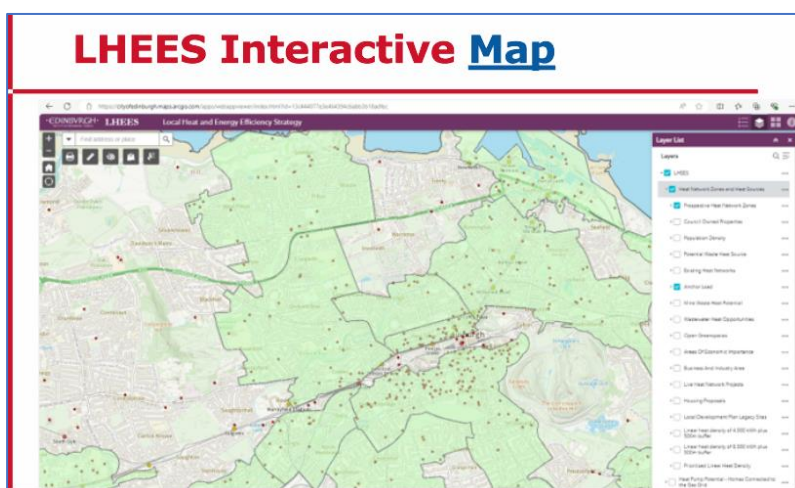
Select "Prospective Heat Network Zones", and be surprised!

Zero-in on your locality by adjusting the plus / minus buttons on the top LHS of the map.

Note how much of your community council area could, repeat could, come into the frame, in due course!

Bring this to public attention!

Keep in touch with LHEES developments!)



Delivery Model – examples

- The Scottish Futures Trust published their report: "[Heat Networks Delivery Models](#)" in February 2024
- The supplier will be asked to consider the following models:
 - In-house delivery
 - Joint venture – with a sliding scale of Council stake e.g. 5-50%
 - Models involving a form of energy partnership with a private sector partner, potentially involving other public sector bodies in the area
 - Service concession.
- The options appraisal will consider the scope for the following to play a role in the optimal delivery model:
 - Energy for Edinburgh, the Council's arm's length energy services company, e.g. as the vehicle for a joint venture
 - The community, e.g. via community ownership shares.

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The critical question is who commissions the rollout and on what terms?

Strategic development and in-house delivery by the Council?

Joint-venture enterprise as with Midlothian Council and Vattenfall?

How does private sector involvement marry-up with participation by other public sector bodies (e.g. NHS, Universities)?

How does the Council direct projects towards those areas suffering most from fuel poverty?

How does the Council 'protect its values'?

How does the Council protect itself when offering the private sector service concessions to deliver parcelled-up heat network projects completed on the drawing board?

So, it's interesting to hear that the CEC LHEES team is working on a Heat Network Customer Charter. This would aim to ensure there is basically "a universal experience of being a heat network customer throughout the city", with a set of guidelines that the heat network operator would be required to meet within Edinburgh.

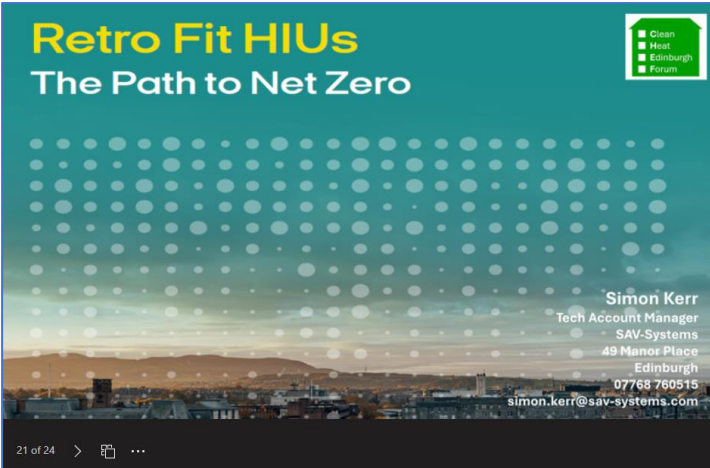
We are also waiting on Scot Gov to offer statutory heat network regulations, which might appear within the next six months.

Key next steps

- Agree a preferred model for supporting the wider roll-out of Heat Networks in Edinburgh
- Create a Heat Network Customer Charter
- Feasibility study for a Heat Network in the Old Town
- Feasibility review of the prospective Heat Network Zones
- Audit and analysis of low/zero carbon heat sources in and around Edinburgh
- Identification of an optimal spinal pipe serving a city-wide network, or linking multiple networks
- Statutorily designate Heat Network Zones and develop a consenting regime for Heat Networks.

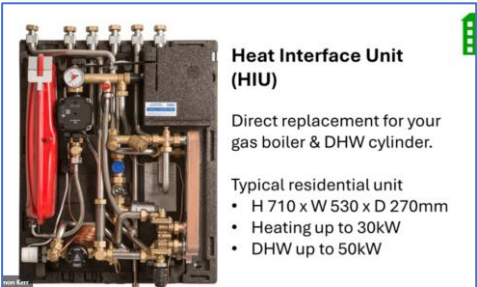
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Handover to Simon Kerr, of SAV Systems, also a CHEF member.

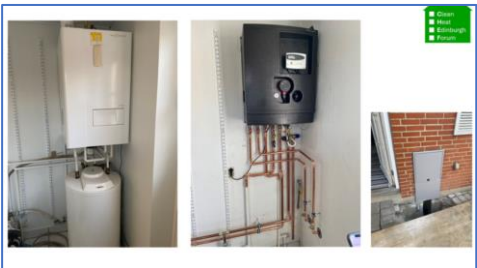


Approximately 150 heat networks in Edinburgh, predominantly new build as opposed to retrofit of old / existing buildings. About 10,500 heat interface units in place. Lead case study in Scotland in that latter regard is the Aberdeen Heat and Power retrofit of all their tower blocks around 10 years ago, undertaken to address fuel poverty. A lead international example is Denmark where 67% of population are on heat networks, 98% in Copenhagen. So, it is 'do-able' and it is a good future-proof solution to energy security. You capture heat that is currently being 'wasted' and demand is alleviated on the increasingly pressured electricity grid.

But retrofitting on a massive scale in prospect.



For domestic units, no major space issues, since the gas boiler is dimensionally pretty much the same as the HIU. Heating to 30kW and direct hot water to 50kW should cover most needs. Larger units are available.



How to accelerate uptake in the face of the capital costs of converting?

One idea may be a leasing arrangement whereby the network provider provides for conversion and connection to the heat network, with the user paying a 'lease supplement' on a monthly basis over a period of, say, 20 years.

The user doesn't own the kit, is covered for maintenance and upgrades, but has a long-term contract commitment to the supplier. Heat network providers have an easier "in" since the homeowner user in this situation doesn't have to fork out a large lump sum.

"...so, the retrofitting of (the) heat interface unit is relatively hassle-free for a particular dwelling; the disruption will be pipes in the street ... I can't remember a time in Edinburgh where they weren't digging the streets up, so I'm not sure we will notice much of a difference with digging streets up to fit pipes into." (SK)

" Hopefully, the heat network and the heat interface unit will be seen as a simple transition for the homeowner." (SK)

Summary by Bill Rodger, Chair of Trinity CC and CHEF member.

Refer back to the Kira Myers' video:

Gas will run out one day.

Renewable electricity will not be sufficient in itself to let us decarbonise to the extent we need to. There has to be another way to 'net zero'.

Heat networks are a 'new' concept here but they are an established one elsewhere.

Scot Gov and CEC recognise the imperative for change; the 'funding gap' is a massive piece in the jigsaw, a piece still to be shaped in itself.

When heat network implementation begins in earnest, "we have to recognise there will be disruption around us. ... There's no two ways about that. Despite Simon's rosy view of street digging in Edinburgh, I don't think the residents are entirely reconciled to it." (BR)

"I really think that we all, each of us needs to look at how our community councils will be affected", using the LHEES mapping tool to display community council boundary lines. ... The key message I'd like to leave you with is, please look at Kira's video; please look at what it means for your community council; please find out a bit more about it.

Concluding remarks from Johanna Carrie, member of Fairmilehead CC and the founder of CHEF.

Over a long period, we have moved from room-by-room heating in a domestic environment to central heating, a single heat source for the home. Now we are set to move to the practical idea of a single heat source for a multiple-occupancy building, or for a street. This is "a great idea ... we should be building on". (JC)

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