



RENFREWSHIRE'S

LOCAL HEAT & ENERGY EFFICIENCY DELIVERY PLAN (LHEEDP)

Environment, Housing & Infrastructure

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1. Introduction To Local Heat & Energy Efficiency Delivery Plan (LHEEDP)

This document is the Delivery Plan for the Renfrewshire Local Heat and Energy Efficiency Strategy (LHEES). It should be read in conjunction with the Renfrewshire LHEES itself.

The Delivery Plan sets out how Renfrewshire LHEES is to be implemented, with a focus on actions over the period 2024 to 2029.

The plan proposes to support Renfrewshire Council and our partners to work towards delivery of the changes and opportunities identified in the Strategy. This is intended as a 5-year term delivery of actions, based on local priorities, LHEES considerations and stakeholder engagement. This helps understand what actions can currently be delivered, given the changing policy landscape as well as understanding that new future policies and programmes will be developed alongside new technologies being adopted as they become viable.

Continuing engagement with both internal and external stakeholders will be critical to support the delivery of LHEES and embed LHEES within the local governance structures and processes, not just of the Council but our Community Planning Partners and all stakeholders, in order to identify and optimise new opportunities, including collaboration and partnership working opportunities as they arise.

The high-level LHEES Delivery Plan is a living document and is subject to change when the Council and partner organisations start delivering LHEES and/or large-scale renewables projects as well as new developments and the emergence of new technologies. It is expected to be updated in line with local and national policy and target developments, with a statutory obligation to update at intervals of no more than 5 years.

2. Approach to Delivery Plan

2.1 LHEES Priorities

The purpose of this Delivery Plan is to detail the specific opportunities and delivery mechanisms for Renfrewshire to reduce our energy emissions and decarbonise our heating systems through large-scale projects, such as developing local heat network portfolios (both new network developments and expansion of existing networks). Also by installing measures at individual building level through improving energy efficiency to reduce energy costs and alleviate fuel poverty.

This covers short and medium goals within a 5-year timeframe and longer-term aspirational actions; thus, the plan focuses on opportunities and approaches for this first phase of the LHEES, with the next Delivery Plan scheduled to be published no later than December 2028.

2.2 Renfrewshire Priorities

Renfrewshire's two key themes to guide the development of this Delivery Plan are intended to maximise the effectiveness of LHEES delivery are:

1. Maximising and exploring in detail the potential for heat networks beginning with the 6 first phase heat network zones identified in the Renfrewshire LHEES.
2. Investigating the outline costs of installation and potential savings (carbon and cost savings) of identified solutions on an area-by-area basis, with the alleviation of fuel poverty as a priority.

3. Action Plan

Officers have identified a mixture of high-level actions which are set out in the summary of actions in section 4, and these will be incorporated and developed in more detail on a project-by-project basis to ensure benefits are optimised and will include specific details relating to timescales, inputs and desired outcomes. Through a monitoring and evaluation process we will work towards targets set through the delivery plan and from this we can identify more specific projects within the Renfrewshire area.

These actions in a Local Heat and Energy Efficiency Strategy (LHEES) delivery plan are crucial for its success. This involves a comprehensive approach to communication, education, awareness raising and collaboration with all stakeholders.

Heat Networks: This involves creating infrastructure for distributing heat efficiently across multiple buildings. Heat networks (or district heating systems) provide centralised heat from a single source or a combination of sources to multiple end-users via buried pipework leading to more sustainable, efficient, and cost-effective heating solutions when compared with individual carbon-intensive heating systems within each building and through the optimisation of low carbon heat sources and waste heat recovery.

Funding: This is a critical component for the successful delivery of a Local Heat and Energy Efficiency Strategy (LHEES). Securing adequate funding ensures that all phases of the project, from planning to implementation and maintenance, are carried out effectively ensuring sustainable and impactful energy solutions for the community. LHEES is also an opportunity for private investment opportunities attracting private sector-led projects, public sector exemplar opportunities, and external funding; coordinating and collaborating on joint ventures; and identifying innovative delivery models to turn sectoral ambitions into investable projects.

Skills and Jobs: LHEES is an opportunity to upskill and reskill the local workforce and create significant sustainable jobs opportunities across various sectors, from design and construction through to operation and maintenance, as well as local supply chain and manufacturing opportunities. By developing these skills and creating related job opportunities, the delivery of a Local Heat and Energy Efficiency Strategy can effectively contribute to both environmental sustainability and local economic growth.

Awareness and engagement: This involves a comprehensive approach to communication, education, awareness raising and collaboration with various stakeholders. Within the Plan for Net Zero, Renfrewshire's LHEES is a key thread where the proposed solutions reflect local needs and priorities of our communities and extensive engagement will ensure that the needs of all groups are considered with a focus on addressing inequalities and fuel poverty.

Building Level: This involves a series of steps to improve the energy performance of individual buildings, whether residential, commercial, or public. This plan ensures that each building within the target area benefits from improved heating systems, enhanced energy efficiencies/savings, and reduced carbon emissions leading to enhanced living conditions. It is important to consider the whole building as a system when understanding retrofit works and associated costs. The 'fabric-first' approach considers what is required, prioritising repairs, insulation, draught-proofing and ventilation as key first measures to ensure energy conservation, reducing the amount of energy needed and reducing energy waste in our buildings.

4. Summary of Actions

It should be noted that the actions along with stakeholders within the delivery plan will be updated and amended as projects are identified and feasibility studies are concluded.

Heat Networks	Funding
<ul style="list-style-type: none">• Conduct feasibility studies to explore heat network opportunities, including expansion of existing networks to meet heat decarbonisation targets.• Ensure that the Delivery Plan aligns with new and existing plans for example the new Local Development Plan.• Engage with key internal and external stakeholders in relation to heat network potential.• Further develop heat network portfolio of projects identified in the Strategy.• Engage with non-domestic properties within heat network zones that have high suitability for heat network connection and/or anchor load potential.• Explore collaboration opportunities with neighbouring Local Authorities, including potential cross-border heat networks.• Building Assessment Reports (BARs) including, identifying the best approach to implementation in partnership with Scottish Government and all 32 Scottish Local Authorities.	<ul style="list-style-type: none">• Identify and review existing funding programmes and schemes for energy efficiency and heat decarbonisation.• Consider national and local levels on available opportunities for different housing stocks.• Engage with the Scottish Government to report the funding gap, as identified by this LHEES and further analysis, for energy efficiency measures of regional building stock (domestic and non-domestic).• Explore innovative delivery models, including regional approaches, joint ventures and public-private partnerships.• Outline Business Case Development has been successful for accessing both Council and external funding.• Outline Business Case (OBC) Council and Scottish Government matched funding has been successful for Paisley North (AMIDS) and Paisley Central – progress to next steps developing the OBC.

Skills and Jobs

- National and regional co-ordination of skills and jobs baseline to identify and address the skills gap and develop the skills transition.
- Support the development of new and existing supply chains to encourage growth of local skills and reduce the risk of local skill shortages.
- We will produce a proposed pipeline of our major infrastructure projects in order to link with skills transition and local employment opportunities and identify skills gaps, shortages and requirements ahead of time. This proposed pipeline will build on work that is already underway to encourage investment in local areas; enable local supply chain and manufacturing opportunities to be identified; de-risk private sector investment; and bring about regeneration of local areas.
- We will work with colleges, schools, universities, local training providers, apprenticeships and staff training, to ensure that the courses and training opportunities exist for the stable and sustainable, quality jobs that will be created to ensure every person is able to reskill and upskill.

Awareness and Engagement

- Work collaboratively to improve data with a focus on non-domestic buildings in order to gather information on energy consumption, carbon emissions, building types, and existing infrastructure that may be incorporated into a network.
- Community surveys and stakeholder consultations to understand local energy needs and behaviours.
- Use media channels to promote and educate about energy efficiency, as well as providing energy advice and support.
- Host workshops and training sessions to spread awareness of the Local Heat and Energy Efficiency Strategy.
- Provide details of funding opportunities and financial support schemes available to residents and businesses.
- Continue with internal working group for discussing LHEES delivery with relevant people/organisations.
- Engagement with Scottish Power to identify existing grid capacity to meet heat decarbonisations requirements and identify innovative solutions to local grid constraints.

<p>Building Level</p> <ul style="list-style-type: none"> • Further work to understand the scale and costings of the specific energy efficiency retrofit works and heat decarbonisation measures required across Renfrewshire for domestic and non-domestic building stock. • Set out planned projects to decarbonise heating within buildings and housing stock. • Set out planned projects to improve energy efficiency within buildings and housing stock. • Align with Historic Environment Scotland’s ‘Historic and Traditional Buildings’ report to ensure traditional construction buildings specific needs and characteristics are taken into account. 	<p>General</p> <ul style="list-style-type: none"> • Ongoing data collation and verification to inform projects and identify high certainty actions and low regret measures and ensure the most current information is being used. • Continue to review methodology to inform future iterations of the Strategy and the Delivery Plan.
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Table 01 - Summary of actions

5. Actions in detail

Please see Appendix 2 which sets out the various stakeholder groups that are referenced in the tables below. The Delivery Plan is a live document, and details of funding, timeframes and progress will be included as they become available.

Heat Networks

	Actions	Lead	Stakeholders	Timeframe
01	Conduct feasibility studies to explore heat network opportunities, including expansion of existing networks to meet heat decarbonisation targets.	Energy Management Unit	<ul style="list-style-type: none"> • Internal • External 01 	2023-2024
02	Ensure that the Delivery Plan aligns with new and existing plans for example the new Local Development Plan.	LHEES Working Group	<ul style="list-style-type: none"> • Internal • External 01 	2024
03	Engage with key internal and external stakeholders in relation to heat network potential.	Climate Team	N/A	2024-2029
04	Further develop heat network portfolio of projects identified in the Strategy.	Energy Management Unit	<ul style="list-style-type: none"> • Internal • All External 	2024-2029
05	Engage with non-domestic properties within heat network zones that have high suitability for heat network connection and/or anchor load potential.	Climate Team	<ul style="list-style-type: none"> • Internal 	2024-2029

06	Explore collaboration opportunities with neighbouring Local Authorities, including potential cross-border heat networks.	Climate Team	• Internal	Ongoing
07	Building Assessment Reports (BARs) including, identifying the best approach to implementation in partnership with Scottish Government and all 32 Scottish Local Authorities.	Building Standards	• Internal	2024-2029

Funding

	Actions	Lead	Stakeholders	Timeframe
01	Identify and review existing funding programmes and schemes for energy efficiency and heat decarbonisation.	Energy Management Unit/Housing Investing Team/ Climate Team	• Internal	Ongoing
02	Consider national and local levels on available opportunities for different housing stocks	Energy Management Unit/Housing Investing Team	• Internal • All External	Ongoing
03	Engage with the Scottish Government to report the funding gap, as identified by this LHEES and further analysis, for energy efficiency measures of regional building stock (domestic and non-domestic).	Energy Management Unit/Housing Investing Team	• Internal	Ongoing

04	Explore innovative delivery models, including regional approaches, joint ventures and public-private partnerships.	Energy Management Unit/Housing Investing Team/ Climate Team	<ul style="list-style-type: none"> • Internal • All External 	2024-2029
05	Outline Business Case (OBC) Council and Scottish Government matched funding has been successful for Paisley North (AMIDS) and Paisley Central – progress to next steps developing the OBC.	Energy Management Unit	<ul style="list-style-type: none"> • Internal 	2024-2025

Skills and Jobs

	Actions	Lead	Stakeholders	Timeframe
01	National and regional co-ordination of skills and jobs baseline to identify and address the skills gap and develop the skills transition.	Climate Team	<ul style="list-style-type: none"> • Internal • All External 	Ongoing
02	Support the development of new and existing supply chains to encourage growth of local skills and reduce the risk of local skill shortages.	Climate Team	<ul style="list-style-type: none"> • Internal • All External 	Ongoing
03	We will produce a proposed pipeline of our major infrastructure projects in order to link with skills transition and local employment opportunities and identify skills gaps, shortages and requirements ahead of time. This proposed pipeline will build on	Climate Team	<ul style="list-style-type: none"> • Internal • All External 	2024-2029

	work that is already underway to encourage investment in local areas; enable local supply chain and manufacturing opportunities to be identified; de-risk private sector investment; and bring about regeneration of local areas.			
04	We will work with colleges, schools, universities, local training providers, apprenticeships and staff training, to ensure that the courses and training opportunities exist for the stable and sustainable, quality jobs that will be created to ensure every person is able to reskill and upskill.	Climate Team	<ul style="list-style-type: none"> • Internal • All External 	Ongoing

Awareness and Engagement

	Actions	Lead	Stakeholders	Timeframe
01	Work collaboratively to improve data with a focus on non-domestic buildings in order to gather information on energy consumption, carbon emissions, building types, and existing infrastructure that may be incorporated into a network.	Energy Management Unit	<ul style="list-style-type: none"> • Internal • All External 	2024-2029

02	Community surveys and stakeholder consultations to understand local energy needs and behaviours.	Climate Team	<ul style="list-style-type: none"> • Internal • All External 	Ongoing
03	Use media channels to promote and educate about energy efficiency, as well as providing energy advice and support.	Energy Management Unit/Communications Team	<ul style="list-style-type: none"> • Internal 	Ongoing
04	Host workshops and training sessions to spread awareness of the Local Heat and Energy Efficiency Strategy.	Climate Team	<ul style="list-style-type: none"> • Internal 	Ongoing
05	Provide details of funding opportunities and financial support schemes available to residents and businesses.	Climate Team	<ul style="list-style-type: none"> • Internal • External 01 	Ongoing
06	Continue with internal working group for discussing LHEES delivery with relevant people/organisations.	Energy Management Unit	<ul style="list-style-type: none"> • Internal 	2023-2029
07	Engagement with Scottish Power Energy Networks (SPEN) to identify existing grid capacity to meet heat decarbonisations requirements and identify innovative solutions to local grid constraints.	Energy Management Unit	<ul style="list-style-type: none"> • Internal • External 02 	Ongoing

Building Level

	Actions	Lead	Stakeholders	Timeframe
01	Further work to understand the scale and costings of the specific energy efficiency retrofit works and heat decarbonisation measures required across Renfrewshire for domestic and non-domestic building stock.	Energy Management Unit/Housing Investing Team/ Climate Team	<ul style="list-style-type: none"> • Internal 	2024-2029
02	Set out planned projects to decarbonise heating within buildings and housing stock.	Energy Management Unit/Housing Investing Team/Planning/Building Standards	<ul style="list-style-type: none"> • Internal 	Ongoing
03	Set out planned projects to improve energy efficiency within buildings and housing stock.	Energy Management Unit/Housing Investing Team	<ul style="list-style-type: none"> • Internal 	Ongoing
04	Align with Historic Environment Scotland's 'Historic and Traditional Buildings' report to ensure traditional construction buildings specific needs and characteristics are taken into account.	Climate Team/Planning	<ul style="list-style-type: none"> • Internal • External 01 	2023-2029

General

	Actions	Lead	Stakeholders	Timeframe
01	Ongoing data collation and verification to inform projects and identify high certainty actions and low regret measures and ensure the most current information is being used.	Energy Management Unit	<ul style="list-style-type: none">• Internal	2023-2029
02	Continue to review methodology to inform future iterations of the Strategy and the Delivery Plan.	Climate Team	<ul style="list-style-type: none">• Internal• External 01	Ongoing

6. Renfrewshire Examples

6.1 Projects

Housing Investment Team - pilot project where insulation works, and fabric improvements have been carried out in conjunction with an Air Source Heat Pump. The project will assess whether the heat demand has been reduced sufficiently to allow a heat pump to run at lower or at least equal costs for the tenant as a gas combi boiler (Wenlock Road, Paisley).

Renfrewshire are also working on various work programmes out with the regeneration programme which is detailed below in section 6.2. The Council were granted funding from the Social Housing Net Zero Heat Fund (SHNZHF). The project will aim to deliver energy efficiency measures and low emission heating and will allow the Council to assess whether this is something which can feasibly be rolled out to the wider housing stock.

To achieve a sufficient reduction in heat loss and heat demand, designs using passive house principles will be produced and then the homes will be retrofitted with a package of energy efficiency improvements which will include external wall insulation, loft insulation, roof replacement with integrated Solar PV arrays, new energy efficient windows and doors and other related works such as Mechanical Ventilation with Heat Recovery (MVHR) systems. Individual Air Source Heat Pumps will then be installed to replace existing Gas Combination Boilers.

Of the 12,000 properties within the housing stock, around 10,000 of these have gas combi boilers installed, and currently these are the cheapest, most controllable systems for tenants. It is important to note the risk that changing to lower carbon heating systems before reducing the demand, could put tenants into fuel poverty. Over a period of time the boilers will have a replacement programme, but it is important to find the balance between meeting carbon targets and fuel poverty.

Various capital programmes will include returning to properties where external wall insulation and new roofs over the last 10 years were installed, to now install PV panels, top up loft insulation and install new windows. A large-scale window replacement programme of all our housing stock will also be progressing.

6.2 Housing-led Regeneration Programme

Our Housing Regeneration and Renewal Programme will improve the quality of housing in eight areas across Renfrewshire. We are taking forward a £100m ten-year investment programme to help improve council housing within Renfrewshire by creating modern, affordable, high-quality, energy-efficient council homes. Phase 1 will focus on eight areas across Paisley, Renfrew and Johnstone.

The programme will make major improvements to existing buildings, but it is about much more than that - we will also consider how to improve the wider environment, including outside and communal areas, and how to keep fuel bills down by making homes more energy-efficient. As well as improvements to existing homes, we are building around 350 new council homes across four of the areas. Residents were consulted in summer 2021 on the initial plans for their area, and changes were made to the plans based on the responses to that.

This will in most cases include measures such as:

- new roofs, including new roof trims, gutters and rainwater pipes, and the addition of solar panels.
- external wall insulation.
- new close doors, repainted closes and repairs to stair treads.
- (in some cases) new windows.

Further details of the programme can be found on our website at: [Housing-led Regeneration Programme](#)

6.3 New Build Homes Programme

70 new build affordable homes will be delivered as part of the Howwood Road Area regeneration in Johnstone with a further 60 affordable homes to be constructed at Gallowhill, Paisley. These homes will be delivered to Gold Aspects 1 – 8 of the Scottish Technical Standards (domestic) in terms of sustainability with Air Source Heat Pumps being the primary source of heating complimented mechanical ventilation heat recovery and solar panels. These homes will also be digitally enabled.

The Council's new build housing specification requires that our new build homes meet Gold Aspects 1 – 8 of the Scottish Technical Standards (Domestic) as a minimum with the primary source of heating provided by Air Sourced Heat Pumps. Where suitable Ground Sourced Heat Pumps and district heating systems will be used.

6.4 ECO Flex 4

Renfrewshire's Energy Management Unit manage the ECO Flex 4 funding scheme. The Energy Company Obligation (ECO Flex 4) is a scheme where funding is available to make eligible homes more energy efficient. It applies to:

- private housing in Renfrewshire
- fuel-poor households that do not meet criteria for other schemes.
- low-income or vulnerable households that are vulnerable to the effects of the cold.
- energy inefficient homes who may benefit from heating and energy saving measures.

The scheme does not apply to Council Housing or Registered Social Landlords.

Further details of the scheme can be viewed on our website at: [Funding to make homes more energy efficient \(ECO4 Flex\)](#)

6.5 Energy Advocacy Advice

Renfrewshire Council have been providing Energy Advocacy since 2012. The energy advocates support residents of all tenure within Renfrewshire. This includes fuel debt, supplier disputes, priority service provision, supplier switching and energy usage.

The advocates partner with a wide range of external partners in order to offer an integrated, more comprehensive and efficient service to the advantage of our clients. Renfrewshire Council has provided Energy support to its residents for over 25 years and continues to be very successful at providing invaluable assistance to the local community. Considering recent and expected rises on fuel costs, the service is destined to become even more essential than ever before.

Further details on Renfrewshire's energy advice service can be viewed on our website at: [Renfrewshire Energy Advice](#)

7. Feasibility Studies

Renfrewshire Council obtained funding to carry out feasibility studies at a number of locations across Renfrewshire which are detailed below. These initial areas were identified through data analysis during the preparation of the Local Heat and Energy Efficiency Strategy identifying as having the high heat demand, being close to an energy source and in the presence of public buildings as potential anchor loads. The areas not currently within the first phase heat network zone will be looked at in closer detail to identify opportunities for smaller scale networks or communal heat sources.

7.1 Paisley East/Paisley West/Paisley Central

East

There is an opportunity for a new heat network around the Abbey in Paisley, making use of air source heat pumps at an energy centre, with electric boiler top up. Thermal storage at the energy centre can maximise the annual heat demand to be provided by heat pumps while backup/top-up electric boilers provide resilience and can facilitate meeting peak demands.

West

There is an opportunity for a new heat network in West Paisley, making use of wastewater (sewer) source heat pumps and air source heat pumps at an energy centre adjacent to George Court, with electric boiler top up. Thermal storage at the energy centre can maximise the annual heat demand to be provided by heat pumps while back-up/top-up electric boilers provide resilience and can facilitate meeting peak demands.

Central

There is an opportunity for a new network in Paisley Central, making use of waste heat recovery and wastewater source heat pumps alongside air source heat pumps at an energy centre adjacent to Renfrewshire House, with electric boiler top up. Thermal storage at the

energy centre can maximise the annual heat demand to be provided by heat pumps while back-up/top-up electric boilers provide resilience and can facilitate meeting peak demands.

7.2 Paisley North – Advanced Manufacturing Innovation District Scotland (AMIDS)

There is an opportunity for to extend the existing AMIDS wastewater heat recovery heat network to Glasgow Airport making use of water source heat pumps at each building supplied by AMIDS as the main source of heat. Buffer vessels at each building can maximise the annual heat demand to be provided by AMIDS while back-up/top-up electric boilers provide resilience and can facilitate meeting peak demands.

Following the results and findings of the Paisley Central and Paisley North (AMIDS) feasibility studies, Renfrewshire are progressing with outline business case applications to the Heat Network Support Unit which would enable Renfrewshire Council to further develop the opportunities which have been identified at a scale and will also enable knowledge sharing and lessons learned that can be applied across Scotland.

7.3 Johnstone

The proposed location for the district heat network (DHN) was Howwood Road area, within the area several buildings were identified as having the potential for district heat connection. The main buildings identified for the pre-feasibility report include Johnstone High School, Johnstone Community Sports Hub, Fordbank Primary School and West Johnstone Shared Campus. In addition, it was proposed a number of residential sites should also be considered within the DHN; two sites owned by Linstone Housing Association, one site owned by the council near Howwood Road.

The conclusion from the study determined that the area is not heat dense and a heat network solution may not be the most cost-effective approach in this specific scenario. It was recommended to consider other routes to net-zero. For example, consider an options appraisal for discrete scale, as buildings connected in a localised area, and building-level low-carbon heat such as ASHP.

An options appraisal for routes to net zero could include considerations on the following:

- Discrete scale heat networks and building-level low-carbon heat with low-carbon heat technologies
- Energy efficiency opportunities, including heat demand reduction measures, heating system control.
- Consider complementary renewable low-carbon electricity technology (e.g. PV for on-site electricity generation)
- Building condition survey – assess heat equipment age and condition (replacement plans), opportunities to reduce heat operating temperatures building-side, connect with survey for energy efficiency measure opportunities.
- Consider funding opportunities for discrete scale heat networks and building-level improvements – low-carbon and energy efficiency.

Ultimately, although heat networks are an efficient means to distribute low-carbon heat, they are not the only solution to achieve low-carbon heating. It is equally valid to consider building-level and discrete scale low-carbon heat opportunities as part of the Council's route to net zero.

7.4 Foxbar

The conclusion from the study determined that the area is not heat dense and a heat network solution may not be the most cost-effective approach in this specific scenario. It was recommended to consider other routes to net-zero. For example, consider an options appraisal for building-level low-carbon heat technologies such as individual ASHP.

An options appraisal for routes to net zero could include consideration of:

- Building-level low-carbon heat with low-carbon heat technologies
- Energy efficiency opportunities, including heat demand reduction measures, and heating system control.
- Consider complementary renewable low-carbon electricity technology (e.g. PV for on-site electricity generation)
- Building condition survey – assess heat equipment age and condition (replacement plans), opportunities to reduce heat operating temperatures building-side, connect with survey for energy efficiency measure opportunities.
- Funding opportunities for building-level improvements – low-carbon and energy efficiency

Ultimately, although heat networks are an efficient means to distribute low-carbon heat, they are not the only solution to achieve low-carbon heating. It is equally valid to consider building-level low-carbon heat opportunities as part of Renfrewshire's route to net zero.

Appendix 1 – Glossary of terms

Terms	Description
Anchor Loads	Buildings with significant heat demands that are critical to making a heat network viable and have high potential to be one of the first connected demands on a network.
Baselining	A fixed point of reference for reference for comparison. For LHEES this is to understand at local authority or strategic level, the current status of all building stock against the LHEES Considerations.
Building-level Pathway	The outcome of assessment to provide the likely energy efficiency retrofit technologies, as well as the low carbon heating system (where applicable) to support building level decarbonisation.
Carbon Dioxide	The most abundant greenhouse gas (making up around 2/3 of greenhouse gases). It is naturally occurring but is also a by-product of human activities such as burning fossil fuels, land-use changes and other industrial processes and contributes to climate change and global warming. It is the reference gas against which other greenhouse gases are measured.
Carbon Dioxide Equivalent (CO ₂ e)	A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP).
Carbon Emissions	The release of carbon dioxide (CO ₂) into the atmosphere.
Carbon Offsetting	The process of compensating for carbon dioxide emissions arising from activities by participating in schemes which remove equivalent levels of carbon dioxide in the atmosphere, e.g. tree planting, carbon capture, peat bogs.
Climate Change	Refers to any significant change in the measures of climate lasting for an extended period of time, including major changes in temperature, rainfall and severe weather patterns that occur over several decades or longer.
Data Zone	Output areas which have populations of around 500 to 1,000 residents.

Decarbonisation	The reduction or removal of carbon dioxide (CO ₂) into the atmosphere resulting from human activity, with the eventual goal of minimising emissions as far as possible.
Delivery Area	Areas at a higher granularity (higher level of detail) than Strategic Zones. These spatial zones should set out clusters of buildings within a Strategic Zone that identify potential solution(s) at a delivery level. They will be an important starting point for identifying a range of projects, regulation and actions to be developed in the LHEES Delivery Plan.
Energy Performance Certificate (EPC)	Gives information on how energy efficient a building (including homes) is; how it could be improved; and an environmental impact rating to show CO ₂ emissions. Buildings are rated on a scale of A to G, with A being the most energy efficient. An EPC is required for new buildings/homes; when you are selling a building/home; or when renting to a new tenant.
Fossil Fuels	Non-renewable energy sources formed from fossilised plants and animals over millions of years such as coals, oil and gas.
Fuel Poverty	Defined as any household spending more than 10% of their income on energy after housing costs have been deducted.
Greenhouse Gases	Any gas that absorbs infrared radiation in the atmosphere and contribute to global warming and climate change.
Intermediate Zone	Statistical geographical areas (2,500 - 6,000 household residents) within local authorities, built up from aggregates of data zones.

LHEES Considerations	<p>The LHEES Considerations are a list of technologies, building typologies and policy priorities used to identify and target interventions. They include:</p> <ul style="list-style-type: none"> - Heat networks. - Off-gas grid buildings - On-gas grid buildings - Poor building energy efficiency - Poor building energy efficiency as a driver for fuel poverty - Mixed-tenure, mixed-use and historic buildings
LHEES Delivery Plan	A document setting out how a local authority proposes to support implementation of its local heat and energy efficiency strategy.
Linear Heat Density	A measure of heat load per meter of district heating pipework. In short, this approximates how much revenue a branch of a network can generate for a given capital cost.
Low Temperature District Heating Network	Reduces the amount of energy lost converting and transporting heat to buildings.
Net Zero Emissions	When greenhouse gas emissions are balanced by removals over a specified period.
Resilience	The capacity to anticipate, prepare for, respond to, absorb and recover from the stresses imposed by climate change from significant multi- hazard threats with minimum damage to social well-being, the economy and the environment.
Strategic Zone	A visualisation of the potential pathways to decarbonise the building stock at a local authority level, split out by intermediate zone or data zone. These are useful to understand the baseline performance, the scale of potential and initial areas of focus, which could be used to inform Delivery Areas and follow on engagement.

Wet central heating system

A system with central heat source (usually a boiler) that produces hot water which is distributed around the building, heating radiators and can be used for hot waters from hot taps and showers.

Appendix 2 – Stakeholders

Renfrewshire Council - Internal Stakeholders
Councillors
Infrastructure, Land and Environment Policy Board
Planning and Climate Policy Board
Housing Services
Property Services
Planning and Building Standards
Corporate Governance - Legal Services
Finance and Procurement
City Deal and Infrastructure
Regeneration and Economic Development
LHEES Officers Working Group
Climate Team
Energy Management Unit

Renfrewshire Council - External Stakeholders	
01. National	<ul style="list-style-type: none"> • Scottish Government • Energy Saving Trust • Coal Authority • Historic Environment Scotland • Scottish Environmental Protection Agency • NatureScot • National Trust for Scotland • Zero Waste Scotland • Viridor (Energy from Waste – Clyde Valley Waste Partnership) • Energy Savings Trust Scotland • Home Energy Scotland • Scottish Futures Trust • Community Energy Scotland • Local Energy Scotland • Scottish Local Authority LHEES Forum
02. Energy/Utilities	<ul style="list-style-type: none"> • Scottish Power Energy Networks • Scottish Gas Network • Scottish Water
03. Housing Associations	<ul style="list-style-type: none"> • Bield • Blackwood • Bridgewater • Cairn • Ferguslie Park • Hanover • Horizon • Key

	<ul style="list-style-type: none"> • Link • Linstone • Loretto • Paisley • Sanctuary • Williamsburgh
<p>04. Community Planning Partners</p>	<ul style="list-style-type: none"> • OneRen • University of the West of Scotland • West College Scotland • NHS • Police Scotland • Scottish Fire and Rescue • Renfrewshire Health and Social Care Partnership • Renfrewshire Chamber of Commerce • Engage Renfrewshire • Scottish Enterprise • Skills Development Scotland • Clyde Muirshiel Regional Park Authority
<p>05. Skills and Supply Chains</p>	<ul style="list-style-type: none"> • Schools • Colleges • Universities • Training providers • Apprenticeship providers • Local employers

06. Other Key Interest Groups	<ul style="list-style-type: none">• Community Councils• Community Groups• Local Partnership Areas• Care Homes and Nursing Homes• Tenants Groups• Developers• Third Sector Organisations• Local Businesses• Large Businesses (Potential Anchor Loads)• Industry (potential Anchor Loads and Potential Waste Heat)• Neighbouring Local Authorities

Appendix 3 – National Policies

Climate Change (Emissions Reduction Targets) (Scotland) Act 2019	Sets a 2045 net zero emissions target and interim targets: 75% by 2030; and 90% by 2040.
Climate Change Plan: third report on proposals and policies 2018-2032 (RPP3)	Sets out the path to a low carbon economy while helping to deliver sustainable economic growth and secure the wider benefits to a greener, fairer, and healthier Scotland in 2032.
Draft Energy Strategy and Just Transition Plan	Sets out clear policy positions and a route map of actions with a focus out to 2030 that the Scottish Government will take and the changes that the UK Government must deliver.
Energy efficiency in social housing	Aims to improve the energy efficiency of social housing in Scotland. It will help to reduce energy consumption, fuel poverty and the emission of greenhouse gases. It is based on the minimum Energy Performance Certificate (EPC) rating. All social housing must meet, or be treated as meeting, EPC band B, or is as energy efficient as practically possible, by December 2032.
Fuel Poverty (Targets, Definition and Strategy) (Scotland) Act 2019	Sets targets relating to the eradication of fuel poverty; to define fuel poverty; to require the production of a fuel poverty strategy; and to make provision about reporting on fuel poverty. no more than 5% of households in Scotland are in fuel poverty, no more than 1% of households in Scotland are in extreme fuel poverty, the median fuel poverty gap of households in Scotland in fuel poverty is no more than £250.
Heat Networks (Scotland) Act 2021	Regulates heat networks, supporting objectives in the Heat in Buildings Strategy to grow heat network opportunities. This strategy helps Renfrewshire meet part of its duty within the Act by identifying potential heat network zones.
Heat in Buildings Strategy	Sets out our vision for the future of heat in buildings, and the actions we are taking in the buildings sector to deliver our climate change commitments, maximise economic opportunities, and ensure a just transition, including helping address fuel poverty.
Housing to 2040	Sets out a vision for housing in Scotland to 2040 and a route map to get there. It aims to deliver our ambition for everyone to have a safe, good quality and affordable home that meets their needs in the place they want to be.

National Planning Framework 4

Sets out spatial principles, regional priorities, national developments, and national planning policy. How Scotland will work together in the coming years to improve people's lives by making sustainable, liveable, and productive places.

Central Scotland Priorities:

To deliver sustainable places, Regional Spatial Strategies and Local Development Plans in this area should support net zero energy solutions including extended heat networks and improved energy efficiency, together with urban greening and improved low carbon transport.

To deliver liveable places, Regional Spatial Strategies and Local Development Plans in this area should pioneer low carbon, resilient urban living by rolling out networks of 20-minute neighbourhoods, future proofing city and town centres, accelerating urban greening, investing in net zero homes, and managing development on the edge of settlements.

To deliver productive places, Regional Spatial Strategies and Local Development Plans in this area should target economic investment and build community wealth to overcome disadvantage and support a greener wellbeing economy.

Across these priorities, there is a need for greater investment in, and development of, net zero homes and places supporting green jobs. Local Development Plans and strategies like Local Heat and Energy Efficiency Strategies will focus on decarbonising heat and energy networks, and the just transition to greener, low carbon heat generation.

Appendix 4 – Local Policies

<p><u>Council Plan – 2022-2027</u></p>	<p>"Creating a fairer Renfrewshire built on innovation, wellbeing and opportunity". The Council Plan sets out how the Council will collaborate with partners, communities, and business to progress our five strategic outcomes.</p> <p>There are five strategic outcomes: place, economy, fair, green, and living our values.</p>
<p><u>Housing-led Regeneration and Renewal Programme</u></p>	<p>A £100m ten-year Housing-led Regeneration and Renewal Programme aimed at delivering modern, high quality, energy-efficient and affordable council housing throughout Renfrewshire, and creating nicer places to live.</p>
<p><u>Renfrewshire Community Plan 2017-2027</u></p>	<p>Developed together and signed up to by key public, private and third sector organisations. It marks a shared responsibility to work together to get things right for people in Renfrewshire, and a real commitment to addressing the inequalities that exist.</p> <p>The content of Our Renfrewshire is the result of conversations with partners and local people about opportunities, challenges, and aspirations, informed by a comprehensive data and evidence set.</p>
<p><u>Renfrewshire Economic Strategy 2020-2030</u></p>	<p>Sets out the ambitions and actions to achieve sustained, inclusive growth of the Renfrewshire economy over the next 10 years.</p>
<p><u>Renfrewshire Local Development Plan</u></p>	<p>Sets out the spatial strategy and proposals for Renfrewshire over the next 10 years.</p>
<p><u>Renfrewshire Local Housing Strategy 2023-2028</u></p>	<p>Sets out the strategic approach of the Council and its partners to delivering high quality housing and housing related services across all tenures to meet identified housing need in Renfrewshire.</p>

<u>Renfrewshire's Plan for Net Zero</u>	<p>Developed in collaboration with all our stakeholders, we are committed to working towards net zero by 2030 for the whole of Renfrewshire to ensure a safer, healthier, greener, and fairer place for everyone to live, work and spend time in.</p>
<u>Renfrewshire Strategic Housing Investment Plan</u>	<p>Identifies affordable housing projects which are to be supported by Scottish Government funding and sets out how this investment will be targeted to meet the strategic priorities of Renfrewshire's Local Housing Strategy.</p>
<u>Vacant and Derelict Land Strategy</u>	<p>The strategy identifies actions to promote the redevelopment and/or re-use of brownfield and previously used land to enhance places and support sustainable economic growth.</p>



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