

2030 CLIMATE STRATEGY

*Delivering a Net Zero,
Climate Ready Edinburgh*

Draft: June 2021





Net Zero Energy Generation and Energy Efficient Buildings

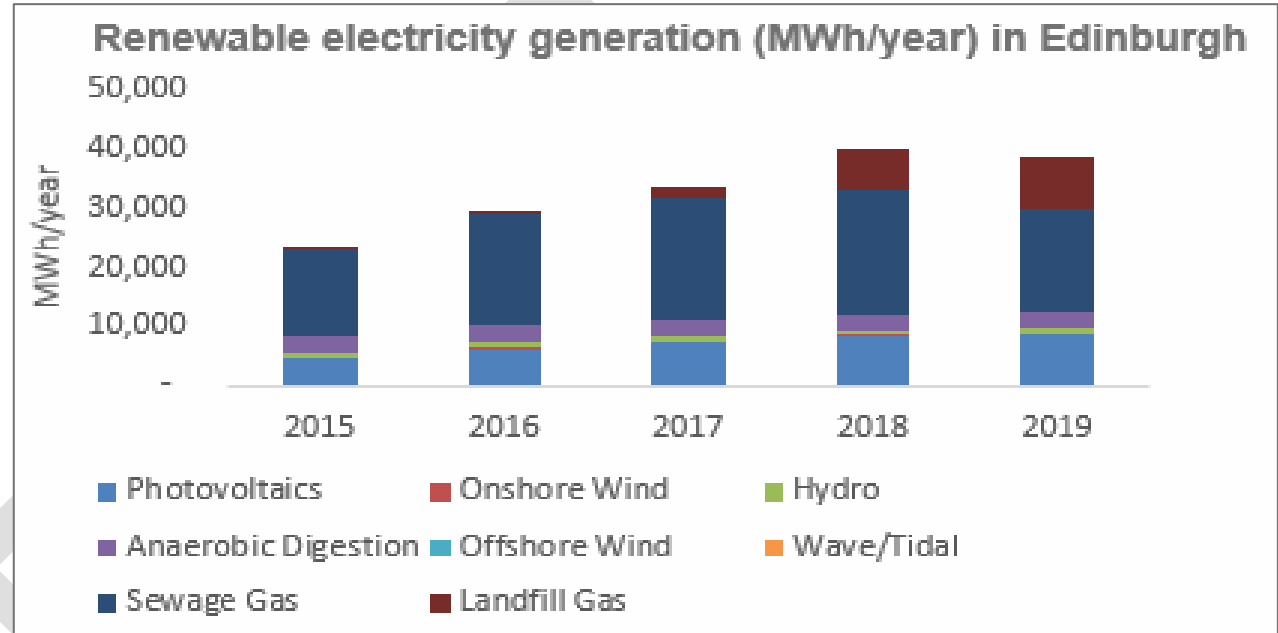
Energy to heat and power Edinburgh's buildings is one of the biggest sources of greenhouse gas emissions in the city.

Energy accounts for 68 percent of the city's emissions, with around half of this coming from domestic homes. Natural gas accounts for 35 percent of the city's emissions, with around two thirds of domestic energy, and around 40 percent of non-domestic, currently provided by gas.

Local renewable energy generation levels are low

The cost of electricity in comparison to gas is currently high, and Edinburgh has relatively low levels of local renewable electricity generation (currently only two percent of the city's total electricity consumption).

Figure 14: Renewable electricity generation (MWh/year) in Edinburgh. (Source: Department for Business, Energy and Industrial Strategy (BEIS) - Renewable electricity by local authority, September 2020)



The city is growing, and energy demand is set to increase

The city is growing, with more people, new developments and more buildings across the public, private, commercial and domestic sectors driving the need for city-wide heat and energy generation and distribution solutions.

This will create increased demands on the infrastructure supporting our energy supply, with peak demand across the UK estimated to increase between 33 percent and 58 percent by 2050.¹

The city's energy networks and supporting infrastructure need to change at speed

Local heat and energy generation and distribution (including heat networks) is largely considered on a development-by-development basis. This means as a city we need to make decisions in a more strategic way, and position Edinburgh to maximise the commercial, carbon reduction, energy savings and resilience benefits potentially available.

Green hydrogen may be able to offer future solutions, but the technology is still being developed and tested, and future

requirements for hydrogen-ready appliances and a gas grid supporting it are not yet clear and still being piloted through innovative projects like H100 Fife or Hy4Heat.² While maintaining watch on this innovation, the city will take an electricity first approach to meeting the city's needs.

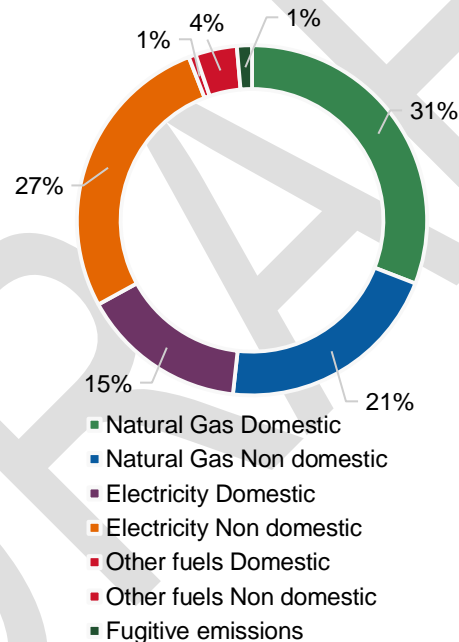


Figure 15: Energy consumption by fuel source: (Source: Edinburgh Carbon Scenario Tool, based on Department of Business, Energy and Industrial Strategy (BEIS) datasets (2017/18 data))

The city has a high proportion of older buildings which need adapted to be energy efficient and resilient to the impacts of climate change.

Edinburgh has a rich mix of heritage buildings and buildings in conservation areas which are an asset to the city's cultural wealth. These buildings make a major cultural, social and economic contribution to the city. While these buildings require a lot of energy to heat and a bespoke approach to their adaptation, keeping them well conserved and maintained can improve their energy efficiency. Edinburgh's Old and New Town is an UNESCO World Heritage Site and is already feeling the impacts of climate change. As well as its historic and cultural importance, it is a place where people live, work and study.

Around 48 percent of Edinburgh's homes were built pre-1945, with many requiring essential maintenance repairs and upgrading ('retrofitting') to become more

¹ [Future Energy Scenarios, National Grid, July 2020](#)

² [H100 Fife, SGN, accessed June 2021](#); [hy4heat, accessed June 2020](#)

resilient to future climate change and energy efficient.

Forty-two percent of homes have energy performance certificate ratings of D or lower and regulations proposed by the Scottish Government in the national draft Heat in Buildings Strategy would mean that by 2035, all domestic properties will need to have an EPC rating of C or higher. For Edinburgh, this could be as many as 100,000 homes in Edinburgh that will require retrofitting.

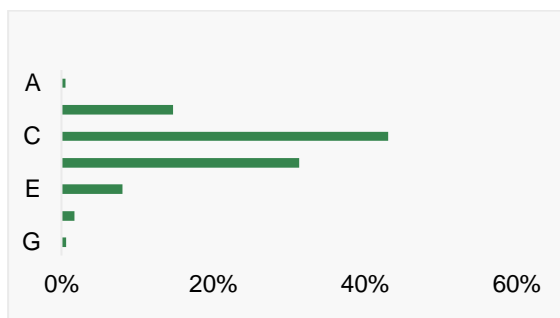


Figure 16: Scottish domestic building energy performance based on EPC rating. Source: [Scottish Government data](#) (Data available for 4,905 properties only out of 238,269 households)

Only 15 percent of homes in the city are owned by the local authority or housing associations³. This means the city is dependent on businesses, owner-occupiers and private landlords investing in their buildings if we are to reduce the city's emissions and ensure buildings are climate resilient, with communal spaces and mixed-tenure buildings requiring owners to co-operate on organising retrofit works.

Many of Edinburgh's residents will need financial support to be able to meet the costs of retrofitting their homes to the required standards, and to reduce energy demand to a level where non-gas heating systems are affordable to run.

The costs of upgrading the city's public buildings are significant

Public sector partners also own large amounts of operational estate across the city, with the Council alone owning over 600 buildings – around 40 percent of which were built within the last 50 years, with 30 percent being over 100 years old. Other city partners, such as Edinburgh's universities and the NHS, face similar estate challenges.

The age, range, and complexity of the city's operational estate means the costs of retrofitting large operational buildings to become net zero is significant, and current financing models for resourcing retrofit have limited commercial return, making it difficult to lever the external investment needed.

Retrofitting large operational buildings takes a long time and comes with significant disruption to services given the number and size of buildings.

Ensuring action on energy delivers wider social and economic benefits

We have an opportunity to make investing in energy infrastructure and retrofitting the city's buildings an investment in Edinburgh's economic recovery.

Heat and energy development offer opportunities for public and private investment at scale, and with confidence in revenue-generating infrastructure. Improving the energy standards of our buildings and developing new energy infrastructure presents opportunities to generate new markets, creating local jobs and skills development opportunities, delivering financial returns to be re-

³ : [Scottish House Condition Survey: Local Authority Analysis 2017-2019](#), Scottish Government, February 2021

invested locally, which supports community wealth-building and a just transition to net zero.

Our vision

Our vision is that by 2030, citizens and businesses will be heated and powered by clean energy, and we will all live in homes that are warmer and healthier to live in.

Better-insulated, energy efficient buildings will have significantly **reduced energy demand, helping to lower costs**, and will be heated and powered by **clean energy** – including more locally generated or community-owned renewable energy – helping to reduce the risks of energy insecurity.

Financial assistance will be available for citizens on lower incomes to help meet the costs of retrofitting their homes – **reducing running costs**, which in turn will help tackle fuel poverty.

Public services will be collocated in a smaller number of **high-quality energy efficient buildings**, that make better use of what we retain, to offer **joined up local services** that better meet our resident's needs, and deliver savings to the public sector that can be re-invested in services.

We will have preserved our UNESCO World Heritage site and historic buildings, taking an 'Outstanding Universal Value' approach, and protecting the embodied carbon they hold. The rest of our homes and city buildings will be fully adapted to our changing climate and will have heating and cooling systems that are able to deal with wetter winters and hotter summers

The scale of the work required to improve Edinburgh's buildings and energy infrastructure means we will create local jobs and skills development opportunities – allowing us to support local businesses and **build community wealth**.

Our strategic approach

We will lay the foundations for change by **understanding energy demand** across the city and setting **progressive planning policies** that support change.

We will bring partners together to create an **energy masterplan** for the city and collaborate on **exemplar retrofit pilots**, using the learning to develop **joint city retrofit plans** that secure economies of scale.

We will **align city investment** in public buildings and energy infrastructure to support **20-minute neighbourhoods**, and we will **support citizens and businesses to invest** in their buildings. We will target

this work to ensure it supports **community wealth building** and a **just transition** to a resilient net zero city.



Energy efficient new buildings

National requirements for new domestic buildings are set to change, with no new developments being permitted to connect to the gas grid from 2024. If we are to meet our ambition for Edinburgh, we need to **go faster on low carbon heat**.

'City Plan 2030' will set high **energy standards** in new developments and require the use of **low and zero emissions technologies** to heat and power the city's new buildings.



Planning for a clean energy future

To deliver change to heat and energy over the next 10 years, we will undertake data-led energy mapping across the city to better understand current and future demand, and the opportunities for new local generation and distribution systems,

The Council will enter into a strategic partnership with SP Energy Networks to align investment in the grid and associated infrastructure with the city's future energy needs. This will help ensure the grid is

able to meet increased demand and infrastructure is improved at strategic locations which support city development.

We will establish a new City Heat and Energy Partnership with key public and private sector organisations. The partnership will be tasked with co-ordinating investments and supporting the delivery of flagship actions for the city.

The partnership will develop a city-wide heat and energy masterplan which will incorporate a Local Heat and Energy Efficiency Strategy align current and future grid development to the city's energy needs.

The strategy will also include support for renewable energy, micro grids and measures to lower the cost of electricity and tackle fuel poverty, as well as meeting national requirements⁴.

This will include working with Edinburgh and South East City Region Deal partners to develop regional renewable energy solutions. This work will draw on the region's wind, geothermal, hydro and solar assets and will look to learn from the H100 hydrogen pilot.



Investing in energy

To deliver the city energy masterplan, the partnership will work with the Scottish Government and private and public sector partners to develop a long-term shared investment strategy and delivery mechanisms. This work will focus on maximising opportunities for local revenue generation and securing a clean and affordable renewable energy infrastructure for citizens and businesses.



Developing heat networks

The partnership will work with communities and developers to deliver heat networks that meet the needs of key public sector buildings and major new developments across the city (focussing initially on major new developments at Granton Waterfront and the BioQuarter).

The Council will identify heat network zones, in line with emerging regulatory requirements. It will work with developers to further expand heat networks and will

ensure all Council-led infrastructure investment plans will seek opportunities to connect to heat networks as they are developed, beginning with the Council's learning estate programme.



Improving the city's public buildings and energy infrastructure to support thriving local neighbourhoods

The city's public buildings need to be energy efficient, meet citizen's needs, and support 20-minute neighbourhood models that ensure easy access to local services and reduce the demand for travel.

We will collaborate with city partners, to strategically and align investment in our estates to ensure it supports **improved service delivery, improved energy efficiency and reduced emissions.**

To achieve this, we will develop a **joint public sector estate retrofit plan** that will create economies of scale, support local companies, and unlock the potential large scale retrofit has to signal future needs to the supply chain, stimulate targeted

⁴ [Heat in buildings strategy - achieving net zero emissions: consultation, Scottish Government, February 2021](#)

workforce and skills development, and create new local jobs in the city.

We will work with the Heat and Energy Partnership to develop supporting **place-based energy infrastructure projects** – to ensure joint public sector estate retrofits include consideration of **net zero heat and energy generation solutions, planned to meet neighbourhood’s needs.**

Case study: Western General Hospital Heat Network

NHS Lothian has commenced a major programme of energy efficiency works at the Western General Hospital to deliver high energy efficiency systems and low carbon technologies.

The works are urgently needed to replace ageing infrastructure, but the overall aim of the programme is to find a pathway to net zero in line with NHS Lothian Carbon Commitments. The pathway is based on replacing the old steam network with a low temperature district heat network (*cont...*) and commissioning a new energy centre for the site.

Phase 1 of the project is complete with part of the site now served by the new Low Temperature Heat Network. The project will be phased over a number of years, with

Phase 2 extending the heat network to further buildings on the site.

The Western General Hospital is a major consumer of energy, so the plans for the site have potential to make a contribution to the net zero pathway for the city as a whole and potentially integrate with wider energy systems and heat networks.

Source: NHS Lothian



Warm, comfortable and affordable social housing

Improving the **energy efficiency of Edinburgh’s existing homes** is one of the most effective steps we can take to reduce the city’s emissions. Achieving this will mean bringing forward a programme to carry out **‘fabric first’ building upgrades** at pace, to support accelerated uptake of **new smart energy controls and low carbon heating and cooling systems.**

We will deliver an **advanced whole house retrofit programme** across existing Council homes based on the EnerPHit retrofit standard, which can deliver up to an **87 percent reduction in emissions** while also improving **health, comfort and affordability** for tenants.

We will work with Housing Associations and Registered Social Landlords to secure economies of scale and extend the reach of programmes across Edinburgh’s **35,000 social rented sector** homes.



Supporting citizens and businesses

Owner occupiers, private landlords and the city’s businesses will also need to invest in their buildings if we are to reduce the city’s emissions. We will work across the public/private/domestic sectors to develop **exemplar retrofit pilots** which will test innovative finance models to support retrofitting, including in challenging mixed-tenure and heritage settings.

We will share learning from pilots with the Scottish Government and call on them to develop and roll out **new incentivisation models** to support citizens and businesses to invest in improving the energy efficiency of their buildings, targeting financial assistance toward low-income households to help **tackle fuel poverty.**

Case study: Integrating fabric first approaches to achieve wider community benefits in social housing

The City of Edinburgh Council manages approximately 20,000 homes which consists of a significant number of 'hard to treat' non-traditional construction types which can present significant technical retrofit challenges.

The Council is currently developing a Whole House Retrofit approach. This approach will initially assess which advanced whole house retrofit standards (such as EnerPHit) are the most suitable from a technical and financial perspective, across the various Council housing archetypes to align with the Council's long-term net zero carbon targets and to also provide energy savings for tenants.

Whole House Retrofit focuses on fabric first measures, including improved thermal insulation, airtightness and ventilation to significantly reduce energy demand and the need to heat the home. It also helps to ensure homes deliver health, comfort and affordability benefits to tenants.

The wider Whole House Retrofit programme will be a key component of the Council's wider area-based regeneration approach which has the potential to transform neighbourhoods and provide environmental, social and economic opportunities.

Pilot projects will be developed to assess the benefits and practicalities of an advanced whole house retrofit approach across a variety of the Council's most common building archetypes, along with detailed monitoring and

evaluation to assess the carbon and energy cost savings.

These pilot projects will inform the longer-term investment and roll out of the whole house retrofit programme.



A new skilled workforce, making Edinburgh a centre for excellence

A large new skilled workforce will be needed to deliver new **energy infrastructure and retrofit at scale and pace** across the city's public, private and domestic buildings. The Scottish Government has committed to developing a Climate Emergency Skills Action plan to support market demand for the skills required and national data suggest there could be:

- Between 1,500 and 9,000 jobs over 15+ years in zero carbon energy (including renewables, hydrogen and storage)
- Between 6,000 and 13,000 jobs over 10+ years in decarbonising buildings and broadband
- Between 2,000 and 3,500 jobs over three years in building new social housing.^{5 6}

We will ensure these opportunities deliver economic benefits for citizens and the city by working with the industry and South East Scotland City Region Deal partners on their skills development programmes to ensure the city has the workforce needed to transform with a focus on **green construction skills**.

Case study: Canongate Housing Development Energy Efficiency and Conservation project

In March 2021, Edinburgh World Heritage in partnership with the City of Edinburgh Council undertook an innovative pilot to retrofit a mixed tenure tenement block of post-war B-listed development, designed by Sir Basil Spence in the late 1960s. Focusing on 10 flats and 2 commercial units, the project aimed to both improve energy efficiency and restore or repair its original features.

Supported by funding from the Scottish Government and Scottish Power Energy Networks' Green Economy Fund, the project developed and tested innovative and replicable delivery models for the retrofit of domestic/non-domestic listed properties considered as hard-to-treat.

Source: [Edinburgh World Heritage](#)

⁵ [Green Jobs in Scotland, STUC, accessed June 2021](#)

⁶ [Green Jobs in Scotland, STUC, accessed June 2021](#)

Net Zero Energy Generation and Energy Efficient Buildings

Outcomes

- Heat and energy generation and distribution is clean and renewable, and buildings are energy efficient and resilient to climate change.
- The cost of heating and powering the city's homes and other buildings is reduced, helping to tackle fuel poverty.
- Retrofit and energy infrastructure projects are delivering economic and social benefits to businesses and citizens supporting a just transition.

Action	Next steps and Indicative delivery timeframe	Delivery partners
1. Laying the policy foundations	<ul style="list-style-type: none"> ● Set progressive planning policies to increase energy standards in new buildings. <i>2021–2023</i> ● Require the use of low and zero emissions technologies to heat and power the city's buildings. <i>2021–2023</i> 	The City of Edinburgh Council, The Scottish Government, developers, Registered Social Landlords
2. Developing a city energy masterplan	<ul style="list-style-type: none"> ● Convene a City Heat and Energy Partnership. <i>2021–2023</i> ● Develop a city-wide heat and energy masterplan. <i>2021–2023</i> 	The City of Edinburgh Council, NHS, Edinburgh universities, Scottish Water, Scottish Power Energy Networks, Scottish Gas Network, and other key partners.
3. Grid investment	<ul style="list-style-type: none"> ● Establish a strategic partnership with Scottish Power Energy Networks. <i>2021</i> ● Align current and future grid development to the city's energy needs. <i>2022-2030</i> 	The City of Edinburgh Council, SP Energy Networks
4. Energy investment strategy	<ul style="list-style-type: none"> ● Develop a long-term shared investment strategy to deliver the city energy masterplan. <i>2021–2023</i> ● Agree appropriate delivery mechanisms. <i>2021–2023</i> 	City Heat and Energy Partnership, The Scottish Government, private sector
5. Developing regional energy solutions	<ul style="list-style-type: none"> ● Develop regional renewable energy solutions which draw on the area's wind, geothermal, hydro and solar assets. <i>2024-2027</i> ● Learn from the H100 hydrogen pilot. <i>2024-2027</i> 	City Heat and Energy Partnership
6. Developing heat networks	<ul style="list-style-type: none"> ● Identify heat network zones across the city. <i>Early 2022</i> ● Ensure all Council-led infrastructure investment plans seek opportunities to connect to heat networks, beginning with our learning estate programme. <i>2023 - 2027</i> ● Work with communities and developers to deliver heat networks which meet the needs of key public sector buildings and major new developments across the city, beginning with Granton Waterfront and the BioQuarter. <i>2023 - 2027</i> 	The City of Edinburgh Council City Heat and Energy Partnership
7. Focussing on place-based projects	<ul style="list-style-type: none"> ● Collaborate on place-based joint energy infrastructure projects which maximise opportunities to deliver low-cost, clean, renewable energy to neighbourhoods and communities, with a focus on areas experiencing inequalities. <i>2024–2027</i> 	City Heat and Energy Partnership

8. Retrofitting the city's social housing and public sector estate	<ul style="list-style-type: none"> • Develop a plan for retrofitting social housing across the city to the highest energy standards, to reduce energy demand and tackle fuel poverty. <i>2028-2030</i> • Collaborate on and identify opportunities for a joint public sector estate retrofit programme. <i>2023-2027</i> • Ensure retrofit programmes create green jobs and skills development opportunities for citizens, targeting those at greatest risk of poverty. <i>2023-2027</i> 	<p>The City of Edinburgh Council, Registered Social Landlords</p> <p>NHS, University of Edinburgh, Heriot Watt University, Scottish Fire, Scottish Power Energy Networks, The City of Edinburgh Council, skills development bodies.</p>
9. Testing innovative approaches for challenging settings	<ul style="list-style-type: none"> • Scope and test innovative approaches to retrofit in challenging mixed-tenure and heritage settings, to deliver exemplar models and accelerate progress. <i>2021-2023</i> • Adapt Edinburgh's World Heritage site to be resilient to climate change. <i>2021-2023</i> 	<p>EIT Climate-KIC, Edinburgh Climate Change Institute, Changeworks, Edinburgh World Heritage</p> <p>Edinburgh World Heritage, Historic Environment Scotland</p>
10. Supporting owner-occupiers and landlords	<ul style="list-style-type: none"> • Develop models that support businesses, owner-occupiers and private landlords to invest in energy retrofits. <i>2024-2027</i> • Call on the Scottish Government to bring forward at speed schemes to support citizens to fund energy efficiency upgrades and decarbonisation of heat in their homes. <i>2021</i> • Call on the Scottish Government to urge the UK Government to ensure its future Heat in Buildings Strategy includes action to significantly reduce the cost of electricity, without passing costs on to other areas of households' budgets. <i>2021</i> 	<p>The City of Edinburgh Council, EIT Climate-KIC, Changeworks, Edinburgh World Heritage</p> <p>The City of Edinburgh Council, The Scottish Government</p>
11. Resourcing net zero public buildings	<ul style="list-style-type: none"> • Call on the Scottish Government to work with city partners to identify and deploy additional resource to deliver net zero public buildings. <i>2021-2023</i> 	<p>The City of Edinburgh Council, The Scottish Government, developers, Registered Social Landlords</p>