

Topic Paper - Renewable Energy Infrastructure

ELC 010

Context: Climate Change (Scotland) Act 2009 NPF Spatial Strategy, NPF 4 Policy 1, 2, 5, 6, 9, 10, 11, 12, 14, 15, 19, 20, 22, 23, 33

Introduction: This section is the principal section covering production of renewable energy and production and transmission of heat. Electricity and gas infrastructure is also covered in the Spatial Strategy section.

LINKS TO EVIDENCE

ELC OXX	Numbers should align with mastersheet
Transmission and Distribution	
ELC 329	National Grid ESO's interactive map - overview of largescale transmission reinforcement planned over the next 10 – 15 years. This map is illustrative and does not represent specific cable routes . https://www.nationalgrideso.com/future-energy/pathway-2030-holistic-network-design/holistic-network-design-offshore-wind/our-interactive-map
ELC 331	Scottish Power Energy Transmission https://www.spenergynetworks.co.uk/pages/investment_scotland.aspx
ELC 332	Scottish Power Energy Distribution Network Development Plan https://www.spenergynetworks.co.uk/pages/network_development_plan.aspx
ELC 333	Scottish Power Energy Distribution 'Heatmaps' https://www.spenergynetworks.co.uk/pages/dg_spd_heat_maps_terms.aspx This mapping shows where there are constraints to connection and where there may be opportunities to connect.
ELC 344	SPEN Embedded Capacity Register SPEN Website
Policy 11: Energy	
ELC 334	UK Government Energy Security Plan "Powering Up Britain" https://assets.publishing.service.gov.uk/media/642708eafbe620000f17daa2/powering-up-britain-energy-security-plan.pdf (March 2023) This Plan sets out the steps the Government is taking to ensure the UK is more energy independent, secure and resilient
ELC 335	Scottish Government draft Energy Strategy and Just Transition Plan https://www.gov.scot/publications/draft-energy-strategy-transition-plan/ (10 January 2023)
ELC 336	Location of renewable energy installations (1MW and over consented prior to 2021, 150kW and over since)(mapping) https://spice-spotlight.scot/2024/03/11/renewable-energy-map-of-scotland/
ELC 337	Scottish Energy Statistics https://www.gov.scot/collections/quarterly-energy-statistics-scotland/

ELC 410	Spice Spotlight: Renewable Energy Map of Scotland: https://spice-spotlight.scot/2024/06/17/renewable-energy-map-of-scotland/
<i>Nuclear</i>	
ELC 299a	Scottish nuclear energy policy – https://www.gov.scot/policies/nuclear-energy/ Scottish Government, accessed 21 November 2023
ELC 299b	Environmental Impacts of Torness: EDF leaflet https://www.edfenergy.com/sites/default/files/torness_guide_to_environmental_impact.pdf
<i>Wind</i>	
ELC 295	Onshore Wind Sector Deal - https://www.gov.scot/publications/onshore-wind-sector-deal-scotland/documents/ (21 September 2023). This document sets out commitments from the Scottish Government and the onshore wind industry to deliver on their collective ambition of 20GW of onshore wind in Scotland by 2030 whilst delivering maximum benefit to Scotland.
ELC 296	Scottish Government's Onshore Wind Policy Statement Wind turbine applications in East Lothian – GIS layer
ELC 297	Carol Anderson and Alison Grant: Landscape Capacity Study for Wind turbines in East Lothian - Link to study
ELC 298	Carol Anderson and Alison Grant: Supplementary Landscape Study for Smaller Wind Turbines Planning Guidance for Lowland Wind Turbines
<i>Hydrogen</i>	
ELC 330	Deep Decarbonisation Pathways for Scottish Industries: A study for the Scottish Government (2020) https://www.gov.scot/binaries/content/documents/govscot/publications/research-and-analysis/2020/12/deep-decarbonisation-pathways-scottish-industries/documents/deep-decarbonisation-pathways-scottish-industries-study-scottish-government-final-report/deep-decarbonisation-pathways-scottish-industries-study-scottish-government-final-report/govscot%3Adocument/deep-decarbonisation-pathways-scottish-industries-study-scottish-government-final-report.pdf
ELC 294	Hydrogen Action Plan (2022) - https://www.gov.scot/publications/hydrogen-action-plan/
<i>Offshore</i>	
ELC 289	National Marine Plan 1 (current) - https://www.gov.scot/publications/scotlands-national-marine-plan/ and 2 (forthcoming)
ELC 290	The UK's Clean Energy Industries Sector Plan (replacing the UK Government Offshore Wind Sector Deal https://www.gov.uk/government/publications/offshore-wind-sector-deal/offshore-wind-sector-deal)
ELC 291	Sectoral Marine Plan for offshore wind energy https://www.gov.scot/publications/sectoral-marine-plan-offshore-wind-energy/
ELC 292	Marine Scotland spatial information on off-shore renewables and transmission infrastructure at https://marine.gov.scot/
ELC 293	Offshore Wind Scotland website https://www.offshorewindscotland.org.uk/
<i>Heating and Cooling</i>	
ELC 338	East Lothian's Local Heat and Energy Strategy and Action Plan: Item 130/24 on the Members Library Service 31 October 2024: https://www.eastlothian.gov.uk/meetings/meeting/17380/members_library_service
ELC 339	Scottish Heat Map - https://heatmap.data.gov.scot/custom/heatmap/
ELC 340	Non-Gas Map - https://www.nongasmap.org.uk/
ELC 341	Scottish EPC Register - https://www.scottishepcregister.org.uk/
ELC 297	Green Heat in Green Spaces – Green Spaces Scotland and Park Power – Project output downloads from https://www.greenspacescotland.org.uk/introducing-ghigs
ELC 342	Scottish Government Permitted Development Rights reviews phase 3 consultation

ELC 343	National Grid transmission and distribution network mapping https://www.nationalgrid.com/electricity-transmission/network-and-infrastructure/network-route-maps
ELC 044	Tree and Woodland Strategy for East Lothian (ELC) Tree and Woodland Strategy

EVIDENCE

Transmission and Distribution

- 10.1 The electricity transmission and distribution system transfers power from where it is generated to where it is used. Some renewable energy generation is used on site, however where this is not possible a grid connection is needed. Smaller proposals will connect to the distribution grid (<132kV) run by Scottish Power Energy Networks (SPEN). Larger proposals may be able to connect to the transmission system, run by Scottish Power Transmission (132kV or over).

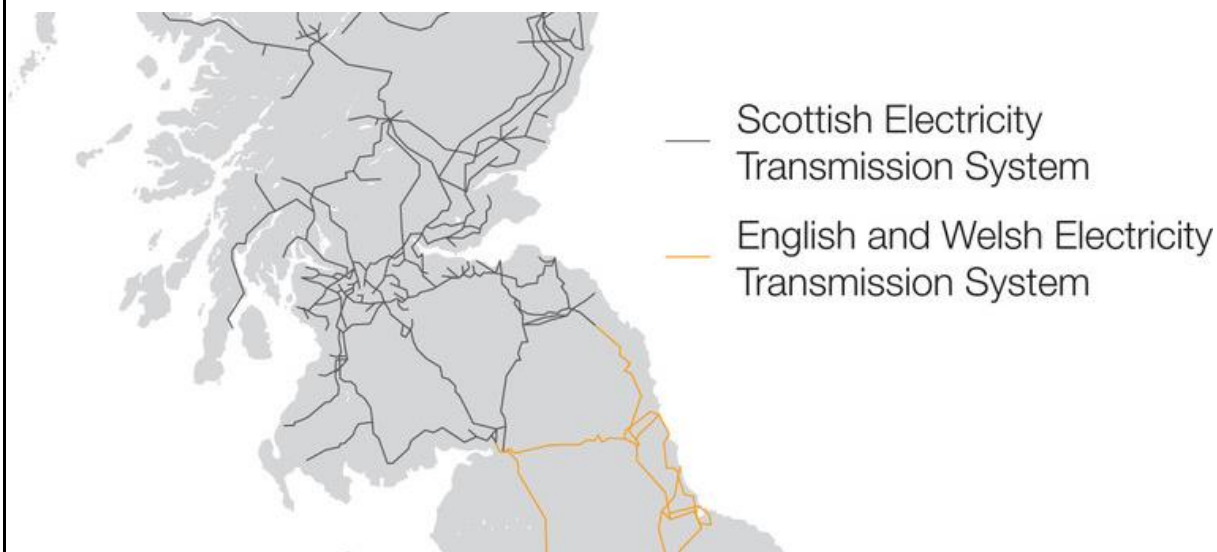


Figure 10.1 National Grid Transmission network route maps (from <https://www.nationalgrid.com/electricity-transmission/network-and-infrastructure/network-route-maps>)

- 10.2 SPEN note that what their customers value is reliability, safety, cost-efficiency and being able to consume when they want. SPEN's Network Development Plan outlines their challenge is continuing to deliver this model of energy supply. This is mainly due to the energy landscape (supply and demand for energy) going through a period of transition. The key drivers are:
- Decarbonisation: moving to net zero means electrification of much of our transport and heating of buildings
 - Decentralisation: more generation is connected to the distribution network (rather than transmission network)
 - Democratisation: the rise of the active consumer, with smart meters, smart domestic appliances and batteries, and storage of electricity in electric vehicle batteries, which can have a role in network and system services
- 10.3 SPEN have modelled where intervention is needed to increase capacity, based on different scenarios, and checked against compliance with Net Zero goals. Without change, customer demand and generation growth will overwhelm network capacity.
- 10.4 The following map shows the level of constraints that SPEN consider apply to those seeking to connect generation capacity to their network. This should be read in conjunction with the key to the categories following

the map. This shows that there are constraints to connection across East Lothian. Alternative connection offers can be made at distribution level, however, so there may still be some means of exporting electricity from new proposals. Upgrades to the distribution network would ideally be needed to connect a significant amount of new capacity.

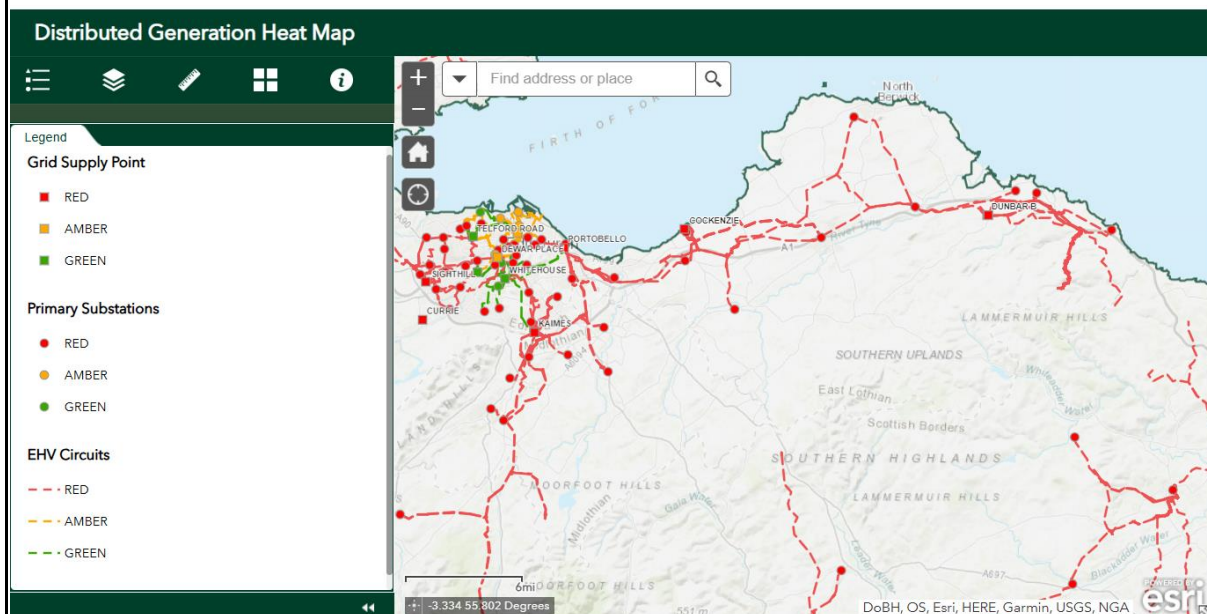


Figure 10.2 Distributed Generation: implications for connection; ‘Supported by SP Energy Networks Open Data’ ELC 333 (accessed 11 July 2025)(Whilst all reasonable care has been taken in the preparation of the information and data presented within these pages, neither SP Energy Networks nor East Lothian Council are responsible for any loss that may be attributed to the use of the data)

Description of Red/Amber/Green Categories above.

Category	Description
Green	All operational factors are within tolerable limits and so opportunities may exist to connect additional Distributed Generation without reinforcing the network (subject to detailed studies).
Amber	At least one factor is nearing its operational limit and hence, depending on the nature of the application, network reinforcement may be required. However, this can only be confirmed by detailed network analysis.
Red	At least one factor is close to its operational limit and so installation of most levels of Distributed Generation and a local connection is highly unlikely. It may also require extensive reinforcement works or given the lack of a local connection, require an extensive amount of sole user assets to facilitate such a connection

The following map shows generation and storage resources of 50kW or more, that are connected (or accepted for connection) to the distribution network.

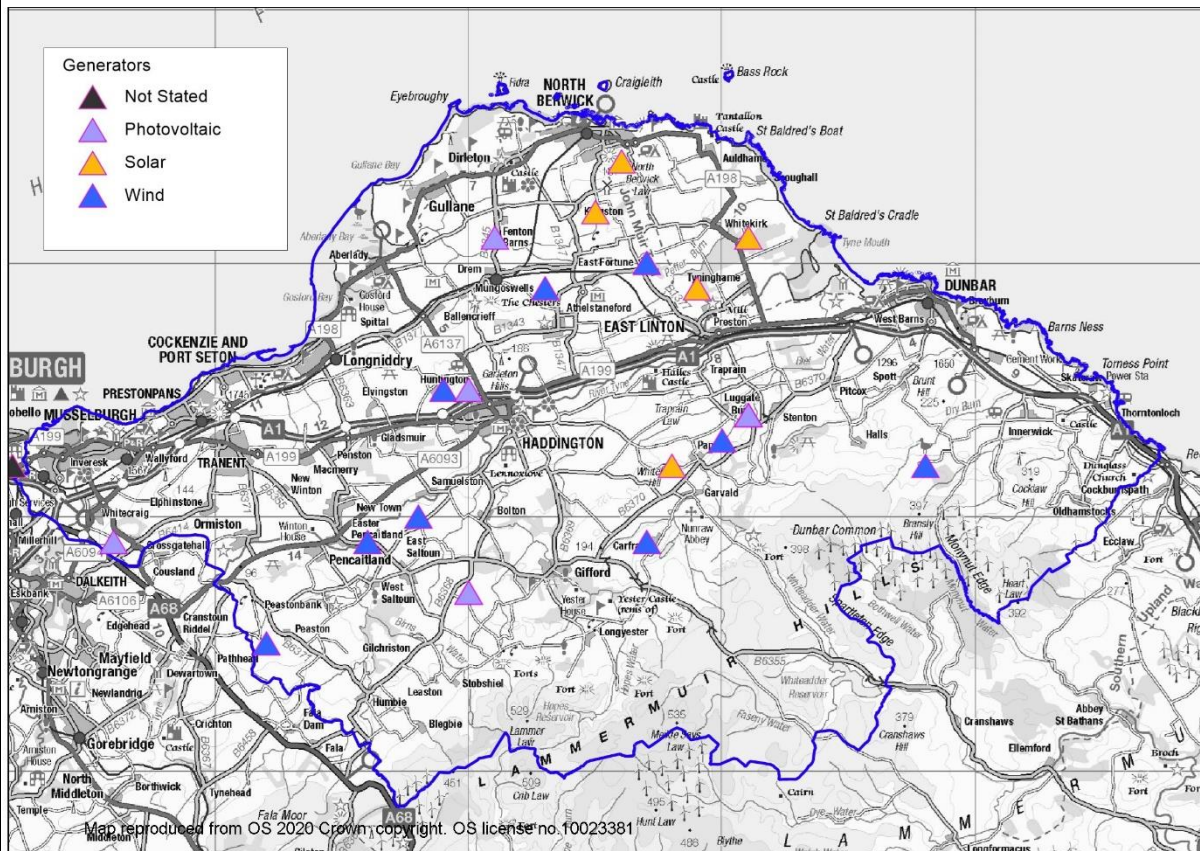
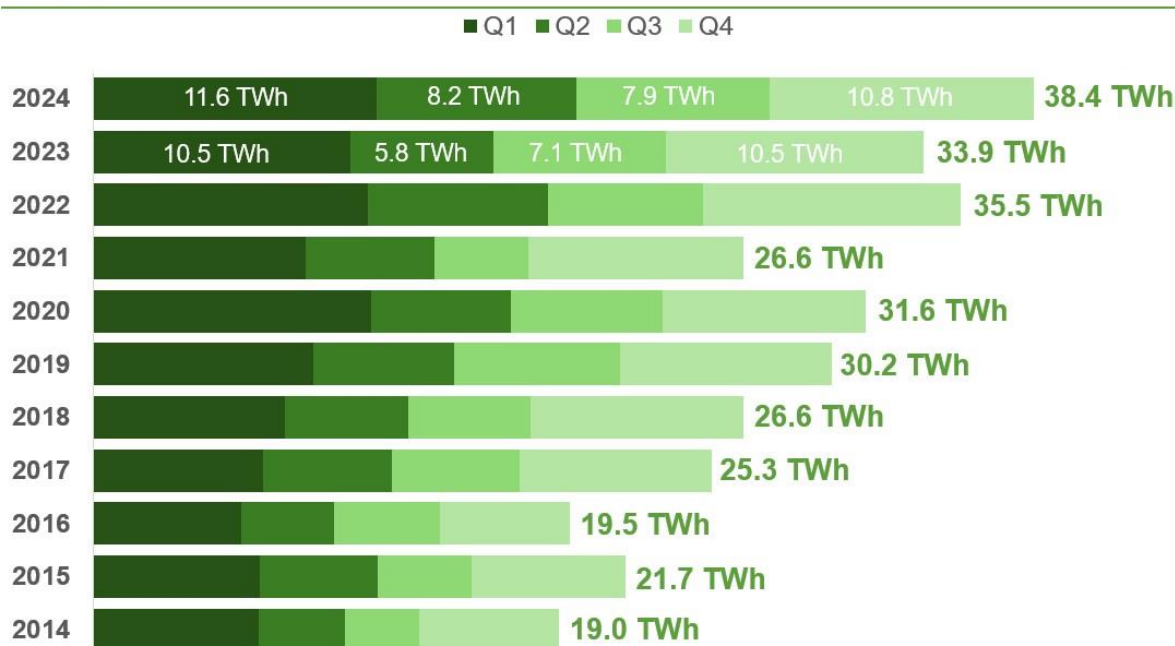


Figure 10.3 Extract from SPEN Embedded capacity register (ELC 440), downloaded 15 March 2024. 'Supported by SP Energy Networks Open Data'.

Overall generation

- 10.5 Decarbonising the grid is important to help Scotland and the UK meet climate targets. Policy 11 of NPF4 supports renewable energy, though proposals must show how landscape and other impacts are mitigated. NPF4 also contains other policies protecting landscape areas as well as other natural and cultural heritage assets.
- 10.6 Renewable energy production has significantly increased in Scotland overall over the last 10 years. Statistics are available from Scottish Energy Statistics (ELC 337) and show a real shift in generation away from fossil fuels and towards renewables.

Quarterly electricity generation from renewable sources in Scotland 2014 - 2024



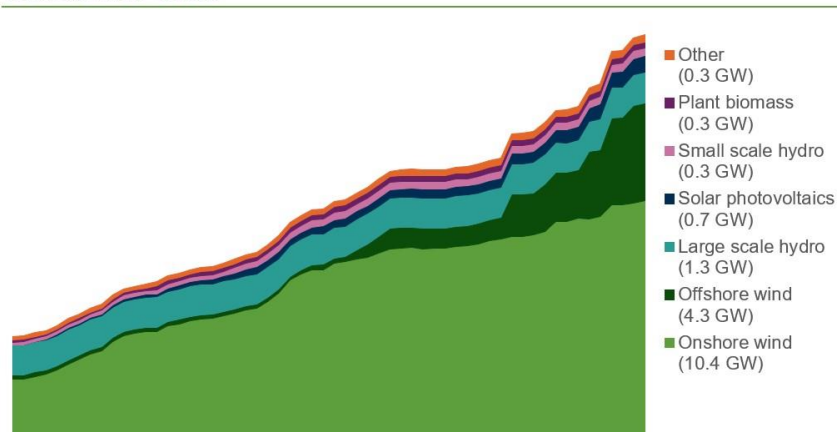
Source: DESNZ

Figure 10.4 Renewable electricity generation by quarter in Scotland (2013 - 2023) from Scottish Energy Statistics (ELC 337)

The different types of renewable energy that make up this mix are shown below.

Quarterly Renewable Electricity Installed Capacity

Scotland, Q4 2010 - Q1 2025



Source: DESNZ

Figure 10.5 Renewable energy installed capacity by type, Scottish Energy Statistics (ELC 337): Energy Statistics for Scotland - Q1 2025

10.7 The renewable energy generated meets Scotland's electricity demand in terms of total generation (which doesn't mean there are no imports, as timing is important as well as total quantity). Overall, Scotland is an electricity exporter, and this has an indicative value of £1.5 billion (ELC 337). The position of East Lothian means electricity exported to demand centres in England from the north, or from offshore to the central belt and south, can be

transmitted through the area. A current pinch point between north and south on the national grid means East Lothian is also under pressure for battery energy storage systems.

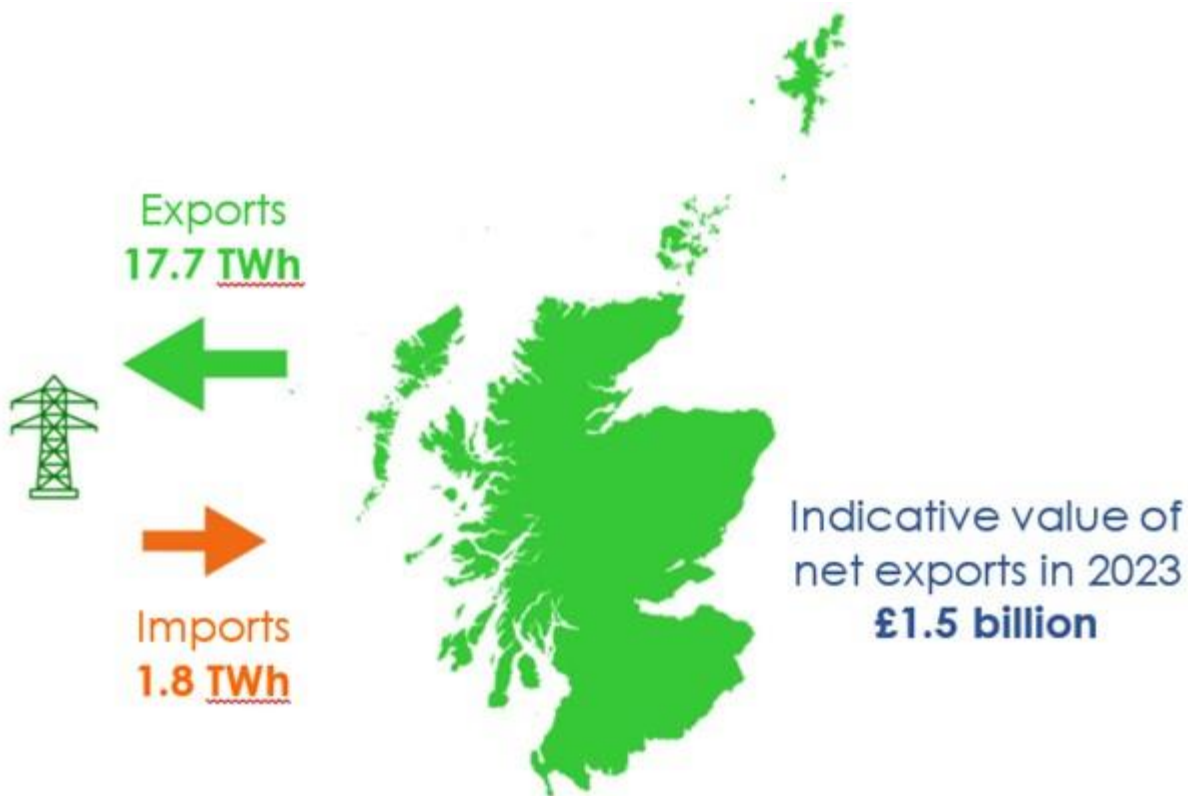


Figure 10.6 Scotland's electricity transfers 2023

10.8 Applications for offshore and onshore wind continue to make up the majority of applications for generation. However, applications for battery energy storage projects have overtaken this in terms of capacity.

Estimated capacity (GW) by technology and planning stage for renewable energy projects in the planning pipeline
As of end March 2025

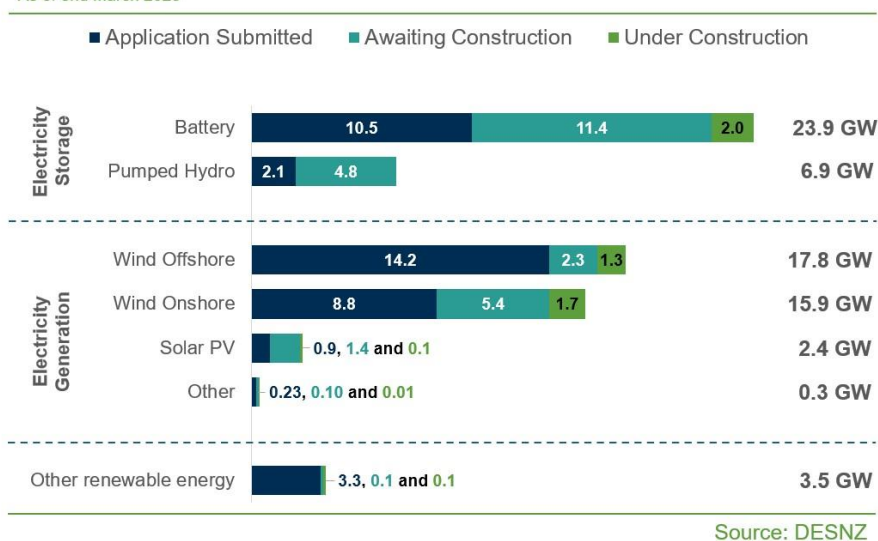


Figure 10.7 Renewable electricity pipeline generation and storage in Scotland by planning stage and technology: Scottish Energy Statistics Q1 2025 (ELC 337)






10.9 Electricity is not the only energy used, and progress towards decarbonising both heat and transport has been slower. Overall Scottish consumption from renewables is still less than from fossil fuel sources.



Figure 10.8 Current progress towards targets (Scottish Energy Statistics, ELC 337)

10.10 This shift towards renewables from fossil fuels has been echoed in East Lothian. Here, there has been a long history of energy production, from coal mining since before medieval times, to coal fired generation from the 1960s to 2010s, to nuclear, wind and solar generation now. East Lothian has therefore experienced both the benefits and the impacts of different types of energy generation. East Lothian continues to make a significant contribution to Scotland's energy needs, hosting a considerable portion of Scotland's low and zero carbon generating capacity. In addition, several large offshore windfarms make landfall here. Net zero targets imply significantly greater investment in renewable energy across a range of generation technologies, storage and transmission infrastructure.

10.11 A significant increase in the use of renewable heat is crucial if Scotland is to meet its climate targets. There are challenges in matching producers and users of heat, as well as retrofitting heat networks and issues around financing and deregulation of energy supply. East Lothian currently has a very low usage of its potential heat resource. Decarbonisations of transport, which is linked to electricity supply as well as use of active travel, is also needed.

				
Torness Nuclear power station 1290MW	Crystal Rig 200.5 MW	Aikengall/Wester Dod 180Mw	Dunbar Energy from Waste plant 30MW	Viridor landfill gas

Nuclear Energy

10.12 Torness Nuclear Power station was consented in 1978 and began producing power in 1988. Its total rated supply to the grid is 1190MW. According to EDF, the plant has over its lifetime produced over 290TWh of electricity, enough to power every home in Scotland for 29 years. EDF employs around 550 full time staff, and over 180 full time contractors with other jobs supported by their spend into the local economy. Decommissioning is expected

to start in the lifetime of LDP2, currently in 2030. Staffing will be gradually reduced as decommissioning progresses.

10.13 Scottish Government policy is opposed to the building of new nuclear stations. However Scottish Ministers support the extension of the operating life of Torness if strict environment and safety criteria continue to be met. UK policy is supportive of new nuclear; although energy (other than renewable energy) is a reserved matter, planning is not. NPF4 does not mention nuclear as a technology to be supported in Policy 11 and Scottish Ministers have stated their intention to use their planning powers to oppose building of new nuclear stations. In the past nuclear power stations have had a capacity of greater than 50MW. The newer Small Modular Reactors are also likely to be above this level. At the moment, this means applications for new nuclear facilities would be determined by Scottish Ministers under the Electricity Act 1989, rather than by the Council.

Wind - Onshore

10.14 The Scottish Onshore Wind Policy Statement sets out Scottish Ministers' ambition to deploy 20GW of onshore wind by 2030. Even with the projects in the pipeline, there is still some way to go to meet this target.

10.15 East Lothian is well located for onshore wind in terms of wind resource. However, there are constraints in many areas including steep terrain, proximity to settlements, and built and natural heritage constraints. Existing wind development in East Lothian largely follows a pattern. Some areas are largely free of wind development or the visual impact of wind development. The current LDP steers large scale wind development to the larger scale landscapes of the Lammermuirs, where it seeks a 'cluster and space' pattern of development. The plan also sought to restrict the height of wind turbines in the lowland areas, largely to protect landscape and cultural heritage interests. The resulting pattern of development is therefore large-scale windfarms in a cluster and space pattern in the Lammermuirs, with wind turbine development restricted to smaller scale development in the more intimate and highly intervisible landscapes of the lowlands.

10.16 Pressure for further large-scale windfarm development continues in the uplands. Recent applications have been made in the Lammermuirs just across the boundary in Scottish Borders Council area at Fallago Rig (the physical extension of which was refused at appeal), Dunside, Longcroft and Ditcher Law. In East Lothian, an application for wind turbine development at Newlands Hill is under consideration.

10.17 Repowering is likely to become an issue over the next LDP period, with the first of the larger windfarms reaching the end of their planned life. The first part of Dun Law started operation in 2000, while Crystal Rig 1 commenced in 2003. Although both of these are in Scottish Borders council area, their visual influence is felt as much in East Lothian.

10.18 The location of windfarms can be seen at [Spice Spotlight: Renewable Energy Map of Scotland](#) (ELC 410). Within East Lothian the largest wind developments are Crystal Rig and Aikengall Community Windfarm at the east end of the Lammermuirs. Pogie, at the west end, is smaller in scale.

10.19 Crystal Rig and Aikengall windfarms both straddle the boundary with Scottish Borders. Crystal Rig, with a nameplate capacity of 200.5 MW, had in 2022 the second highest capacity of all windfarms in the UK, with Aikengall at 180MW not far behind. Fallago Rig lies just into Scottish Borders area between Dun Law and Crystal Rig. Recently applications for further windfarms on the boundary with Scottish Borders Council have been made. Dunside windfarm, to the east of Fallago Rig, is awaiting decision from Scottish Ministers; Longcroft and Ditcher Law, both west of Fallago, are also awaiting decision. The Council did not object to the application at Dunside or

Ditcher Law, but did object to Longcroft due to its landscape and visual impact. Additional Information has been submitted for all three.

10.20 The trend with windfarm development is for fewer, large turbines on a site. Once the height is 150m or more, the need for aviation warning lighting must be considered. The Council objected to the application for Crystal Rig 4 on the basis of its lighting, and a reduced scheme was required. Aviation lighting has also been required on other developments in this area.

Wind - Offshore

10.21 Significant windfarm development off the coast of East Lothian is under construction or planned. Neart na Gaoithe, 15km east of Fife Ness, is visible from closer parts of our northern and eastern coast, as well as upland areas. Development further afield has been consented at Inch Cape and Seagreen. All of these windfarms will have onshore transmission infrastructure in East Lothian.

10.22 The Neart na Gaoithe cable route makes landfall at Thorntonloch before connecting to a substation at Crystal Rig. There are also grid strengthening works at the coast there known as the Eastern Link, which will connect to an offshore cable to England. A substation to connect the proposed Berwick Bank windfarm would also be there. Power from Inch Cape and Seagreen windfarms will come ashore at the former Cockenzie Power Station site, where onshore transmission works are being constructed.

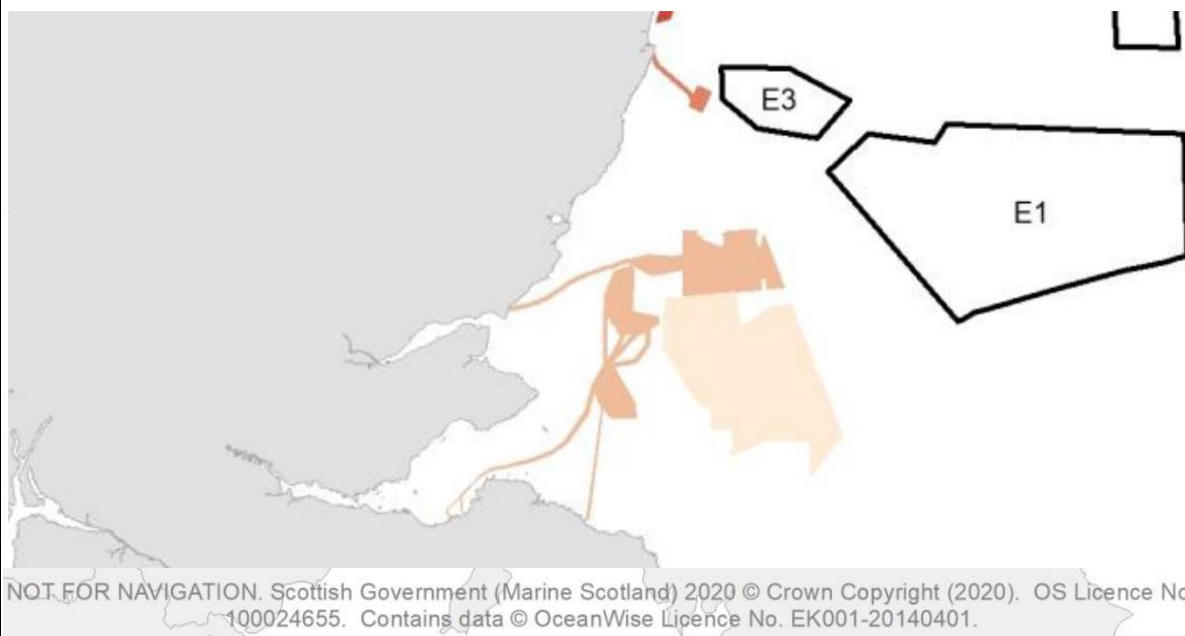


Figure 10.9 Extract from Scottish Government Sectoral Marine Plan for offshore wind energy, Scottish Government (Marine Scotland) 2020

Battery Energy Storage Systems

10.23 Battery energy storage systems of 50MW or over are determined by Scottish Ministers under the Electricity Act 1989, as they are considered as electricity generating stations. Smaller scale proposals are determined by the Council.

10.24 The increasing demand for these systems has arisen from the push to decarbonise the electricity system. Intermittent generation from wind, and to a lesser extent other renewable sources, means there is a need to store electricity to match fluctuating generation with demand. Battery energy storage systems do this. Currently

and previously, an excess in demand over supply would be met by increasing generation at gas or coal power stations, with some storage provided by hydro stations. Periods where there is generation in excess of demand are addressed by 'constraining off' generation – paying generators to switch off their supply. This means that some potential capacity for renewable energy generation is lost. Battery energy storage systems are one solution to this. Other potential solutions are management of charging of electric vehicles; demand management at the consumer level, or hydrogen technology (see below).

- 10.25 In East Lothian there have been battery storage proposals in association with existing windfarms, such as at Aikengall. Battery storage allows electricity from the facility to be stored and released to the grid when the best price can be obtained. Standalone battery energy storage systems allow electricity generated by others to be purchased from the grid at times when more electricity is being produced than needed, then released to the grid at a higher price when generation falls or demand rises.
- 10.26 As noted above, East Lothian is at a point on the electricity transmission system where there is currently a pinch point on the network between Scotland and England. As more windfarms are built further north, on days when winds are good it will not be possible to export all of the electricity generated to where it is used, due to lack of grid capacity. Arising from this, there have been a number of applications for battery energy storage in East Lothian. A proposal at Branxton has recently been given consent by Scottish Ministers. The council did not object to that application, nor to a proposal at Smeaton, though this has yet to be determined. The Council is considering our position on an application at Dolphinstone, south of Tranent, and a proposal called Braxbess, by Innerwick. Upgrades to the transmission system will help reduce the bottleneck and move power to where it is needed. The recently approved Eastern Link project, which will allow transfers via an offshore cable, is part of this. However, storage of some kind will still be needed.
- 10.27 Battery Energy Storage Systems, especially in combination with other electricity infrastructure, can bring issues for nearby residents and communities. This includes landscape and visual impact and impacts from traffic.

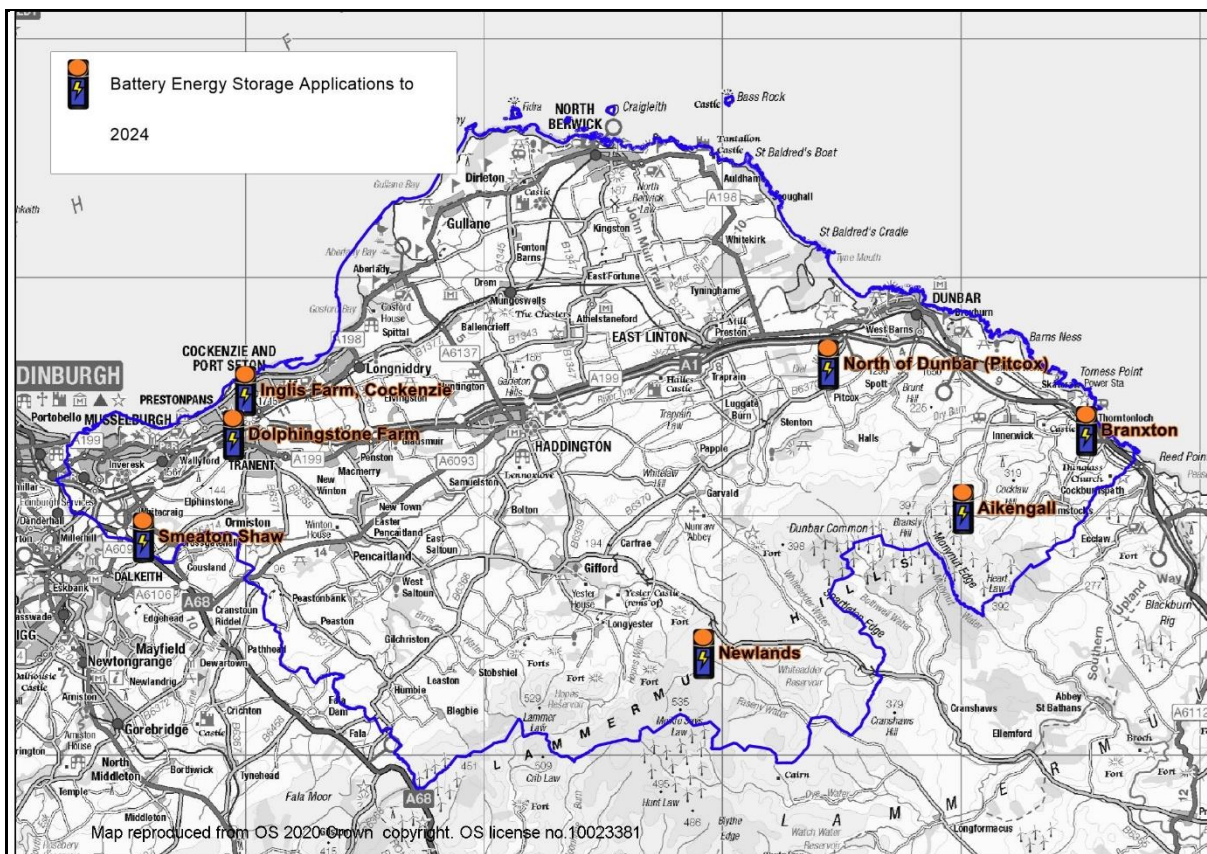


Figure 10.10 Battery energy storage applications

Anaerobic Digestors

- 10.28 Anaerobic digestion plants use the natural processes of plants and animal materials being broken down by microorganisms to generate heat and power. The feed material is generally something that would otherwise be waste, such as slurry, crop or food waste.
- 10.29 Three anaerobic digestion plants have received planning consent in East Lothian. A plant at Ruchlaw Mains by Stenton (East Lothian planning reference number 10/00660/P) uses pig slurry and other organics products to generate renewable electricity and create organic fertiliser. A digester at Pure Malt Products, Haddington (Ref: 13/00845/P) was given permission in 2013 and is now operational. A plant at Standalane, Ballencrief (Ref: 16/00068/P) which would have used agricultural and brewery by-products was refused permission (which refusal was upheld at appeal) due to the harm to the character and appearance of the area. A plant to the north of this, at Bangley Quarry, Huntington by Haddington (Ref: 17/00922/P) was given permission shortly afterwards however.
- 10.30 The majority of feedstock for the Bangley Quarry plant was to be sourced from local farming and agricultural markets, anticipated to consist of grass silage, hybrid rye, straw and vegetable processing residues. Consent was later given (at appeal) to allow household and commercial food waste and animal by-products to be used, and for an increase in the maximum weight of material to 100,000 tonnes per year.

Solar farms

- 10.31 Until 2025, there were no applications for commercial scale solar arrays. Recently, an application to Scottish Ministers has been made for a solar farm of around 165 MW, plus battery energy storage. The red-line boundary covers an area of around 184 ha, comprising 20 agricultural fields at Springfield, some 8 km from Dunbar and just

under 0.5 km from Oldhamstocks. The Council has not taken a view on this proposal, which remains undetermined.

10.32 Before this the largest application was that for 520 solar voltaic panels totalling 260 kW, forecast to generate around 0.227 GWh, to help power Dunbar Waste Water Treatment Works. This is followed by a combined ground source heat pump/solar pv proposal at Howden Farm, including 599 solar pv panels which combined would have an output of 186 kW.

10.33 Most of the remaining solar applications were domestic or to provide small amounts of power for stand alone structures, such as such as the meteorological mast at Newlands Hill, or to light a sculpture at Dunbar. As solar panels improve in efficiency and/or energy prices increase they may become more viable. This may lead to an increase in development pressure for solar arrays. See 'Solar – domestic/business' for more.

Hydro

10.34 There is a limited amount of hydro generation in East Lothian. Scottish Water generate hydroelectricity at Castle Moffat, which helps decarbonise their water supply infrastructure. Recently they have invested £3 million in a scheme at Whiteadder Reservoir, fed by a siphon and believed to be the first of its type in Europe. This system helps regulate water levels in the reservoir and will offset nearly a third of the power used by one of East Lothian's largest pumping stations at Hungry Snout.

Cumulative impacts

10.35 The change to renewable energy generation involves not just the installation of generation technology but also associated storage facilities and upgrades to the transmission system. The cumulative impacts can be considerable, both during construction and operation. This includes impacts on amenity, including from noise and traffic movements. There can be a lack of coordination between developers, which can lead to ongoing issues for communities. Impacts on communities have been felt in particular in East Lammermuir Community Council area, where several large projects have come forward or are planned. Once projects are operational there can be ongoing cumulative impacts on landscape and visual, cultural heritage and biodiversity receptors, among others.

10.36 The Council is commissioning a study (Renewable Energy Landscape Sensitivity Assessment) to assess the sensitivity of the landscapes within East Lothian to absorb onshore wind energy development, solar photovoltaic development, Battery Energy Storage Systems (BESS), and emerging hydrogen technology. The assessment is also expected to look at Data Centres, as these are often related to energy infrastructure. The stages of the assessment are expected to be a baseline desk and field study, followed by consultation which is hoped to be alongside publication of LDP2. The final assessment will be produced having taken any comments received into account.

Domestic/Business Renewable Generation

10.37 There is a range of renewable energy technology that can be installed on existing domestic or other buildings, the main ones being solar panels and heat pumps. There are permitted development rights for houses and flats for biomass and combined heat and power flues, ground, water and air source heat pumps, free standing wind turbines and Solar PV and solar thermal equipment. Planning requirements are more restrictive within Conservation Areas.

Solar

10.38 From the adoption of the LDP to the end of 2023, there were 98 planning applications for solar panels, 2 of which were withdrawn and the remainder granted. Most of the applications were on existing houses or buildings. Solar panels can now be installed on existing houses and flats outwith Conservation Areas under permitted development rights. There were a handful of small scale arrays in the countryside to serve either larger houses or business, for example at Howden Farm, Gifford, and Gifford Bank House and Broadwoodside, Gifford, and Kilduff House near Athelstaneford.

10.39 East Lothian has a large number of buildings that are either Listed or in Conservation Areas, as well as many vernacular buildings. There is a risk therefore that overall solar panels could harm the historical environment. Seventy-seven of the applications for solar panels were in Conservation Areas, as shown in the table below. There were 9 Listed Building consent applications which included solar, one of which was withdrawn and the remainder granted. Four of these were in Conservation Areas.

Conservation Area	No. of applications (properties involved)	Conservation Area	No. of applications
Aberlady	4	Haddington	5
Athelstaneford	2	Innerwick	2
Belhaven	3 (2 properties)	Inveresk	3
Cockenzie	2	Musselburgh	3
Dirleton	2 (11 properties)	North Berwick	6
Dunbar	10	Pencaitland	7
East Linton	1	Spott	3
East Saltoun	5 (6 properties)	Stenton	2
Garvald	2 (8 properties)	Tranent	2
Gifford	7 (14 properties)	West Barns	2
Gullane	4		

Heat pumps

10.40 There were 46 planning applications which mentioned heat pumps between the adoption of the LDP and 2024, three of which were withdrawn and one of which was pending decision at the time of writing. One application was refused, however this was due to the principle element of the application, a change to materials, being unacceptable and not the heat pump itself. There were 10 listed building applications which included heat pumps, all of which were granted.

10.41 Heat pumps are becoming the main choice for central heating systems in new developments. It is likely that there will be an increasing trend in installations.

Hydrogen

- 10.42 The Scottish Government sees hydrogen as a potentially important tool to meet climate targets. Hydrogen can be used to decarbonise industry, transport, power and heat. The ambition is for Scotland to become a leading producer and exporter of hydrogen. Hydrogen to meet transport demand could be a big part of this, with some hydrogen vehicles already on the road. Hydrogen is expected also to have a role in energy storage. The Scottish Government Hydrogen Policy Statement set a target of 5GW of renewable and low carbon production by 2030 and 25GW by 2045. This is an equivalent of 15% of Scotland's total energy demand. The ambition for hydrogen production is closely linked to expanding capacity for offshore and onshore wind.
- 10.43 The related Hydrogen Action Plan supports the development of Regional Hydrogen Energy hubs, as shown below. None of these are in East Lothian. No planning applications for hydrogen facilities have been made.

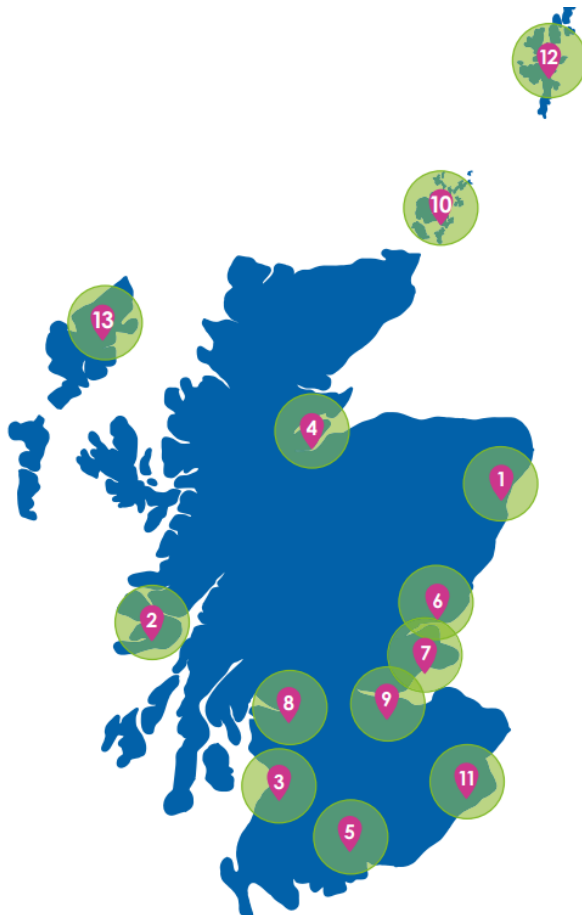


Figure 10.11 Extract from Scotland's Hydrogen Action Plan showing regional hydrogen hubs

- 10.44 In addition to hydrogen production, the Hydrogen Action Plan also seeks to increase demand by supporting its use. Likely users are seen as some industries, shipping and freight transport, and long term energy storage. It is less likely to be used for cars or light goods vehicles due to competing battery electric solutions. The Hydrogen Action Plan does not see a significant role in decarbonising domestic heat. However, electrolysis produces waste heat which could potentially be captured and contribute to decarbonising heat in the region.

Fewer alternatives
and significant
market opportunity



Many alternatives
and less certain
market opportunity

Fertilisers (ammonia), Chemical Feedstock, Refineries,
Energy exports via pipeline and ship, Methanol

Distilleries, Steel production, High-temperature
industrial heat

Long-term energy storage, Off-grid portable power
generators, Maritime (other than small vessels), Aircraft

Heating in SIUs, Heavy road vehicles

Rural and island grids, Uninterruptable power
supplies, District heating, Commercial heating,

Low-temperature industrial heat, Maritime-small
vessels, Rail, Domestic heating

Power system balancing, Short-term energy
storage, Light road vehicles (cars, vans etc)

Figure 10.12 Potential users of hydrogen (extract from Scottish Government's Hydrogen Action Plan)

10.45 East Lothian has some features which may potentially make hydrogen related development attractive. There are connections to offshore windfarms, and onshore wind. There is also a mains gas transmission pipeline running north/south through the area.

HEATING AND COOLLING

Policy 19 Heat and Cooling

NPF4 Requirements: Policy 19

LDPs should take into account the area's Local Heat & Energy Efficiency Strategy (LHEES). The spatial strategy should take into account areas of heat network potential and any designated Heat Network Zones (HNZ).

Local Heat and Energy Efficiency Strategy

10.46 Decarbonising energy use in buildings will require both increasing the energy efficiency of buildings and seeking different sources of heat. The [Local Heat and Energy Efficiency Strategy](#) sets out the Council's long term vision for improving energy efficiency and decarbonising heat in both domestic and non-domestic buildings. This was shaped by Scotland's statutory targets of addressing fuel poverty and reducing greenhouse gas emissions. The Strategy and associated [Action Plan](#) were approved by the Council in October 2024. The overall aim is for properties in East Lothian to have access to affordable, reliable and low carbon heat. Some of the actions set out to achieve this have a policy or spatial dimension that will need to be reflected in LDP2.

10.47 The LHEES is clear that the strategy must also tackle fuel poverty. There is a clear correlation between areas that are in the most deprived SIMD deciles and at risk of fuel poverty. This is not surprising given that low income is taken into account for both. The scale of the challenge is highlighted below; in some areas it is probable that over a third of households are in fuel poverty.

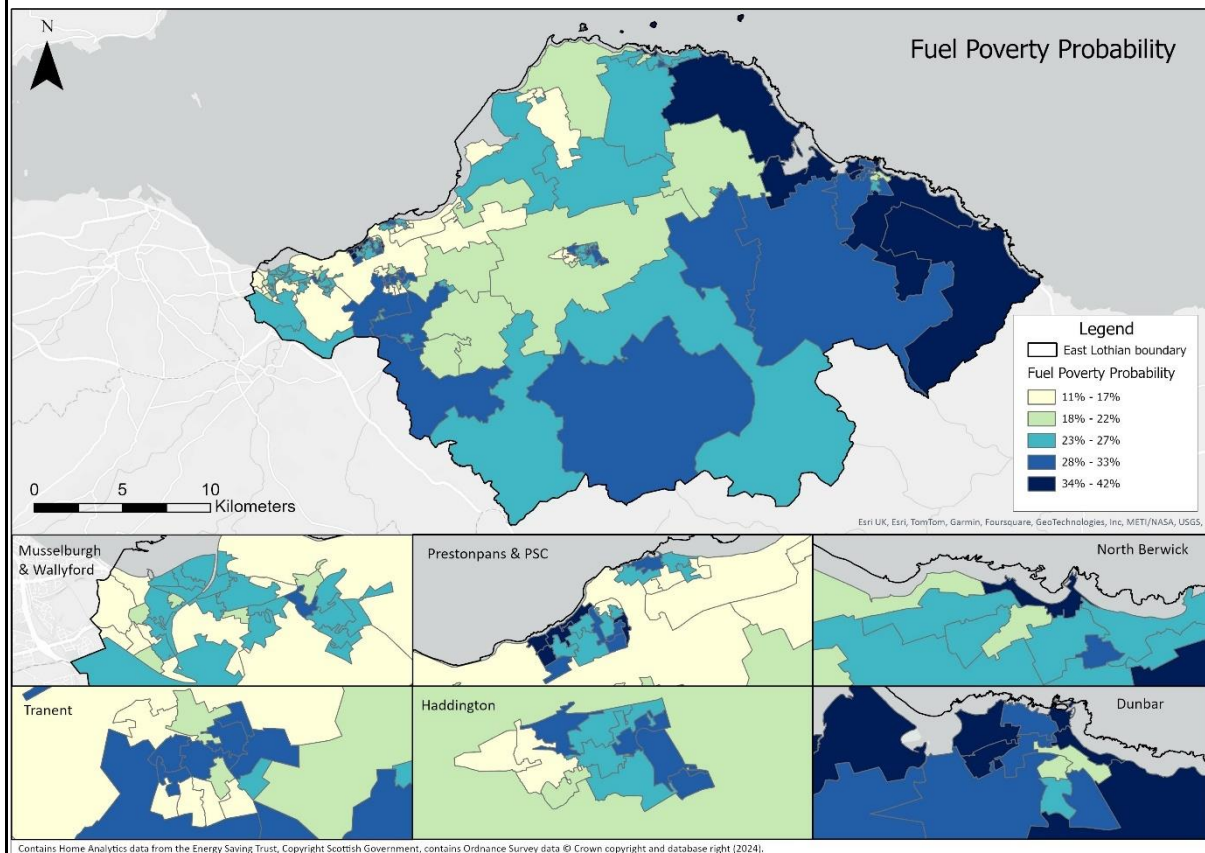


Figure 10.13 Map showing the probability of households being in fuel poverty (extract from LHEES)

10.48 Most domestic property in East Lothian, around 80%, are on mains gas (see Figure 15 below). Around a further 10% use electricity, 5% use oil and the remainder biomass or LPG. Most of the off-gas network properties are in the rural area, as would be expected. Most non-domestic properties use electricity for heating (though some of the ones that don't are larger heat users). These are not an immediate priority as their heating will decarbonise along with the electricity grid.

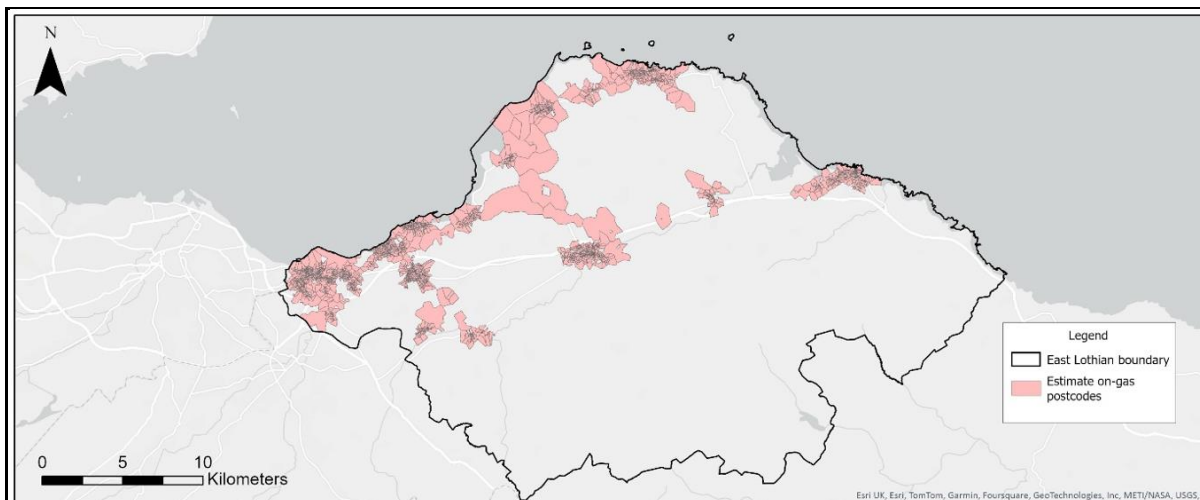


Figure 10.14 Extract from LHEES: Estimate of on-gas postcodes

- 10.49 The proportion of domestic properties in each Energy Performance Certificate category is shown in the figure above (though around 40% of EPCs are estimated so the margin of error is quite high). Around half of East Lothian's homes are shown as rated poor (D-G) which is in line with the national picture. The age of the property is an important factor in energy efficiency, with older properties are often being stone built, and harder to insulate. Around a sixth of homes are built before 1919. 5% of domestic properties are Listed, and 18% are in Conservation Areas (some are both). These buildings tend to perform worst in terms of energy efficiency. For example, the LHEES estimated that 11% of domestic properties in East Lothian have single glazing, rising to 31% in Conservation Areas and 57% among listed buildings. This difference will partly be because many of those properties are older, and so were built before double glazing was installed as standard. However, it may also be because the need to retain the historic appearance of the building makes installing double glazing more expensive.
- 10.50 There are 26 existing heat networks in East Lothian, all but one, at Queen Margaret University, are small scale. 15 are in social housing or care settings. 10 are rural, based around farms with biomass boilers. Just into Midlothian a district heat network is being developed based on the Millerhill waste plant. Some of this heat could potentially be brought to East Lothian. The LHEES focuses research into shared heat pumps on properties unlikely to be served by district heat network solutions. These include those areas not served by the gas grid. These settlements are:
- Drem
 - East Saltoun
 - Garvald
 - Gifford
 - Humbie
 - Innerwick
 - Oldhamstocks
 - Spott
 - Stenton
 - Tynninghame
 - West Saltoun
 - Whitekirk

- 10.51 In looking at District Heat Networks, by far the biggest concentration of heat demand across the region is in Edinburgh, with demand in East Lothian more dispersed though based in the main settlements. Further detail on demand is shown in the LHEES, as well as potential local heat sources that could meet this demand.
- 10.52 The main waste heat sources identified in the LHEES are:
1. Energy from Waste Facility, Dunbar. This plant has a commitment to make up to 10MW of heat available for local use, which to date has not been accessed. The operator has said the plant could potentially heat 71,000 homes. The challenge is to find sufficient demand to justify the expense of installing the pipe network needed, and to allow for a period where the plant shuts down for maintenance.
 2. Cement Plant, Dunbar. This is the single largest source of CO₂ in East Lothian. Although the plant is efficient, there is some waste heat. This facility also closes for annual maintenance, and unlike the Energy from Waste facility, this is early in the year when heat demand is highest. Using heat from this plant therefore implies a linked heat delivery system.
 3. Waste-water sewers; heat networks using this heat are operational at other Scottish locations and a major project is being considered at Seafeld, which treats a significant proportion of East Lothian's waste via the coastal sewer. Waste from Midlothian also goes to a pumping station at Wallyford, thence to Seafeld, and there may also be opportunities to use waste heat from this pipe. However, if heat were extracted from sewers in East Lothian this might impact the Seafeld project.
 4. Glenkinchie Whisky Distillery. Heat is generated during whisky production, currently cooled in ponds on site. Due to the distance to areas of demand it may be impractical to export this heat but it could be explored.
 5. The Maltings, Pencaitland. The site owner is keen to explore whether this could be exported to provide heat to the local community.
 6. Green Hydrogen. Production of green hydrogen generates large quantities of waste heat. Although there are no confirmed plans in East Lothian, there may be opportunities for future production at Cockenzie and Torness, where offshore power cables come ashore.
- 10.53 The main zero emissions sources identified were:
1. Mine Water Source. A study commissioned by the Council found a maximum output of 9.7MW could be delivered at the Coal Authority's treatment site at Blindwells. This is viewed as viable and further investigation is being taken forward by the developer there. Minewater could also supply a heat network at Prestonpans.
 2. Sea Source. East Lothian's coastal location makes utilising the sea as a source of heat promising. A challenge is identifying appropriate locations for heat infrastructure that have development land on the coast and suitable access to the sea.
 3. Ground Source and Water Source. A report Green Heat in Greenspaces looked at the potential to use parks and rivers to extract heat for public buildings. Dunbar, Haddington and Tranent had options for or ground source heat pumps, with a water source pump a possibility at Whitecraig.
 4. Electric Boilers linked to Thermal Storage.
 - Additional potential infrastructure projects across East Lothian could help facilitate more cost-effective delivery of heat network solutions. These are: Cockenzie former Power Station site: the Council owns this site and is preparing a masterplan for its redevelopment for energy and employment. This coastal location could provide access to sea water for a sea source heat pump. Location of a major heat centre could make this location potentially more attractive to other businesses and job creators.
 - Offshore wind connections: a number of connections from offshore windfarms have or will come ashore here. Consideration should be given to the potential for an electricity supply from this for heat infrastructure.
 - Musselburgh Flood Protection Scheme: there may be an opportunity to include heat network infrastructure within the proposed construction

- 10.54 Active Travel Corridor (Dunbar – Edinburgh) – it may be possible to align construction of this with the installation of heat network infrastructure
- 10.55 The LHEES notes that the Council is exploring wider opportunities for heat network development, potentially involving connecting multiple heat sources and including thermals storage. This would require a significant transmission network of insulated pipes to move the heat to customers across East Lothian and potentially, into Midlothian and Edinburgh. Feasibility work will be required to assess financial and technical viability. While installation of individual heat pumps would have major implications for the electricity grid infrastructure, district heat networks should significantly reduce the scale of local electricity grid upgrades in many towns.
- 10.56 The LHEES also notes there will be a need for a substantial skilled workforce to meet its targets. There is a shortage of skills for some of the roles, some of which are also needed for other types of development. A relatively cheap supply of heat might also open up potential for out-of-season food production.
- 10.57 NPF4 notes for ‘Central’ that we need to work together to decarbonise buildings and establish heat networks, with net zero energy solutions including heat networks and improved energy efficiency a ‘Priority’ for the Central area. NPF4 Policy 12 provides that any further Energy from Waste plants must be able to demonstrate that a functional heat network can be created and provided. NPF Policy 19 Heat and Cooling encourages development that supports decarbonised solutions to heat (and cooling) demand. The ‘outcome’ of this policy is that development is connected to expanded heat networks. Policy 19 provides that development proposals within or adjacent to a Heat Network Zone identified in the LDP will only be supported where they are designed and constructed to connect to the existing heat network. The policy also provides that where a heat network is planned but not yet in place, development proposals will only be supported where they are designed and constructed to allow for cost-effective connection at a later date. Major generators of waste or surplus heat will require to produce a Heat and Power Plan to show how the recovered energy will be used.
- 10.58 The LHEES does not mention developer contributions as a potential source of funding for heat networks. It does not indicate where Heat Network Zones might be. It indicates where heat networks are being considered, but at the time of its approval there were no firm plans for the introduction of any of them specifically. Actions for planning in the LHEES are to agree advice on energy efficiency measures that can be provided to owners of properties in Conservation Areas.

Encouraging energy efficient buildings and layouts

- 10.59 Building Standards govern the energy efficiency requirements of home construction and are increasing. Planning can plan housing layouts which shelter or shade buildings so they use less energy or can gain heat from the sun. Although our design policies include encouragement for energy efficient design, this is only one consideration among many. Planning policy could seek a greater emphasis on producing an energy efficient design. This would allow for more of the renewable energy produced on housing sites to be used for appliances within homes rather than heating, so reducing electricity demand overall.
- 10.60 In December 2022, the Minister for Zero Carbon Buildings, Active Travel and Tenants’ Rights confirmed that the Scottish Government will make legislation by December 2024 to deliver “a Scottish equivalent to the Passivhaus standard”. Consultation on proposals is anticipated to be launched in spring/summer 2024, followed by laying of amending regulations by mid December 2024.
- 10.61 There are five key principles underlying the passivhaus standard:
- High-quality insulation

- Heat control and robust windows
- Building airtightness
- Heat recovery and ventilation
- Thermal bridge free design

Low and Zero Carbon Technology in large new housing development

10.62 Section **3F** of the Town and Country Planning (Scotland) Act 1997, as amended through Section 72 of the Climate Change (Scotland) Act 2009 currently requires LDPs to include policies requiring all developments in the local development plan area to be designed so as to ensure that all new buildings avoid a specified and rising proportion of the projected greenhouse gas emissions from their use, calculated on the basis of the approved design and plans for the specific development, through the installation and operation of low and zero carbon generating technologies.

10.63 The current LDP has sought a 15% contribution from this technology as from 2019. There are indications from Scottish Government that they intend to repeal this legislation.

10.64 Planning implications [Planning policy - section 3F: research - gov.scot \(www.gov.scot\)](https://www.gov.scot/research/publications/planning-policy/section-3f-research/summary)

- concerns about the strength of suspensive conditions and the subsequent ability to enforce compliance.
- a need to address the underlying conflict between Planning and Building Standards over the mandatory use of LZCGT.
- the above research recommends that the LZCGT contribution to CO2 emission reductions be defined as a constant and perpetual 12% of the percentage CO2 emission reduction sought through Scottish Building Standard 6.1.

Cooling - Tree and Woodland Strategy

10.65 Tree planting can be used to help make more resilient and adaptive urban environments, including by creating shade, urban cooling, and provision of trees as windbreaks. The forthcoming Tree and Woodland Strategy sets a target for 30% tree canopy coverage in each settlement overall and in those areas of East Lothian in the lowest 30% SIMD areas. This will help provide comfortable urban environments in the predicted increasingly hot summers. Well placed trees and shrubs can also help shelter buildings against cold winds, reducing the need for heating in winter.

10.66 Existing tree canopy coverage is as shown in the chart below.

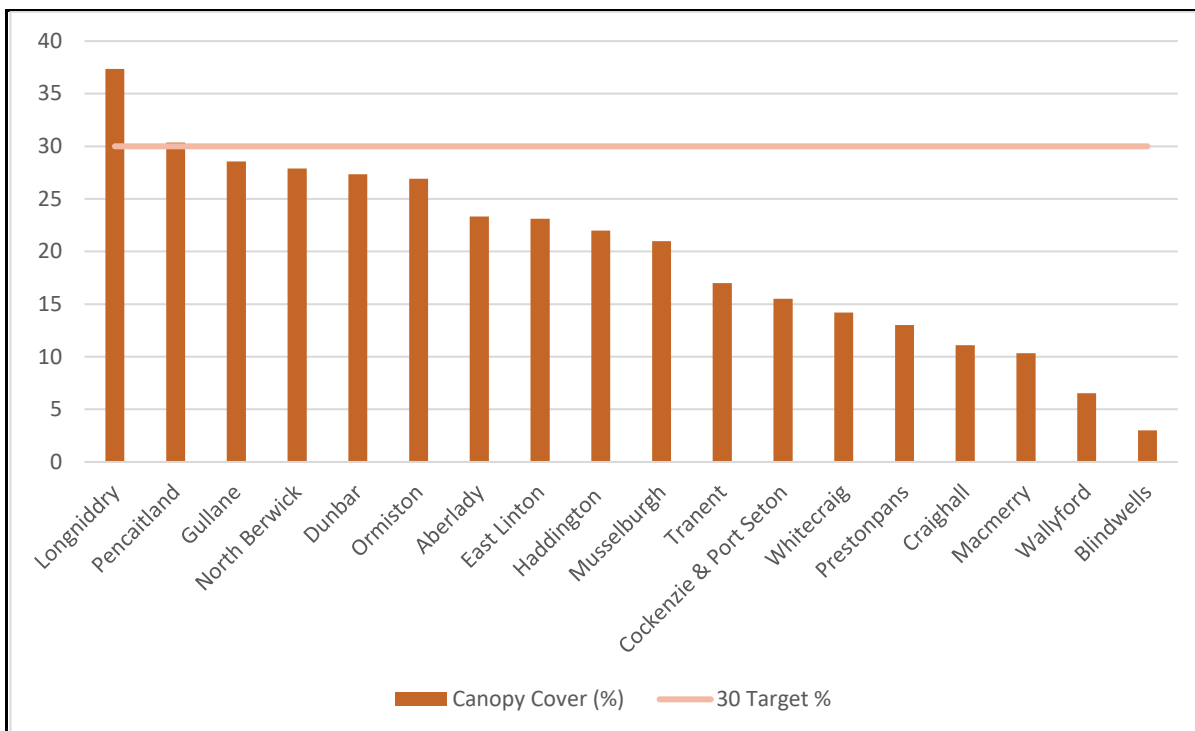


Figure 10.15 Graph of settlement canopy coverage

10.67 For SIMD areas, tree canopy coverage is low in some, especially in Prestonpans and Tranent, which have low tree canopy coverage overall. There may be opportunities for LDP policy to support increased tree canopy coverage through development proposals.

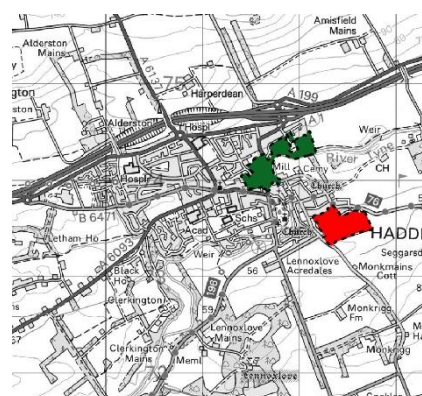
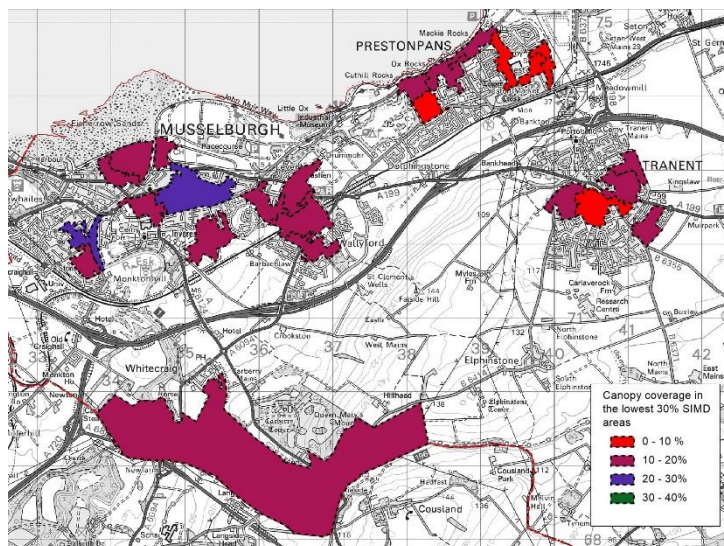


Figure 10.16 Map of canopy coverage in lowest 30% SIMD areas to west of East Lothian, with Haddington inset

SUMMARY OF STAKEHOLDER CONSULTATION

RENEWABLE GENERATION

Events

- 10.68 A comment was made at the Prestonpans event that we should aim towards self-sufficiency in energy. “Land for solar farms, decarbonisation, sustainable energy” was added to a post-it at Prestonpans.
- 10.69 In Haddington a comment was made on employment opportunities with wind and solar in the Lammermuirs. The possibility of hydro power in the hills was also raised at this event.
- 10.70 At Dunbar the future of the Torness site after decommissioning was queried. A comment was made at this event that there are also park power and solar farm opportunities. Ground source heat pump for heating was added to a post-it placed at Newtonlees. A post-it placed at Carberry asked for consideration of how to use the site for renewable energy.
- 10.71 At Musselburgh MECA a post-it said “Decarbonising energy partnership working with Midlothian for heat capture from the waste plant”.
- 10.72 The issue was not raised at the North Berwick, Musselburgh Brunton Hall or Tranent events.

Online Survey

- 10.73 The online survey did not ask directly about renewable energy, but it did ask questions about the focus of the Spatial Strategy. More than one choice could be selected. It also asked about how to address the climate emergency. Addressing climate change, which renewable energy development can contribute to, was one of the top responses of the area of focus for the LDP spatial strategy. The cumulative impact of renewable energy developments was chosen by fewer respondents but was still a concern.
- 10.74 There was also a comment that encouraging renewable energy generation should be a focus.

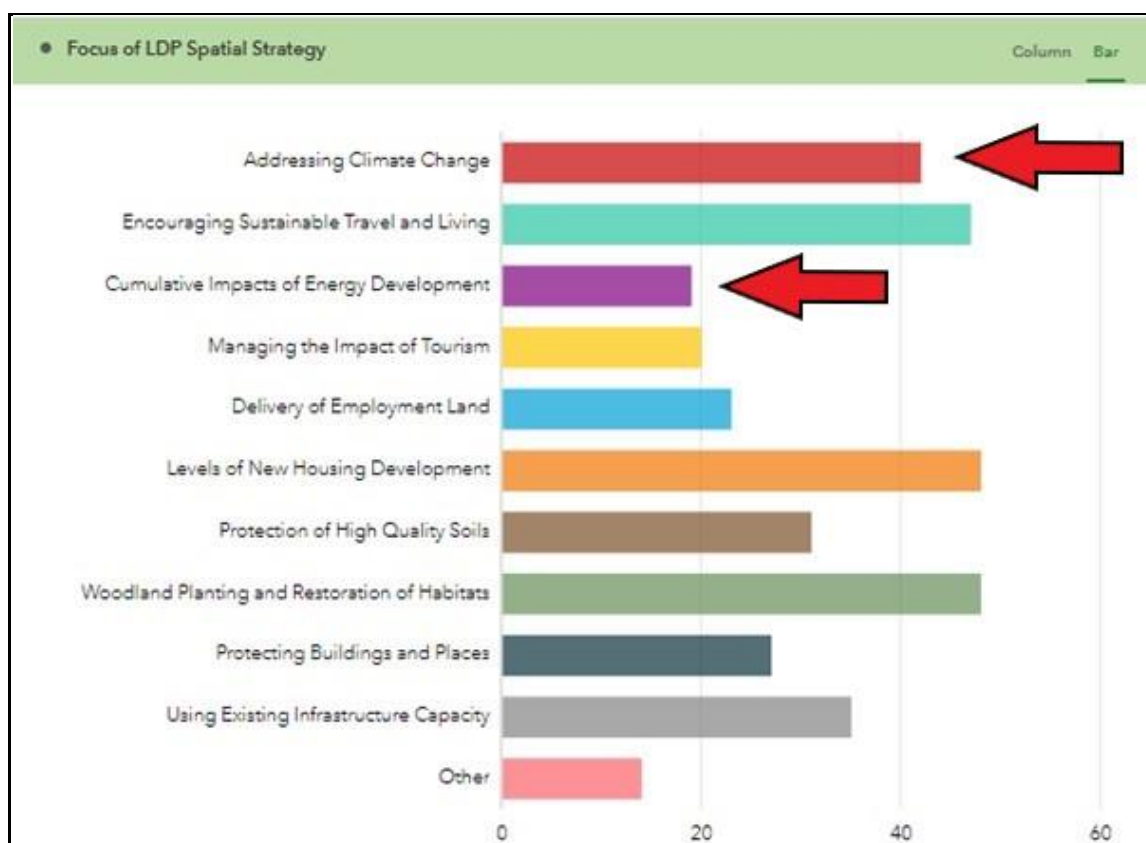


Figure 10.17 Responses to online survey question on what the focus of the Spatial Strategy should be.

- 10.75 The survey asked how the climate emergency should be addressed. Several responses were made in support of renewable energy in general for this reason; increasing uses of solar panels; wind turbines on and off-shore.
- 10.76 For the survey question about what evidence was needed, a comment was made that “Renewable energy is an essential part of our energy plan moving forward it should be supported in all forms in appropriately considered locations.” A call was also made to consider the aesthetic of wind generators. The commenter considered the turbine in front of Dirleton Castle to be an eye sore and did not think it generated much power. A comment identified self sufficiency in energy as a key challenge.
- 10.77 In response to the question about improving energy efficiency in existing buildings, a responder considered that the planning system could be off-putting for those wishing to install solar panels in Conservation Areas: they considered that regulations prioritising conservation over climate issues should be reviewed. Another response on this issue considered that there should be clear guidelines on, for example, heat pumps in relation to the historic environment. A suggestion was made for the Council to install solar panels for lower income households at a reduced rate. Another thought that options for being a hydrogen county should be explored, and that technical advice and subsidy should be given for conversion to solar.
- 10.78 The survey asked what the LDP should do to increase energy performance in new buildings. Responses in terms of the technical solutions that should be pursued relevant to renewable energy generation were PV/solar panels; smart meter installation. In terms of policy, suggestions were for a mandatory requirement for new builds to install solar panels and/ or air source heat pumps.

- 10.79 A response to the online survey considered investment in solar panels and retrofitting older properties should be an area to focus on in the coming 10 years. Another considered incorporating renewable energy development into housing would address the climate and nature crisis.
- 10.80 A comment was made that new (or renewed) applications for renewable energy generation, storage or supply should prioritise community-owned projects or set a minimum level for a community stake. Another comment was that community initiatives to generate energy should be supported.
- 10.81 Comments were also made on the value of features that could be impacted by some renewable energy development. This included the landscape, including dark skies, natural places and biodiversity.

Place Standard

Children and Young people

Primary schools

- 10.82 Consultation with Primary School children was carried out by the East Lothian Play Association. Key findings included the importance to children of access to natural areas, and their concern for nature. In discussing nature, many children talked about the beautiful scenery in East Lothian, and that they enjoy hill walks, the views, sunsets and having space around them. There is a lot of concern about climate change, and crossover with the theme of nature crisis. When asked 'What is special about where you live' the most frequent response made by children related to natural areas. The beaches, woodlands and hills are clearly appreciated by children. Children gave many reasons for enjoying natural areas including the importance for wildlife, fun and relaxation.
- 10.83 Climate change was not raised as a topic in all schools, but where it was, children were reported as being passionate and knowledgeable about alternative energy sources. In discussing climate change, some children called for more charging points for electric cars; which implies a source of electricity to supply them.

"Solar panels can make power from the sun." **Child at St Mary's Primary School**

"I think there should be a lot more wind farms and solar power. It's not good when you collect it from coal under the ground and all the pollution goes up into the world. It makes forest fires, there should definitely be more wind farms and solar panels on houses. The wind farms could be in the hills or out at sea."

Child at Cockenzie Primary School

"Wind farms at sea and solar panels on houses. Train stations, less cars." **Child at Cockenzie Primary School**

"Less oil rigs and should use solar and wind energy instead." **Child at St Mary's Primary School**

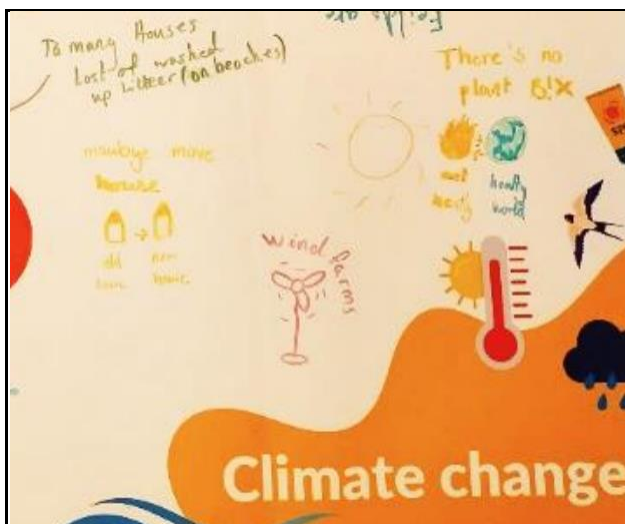


Figure 10.18 Part of a future map of East Lothian, by children at Aberlady Primary School

10.84 The report sums up what is important to children for the next Local Development Plan in section 6.1. This includes more use of solar and wind power, and more electric charging points.

Secondary pupils

10.85 Secondary school engagement was carried out via a questionnaire and discussion of the Place Standard in groups at five of East Lothian's seven secondary schools. One of the questions for secondary school pupils in the questionnaire was about what they would like to see done to help tackle climate change. More green energy was one of the solutions, along with protecting nature and green areas. Comments through the questionnaire included:

"Invest in renewable energy and get them windmills CHURNING"

"My dream East Lothian would have solar power and wind power using the windy and mostly sunny coastline. Hydropower could be a great investment too"

10.86 Through the Place Standard engagement, a key issue was that the young people appreciated the access to nature they had in much of East Lothian.

HEATING AND COOLING

Events

10.87 Few comments were made on heating. "Ground source heat pump for heating" was added to a post-it placed at Newtonlees. Park power opportunities for low carbon energy were mentioned at the Dunbar and Musselburgh events. At the MECA event a Decarbonising Energy Partnership working with Midlothian for heat capture from the waste plant was mentioned.

Online Survey

10.88 A number of suggestions were made in response to the online survey question asking how to address the climate emergency. Heat pumps were suggested. A response asked if district or per block/tenement heating would give the economy of scale needed to take advantage of minewater for heating. The link between poor insulation and inefficient heating and fuel poverty was noted by Cala Homes, who quoted a figure of 89% of all new homes built by Homes for Scotland members being at least an EPC Grade B standard. They noted that increasingly home

builders are embedding zero emissions heating systems and enhanced energy-efficiency measures into their developments.

- 10.89 The online survey asked about how to improve energy efficiency in existing buildings. The difficulties of carrying out sympathetic conservation measures in old or listed buildings was raised in response. . This responder noted they saw a lot that is detrimental to the fabric of buildings and their historic interest and considered that solutions are also only possible for the wealthy. However other responders considered it should be easier to obtain permission for works in older buildings. A response called for a firm set of guidelines for what is acceptable in terms of e.g. heat pumps in relation to Conservation Areas and Listed Buildings, to avoid householders incurring fees for inappropriate schemes. A suggestion was made for the council to install solar panels for lower income households at a reduced rate.
- 10.90 Another response to this question welcomed the council's ideas for district heating scheme to provide hot water for larger settlements, however thought the long term vision might not come soon enough for those wanting to decarbonise now. Another suggestion was to secure a community wealth fund from those who exploit natural resources to support energy efficiency measures, and from the same person, to ensure all new developments have a community energy scheme in place.
- 10.91 The online survey also asked what the LDP should do to increase energy performance in new buildings. Responses in terms of the technical solutions that should be pursued relevant to individual houses were: improved insulation, heat pumps (air and ground source); smart metre installation; underfloor heating should be standard; triple glazing in new builds; battery storage alongside solar panels. Wider scale suggestions were: district heating generally; use waste heat from Viridor to heat houses in Dunbar; take heat from the sea to heat homes in North Berwick; explore tidal power especially in harbours.
- 10.92 It was suggested that to look at Scandinavia and see what they do.
- 10.93 As a matter of policy, suggestions were made to increase both insulation and energy efficient materials. New build standards were variously suggested to be the 'maximum possible', 'A or B classification', 'Passivhaus standard'. Compulsory solar panels and heat pumps were suggested.
- The planning process needs to have requirements on the minimum (and preferred) levels of insulation and energy generation.
 - Ground source heat pumps to be encouraged especially over former mine workings
 - Insist that commercial builders apply the highest standards of insulation etc in buildings, not just statutory minimum.
 - Adopting NPF4 policies and incorporating energy efficiency into the LDPs
 - Stricter laws requiring eco-friendly builds
- 10.94 On layout/location/house types/materials
- Smaller house builds / footprints - many 4+ bedroom homes are under utilised.
 - By not locating any new builds in exposed locations
 - Design standards should be set so that new homes are orientated to benefit as far as possible from passive solar warmth.

- There should be no large windows in north facing walls
- Use sustainable materials only (eg limit concrete/stone, use sustainably produced woods)

10.95 Comments were also made on process/development management issue:

- Speak to developers about their plans
- Stop letting developers get away with it eg only 14% of new housing on Dunbar Golf course are energy efficient; Blindwells 1 is going ahead without the geothermal 'Vision 2010'
- Don't grant planning unless they meet strict energy and environmental standards

10.96 Many housebuilders commented that this is not a matter for the LDP as it is covered by Building Standards and/or addressed in Policy 2 of NPF4. Many considered the continued advancement of energy efficiency improving technology is best fostered by clear national standards rather than a patchwork of individual requirements across different local authorities. A comment was made that by future proofing housing development, issues such as climate change would be addressed and there would be less pressure for local energy development.

Children and Young People

Secondary engagement

10.97 A separate children & young people consultation was carried out and involved a distribution of a short questionnaire to seven state secondary schools in East Lothian. There were a total of 308 respondents containing valid data. The comments highlighted a need to invest in renewable energy and district heating.

"I would like to see district heating, double glazing and better insulation to save wasted energy lost through drafty houses, whilst increasing the living standard and make heating more affordable" **Response to secondary school questionnaire.**

Primary School Engagement

10.98 The key findings of their report noted the importance of protection of natural assets, and concern about climate change.

WHAT THIS MEANS FOR THE PROPOSED PLAN?

10.99 Studies carried out alongside the LDP will need to be flexible enough in their scope, findings and guidance to accommodate any changes to technology over the lifetime of the plan.

Nuclear

10.100 Scottish Government policy and lack of support for nuclear power in NPF4 suggests that the LDP should not plan for a replacement for Torness, but instead for eventual decommissioning of the site. The issue of decommissioning was raised through consultation. A replacement for Torness was not raised through public consultation, though given the number of employees there, and the amount of low carbon electricity that can be produced by nuclear, it is likely there would be some support for this, if it were an option at national level.

RENEWABLE ENERGY

Large scale renewables

- 10.101 NPF4 now accepts impacts from renewable energy developments where the effects are localised. East Lothian's Landscape Capacity Study 2005, and its supplementary study, still contains relevant information as the underlying landscapes mostly have not changed that much although the original study was carried out nearly 20 years ago. The Assessment of Landscape Sensitivity to Renewable Development will update this work and apply it to other forms of renewable energy.
- 10.102 The council has previously aimed to match the scale of wind energy generation to the landscape, with large scale development in the uplands and smaller scale development in the lowland area, where it can be accommodated at all. With a very small number of exceptions this approach has been successful, and this basic approach is likely to remain appropriate. As turbines pass 150m, aviation lighting is needed. This has potential for visual impact on the area, and to change its character in nighttime, and at dusk and dawn. The LDP could explore whether there is a way of avoiding the need for this lighting through alternative solutions.
- 10.103 The key findings that children and young people, as well as adults, value natural spaces should be kept in mind in seeking to develop new renewable energy proposals, which can have a significant impact on such areas. There was also support for renewable energy in general, including wind.

Cumulative Impact

- 10.104 East Lothian is the focus of a great deal of development interest from the energy sector due to its location, geography and historic transmission infrastructure. The LDP needs to consider how cumulative impacts of numerous projects can be managed. The LDP needs to consider the cumulative impact of the finished projects on receptors. It also needs to consider how the process of construction of different projects in the same area, sometimes with overlapping timescales, can be managed.

Domestic and small-scale Renewables

- 10.105 The LDP should consider whether further guidance on renewable energy in relation to the historic environment would be useful. The scope for asking for renewable energy technology to be installed in new development, including housing, beyond building standards requirements could be considered.

HEATING AND COOLING

- 10.106 Energy efficiency measures in both domestic and non-domestic properties are a priority. The LDP should consider how to encourage such measures.
- 10.107 The LDP should consider how to promote energy efficiency measures while protecting the natural and historic environment, and if there is a conflict between these two aims, where the balance lies.
- 10.108 The LDP should reflect the spatial aspects of the proposals coming out of the LHEES, safeguarding areas where necessary and considering any required actions for new development or for contributions to the network. The LDP should consider whether there are any areas that should be designated as Heat Network Zones. It should consider whether there are any areas where plans for heat networks are sufficiently advanced to require development to allow for cost-effective connection, and how to link policy requiring this to the development of schemes under the LHEES.

10.109 If Section 3F, requiring low and zero carbon generating technology in housing development is repealed, this policy will no longer be required in the LDP. If not, consideration will need to be given to the level at which the requirement should be set.

AREAS WHERE THERE IS AGREEMENT OR DISPUTE ON ISSUES AND POSSIBLE APPROACHES.

10.110 No areas of dispute. Agreement on the need for action to address climate issues but a variety of views on the suitability of different energy infrastructures.