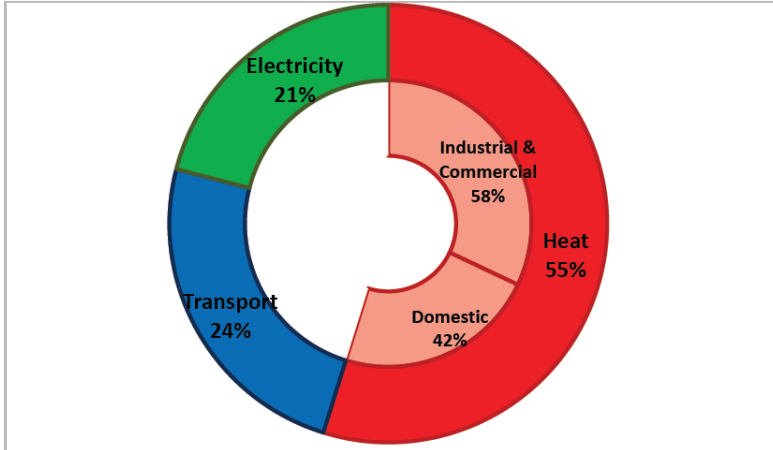


# Planning and Heat

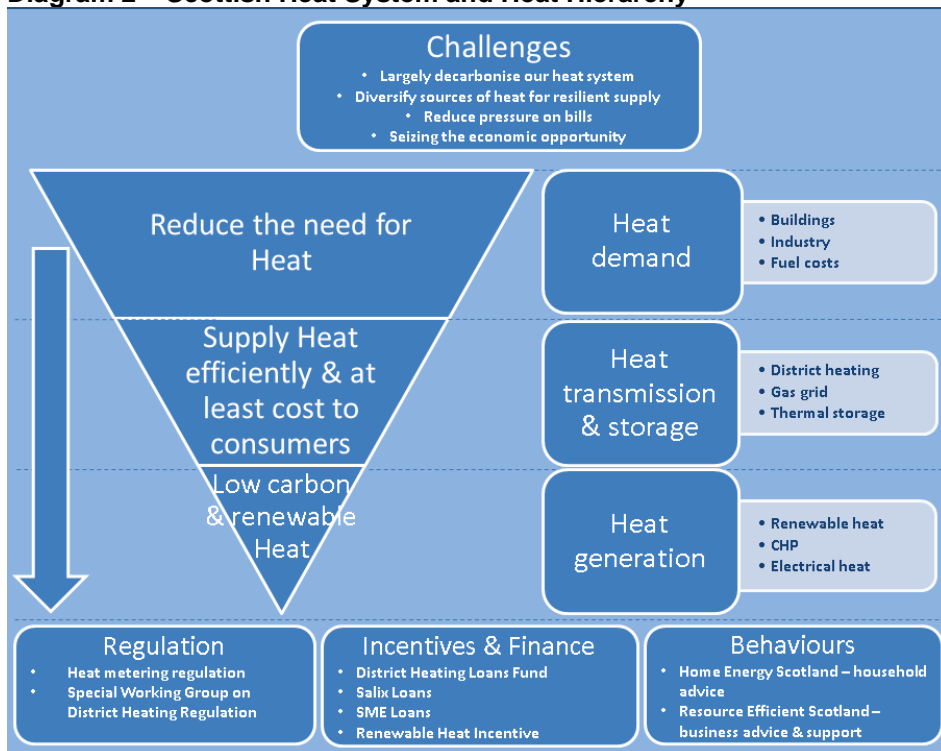
**Snapshot:** Heat is at the core of Scotland’s energy system. It is the biggest element of our energy use (over 55%), and the largest source of our emissions (47%). The Scottish Government is committed to largely decarbonising our energy system by 2050, at an affordable price to consumers through maintaining and developing secure supplies of energy. Our current ambition is to achieve 1.5 TWh of Scotland’s heat demand to be delivered by district or communal heating and to have 40,000 homes connected by 2020.

**Diagram 1: Total final energy consumption in Scotland, 2012**



Sources; 1) DECC, Total Final Energy Consumption Statistics: 2014 2) DECC, Energy Trends: Electricity generation and supply figures for Scotland, Wales, Northern Ireland and England: 2004-13

**Diagram 2 – Scottish Heat System and Heat Hierarchy**



The Scottish Government’s [Heat Policy Statement](#) was published in June 2015. Spatial planning has a key role in supporting the development of combined heat and power and district heating and cooling systems. SPP<sup>1</sup> paragraphs 158-160 set out the requirements for development plans and NPF3<sup>2</sup> Chapter 3: A Low Carbon Place sets out the planning priorities for Heat. SPP clearly states that:

<sup>1</sup> [Scottish Planning Policy](#)  
<sup>2</sup> [Scotland’s Third National Planning Framework](#)

**Local development plans should:**

- use heat mapping to identify the potential for co-locating developments with a high heat demand with sources of heat supply;
- support the development of heat networks in as many locations as possible, even where they are initially reliant on carbon-based fuels if there is potential to convert them to run on renewable or low carbon sources of heat in the future;
- identify where heat networks, heat storage and energy centres exist or would be appropriate and include policies to support their implementation.

**Policies should:**

- support safeguarding of pipe runs within developments for later connection and pipework to the curtilage of development;
- give consideration to the provision of energy centres (a boiler or CHP or a pumping plant with large storage tank) within new development;
- where a district network exists, or is planned, or in areas identified as appropriate for district heating, policies may include a requirement for new development to include infrastructure for connection, providing the option to use heat from the network;
- secure provision for heat storage tank from non-renewable sources if there is potential to switch to renewable sources within the lifetime of the development;
- encourage micro-generation and heat recovery technologies associated with individual properties where heat networks are not viable.

Planning authorities can support the transition to efficient, low carbon and renewable heat, recognising in particular that infrastructure and co-locating supply and demand requirements have spatial as well as policy implications. Using heat mapping can focus on local need; reduce fuel poverty; realise economic opportunity; and provide strategic policy direction. The [Scotland Heat Map](#), launched in 2014, is available to view.

**Suggested Area of Focus for Planning Authorities:**

- support all scales of development associated with the generation and distribution of heat and ensure that efficiency and renewable heat potential is optimised.
- participate in the development and use of heat maps to identify the potential for new and extended heat networks, and develop an indicative spatial plan for heat in the development plan.
- identify short (1-5 years), medium (5-10 years) and potentially longer term (10+ years) opportunities within development plans and action programmes for CHP and district heating and cooling networks.
- consider opportunities for renewable heat sources on brownfield sites and secure integration of heat networks and associated energy centres within multi-functional green networks.

**Strategic Development Plan Authorities:-**

- align visions and spatial strategies to support climate change and renewable energy and heat targets by identifying strategic opportunities for heat efficiency and renewable heat;
- consider identifying key settlements or major growth areas where opportunities may arise for district heating and cooling networks that should be explored further by LDPs;
- align heating and cooling with other policy drivers such as climate change adaptation, delivering a low carbon economy, reducing fuel poverty, green networks and place-making.
- encourage the efficient delivery of heat in all its forms, looking for potential opportunities to link urban networks across broader metropolitan areas, including across local authority boundaries.

**Planners should:-**

- share information with developers (e.g. at pre-application stage) and highlight opportunities to link existing or planned heat networks or sources;
- highlight applications that do not address heat efficiency;
- take account of other policy objectives such as Designing Streets; and
- factor heat map information into the decision-making process.

**Opportunities for Planning Authorities**

<b>Stage in Planning Process</b>	<b>Possible Actions</b>
<b>Monitoring and Evidence Base</b>	<p>Use the Scotland heat map to identify:</p> <ul style="list-style-type: none"> <li>• heat supply and demand opportunities; and</li> <li>• locations with high heat demand or need, such as areas of high heat density, communities off the gas grid, fuel poor areas, and anchor heat load operators such as hospitals and universities.</li> </ul> <p>Explore where there might be other potential areas of high supply, such as harvestable woodlands and sawmills for biomass, distilleries and industrial sites generating surplus heat, heat from the sea and watercourses, <a href="#">geothermal sources</a> and waste streams.</p>
<b>Call for sites and pre-plan site assessment</b>	<ul style="list-style-type: none"> <li>• Require site submissions to provide appropriate levels of supporting information that can allow a reasonable assessment of site potential for heat networks. This could include indicative layouts identifying proposed land uses and identification of building numbers and densities.</li> <li>• Assess potential sites against the heat map for their proximity and potential to link to an existing or proposed heat source or network.</li> <li>• Consider potential viability in delivery of a heat network based upon the proposed mix of land-uses and/or scale of development.</li> </ul>
<b>Main Issues Report</b>	<ul style="list-style-type: none"> <li>• As above, identify spatially those sites/areas that could offer the best opportunities for future heat networks focusing on short term initiatives within the lifetime of the plan, but with a view to supporting any longer term opportunities. Take this into account when identifying preferred and reasonable alternative sites.</li> <li>• Use the heat map to consider spatial policy options that promote energy efficiency, heat distribution and the use of renewable heat sources.</li> <li>• Consider the potential to build efficient heat supply and distribution into new and existing developments, with increasing contributions from renewable sources over time.</li> <li>• Consider directing development proposals to growth corridors, in particular where heat networks can most easily be developed, expanded and maintained, and at densities sufficient to make schemes viable and technically feasible.</li> <li>• Consider allocating sites of a scale and with a mix of uses that could allow district heat networks to be technically feasible and financially viable.</li> <li>• Consider cross-boundary co-ordination including potential need for pipe runs beyond the site.</li> </ul>
<b>Strategic Environmental Assessment</b>	<ul style="list-style-type: none"> <li>• As a district heating strategy is likely to fall within the scope of the Environmental Assessment (Scotland) Act 2005, the likely environmental effects, both positive and negative, should be scoped out as well as being aligned with the Scottish Government's climate change, energy and heat targets.</li> </ul>

	<ul style="list-style-type: none"> <li>• Within the statutory requirements of the 2005 Act it is essential to consider and identify <b>reasonable</b> alternatives to the identified strategy, in order to explore opportunities to avoid or mitigate adverse environmental effects or enhance positive ones.</li> <li>• Scottish Government <a href="#">SEA Guidance</a> is available.</li> </ul>
<b>Spatial Planning</b>	<ul style="list-style-type: none"> <li>• Use the heat map to consider spatial policy options that promote energy efficiency, heat distribution and the use of renewable heat sources;</li> <li>• Identify spatially the opportunities for harnessing low carbon or renewable heat sources;</li> <li>• Map the potential for linking sources of heat with areas of high heat demand or need, identifying areas where there is potential for new district heating networks or an extension to an existing one;</li> <li>• Consider the potential to build efficient heat supply and distribution into new and existing developments, with increasing contributions from renewable sources over time;</li> <li>• Consider allocating sites at a scale and with a mix of uses that could allow district heat networks to be technically feasible and financially viable;</li> <li>• Consider cross-boundary co-ordination including potential need for pipe runs beyond the site;</li> <li>• Identify the potential for extending low carbon or renewable heat infrastructure in regeneration areas as an integral part of masterplanning.</li> <li>• Integrate heat networks and associated energy centres within green networks and other public sector managed assets e.g. schools, hospitals, swimming pools.</li> </ul>
<b>Drafting Development Plan Policy</b>	<ul style="list-style-type: none"> <li>• Develop localised policies that support the development of heat networks and heat derived from efficient, low carbon or renewable sources, considering co-location of heat emitters and heat users.</li> <li>• Develop policies which encourage proposed development to either connect to existing or heat distribution infrastructure or to be designed so they are capable of being connected in the future.</li> </ul>
<b>Supplementary Guidance</b>	<ul style="list-style-type: none"> <li>• Consider providing detailed guidance to support the consideration of heat related proposals, such as locating energy centres to fit with more effective layouts for housing and mixed-use communities, handling noise and pollution control, and designing in heat infrastructure required for district heating such as thermal storage units.</li> </ul>
<b>Development Plans Action Programmes</b>	<ul style="list-style-type: none"> <li>• Consider establishing a working group on heat to include a range of stakeholders, including principal heat providers and anchor heat load representatives. Identify tasks such as progressing heat mapping and initiatives aimed at delivering and extending heat networks, and maintain momentum with stakeholders to realise renewable heat objectives identified in the development plan.</li> </ul>
<b>Pre-Application Stage</b>	<p>Request an energy statement based on the heat hierarchy in support of a planning application. This should show heat from renewable sources or a capability to progress towards this at a future date.</p> <ul style="list-style-type: none"> <li>• Use the heat map to help determine whether connection to an existing heat network, developing a new district heating scheme or an individual property solution is the most suitable option.</li> <li>• Encourage developers to future proof designs where connection to a district heating at a future date is a possibility.</li> </ul>

<p><b>Securing Sufficient Information to Determine Planning Applications</b></p>	<ul style="list-style-type: none"> <li>As above, in order to identify heat options, encourage applicants to submit an energy statement proportionate to the scale of new developments. These may be informed by heat map information and include an assessment of whether an individual property or district heating solution is technically feasible and financially viable. The statement should identify any available sources of heat or other factors such as where land should be safeguarded for future district heating infrastructure. To address any potential conflict of interest for commercial developers local authorities may wish to consider using independent experts to scrutinise figures provided to assist in identifying whether or not a scheme is technically feasible and financially viable.</li> </ul>
<p><b>Determining Planning Applications</b></p>	<p>Consider:-</p> <ul style="list-style-type: none"> <li>whether an individual or district heating solution is more appropriate, taking account of the potential heat sources (geothermal, biomass, energy from waste, modular systems using heat pumps) available;</li> <li>connections to existing or proposed networks;</li> <li>the phasing of larger schemes to deliver benefits towards the transition to renewable sources of heat supply or the growth of the heat network.</li> <li>the potential for integrating with green networks to ease connection at a future date.</li> <li>siting and design in relation to the provision of sufficient space to accommodate an energy centre, visual impact, public safety and amenity considerations;</li> <li>how the development will contribute to the achievement of renewable heat targets.</li> </ul>

## Technical Information

Further detailed [technical information](#) on district heating and cooling technology is available.

## Heat Mapping

Heat mapping is a powerful way to visualise opportunities, to assess who needs heat (demand) and where sources of heat might come from (supply), and how these can be connected in an efficient way to reduce the cost of heat supply and the carbon intensity of heat generation. It can also be used, in combination with other spatial datasets, as a tool to focus on areas of need or priority.

The heat maps allows users to identify where there opportunities for decentralised energy projects across Scotland. More

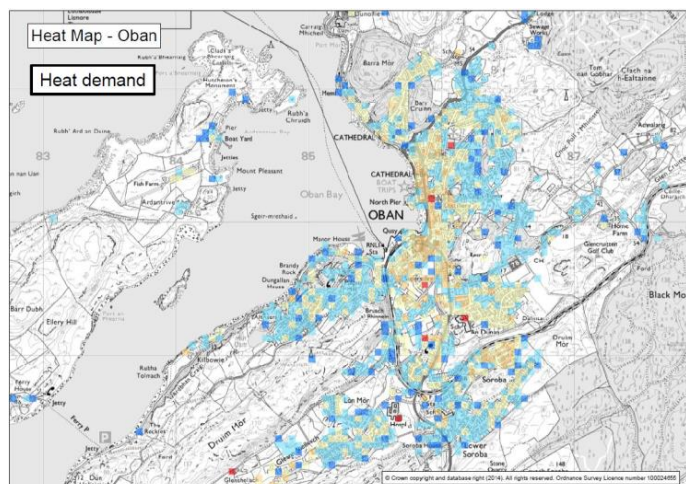
detailed versions of heat maps are held locally by every local authority to aid the

development of local heat plans, policy and projects. It can be used to identify where there are opportunities for heat networks, to assess heat density and proximity to heat sources. The heat map will be updated regularly and will evolve over time.

## Heat Sources

Heat can come from a wide range of sources including low carbon sources such as recovered heat from industrial processes, renewable technologies such as heat pumps (ground, air and water

**Diagram 3 – Example of Heat Map**

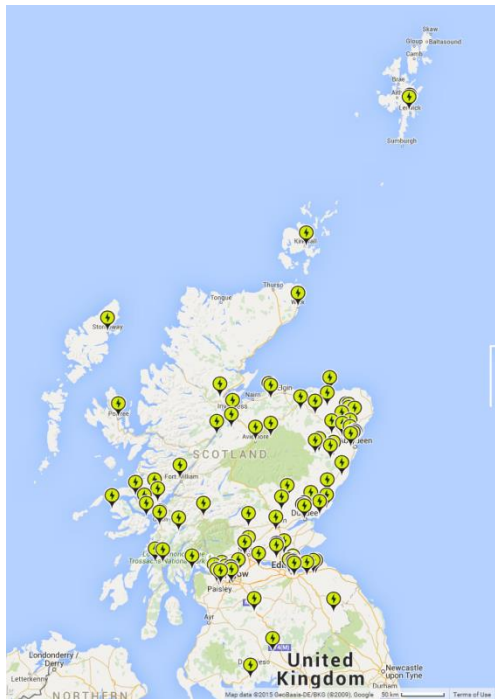


Source: <http://heatmap.scotland.gov.uk/>

source), geothermal, biomass, solar thermal, and hydrogen, from combined heat and power (CHP) using traditional fossil fuels, energy from waste, anaerobic digestion or woodfuel, and from thermal storage heated by renewable technologies such as wind or hydro. There is a range of potential renewable heat sources, some of which are covered in related Scottish Government online advice for: [Woody biomass](#), [Deep geothermal](#), [Energy from waste](#), [Anaerobic Digestion](#)

All [online planning advice notes](#) are available.

**Diagram 4: Examples of Operating District Heating Schemes in Scotland (June 2015):**



**Useful References**

- [Scottish Heat Map](#)
- [The Heat Policy Statement: Towards Decarbonising Heat: Maximising the Opportunities for Scotland](#)
- [The Low Carbon Infrastructure Transition Programme](#)
- [Heat Network Partnership - District Heating Strategy Support](#)
- [District Heating Initiatives – Heat and the City](#)
- [Conserve and Save Energy: Energy Efficiency Action Plan](#)
- [Expert Commission on District Heating](#)
- [Community Energy: Planning, Development & Delivery](#)
- [Community Renewable Energy Toolkit](#)
- [Heat Networks legislation for metering and billing: compliance and guidance](#)

Source: <http://www.districtheatingscotland.com>

**Diagram 5: Example Heat Strategy Spatial Diagram**



Source- Ramboll on behalf of Heat Network Partnership (Diagram is indicative only and not approved for use)