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Evidence base: Checklist 1. Existing Energy Demands and Infrastructure

Checklist questions	Sources of further information/ guidance/ examples
1. What building types (housing/ office/ industry/retail/ and so on) are present and what is their floor area, heating, cooling and power demands? This can be used to build up an existing heat, cooling and power density map.	<p>Other than talking to energy managers and operators of buildings in a local area, this data is not currently readily available.</p> <p>It is theoretically possible for a local authority to map heat densities at post code level using census data and business rates data to assess the number of dwellings and the floor area of different non-residential buildings in a post code area. The heat demands can then be estimated by making assumptions about the heat demand per unit floor area, based on benchmarks for each building type. This approach was used for the Carbon Trust study into the UK Potential for Community Heating with Combined Heat and Power, 2003, carried out by BRE, see www.est.org.uk/download.cfm?p=15&pid=570.</p> <p>Defra has published advice for local authorities who are commissioning heat mapping studies: http://chp.defra.gov.uk/cms/assets/pdf/chp-planners-workshop/Heat-Map-Consultant-briefing-documentdefra-format.pdf.</p>
2. Is there any existing public sector housing stock in line for major refurbishment? Is the housing stock still under local authority management?	Such housing could provide heat load for a new district heating network. If all stock has been transferred, it may still be the case that Housing Associations, or Registered Social Landlords may be planning major refurbishments to meet Decent Homes standards.
3. Are there any existing 'anchor' heat loads – leisure centres, hospitals, prisons, hotels – which could be linked into a district heating network, or are already supplied by CHP?	Discussion with energy managers for buildings concerned. The Combined Heat and Power Association (CHPA, www.chpa.co.uk) may be able to assist with identifying CHP installations in a local area. Similarly, local authority energy managers, Future Energy Yorkshire (www.fey.org.uk), the Regional Energy Forum and groups co-ordinated by Local Government Yorkshire and Humber may be able to provide information on installations. The Future Energy Yorkshire Energy Generation Map shows existing sites with CHP in the region. www.fey.org.uk/site/EnergyServices/EnergyGenerationMap/tabid/151/language/en-GB/Default.aspx
4. What is the location, performance and capacity of existing district heating schemes and block based heating schemes both in the public and private sectors?	Discussion with local authority housing teams, Housing Associations or Registered Social Landlords for social housing. This can be used to establish any energy sources which could be tapped into by new development. The Future Energy Yorkshire Energy Generation Map shows existing sites with CHP in the region (see above).
5. What are the locations, performance and capacity of existing sources of waste heat e.g. from power generation or industrial processes?	<p>Discussion with the operator of the power station/ facility.</p> <p>The Future Energy Yorkshire Energy Generation Map shows existing power stations in the region (see above).</p>
6. What capacity do existing CHP schemes have for supplying additional heat load?	Discussion with the CHP operator.

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Evidence base: Checklist 2. Proposed and Potential Development and Energy Infrastructure

Checklist questions	Sources of further information/ guidance/ examples
1. What are the locations and sizes of areas already identified for development, what types of development are planned (office, retail, industrial, residential), and what are their floor areas, density, and heating, power and cooling demand?	<p>Some information on this would be available from previous allocations in local plans or new Site Specific Allocations, or Area Action Plans. The 2008 Yorkshire and Humber Plan (Regional Spatial Strategy) and the 2009 update also provide information on potential sites for new housing and employment. For some sites, there may be preliminary masterplans – e.g. for Universities or hospital sites, or planning permissions granted.</p> <p>For dwellings, basic estimates of energy loads can be made from assumptions about house type mix and then using SAP/NHER calculations, which are used to assess compliance with Part L of the Building Regulations. For non-dwellings, estimates of energy loads can be made using energy benchmarks available for different building types from a variety of sources, such as CIBSE TM 46: Energy Benchmarks (www.cibse.org/index.cfm?go=publications.view&item=404), CIBSE Guide F: Energy efficiency in Buildings (www.cibse.org/index.cfm?go=publications.view&item=6); the London Renewables Toolkit (www.london.gov.uk/mayor/environment/energy/docs/renewables_toolkit.pdf) and the Carbon Trust Energy Consumption Guides (www.carbontrust.co.uk/publications).</p>
2. Have the various uses identified for new sites been considered in terms of whether their energy demand profiles are complementary, so that any new energy centre, particularly those containing CHP can be operated under optimum conditions?	<p>For example, a useful combination of loads is office developments with residential developments. During the winter, homes generally require heating in the morning and evening whereas offices will require heat during the day. In the summer, offices can also use heat in absorption chillers to meet their cooling needs. A good combination of loads at different times of day and year will ensure a relatively steady year round demand for heat so that CHP plant can be run at full capacity as much as possible. As electricity is generated at the same time as producing heat, this will ensure that the quantity of (local) electricity generated is maximised, which will maximise the CO₂ savings.</p>
3. Could any of the existing block or district-based systems (if any identified from part 1), which are due for refurbishment or replacement be linked into new developments proposed on adjacent sites?	<p>Discussion with operator of system.</p>

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Evidence base: Checklist 2. Proposed and Potential Development and Energy Infrastructure (cont.)

Checklist questions	Sources of further information/ guidance/ examples
4. Can the development of adjacent or nearby sites be programmed in order to facilitate sharing of a single energy centre?	This may involve interim solutions where, for example, a containerised energy centre can be used to provide energy for one part of an area whilst other areas are completed.
5. Are new developments planned adjacent to existing or proposed waste sources of heat that could take advantage of that heat? If not, is there potential for any such areas to be brought forward for development?	
6. What is the ownership and likely timescale of these developments? Is there the potential to set up public-private sector partnerships to help promote sustainable design and renewable or low-carbon energy supply?	An example of a public private partnership could be the formation of an Energy Services Company (ESCo), such as in Woking Borough Council. Areas of local authority or public sector owned land represent an opportunity for setting higher targets because the authority may be prepared to accept a lower land value from developers in exchange for wider social benefits (e.g. use of the Power of Wellbeing provision in the Local Government Act 2000 – this approach was used by the London Borough of Sutton for the BedZed project). Alternatively, the local authority may wish to have a stake in such a venture to reduce its own energy costs and to receive a share of revenues from energy sales.
7. Are the new development If areas on the mains gas network?	<p>the area being considered is one of the New Growth Point areas, there may already have been a study carried out on projected infrastructure requirements.</p> <p>This is significant because a mains gas supply would be required for a gas CHP system. Conversely, if there is no gas supply, this would make the use of renewable sources of heating more cost-effective in comparison to heating with oil, LPG or electricity.</p>
8. Are there any new district heating schemes planned?	

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Evidence base: Checklist 3. Other Constraints and Opportunities

Checklist questions	Sources of further information/ guidance/ examples
CONSTRAINTS	These are set out in detail in the Companion Guide to PPS22, see http://www.communities.gov.uk/publications/planningandbuilding/planningrenewable .
1. Are there any national or international environmental designations in an area, such as: conservation areas, AoNB, SSSI, National Parks, World Heritage Sites, or World Heritage coasts?	This information would be held by the local authority. It can also be downloaded free of charge from the MAGIC website http://www.magic.gov.uk/ . MAGIC is a partnership project involving six government organisations who have responsibilities for rural policy-making and management, and although it has been designed to meet the needs of the partner organisations, the facility is available to anyone over the Internet.
2. What is the capacity of access to new and existing development areas by road, rail or waterway?	This is important to help consider suitability of access for biomass and waste fuel delivery
3. Are there particular landscapes or important views which need to be protected and which may impact on the suitability of large scale renewable installations e.g. wind turbines?	These sensitivities are likely to be defined elsewhere in the LDF.
4. Are there existing developments such as airports or military bases which may impact on the installation of certain renewable energy sources (e.g. wind turbines)?	
OPPORTUNITIES	
1. What is the potential for wind generation in the area? What is the exposure of development areas to unobstructed wind flow?	For sites where there is to be new residential development, analysis would be required to assess whether wind turbines could be sited a sufficient distance away from the new dwellings to meet noise guidelines. The Carbon Trust has published the wind power estimator which allows wind resource and potential turbine output to be estimated for any location in the UK. http://www.carbontrust.co.uk/windpowerestimator/
2. Are there canals, rivers or lakes located adjacent to new development sites which could be used as sources of heat or cooling?	These features could be used by heat pump systems to provide heating and cooling for buildings.
3. Are there sustainable local sources of biomass from current or potential energy crops, (e.g. willow, miscanthus), manures and slurries, forestry and woodland residues, industrial wood waste, parkland and townscape arboreal waste?	The Future Energy Yorkshire Biomass Portal provides information on the biomass resource available in the region, including a map showing location of fuel suppliers and details of the Woodfuel Infrastructure Programme, which has been set up to develop the biomass supply chain in the region www.fey.org.uk/site/WIPBiomass/Support/tabid/314/language/en-GB/Default.aspx Local authorities may their own biomass resource either arboricultural residues (parks, schools, etc) or clean recycled wood waste.