



Department for  
Energy Security  
& Net Zero

# Heat network compatibility guidance for Public Sector Decarbonisation Scheme Phase 4 applicants

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# Introduction

Applicants to Phase 4 of the Public Sector Decarbonisation Scheme (PSDS) are encouraged to consider whether they can connect to a heat network, either now or in the future. Where a heat network connection is not currently possible, but are likely to be developed, applicants are encouraged to make their project heat network compatible to facilitate and reduce costs of a future connection.

This document provides guidance for PSDS Phase 4 applicants on the steps they should consider taking to ensure their buildings are heat network compatible.

## Background

### Heat networks

Heat networks distribute heat or cooling from a central source or sources and deliver it to a variety of different customers such as public buildings, shops, offices, hospitals, universities and homes. In high density urban areas, they are often the lowest cost, low carbon heating option. By supplying multiple buildings, they avoid the need for individual boilers or electric heaters in every building. Heat networks are also uniquely able to use local sources of low carbon heat which would otherwise not be utilised, for example from industrial processes, data centres, or even from rivers.

Heat networks will play a crucial role in decarbonising heat in buildings. Our analysis shows that heat networks could provide about 20% of total heat by 2050. They currently provide about 3%.

### Heat network technical standards

Currently, there is no regulatory requirement for heat networks to meet technical standards. Until such time as technical standards regulation is introduced, whilst not a formal requirement, the design and installation of communal and district heating systems should aim to be in accordance with the voluntary standards in CIBSE's Code of Practice 1 (2020):

<https://www.cibse.org/knowledge-research/knowledge-portal/cp1-heat-networks-code-of-practice-for-the-uk-2020-pdf>

# Heat network compatibility guidance for PSDS Phase 4 applicants

## High-level points

For a PSDS installation to be heat network compatible we would encourage PSDS applicants to consider taking the following steps:

- Adopt a wet heating system with a centralised heating source and distribution system for each building or across all the buildings (also referred to as a communal heat network).
- Install the low carbon heating technology and associated distribution system in a location that is accessible to an appropriately sized incoming and outgoing heat network connection pipe that would enter the building below ground level. Ensure there is sufficient space for future heat network operating equipment (see below).
- Have engaged with the existing heat network operator (where present) to ensure that the technical characteristics of the building's heating system have been designed with a view to future connection of the local heat network (e.g. flow and return temperatures) into the proposed design.
- Have designed a system that enables a transition to the heat network in a manner that avoids building shutdowns or heat outages (e.g. appropriate installation of isolation valves). In the simplest form, this would include a set of equal tees on which the heat network pipework could connect directly, as well as appropriate isolation valves to allow for future isolation of the building heating system from the wider district heat network.

We would advise against the installation of:

- Direct electric or infrared heating systems.
- Refrigerant based (VRF) heat pumps.

## Detailed considerations

To make the transition to a heat network in the future as smooth, cost effective and least disruptive as possible, the PSDS proposal should also consider incorporating the following considerations into their design.

Topic	Detail
General building-level measures	<ul style="list-style-type: none"> <li>- Heat emitters/underfloor heating designed for the temperature of the heat network or lower temperatures in the absence of a heat network operator.</li> <li>- Appropriate level of fabric insulation to ensure that heat from the heat network is used efficiently and enable low return temperatures.</li> <li>- Variable flow pumping systems to help with lower return temperatures (i.e. inverter driven pumps, removal of unnecessary low loss headers, replace 3 port control valves with pressure-independent control valves (PICVs) or equivalent, close any open bypasses).</li> <li>- Other insulation, for example draught proofing or draught lobbies.</li> <li>- Final customer heat meters installed where it will be required by Heat Network (Metering and Billing) Regulations 2014.</li> <li>- Monitoring of building heat load on a half hourly basis so that required heat network connection size can be accurately determined.</li> </ul>
Space for future operating equipment	<ul style="list-style-type: none"> <li>- Heat network connection substation inclusive of:                             <ul style="list-style-type: none"> <li>o heat exchanger.</li> <li>o filtration, valves, pumps and controls.</li> <li>o heat meter.</li> </ul> </li> <li>- This equipment will generally be located within the plant room.</li> </ul>
Planning for future pipework connections	<ul style="list-style-type: none"> <li>- Routes for foundation level sleeved pipe routes into the building / plant room.</li> <li>- Reserved/safeguarded pipe routes to the interface with the building system (heat network substation).</li> <li>- Pre-formed underground service ductwork runs/access points.</li> <li>- Optimisation of existing pipe runs to minimise pipework length.</li> <li>- Insulated internal heat distribution pipework.</li> <li>- Space for risers/lateral pipework.</li> <li>- Any pipework installed ahead of need is adequately maintained.</li> </ul>

<p>Flow/return temperature design</p>	<ul style="list-style-type: none"><li>- Heating system designed to minimise the flow and return temperatures to help ensure efficiency of the wider network is maintained.</li><li>- Use of weather compensation on heating systems to lower average return temperatures.</li><li>- Hot water generation equipment that is designed to achieve low return temperatures.</li><li>- Where the operating temperature of the heat network is lower than the building's needs, space will be needed for equipment to boost the temperature.</li></ul>
<p>Future connection</p>	<ul style="list-style-type: none"><li>- Scope to move efficiently from the existing to new heat provider (e.g. avoiding long-term energy or asset contracts which don't have suitable break or variation clauses to enable cost-effective transfer).</li></ul> <p>Design to minimise disruption to building users/others in the locality.</p>

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