Contracting and Pricing of Heat Supply Agreements (HSA)

1 Physical assets of heat network

The main physical assets of a typical heat network can be categorised as:

- Generation – the assets which produce heat for distribution. This will generally involve development, construction, operation and maintenance of an energy centre. Where the primary heat source to a network is surplus industrial heat (e.g. an energy from waste facility), an energy centre will normally still be required for back-up / top-up heat;
- Distribution – the main heat network infrastructure for the distribution of heat from the energy centre to the end customer(s). This usually requires the installation of a network of pre-insulated pipes, which transfers thermal energy in the form of steam, hot water or chilled liquids from the energy centre to the interface with the customer's heat plant; and
- Supply to customer plant – the installation and operation of a heat interface unit / substation, which serves as the interface to the customer's internal hot water pipe distribution network, and through which thermal energy is transferred from the primary distribution network to the customer building.

2 Types of Heat Supply Agreements

Corresponding with the different commercial models for heat networks, HSAs arise in a variety of settings. There are two main types: a 'bulk HSA' or 'network HSA' regulates supplies between generators and network operators, whereas 'customer HSAs' regulate supplies to end users.

The objectives of the parties to the HSA will vary according to which physical assets they own, where they sit in the contractual chain (i.e. heat generator, network operator, or customer) and their investment criteria.

The main district heating operators have their own standard form agreements. HSAs for domestic customers tend to be relatively short in length. For non-domestic customers and bulk/network HSAs, agreements can be lengthier and more complex, particularly if the customer is a public sector body acting as an anchor load customer for the development of a new network. Service standards for such agreements will be different to those used in domestic HSAs.

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Examples of the different contexts in which HSAs arise include:

- Self-generation / self-supply: an organisation (e.g. a local authority or residential social landlord) owns all the assets, i.e. generation equipment, distribution network, and interfaces to customer buildings. It effectively self-supplies to meet its own heat demand. In this situation an HSA may be a simple internal re-charging arrangement between departments of a local authority, or a template supply agreement between an RSL and individual tenants
- Self-generation / supply to third parties – a single organisation (e.g. a local authority) owns the generation assets and distribution network, and supplies heat to a combination of its own buildings and buildings owned by third parties. For example, a local authority installs a large CHP plant in a leisure centre and supplies excess heat to other authority buildings and neighbouring commercial premises.
- Third party generation / self-supply – in this situation the generation assets and distribution network are under separate ownership, and the network owner supplies its own buildings. For example, a local authority buys waste heat from an energy from waste facility and supplies a number of its buildings through its own distribution network. Here there will be a formal heat supply agreement between the owner of the generation assets and the owner of the network. This is sometimes referred to as a network / bulk HSA. There will also be less formal arrangements for the onward heat supply from the network to the network owner's buildings.
- Third party generation / third party supply – in this scenario, again the generation assets and distribution network are under separate ownership, but in this case the buildings supplied by the network are also under different ownership. There will be multiple different heat supply agreements, which could be structured in different ways:
- Example 1: the heat generator supplies heat to the network operator under a network / bulk HSA, and the network operator sells the heat to end users under ndividual customer HS As.

Example 2: the heat generator contracts directly with end-users for the supply of heat under a customer HSA. Both the end-users and the heat generator pay the network operator connection charges to connect to the network operator's pipe, and a 'use of system' charge to use its pipe to transfer heat from the energy centre to the end users.

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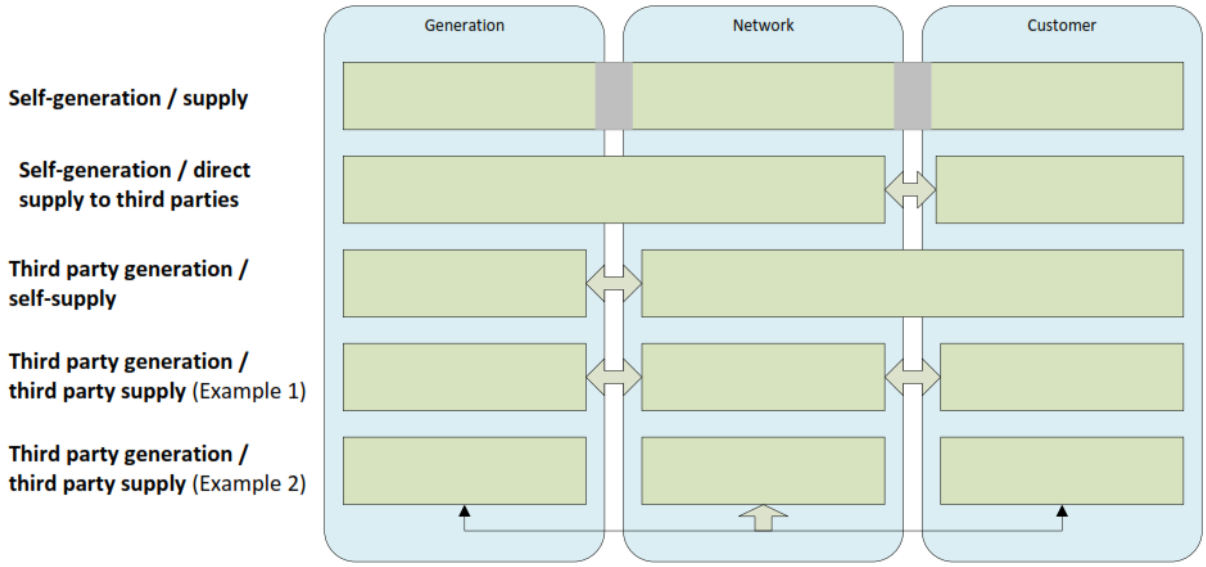
Graph 3 The main supply models



3 Pricing of HSA

A key element of any HSA is transparency around charging arrangements. Heat charges, and the structure of different elements of such charges, depend on a number of factors, and must be carefully modelled on a project-specific basis. This is a specialist area, and financial advice should be taken.

Components to a heat tariff are:

- connection charge – a one-off charge representing the cost of providing a new connection from the network to the customer. In some cases the charge will be modelled on a developer's avoided cost of implementing an alternative heating supply in a new development. Connection charges are sometimes waived or discounted to attract new customers (particularly where the network operator is seeking to secure the required anchor load customers to ensure the scheme is financially viable), or borne by developers as part of the overall utility package for a plot;
- fixed element – an annual fixed amount, similar to a standing charge for other utilities, and typically calculated on a €/day basis per customer type. The charge represents the cost of installing, aintaining and eventually replacing the infrastructure used to bring the heat (and/or cooling) to the customer from the energy centre. The charge is independent of the amount of heat / cooling used by the customer over the year; and
- variable element – a volumetric based charge (in €/MWh) which varies according to the amount of heat consumed by the customer, as recorded by a heat meter.

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There are a number of approaches to structuring tariffs. For example, some suppliers offer a lower price to customers who can deliver a lower return temperature. This optimises the 'delta T', i.e. the difference between flow and return temperatures for the building connection, which helps overall network efficiency. Others may be offered a tiered tariff, with a lower tariff for meeting base load requirements, and a higher tariff for peak load. The key point is that the charging arrangements in an HSA should be transparent and sensitivity tested under a wide range of scenarios.

For bulk / network HSAs and non-domestic HSAs involving anchor load customers, it is possible to be used a guaranteed minimum annual heat off-take. This means that if the customer's demand falls below an agreed minimum, it will still be liable to pay for the minimum amount as if it had used it. The purpose of this is to de-risk the supplier's investment in the energy centre and/or network infrastructure. An investor would otherwise face a level of demand/market risk that it may consider unacceptable. Setting a guaranteed minimum off-take gives the supplier (and its investors) confidence that irrespective of the customer's actual demand in a given year, it will receive sufficient income from the customer to cover its fixed costs (including debt service).

Consideration should also be given as to whether a shortfall payment in one year could be offset by payments in other years in which actual heat supplied had exceeded the guaranteed minimum. This would help to mitigate the customer's risk of having to make shortfall payments.

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