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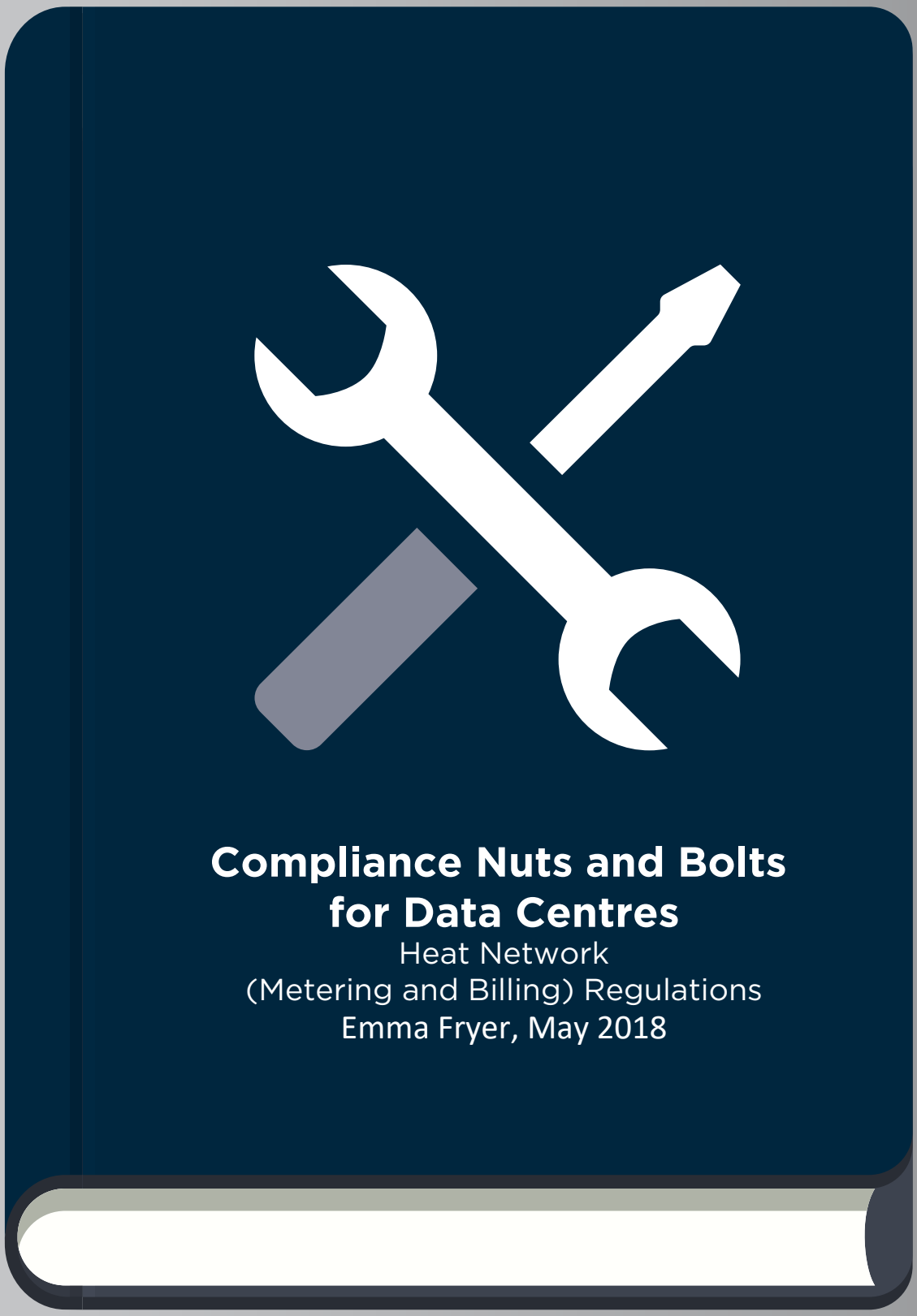


Compliance Nuts and Bolts for Data Centres

Heat Network (Metering and Billing) Regulations

Emma Fryer, May 2018

Context

This regulation was flagged up because it applies to facilities where heat or cooling is provided to third parties. The objective is to ensure that landlords charge only for what they provide so that tenants who improve energy efficiency reap the benefits in terms of lower costs, rather than being charged a flat rate or a proportion based on space occupied. The legislation therefore targets a common split incentive in landlord tenant relationships and encourages energy efficiency. However, it becomes tricky when applied to data centres and applies both to heat and cooling. While the provision of heat to third parties is rare, data centres do provide cooling to their tenants. If cooling is segregated and supplied to at least one end user on a campus or more than one tenant within the same building then the legislation applies and metering may be required, provided that doing so is technically feasible and makes economic sense.

What we did

Operators were concerned about the implications of the legislation and the potential impacts on contractual arrangements if they were obliged to meter and charge for cooling as prescribed. techUK initiated a dialogue with the Department for Business, Energy, Innovation and Skills (BEIS) to explore the requirements in a data centre context. It rapidly became clear that the legislation had not been developed with data centres in mind. Preliminary guidance was prepared with the help of BEIS. A data centre visit was arranged for officials and findings were reviewed at a follow-up workshop.

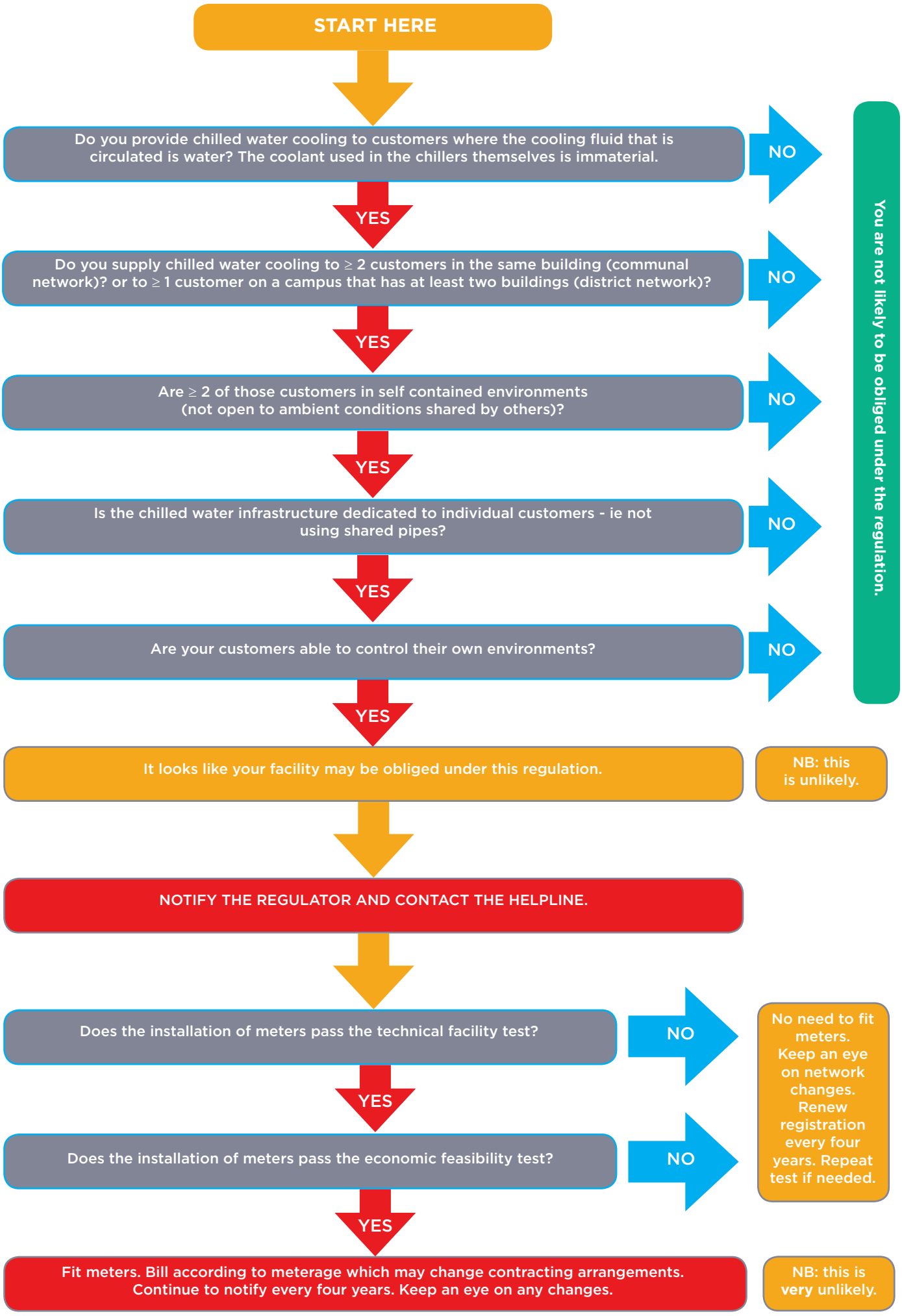
Outcome

There are only limited circumstances where this legislation applies to data centres and very few facilities meet all the criteria (see decision tree below). Even then, it is unlikely that retrofitting meters would be both technically and economically feasible. BEIS takes the view that enforcing the legislation in this context is unlikely to deliver any meaningful policy outcome in terms of behaviour or efficiency. The Department is likely, therefore, to be pragmatic as Regulator because there is little to be gained in terms of energy savings in existing facilities. However, operators in the process of developing new facilities should be mindful of the legislation when configuring cooling supply and when considering how to reuse waste heat.

The following pages explain the legislation and provide a guide to interpretation for operators.

1. Context: Scope, timing, objectives, relevance
2. What you need to do
3. Are you in scope?
4. Potential scenarios
5. What to do next if you ARE in scope
   a. Notification
   b. Installing meters
   c. How do you meter and bill?
6. FAQs
7. Further information: helplines and contacts

Heat Network Decision Tree for Data Centres: Cooling



1. Context

Relevant legislation: Part of EED (Energy Efficiency Directive) Enshrined in UK Law through a Statutory Instrument, the Heat Network (Metering and Billing) Regulations 2014

Came into force: 2014. Organisations in scope should have notified BEIS by 31 December 2015

Policy objective: To address the kind of perverse incentives that stop tenants from improving the efficiency of the building they occupy because the landlord will just bill them on the basis of area occupied rather than what they use. The objective is to give customers of heat or cooling more control, and better incentives, to improve efficiency either through investment or behaviour by ensuring that they are billed for what they use.

Why does it matter to data centre operators? There is a potential compliance issue because the Regulations require companies providing heat **or cooling** to customers[1] or end users within a single building and/or to multiple buildings (e.g. on a campus) to be able to meter that provision and bill it accurately.

How do you know if this affects you? The regulations apply to networks that share heat (or cooling). They identify two types of heat network: multi building networks (district heating or campus heating) and single building networks which they call communal networks. The rules differ slightly for these two. Your facility is in scope if:

A) If you are providing heating (or cooling) to at least one end user/customer either on a campus or externally as district heating. This heat can be generated or waste. The regulations do not apply if the heat/cooling is genuinely free of charge but would apply if the provision were expected as part of a tenancy (whether contractually explicit or not).

OR

B) If you are providing (heating or) cooling[2] to more than one customer within a single building (your data centre).

AND chilled water is being used at the point of cooling (irrespective of what is used by the chillers themselves) i.e. chilled water is the fluid that is being pumped round).

AND those customers are in self contained rooms or units (not cages because these are open to ambient conditions).

1. Customer means the entity paying for the cooling or heating. Heating or cooling provider means the person / entity charging for heat or cooling
2. The regulatory scope also includes the provision of heating to two or more customers within a single building but this is much less likely in a data centre. If for instance two companies rented offices within the data centre building that were heated by waste heat from the facility and this was charged for or expected as part of their tenancy then this could bring the facility into scope. In reality, data centre operators are more likely to be in the business of providing cooling to third parties rather than heat. We will be developing some scenarios to help clarify those sites likely to be in scope.

2. What YOU need to do.

a. Establish whether you are in scope or not.
b. Start with the decision tree (above), read this briefing and have a look at the Heat Network information and guidance: https://www.gov.uk/guidance/heat-networks
c. If you are in scope, notify the Regulator.
d. If you are still struggling, get in touch with the helplines/contacts at the end of this briefing

3. Are you in scope?

Bear the following rules of thumb in mind:

- Don't forget that to be in scope you need to be providing cooling to more than one customer in a single building network or at least one customer in a multi-building network.
- Heat or cooling has to be provided to partitioned areas that are self contained in terms of temperature.
- Organisations with heat or cooling networks sometimes mistakenly think they are in scope. The heat or cooling has to be provided to third parties. If there is no customer involved then you are out of scope.
- If heat or cooling is provided free of charge then the provider is exempt PROVIDED that this is explicit in the contract and the provision of heat or cooling plays no commercial role between the parties (i.e. is not expected as part of the package).
- To know whether you as operator is in scope, you do NOT count the total number of customers, only those customers who are in scope.
- The rules of thumb for data centres may be different in the case of new builds with multiple building networks. In these cases contact the helpline.
- Communal areas do not count because they cannot be allocated by use.

4. Potential scenarios

In discussions with the Regulator, data centre operators outlined a number of likely operational scenarios and examined these in the context of the new regulations. Most of the scenarios are specific to cooling because there are multiple permutations regarding the way cooling is deployed in data centres. The exact configuration is very important in establishing whether this regulation applies or not.

- Two or more customers each occupying enclosed spaces with bespoke cooling where usage can be attributed should be IN scope. The technical and economic tests still have to be passed before the operator is obliged to meter and bill by use but the operator will need to register.

- If an operator has a multi-tenanted room, free range racks or cages then the use of cooling cannot be attributed to individual customers so the operation is OUT of scope.

- If an operator of a single building (i.e. not a campus) has a single tenant in a room with their own infrastructure where cooling use can be directly attributed this is OUT of scope because there are not two or more customers in scope. One or more only applies if there are multiple buildings).

- If an operator has a number of single tenants in their own rooms, but sharing a floor void or end infrastructure, then these are OUT of scope because it is not possible to attribute usage to individual customers.

- If an operator has a single customer in the same building as multiple customers who share end infrastructure, this is likely to be OUT of scope because the usage cannot be attributed meaningfully to individual users, though this will depend on the exact scenario.

- If planning conditions require the provision of waste heat this won't automatically mean you are in scope because those conditions do not define contractual or commercial factors, so you as operator can decide whether you wish to charge or not.

5. What to do if you ARE in scope

If you are in scope then all you need to do for the moment is alert the regulator, but there may be further implications.

a) Notification

- If you are deemed to be in scope then you must notify the regulator. To notify, you fill in the notification template at www.gov.uk/heat-networks and email to heatnotifications@beis.gov.uk

- The notification deadline was December 2015 so you will be notifying retrospectively. The regulator is dealing pragmatically with late compliance provided organisations are not deliberately flouting the rules. So companies seeking to notify retrospectively are unlikely to be penalised unless they refuse to notify, deliberately avoid notification, notify incorrectly[3] or fraudulently.

- Operators in scope must notify every four years from the initial date of notification EVEN if they are not required to install meters (i.e. they are in scope of the regulation but exempt from some of the requirements – this is a bit like other regulations like MCPD, where operators have to register but are usually exempt from fitting abatement).

- If there are changes to the network, operators need to notify the change in the next round. Unlike other compliance schemes there is no requirement to submit a variation to notify changes to the network until the next notification date UNLESS the change involved the creation of a new network. For example a district network that is split into two networks, using another separate energy centre/ boiler. Changes in tenants are unlikely to necessitate notification.

- Although new networks have to be notified, adding to an existing network is NOT viewed as a new network. Data centre campus arrangements may comprise a network of networks where some networks are sublet. The lessees may change. This change would not usually create a new network.

- Changes in technology types do not have to be reported.

- Companies are advised to notify as soon as possible.

3. Govt is not looking to penalise heat suppliers who make honest mistakes in their notifications. All notifications go through a quality assurance process, and the Regulator contacts the heat suppliers to correct information where they suspect a mistake has been made. Enforcement action would likely only be where there is an intention not to comply.

b) Installing meters

- Once you have established that you are in scope and have notified BEIS, you may need to implement metering.
- Operators ONLY have to fit meters if two tests are passed: the Technical Feasibility Test and the Economic Feasibility Test. These tests do what they say on the tin:
  - The Technical feasibility test assesses whether fitting meters is technically feasible (for instance in a data centre if critical systems had to be taken offline to fit meters then this might be deemed technically unfeasible).
  - The Economic Feasibility Test establishes whether the benefit is outweighed by the cost and will most likely be based on the cost of installing and maintaining meters and providing billing for ten years compared to the ten year saving.
- At the moment the Economic Feasibility Test is being reviewed and the final version is yet to be published. The Regulations are due to be updated by mid-2018 and the new economic feasibility tool is likely to be released shortly after this in summer 2018. There will be a consultation on the revised economic viability tool in early 2018.
- Because of the delay you will not be required to install meters until the new guidance is released. Govt is taking a "proportionate approach" in view of the fact that the tool is not yet ready. This just means that they won't penalise operators – yet.
- The important thing to note is that the deadline for installing meters has not yet been decided and will be confirmed after the amended Regulations are in place.
- As a rule of thumb, the newer the facility the more likely it is that meters will be required (e.g. if constructed after December 2014).[4]

c) How do you meter and bill?

- Metering in this context does NOT mean electricity meters but heat (or "coolth") meters.
- Heat meters measure the amount of heat in KWh that is being consumed. Cooling would be measured in a similar way.
- If operators are required to install meters then they MUST then bill according to consumption
- If that involves a change to contractual arrangements then so be it – see the FAQs on the next page.

4. Buildings constructed after this date on district (multi building) networks (and major renovations) require final customer meters be installed, but this does not apply to communal (single building) networks.

6. FAQs

Q1: Sub-Letting: In a leasing model where the data centre operator lets halls to a customer who then services multiple customers of their own. Would there be obligations on the initial customer or would the obligation be just on the operator?

A: *This would depend on who is charging for the provision of the heating/cooling. It is possible for a customer to also be a heat supplier through cascading responsibility. This is elaborated in the Heat Network scope guidance @ www.gov.uk/heat-networks*

Q2: Doing the right thing: There is a concern that operators who are "doing the right thing" and re-using their waste heat could potentially be penalised. The sector is not new to this: DSR is problematic because of compliance issues and CRC discourages the consolidation of computing resource into efficient, purpose-built facilities. It was important that the regulation, when applied, does not punish good behaviour. Will there be a "common sense" test?

A: *The Regulator will take a proportionate approach to enforcement and recognise heat suppliers who are trying to comply. We recommend that heat suppliers contact us if they are unsure of their obligations and want advice relating to their system.*

Q3: Revision of existing contracts and SLAs: Currently operators tend to charge for IT power and then a share of cooling based on that IT load. Changing the charging structure could mean that contracts and SLAs would need to be rewritten. Would this be required?

A: *The Regulations take precedence over contracts, so contracts may need to be rewritten if the Regulations apply.*

Q4: Control vs ownership/SLAs: Operators have SLAs (service level agreements) with customers, whereby they adhere to a temperature range (normally within ASHRAE standards). Although customers may set SLAs they do not have access to temperature controls. The data centre operator controls the ambient temperature within that space. This is done because there may be slight variances on temperature ranges for customers (e.g. one may be 18 – 25˚; another may be 21 – 24˚) so operators need to set the ambient room temperature so that it meets the overall requirement. They benchmark that to give the right range and contingency, to allow for the cycling of units or even maintenance. Moreover, changes in external ambient conditions can affect the disbursement of the heat created by the IT. How could the legislation be applied meaningfully in this context?

A: *The regulation was not designed with this application in mind and the regulator is likely to take a pragmatic approach.*

Q5: Operator access: What happens if customers do not want to be metered and do not agree to give the operator access to fit meters?

A: *This might be deemed to fail the technical test if operators are prevented from fitting meters.*

7. Further information

Heat network helpline and enquiry line

T 020 8943 7272
E heatnotifications@beis.gov.uk
W www.gov.uk/heat-networks
Enquiry System: www.rohs.bis.gov.uk/enquiry.aspx

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