UK Council of Data Centre Operators

tech^{UK}

BEIS Call for Evidence: Helping Businesses improve the way they use energy
- **Comments and feedback on the draft.**
- **Responses to relevant questions**

Note on scope

This input represents the views of UK data centre operators, the energy intensive cohort of businesses within the digital technology sector. This input accompanies techUK's broader response which represents the views of the ICT sector at large.

The UK Data Centre Sector

Data centres store, process, transact and managed digital data. There are over 300 data centres in the UK (excluding server rooms). The UK data centre sector is a real success story, is globally important, underpins a fast-growing internet economy worth £225 Bn and provides the technical infrastructure for financial services, aerospace, transport, healthcare, retail and utilities. There are over 150 commercial data centres in the UK and each new data centre contributes between £397 M and £436 M GVA per year to the UK economy[1]. The contribution of each existing data centre is estimated to lie between £291 M and £320 M.

Summary

techUK is very pleased that Government is seeking input on ways to improve business energy efficiency. We agree that there are still efficiency gains to be made across the economy but knowing they are there and implementing them successfully are very different challenges. Standards and incentives that work in one sector may be ineffective in another. Businesses struggling under regulatory and reporting burdens find themselves diverting resource into compliance processes rather than energy stewardship activities. While energy intensive sectors are strongly incentivised towards efficiency, long payback periods are still a major barrier to implementing larger, long term investments and they find themselves at a competitive disadvantage compared to counterparts elsewhere.

Within the measures discussed, the balance of carrot and stick could be improved to incentivise the right behaviours. Uncertainty regarding the future of the CCA scheme, an important differentiator for the sector, together with its early closure for new entrants, is very disappointing at a time when government should be reinforcing signals of support. The failure to implement the findings of the Helm Review are also causing concern. BEIS has yet to take action to meet its commitment to reduce energy costs for business.

The proposals include some important systemic misconceptions. Demand reduction is confused with energy efficiency – the former is not necessarily the result of the latter – and the assumption that all efficiency improvements can be attributed to policy interventions is inaccurate.   To be correctly targeted and effective, policy must be properly informed. Government should also be candid rather than complacent about policy failures like the CRC, so that lessons can be learned instead of mistakes repeated. We have therefore included comments on the text in addition to addressing the questions relevant to our sector.

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[1] https://digitalrealty.box.com/s/bserfy44rne36jxupnnnirdcbwdcvp7f

Comments on the Consultation.

CHAPTER 2: VISION

2.5 We think that greater international opportunities go beyond construction and associated physical products. There is also opportunity to export systems, services and operational management tools, where the UK already has a successful track record.

2.7 We would welcome more clarity on the modelling and associated assumptions used here.

2.9 We are struggling with the statement *"the government is supporting National Grid's Power Responsive campaign to increase the participation of non-domestic consumers in demand side response"*. This is not the case when applied to our sector. UK data centre facilities share around 2GB of distributed generating capacity but new and existing regulations largely prohibit the sector from participating in demand side response. Government needs to state more candidly that participation in demand side response excludes diesel plant in the interests of air quality. See embedded document.

techUK DCC Com
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2.12 We think the statement that efficient buildings command higher sales and rental premiums is only true under limited circumstances. In our market, price is dependent on location. However, since energy costs are usually passed to customers, efficient operations are more competitive.

2.14 We are concerned that there is implicit confusion between reducing demand and energy efficiency. Lowering energy consumption is not necessarily the result of energy efficiency: the offshoring of industrial processes has contributed to a decline in industrial energy use that is unrelated to efficiency. High energy users may also be extremely efficient. Moreover, energy productivity is more important than energy efficiency. Energy consumption within the data centre sector is increasing slightly year on year but both energy efficiency and energy productivity are improving. In our sector there is also a trade off between energy and resilience. More resilient sites have a higher energy impact, largely through duplication of additional plant and systems and lower occupancy to (to leave larger margins in terms of cooling, and power supply). The current document does not adequately distinguish consumption from efficiency or productivity.

2.16 There is a rather sweeping assumption that energy efficiency improvements are driven by policy. Yes, policy does play a role. The Climate Change Agreement has indeed been effective by shortening ROI for efficiency measures, aligning customer and supplier incentives and improving information sharing but other measures (CCL, CRC, ESOS) are not. Within the broader ICT sector policy is important in levelling playing fields but it has not been the primary driver of efficiency gains. Market forces have driven R&D and technology development much faster than policy measures: as a result the energy required to process a given amount of data has decreased by seven orders of magnitude over the last three decades. While it is unlikely that this trend can continue indefinitely, it is not accurate to attribute energy savings to policy measures alone.

2.18 Again we are uneasy about automatically attributing energy reductions to improvements in efficiency.

2.19: We are struggling to understand the phrase: *"we have identified a potential to deliver a further 10TWh of process savings, with an additional capital cost of up to £3bn, saving up to £1bn in energy bills in 2030"…* Does this mean that a £3bn investment would result in £1bn of savings? In this case we do not understand the business case since it does not deliver a viable ROI.   Secondly, does *"in 2030"* mean "in the year 2030" or "by 2030"?   We would welcome clarification and more information on modelling and assumptions.

CHAPTER 3: BUILDINGS

Within the data centre sector we do not anticipate that business energy use will fall. The sector is growing and we expect to see an incremental increase in power demand over the next decade. There are two main drivers for this:

1. The increase in digitisation and the demand for digital data generated by government policy, by business trends and by social activity. This will drive a net increase in sector energy use, although elsewhere in the economy the consequence of digitisation will be a net reduction in energy consumption.

2. The outsourcing of existing activity to third party providers and the cloud. This is likely to reduce ICT sector energy use because consolidation and virtualisation dramatically improve efficiency.

CHAPTER 4: ENABLING MARKETS

The digital technology sector is already strongly incentivised through market forces to improve efficiency. At the processor end, improvements enable cost reductions and drive productivity and innovation across the entire sector.   Within the data centre sub-sector, the energy intensive nature of data processing provides a strong financial incentive for efficiency.

Please see our generic response on this topic for more detail.

CHAPTER 6: INDUSTRIAL PROCESSES

6.3: Data centres are where the industrial strategy and the digital strategy meet. Unfortunately they were not mentioned in either document.

6.4: This statement is incorrect. The government still presides over some of the highest energy costs in Europe, despite commitments to reduce energy costs for business. BEIS has yet to implement any of the recommendations of the Helm Review or meet its explicit commitment to reduce business energy costs.

The Climate Change Agreement (CCA) stands alone as an effective policy tool due to the combination of carrot (CCL discount and CRC exemption) and stick (buy out costs and reputation). While the CCA has provided welcome, if partial relief, it is now closed to new entrants, a particularly severe blow for a growing sector where investors should be seeing signals of support from government.   In addition, and despite being more energy intensive than many listed sectors, the data centre sector is not classed as an electro intensive industry, another serious omission.

ESOS is widely regarded as costly, burdensome and ineffective when applied to energy intensive organisations. Such businesses are already adequately motivated to reduce energy. Government has also wildly misjudged the compliance costs of these schemes. A poll of our members revealed that they were

allocating from £10,000 to £75,000 to handle ESOS compliance costs, money that could have been invested in efficiency measures.

CRC is widely regarded as a failed policy: in particular it created perverse incentives that penalised outsourcing and consolidation. In principle and practice it was a poor tool.

SECR has increased scope, added compliance burdens and exempted those processes that we know to be the least efficient, and most in need of intervention, in the market. There is significant overlap with ESOS. Some companies are obliged under both, some under one and some under the other. Inclusion of travel is burdensome for businesses, and as yet it is not clear how the energy intensity metric will be applied nor how it will be rendered meaningful.

Data centres may be operated commercially by third party providers as an outsourced service or "in house" by organisations to support their IT function. While the energy consumption and efficiency of commercial data centres is transparent through the Climate Change Agreement, data centre estates that remain in house tend to be under the radar.   Evidence from the EURECA project and from anecdotal reports suggests that small in-house facilities are among the worst performing, especially those within the wider public sector estate. We are therefore disappointed that government has exempted public sector organisations from reporting requirements.   By this single act a major opportunity to identify and address significant energy waste has been lost.

IHRS is welcome but the Heat Networks (Metering and Billing) Regulation imposes burdens on, and therefore presents a disincentive for, companies exporting their waste heat for reuse. Nevertheless we are pleased that data centres have been included in the list of eligible sectors and look forward to working with Government to identify and address barriers to heat reuse.

6.8: Although views were sought, and submitted, on the findings of the Helm Review, we have yet to see any of its recommendations implemented.   We consider the current level of support inadequate. As mentioned above, Government has explicitly stated its intention to reduce energy costs but has not acted on it. With Brexit approaching and UK energy costs, especially the non commodity elements, well above those of competing European markets, Government needs to start sending the right messages to operators and investors. This is escalating into a critical issue for the data centre sector.

Call for Evidence Questions

Questions 4, 5 and 6: We would advise caution when applying building standards to premises that house industrial processes. While we find that standards do improve efficiency, they must be appropriate to the building type. The data centre sector works to a number of standards relating to building operation and design that are primarily aimed at improving efficiency in a highly technical environment. While we encourage development of, and adherence to, such technical standards, we would be cautious that broadening the scope of one-size-fits-all building standards could be counter productive. For example, some processes depend on effective heat rejection. In such cases the better the building envelope is insulated, the less efficient it is.

The sector supports BREEAM and is currently working with BRE to update the standard with respect to data centres.

Questions 9 & 10: We strongly support voluntary standards, which are bespoke and peer reviewed. There is an active standards development programme within the data centre sector, which also uses a wide range of performance metrics, some of which are linked to formal standards. The majority of these standards relate to energy performance in facility design and operation.

We would like to see more standards developed in the end of life / disposal life cycle phase and in technology areas like software. Initiatives are underway and we anticipate that these will follow.

Within the data centre environment, voluntary standards applicable to data centres benefit from being correctly targeted, appropriate, recognised by both customer and supplier, and widely adopted. This is a relatively new sector but we are seeing adoption rates increase.

In terms of performance metrics, similar criteria apply – a good metric should enable a facility to be compared with itself over time, or with another similar facility. It should be relevant and it should not be onerous to measure.

The biggest mistake would be to pursue a "one size fits all" standard or metric to assess data centre performance / energy efficiency – or worse, to consider that an existing metric or standard can be applied thus.

Data centre performance metrics   L6907a.ppt

Question 11: There is a very active energy consultancy sector in the UK but a considerable proportion of this business is generated by the sheer complexity of the energy market and energy contracting in the UK, of duplicative and burdensome regulatory requirements, of multiple government schemes. A whole generation of consultants has emerged because businesses have to contract in specialist help simply to deal with the weight of energy related policy interventions of one type or another. There is nothing efficient or productive about this overlapping set of requirements and SECR does not do nearly enough to rationalise this landscape. Businesses are still reporting the same energy and carbon to multiple authorities, to different deadlines, with different conversion factors. Radical simplification is required so that businesses can concentrate on doing the right things instead of having their resource taken up by the process of compliance. The real role for government is to rationalise the energy landscape so that the role of energy services is focused on helping companies deliver efficiency improvements.

Question 14: We are not familiar with the IPMVP but we tend to find that potential energy savings are often wildly exaggerated by the solution provider. In some cases this is because energy use is overestimated to start with or because there is some unstated condition that must apply for the solution in question to deliver.

Regarding the cost of M&V, data centres tend to be very closely monitored often down to the server level, so energy monitoring is business as usual. We do not foresee that simple monitoring would add significant

cost. However the data centre environment does not permit the installation of any monitoring equipment that disrupts operations.

In principle we would welcome quality assurance schemes covering the energy services market. In our experience the quality of consultancy is very variable. Certain consultants have also adopted unethical approaches to charging – for instance seeking to apply a percentage fee on CCA savings for operators.

Question 15: Data centre operators tend to be energy intensive so are less likely than other sectors to need aggregation services.

Question 17: Yes. The ability to benchmark can be useful but can also be counterproductive. No two businesses or sites are alike and using a single performance metric encourages inappropriate comparison and ultimately, gaming of the metric. The inappropriate use of PUE (power usage effectiveness) within the data centre sector demonstrates that metrics are applied well beyond their intended scope. The results can be misleading. We prefer to see individual sites benchmarked against themselves over time.   See also our other comments on metrics.

Question 18: Within our experience the broad tendency is that the more energy intensive a sector, the more transparent energy use is. Within the data centre sector the larger operators previously reported via the CRC and carbon reporting. Now the Climate Change Agreement provides invaluable data on the whole of the commercial sector in the UK. If the CCA allowed the inclusion of enterprise data centre facilities, then we would have robust, audited data on the entire sector. Moreover, there would be compelling reasons for organisations to outsource the inefficient, distributed IT functions into purpose built facilities and by doing so, deliver significant net energy reductions. We consider this to be a serious omission in UK energy efficiency provisions.

Question 24: Energy Technology List (ETL): In theory data centres present a perfect environment to apply the ETL However, only a minority of operators make use of it.   The scheme is too complex and burdensome, may not include the best performing equipment if suppliers do not have the appetite to apply, and the payback needs to be higher to make a real impact on the longer term investment decisions.

The step change that is needed is not in promotion and awareness but in increasing the allowance to bridge the investment-payback gap. Other ways to make it more compelling include reducing bureaucracy: it really only makes sense for companies buying a few very expensive items or lots of exactly the same thing.

Question 26: ETL needs to be broadened in scope from products to processes. It is far too "widget-focused". Please see our 2016 input on ETL.

techUK ETL
response.pdf

Question 30; Trade bodies: Over 75% of our members are SMEs. As a trade body we have a role in providing advice, access to information sharing and best practice guidance. More recently we have also informally collected feedback on the performance of energy consultants active within the data centre sector. techUK makes extensive use of the energy use dataset provided by the CCA and we publish regular reports setting out sector progress against targets. See the three reports below.

- CCA for Data Centres: First Findings Report:
  http://www.techuk.org/insights/reports/item/2773-climate-change-agreement-for-data-centres
- CCA for Data Centres: Progress Against First Target:
  https://www.techuk.org/images/CCA_First_Target_Report_final.pdf
- CCA for Data Centres: Progress Against Second Target:
  https://www.techuk.org/images/CCA_Second_Target_Report_04.pdf

Contacts

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About the UK Council of Data Centre Operators

techUK's Data Centre Council comprises twenty individual members who represent the full spectrum of business interests and business models across the data centre sector. Members include wholesale and retail colocation providers, cloud and hosting operators and enterprise providers and range from multinationals to SMEs. Some members specialise in the provision of professional services to data centres such as lawyers, surveyors, investors and advisors, some manufacture the IT and communications hardware that occupy these facilities and others represent the data centre supply chain. The Council is a decision-making body providing strategic direction for all techUK's activity relating to data centres. Formal Terms of Reference provide governance for the group.

Comprising senior decision makers, the Council is the single most influential body representing data centres in Europe. The Council is chaired by Andrew Jay, Executive Director at CBRE and the vice chairman is Rob Coupland, MD of Digital Realty EMEA. A list of members, terms of reference, achievements and other Council communications can be found here: https://www.techuk.org/focus/programmes/data-centres/groups/data-centres-council

About techUK

techUK is the trade association representing the digital technology sector in the UK. techUK represents the companies and technologies that are defining today the world that we will live in tomorrow. The tech industry is creating jobs and growth across the UK. In 2015 the internet economy contributed 10% of the UK's GDP. 900 companies are members of techUK. Collectively they employ more than 800,000 people, about half of all tech sector jobs in the UK. These companies range from leading FTSE 100 companies to new innovative start-ups. The majority of our members are small and medium sized businesses. www.techuk.org