

# **BCS, the Chartered Institute for IT Response to DEFRA: Consultation on Saving Energy through better Products & Appliances**

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## **1 Introduction**

### **BCS, the Chartered Institute for IT**

BCS promotes wider social and economic progress through the advancement of information technology science and practice. We bring together industry, academics, practitioners and government to share knowledge, promote new thinking, inform the design of new curricula, shape public policy and inform the public

As the professional membership and accreditation body for IT, we serve over 70,000 members including practitioners, businesses, academics and students, in the UK and internationally. We deliver a range of professional development tools for practitioners and employees.

A leading IT qualification body, we offer a range of widely recognised professional and end-user qualifications.

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## 2. Responses to consultation questions

### 1. *Are the outlined policy measures sufficiently ambitious, too ambitious or not ambitious enough in view of the Government's climate change commitments?*

BCS, the Chartered Institute for IT, believes the policy measures are a step in the right direction but fall short of the changes needed to allow Government to meet its climate change commitments. Government should consider following the example of other countries that have implemented strong demand and supply side incentive programmes in order to meet the climate change targets.

### 2. *Are the outlined policy measures sufficient and appropriate in order to achieve the required reduction in CO<sub>2</sub> emissions from the products included in this document?*

BCS actively supports the use of the EU Code of Conduct for energy efficient Data Centres (EU CoC) as a benchmark. Given the significant levels of Government IT spend per annum we believe its adoption by Government departments and the rest of the public sector would help its promotion across the UK IT and business sectors and greatly assist in the achievement of the required reduction in UK CO<sub>2</sub> emissions. Transformation of the market in these products can be achieved by use of the EU CoC and the new toolkits that have become available to support the best practices it recommends.

We would like to point out that price elasticity as well as policy intervention may affect the expected energy consumption increases, particularly in data centres.

Further reduction of the anticipated increase in energy consumption by data centres can be curtailed by policies that encourage a move away from data centres running with constant mechanical chilling. Data centres do not need close-control air conditioning; it is only those that still include legacy mainframes or archive tape libraries that need air conditioning at all. In those cases the EU CoC is very clear that the legacy equipment should be separately housed, and separately cooled, to avoid having to air condition the entire data centre. Air-cooled equipment for high density applications is likely to be replaced by one of the multitude of direct liquid cooling technologies within the next 24-36 months.

The Institute's view is that there is no growth expected for close-control units given the increasing allowable temperature and humidity tolerance ranges of IT devices, coupled with the drive to provide and control data centre environments across a wider range of temperatures and humidities to maximise power efficiencies.

Most data centres are dominated by a fixed load due to old design and operational practices in the mechanical, electrical, compute, network and storage equipment. This is being addressed for computer equipment by Energy Star and other initiatives including the EU CoC, and in the mechanical / electrical infrastructure by the EU CoC. There has been no useful progress from network equipment vendors and very little from the storage sector. With the advent of on-demand services such as iPlayer and growth in collaboration services in business, the power ratio is rapidly swinging away from computers and towards the network and storage equipment, which is where some real pressure needs to be applied – virtually all network and storage equipment uses >98% of peak power when idle.

The Institute is concerned about the implicit assumption within the policy measures that only 'compute' load is productive load. In many cases it is the storage or networking that is the 'useful work' of the facility. (Consider the BT fibre to the home network data centres, BBC iPlayer or Wikipedia). The compute load is only there to service the storage and networking in these cases. We suggest that this simplistic view of 'useful' and 'overhead' is dangerous and pernicious.

The Institute would question the low prediction for the take up of the Energy Saving Recommended (ESR) Scheme shown in Annex 7, given the experience to date with refrigerators and freezers.

### ***3. Are the projected market impacts of the proposed policy packages shown in the product area annexes set at the right levels?***

HM Government has just launched an ICT strategy. Aligning these policy measures with that strategy will influence vendors, given the Government's purchasing power.

The Government's Green ICT strategy is seeking to create a drive towards re-usability, with greater choices for upgrading devices. However, the impact of this policy is not reflected within the life expectancy periods given.

The desktop policy does not discuss thin client technology. This may have an impact on PC use in non-domestic environments. Home users may also choose to buy in to cloud-hosted computing and use a netbook rather than a laptop. It is the general case that thin clients use less power than the equivalent generation desktop / laptop.

Additionally, the trend towards product consolidation (for example, PC functions on the Xbox or TV screens becoming the internet access point) and electronic book developments cannot be ignored. The predictions fail to address a move towards larger bandwidth (covered within the Government's Digital Britain aspirations). Slimmer clients and mobile applications fuel a convergence with mobile phone technologies. Perhaps we need to move on from laptops/desktops to something like 'usertops' as a term to encompass all these access devices.

Following on from this, we may see a move towards a single domestic/business device, with different Virtual Desktops. DEFRA is already exploring the scope for this with IBM. This will be a step beyond thin clients and would dramatically reduce the number of 'usertop' devices.

Energy Star will be seeking continuous improvements, for example, internal power management, switching off unused drives and ports, also screens when external monitors are in use. Government procurement policies will have a major effect on this, given that they are the largest consumer of IT services in UK.

It is unclear whether the increase in sales of photo printers is included in the domestic assessments.

It does not appear that an account is taken of the move from LCD to LED monitors which we believe will lead to another drop in power consumption, though the trend to purchase larger screens – as they get lighter and of better definition – may balance out the power savings from new technologies.

**4. *Are there any other potential impacts resulting from these proposals, either overall or at a product area level, that should be taken into account?***

The Data Centre strategy does not mention storage. Storage technologies are changing and will continue to do so with some arguing that storage growth can be limited. Storage demand, however, appears to be price elastic. Everything that has been done to decrease the effective cost of storage so far (de-duplication and so on) has increased the rate of demand growth. If SMEs push their ICT needs in to the 'cloud', expensive mini data centres may disappear with massively more efficient main ones taking the load. The heavy use of VDI (Virtual Desktop Infrastructure) will lead to increased power needs within data centres, however it may result in a decrease in power needs overall.

The Institute thinks that the key government policy on CRC will impact UK data centre figures, as companies may choose to move their data centre provisions and data centre providers offshore. We believe that much more work is required here. It is not clear how far the CRC pressure on businesses and data centre operators may lead them to out-source/off-load and off-shore data centre services. This may result in the UK having far fewer data centres than is currently envisaged.

The Institute is concerned about perverse directions on power supply efficiencies. Energy Star is driven by the 80 PLUS standard, it specifies efficiencies in absolute terms and is good for high demand devices. Low demand devices need higher faceplate power ratings in order to achieve the level of efficiency sought. EuP is driving down the 'off' power use of equipment. This is fighting against the current 'will' of Energy Star, which has scrapped an 'off' power requirement in favour of active standby technologies. These technologies have the potential to reduce the significant percentage (40%- 1E report<sup>1</sup>) of UK desktop PCs that are left on 24/7. These two are in conflict, possibly in violation of EU motions taken in the last five years to adopt Energy Star.

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<sup>1</sup> [http://www.1e.com/EnergyCampaign/downloads/PC\\_EnergyReport2009-UK.pdf](http://www.1e.com/EnergyCampaign/downloads/PC_EnergyReport2009-UK.pdf) [last accessed 24/02/10]

**5. *What additional measures would you suggest developing into further product policy, either to 2020 or beyond this, for any of the product areas covered?***

BCS recommends a complete ban in the UK/EU on the sale of battery powered consumer electronic devices where the battery is not user replaceable. We believe owners should not be required to send devices back to a vendor service centre (at a significant proportion of the cost of a new device) for a replacement battery. Neither should the user void their warranty by opening the device to apply a third party replacement. Current practices may increase revenue from consumers but they produce complex and toxic waste that developed nations are not capable of disposing of without significant pollution; batteries are amongst the most toxic components.

BCS would welcome a standard (or set of) input voltages and connectors for DC adaptors to enable people to purchase devices without each needing a separate adaptor. Most people and most desks have a depressing range of individual low voltage DC adaptors which could, and should, be replaced by a single standard. Each adaptor inefficiently delivers a few watts of power to a device for a short service life and is then disposed of with all the environmental impact of manufacture and disposal added to inefficient operation. A standard voltage and connector will enable market competition to deliver more cost and energy efficient, tidier, longer-lived PSUs.

Finally, we suggest that consideration of the marketing practices of printer manufacturers should be included within the policies. Printer manufacturers are guilty of supplying half-full printer cartridges, selling complete printers for less than the cost of cartridges or telling customers that refilled cartridges are in some way inherently flawed, whilst refusing to supply reprocessed cartridges themselves.

**6. *Are there any other market or technological trends or factors that should be taken into account in this overview, or in the product area annexes?***

Annex 11 discusses virtualisation. An increase in uptake of computing demand as a result of the cost efficiencies brought about by server virtualisation or consolidation is expected. This is the Jevons paradox, which can be observed throughout most improvements in efficiency. It is likely, however, as a result of virtualisation or consolidation, that the increased efficiency of computing, and thus increased use will result in carbon savings in other industries and help offset more extreme growth in CO<sub>2</sub> emissions from the data centre market. The Data Centre Specialist Group within the Institute is currently investigating some significant issues with respect to the impact on server power management of current virtualisation technology. Our Data Centre Specialist Group will be pleased to include DEFRA in any useful output.

Generally server technologies are moving in the direction of the EU CoC, even though uptake of participant registrations is slow. More intelligent power management for servers and storage devices will have a positive impact.

No mention is made of the trend towards cloud computing and the impact that this will have upon server numbers. This may not significantly affect energy demand over time, but BCS suggests that DEFRA should acknowledge these trends.

We can see no assessment of the impact of Unified Communications and Conferencing technologies on the ICT footprint trajectories.

**7. *Are the Government Standards presented in a clear and accessible way in this consultation document and annexes?***

**Annex 7 – ICT products**

This annex might benefit from being re-labelled as 'ICT products for users' to distinguish from the existing Annex 11, 'Servers and Data Centres'.

**Annex 11 Servers & Data Centres**

Given current trends, we suggest splitting data centres from server technologies. Data centre air conditioning technology has very little in common with normal air conditioning and is rapidly diverging. Ideally organisations should be encouraged to build data centres without any air conditioning. These areas are addressed by the EU CoC.

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