Greening Government ICT

2017 annual report

August 2018

Contents

Forward

The government set up its Green ICT Delivery Unit (GDU) in 2009 and launched its first Greening Government ICT Strategy in 2011 with a commitment to report transparently. This is the 2017 annual report from the GDU continuing the assessments used in that Strategy for a sixth year and adding new assessments foreseen as the basis for a 2020 Greening Government Technology Strategy currently under development.

Since the original strategy was published there have been major changes in the government's approach to technology and digital services. Digital and Data transformation programmes are bringing with them further reductions in the sustainability impacts of ICT as well as opportunities for using digital technologies to reduce the wider sustainability impacts of government work.

There is a strong central commitment through the central Ways We Work (TW3) programme to ensure that civil servants have the modern tools they need to enable them to work more smartly with each other and with our customers. The Estates Rationalisation programme is requiring the use of the same tools to reduce future demand for expensive office space.

This report shows the progress we are making and provides case studies of how departments are using a wide range of digital services from modern communication and collaboration tools to cloud-sourced data storage.

Government recognises the importance of the sustainability impacts of its digital services and technologies by including compliance with the Greening government ICT Strategy as one of the conditions set in its Government Digital Services (GDS) Technology Code of Practice for all new significant investments by departments in new technologies and digital services.

The Green ICT Delivery Unit (GDU) is a light touch virtual organisation which identifies and shares best practice across all departments, and provides a good example of cross-government collaboration. The GDU also reaches out to the UK ICT industry, through organisations such as TechUK, JISC (Joint Information Services Committee for Higher Education) and the BCS (British Computer Society), working together to identify opportunities and pushing for continuous improvement in reducing the sustainability impacts of digital services and technologies.

In parallel with the Greening government ICT strategy there has been a wider programme to reduce the sustainability impacts of the digital services and technologies we consume through the Greening Government Commitment (GGC) programme. A new 2020 GGC programme has now been adopted by departments seeking to reduce the sustainability

impacts of government work, setting specific targets for reductions in GHG emissions, waste arisings, land fill, and use of paper and water.

It also includes requirements for more sustainable supply chains and procurements, resilience in the face of a changing climate and sustaining of bio-diversity and our natural habitats.

Digital services and technologies have a key role to play in enabling these reductions and the GDU is developing a new 2020 greening government technology strategy to underpin department work towards meeting these commitments.

The GGC 2016/17 Annual report and the 2020 Commitment programme can be found at https://www.gov.uk/government/collections/greening-government-commitments. Readers will need to bear in mind that the GGC programme uses a different reporting methodology and does not cover the same departments in all its assessments.

With assessments being submitted by 15 government organisations, this report shows the continuing commitment of government to using sustainable digital services and technologies. Participating organisations are thanked for the positive commitment and enthusiasm of their GDU representatives without this we would not have achieved the successes highlighted in this report.

John Seglias

Chair of the Green ICT Delivery Unit (GDU)

Chief Technology Officer

Defra

Introduction

During 2016/17 departments continued their journey towards using more sustainable digital services, technologies and best practices, ahead of the new 2020 Greening Government ICT Strategy including:

- The Cabinet Office/Government Digital Service (GDS) Digital by Default and Ways of Working programmes require departments to use new digital tools, channels and services if they are to deliver the changes sought to more sustainable and cost-effective ways of working;

- The GPU Estates programme is seeking a significant reduction in use of expensive office space and a move to regional hubs in which organisations will share office ICT services such as networks, gateways, print and meeting room services including booking, and video conferencing, whilst retaining access to their own organisation digital services.

- The GDS Technology Code of Practice (published August 2016) which sets out the conditions for departments to meet in purchasing digital services and technologies to ensure cost-effective, sustainable, flexible and secure services and technologies. Compliance with the Greening Government ICT Strategy, is included as condition 10 and it is the role of the GDU to provide the guidance and best practices in that Strategy to enable departments to procure services and technologies with minimal sustainability impacts.

This report:

- Conveys the highlights from departments 2016/17 assessments of progress in greening their digital services and technologies.
- Includes the work done by the GDU throughout 2016-17.
- Identifies areas where departments remained challenged in adopting best practices to reduce the sustainability impacts of their technology services.
- Sets out broadly the direction for 2017-18 and the new 2020 Greening Government Technology Strategy.

Assessment of the ICT operational energy footprint

This is the sixth year that the GDU has gathered figures for the IT operational energy footprint. This is the assessment, if not measurement, of the energy taken to run our IT. The GDU again used the tool developed with the Joint Information Systems Committee for Higher Education (JISC).

Key highlights:

- 13 departments refreshed their footprint figures, an increase of 3 from last year.
- The assessment covered an additional 69k staff in comparison to last year.
- Average footprint reduced again from 856kwh/staff to 828kwh/staff.
- Servers showed the greatest reduction of -75kwh/staff, followed by networks -62kwh/staff, telephony -58kwh/staff and Audio-visual -26kwh/staff.
- End use assets showed the largest increases of around 141kwh/staff. Staff figures increased by 16% in comparison to last year, partly as a result of EU Exit and Transformation programmes.
- Returns from a further 1 department carried forward to provide a comparable assessment to last year's.

Chart 1

2016-2017 footprint using published conversion factors for each year

Category	Energy Use (kWh/y)	%	Energy Cost (£/y)	CO_2 emissions (kg/y)	Number of staff covered	Average kWh/y staff	Average £/ staff	Average kg CO_2/ staff
Audio Visual	16,225,815	4.2%	1,573,904	7,499,409	484,835	33	3	15
End User	126,900,037	32.8%	12,309,304	58,651,928	490,835	259	25	119
Imaging	49,337,870	12.7%	4,785,773	22,803,470	484,835	102	10	47
Networks	23,840,322	6.2%	2,312,511	11,018,758	490,835	49	5	22
Servers	161,380,918	41.7%	15,653,949	74,588,646	490,835	329	32	152
Telephony	9,549,539	2.5%	926,305	4,413,701	484,835	20	2	9
TOTAL 2017	387,234,501	100%	37,561,747	178,975,914	487,835	791	77	366
TOTAL 2016	395,774,692	100%	38,390,145	182,923,105	418,338	856	83	396
Change	-8,540,191	0%	-828,398	-3,947,191	69,497	-65	-6	-30

Chart 2

2015/2016 conversion factors to show the actual emission reduction across the two years, rather than a reduction which in part was due to the conversion factor reduction
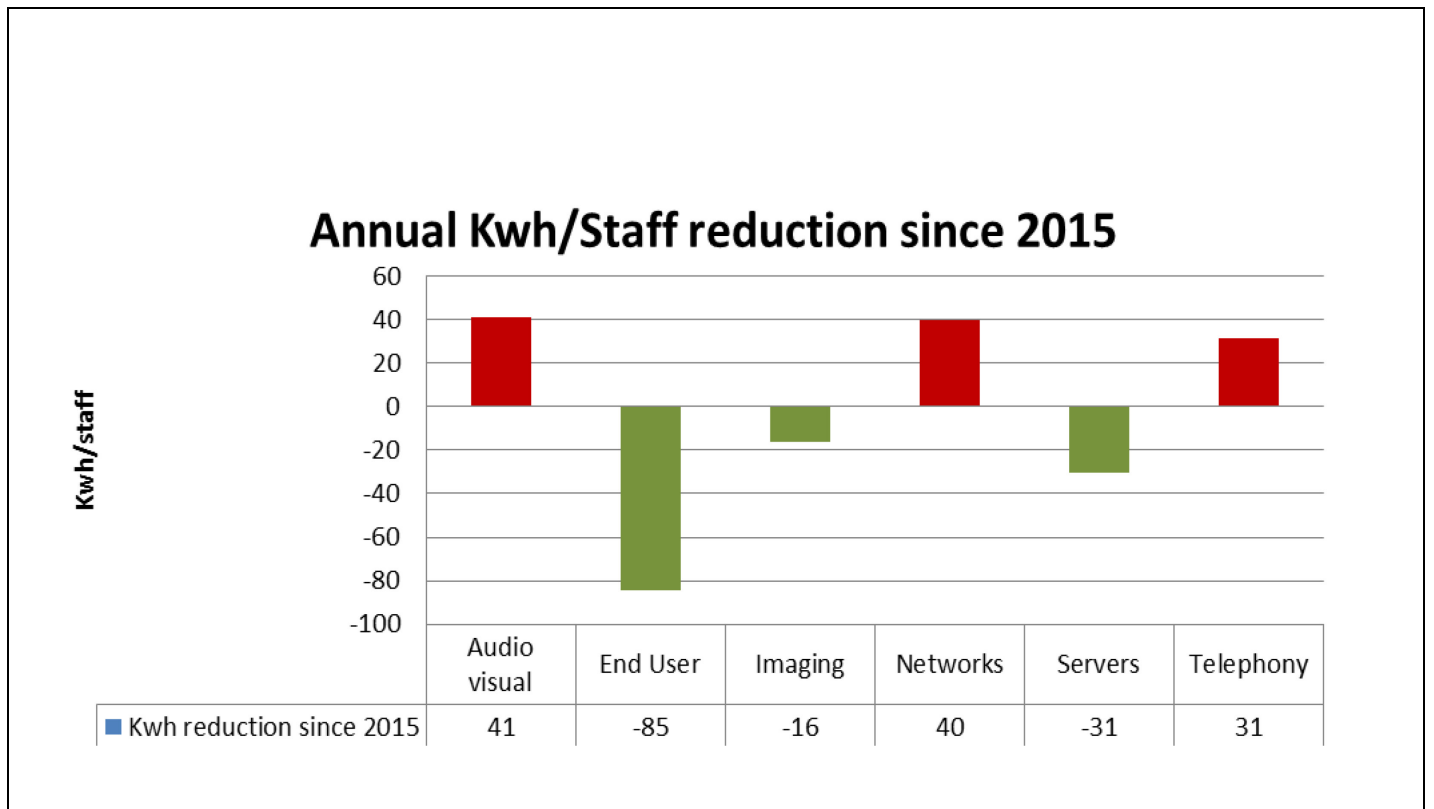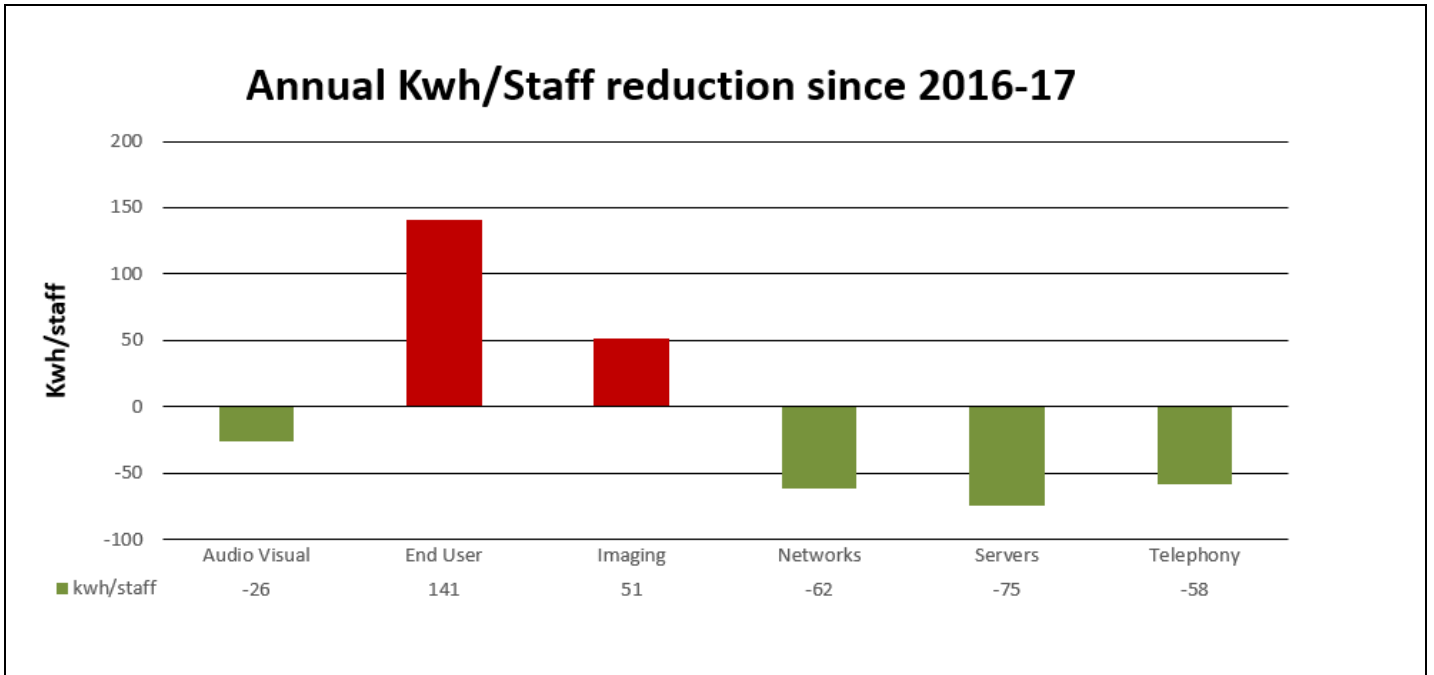
Category	Energy Use (kWh/y)	%	Energy Cost (£/y)	CO_2 emissions (kg/y)	Number of staff covered	Average kWh/y staff	Average £/ staff	Average kg CO_2/ staff
Audio Visual	16,985,046	4.0%	1,647,549	7,850,318	484,835	35	3	16
End User	132,837,891	33.0%	12,885,275	61,396,345	490,835	271	26	125
Imaging	51,646,467	13.0%	5,009,707	23,870,481	484,835	107	10	49
Networks	24,955,849	6.0%	2,420,717	11,534,344	490,835	51	5	23
Servers	168,932,187	42.0%	16,386,422	78,078,768	490,835	344	33	159
Telephony	9,996,377	2.0%	969,649	4,620,225	484,835	21	2	10
TOTAL 2017	405,353,817	100%	39,319,320	187,350,481	487,835	828	80	383
TOTAL 2016	395,774,692	100%	38,390,145	182,923,105	418,338	856	83	396
Change	9,579,125	0%	929,175	4,427,376	69,497	-28	-3	-13

Conversion factors

	2013	2014/15	2015/16	2016/17
Default electricity price (£/KwH) (u)	*0.11*	*0.12*	*0.10*	*0.10*
Default CO_2 emission (kg CO2/kWh) (v)	*0.480*	*0.494*	*0.462*	*0.449*

Chart 3

The following charts shows the change in the footprint for each component using 2015/2016 Factors

Annual Kwh/Staff reduction since 2016-17

	Audio Visual	End User	Imaging	Networks	Servers	Telephony
■ kwh/staff	-26	141	51	-62	-75	-58

Annual Kwh/Staff reduction since 2015

	Audio visual	End User	Imaging	Networks	Servers	Telephony
■ Kwh reduction since 2015	41	-85	-16	40	-31	31

Change in proportion of kwh/staff across each category using 2016 factors
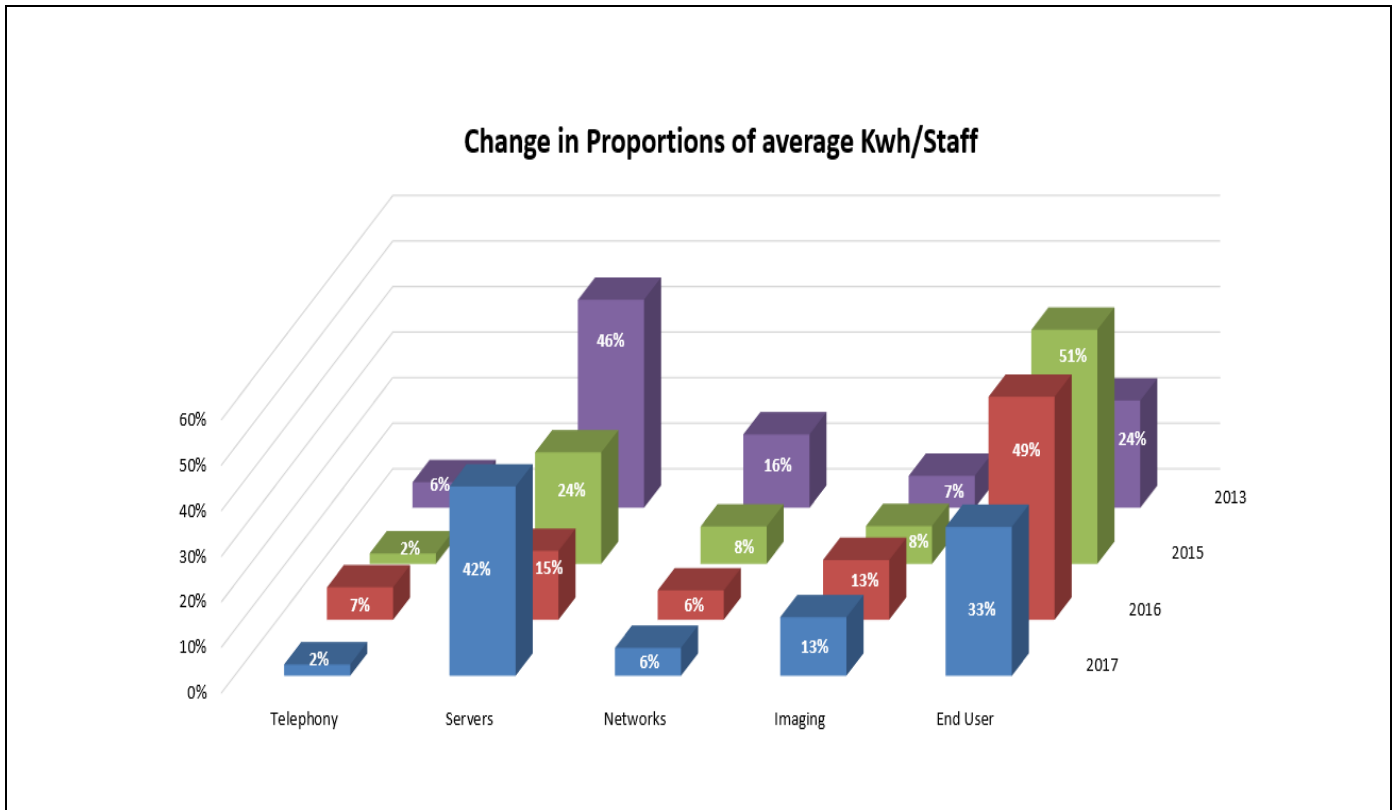
In conclusion

- Despite an increase in submissions, there has been an improvement in operational footprint figures overall
- End use assets saw the largest increase followed by imaging.
- Servers showed the greatest reduction.

Recycling and disposals

Key Highlights

- 6 departments submitted statistics, one less than last year.
- 1.43% to landfill/incineration, -2.53 less than last year.
- Generated £59k income for departments this year.

Chart 4

Summary data for April 2016 to March 2017

	Quantity	Weight (KG)	%
Total Items Collected	47,397	654,165	100%
Items supplied schools /charities under MAR	374	5,904	0.9%
Items for commercial sale	21,247	179,545	27.45%
Subtotal of items re-utilised	21,621	185,449	28.35%
	0.00	0	
Total items for recycling	25,776	468,716	71.65%
Items broken and containing hazardous waste	233	16,278	2.49%
	0.00	0	
Total of items/materials for reclamation	25,543	452,438	69.16%
Total of items/materials for reclamation	22,239	443 087	67.73%
residue of unrecyclable materials for landfill or incineration	3,304	9,351	1.43%
total percentage by weight of materials reused or reclaimed			98.57%
Total Revenue generated through re-marketing/selling of assets in 16-17			£59 252

Adoption of best practices

Departments continue to strive for the most efficient and effective ways of implementing best practices and use of technology across the three sustainability pillars. Best practices have also been widely accepted for benchmarking and represent outcomes of repeated and contextual actions.

Key Highlights

- Returns received from 12 organisations, 3 more than the last year, covering some 460k staff.
- Overall out of 50 best practices, departments have implemented on average 33, an improvement of +8 from last year.

Chart 5

Table higlighting good take up across 🟢 *and areas in progress for 2018/2019* 🟡

Adoption of Best Practices

Energy 73%	🟢	Low power mode adoption. EU Code of Conduct for energy efficient data centres. Enabling home working on-line. In office systems for heating/lighting, hot desking, WIFI, conference room booking and e-conferencing.
Travel 80%	🟢	E-conferencing services. Provision of travel guidance
Print 65%	🟢	Matching deployments to demand. Default driver settings for efficient printing. Assessing refresh of printers to sustain assets. Guiding staff on working without paper. Feedback of print statistics to teams/staff. Digital by default working internally and with customers.

Waste **71%**	🟢	Adoption of waste hierarchy. Sweating asset to end of life. Provision of statistics. Adopting recycling and waste reduction in procurements.
Sustainable Procurement **80%**	🟢	Government / Industry procurement standards. Inclusion of fair staffing arrangements. Avoidance of flood plains.
In Progress	🟡	Guidance/advice/best practice available to support staff working at home. Code of Conduct for Broadband devices. Paper free days. Run competitions between teams/locations to reduce paper consumption. Print denial arrangements. Buying assets that are recyclable. Maximising use of recycled material in new assets. Footprint impacts of travel options. Buy/deploy assets with high percentage of recycled material /components. Supplier support and services for local communities. Build Supplier use of e-conferencing through contract provisions.

Case Studies

Ministry of Justice – Commuter Hubs (Award winning)

| Ministry Of Justice | The MoJ are continuing to open a range of Commuter Hubs. These hubs offer bookable desks that offer staff an alternative work location closer to where they live, with the facilities they expect in their main office. There are currently 46 hubs totalling 353 desks, and some hubs have access to meeting rooms. The MoJ have won several awards for this initiative over the last 3 years, such as joint winner of the innovation category of the Top Employers for Working Families Award. |

Defra - Sampson House Exit Project (SHEP)

| Department for Environment Food and Rural Affairs | A project to move all business applications from Sampson House (a major Defra Data Centre) to the new data center. By January 2017 the data center recorded zero footprint. The project has brought many opportunities that consume less power, promote a more centralised approach with fewer pipes to monitor and promoted avenues to optimisation like transport and maximisation of bandwidth utilisation and performance of the network without straining applications. Five current data centres are being consolidated into two with an anticipated reduction of circa 50% in energy. |

Ministry of Defence - Contracting Purchasing and Finance system (CP&F)

| Ministry Of Defence | A single online end to end procurement system for all MOD procurement activity. All other processes especially paper based systems will be either replaced or subsumed. The Contracting Purchasing and Finance system (CP&F) has made significant paper savings in terms of eliminating paper invoicing through the use of forced e-invoicing unless a formal exemption is agreed. Target reduction of >90%;

There is no longer a need for reconciliation reports between the outsourced Purchased to Payment (P2P) and in-house Finance payment system. This affects all business units in the MOD who would do the reconciliation every month. There will be no more hard copy paper contracts once Release 3 is delivered in April 2018 - all will be held electronically. |

Looking forward

For the future the GDU will continue to support departments in improving the sustainability of their technology. As well as sharing assessments and case studies, the group will continue to meet three times during the year and will develop a new greening government technology strategy for 2020 to support central government programmes and give clear guidance to departments on how to reduce the sustainability impacts of their digital services and technologies

With an expanding range of technology and innovative solutions available on the marketplace, large, long term SI contracts are not so attractive to departments. Recognising this move to standardised services the GDU will concentrate engagement with CCS to deliver more sustainable ICT services through catalogue frameworks.

With the efficiency agenda impacting the whole public sector the GDU needs to expand its remit to provide all government departments and arm's length bodies to reduce their sustainability impacts and improve efficiency through the use of digital and ICT services. It will look to pass on its skills and experience to help staff improve their awareness of the sustainability and efficiency opportunities, as we move from legacy on premise infrastructure to the cloud.

Participating departments

We thank government officials that provided important insight and endorsed the report, in particular

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