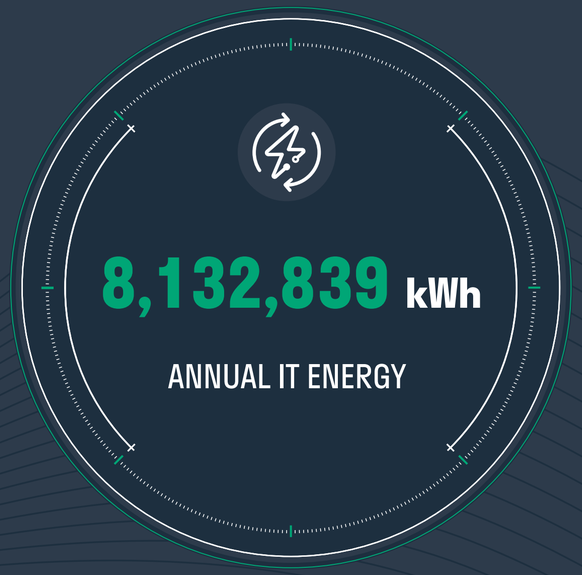
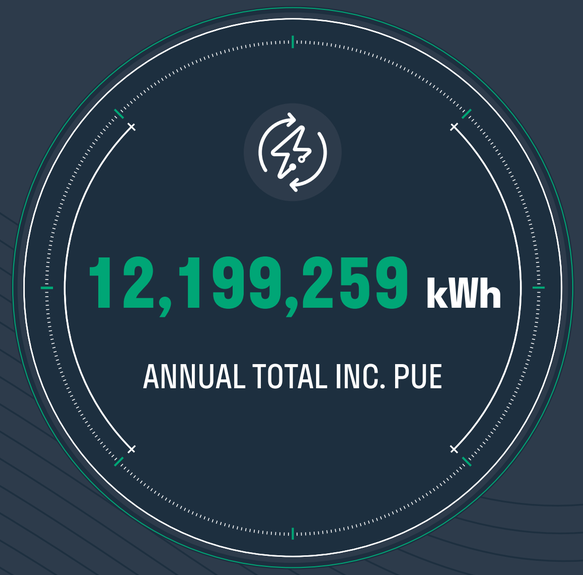
SECTOR

Financial Case Study

Dashboard

LOCATION:	TOTAL SERVERS :	SERVER CONFIGS:	UTILISATION:	NETWORK:	STORAGE:	PUE:
UK (North)	**2227**	**80**	**40%**	**20%**	**10%**	**1.5**





ANNUAL SCOPE 2

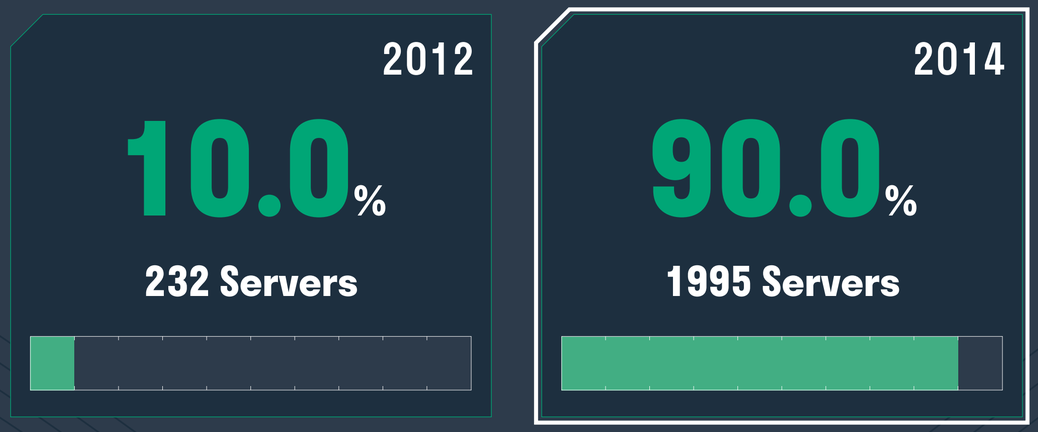
2,586,243 KG CO_2e

ANNUALISED EMBODIED EMISSIONS

460,271 KG CO_2e

Note: Scope 3 will be annualised and for 2022/23 include up to 2014 (based on 6 year product life)

Percentage of estate by age



Grading

GRADE **A**

103 SERVERS

5.0%

GRADE **B**

906 SERVERS

41.0%

GRADE **C**

59 SERVERS

3.0%

GRADE **D**

927 SERVERS

42.0%

GRADE **E**

27 SERVERS

1.0%

GRADE **F**

205 SERVERS

9.0%

Key Metrics

ESTIMATED ANNUAL IT ENERGY CONSUMPTION:
8,132,839 kWh

PUE: **1.5**

CUE: **0.32**

DCIC: **65%**

ITEU: **40%**

ESTIMATED ANNUAL M&E ENERGY CONSUMPTION:
4,066,420 kWh

ESTIMATED ANNUAL SCOPE 2 EMISSIONS:
2,586,243 kg of Co_2e

ITEE: **7,796 ssj_ops/watt**
GRADE C

OVERALL ANNUAL ENERGY CONSUMPTION:
12,199,259 kWh

ESTIMATED ANNUAL EMBODIED EMISSIONS:
460,271 kg of Co_2e

WATER USED TO PRODUCE ELECTRICITY:
13,395 m^3

Project 1

BIOS

BIOS is the fundamental firmware of a computer, when it comes to power consumption it controls how the server responds to workloads. The BIOS controls the power and performance of the CPU by controlling its frequency and voltages, as well as power limits and cooling. Configuring the BIOS for efficiency allows the server to take full advantage of the hardware features to optimise the computer's operation.

The older generations in your estate (2012-2015) offer the biggest gains with no downsides, where maximum performance uses significantly more power without any improvement in workload performance. We have excluded Blades from this analysis but this still leaves over 1425 servers available for this change (60% of estate).

Change your BIOS setting from performance to Balanced. This will maximise efficiency, with Dell PowerEdge Servers this is called DAPC. HPE ProLiant's have a Balanced Performance Power Profile.

At idle a server can use 50% less power in an efficient configuration than in a max performance one. This difference decreases as utilisation increases, so at 40% utilisation the saving is 22-30% versus performance mode. With no impact on performance.

Outcome:
Identify all servers with CPU utilisation averages below 60% from the 1425 low risk configurations. Ensure they are set in a balanced BIOS. This will save between 18-50% on each servers energy usage.

If these servers are in performance mode, the reduction will be from 2.2 – 3.1 million kWh annually and over 600 metric tonnes of Co2e. This would have a cost saving of circa £400,000 - £660,000 each year.

Project 2

End of life decommission. The servers for analysis were due to be decommissioned and replaced over the next 12 months.

These could be replaced with 406 PowerEdge R7625 Servers at the same average utilisation of 40%

This would lead to an 78% reduction in Energy and Carbon or saving of over 38 million kWh and 8 thousand Metric Tonnes of Co2e.

Saving, at todays energy prices, £6.1 Million pounds.