Screen Brightness Eco Quality Improvement Project

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INTRODUCTION

NBT aims to be net zero by 2030.

- 90 000 tonnes of CO2 was produced in 2022–23 by NBT [1]

Computer screen usage is essential to clinical and non-clinical work and is thus a major energy drain [1].

Hypothesis

- Reduction in screen brightness would be a scalable method of reducing energy and financial costs.

METHODOLOGY

Time frame

Data were collected at Southmead Hospital Gate on wards 28a and 28b between January and March 2025.

Intervention and measurement

1. **Baseline:** For each computer type on both wards, screen brightness (%) and energy consumption (kWh) were recorded over a 12-hour period using an LCD energy monitor.
2. **Intervention:** Screen brightness was reduced to 40% on each device.
3. **Follow-up:** Energy consumption was remeasured over the same 12-hour period.

Design

- ≥1 of each computer type was sampled on each ward and results extrapolated to the total number of computers.
- The reduced kWh measurement informed energy, CO2 and cost savings.
- Results were extrapolated to estimate annual / trust-wide savings.
- Staff were surveyed regarding screen brightness use.

Average emissions/tariffs from NBT

- Electricity 0.20705 kgCO2e/kWh
- Electricity £0.22/kWh

RESULTS

Ward-level results*

Ward	Median baseline brightness (%)	Total baseline energy per day (kWh)	Total energy per day at 40% (kWh)	Energy saved in 1 day [1 year] (kWh)	CO2 saved in 1 day [1 year] ($kgCO_2e/kWh$)	Money saved in 1 day [1 year] (£)
28a	80	3.9552	3.0432	0.912 [332.9]	0.189 [68.9]	0.20 [73.2]
28b	70	3.7464	2.6184	1.128 [411.7]	0.233 [85.2]	0.25 [90.6]
Total	80	7.7016	5.6616	2.040 [744.6]	0.422 [154.1]	0.45 [163.8]

9 computers on both wards.

Data on 12 screens, remaining 6 assumed data.

Median values extrapolated for all 23 wards.

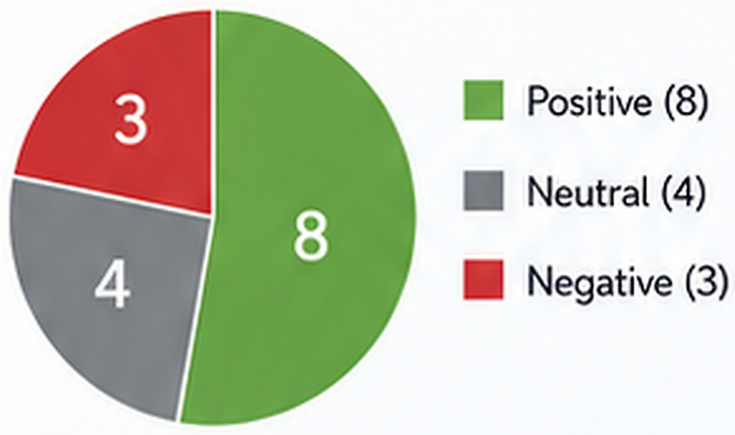
Trust-wide summary (all 23 wards)*

	In 1 day	In 1 year
Energy saved (kWh)	27.293	9961.872
CO2 saved ($kgCO_2e/kWh$)	5.6510	2062.6
Money saved (£)	6	2191

*Green–Pink Zone columns, excludes ED/ITU/Theatres/SDEC

SURVEY RESULTS

n=15 surveyed



6 had ocular symptoms from screens e.g. strain, dryness, pain

DISCUSSION

Savings are possible but small in the context of NBT emissions. More aggressive strategies are needed. Longitudinal data are needed to truly assess savings. Further studies could explore sub-40% reductions, and idle screen usage.

LIMITATIONS

Small sample size, two-ward setting, incomplete screen measurements, short follow-up, and reliance on extrapolated annual savings limit the generalisability and accuracy of the findings. Differences in screen use and reported ocular symptoms may also affect implementation.

CONCLUSION / KEY TAKEAWAY

Reducing screen brightness to 40% appears feasible and can produce modest energy, CO2, and cost savings.

Impact is limited in the context of NBT emissions; further research and more aggressive strategies are required to achieve greater savings.

Small changes today can contribute to a more sustainable healthcare tomorrow.