

Sustainability benefits of Google ChromeOS for Digital Signage

A comparison of the environmental and economic impacts of using ChromeOS devices and ChromeOS Flex as alternatives to Windows for digital signage.

SUMMARY

Whether informative visual displays or interactive kiosks, digital signage is common in business, public sector, education and retail sectors. The content displayed on the screens is often delivered to them via small form-factor, networked desktop devices.

Selecting a desktop device with the lowest power consumption will reduce utility costs and scope 2 GHG emissions, so independent specialists Px3 undertook a study to compare the impact of using Chromeboxes, Windows 11 Intel NUC devices and NUC devices converted to use ChromeOS Flex.

What were the Key Findings?

ENERGY & GHG EMISSIONS SAVINGS

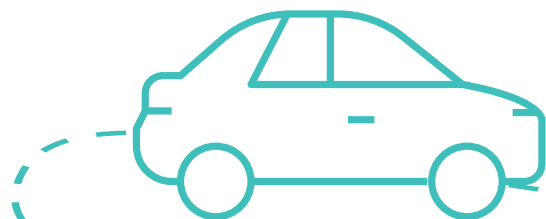
The Windows 11 NUC micro form factor desktop computer **consumed significantly more electricity than the Chromebox when operating digital signage - 39% more in a business/education and 42% more retail environment.**

When the device was converted to run the ChromeOS Flex operating system the difference was still significant – **In the Windows 11 configuration it 16% more in a business/education and 21% more retail environment**, indicating that the operating system and device design and components have important impacts.

Calculating the impact of one hundred devices over five years **indicates a saving in the retail use case of 1,052 kgCO₂e for Chromeboxes and 727 kgCO₂e for the use of ChromeOS Flex.**

Conversion to ChromeOS Flex also enables the lifespan of devices to be extended, reducing the annualised supply chain emissions. Extending the lifespan of the hundred devices by three years would typically abate a total of 4,200 kgCO₂e -

equivalent to preventing emissions caused by driving a petrol car for over 15,295 miles.



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COST SAVINGS

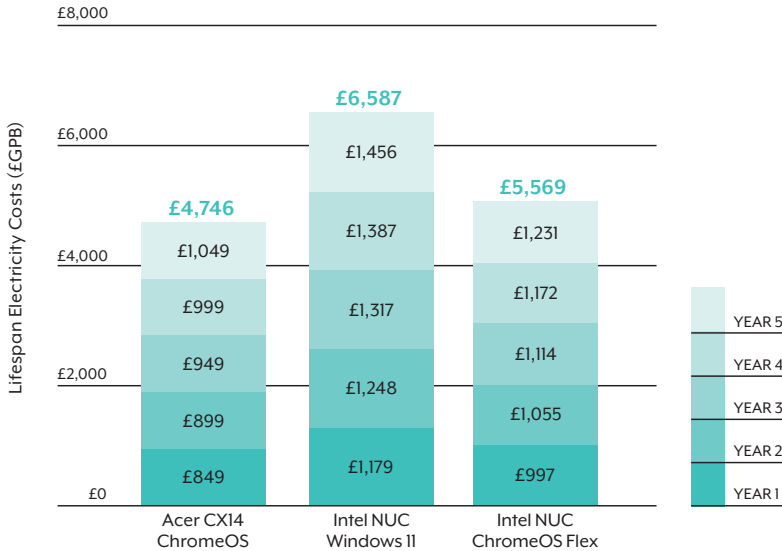
Calculated over five years, using **Chromeboxes reduced energy costs by as much as £2,647** per hundred devices.

Using **ChromeOS Flex would save £1,830 in energy costs** over the same period. Extending the device life, and delaying the refresh cycle of existing Windows devices, by 36 months reduced device capital expenditure by 37%. For one hundred devices the additional saving in procurement costs by transitioning to ChromeOS Flex is calculated at around £9,000.

SUMMARY

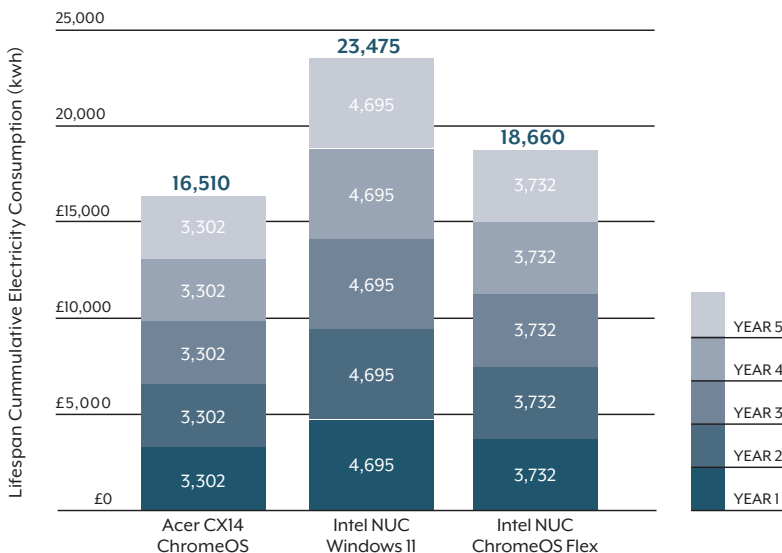
Organisations planning new deployments of digital signage should **consider the use of Chromeboxes to reduce energy use, costs and associated emissions**. Those managing existing Windows-based digital signage **should consider the significant environmental and cost benefits of converting the devices to ChromeOS Flex**.

LIFESPAN ELECTRICITY COST (£GPB) RESULTS FOR 3 DEVICES IN A BUSINESS/EDUCATION ENVIRONMENT



using Chromeboxes saved as much as **£2,647** per device in energy costs

LIFESPAN ELECTRICITY CONSUMPTION (kwh) RESULTS FOR 3 DEVICES IN A RETAIL ENVIRONMENT



ChromeOS Flex reduced costs by **£1,830**