Case Study 4: ICT Servers

Replacing an old inefficient ICT server saved Trinity First School £1,600 in electricity costs per year, returning the investment in 2.5 years

'Working with Energy Sparks has been brilliant. It is always lovely to find ways of saving money but to do so whilst not just maintaining but improving standards is a double bonus. Plus, we have been able to do meaningful work with the children on environmental issues alongside making changes which have a positive impact on the environment.'

Amanda Seager, Headteacher, Trinity First School, Frome

Summary

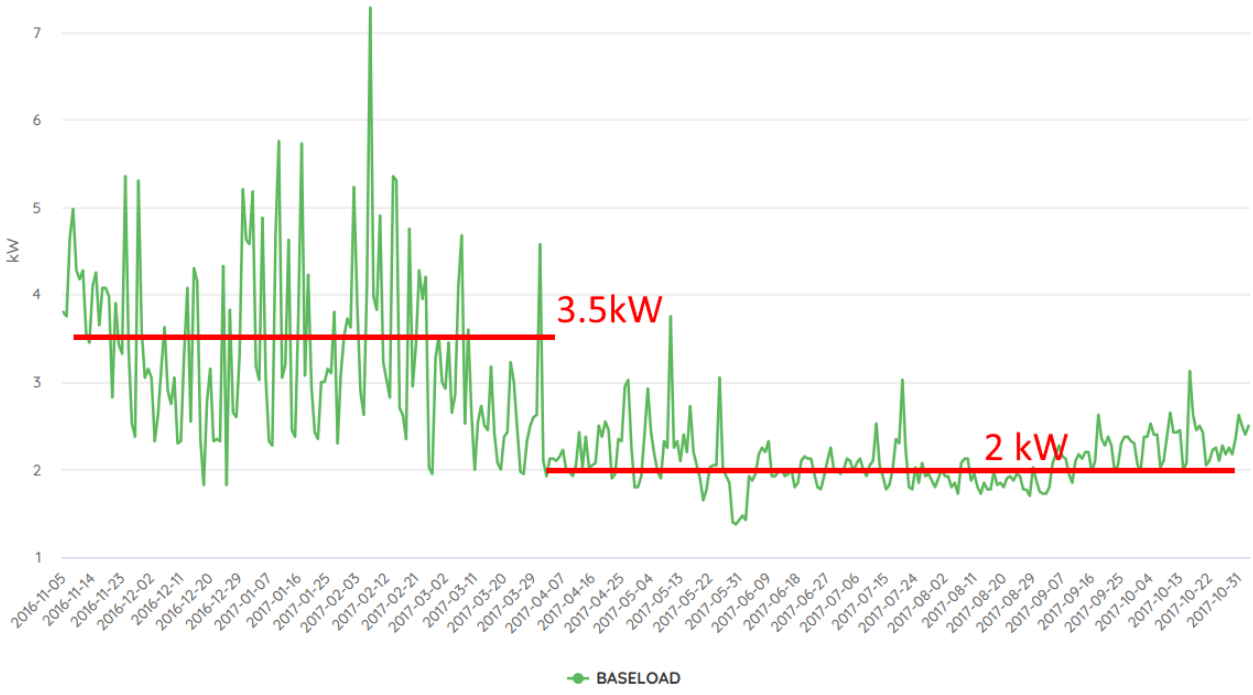
Trinity C of E First School in Frome saved £1,600 per year in electricity costs when they spent £4,200 on replacing their aging inefficient ICT servers.

Analysis

ICT infrastructure has been the cause of a significant rise in school electricity consumption over the last 2 decades. however recently this increase has reversed as new ICT servers have become more energy efficient, desktop PCs have been replaced by energy efficient laptops and tablets, and some schools have moved their ICT infrastructure to the cloud.

ICT servers have been a significant component of this increase as they are left on 24 hours a day, 365 days of the year, and particularly older servers manufactured prior to 2015 can be very inefficient.

Energy Spark's has a variety of ways of looking at electricity consumption, including those which focus on 'baseload' – the consumption of appliances left on when the school is unoccupied. Energy Spark's baseload charts show the impact of the replacement server at Trinity:



The baseload dropped 1.5 kW from 3.5 kW to 2 kW. This is about a 13,000 kWh and £1,600 annual reduction in electricity consumption. This one change represented as 23% reduction in the school's annual electricity consumption.

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Further Information

- If you are considering upgrading your ICT servers you should consider 2 options: purchasing a more efficient server, or move your servers offsite to 'the cloud' (see DFE advice here)
- Cloud servers mean that all your server onsite electricity costs can be eliminated and ICT support costs can be significantly reduced; cloud servers are shared 'as virtual machines' between multiple users groups, so out of school hours others can use the server meaning its electricity consumption is not wasted
- If you are considering upgrading your existing servers and want to understand the benefit in electricity savings we recommend you assess the power consumption of your current servers using a mains electricity monitor (cost about £15, or available free from Energy Sparks, pictured to the right:). You can do this as a learning activity with your pupils, following the Energy Sparks activity instructions found here. This will be able to give you an accurate assessment of your current servers' consumption and the potential saving of moving to a new server. Newer servers are faster, so it might even be possible to consolidate several servers into a single server – but when purchasing you need to ask about the new servers' electricity consumption.
- There are several other ways to reduce electricity consumption from ICT in schools:
    - Replacing desktops with laptops or tablets
    - Making sure that the desktops you have are configured to switch to standby when not used
    - With the help of your pupils audit other ICT infrastructure in schools (e.g. using a mains appliance monitor), to identify inefficient printers or photocopiers, and those without a standby function. Often schools have redundant networking equipment which can be removed after ethernet has been replaced by Wi-Fi
    - Air conditioning costs can be reduced by increasing the room temperature in server rooms, or simply by reorienting the servers so there is a smoother airflow of cool air into the servers' fans and out the other side. Research shows you can run your server room temperature as high as 27°C without affecting your server's efficiency.

  More detailed information on what you can do to reduce your ICT electricity consumption is available on the Energy Sparks website here.

Lessons Learned

- You can often justify replacing old ICT infrastructure on electricity costs reductions alone
- Energy Sparks provides a wide variety of tools to help you understand your electricity consumption; ICT often can be 30% of a school's consumption
- Energy Sparks activities get your pupils involved in identifying energy guzzling ICT infrastructure and other appliances whilst also learning energy life skills which they can share with their families at home.
- Energy Sparks also provides benchmarking – allowing you to compare your electricity consumption with other schools either on an overall basis or more narrowly for example on baseload
- Energy Sparks alerts provide monitoring of your electricity and gas consumption via your school's smart meter data, and immediately notify you if your consumption increases for example if an errant appliance has suddenly increased its consumption

If you have any questions about Energy Sparks, please contact us: hello@energysparks.uk

www.energysparks.uk

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