



Energy Sparks Case Study

Identifying inefficient equipment

Pupils at Freshford Primary School used Energy Sparks to save their school £740 per year in electricity costs, by using Energy Sparks to identify that their kitchen had an inefficient freezer. A new freezer was purchased for £300; the electricity savings paid for the investment within 4 months, and over the 10-year life of the freezer will save the school £7,400.

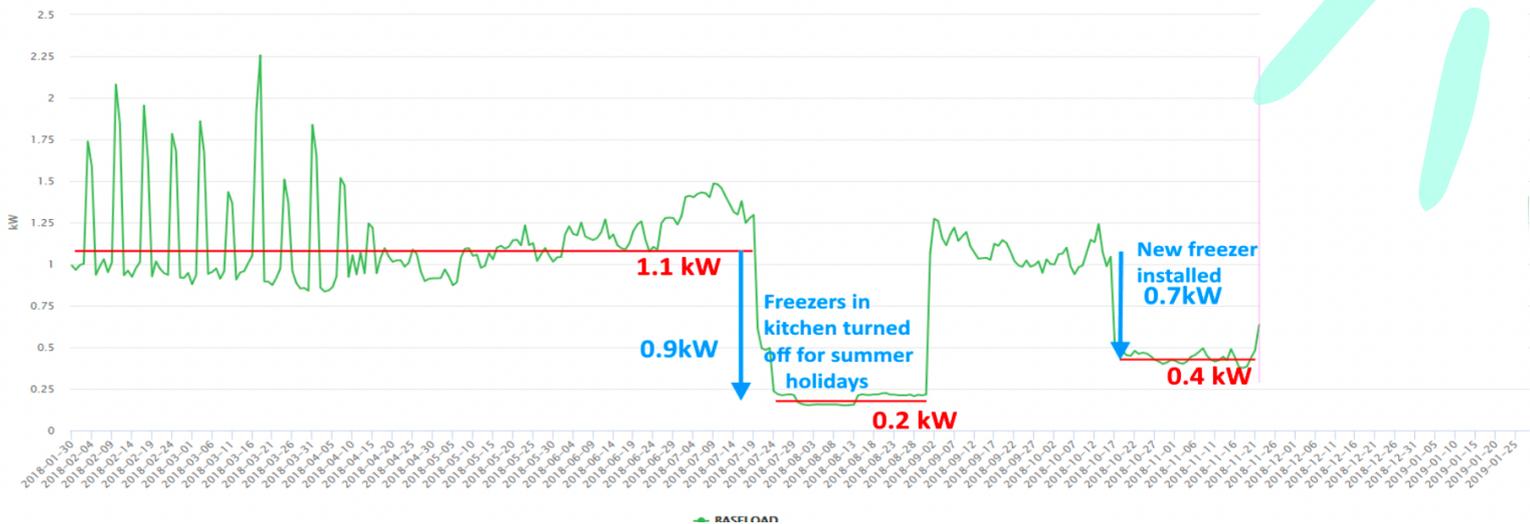


Analysis

After the summer holidays the pupils noticed that the Energy Sparks chart, displaying baseload had dropped over the summer holidays, and wondered what had been turned off in the school to reduce the 'baseload' from about 1.1 kW to 0.2kW, a drop of 0.9 kW (costing about £950 a year):

Electricity baseload is the electricity needed to provide power to appliances that keep running at all times. It can be measured by looking at your school's out of hours electricity consumption.

Baseload kW



Following some investigation, pupils identified that the kitchen staff had turned off the fridges and freezers over the summer holidays, and this was the reason for the drop. They discovered that an 'A+' rated freezer should only use about £40 a year on average, so if their 3 fridges and freezers were using £950 they must be very inefficient.

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To understand how inefficient the freezers were, the pupils borrowed some appliance monitors from Energy Sparks, which record how much electricity individual appliances use. From this they determined that one of the freezers was very inefficient. They then wrote a letter to the headteacher and school business manager explaining the problem and asking for the freezer to be replaced, to save energy, reduce the school's costs and reduce CO2 emissions. The school management agreed to replace the freezer in October and the school's baseload was reduced by 0.7 kW, saving about £740 per year - as shown in the chart.

Further information

- Baseload -the amount of electricity a school uses out of hours when there is no one in the building; this is typically from appliances which have been left on e.g. ICT servers, fridges, freezers or items on standby e.g. laptops, photocopiers
- Energy Sparks has several charts which show the baseload, as in the example overleaf. It also has an alert-based system which will send you emails or text messages if the baseload changes significantly, which would indicate if something new had been accidentally left on
- The energy consumption of the freezers which were turned off during the summer holidays was initially calculated by reading the drop in baseload from the Energy Sparks chart - 0.9 kW, multiplying this by the number of hours in a year 8,760, to get the number of kWh used: 7884 kWh and then multiplying this by the cost of electricity - 12p/kWh, so an annual electricity cost of £946
- The appliance monitors were then used to monitor and calculate the annual usage of each freezer to identify which freezer(s) needed changing
- The cost of running a potential replacement 'A+' rated freezer, was found from the 'EU Energy Rating label' on the marketing for the new freezer (around 300 kWh), the difference between this and the monitored usage of the existing freezer was the saving in kWh, which when multiplied by the cost of electricity - 12p/kWh provides the annual cost saving

By using Energy Sparks, the pupils have helped save the school £740 per year, which over the life of the new freezer is £7,400 - enough to buy 1,500 library books!

Payback in the investment was only 4 months

Energy Sparks provides tools for analysing electricity consumption which can highlight potential energy savings, and its alert system - which notifies the school of changes in electricity consumption, can help maintain these improvements

Pupils can act as strong advocates for change in schools, and Energy Spark's educational activities provide them with energy literacy skills which can be applied in their future lives

