

Profit margins for all community/independent shops are tight. Reducing overheads by spending less on energy (electricity, gas or oil) is one way to boost profits. But can you achieve this while providing a comfortable environment for staff and customers and maintaining the ideal environment for the preservation of your stock? This tip sheet will give you some ideas for reducing your energy bills and supporting the low carbon agenda while still providing a great service.

Fridge & Freezer Units

Do you know that, according to the Carbon Trust¹, at least 70% of your shop's electricity use is likely to be from fridges and freezers? Reduce your energy costs by taking the following actions:

- The electricity used by your fridges and freezers can be reduced by as much as 20% by ensuring staff clean units regularly and equipment is maintained by a qualified refrigeration specialist. Refer to product guidelines to create a cleaning schedule.
- Avoid placing the units near sources of heat such as heaters or cooking equipment. Heat makes the unit's compressor work harder than necessary to maintain a low temperature.
- Poor air circulation results in a build-up of warm air making units work harder. Maintain free air circulation to reduce strain on the system by leaving at least 50 mm at the sides and 200 mm at the top and back of your units and make sure air grilles are clear of product and merchandising.



If your ice-cream freezer uses 2.9kW per day it will cost around £62 to run over the winter. If profit from ice-cream sales during this period are likely to be less than that consider turning off the ice-cream freezer over winter and offering a limited selection of ice-creams from your general freezer.



If you are storing only salad or vegetable items, a temperature of 6°C is ideal.

- Running two half-full fridges or freezers uses more energy than one well-stocked one so fill up or switch off units.
- Set the running temperature specifically to suit the type of food stored in your units to reduce your energy usage. Guidance on ideal storage temperatures can be found in the link at the end of this document².
- Save electricity by adding night blinds or covers to open fridge and freezer cabinets when the shop is closed. A low cost way to add covers to open chest freezers is to add foam insulation boards (cut to fit).

- Adding AeroFoil³ to your open fridges could deliver a 15% saving and payback your investment in a couple of years.
- When considering new fridges and freezers, buy those with A++ to A+++ EU energy rating labels. Although they may be slightly more expensive to buy, they can use 30% less energy over their life and will pay-back quickly in reduced energy costs.



Night blinds on an open fridge

Other Electrical Equipment

You may have other electrical equipment in your shop such as a coffee machine, pie or hot dog warmer and computer.

- To minimise electricity, the general rule for all these appliances is to only have them switched on when they are in use and keep them well maintained and serviced.
- If manual switch off is proving difficult, timers, can be added between the plug and the socket, for as little as £10. This will ensure that they are never left on overnight.
- Some manufacturers do not recommend switching off their equipment. Before switching off energy using items check product information or contact the manufacturers. When you come to replacing an item of electrical equipment ensure the new model can be turned off safely.



A 750w pie warmer uses approximately 4.5kW between 8pm and 8am. Switching this off overnight saves almost £200 per year

Heating and Cooling

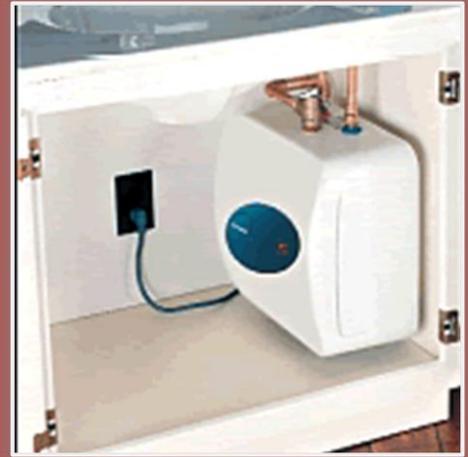
Some shops are adequately heated by the exhausted heat from the fridges and freezers while larger shops, particularly those with a café, may have a dedicated heating system.



If fridges and freezers are on an external wall, warm air can be extracted directly outside

- If you have a heating system, setting your heating thermostat for an internal temperature of 19°C is sufficient.
- If you have a fan heater above your entrance door only turn it on when the shop is open. Running an over-door heater when staff are present but the shop is not open over winter could cost you £85 (at 2 hours a day).
- Efforts to keep external doors shut will also help maintain a comfortable temperature in cooler months.
- If your shop has a cooling system to counteract the heat generated by the refrigeration units in summer, actions can be taken to reduce its use.
- If you use air-conditioning, agree a set temperature. Commonly this would be at 24°C.

- Mechanical ventilation can be used to exhaust warm air from the fridge and freezer units to reduce the heat inside the shop in summer. If the units are on an outside wall, warm air can be extracted directly outside. Alternatively, if heat is collecting centrally, an extractor in the ceiling or along the top of the walls will be effective.
- Make sure controls for mechanical ventilation are accessible and switched off in colder months.
- If you have a hot water tank, ensure it is turned off overnight, either manually as part of the shop's shut down procedure or by using a programmable timer.



If a small electric water heater is switched off when the shop is closed, it can save £60 per year. When the hot water is switched on again from cold it will only take 15 minutes to provide hot water for the rest of the day

Lighting

Lighting is likely to make up approximately 20% of your shop's electricity costs. LED light bulbs are now available for virtually all fixtures and will reduce electricity use by between 45% and 80% depending on the type of lighting you currently use. In addition, LED bulbs last for up to 35,000 hours, which significantly reduces maintenance and replacement costs. LED replacement bulbs will normally pay back in two to five years.



A 72 watt 2ft square panel light can be replaced by a 45 watt LED panel.

- When choosing bulbs, replace like for like by determining brightness (lumens) and colour temperature (from warm white, cool white or, sometimes, daylight).
- Ensure that, whichever supplier you use, they offer a minimum 5 year failure replacement guarantee and are prepared to let you test a number of lights to ensure the light quality is correct before making a final purchase.

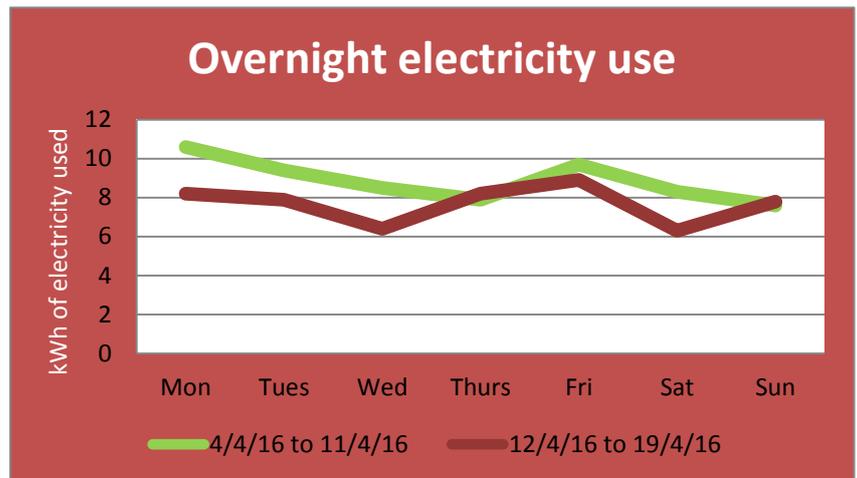
Review energy prices

When did you last check the rate you are charged for your electricity and gas? If you allow your contract to roll over without discussion with your energy company you may see your prices rise by as much as 35% so review energy prices before the end of your contract. Compare prices for both tariff and standing charge with at least two other suppliers.

Know what you use

How much electricity is typically used when your shop is closed (and how much when open)? Reviewing overnight energy use will help set targets to making reductions.

- Record a meter reading (kWh) at the end of a day and again when you return the next morning for a few days to determine how much electricity is typically used when the shop is closed. Use these readings to generate graphs to inform staff and encourage energy saving actions.
- Improvements to energy efficiency can be verified by reviewing reductions in overnight energy use.
- You can also take and use manual readings for gas, if applicable.



Solar PV

For any form of renewable energy generation, best practice is to implement all energy efficiency measures before considering installing renewable energy generation. If you own your building, or are on a long lease, consider installing a solar photovoltaic (PV) system to generate electricity. PV installations are best suited to sites with high use of electricity during the daytime that have a south facing roof at an angle of between 20 and 50 degrees. There are a number of structural considerations when adding PV panels, including weight on the roof, access to roof for maintenance, etc., so a thorough feasibility study, carried out by a qualified provider, is recommended. A useful resource is the Centre for Alternative Technology³ which provides details on the most up to date feed-in-tariff rates and the economic impacts of installing a solar system (and other renewable technologies). There are a number of funding routes, including third party owned, crowd sourced funding, and community owned where the project would be invested in by the community and some (but not all) of the savings would benefit the building.

References

- http://www.carbontrust.com/media/13055/ctg046_refrigeration_systems.pdf
- <http://www.fosterrefrigerator.co.uk/downloadsMCL/NJB0490%20Energy%20Efficiency%20Green%20Paper%20Nov%202009.pdf>
- <http://info.cat.org.uk/solarcalculator>
- <http://www.jordon.co.uk/aerofoils>

Image references:

Lighting: <https://www.ledhut.co.uk/commercial-led-lighting/led-panel-lights.htm>

Night blinds: <http://www.commercialblindsuk.com/home/fridge-blinds>

Chilled salad: <http://www.alamy.com/stock-photo/publix-grocery-store.html>

Ice-cream freezer - <http://sweetsntreats.me.uk/ice-cream/>

Hot water heater; <http://www.treehugger.com/culture/ariston-point-of-use-hot-water-heaters.html>

Pie warmer: <http://www.mildurapartyhire.com.au/product/small-pie-warmer/>

This tip sheet has been compiled by EiE as part of the ENRICH programme funded by TOE2 and the Patsy Wood Trust. For further information or to book an energy efficiency assessment visit for your shop contact EiE on 01865 484153 or eie@brookes.ac.uk

