



LED lighting and life

Over the last decade, we've all been encouraged to switch to using LED lighting. Local authorities have replaced almost all of the sodium street lights with LEDs. Even though the initial cost per unit is more than the old tungsten filament (incandescent) bulbs, they use much less power. That means that we save on our energy bills. But as with many innovations there are positives and negatives.

LED lights are about 80% more efficient than incandescent and roughly 50% more efficient than compact fluorescent lights (CFL). A 10 watt LED produces the same amount of light (lumens) as a 60 watt incandescent bulb. It produces less heat than an incandescent one and very much less than a halogen light. Most LEDs have a very long life, even up to 75,000 hours compared with 2000 hours for tungsten.

Another big advantage of LEDs is that they turn on instantly, unlike fluorescents. Fluorescent tubes were used in offices, workshops and garages. Have you gone into your garage at night in winter and had to wait for the tube to fire up? Not so with LEDs, and there are direct LED replacements for fluorescent tubes that can be plugged in without re-wiring. LEDs are quite robust and can stand considerable shocks. The old incandescent ones were quite fragile, especially when hot. Fluorescent tubes contain mercury so required safe disposal at the end of their life.

LEDs do have their downsides too. They are more expensive but the cost is off-set by their long life. They don't work so well with dimmers. Incandescent bulbs could be dimmed easily as could CFLs but LEDs tend to start flickering as they are turned down. Most won't start at a low level either. The actual life may well be shorter depending on how and where they are used. Even LEDs can be affected by local conditions. They degrade if subject to excessive heat, so can't be used in, say, ovens. Its harder to get all-round light with LEDs as the light emitter is one-sided: a cluster is needed with some sort of reflector built in.

Recently, some other limitations of LEDs have been shown, particularly with regard to street lighting. The spectrum of light emitted from 'white' LEDs is skewed towards the blue end and they are very bright. Research in the last few years has shown that the population of insects in hedges and banks under such lighting is reduced, including adult moths and their caterpillars. The effect of sodium lamps was much less as the intensity was lower and the spectrum limited to the orange glow of sodium. The numbers of insects has reduced dramatically in the past few years leading to worries about crop failures due to lack of pollination. Moths that fly at night also pollinate. In some parts of the world, LED lights disrupt animal behaviour more dramatically. Hatchling loggerhead turtles in Florida become disoriented and head inland rather than seaward. Migrating birds that use the moon and stars for navigation get lost when confused by bright lights, especially LEDs.

Councils can do some things to mitigate the effects of LED street lighting. They can reduce the intensity somewhat, so that there is still sufficient light for road users but have less effect on insect life. They can also turn off the lights for part of the night or even fit motion detectors so that they come on when there's traffic or pedestrians. It is possible to fit filters to screen out blue wavelengths.

Parishioners recently voted for the new Neighbourhood Development Plan (NDP). One section (Policy CAP10) focused on dark skies in Cold Ash. Dark areas were good for the best viewing of the aurora borealis in May. The Parish is fortunate in not having much street lighting and there are significant areas where the skies are quite dark, though there are other parts where light pollution is fairly high. As explained in the NDP document, there are benefits for humans and wildlife from having dark skies: the quality of life is improved, sleep patterns are better and wildlife is less disturbed. Dark skies are part of our heritage and culture but we've hidden them by lighting everything up and almost forgotten them. How many of us have seen the glories of the Milky Way recently? It's very hard to see it at all in many places around here.

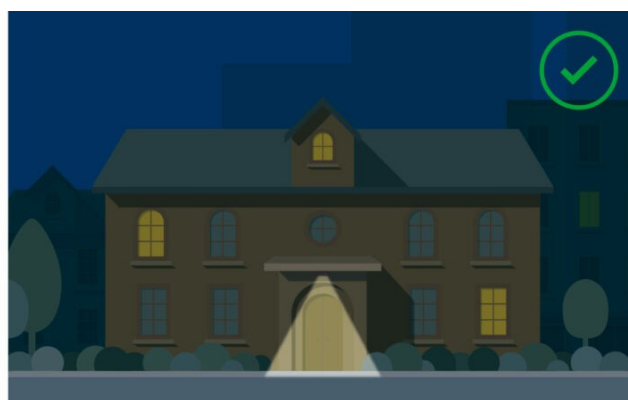
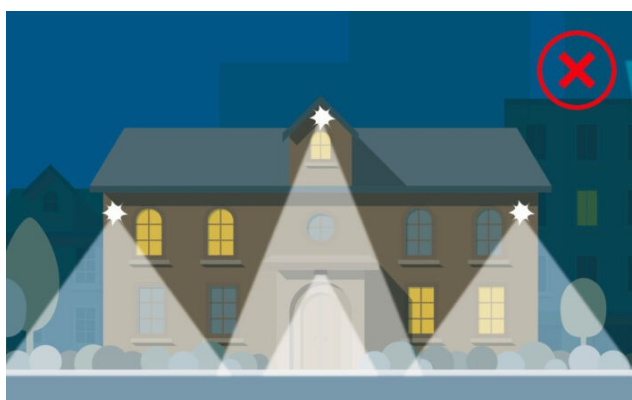


The Milky Way. The UK Space Agency (Open Government Licence)

The NDP reproduced part of a national map from the Countryside Charity of light pollution across the UK. The bright, light-polluted areas of cities and towns show clearly. The light pollution from Newbury, Thatcham and Chieveley Services is also very clear. With even just a limited amount of cloud cover at night, quite a lot of this light is reflected and affects our area so we struggle to see the Milky Way. The local councils and the operator of the Services should consider ways in which they can reduce the impact, which will likely save them money too. But we can act locally to increase the amount of dark skies we have.

The maps show that there is some light pollution along the roads in Cold Ash but with little street lighting that means it comes from properties. There is one obvious patch towards the north end of Hermitage Road. This is due to the way in which we illuminate our buildings. Up to half of outdoor lighting goes skywards but it doesn't have to. The Dark Sky organisation (darksky.org) is a volunteer group that works "around the world to protect the night sky through education, advocacy, retrofits, community science and more". It has five principles for outdoor lighting:

1. Only have lights if they are needed. Consider how the use may impact wildlife
2. Direct the light so it falls only where it is needed and doesn't spill beyond
3. Lights should be no brighter than necessary. Take care to avoid reflections
4. Control lights with timers and motion detectors, dim them or turn them off
5. Use warmer colour lights and cut down on bright white that has lots of blue and UV



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The Dark Sky organisation has lots more advice for homes and businesses. If everyone checked their outside lighting and followed these principles, we could have even more dark skies around here.

Richard Marshall

Do you have an idea for an activity or project that would help everyone cope with Climate Change or related topics? We can provide support, help develop your ideas, even cover some costs such as poster printing etc. You could use our logo. Get in touch with our chair, Richard Marshall:

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