

Measures to reduce CO₂ emissions for hotels



Introduction

This document offers guidance on the immediate steps that hotels can take to help tackle climate change by reducing their carbon emissions through:

- Direct energy use associated with buildings
- Indirect energy use in buildings
- Emissions associated with commuting, business and customer travel.

The information is extracted from a detailed technical report 'Review of Measures to Reduce Carbon Dioxide Emissions', produced in January 2020 by the Tyndall Centre for Climate Change Research in partnership with Electricity North West.

Summary

Space and water heating are the main contributors to onsite hotel energy demand and most of the energy-related CO₂ emissions from hotel buildings are from natural gas used for heating and hot water.

Energy demand reduction itself may come not only through equipment and building fabric change, but through new energy management processes and engagement with colleagues and customers.

In summary, starting with the easiest solutions to implement, the following measures are recommended:

1. Replace lighting with LEDs and fit motion sensors
2. Introduce carbon literacy training for colleagues
3. Maximise insulation and minimise drafts
4. Replace taps and shower heads with water-efficient versions
5. Install solar panels, solar thermal and electric vehicle (EV) charge points.

Detailed guidance

Energy management and monitoring

Meter point monitoring or more sophisticated monitoring and control systems can identify current avoidable wastage of energy for quick wins and also set a baseline for high use areas and services which should be tackled. Better control of building temperature can reduce heating energy requirements without affecting comfort, and draughts, over-lighting, and countervailing actions such as having windows open or radiators on while air conditioning is operating can be identified and eliminated.

Other interventions include lighting sensors, zonal temperature setting, controlled hot water flow temperature, and controlled and improved thermostat location. As well as technical interventions, new protocols for colleagues to check and correct overheating in parts of the building can also reduce waste energy, as can equipment checking (and cleaning of parts) and avoiding overcooling in refrigeration.

Improve energy efficiency of the building and equipment

Refurbishment and maintenance cycles can be important opportunities to add more efficient equipment or improve the thermal efficiency of the building, for example, by improving the air tightness of windows and doors and insulation levels for walls.

Adding complementary ventilation and heat recovery can also reduce the energy needed to heat and cool hotels even further. Easy-to-implement measures to reduce hot water usage through spray taps and shower controls will also lead to reduced energy use and therefore carbon emissions.

Ensure best practice lighting

Although lighting may only be around 15% of a hotel's onsite energy use, if older lighting technologies and manual controls are currently in place there can be significant immediate reductions in electricity demand.

Best practice lighting requires a well-controlled system that optimises the use of lights (eg motion sensors and timers), and the replacement of older lamp types with LEDs.

Increase direct use of renewables

As hotels have a significant daytime electricity load, rooftop renewables including solar panels for direct generation and solar thermal for water heating are an appropriate solution.

All electricity generated by solar panels could be used by a hotel onsite and contribute to reducing the building's energy-related emissions by reducing electricity imports from the electricity grid.

As between 10% and 20% of hotel energy use is likely to be hot water supply, reducing imported energy to the building by utilising solar irradiance on the building can provide an important emissions saving. Some assessments suggest that in some cases 40% of hot water demand could be supplied by solar thermal.

Transport and travel emissions

Decarbonising surface transport (road and rail) is a significant priority for meeting emissions targets. In terms of carbon reporting, commuting and business travel fall into what are called Scope 3 emissions (indirect emissions that occur throughout a company's value chain).

Best practice for reducing these cover three areas:

Colleague commutes

- Shift journeys to 'active' modes such as cycling or walking
- Shift car journeys to public transport
- Shift car use to electric vehicles by creating workplace travel plans.

Business travel

- Reduce the need to travel by using technology instead of meetings
- Reduce travel distances by optimising meeting locations
- Reduce greenhouse gas emissions by using low carbon modes of travel
- Hold meetings in places easily accessible by public transport and rail.

Customer travel

- Use colleague shuttle buses to bring customers to out-of-town sites
- Encourage use of public transport for accessing city centre sites.

Recommendations common to all business sectors

Some of the key recommendations listed in the report apply to more than one business sector, for example, monitoring energy usage, using low-energy control systems and installing rooftop solar panels. Key points relating to these recommendations which apply across sectors are listed below.

Leases

For many businesses, issues with energy and lighting management, and with rooftop solar installation can arise due to the ownership arrangement of the space in buildings eg if it rents rather than owns the building. This is particularly the case for non-supermarket retailers and offices. The Better Building Partnership highlights the relationship between owners and occupiers in terms of the responsibilities and benefits for procurement and control of energy as a key barrier to improving the environmental performance of buildings. One approach to overcome this is through the use of a 'green lease'. This is a standard lease with additional clauses that address the environmental management and improvement of a building, making clear the responsibilities for the owner and the occupier, and is legally binding. Alternatively, a non-legally binding memorandum of understanding can be agreed between owner and occupier.

Gains without adverse impact

Evidence suggests that reductions in energy use for lighting, temperature and air quality can be made without any adverse impact on the service being provided.

Financial support

Qualifying heat pumps and biomass boilers can benefit from the Renewable Heat Incentive (RHI) which provides financial support to adopt low carbon heating.

Additional low carbon power generation

Best practice for buying in renewable energy is that it should be additional low carbon power generation that wouldn't otherwise have been installed, for example, with direct purchase through a power purchase agreement (PPA). Where businesses are closely located there may be opportunities to pool resources and develop technologies that can supply multiple sites with renewable energy. Just switching to an energy retailer specialising in renewables does not directly reduce the carbon emissions of the building.

Carbon emissions reduction potential

The potential carbon emissions reduction that could be achieved if all of the best practice recommendations are implemented for hotels is 36%. It should be noted that this is an average figure for diverse sectors. Even optimum reductions for an individual business will depend on a number of factors.

To see the full report, please visit www.enwl.co.uk/decarbonise-your-business.