

UCL Heating, Cooling and Ventilation Policy

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1. Introduction

This document describes UCL's policy for heating, cooling and ventilating spaces within the University in line with the University's Environmental Sustainability Strategy and Health and Safety Policy.

UCL spends £14 million a year on energy, it is estimated that over 50% of this cost is the result of heating, cooling and ventilating our buildings. Not only does this represent a significant cost to the university, it has a major environmental impact – over 45,000 tonnes of CO₂ in 2014. It is therefore essential that actions are taken to reduce the level of energy used for heating and cooling.

2. Heating Season

There are three heating control seasons:

Winter – November, December, January and February

Spring/Autumn – March, April, May, September and October.

Summer – June, July and August

In the Winter heating will be on, in the Summer heating will be turned off. During the Spring/Autumn season the Building Management System will only turn on the heating when either:

- External temperatures drop below 16°C for 8 consecutive hours in a 24 hour period or more.
- External temperatures drop below 17°C for 24 hours or more.

This prevents heating being activated on cooler spring/autumn mornings which can cause overheating later in the day. For buildings without a Building Management System the heating season start date will be decided by Estates, based on average outside temperatures.

3. Minimum & Maximum Temperature

The Estates Division will aim to heat spaces across campus to between 19-21°C during the Winter, Spring and Autumn seasons as required. This is in line with CIBSE guidance and is three degrees higher than the level required in the legislative document: Control of Fuel and Electricity (Heating) (Control) (Amendment) Order 1980. Increasing the temperature from 21°C to 22°C can cause CO₂ emissions to rise by as much as 8%¹.

¹ Reference: Based on data provided by the Carbon Trust

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In the summer where air conditioning is provided the systems will aim to maintain a minimum internal temperature of 22°C, with air conditioning being activated at 25°C.

Where there is a specific temperature requirement outside of these ranges for research or scientific purposes this will be considered if robust evidence can be provided, i.e. manufacturer's data sheets for equipment. To improve cognitive function at elevated CO₂ levels lecture theatres will be cooled to 20°C where there is separate control for the lecture theatre to the rest of the building.

Achieving the heating levels stipulated in this policy should not require significant investment in new heating controls or systems, but will rather be achieved through adjusting current equipment or by cost-effective investment with a short-term payback. For example, repositioning of room or radiator thermostats, adding thermostats, insulation or draught-proofing. 19-21 Degrees is a desired value for the majority of the building and some areas may not achieve this temperature either by circumstance or design. Controls will be adjusted to suit the majority not to satisfy the coldest areas of the building. Cold areas will be investigated to identify how they can be improved.

There are a number of legacy heating and cooling issues across the campus, which the Estates Division is working to rectify, these legacy issues may mean that the temperatures identified above are not met in all cases initially. However, issues should be reported through the customer services centre.

4. Timing of heating/cooling provision

Normal heating, cooling and ventilation hours are 8.00am to 6.00pm Monday to Friday, with the following exceptions:

- Cafes, bars, libraries and other student spaces as per advertised opening hours.
- Student residential accommodation which will be provided from 7.00am to 2.00am Monday to Sunday (a night set-back of 16°C will be provided outside of these hours).

For laboratory spaces which need to be maintained at a constant temperature requests to extend the provision of heating, cooling and ventilation outside of these hours should be made through the customer service request form: www.ucl.ac.uk/maintenance-service-requests/.

Out of hours heating, cooling and ventilation will be provided to centrally bookable spaces when they are in use.

One-off out of hours heating/cooling requests for evening/weekend events, should be made using the customer service request form: www.ucl.ac.uk/maintenance-service-requests/. Sufficient notice (48 hours) should be given to ensure that your request can be implemented.

The majority of buildings on the Central Campus are heated by the district heating system. The district heating system runs primarily on Combined Heat and Power Engines (which have

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a lower carbon intensity) rather than the gas and oil boilers. To ensure efficiency of the system some buildings on the district heating system may not see a temperature drop overnight.

5. User control of heating

Heating, Ventilation and Air Conditioning (HVAC) systems in each building are in the majority controlled by a Building Management System (BMS). The BMS detects both internal and external temperatures and, based on previous performance, calculates the appropriate time to switch systems (boilers, pumps etc.) on in order to achieve the desired temperature by the start of the occupancy period. BMS settings are maintained and adjusted by Estates. Non-Estates staff members may request read-only access to the BMS (but should demonstrate a need – e.g. to monitor critical environmental conditions for research), but may not make changes to any settings.

Where local heating controls e.g. thermostatic radiator valves, are provided, it is expected that occupants will manage these to maintain internal temperatures at 19-21°C. Windows and doors should be kept closed during the heating season.

6. Portable Heaters & Coolers

The use of portable heaters or air-conditioning units is not authorised in any University premises. This is because:

- They prevent heating being provided in other parts of a building as they cause false temperatures to be sensed by the BMS which can prevent other parts of the building being heated.
- The electrical system may not be designed for heavy electrical loads associated with portable HVAC units potentially causing overloads, trips and disastrous circuit failures.
- Portable heating/cooling units produce three times more CO₂ compared to centralised heating/cooling systems.
- They increase the risk of fire.

The exception is when existing systems have been found by Estates Services to be incapable of meeting acceptable conditions due to plant failure, building condition, or extreme climatic conditions. In such a situation, Estates will provide the portable heating and cooling devices.

Any portable heaters or coolers that are not provided by Estates may be removed by the Estates team without notice.

7. Criteria for Refrigerant Cooling Provision

Air conditioning or local cooling may only be installed if:

- It is required by regulation or enforceable code of practice (e.g. Home Office Scientific

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- Procedures), or
- There is a specific identifiable academic need (such as chemical deterioration at elevated temperatures or equipment temperature requirements that cannot be addressed by passive measures).

During hot summer conditions the following measures to increase comfort should be adopted:

- Relaxation of formal office dress to encourage individual adaptation to conditions
- Opening windows, using blinds and moving out of sunny areas²
- Flexible working so people can work at more comfortable times
- Increasing air movement; e.g. through the use of local fans (these can be equivalent to reducing the operative temperature by around 2°C).
- Controlling or eliminating appliances that contribute to heat gains within the indoor environment, such as freezers, drying ovens, steam baths and IT equipment.
- Installation of solar film – which can be arranged by Estates

There is no legal upper limit on internal temperatures. If after taking the above measures you are still constantly experiencing temperatures over 28⁰ C you can make a project request through Customer Services. The need for refrigerant cooling provision will then be assessed on a case by case basis, providing funding from the department is available to pay for the cost of installation³.

Unseasonable and unexpected weather conditions will not be a basis for the installation of cooling systems.

Where comfort cooling is provided it will be subject to control by Estates in the same way as the centralised heating systems. Stand-alone air conditioning units not connected to the Building Management System must not be installed.

8. Procedure for Refrigerant Cooling requests:

Any additional refrigerant cooling shall be business cased and approved by the Environmental Sustainability Team. The initial cooling assessment sheet (provided by Facilities and Infrastructure) shall be completed and submitted to the Environmental Sustainability Team (green-ucl@ucl.ac.uk).

The business case should specify:

- Demonstration/modelling of consistently unacceptable temperatures.

² There may be exceptions where opening windows is not feasible, for example due to construction noise.

³ For spaces that are constantly experiencing temperatures over 28⁰C, where the use of the space has not been changed beyond its design intent and high heat producing equipment has not been added to the space (e.g. freezers) will be considered for refrigerant cooling paid for by Estates on a case by case basis.

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- An explanation of how other design solutions e.g. shading, central fans and relocation of high heat producing equipment (e.g. fridges, freezers and servers) have been explored.
- Risk assessment actions from overheating

All submitted cases shall be dealt with based upon their individual merits with the final decision based upon a sound technical, financial and pragmatic case. From these decisions a set of case law will be developed to help inform future decisions.

9. Humidity control

Humidity control will only be provided where there is a specific need for scientific research purposes.

10. Reporting faults with heating, cooling or ventilation systems

All faults and issues should be reported to the Customer Services Centre Service request form: www.ucl.ac.uk/maintenance-service-requests/

Tel: 30000

Email: efdservices@ucl.ac.uk

11. Accountability

This heating and cooling policy is jointly owned by UCL’s Environmental Sustainability and Facilities and Infrastructure teams. It will be reviewed on an annual basis.

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