

Overheating Glossary



Term	Definition	Source
Adaptation	Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities	UKCIP Glossary http://www.ukcip.org.uk/glossary
	Planned adaptation is the result of a deliberate policy decision, based on an awareness that conditions have changed or are about to change, and that action is required to maintain, or achieve, a desired state	UKCIP Glossary http://www.ukcip.org.uk/glossary
	Reactive adaptation is adaptation that takes place in response to the consequences of a particular event	UKCIP Glossary http://www.ukcip.org.uk/glossary
	Anticipatory adaptation is that which takes place before impacts of climate change are observed	UKCIP Glossary http://www.ukcip.org.uk/glossary
Adaptation Measures	Actual adjustments, or changes in decision environments, which might enhance resilience or reduce vulnerability to observed or expected changes in climate	UKCIP Glossary http://www.ukcip.org.uk/glossary
Adaptive Thermal Comfort	'Adaptive' comfort models used in standards which express the comfort temperature through its relationship with the outdoor temperature in naturally ventilated buildings when they are in free-running mode	CIBSE TM52: 2013, The limits of thermal comfort: avoiding overheating in European buildings

Term	Definition	Source
Air Change Rates/Air Changes Per Hour	The rate of ventilation expressed in terms of the number of times the entire volume of air in a home is replaced within the duration of an hour	“Understanding Overheating - Where to Start”, NHBC Foundation NF 44, Jul. 2012
Airtightness	The descriptive term for the resistance of the building envelope to the leakage of air. The greater the airtightness, the lower the air infiltration. Airtightness is usually measured by an air pressure test to give a value in $m^3/hr/m^2 @ 50Pa$. The smaller the number, the more airtight the dwelling	“Understanding Overheating - Where to Start”, NHBC Foundation NF 44, Jul. 2012
Appendix P	Appendix P of the Government’s Standard Assessment Procedure (SAP) provides a basic methodology for estimating whether a new dwelling might have high internal temperatures in summer months	Overheating in Homes - The Big Picture Full Report, Zero Carbon Hub, Jun. 2015
Cooling Degree Days	An annual measure of the extent to which temperatures suggest that buildings may require some form of cooling (e.g. air conditioning), based on the daily temperature being above a specified threshold	UKCIP Glossary http://www.ukcip.org.uk/glossary
Cooling Degree Hours	The cumulative number of occupied hours the operative temperature is above the threshold discomfort temperature weighted by the magnitude of the exceedance	CIBSE TM49: 2014, Design Summer Years for London, The Chartered Institution of Building Services Engineers, 2014
Decorum-Adapt Model	A geographic information system (GIS)-based model developed by Oxford Brookes University to assist planners and policy-makers in assessing overheating risk rapidly at the stock level	R. Gupta and M. Gregg, “Preventing the overheating of English suburban homes in a warming climate,” Building Research & Information, 2013

Term	Definition	Source
Design & Build	A building construction procurement route in which the main contractor is appointed to design and construct the works. The contractor can either be appointed to undertake all the design work, or separate consultants can be appointed by the client to prepare a concept design and outline specification, with the contractor completing the detailed design and specification	Joseph Rowntree Foundation, Care provision fit for a future climate, 2016
Design Summer Year	An input into a dynamic thermal model. A design year of 8760 hours of climatic data developed for the assessment of overheating risk ...based upon high summer dry bulb temperatures, as opposed to design solar irradiances. For London, design summer years have been prepared to take account of the Urban Heat Island. See CIBSE TM49: Design years for London (2014)	CIBSE Guide A: Environmental design, Eighth edition. London: Chartered Institution of Building Services Engineers, 2015
Dynamic Simulation Model	Model in which calculations are repeated many times, each calculation representing behaviour over a time period (time-step) of one hour or less. This allows thermal storage, daily cycles of weather, occupancy and other time varying factors to be represented	CIBSE AM11: 2015, Building performance modelling, The Chartered Institution of Building Services Engineers, 2015
Dynamic Thermal Model (DTM)	A model in which a number of parameters vary with time and calculations represent behaviour over a chosen time period, e.g. of one hour or less. This allows temporal variations in thermal storage, weather, occupancy etc., to be represented	CIBSE AM11: 2015, Building performance modelling, The Chartered Institution of Building Services Engineers, 2015
Excess Morbidity	Incidence of disease above the expected mean baseline for that region and period of year	Joseph Rowntree Foundation, Care provision fit for a future climate, 2016
Excess Mortality	Mortalities (deaths) above the expected mean baseline for that region and period of year	Joseph Rowntree Foundation, Care provision fit for a future climate, 2016

Term	Definition	Source
External Heat Gains	Heat gained from: solar radiation falling on surfaces such as walls and windows; heat transmission through the building fabric (walls, windows, roof etc) when the outside temperature is warmer than inside; and warm outside air entering the building through open windows, doors and openings in the building structure	CIBSE Knowledge Series: KS16, How to manage overheating in buildings: A practical guide to improving summertime comfort in buildings, Chartered Institution of Building Services Engineers, 2010
Free-Running Buildings	When buildings are not consuming energy for the purpose of heating or cooling	Joseph Rowntree Foundation, Care provision fit for a future climate, 2016
Future Weather Year	Hourly weather data sets based on climate projections, to enable designers to assess the potential impact of climate change on building performance. See for example, CIBSE TM48: Use of climate change scenarios: the CIBSE future weather years (2009), and the PROMETHEUS project	CIBSE Guide A: Environmental design, Eighth edition. London: Chartered Institution of Building Services Engineers, 2015
g-Value	A property of a glazing material that indicates its solar performance. It is composed of the direct solar transmittance (which depends on the optical properties of the glass) and the secondary transmittance, which is the solar radiation absorbed within the glass and re-emitted inside the building	CIBSE LG10 Daylighting - A Guide for Designers: Lighting for the Built Environment. Chartered Institution of Building Services Engineers, 2014
Heat Gain	The quantity of heat absorbed by an enclosed space or system	ASHRAE Terminology https://www.ashrae.org/resources-publications/free-resources/ashrae-terminology
Heat Interface Unit (HIU)	The means of connection of the consumer's heating and hot water systems to a heat network and may include isolation and control valves, heat exchangers, pumps and metering devices	Designing Buildings Wiki http://www.designingbuildings.co.uk/wiki/Home from BSRIA guide to heat interface units BG 62/2105

Term	Definition	Source
Heat Transfer	The process of thermal exchange between different systems...Very broadly, the mechanisms of heat transfer can be described as: Conduction, Convection, Radiation and Phase change. The thermal behaviour of a system is a function of the dynamic relationship between these mechanisms	Designing Buildings Wiki http://www.designingbuildings.co.uk/wiki/Home
Heatwave	Although there is no official definition of a 'heatwave' in the UK, the term can be used to describe an extended period of hot weather relative to the expected conditions of the area at that time of year	Met Office http://www.metoffice.gov.uk/public/weather/heat-health/#?tab=heatHealth
Internal Heat Gains	Heat gained from, for example, equipment, lights and people... Anything that uses energy in a space will transfer heat to that space	CIBSE Knowledge Series: KS16, How to manage overheating in buildings: A practical guide to improving summertime comfort in buildings, Chartered Institution of Building Services Engineers, 2010
Low-e Glazing	Low-emissivity glazing. Glass with a selective heat reflecting coating applied to it	CIBSE LG10 Daylighting - A Guide for Designers: Lighting for the Built Environment. Chartered Institution of Building Services Engineers, 2014
Mean Radiant Temperature	Mean radiant temperature (MRT) is a measure of the average temperature of the surfaces that surround a particular point, with which it will exchange thermal radiation. If the point is exposed to the outside, this may include the sky temperature and solar radiation	Designing Buildings Wiki http://www.designingbuildings.co.uk/wiki/Home
Mechanical Ventilation With Heat Recovery (MVHR)	A balanced mechanical whole-house ventilation system where stale air is removed from wet rooms and fresh air is supplied to habitable rooms. In the ventilation unit, heat is removed from warm extracted air via a heat exchanger and is used to pre-heat the incoming supply air	"Understanding Overheating - Where to Start", NHBC Foundation NF 44, Jul. 2012

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Mechanical Extract Ventilation (MEV)	Continuous Mechanical Extract Ventilation systems use continuously running extract fans that create a negative pressure within the dwelling drawing in fresh air through vents and openings. Extract fans are installed to all wet rooms and must incorporate a boost function to temporarily increase the rate of extract as needed to dispel moisture, odour etc.	“Part F 2010 – where to start: An introduction for house builders and designers.” Published for the NHBC Foundation by Richards Partington Architects, Nov-2011
Natural Ventilation	Ventilation that relies on moving air through a building under the natural forces of wind and buoyancy	CIBSE Guide B: Heating, Ventilating, Air Conditioning and Refrigeration, The Chartered Institution of Building Services Engineers, 2005
Operative Temperature	The operative temperature combines the air temperature and the mean radiant temperature into a single value to express their joint effect. It is a weighted average of the two	CIBSE TM52: 2013, The limits of thermal comfort: avoiding overheating in European buildings
Overheating (general)	The phenomenon of excessive or prolonged high temperatures in the home, resulting from internal or external heat gains, which may have adverse effects on the comfort, health or productivity of the occupants	Overheating in Homes - The Big Picture Full Report, Zero Carbon Hub, Jun. 2015
Part L1A of Building Regulations	Approved documents provide general guidance on how different aspects of building design and construction can comply with the Building Regulations. Approved Document L: Conservation of fuel and power, deals with energy efficiency requirements. Approved Document L1A: Conservation of fuel and power (New dwellings). Approved Document L1B: Conservation of fuel and power (Existing dwellings)	Designing Buildings Wiki http://www.designingbuildings.co.uk/wiki/Home

Term	Definition	Source
Passive Design	Design that eliminates the need for auxiliary heating or cooling by using aspects of the local climate and the natural environment to maintain a comfortable temperature within the building. Such designs involve appropriate orientation and layout, appropriate materials as well as maximising daylighting, natural ventilation and solar energy	Joseph Rowntree Foundation, Care provision fit for a future climate, 2016
Passive House Planning Package (PHPP)	A design tool produced by the Passivhaus Institut for use by building architects and designers. PHPP incorporates the energy specifications for quality-approved Passivhaus buildings from the Institut in manual and CD-Rom	http://www.passivhaustrust.org.uk/design_support.php
ProClips	Probabilistic Climate Profiles (ProCliPs) are representations of the UKCP09 climate projections that provide digestible summaries of the UKCP09 projected changes. They assist building designers in familiarising themselves with the likely future climate	M. Shamash, G. Metcalf, and A. Mylona, "Probabilistic Climate Profiles - The effective use of climate projections in building design," Chartered Institution of Building Services Engineers, 2014
Purge Ventilation	Defined in the Building Regulations Approved Document F as 'manually controlled ventilation of rooms or spaces at a relatively high rate to rapidly dilute pollutants and/or water vapour. Purge ventilation may be provided by natural means (e.g. an openable window) or by mechanical means (e.g. a fan).' Part F also notes that 'Purge ventilation provisions may also be used to provide thermal comfort, although this is not controlled under the Building Regulations'	HM Government, "The Building Regulations 2010: Approved Document F1 Means of Ventilation", 2010
Resilience	The ability of a social or ecological system (i.e. person, community, building, physical region) to absorb disturbances whilst retaining same basic structure, functions and capacity to adapt to stress and change	Joseph Rowntree Foundation, Care provision fit for a future climate, 2016

Term	Definition	Source
Solar Gain	Short wave radiation from the sun that heats a building, either directly through an opening such as a window, or indirectly through the fabric of the building	Designing Buildings Wiki http://www.designingbuildings.co.uk/wiki/Home
Solar Radiation	The transmission of radiant energy from the sun	ASHRAE Terminology https://www.ashrae.org/resources-publications/free-resources/ashrae-terminology
Standard Assessment Procedure (SAP)	The Government's approved method for calculating the energy efficiency and carbon emissions from homes to demonstrate compliance with the Building Regulations	"Understanding Overheating - Where to Start", NHBC Foundation NF 44, Jul. 2012.
Test Reference Year	A design year of 8760 hours of climatic data that represents a typical year and is appropriate for the calculation of typical energy consumption (Input into a dynamic thermal model)	CIBSE Guide A: Environmental design, Eighth edition. London: Chartered Institution of Building Services Engineers, 2015
Thermal Comfort	That condition of mind that expresses satisfaction with the thermal environment	International Organization for Standardization (ISO) 7730:2005
Thermal Mass	The ability of a material to absorb and store heat. Thermal mass can be used in buildings to provide steady indoor temperatures. Materials with high thermal mass absorb the heat from within the building during the day, and then expel it slowly when temperatures drop (e.g. at night), when coupled with adequate ventilation	Joseph Rowntree Foundation, Care provision fit for a future climate, 2016
Thermal Mass Parameter	In SAP, the Thermal Mass Parameter (TMP) is required for heating and cooling calculations. It is defined as the sum of (area times heat capacity) over all construction elements divided by total floor area. It can be obtained from the actual construction elements of walls, floors and roofs (including party and internal walls, floors and ceilings)	DECC, "The Government's Standard Assessment Procedure for Energy Rating of Dwellings. 2012 Edition, published by BRE on behalf of DECC, Oct-2013

Term	Definition	Source
Thermal Transmittance (U-Value)	Heat transmission in unit time through unit area of a material or construction and the boundary air films, induced by unit temperature difference between the environments on each side	ASHRAE Terminology https://www.ashrae.org/resources-publications/free-resources/ashrae-terminology
Thermoregulation	The process that enables the human body to maintain its core internal temperature (37°C). Mechanisms within the body such as sweating, expansion of blood vessels help return the body to a state of even internal temperature (homeostasis) if external environmental conditions create increases or decreases in the body's temperature	Joseph Rowntree Foundation, Care provision fit for a future climate, 2016
UKCP09 Climate Projections	Climate projections expressed in terms of absolute values ...A projection of the response of the climate system to emission scenarios of greenhouse gases and aerosols, or radiative forcing scenarios based upon climate model simulations and past observations	UK Climate Projections Glossary Help>Glossary">http://ukclimateprojections.metoffice.gov.uk/ Home > Help > Glossary
UKCP09 Probabilistic Climate Projections	UKCP09 projections of future absolute climate that assign a probability level to different climate outcomes	UK Climate Projections Glossary Help>Glossary">http://ukclimateprojections.metoffice.gov.uk/ Home > Help > Glossary
Urban Heat Island	The 'Urban Heat Island' effect is the phenomenon whereby the temperature in urban areas (particularly at night) is higher than in surrounding rural areas. The UHI effect arises partly because of the different terrain characteristics of city and countryside (such as their reflectivity and the friction effect of their surface), partly due to the ability of buildings to absorb heat by day and release it by night, and partly due to the energy dissipated within the city from human activities	UK Climate Projections Glossary Help>Glossary">http://ukclimateprojections.metoffice.gov.uk/ Home > Help > Glossary

Term	Definition	Source
Value Of A Prevented Fatality (VPF)	A metric also known as the Value of a Statistical Life (VSL)...widely used in Government appraisal and cost-benefit analysis, for example in transport appraisal	Used in UK 2012 Climate Change Risk Assessment. D. Hames and S. Vardoulakis, "Climate change risk assessment for the health sector," Defra, Jan. 2012
Value Of Life Year (VOLY)	A metric that explicitly recognises the change in length of lifetime as a result of the climate change risk	Used in UK 2012 Climate Change Risk Assessment. D. Hames and S. Vardoulakis, "Climate change risk assessment for the health sector," Defra, Jan. 2012