



# Energy Efficient Homes

## Net Zero Carbon Toolkit Information Sheets

### Sheet no 8: Insulation: Windows & ventilation

#### Windows

##### Get the best out of your single, double or triple glazing

Heat losses from our homes from windows can amount to:

- 20% through old single-glazing
- 7% through double-glazing
- 4% through triple-glazing

As well as reducing heat losses, good modern double or triple glazing, if fitted properly, will increase airtightness and reduce noise and condensation. The insulating properties will be increased if e-coatings are used on the glass and the gap between the glazing panels is filled with argon gas.

The frames of double and triple glazing may be made of wood, metal or plastic. There may be restrictions on the type of frame permitted in Conservation Areas or Listed Buildings, and you should check with the Planning Authority.

A low-budget option is to add secondary glazing on the inside of single-glazed windows, using plastic sheeting or an additional pane of glass. In the case of old-fashioned sash windows, these are unlikely to

be airtight, so it may be best to fit a secondary glazing panel which can be opened and closed over the whole frame.

Well-fitting thick curtains can also be very effective at cutting heat losses. See the following websites:

<https://cat.org.uk/info-resources/free-information-service/eco-renovation/windows>

[www.cse.org.uk/downloads/advice-leaflets/energy-advice/insulation-and-heating/advice-leaflet-secondary-glazing.pdf](http://www.cse.org.uk/downloads/advice-leaflets/energy-advice/insulation-and-heating/advice-leaflet-secondary-glazing.pdf)

#### Doors

##### Check the insulation of external door frames

A surprising amount of heat can be lost through the non-glazed portion of doors, even of modern ones, and you should ensure that they are draught-proof and well insulated. Further advice can be found at:

<https://energysavingtrust.org.uk/advice/windows-and-doors>

<https://www.cse.org.uk/downloads/advice-leaflets/energy-advice/insulation-and-heating/advice-leaflet-energy-efficient-glazing-high-performance-doors.pdf>





## Avoid thermal bridging

The Zero Carbon Hub describes thermal bridging as: “A thermal bridge (sometimes called a cold bridge) is a localised weakness or discontinuity in the thermal envelope of a building...These occur at junctions between elements, such as a wall and a floor or a window and a wall. At these locations heat is more able to transfer through the construction, resulting in greater heat loss from the dwelling and localised ‘cold spots’ in the building envelope.”

Thermal bridges need to be rectified where possible in order to reduce heat losses. To avoid them when fitting new windows or doors insulation must be fitted continuously around them and the wall in which they are situated. Professional advice should be sought. Further information can be found on pages 54 and 55 of the Net Zero Carbon Toolkit at: [www.westoxon.gov.uk/media/2ddb125k/net-zero-carbon-toolkit.pdf](http://www.westoxon.gov.uk/media/2ddb125k/net-zero-carbon-toolkit.pdf)

## Ventilation

To achieve the reduction in heat losses needed to achieve Net Zero Carbon requires us to make our homes more airtight. They must still be ventilated, but in a controlled way instead of by uncontrolled draughts.

### Use airbricks and trickle vents to control ventilation

Air bricks at ground level permit a flow of air under suspended floors; they are also required for safety reasons in rooms with fires such as log burners, and they must not be blocked. New double or triple glazed window units often include trickle vents to permit an air flow.

### Provide shading to prevent overheating

Good ventilation is also needed to prevent overheating in our increasingly warm summers, and south-facing windows should ideally be shaded by shutters, blinds or curtains.

## Other sheets available in this series

1. Fabric First: Planning changes to your home?
2. Preparing for Retrofit: Resources on your doorstep
3. The Energy Pyramid: The Principle behind the Whole Building Plan
4. Opportunities to Begin the Journey
5. First Retrofit Priorities
6. Insulation: Roof & Attic
7. Insulation: Walls
- 8. Insulation: Windows & Ventilation**
9. Insulation: Floors
10. Water Efficiency
11. Heating systems
12. Lighting
13. Renewables
14. Costs & Grants

### Consider Mechanical Ventilation with Heat Recovery (MVHR)

This is a top-of-the-range ventilation system, electrically operated, which channels fresh air at the right temperature to all the rooms of the house. It requires quite a lot of space for piping, and is easiest to install when houses are newly built.

Other simpler methods are: Natural Ventilation, Passive Ventilation, Intermittent Extraction, Positive Input, Mechanical Extraction.

For information about these, together with “Eight tips for good indoor air quality”, see:

[www.cse.org.uk/downloads/advice-leaflets/energyadvice/insulation-and-heating/building-performance/advice-leaflet-ventilation.pdf](http://www.cse.org.uk/downloads/advice-leaflets/energyadvice/insulation-and-heating/building-performance/advice-leaflet-ventilation.pdf)