

Energy efficiency measures – Replacement windows



Scope

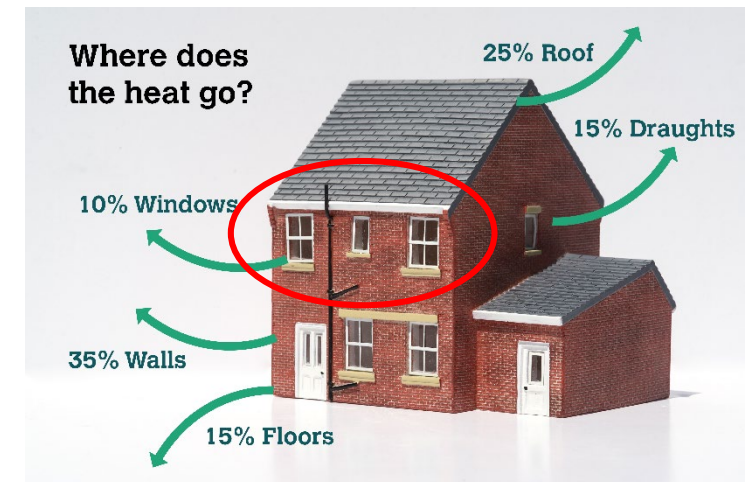
- This training module is aimed at **HomeWorks** registered tradespeople who are acting as Low Carbon Ambassadors (LCAs) to provide basic energy efficiency advice to homeowners
- It is one in a series of training modules aimed at LCAs:
 - Introduction to domestic retrofit
 - What is **HomeWorks**?
 - Understanding an EPC (Energy Performance Certificate)
 - Energy efficiency measures (EEMs):
 - Low/no cost measures
 - Loft insulation
 - Draught-proofing
 - Cavity wall insulation
 - Solid wall insulation
 - **Replacement windows**
 - Boiler replacement





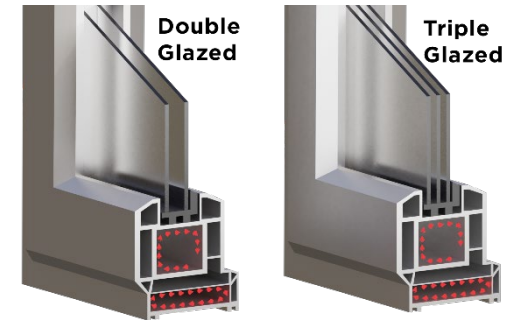
EEMs – Replacement windows - Learning outcomes

- The learning outcomes of this training module are to summarise:
 - The different types of replacement windows
 - The materials they are made of and how this affects window performance
 - The approach to assess the overall performance of windows
 - How planning requirements can impact on window replacement
 - The approaches for secondary glazing
 - The energy savings and other benefits associated with replacement windows



Energy efficient windows

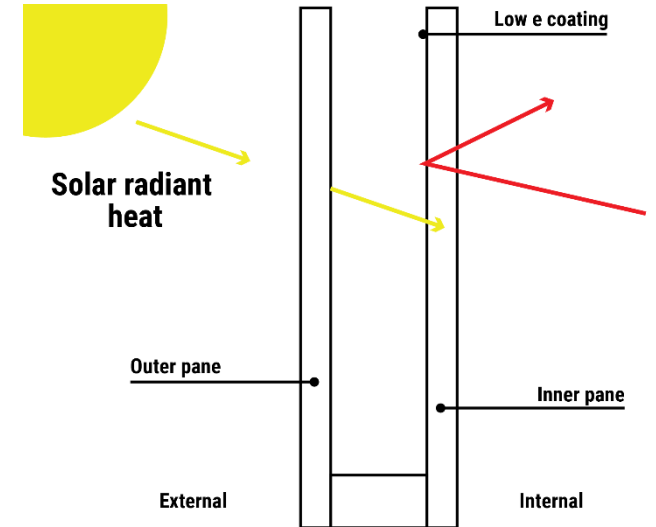
- Single glazed windows lose heat through glass and frame by conduction
- Can also be draughts – see ***Draught-Proofing***
- Energy efficient windows include:
 - Double glazing
 - Triple glazing
 - Secondary glazing
- Replacement windows installed by professionals, but competent DIYers can install secondary glazing
- Installers registered with competent scheme ensure installations meet Building Regulation requirements





Window materials

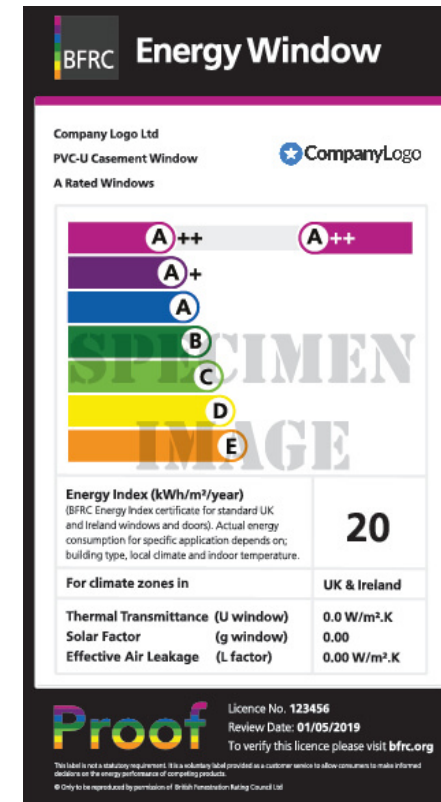
- Glass:
 - Low-E glass has thin coat on internal glass surface to reflect heat back into home but still let in daylight
- Gap:
 - Typical size for double glazing is 16mm
 - Gap filled with air or inert gas and completely sealed
- Pane spacers:
 - Keep glass panes apart - 'warm edge' spacers have little or no metal
- Frame:



uPVC	Wood	Aluminium or steel	Composite
<ul style="list-style-type: none"> • Needs no regular maintenance • Can be recycled 	<ul style="list-style-type: none"> • Lower environmental impact • Requires maintenance • Used in conservation areas 	<ul style="list-style-type: none"> • Slim and long lasting • Can be recycled 	<ul style="list-style-type: none"> • Inner timber frame covered with aluminium or plastic • Reduces maintenance and weatherproofs frame

Window performance

- Window energy performance depends on:
 - Insulation properties of materials (U-value)
 - Amount of daylight windows allows
 - Air leakage of window frame
- British Fenestration Rating Council (<https://www.bfrc.org/>) labelling scheme used to rate windows from A++ to E – also shows U-value
- Replacement windows need to be Band C or better
- Install windows with trickle ventilators in frame to provide controlled ventilation





Replacement windows and planning permission

- Generally, do not need planning permission
- **But**, limitations in:
 - **Conservation areas** – replacement windows need to look like original (e.g. sash windows)
 - **Listed properties** – improvements limited to draught-proofing and secondary glazing
- Contact local authority or conservation department





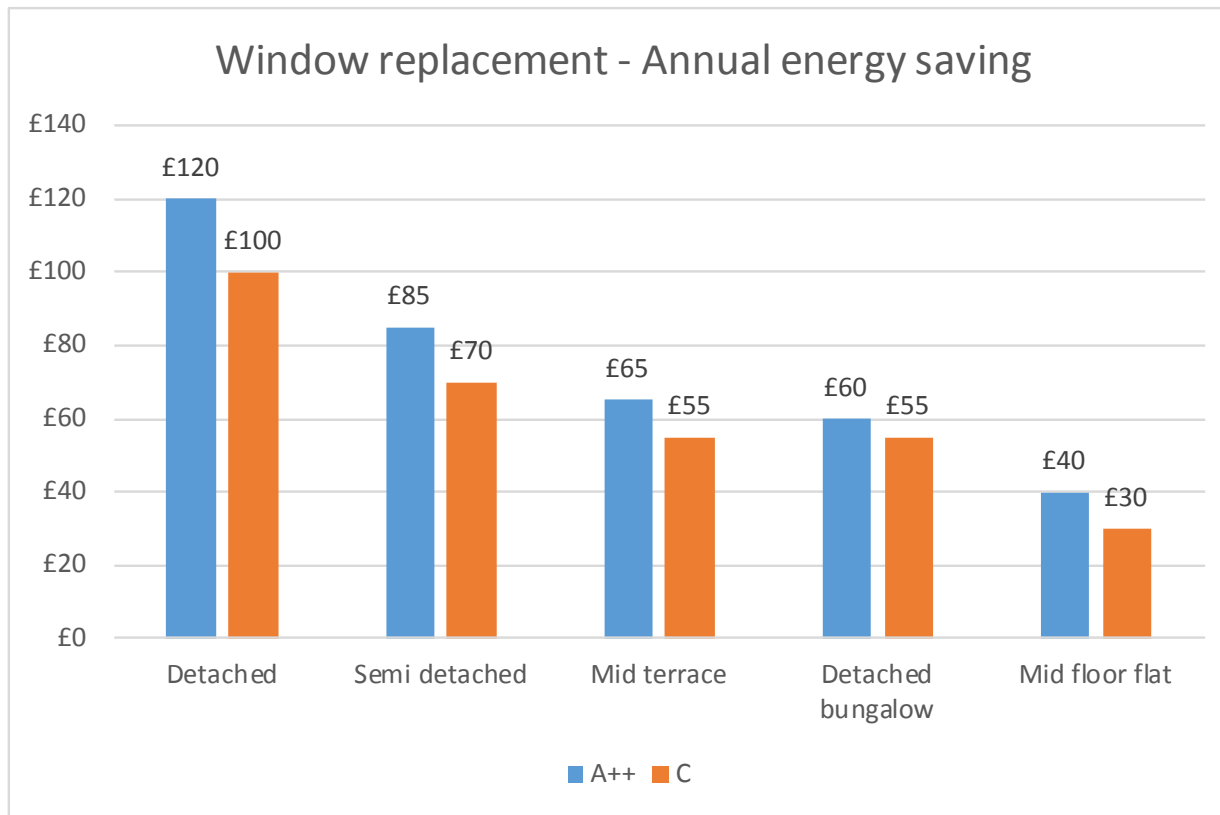
Secondary glazing

- Secondary glazing re-produces double glazing by leaving original window in place and fitting extra pane inside
- Need to draught-proof existing window – see ***Draught-Proofing***
- Options:
 - Thin film onto window frame
 - Acrylic sheet onto frame using proprietary fixing system
 - Professionally-fitted openable window installed in window recess
- Secondary glazing good solution in period properties



Window replacement – Annual energy saving

- Annual energy saving replacing single glazing with double glazing

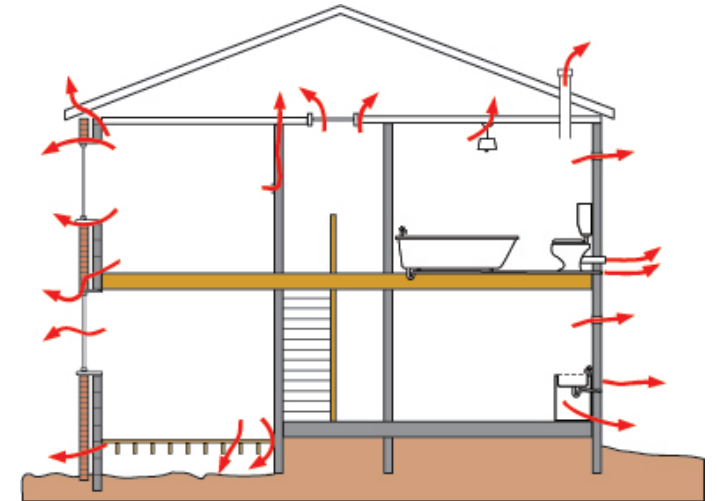
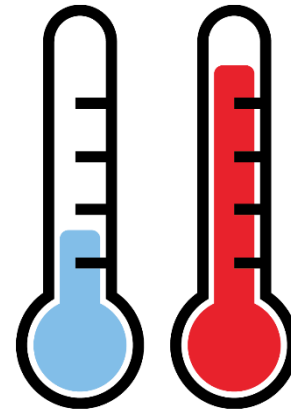
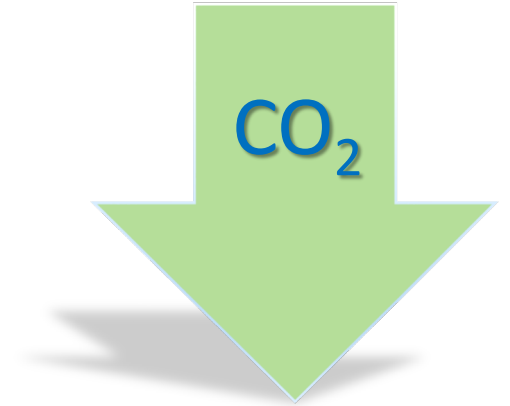


The graph shows the annual energy savings from installing double glazing (rating A++ and C) in five key property types that originally had single glazing.



Replacement windows – Other benefits

- Reduced carbon dioxide emissions
- Improved thermal comfort
- Reduced draughts
- Reduced risk of condensation on internal window pane
- Reduced external noise
- Improves appearance of external façade



Replacement windows – Further information

- Further information on replacement windows can be found on:
 - Energy Saving Trust (EST) website at: <https://energysavingtrust.org.uk/home-energy-efficiency/energy-efficient-windows>
 - Simple Energy Advice (SEA) website: <https://www.simpleenergyadvice.org.uk/your-home/windows-and-doors>
- Registered installers can be found at: <https://www.competentperson.co.uk/>