**NGS National Green Specification**



GBE Green Building Encyclopaedia

[**My house is too costly to run (What can I do to future-proof my bills)**](https://greenlivinglive.com/sustainable-future-theatre/house-costly-run-future-proof-bills?&sortby=customfield_5850%20asc&searchgroup=libraryentry-sustainable-future-theatre)

[BrianSpecMan](https://greenbuildingencyclopaedia.uk/about/brian-murphy-aka-brianspecman/)

05 May 2023

16:00 - 16:45

Sustainable Future Theatre

MY HOUSE IS TOO COSTLY TO RUN   
(WHAT CAN I DO TO FUTURE-PROOF MY BILLS)

Started not finished: See the slide show for the current version

HEATING COSTS

Fuel Poverty Exists:

* Government pays winter heating allowance every year
* Grannies pay for Christmas presents and still go cold
* A better approach is to insulate well once, no more bills, no more annual payouts
* ECO Energy Company Obligations insulate the poorest homes, cheaply with incompetent insulation
* Green Deal came to nothing
* Recent funding was withdrawn before it got started, impatient greedy Government
* Current policies with take 100 years to meet carbon targets we have 10 years
* Current policies with take 300 years to wipe out fuel poverty

Fuel:

* Prices are going up
* Becoming unaffordable for many
* Government pay homeowners to pay energy providers to pay taxes and lobbying bills to keep letting prices rise
* Will the Government pay homeowners every year to pay energy providers?
* Unlikely

80% reduction is easy diagrams

New build is easy, retrofit can be more difficult or expensive

Approaches:

* Heat the sky (no insulation and windows open)
* Heat the building (expensive)
* Heat the rooms (less so and risks)
* Heat the person (challenging to change lifestyles)

Approaches:

* Insulate the building (insulation, thermal bridges, air tightness)
* Insulate the rooms (easier but only have acoustic regulations between some rooms)
* Insulate the person (clothes = lifestyle, challenging to change lifestyles)

Strive for thermal comfort in the building

* Right Insulation reduces heat loss
* Wrong insulation can exacerbate overheating
* Internal Surfaces temperatures
* Glazing Internal surface temperatures
* Glazing and surfaces to be as close as possible to same temperature
* Or you reach for the thermostat

Thermal comfort and glazing table

RETROFIT:

PERFORMANCE OF EXISTING BUILDING FABRIC:

* Deliberately air leaky construction:
* Deliberate ventilation to all rooms and voids
* Ventilated cavity behind wattle and daub independent lining, from below ground floor to attic (Scotland)
* Occupants heated by radient heat from open fires
* Radient heat from Cooking hearth

Existing materials and methods

Thick Brick walls 215 mm and thicker

Thick Stone walls 200 mm down south-east to 800 mm up north-west

Lime Plaster on the hard

Lath and lime plaster Drylining on ventilation cavity behind

Airbricks in every room

Suspended timber floors on honeycomb sleeper walls, perimeter air bricks and cross ventilation

Suspended timber floors embedded in external walls

Softwood timber roofs eaves ventilation, with and without bitumen roofing underlay (England) or softwood sarking boards (Scotland)

External Toilet, Back boiler for hot water

Previous Interventions:

Fitted bathrooms and Kitchens

Domestic hot and cold water,

Insulated hot water cylinder (in sufficient insulation)

Uninsulated pipes in construction cavities

Central heating with radiators on external walls, pipes buried in screeds and uninsulated floors

Risk of choice of additional incompatible materials

Foamed Plastic thermal insulation:

incompatible with timber framing (Moisture impermeable, forces moisture through timbers)

incompatible with masonry walls (Moisture impermeable, traps moisture behind insulation in batten zone)

Glass or Stone wool thermal insulation:

incompatible with timber framing (Moisture permeable, Hydrophobic places moisture at timbers)

incompatible with timber and slate roofing

No solar heat gain resistance, conductivity resistance traps heat, exacerbates overheating

incompatible with moisture permeable masonry walls (insulation potentially kept damp and ineffective)

PERFORMANCE OF EXISTING WINDOWS:

* Deliberately Air leaky
* Top and bottom passive ventilation
* High windows good daylight penetration
* Single glazed: thermal discomfort

Improvement in performance by upgrading in steps

Vertical Sliding Sash Single Glazed:

* Joinery repairs
* Weather stripping
* Double Glazing
* Blinds
* Reflective Blinds
* Thick Curtains
* Secondary Glazing
* Timber Shutters

RENEWABLE ENERGY:

CHEAP OR FREE ENERGY:

* Off peak cheap or free energy
* Internet of tanks, Mixergy domestic Hot water

Glazing and energy tables

NEW BUILD

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30th April 2023 – 12th May 2023