



Brief Introduction to Saving Energy in your Home

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Saving Energy in your Community

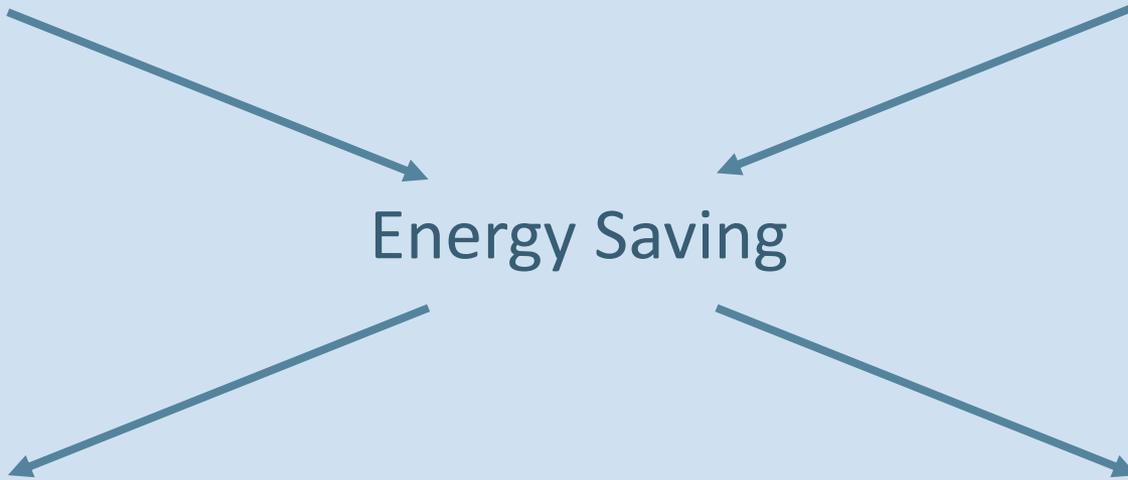
Rising Energy Costs

Climate Change

Energy Saving

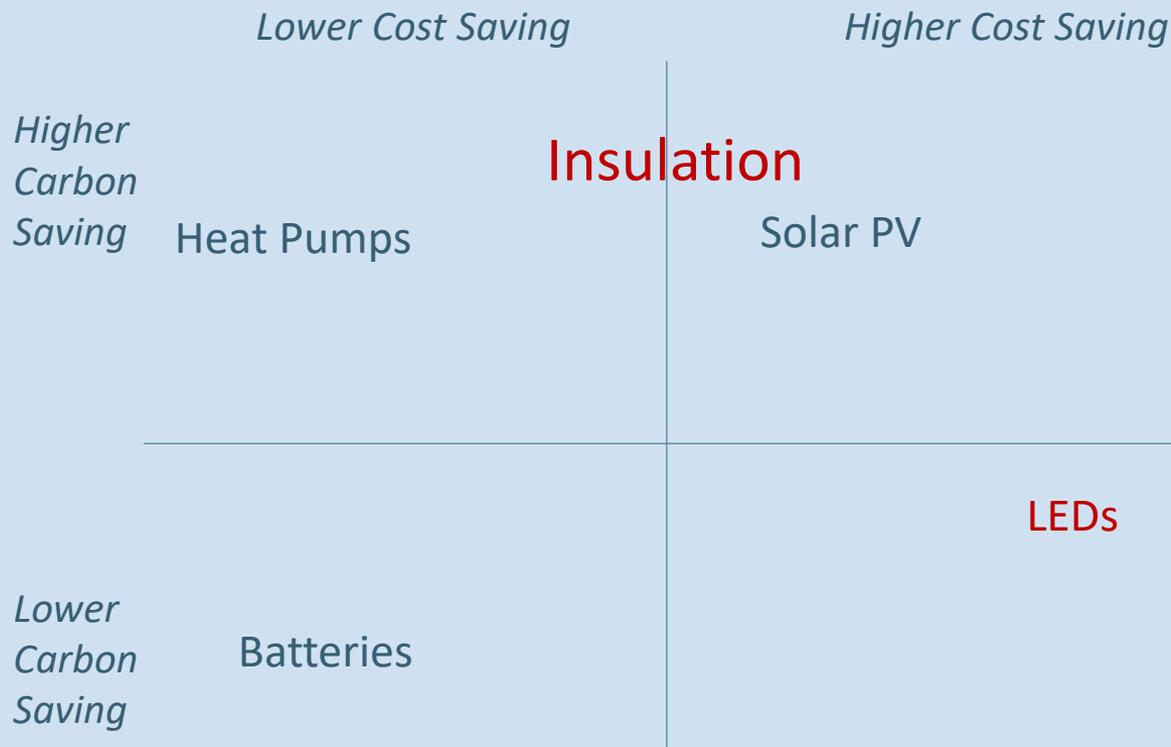
Save Money

Reduce Carbon Emissions





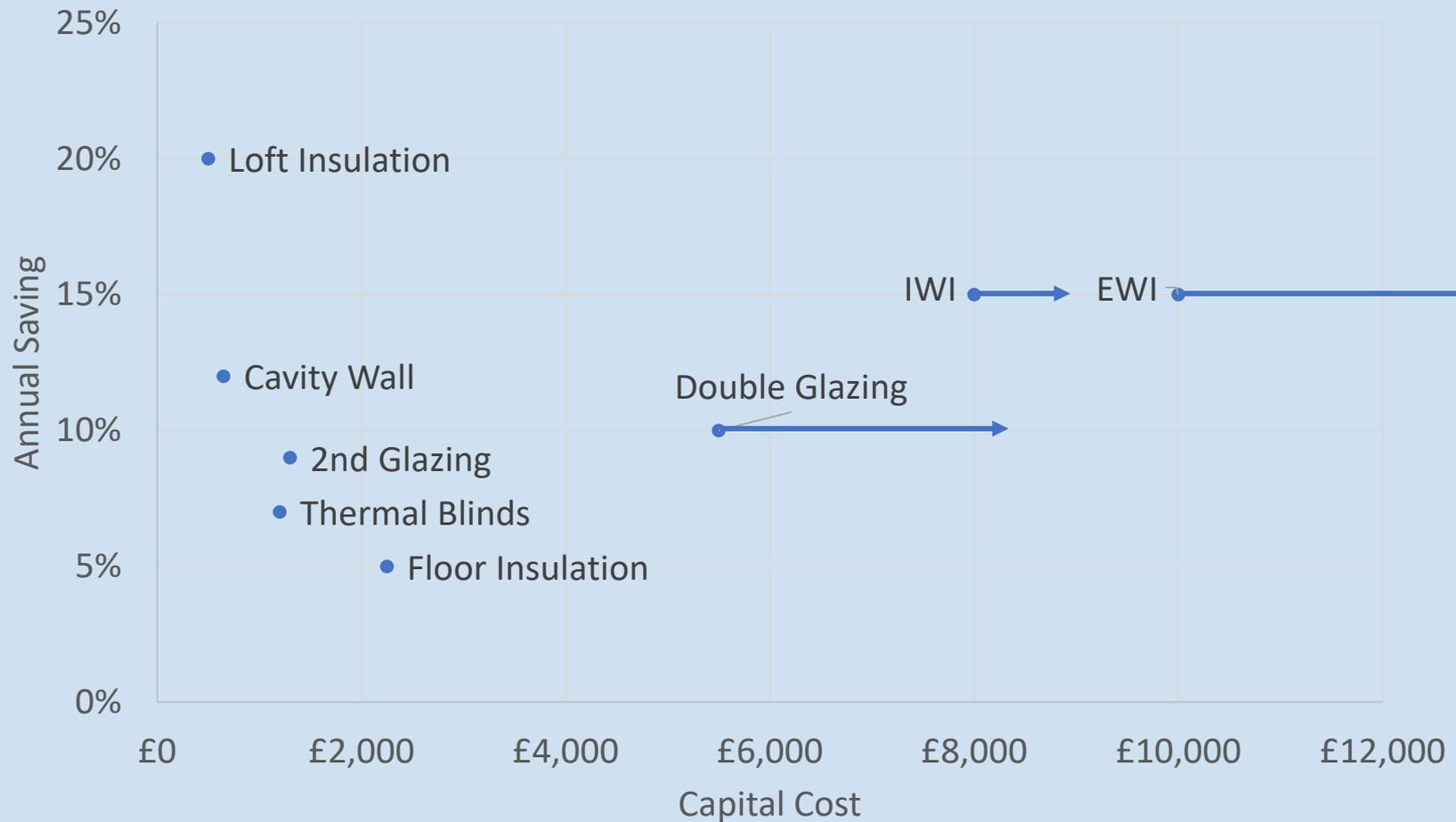
Where to start?



Always, always, always start with lighting and insulation!



Insulation measures



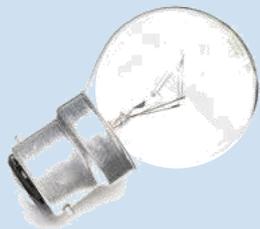
Typical costs and savings for a mid-terrace home



Lighting

- As a rule of thumb – any lights used more than 2 hours a day will pay for LED replacement in under a year
- So lights in the living room, kitchen and main bedroom that are not LED should be changed immediately

	40W Incandescent	35W Halogen Spot	58W 4’ Fluorescent tube	“60W” equivalent fluorescent bulb
Current Watts	40	35	58	60
LED Equivalent W	5	3.5	16	8
Daily use at which payback is under 2 years	35m	1hr 20m	1hr 10m	6hr 20m





Lighting

Common misconceptions:

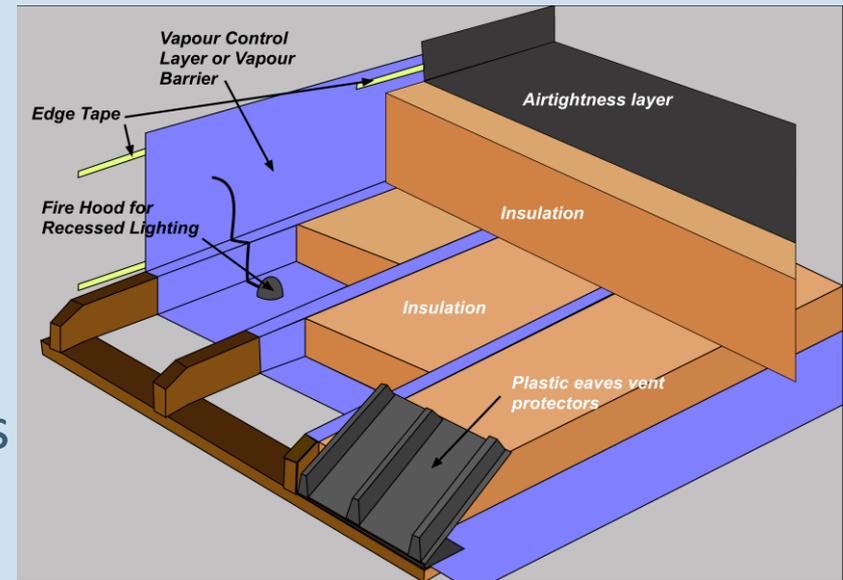
- LEDs are harsh white light - the light colour from LEDs can be anything “Warm white” is same as old incandescent bulbs
- LEDs are dim – current LEDs can match the Lumens of any old bulb
- I already have fluorescent bulbs – payback is longer but still worthwhile
- Low energy bulbs don’t switch on instantly – LEDs do!
- There is carbon tied up in the manufacture of LEDs - true but carbon payback <6 months - no logic in waiting until old bulbs die
- Need to change fittings – pretty much all standard bulb types now have a direct LED replacement – even tubes





Loft Insulation

- Dull but effective!
- Minimum 270mm
- Must run over joists
- Must run down into eaves
- Must be dry – fix leaks first
- Should not cover any large cables (eg electric shower)
- Recessed lighting needs fire hoods to seal opening
- Vapour control and airtightness improve further



eco-home-essentials.co.uk

<https://energysavingtrust.org.uk/advice/roof-and-loft-insulation/>



Loft Insulation

- Some properties are harder to treat
- Loft needs to be cleared
- Flooring should be raised on legs
- Dormers may need more radical solutions





Windows

- Windows account for significant heat loss – a single glazed window has nearly 10x the heat loss of the surround wall (assuming insulated cavity walls)
- Shrink to fit cellophane temporary glazing can cut heat loss in half – more if it seals draughty windows
- BUT be sure to leave some ventilation or there will be damp problems by spring!

Window U Values:	(W/m ² .K)	Heat loss (W)
Single glazing	6	204
Adding a thermal blind	3.2	109
Cellophane film	3.0	102
Secondary double glazing	3.0	102
Old double glazing	2.8	95
New double glazing	1.2	41
Triple glazing	1	34

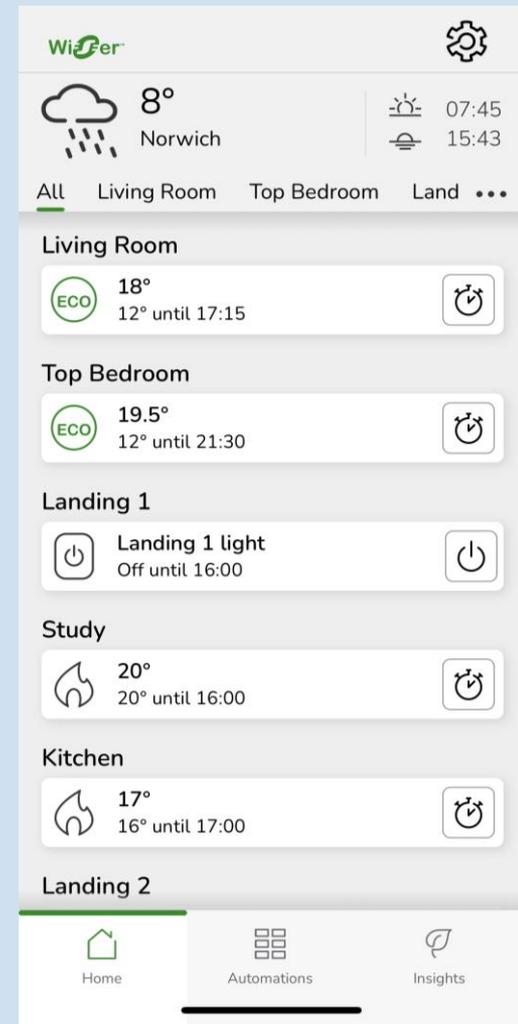
Heat loss from a 2m² window inside temp 22° outside 5°

- Properly fitted thermal blinds are another effective solution – edges in runners or magnet sealed are best



Heating Controls

- Without changing anything else, most people can save just by controlling temperature better
- Dropping unused space back to c 16°C can half the heat loss
- Step 1 is to ensure that radiators have TRVs and time switch and thermostat are set correctly
- TRVs will control each room to the required temperature when the heating is on
- Step 2 is to fit a smart heating controller. TRVs are replaced by wifi linked thermostats
- Now each room has both a thermostat and its own time switch





Using less heat without insulating

- So, note that Living Room is set at 12°C until the evening when it increases to 22°C – it goes back to 12°C at 10:30pm
- But the bedroom stays at 12°C until 9:30pm and then comes up to 19°C until 11pm
- In the mornings the bedroom is warmed from 7 until 8:30 (later at the weekends) but the living room stays low
- Estimates vary but smart controls should save 15-30% on energy use

Living Room



18°

12° until 17:15



Top Bedroom



19.5°

12° until 21:30





Using less heat without insulating

- TRVs are very hard to set right – people tend to turn them up and down if they are too cold or too hot rather than making very small adjustments until they control to the right temperature
- Wall thermostats are often in the hall which is a poor place to decide whether you need heat or not in the living room or bedroom!
- Smart controls also greatly improve the accuracy of control





Room by Room Control



Day/Time	00:00-06:30	06:30-08:30	08:30-21:30	21:30-23:00	23:00-00:00
Mon-Fri	16°C	22°C	16°C	22°C	16°C
Weekend	16°C	22°C	20°C	22°C	16°C



Tado Kit £405 (inc 3 SRVs, extras £74 ea)

For a medium semi with heat demand of 12000kWh/yr
 Annual gas bill will be c. £1250 so a 20% saving would be
 £250 a year – 2-3 year payback



Drayton Wiser Kit £220 (inc 2 SRVs, extras £43)



Hive Kit £150 (SRVs £54 ea)

Day/Time	00:00-07:00	07:00-08:30	08:30-17:00	17:00-21:30	21:30-00:00
Mon-Fri	16°C	20°C	16°C	20°C	16°C
Weekend	16°C	20°C	20°C	20°C	16°C

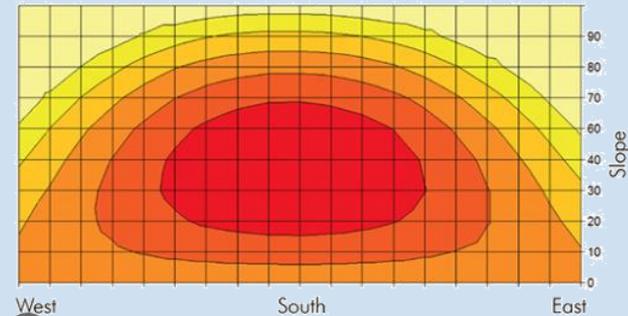
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Bigger Stuff - PV

Solar PV on roofs requires significantly more investment but does provide good returns provided you meet 2 key criteria:

- You need a reasonable size of unshaded roof facing between SE and SW
- You use most of the generated electricity yourself



- Generation is reduced, the further you are away from due South
- Exported electricity is worth much less than the price to buy





Bigger Stuff - PV

Solar PV on roofs is currently around £6,000 for 3.6kW but the cost will depend on your roof and access to it.

Group purchasing will greatly help in ensuring you have the best price from the best supplier

Or you can look to buy through Solar Together
www.solartogether.co.uk





Bigger Stuff – Heat Pumps

- Heat pumps are highly effective at cutting carbon
- Currently 25% of gas and down to 12% by 2030
- **But** gas is still much cheaper than electricity
- Reforms proposed to help this and £5k grant available





Bigger Stuff – Heat Pumps

Key point to note about heat pumps is that the bigger the temperature difference between the heat source (eg outside air) and the output (eg water around your radiators), the lower the efficiency.

- Usually means lower temperature in your radiators
- This means you need bigger radiators (and bigger pipes if on microbore)
- This can be a significant cost element

But all these can be solved and if you insulate first, this will reduce your heat demand





Resources

- Energy Saving Trust is a reliable information source on efficiency measures
- Take some claims in the papers and on the internet with a pinch of salt!
- For example – turn down your boiler and save 12%

**energy
saving
trust**

If your boiler was set very high – eg 80 °C and you lower to 65 °C the base efficiency of the boiler may increase by 4%. If you are not using your radiator TRVs properly, it may reduce fuel use because you are heating your house less but it's better to tackle this by getting your heating under control first!