

Meet The Experts: Getting your home heat pump ready

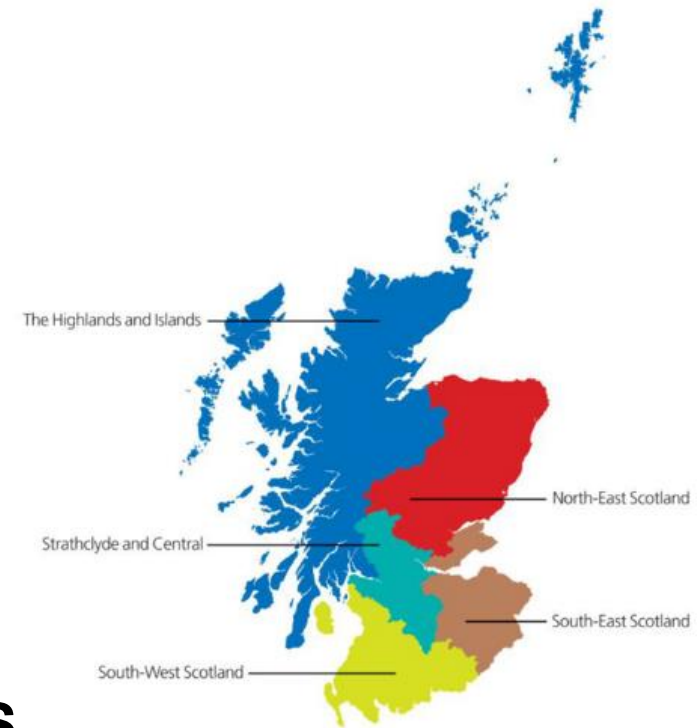
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Home Energy Scotland

- **Free and impartial advice** on energy efficiency, renewables, transport and water efficiency.
- Help people stay warm and reduce bills by providing advice and funding.
- Funded by the **Scottish Government**, managed by **Energy Saving Trust**.
- Delivered by regional advice centres.
- **38,000 households supported by HES SE alone last year.**
- Available by phone, email, in person.



Fabric first approach

Traditional buildings

Building Standards define a ‘**traditional building**’ as:

- “a building or part of a building of a type constructed before or around 1919:
- a) using construction techniques that were commonly in use before 1919; and
- b) with permeable components, in a way that promotes the dissipation of moisture from the *building fabric*.”



Internal wall insulation

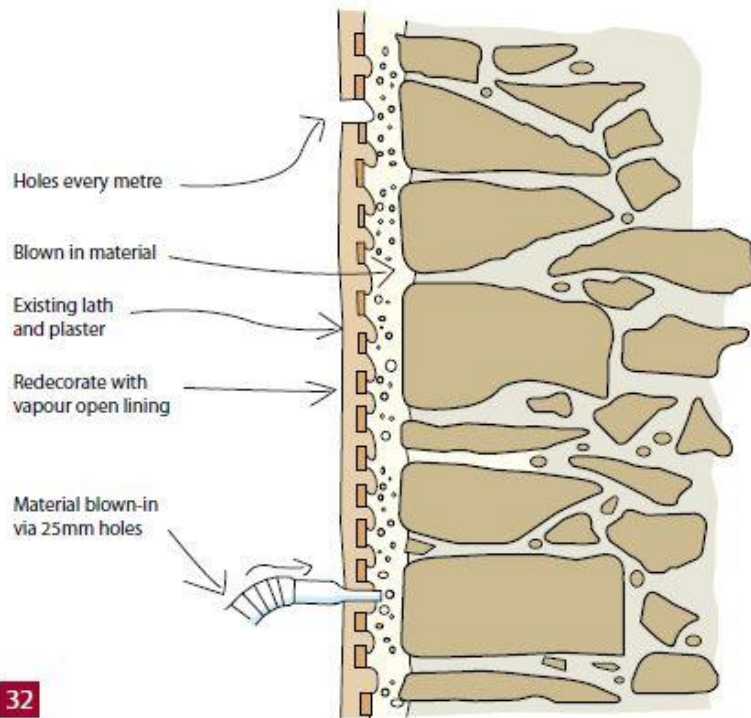
- A layer of insulating material that is fixed directly to the wall or attached via timber battens
- Insulating material can also be applied onto plaster
- Insulating material can also be sprayed on damp or injected behind an existing wall lining
- **Historic Environment Scotland** recommends that natural, breathable insulating fabrics are used in historic properties. This is to maintain the moisture permeability of the structure which is a key consideration in any traditional building
- Materials like wood fibre, hemp fibre, sheep wool and others preferred

Internal wall insulation



Insulation with Aerogel board applied on existing wall lining

Internal wall insulation



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Image: Historic Environment Scotland

- Insulating material can also be sprayed on damp or injected behind an existing wall lining
- This is not necessarily a soft option!

Room-in-roof insulation

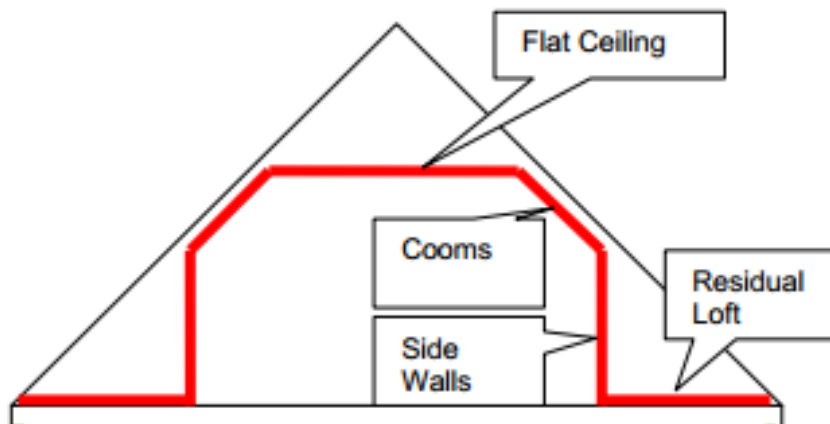


Image: Energy Saving Trust

- Usually, uninsulated.
- Access can pose a problem.
- Insulation can also be blown or attached to existing wall lining.
- (Again) Ideally breathable materials should be used, and ventilation of the roof structure must be maintained!

Room-in-roof insulation

*Image: Historic
Environment
Scotland*



Room-in-roof insulation with wood fibre

Secondary glazing

- Significantly cheaper than double glazing
- Can be almost equally effective (~63% improvement with u-value of about 1.7)
- Various styles and techniques
- Can be installed on hinges to allow for opening or using magnetic strips for seasonal use.
- Other options available (e.g., fitting double glazing panes within the existing sash or even closing your shutters!)



Air Source Heat Pumps

What is a heat pump?

All of us have at least one heat pump at home already!

- A heat pump is a device that makes the heat travel in the opposite to the 'natural' direction, from a cooler place to a warmer place
- A heat pump can harness the energy from the air, ground or water to heat your home

Things to note:

- Seasonal Coefficient of Performance (SCoP)
- Averaged across the year, how many units of heat will your heat pump provide for you for every unit of electricity it uses?
- Flow Temperature



Air Source Heat Pump (ASHP)

Key Points:

- Draws renewable heat from the air
- Will provide heating and hot water effectively even if outside is -15°C
- Works well with radiators and underfloor heating
- May require changes to the distribution system
- Noise levels similar to a fridge but can be louder in cold weather
- 300 – 400% efficient / SCoP 3 – 4
- Install costs between £7,000 - £14,000 for the Heat Pump unit.



Is it right for your home?

Factors to Consider:

- Is your insulation good enough?
- Will the pipework and radiators need to be upgraded?
- Do you have enough space outside for a fan unit (like an air conditioning unit)?
- Do you have room inside for a hot water tank?
- What fuel type are you switching away from?
- What is your heating pattern?
- Do you live in a listed building or in a conservation area?



Benefits

- Financial savings – especially when switching from expensive heating types (e.g. storage heaters or LPG)
- Lower carbon emissions
- No combustion fuels or fuel deliveries required
- Comfort
- Minimal maintenance required
- Can connect to other technology such as solar or energy storage
- ASHPs are generally classed as ‘permitted developments’
- Eligible for the Home Energy Scotland Grant & Loan

Heating system type	Fuel bill saving (£/year)	CO2 savings (kg/year)
Old (G-Rated) gas boiler	£340	2900
New (A-rated) gas boiler	-£14	1900
Old Electric Storage Heaters	£1,100	2000
New Electric Storage Heaters	£840	1600
Old (G-Rated) oil boiler	£510	4400
New (A-rated) oil boiler	£65	2900
Old (G-Rated) LPG boiler	£510	3400
New (A-rated) LPG boiler	£100	2200
Coal	£1,100	over 7000

Figures are based on fuel prices as of January 2024 and are taken from the [Energy Saving Trust](https://www.energy-saving-trust.org/) website

Alternative options

Hybrid heat pumps

- Fossil fuel boiler working alongside the heat pump
- Suitable for older properties where a heat pump may struggle to reach desired temperature
- You would have to upkeep two heating systems



High temperature heat pumps

- Reduces the need to upgrade the distribution system
- Lower efficiencies so more expensive to run

Other options

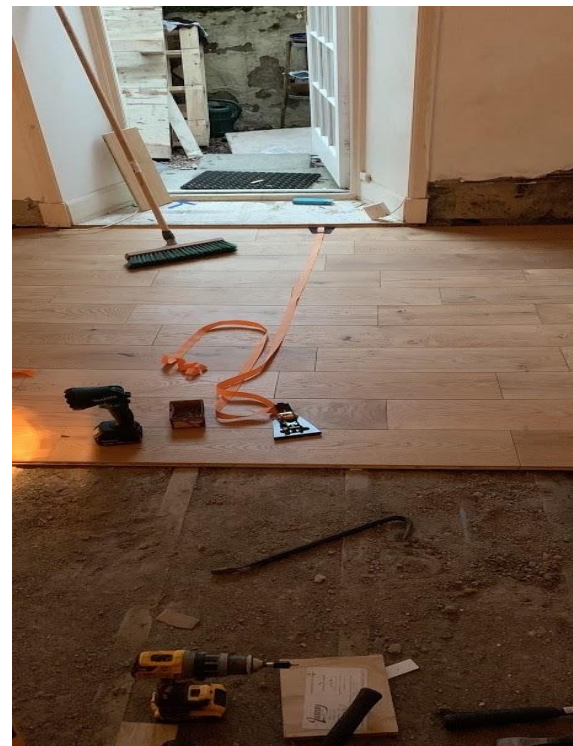
Case Study: Heat pump & insulation in a colony house



Case Study: Heat pump & insulation in a colony house



Case Study: Heat pump & insulation in a colony house



Case Study: Heat pump & insulation in a colony house



Case Study: Life with heat pump

- Easy to control
- The property maintains a comfortable temperature
- No noticeable noise from the heat pump unit
- Customer reported a Seasonal Coefficient of Performance (SCoP) of between about 3.5 – hopes to improve on this
- Quote for the heat pump, distribution system, screed and labour just over £10,000
- Some of the work done by the customer
- Running costs on par with what the customer was paying in their gas heated flat previously

More case studies

More on Richard's journey and how to contact him, and other Green Homes Network members, you can find here: [Energy Saving Trust | Green Homes Network](#)

Historic Environment Scotland's publications provide more insight in retrofitting energy efficiency measures and micro-renewables in traditional buildings:

[Publications | Leading Public Body for Scotland's Historic Environment](#)

Planning & Permissions

Typically, renewable technologies and energy efficiency measures are classed (for most part) as permitted developments. Exceptions do apply for properties in [conservation area](#) and/or [listed buildings](#)

Conditions will apply as per [Permitted Development Rights](#) and there may be specific local guidance.

ELC's Duty Planner is the most appropriate place to direct initial enquiries questions: environment@eastlothian.gov.uk

Planning & Permissions

Permitted Development Rights review

- Consultation went live 31st May 2023 and closed on 23rd August 2023
- The proposals sought to provide more *“flexibility to carry out certain types of development without a planning application having to be submitted to – and approved by – the relevant planning authority”*
- Phase 3 of the review specifically focusses on the installation of renewable equipment and glazing.
- More on this you can find [here](#).
- The Scottish Government are yet to publish results.

Tools and Support

In-Home Specialists Service



- Provide tailored advice regarding your property and specific needs.
- Free and impartial home visit service with on-site advice on renewable technologies and fabric improvements for traditional buildings.
- Technical Officer can provide remote support or visit you at your property if necessary.
- Provide required reports to support funding applications for renewables on self-build projects.

Home Energy Improvement Report

Recommended improvement	Indicative cost	Annual savings		
	£	kWh	kgCO ₂ e	
Extension roof - Insulation for flat roofing (250 mm)	£1,800	206	26	
Room-in-roof flat ceiling and residual loft space - Room in roof, flat ceiling and/or residual loft space insulation (300 mm)	£2,400	2,923	376	
Bathroom - Room-in-roof flat ceiling and residual loft space - Room in roof, flat ceiling and/or residual loft space insulation (300 mm)	£1,400	115	15	
Room in roof wall - Room in roof walls and sloping parts, 100mm insulation	£5,400	4,919	633	
Extension wall - Cavity wall insulation	£500	906	117	
Main walls - Internal wall insulation	£6,700	3,576	459	
Main floor - Standard insulation (e.g. mineral wool) between floor joists (150mm)	£3,100	2,437	313	
Extension floor - Solid floor with 150 mm insulation	£3,100	1,070	137	
Single glazed windows - Secondary glazing	£2,200	718	91	

Potential improvement of your home's energy efficiency



Estimated annual savings and payments with this package of improvements

£1,315 Fuel bill savings	30,756 kWh Energy savings	5,279 kgCO ₂ e Carbon dioxide savings
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Home Renewables Selector Report

Your renewables report

Solar photovoltaics (PV) and battery

Solar electricity panels, also known as solar photovoltaics (PV), capture light from the sun and convert it into electricity for your home. Solar electricity panels will generate electricity even on cloudy days - they just need daylight.

NOTE: The photovoltaic system shown below includes an associated household battery.

Potential performance

Potential annual net benefit

£891 year
£592 from solar PV
£299 from battery storage

<div>Potential CO₂ saving</div> <div> 1,064 kg / year 1,155 from solar PV -91 from battery </div>	<div>Potential fuel bill saving</div> <div> £822 year £453 from solar PV £369 from battery </div>	<div>Potential payments from SEG</div> <div> £70 year </div>
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Estimated installation cost

£13,444
£7,944 for solar PV
£5,500 for battery storage

More detail and assumptions

These figures are based on the information about your property that you have provided and assume that any recommended improvements have been installed first.

<div>Assumed Smart Export Guarantee (SEG) Tariff:</div> <div>4.1 pence/kWh</div>	<div>PV system type</div> <div>Large (6kWp)</div> <div>System requires 43 m2 of roof space</div>
<div>Energy generated by the panels</div> <div>4,998 kWh</div>	<div>Amount used within the property</div> <div>2,899 kWh</div>
<div>Amount exported to the electricity grid</div> <div>1,706 kWh</div>	
<div>Assumed PV inverter efficiency: 95%</div>	
<div>Assumed electric battery efficiency: 95%</div>	

Technical parameters

Direction panels will face

180 degrees (South)
(As entered by you)

<div>Panel slope</div> <div> 40 degrees (As entered by you) </div>	<div>Panel overshadowing</div> <div> None or very little (less than 20% of sky) (As entered by you) </div>
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When you are at property

Home all day
(As entered by you)

Optional electricity storage

Type of storage technology added

Battery storage

Size of battery used

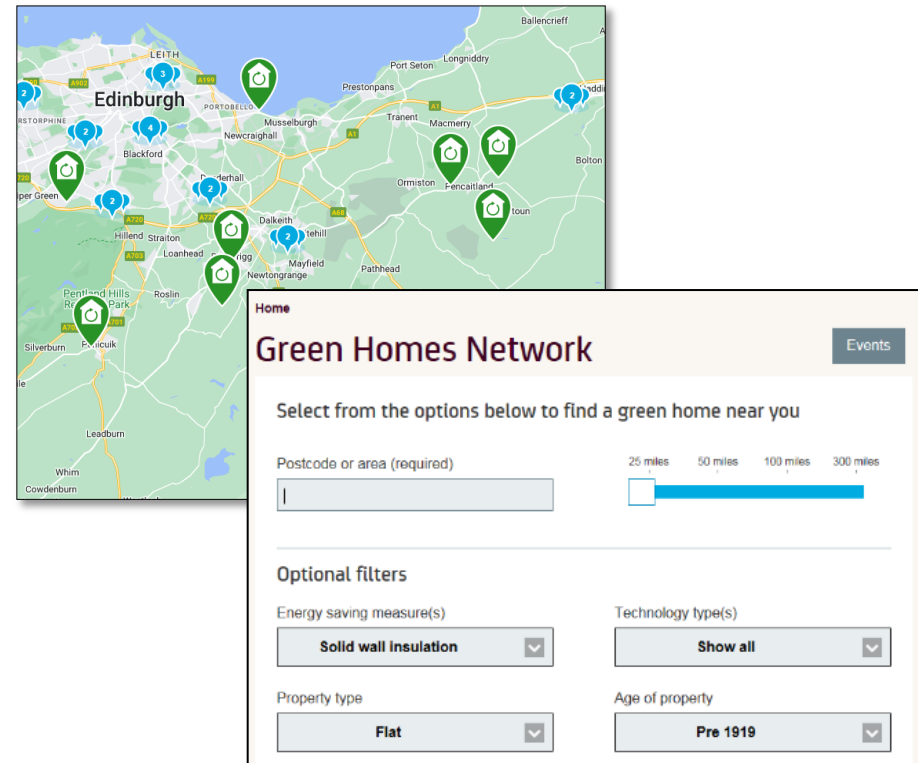
7.5 kWh capacity

The impact this battery has is shown above

Try the tool at:
homerenewableselector.est.org.uk/

The Green Homes Network

- A network of over 300 households in Scotland who have made energy efficiency and renewable technology improvements to their homes
- Managed by the Energy Saving Trust
- Read variety of case studies from across Scotland
- You can call, email or visit GHN members to learn more about their tech and experience, or even attend on of their events



Try the tool at:
greenhomenetwork.energysavingtrust.org.uk/

The Renewable Installer Finder







- Help to locate an MCS certified installer near you
- Read reviews of installers written by real customers







Enter your full postcode or the name of an installer

☒ Map view
☐ List view

☐ I agree that I have read the [disclaimer](#) and agree to the [terms and conditions of use](#). Searching by postcode is only for postcodes in Scotland

Technologies

☐  Solar electricity (PV)
☐  Hydro electricity
☐  Solar water heating
☐  Air source heat pumps
☐  Exhaust air heat pumps
☐  Gas absorption heat pumps

☐  Wind turbines
☐  Wood fuelled heating
☐  Ground source heat pumps
☐  Micro CHP
☐  Solar assisted heat pumps
☐  Water source heat pumps

Distance in miles

10
20
50
100
All

Search by average customer rating

☒ ☆☆☆☆☆
☐ ☆☆☆☆
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☐ Only show installers that have offers at present

Try the tool at: <https://rif.est.org.uk/>

Funding Support

Home Energy Scotland Grant and Loan



- **Air/ground source heat pump/biomass** - £7,500 grant (£9,000 for some rural postcodes) and £7,500 loan
- **Solar** - £1,250 grant and £4,750 loan
- **Battery** - £1,250 grant and £4,750 loan
- Solar and battery storage must be installed alongside renewable heating system or high heat retention storage heaters
- **Internal/external wall insulation** - £10,000 (with 75% cashback) - £7,500 grant and £2,500 loan
- **Double/secondary glazing** (for existing single glazing only) £8,000 loan
- **Loft/cavity/floor insulation** - £1,500 grant with £500 loan
- **Room in roof/flat roof insulation** - £3,000 £1,000 loan

Approval needed before installation

Further advice

[Guide to Energy Retrofit of Traditional Buildings | Hist Env Scotland \(historicenvironment.scot\)](#)

[Measures to help reduce home heat loss - Energy Saving Trust](#)

[A guide to air source heat pumps - Energy Saving Trust](#)

[Find Funding, Grants and Loans: Home Energy Scotland](#)



Get in touch



Call our freephone number:
0808 808 2282



Email us:
technicalteam@se.homeenergyscotland.org



Thanks for listening!

Q&A