Department for the Economy
An Roinn Geilleagair
www.economy-ni.gov.uk

CONSULTATION ON SUPPORT FOR LOW CARBON HEATING IN RESIDENTIAL BUILDINGS

OCTOBER 2024

Contents

Ministerial Foreword

I am pleased to launch this consultation on support for low carbon heating within residential buildings. I have been clear that decarbonisation underpins and interlinks all of my Economic Vision objectives: delivering good jobs, addressing regional imbalance and increasing productivity.

It's accepted that living in a warm home is a basic human right and contributes positively to supporting our physical and mental well-being, however our heavy reliance on fossil fuels to heat our homes contributes significantly to volatility in energy costs and harmful carbon emissions. Low carbon heating technologies provide a reliable, sustainable, clean energy source. They emit lower carbon emissions into the atmosphere compared to fossil-fuel based alternatives such as natural gas and oil boilers. This consultation takes us a step closer to delivering self-sufficiency in affordable renewable energy which will benefit everyone.

This consultation seeks views which will help inform options regarding the design, rules, and guidance of future Government support for low carbon heating technologies. The consultation references the complexities decarbonising our homes will bring, acknowledges the varied nature of our homes, their age, size and location and also the challenging length of time this transition may take. We are all too aware of the challenges that face us, but climate change is one of the most pressing issues of our time so we must act now and at pace.

Importantly, we need solutions that address not only our environmental challenges, but that also foster economic growth. The early adoption of low carbon heating technologies will act as a catalyst for growth within our green economy and present huge economic opportunities.

- By stimulating a strong local renewables market, we can create the conditions for businesses to develop the skills and technologies to provide low carbon heating solutions.
- Harnessing the significant potential to create a centre of excellence within our region for low carbon heating.
- Encouraging local businesses to take advantage of export opportunities to European and global markets.
- We can support local businesses with training and apprenticeships in low carbon technologies, to upskill trainees and provide new career pathways.
- Increasing our low carbon heat installer base by training the next generation of heating engineers through our FE and Higher Education institutions.

It is evident that the implementation of low carbon technologies will benefit all our citizens. In doing so we will not only drive forward towards net zero, but we will improve our productivity, we will grow and nurture good jobs, and we will ensure the opportunity of net zero is regionally balanced.

The transition to decarbonised heat will affect everyone but also benefit everyone in the long term so it's vitally important that we engage everyone in the design and decision-making process. I encourage you to have your say and respond to this consultation with your feedback to help us develop future low carbon heat technology policy.

CONOR MURPHY MLA
Minister for the Economy

Introduction

In December 2021, the Northern Ireland Executive published 'The Path to Net Zero Energy'[1], setting the vision of how energy will be secure, affordable and clean both for now and for future generations. This Energy Strategy sets out a pathway to 2030 that will mobilise the skills, technologies and behavioural change needed to achieve net zero carbon and affordable energy by 2050.

In June 2022, the Climate Change Act (Northern Ireland) 2022[2] was introduced setting a legislative target of an at least 100% reduction in net zero greenhouse gas (GHG) emissions by 2050 compared to baseline, along with interim targets including an at least 48% reduction in net emissions by 2030.

Energy accounts for almost 60% of GHG emissions in Northern Ireland with emissions resulting from a reliance on fossil fuel combustion across power, heat and transport. Despite around half of electricity being produced from renewable sources, through importing fossil fuels, we continue to be susceptible to price volatility in our energy bills through the links to global wholesale commodity markets.

Our aim is to reduce our reliance on fossil fuels and become more self-sufficient through locally produced renewable energy, strengthening our energy security with a key objective of the Energy Strategy to '*replace high carbon heating sources with lower and zero carbon sources in households'*. There is no 'one size fits all' solution that will provide a singular option for decarbonised heating however, electrification of heat will play a foundational role.

Due to the diversity of building types, together with their age and location, other approaches to low carbon heating such as biofuels, may also play a role in the decarbonisation of heat. The department has prepared policy documents for publication on Biomethane Production, Hydrotreated Vegetable Oil (HVO) and Biopropane (bioLPG) to gather evidence to assess their economic, social, and environmental sustainability. Heat Networks and geothermal energy will also have a role to play. The department is currently working on a demonstrator project, GeoEnergyNI, at two test sites in the government estate. Our understanding of the potential for geothermal energy to support the decarbonisation of heat will be augmented by a €20m PeacePlus Geothermal Energy project.

Northern Ireland has a population of 1,903,175[3], with 821,100[4] households, 52,300 of which are vacant and 768,800 occupied (NI Census 2021). The main type of occupied homes are detached (38%), followed by semi-detached and terraced (30% and 22% respectively). In 2021, the residential sector contributed to around 12%[5] of overall GHG emissions in 2021 and currently has low levels of low carbon heating technology deployment, with less than 0.5% of the population using a renewable system solely for heating. 62.5% of households have oil central heating in their accommodation and one third (33.3%) have mains gas central heating. This means that in total, 96% of households are impacted by price volatility associated with fossil fuels, namely oil and natural gas, illustrating the profound scale of the challenge.

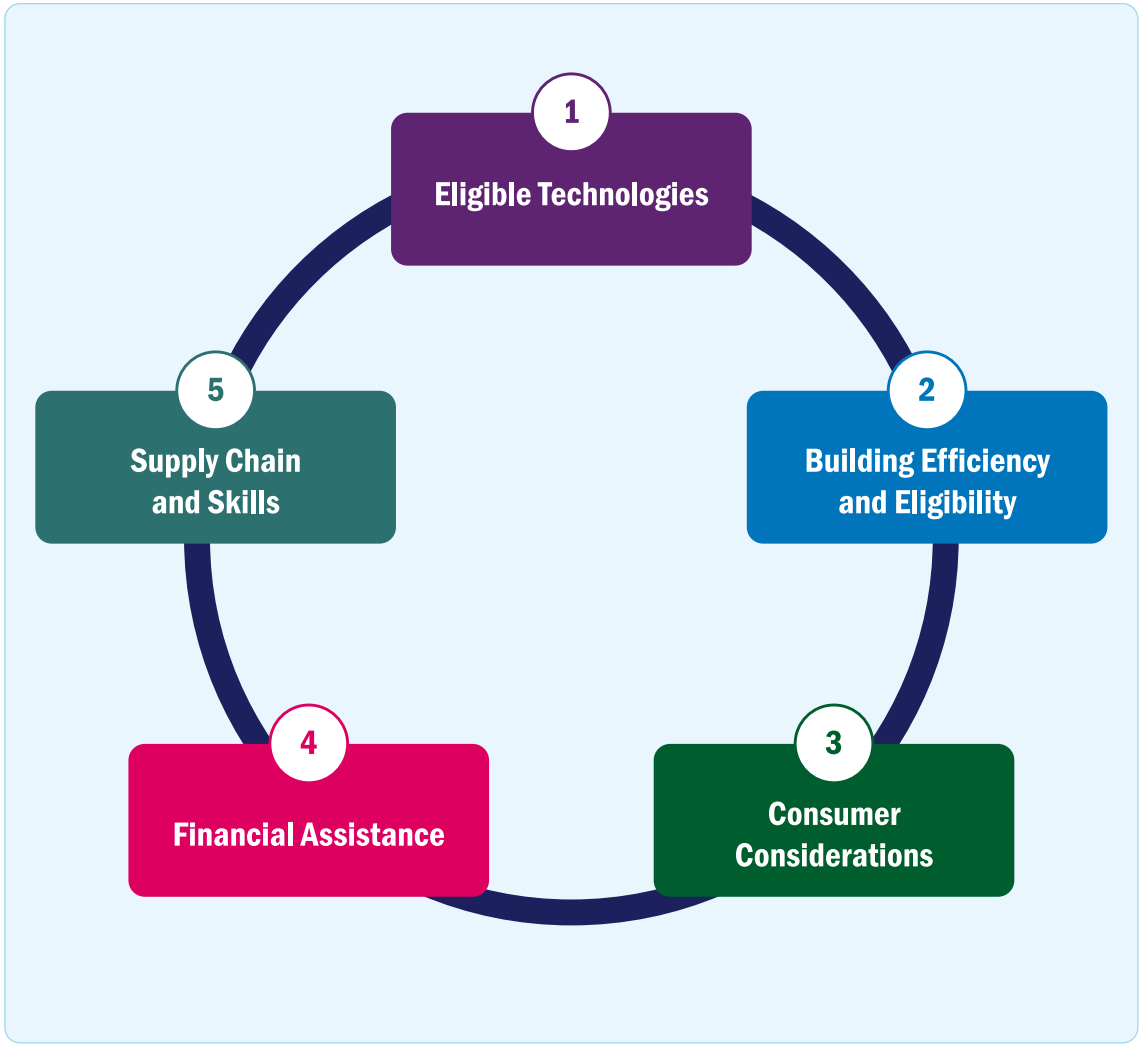
1 Northern Ireland Executive – The Path to Net Zero Energy
2 UK Legislation - Climate Change Act (Northern Ireland) 2022
3 Northern Ireland Statistics and Research Agency - Census 2021 - Population
4 Northern Ireland Statistics and Research Agency- Census 2021 - Household spaces and accommodation
5 Northern Ireland Statistics and Research Agency - Northern Ireland Greenhouse Gas Emissions 1990 - 2021

Reducing our reliance on fossil fuels will help drive the necessary carbon reductions required in the transition to net zero however it will also help to reduce air pollution, caused by the release of particulate matter (PM), nitrogen oxides (NOx) and sulphur oxides (Sox), which are associated with the combustion of fossil fuels. Reducing air pollution will lead to health benefits such as reducing the exacerbation of asthma and other respiratory conditions resulting from poor air quality.

This consultation seeks your views on a new domestic low carbon heat support scheme, to help inform and improve heat policy in this area. In addition, it will serve as a method to gauge public awareness in relation to low carbon heating, together with assessing public interest, including the local renewable heating industry, for a future support mechanism.

The chapters that are included within this consultation are shown in figure 1.

Figure 1 – Consultation Chapters



General Information

Why we are consulting

The purpose of this consultation is to evaluate support options for low carbon heating technologies within the residential sector. The views provided will help the Department for the Economy (DfE), with further policy development in this area.

How to respond

This consultation will be hosted online at the following website: NI Direct - Citizen Space. The Citizen Space website has been specially designed to be as user-friendly and welcoming as possible for those who wish to complete the consultation. It also allows DfE to rapidly collate results. For this reason, we would encourage anyone who is interested in responding to this consultation to utilise Citizen Space as the method of their response.

If this is not possible, you can however respond to this consultation via email to lowcarbonheatconsultation@economy-ni.gov.uk by completing the consultation response form on the departments website or you can respond in writing to the following address:

Low Carbon Heat Consultation
DfE Heat Policy Team
6th Floor, Adelaide House
Adelaide Street
Belfast
BT2 8FD

When responding via email or in writing, please state whether you are responding as an individual, or representing the views of an organisation (please state the name of the organisation). Please also quote the following reference in your response: “Low Carbon Heat Consultation”.

Responses must be received by 23:59 on 31 December 2024.

Annexes

The document refers to Annexes throughout, which can be found alongside the consultation document on the department’s website and on the Citizen Space website.

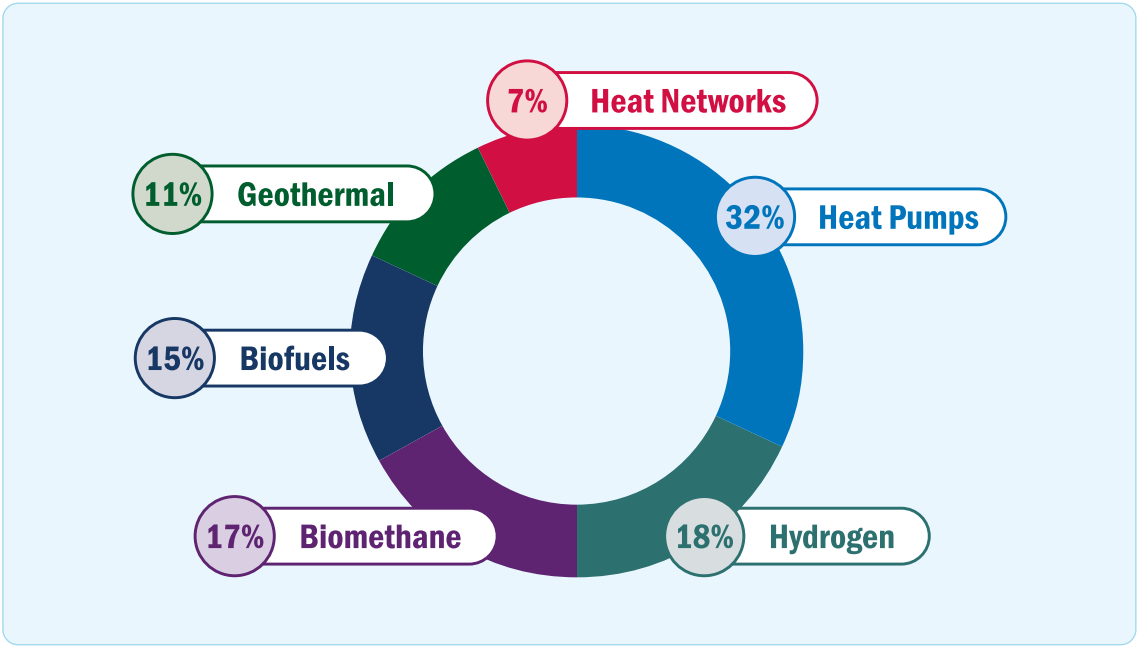
Chapter 1: Eligible Technologies

There are a range of low carbon heating technologies available on the market, which are detailed in Annex A. Some technologies provide hot water only, while others can provide space heating and hot water. This chapter outlines an approach which the department will use to determine those technologies which would be eligible for support and provide value for money, to help achieve net zero carbon emissions by 2050.

Whilst long-term targets to achieve net zero by 2050 can seem distant, the Climate Change Committee (CCC), an independent statutory body established by the UK Government, recommends that all new heating appliances installed here should be zero carbon by 2033 and by 2030 for properties off the gas grid. Heat pumps are the main heating technology in the CCC modelled 'pathways to net zero[6]'.

As part of the Energy Strategy consultation response[7] in 2021, when asked about prioritisation of low and zero carbon heating solutions for trials, 32% of respondents noted that heat pumps should be prioritised for trials by the department (as shown in figure 2).

Figure 2 - Responses given to the Energy Strategy consultation to prioritisation of trials for low and zero carbon heat support.



This consultation will focus on heat pumps, as they have a critical role in providing a highly efficient and low carbon alternative to existing fossil fuel systems. Neighbouring governments have delivered several support grants and schemes to encourage heat pump deployment along with investment in local manufacturing supply chains. Improved investment in the renewable energy sector will help ensure that more of the money spent stays within the local economy, helping to create opportunities for jobs contributing to growing the green economy.

6 Climate Change Committee Advice report: The path to a Net Zero Northern Ireland
7 DfE - Summary of Responses to the Energy Strategy Options Consultation.

The operation of heat pumps does not directly cause emissions at source, however the electricity used to power them is not fully renewable at present[8]. We have substantial and growing renewable electricity resources, with a target set within the Climate Change Act (NI) 2022 to achieve 80% of electricity from renewable resources by 2030. Heat pumps absorb warmth from the air, ground or water and they use this warmth to heat buildings and provide hot water. For every unit of electricity heat pumps consume, a well-installed and reasonably high-spec model will typically produce 3 or more units of heat. This represents an efficiency of 300%, which is much higher than a new condensing gas or oil boiler which may achieve an operational efficiency of around 90% in favourable circumstances. In other words, heat pumps can be over three times as efficient than fossil-fuel boilers.

A hybrid heat pump is used alongside another heat source, typically a gas, oil, or Liquid Petroleum Gas (LPG) boiler. An "all-in-one" hybrid is a single off-the-shelf product that combines the heat pump, boiler and associated controls in one unit. The market for this type of heat pump is not mature, with a small number of manufacturers. The intended use is that the boiler would be used to "top-up" a heat pump output to meet the heating demands of the property. It is possible to install a heat pump alongside either a new boiler or existing boiler.

The UK Government has an ambition to grow the UK market for heat pumps to 600,000 installations per year by 2028. This was set out in the strategy paper: *Heat and Buildings Strategy*[9] (2021).

Criteria for technology support

It is necessary for the department to demonstrate value for money for any support provided alongside delivering against policy objectives. The department has considered key criteria outlined below that will help identify the technologies that will be eligible for support.

1. It is intended that the department will support the upfront capital cost of low carbon heating technologies, rather than the running cost of fuels.
2. Support will be targeted at technologies that currently offer efficiencies greater than 100% as this will deliver higher carbon emission savings compared to fossil fuel alternatives. Annex B outlines a worked example of carbon emissions by main technology types[10].
3. A technology that includes the combustion of a fossil fuel will not be eligible for support, in line with the Energy Strategy vision to replace fossil fuels with renewable energy.
4. Technologies that cause adverse effects on air quality (and consequently human health) will not be supported.
5. The scheme will have an upper capacity limit for an installation of 45kWth[11].
6. A technology that also generates electricity will not be eligible. For example, Combined Heat and Power (CHP) and solar PV-T technologies.

8 DfE - Electricity Consumption and Renewable Generation Statistics
9 HM Government - Heat and Buildings Strategy
10 Annex B shows that oil has the highest carbon emissions of heat delivered of 0.355kgCO2e/kWh, with heat pumps having the lowest carbon emissions of heat delivered 0.124kgCO2e/kWh. Electric heating, such as electric panel heaters that operate with a typical efficiency of 100%, have higher emissions per kWh of heat delivered of 0.347kgCO2e/kWh compared to mains natural gas which has carbon emissions of 0.254 kgCO2e/kWh for heat delivered.
11 The proposed upper capacity limit would apply to individual eligible installations as well as the overall system capacity which should be sufficient for most domestic uses. Support is not intended for heat network infrastructure but could apply to a domestic connection to an existing heat network. This could include, for example, a shared ground loop for a ground source heat pump.

These technologies produce electricity at the same time as generating heat and the electricity is often exported which may be eligible for an export tariff, which would return an income to the owner.

7. An eligible installation must be the primary source to provide full space heating and hot water needs of the property year-round. Support would not be intended to fund a secondary source of heating that would supplement heating on a limited number of days in the year.

Summary of low carbon heating technologies eligible for support

By applying the above criteria, the result is that three technologies have been identified that the department would consider providing support for:

- Air to Water Heat Pump,
- Ground to Water Heat Pump and
- Water to Water Heat Pump.

Table 1 presents a range of low carbon heating technologies and indicates whether supporting the technology would be consistent with the outlined criteria. Annex C provides further details on technology eligibility.

Support schemes in other jurisdictions

Table 2, in Annex D, sets out technology support in comparable support schemes across neighbouring jurisdictions.

Table 1 - Low carbon heating technology options and whether the technology is consistent with support criteria.

Technology	Technology subcategory	1	2	3	4	5	6	7	All
Air-to-water heat pump	Not Applicable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Air-to-air heat pump	Not Applicable	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Hybrid ASHP	All-in-one hybrid heating product	Yes	Yes	No	Yes	Yes	Yes	Yes	No
Hybrid ASHP	New separate fossil fuel boiler	Yes	Yes	No	Yes	Yes	Yes	Yes	No
Hybrid ASHP	Retain existing separate fossil fuel boiler	Yes	Yes	No	Yes	Yes	Yes	Yes	No
Other ASHP	Exhaust air, solar-assisted, and domestic hot water heat pumps.	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Ground-to-water and water to water heat pump	This includes systems that use a shared ground loop.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gas driven heat pump	Not Applicable	Yes	Yes	No	Yes	Yes	Yes	Yes	No
Biomass boiler	Not Applicable	Yes	Yes	Yes	No	Yes	Yes	Yes	No
Biomass stove	Not Applicable	Yes	Yes	Yes	No	Yes	Yes	No	No
Solar thermal	Not Applicable	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Solar PV-T	Not Applicable	Yes	Yes	Yes	Yes	Yes	No	No	No
Electric heating	Electric boiler	Yes	No	Yes	Yes	Yes	Yes	Unknown	No
Electric heating	Electric radiators and storage heaters	Yes	No	Yes	Yes	Yes	Yes	No	No
Micro CHP	Not Applicable	Yes	Yes	Likely to be consistent	Yes	Yes	No	Yes	No
HVO boiler	Not Applicable	No	Yes	Yes	Yes	Yes	Yes	Yes	No
BioLPG boiler	Not Applicable	No	Yes	Yes	Yes	Yes	Yes	Yes	No
Connection to a heat network	Not Applicable	Yes	Yes	Likely to be consistent	Yes	No	Yes	Yes	No
Heat battery	Not Applicable	Yes	Unknown	Yes	Yes	No	Yes	No	No

KEY

Likely to be consistent	Likely to be consistent with the criteria but requires additional conditions or rules in the scheme to ensure this.
Unknown	The range of products on the market means it is not possible to determine, at a high level, whether the technology is consistent with the criteria.

Questions

Question 1
Do you agree with the criteria used to inform technology eligible for support?

- ❑ Yes
- ❑ No

If you do not agree, please explain why you do not agree and provide evidence to support your answer.

Question 2
Do you think that other criteria should be applied?

- ❑ Yes
- ❑ No

Please provide evidence to support your answer.

Other considerations for technology support

Biomass

Biomass may contribute towards the Energy Strategy objectives because the fuel used offers a reduction in greenhouse gas emissions compared to fossil fuels, however biomass results in other forms of air pollution, caused by pollutants such as particulate matter (PM), nitrogen oxides (NOx) and sulphur oxides (SOx).

In the public synopsis of responses to the DAERA Clean Air Strategy Discussion[12] 74% of respondents agreed that biomass should be discouraged in urban areas or in areas with poor air quality.

The CCC, in its *Reducing Emissions in Northern Ireland* report[13], concluded that biomass in urban areas should not be supported due to air quality concerns but noted that biomass boilers can play a role in certain niches.

According to the Electrification of Heat Project Demonstration Project (EOH project)[14], all property types are suitable for heat pumps, therefore due to the potential for harm caused by air pollution and the limited scope for the use of biomass, it is not proposed that support will include biomass technologies.

High temperature heat pumps

There are varying characteristics associated with heat pumps, dependent on the heat pump type, make and model. Typically heat pumps operate at lower central heating flow temperatures (45-55^{o}C) compared to traditional heating systems such as oil and gas (operating at flow temperatures of typically at 60-80^{o}C).

12 DAERA - Clean Air Strategy for Northern Ireland - A Public Discussion Document
13 Committee on Climate Change - Reducing emissions in Northern Ireland
14 Energy Systems Catapult - All housing types are suitable for heat pumps - Electrification of Heat project

Data available from the EOH project[15] found that ASHPs operating at high temperatures (>65 °C flow) perform at a similar Seasonal Coefficient of Performance (SCOP) to low temperature ASHPs[16]. The EOH project noted that just because the heat pump can achieve these higher temperatures, it does not mean that temperatures greater than 65 °C are required to keep a property warm. Even where temperatures greater than 65 °C may be required to keep the property warm, the ASHPs inherent weather compensation controls, combined with higher performing refrigerants and compressor components may mean that the heat pump rarely operates at these higher flow temperatures.

In conclusion, higher temperature heat pumps may have higher initial capital costs (according to AECOM's report *Suitability of Buildings in Northern Ireland for Retrofitting Heat Pumps*[17]) compared to a standard low temperature heat pump, however, due to higher water flow temperatures, retention of the existing radiators and pipework may be possible[18] thus avoiding associated costs of heat emitter replacement costs. There may also be additional benefits in hot water production and the avoidance of immersion heater usage for boost cycles. Similar efficiencies are shown compared to low temperature heat pumps resulting in similar operating costs, according to EOH project, and in fact, some modern systems meeting the "high temperature" definition also exhibited higher performance levels than other "low temperature" competitors. The consumer preference for a high temperature heat pump rather than a low temperature heat pump may be influenced by evaluating the difference in the higher initial capital costs of the heat pump and the savings associated with the heating system itself, upon advice from the system designer and installer.

Hybrid heat pumps

Hybrid heat pump systems typically consist of a small heat pump operating in combination with a traditional fossil fuel boiler. This boiler could be an existing boiler, or a new boiler installed at the same time as the heat pump. The main advantage of hybrid heat pump systems is that they can provide a boost to the heating system to operate at the higher flow temperatures of conventional combustion boilers (such as oil and gas). This increases the potential for retaining the existing pipework and heat emitters if replacement would be otherwise required for a standalone heat pump and thus could avoid some of the associated costs, noting that design and installation would be unique to individual properties. Hybrid heat pumps may also be an option for properties where significant expenditure on fabric upgrades presents affordability challenges in using standalone heat pumps effectively. Having both a heat pump (for at least part of the total heating load) and a conventional fuel heating system offers a level of flexibility regarding optimisation of running costs, subject to variations in the relative price of gas/oil and electricity tariffs.

Among the challenges presented with hybrid heat pumps is a need to have physical space required to have both a conventional combustion boiler as well as an accompanying new heat pump system and components. Furthermore, with hybrid heat pumps there will be additional ongoing maintenance and servicing costs associated with the operation of two heating appliances compared to one.

15 Energy Systems Catapult - Electrification of Heat Installation Statistics Report
16 Electrification of Heat - Interim Insights from Heat Pump Performance Data
17 AECOM report - Suitability of Buildings in Northern Ireland for Retrofitting Heat Pumps
18 It is recommended that a site visit and detailed assessment of the existing radiators would be required.

A key disadvantage of hybrid heat pumps is that at present the boiler component of the system would be predominantly fossil fuel based. The use of biofuels or decarbonised gas supply in home heating may be a potential pathway for decarbonising the fossil fuel combustion in the future.

The departments intention at this stage is to support technologies that offer the greatest carbon savings rather than those that persist with burning of fossil fuels. Therefore, the department do not intend to support hybrid heat pumps as part of a low carbon heat scheme at present.

Minimum efficiency standards of technology

The department has established under criteria 2 that support will be targeted at technologies that offer efficiencies of greater than 100%. However, the department may consider a higher product efficiency standard to be applied to heat pumps to avail of support in the same way that other jurisdictions have. This would bring some advantages such as those outlined below:

1. More effectively reduce carbon emissions – ensuring that a product has a minimum product efficiency is more likely to effectively reduce the carbon emitted by the product.
2. Reduce energy use – a product with a minimum efficiency is likely to use less energy than one without a minimum product efficiency.
3. Lower running costs – the higher the efficiency of a product, the lower the running costs are likely to be for the consumer.

The Boiler Upgrade Scheme in England and Wales requires that all heat pumps have a minimum SCOP rating of 2.8 (i.e. 2.8 units of heat are produced from every unit of electricity input).

If a minimum product efficiency standard is required as a pre-requisite for the technology to be supported, this could mean that certain products may be outside the scope of support, dependent on the minimum product efficiency standard that is determined.

Questions

Question 3
The department does not intend to provide financial support for biomass boilers, do you think there should be exceptions to this?

- ❑ Yes
- ❑ No

Please give reasons for your answer

Question 4
The department does not intend to provide financial support for hybrid heat pumps, do you think there should be exceptions to this?

- ❑ Yes
- ❑ No

Please give reasons for your answer

Question 5

Should a minimum Seasonal Co-efficient of Performance of at least 2.8 or higher be applied to the low carbon technologies considered for support? Please tick all that apply.

- ❑ Air Source Heat Pump
- ❑ Ground Source Heat Pump
- ❑ Water Source Heat Pump

Please give reasons for your answer

Chapter 2: Building Efficiency and Eligibility

The Energy Strategy outlines the need to invest in energy efficiency measures within homes across NI. The Climate Change Committee's Stretch Ambition pathway to net zero for NI[19] asserts 'substantial improvements to the energy efficiency of buildings' to enable NI to achieve net zero carbon by 2050. This chapter considers whether domestic building efficiency requirements should be a pre-requisite of support for low carbon heating technologies and whether there should be consideration given to other factors such as the building location for example.

Buildings that are energy efficient proportionally use less energy to maintain thermal comfort than those of a similar size, type and operation. Building efficiency in this context relates primarily to the insulation properties of building elements such as walls, windows, doors, floors and roofs whilst also taking into account air infiltration. By upgrading energy efficiency measures in a building, the heat loss can be reduced, and less energy required to maintain a particular temperature within a property.

Advantages of improved building efficiency include:

- Reduction in greenhouse gas emissions;
- Lower running costs;
- Improved comfort, allowing buildings to be maintained at a more appropriate average internal temperature at lower cost; and
- Future proofing for lower temperature central heating operation and thus supporting compatibility with heating solutions which operate most efficiently at lower flow temperatures.

Heat pumps and building efficiency requirements

The UK Government's Electrification of Heat Project, which involved the successful installation of 750 heat pumps into a range of property types and ages, noted that there was greater challenge in successfully installing heat pumps in older homes, however, results from the project show that these challenges were manageable.

The technologies considered as eligible for support in Chapter 1 of this consultation are Ground Source, Water Source and Air Source Heat Pumps which typically operate most efficiently at lower central heating flow temperatures. The Heating and Hot Water Industry Council highlight that it is good practice to undertake a full heat loss calculation prior to installation of a heat pump system[20]. The heat loss in properties will vary according to their construction type, age, building standards, materials used and the level of energy efficiency. Taking this into account, the heat pump solution can be sized and fitted in a way that will minimise consumer outlay and maximise energy savings obtained from lower running costs.

19 Climate Change Committee - Advice report: The path to a Net Zero Northern Ireland
20 Heating and Hot Water Industry Council - Minutes of Evidence Report

It is important that any approach taken by the department finds a balance between achieving carbon reductions to meet net zero by 2050 and operational costs faced by the consumer. The cost of building efficiency work can be as, or even more expensive than the cost of installing the low carbon heating technology. Building eligibility criteria should be pitched at a practical level that will encourage the consumer to install a low carbon heating technology, as making the conditions for support too prescriptive may discourage consumers from availing of support.

Assessing the energy performance of buildings

If a building's energy performance is to be considered as a pre-requisite for availing of low carbon heating technology support, then it is necessary to consider the methods that are available to help the department set minimum requirements in this area.

Energy Performance Certificates (EPCs) - UK

The Standard Assessment Procedure (SAP)[21] for the energy rating of dwellings is the UK's National Calculation Methodology used by government to estimate the energy performance of homes. SAP is used to provide input into domestic Energy Performance Certificates (EPCs) and to fulfil emissions assessment requirements under part F of the Northern Ireland Building Regulations, for all newly built dwellings[22].

Reduced data SAP (RdSAP) is the method used to calculate an assessment for existing buildings. Domestic EPCs provide a running cost rating, described on EPCs as an 'energy efficiency rating' (EER) and a greenhouse gas emissions rating, described on EPCs as an Environmental Impact Rating (EIR), of a building on a scale from A to G, where A is very efficient, and G is very inefficient.

An EPC will include a recommendation report listing measures (such as fabric improvements and renewable systems) to improve the energy rating of the building. The EPC also contains information about the potential rating that could apply if all the recommendations were implemented. SAP's standard methods and assumptions have been established so that the EPC of one building should easily be compared with another building of the same type. However, it is worth noting that the SAP is currently undergoing a fundamental review and expected to change from the current methodology, thereby leading to potential inconsistency for comparison purposes.

EPC data for NI

In their report, 'New Foundations - The route to low carbon homes[23] by the Forum for Better Homes NI, May 2023, consideration is given to the energy efficiency of NI's housing stock. The same report shows EPC data for households within NI as shown in figure 3.

21 Department of Finance - Approved Standard Assessment Procedure
22 It can also be used for extensions, or where a material change of use or a change of energy status occurs, as an alternative assessment method to the normal standards-based approach under Part F.
23 New Foundations - The route to low carbon homes (ulster.ac.uk)

Figure 3 – EPC ratings for households in NI

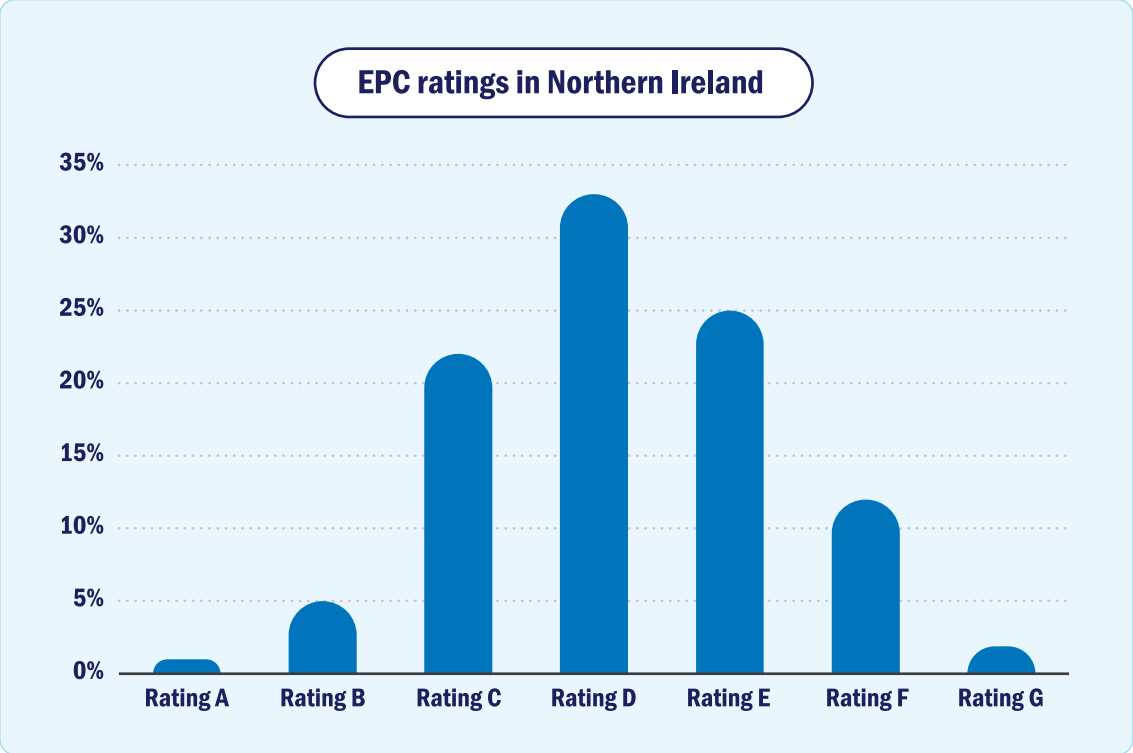


Figure 3 shows that less than a total of 28% of the NI housing stock has an EPC rating of C or higher, with the most common rating for dwellings within NI being EPC rating D.

Building Energy Rating – Republic of Ireland

A Building Energy Rating (BER) certificate demonstrates the energy efficiency of a home and allows comparison of energy performance on a like-for-like basis. The certificate rates a home on a scale of A-G. A-rated homes are more comfortable and will tend to have the lowest energy bills. G-rated homes are more expensive to run and tend to be a lot colder.

In ROI, an independent Sustainable Energy Authority of Ireland (SEAI) registered assessor is required to guide the homeowner on the energy performance of the dwelling, particularly on the suitability of the dwelling for a heat pump system based on the dwelling's heat loss. They also provide the homeowner with independent guidance on measures necessary to ensure that the dwelling fabric heat loss is lowered to an acceptable level for a heat pump system to perform effectively and efficiently. Further details can be found at Annex E. A €200 grant towards the technical assessment is available. This grant is only payable in conjunction with the heat pump system grant.[24]

24 SEAI - Air Source Heat Pump System Grants

Building efficiency requirements for low carbon heating technology financial support – other jurisdictions

Table 3 shows a summary of the building efficiency requirements necessary to be eligible for financial support for low carbon heating technology across the UK and ROI.

The Department for Energy Security and Net Zero (DESNZ) launched a consultation in 2023 in respect of the Boiler Upgrade Scheme (BUS) in England and Wales and have proposed a number of changes to the scheme rules, most notably the removal of the requirement to have no outstanding recommendations for loft and cavity wall insulation on the EPC.[25]

Table 3 – A summary of building requirements to attain financial support for domestic low carbon heating technology across the UK and ROI.

England and Wales (Boiler Upgrade Scheme)	Scotland (Home Energy Scotland)	ROI (Home Energy Upgrade Grants)	NI (NISEP Efficiency Plus Heat Pump Scheme)
To be eligible for funding for low carbon heating technology the property's EPC requirements are[26]: • The EPC must be issued within the last 10 years and • EPCs with insulation recommendations will be accepted[27]*.	Home Energy Scotland offers grants and loans to consumers for both the installation of low carbon heating technology and home efficiency improvements. To be eligible for funding, an acceptable energy report[28] must recommend the energy efficiency improvements being applied for. This report can include an EPC or report issued by a Home Energy Scotland advisor.	A technical assessment of the home must be carried out before application of any grant funding in relation to a heat pump installation, after which any energy efficiency requirements (if any) will be made to the home before installation.	The ASHP installation should only go ahead if an MCS compliant heat loss calculation shows that the property is suitable. This will usually require full loft insulation and/or cavity wall insulation.

It is the department's intention that support should be available and accessible to as many homeowners as possible. Therefore, it is anticipated that there should be no minimum efficiency requirements as part of support eligibility criteria and that assessment of the building's efficiency measures should be conducted as part of the system design and installation process.

25 Proposed amendments to the Boiler Upgrade Scheme Regulations - DESNZ
26 Ofgem - Boiler Upgrade Scheme - Property owners Guidance
27 This change was implemented from 8 May 2024, (with previous EPC's requiring no insultation recommendations). BUS guidance states that it is expected that installers have a discussion with property owners about the benefits of energy efficiency measures and potential measures the property owner could take
28 Home Energy Scotland - Grant and Loan

Questions

Question 6
Should all domestic buildings be eligible for low carbon heating technology support?

- ❑ Yes
- ❑ No

Please give reasons for your answer.

Question 7
What minimum energy efficiency criteria in relation to domestic buildings should be met (if any) to make them suitable for a low carbon heating technology support?

- ❑ Option A – No minimum energy efficiency requirements
- ❑ Option B – A valid EPC with no loft or wall insulation recommendations.
- ❑ Option C – An energy assessment of the home conducted by a technical adviser.
- ❑ Option D – A minimum standard of EPC rating.
- ❑ Option E – Other method (please specify).

Please give reasons for your answer.

Question 8
If you selected Option C – do you think support should be available towards the costs associated with an energy assessment as part of support for the installation of the low carbon technology?

- ❑ Yes
- ❑ No

Please give a reason for your answer.

Tenure

Household properties that are engaged in business activity, or which are registered with Land and Property Services (LPS) for business rates would not be eligible for support. Support provided to these properties would be subject to either the EU's State Aid rules, the UK's international obligations on subsidy control or the UK Subsidy Control Act, which would make administration of support significantly more complex. This would also be the case for the rented housing and social housing sectors.

Business support for the transition to low carbon heating is currently being delivered through the Invest NI Energy and Resource Efficiency programme.

The department would consider that custom self-build properties are eligible for support as these are built and owned by individuals, not companies. These properties are likely to be occupied by those that have built them. These types of properties generally do not benefit from the same economies of scale that projects led by housing developers do. Developer led properties would not be eligible for support as they would not be occupied by those that have built them. In the event that building regulations move to include low carbon heating as a prerequisite then our approach to funding of self-build properties will be required to be reviewed.

Questions

Question 9
Do you agree that support for low carbon heating technologies is provided separately for owner-occupiers with alternative provision of support made for landlord, social housing, and non-domestic properties?

- ❑ Yes
- ❑ No

Please give reasons for your answer.

Question 10
Do you agree that self-build properties should be eligible for support at this time?

- ❑ Yes
- ❑ No

Please give reasons for your answer.

Additional support based on location

Off-gas grid location

According to the Energy Strategy response document, 87% of respondents agreed with the proposal to have a separate approach for on and off gas grid consumers. Those consumers that are off gas-grid may have fewer options for decarbonisation of heat in the future compared to consumers who are on the gas-grid.

Rural locations

Within the Home Energy Scotland grant and loan programme, a rural uplift is available to provide extra support to rural and island homes which can face increased costs to install home improvements. Households in rural and island locations often have no access to the gas grid and rely on other types of heating such as oil, with higher fuel prices observed within rural areas. Whereas industry in urban areas is likely to be dominated by services, within rural areas, agriculture is likely to be more prevalent. This can lead to higher costs for products and services, transportation challenges and lack of competition.

Questions

Question 11
Do you think additional financial support should be available to those homes in rural and island locations?

- ❑ Both – rural and island
- ❑ Rural only
- ❑ Island only
- ❑ Neither

Please provide reasons for your answer.

Question 12
If you answered yes to Question 11, how would homes be identified as rural by the department?

Please provide reasons for your suggestion.

Requirements in relation to existing heating technologies in buildings

"Placing You at the Heart of Our Energy Future" is a criteria of the Northern Ireland Energy Strategy and the associated vision is: "We will make energy as simple as possible for everyone in society and develop policies that enable and protect consumers through the energy transition. Affordability and fairness will be key considerations in all our policy decisions".

In this context replacing a low carbon heating system with another low carbon heating system would only deliver minimal benefits and it is therefore proposed that replacement of an existing low carbon heating system will not be eligible for support. For an installation to be eligible, it is proposed that it must replace a fossil fuel heating technology, direct electric heating or an Economy 7-type electric thermal storage system or be installed where no central heating currently exists.

Questions

Question 13
Do you agree that to be eligible for support, a new heating installation should replace fossil fuel heating, replace direct electric heating, or be installed where no central heating currently exists?

- ❑ Yes
- ❑ No

Please give reasons for your answer.

Question 14
Do you agree that replacing a low carbon heating system with another low carbon heating system should be ineligible for support?

- ❑ Yes
- ❑ No

Please give reasons for your answer

Chapter 3: Consumer Considerations

Achieving net zero carbon should be encompassed with affordable energy for all. In recent times, our reliance on fossil fuels has exposed us to volatile energy prices in the extreme which has seen many households struggle with energy affordability. The transition to decarbonised heat will affect everyone, therefore it is important that we are all involved in decision making. The department remains committed on taking a consumer centric approach to policy decisions.

This chapter aims to consider factors that may impact on a consumer availing of support for low carbon heating technologies and seeks to consider prioritisation of support for consumers. It will also discuss the consumer protection measures that exist and whether these measures should be considered as a pre-requisite when considering support for low carbon technologies. It also outlines options for providing support to consumers that exceeds that available under existing consumer protection law in Northern Ireland.

Influencing factors for consumer decision making

Capital Cost

A key factor affecting scheme uptake will be the costs borne by the applicant against the level of financial incentives offered. Cost implications for the applicant are likely to include:

- Installation costs of the technology,
- One-off costs such as building control or planning permission,
- The cost of undertaking fabric or heating system improvements or other household efficiency measures in advance of installing the technology (if required).

Financial support for capital outlay is discussed in Chapter 4, 'Financial Assistance'. The capital and installation costs of low carbon heating technology will vary across a range of technology and housing types.

Running costs

Aside from capital outlay, the running costs of a low carbon technology such as heat pumps compared to a gas or oil boiler will depend on several factors including:

- What fuel you are replacing and how much it costs.
- Your electricity tariff.
- Which type of heat pump you install and how efficient it is.
- The design of your central heating system.
- Comparative operation and maintenance costs
- The building energy efficiency and air tightness.
- The consumer demand for heating, personal comfort levels and usage patterns.
- Your location and its average air or ground temperatures throughout the year.[29]

The department does not wish to exclude anyone from reducing their carbon emissions by installing heat pumps. All applicants should have good access to information about potential running costs when applying for any support that may be available. The UK government have developed an online tool to assist consumers with deciding if a heat pump is a suitable choice of central heating system for their home. For residents in NI, the link will ask users to continue without an EPC. [30]

29 Energy Saving Trust - In depth guide to heat pumps
30 UK Government - Check if a heat pump is suitable for your home

A comparative illustration of the running costs for a heat pump (with varying SCOP factors) versus oil and gas boilers is shown in figure 4 below.[31]

Figure 4 – Comparison of annual running costs by heating system.

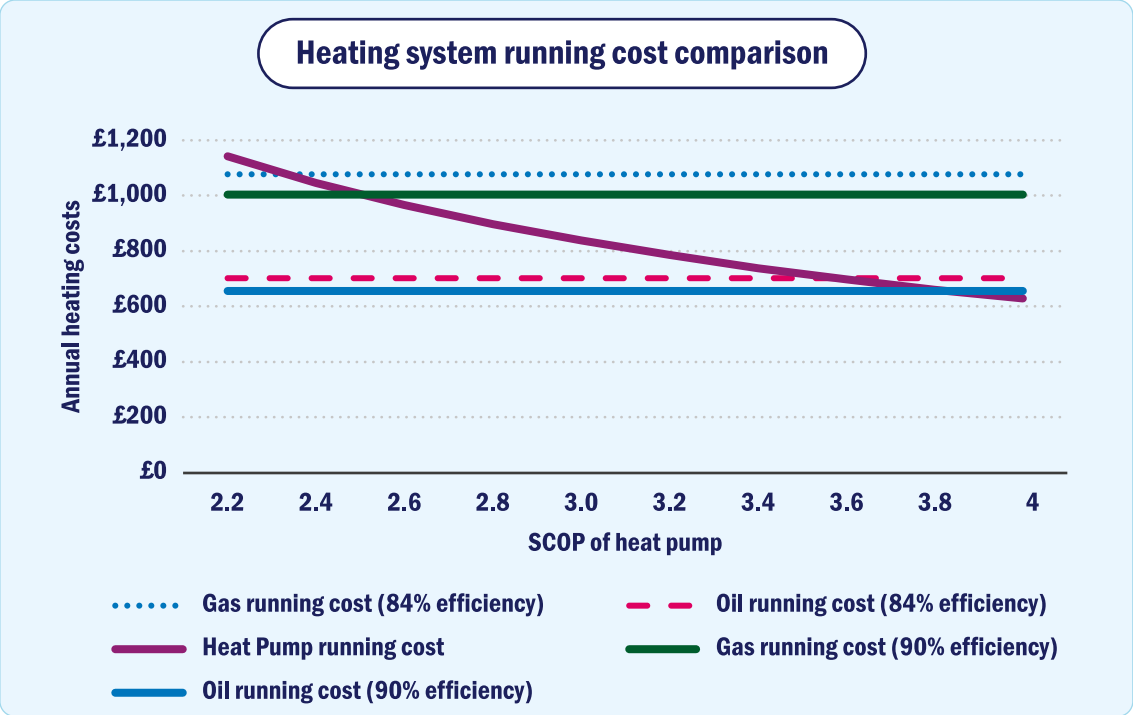


Figure 4 illustrates the running costs of an ASHP at varying SCOP factors compared to a typical gas and oil boiler heating system, both operating at 84% efficiency, and at 90% efficiency. The costs are based on annual heating demand of 9,322 kWh[32].

The annual running costs of a heat pump will decrease as the SCOP (efficiency) of the heat pump increases. Figure 4 shows that heat pump running costs are similar to that of gas heating systems with a heat pump operational SCOP range of between 2.3 - 2.5 and oil heating systems with a SCOP range of 3.6 - 3.8, each depending on the efficiency of the boiler used for comparison. The EOH project shows that the median SCOP for an ASHP was 2.8, with an average of 2.82. Using these assumptions, the cost of running a heat pump is less expensive compared to a gas boiler but would be more expensive compared to an oil boiler.

A correctly designed and installed heat pump system in a well-insulated home will provide competitive heating costs compared to heating oil or natural gas but most importantly will provide stability in running costs due to the price volatility associated with fossil fuels that is experienced less with electricity prices. Electricity price stability will improve as the amount of renewable electricity generated locally grows and the use and importation of fossil fuels reduces. Consumer protection considerations relating to the design and quality of heat pump installations are discussed later in this chapter.

31 The assumptions used to calculate running costs can be found at Annex F. For the purposes of simplicity, the annual maintenance costs are assumed to be the same for all heating systems.

32 A list of assumptions is found at Annex F. A gas tariff of 9.70p/kWh and an oil price of 6.33p/kWh (65.24p per litre) have been used as at 28th April 2024.

The cost of undertaking fabric improvement in advance of technology installation

If additional energy efficiency improvements to a building are favourable in supporting a heat pump installation to proceed, where affordability is an issue, this is likely to deter consumers from installing the technology. Presently, for consumers on lower incomes, support is available for energy efficiency upgrades through the Northern Ireland Sustainable Energy Programme[33] and the Affordable Warmth Scheme.

Recognising the Energy Strategy commitment to 'consider where specific financial assistance may be required to support vulnerable consumers, particularly those on low incomes', it may be that we consider alternative support mechanisms for those on low incomes. To ensure that residential buildings are given the support needed to decarbonise in the path to net zero, the department recognises that support for low carbon heating technologies should also coincide with broader energy efficiency support measures. The department is currently preparing a consultation on evidence-based options for a domestic energy efficiency programme. The outcome of this consultation will help to inform options regarding the design, rules, and guidance of future support.

Other personal circumstances

The following considerations may also impact on a consumer's willingness to apply to the scheme:

- The individual's personal approach to carbon emissions reduction.
- Knowledge of heat pumps and accessibility to information and advice,
- Perceptions of thermal comfort and health.
- The need for a boiler replacement and alternative available options.
- Available space.
- The level of disruption to the home and time taken to install the technology and make fabric improvements (if required).
- Waiting time for installation and/or fabric improvements (if required),
- Confidence in protection and regulation.
- Tenure (whether you rent or own the property).

Research in Northern Ireland from March 2022 illustrated that technologies such as heat pumps are only known by a small number of consumers.[34] The department aims to raise awareness of low carbon heating technologies as it progresses with policy development in this area. A 2023 Nesta Survey[35] found that people who installed heat pumps were motivated to do so for a range of reasons, including improving thermal comfort (29%) and improving health (12%).

Prioritisation

Prioritisation could also be considered to support those who have older fossil fuel boilers to incentivise those consumers who may need boiler replacement soon. This would mean that carbon emission savings could be made sooner to avoid consumers from locking into fossil fuel use for an additional 15-20 years by encouraging early adoption of low carbon heating technologies.

33 Energy Saving Trust - Northern Ireland Sustainable Energy Programme
34 Ipsos - Stakeholder and consumer views on energy transition in Northern Ireland
35 Nesta - Heat pump user survey report May 2023

Questions

Question 15
Should households who have received energy efficiency support via schemes such as NISEP or Affordable Warmth be able to apply for additional low carbon heat support?

- ❑ Yes
- ❑ No

Please give reasons for your answer.

Question 16
Should support options be designed to prioritise or target certain groups of people (such as those on low incomes)?

- ❑ Yes
- ❑ No

Please give reasons for your answer. If you answered Yes, please detail which groups should be targeted and how could this be achieved?

Question 17
Should prioritisation or additional support be given to those with older (perhaps 15+ years) fossil fuel boilers?

- ❑ Yes
- ❑ No

Please give reasons for your answer.

Question 18
Should additional support be offered to the consumer where no central heating system is present in the home?

- ❑ Yes
- ❑ No

Please give reasons for your answer.

Question 19
Should those with multiple occupied properties e.g. holiday homes be eligible to apply for support for more than one property?

- ❑ Yes
- ❑ No

Please give reasons for your answer.

Consumer protection

Goods and services purchased in Northern Ireland since October 2015 have existing protections under the Consumer Rights Act 2015. [36] Some of the issues addressed by this act include product quality, reasonable care and skill taken by service providers, unfair contract terms, misleading selling practices, and rights to repair or replacement. Research from the Energy Saving Trust demonstrates high levels of satisfaction in terms of comfort from heat pumps.[37] According to research conducted by partnership RB&M (Robinson, Bloomfield and Meek) into the Microgeneration Sector, (which involved online surveys and focus groups conducted within the microgeneration sector),[38] satisfaction with renewables is generally very high.

There is some evidence outlined in the report that consumers are sceptical of information that focuses only on the benefits when there may be disadvantages (such as the disruption associated with heat pumps and the need for new emitters, water tanks etc.). It is essential that consumers are protected from harmful business practices. They should be provided with sufficient information to make informed decisions about which products are right for them. Businesses selling these technologies also need to be clear about and supported to comply with their obligations under consumer protection law.

Quality assurance and certification schemes

Research by the Consumer Council for NI[39] found that 'consumer protection is a baseline requirement if consumers are to adopt new technologies and practices. People want trusted sources of information within the energy industry, long-term guarantees on technology and seek protection against mis-selling' and redress in the event of issues with products or services provided. As the department considers the options available for low carbon heating technology support, it is important that products and services that may be supported have appropriate quality assurance in place. Having appropriately qualified labour, quality standards for products and appropriate aftersales services would be a consideration of the department to provide assurance and ensure proper governance before any support would be offered.

In the Republic of Ireland, the SEAI have a list of registered contractors who are suitable to install low carbon heating technologies. There are minimum qualifications that contractors should have, to partake in SEAI supported schemes. Further details and requirements for SEAI installers and installations can be found at Annex G. There is currently no requirement in NI for heat pump installers to have a comparable registration such as the case for gas engineers. The 'Gas Safe Register' is the official registration for all gas safe engineers in NI. By law, all gas engineers must be on the register and hold current qualifications to install, repair or maintain domestic gas appliances.

36 UK Government - The Consumer Rights Act
37 Energy Saving Trust - Heat pumps - getting the most out of your heat pump
38 Robinson, Bloomfield, and Meek - Consumer Research in Microgeneration Sector
39 Consumer Council - Consumer attitudes to protection during energy decarbonisation

An option to address quality assurance by the department when offering support is a requirement that installers of low carbon heating technologies are registered to the Microgeneration Certification Scheme (MCS). Installers certified by MCS have responsibility not only for quality design and installation of micro generating systems but also for customer care if anything was to go wrong. MCS is currently the only certification scheme that is recognised by the UK government for micro-generation schemes. Further details of the scheme can be found at Annex H. Some of the benefits of using MCS would be that the competency and quality of workmanship would be overseen by the registered certification body, together with provision of an aftersales service with a means to correct any consumer issues. An MCS consultation[40] which is now closed, invited views on proposals to transform the way that their scheme operates and the delivery of consumer protections.

The consultation proposed an 'MCS Guarantee' which seeks to address issues of workmanship linked to the system performance of an installation (how the system has been designed and installed) and consider how best to fund the remediation of installation issues for customers whose contractor is no longer trading. MCS are progressing plans to develop a design for the MCS Guarantee, to act as a fund of last resort to remediate an installation problem when all other protections fail, the contractor has left the scheme or is no longer trading. Full plans of the guarantee are expected upon completion of a clear design following feedback received during the consultation. The proposed changes could provide additional assurance and protection to any consumer who installs the technology, knowing that there is a procedure for redress should problems occur.

Each MCS contractor must comply with their competency standard. A business must have at least one Nominated Technical Person (NTP) that is trained in the technology being accredited. This is demonstrated through a training course that leads to a recognised qualification. The NTP takes overall responsibility for installations. When either seeking or maintaining certification each certified company (MCS Contractor) is asked to demonstrate how they engage the services of individuals with the appropriate skills, competency and experience to fulfil each activity involved in the supply, design, installation, set to work and commissioning of microgeneration systems. It will be a requirement that any support available for the installation of a low carbon heating technology will be completed by an installer certified by a scheme such as MCS.

Support for installer certification fees

At present there is no support in NI for installer certification fees and there is no legal requirement for installers to have any type of certification to a scheme. The MCS Certification Fund is an example of installer focused funding from the Scottish government, providing heating engineers with an interest in installing heat pumps with a grant that will pay 75% up to a maximum of £1,000 of the certification fees, boosting the installer skillset with little cost to the business themselves.[41]

40 MCS - Scheme Consultation Proposed changes to MCS
41 Energy Saving Trust - MCS Certification Fund

Questions

Question 20
Do you agree that the department has a requirement for consumer protection measures to be associated with support for low carbon heating technology?

- ❑ Yes
- ❑ No

Please give reasons for your answer

Question 21
What do you feel would be the best method of consumer protection?

- ❑ Option A – Need for installers to be registered to a certification scheme such as MCS.
- ❑ Option B – The department to set its own consumer protection requirements.
- ❑ Option C – Other

Please give reasons for your answer.

If you chose Option B or Other, what consumer protection requirements should be specified?

Question 22
If it is required for installers to be accredited to a certification scheme in order to take part in any future government support, should funding be made available towards certification fees?

- ❑ Yes
- ❑ No

Please give reasons and evidence to support your answer.

Consumer knowledge and maintenance of technology

Ensuring that consumers are confident with the operation of technology in their homes is imperative, as a lack of knowledge may lead to a negative experience which may create a public perception that the technology is difficult to use and maintain. The Building Regulations (Northern Ireland) guidance for existing dwellings[42] states that the dwelling owner should be given information to enable them to operate the building in such a manner as to use no more fuel and power than is reasonable. Information to accompany the installation of fixed building services should be related to the specific system installed and be readily understandable by the occupier.

Information should include how to adjust the timing, temperature and flow control settings, as well as what routine maintenance is necessary to enable systems to be maintained at reasonable efficiency throughout their service life. The validity of warranties for many heating products, such as heat pumps, may be dependent on regular servicing being carried out. The MCS Heat Pump Installer Standard (MIS-3005-I)[43] states that, for compliance with MCS standards, maintenance checks should be undertaken periodically in accordance with manufacturers requirements, and that handover documents should include checks that customers should carry out themselves.

42 Department of Finance Building Regulations Guidance - Technical Booklet F1
43 MCS – The Heat Pump Standard 3005 (Installation)

Other considerations

Electrical Safety in the Home

Research completed by Electrical Safety First, a UK charity, in their report 'Future Homes in Northern Ireland[44]' suggests that in the same way that traditional gas and oil boilers require regular servicing, heat pumps should be maintained by an appropriately skilled certified installer or heating engineer. They also recommend that the shift to electrified heating should be accompanied by rigorous standards for low carbon heating installations and that regular checks of electrical installations and connected equipment are essential, as they deteriorate with age and use. The National Inspection Council for Electrical Installation Contracting (NICEIC) arrange assessments and certification services for contractors in several building disciplines including electrical, renewable energy installing, plumbing, as well as gas and heating engineering. Whilst not a legal requirement for contractors to sign up to, electricians may register as a way of proving their competence and high level of skill. MCS accreditation requires that electrical work completed as part of an accredited installation is carried out by electricians who can demonstrate their competencies in installing electrical renewable systems by holding a recognised electrical certification. A full heat pump installation is assessed by MCS before accreditation is provided to the installer.

In Northern Ireland, there are several organisations that register and assess electrical contractors in this area eg. NICEAC, NAPIT, ECA and work to the UK national safety standard (BS7671).

Questions

Question 23

Should any electrical work completed as part of the low carbon heating technology installation be required to be certified by an approved accredited body?

- ❑ Yes
- ❑ No

Please give reasons and evidence to support your answer.

44 Electrical safety first - Future Homes in Northern Ireland

Chapter 4: Financial Assistance

This chapter seeks to assess financial support options for consideration to enable the adoption of low carbon heating technologies within the residential sector in Northern Ireland. Financial support is aimed at encouraging households to install low carbon heating technologies that are more expensive to buy than traditional boilers. We are seeking views on how support should be determined and administrated, based on a set of fundamental criteria to ensure value for money and effective delivery.

Capital and installation costs

The average (mean) cost and capacity of technologies installed (domestic and non-domestic) through the Boiler Upgrade Scheme (BUS) for England and Wales as at the end of April 2024[45] is shown in Table 4.

Table 4 – The average (mean) cost of installations (for both the domestic and non-domestic sector) as at 30th April 2024 – Boiler Upgrade Scheme (BUS)

Measure	Air Source Heat Pumps (ASHP)	Ground Source Heat Pumps (GSHP)	Shared Ground Loop Ground Source Heat Pumps	Biomass Boilers
Mean cost of installation (£)	13,318	27,532	27,135	16,513
Mean capacity of installation (kW)	10.3	14.8	11.8	23.0

The average cost of a GSHP was approximately £28k (£27k for Shared Ground Loop GSHPs). The capital and installation costs of low carbon heating technology will vary across a range of technology types and housing types. In their report, '*Suitability of Buildings in Northern Ireland for Retrofitting Heat Pumps*,' AECOM noted that the cost of installing a retrofitted ASHP within NI, ranged from £9,000 - £15,000 (excluding VAT), based on a range of output capacities (starting at 3 kW up to 12.8 kW). The NI specific cost of GSHPs and biomass boilers was not reported by AECOM, however as per the MCS data dashboard (this details MCS certified, small-scale renewable energy installations in the UK for both the domestic and non-domestic sector) as of the end of May 2024, the average cost was approximately £25k for a GSHP, £13k for ASHP and approximately £16k for a biomass boiler[46].

Departmental remit

In accordance with Managing Public Money NI (MPMNI)[47], the department may provide two types of financial support to third parties – grants or grant-in-aid (A.5.1 Grants to third parties). A government loan provided at a below-market rate of interest is a type of government grant. Grants and loans are supplied by government to deliver against its policy objectives. Grant-in-aid is usually supplied to Non-Departmental Public Bodies.

45 UK Government - Boiler Upgrade Scheme statistics: April 2024
46 MCS - The MCS Data Dashboard
47 Department of Finance and Personnel - Managing Public Money Northern Ireland

Types of government support

Government grant

A government grant could be used to encourage more households to install low carbon heating technology in NI.

Grants can be paid as follows:

- As a one-off payment towards upfront capital costs or
- As ongoing payments based on a tariff for example.

Low-interest loan (below the market rate)

Low interest rates for loans provided by the government below the market rate, result in lower monthly repayments and reduce the overall cost of borrowing, making borrowing more affordable for consumers.

Loan guarantee

A government guaranteed loan is a loan where the government acts as a guarantor. Government guaranteed loans can help borrowers gain access to affordable financial products and services where they may have been rejected elsewhere.

Administration of support

The department aims to base the administration of any support that may be available on the following criteria:

1. Easy for applicants to apply,
2. Straightforward and low cost to administer,
3. Has no on-going obligations,
4. Has lower risk of overcompensation,
5. Helps towards the upfront capital costs of the technology and
6. Has a budget which can be easily managed.

A research study, conducted by KPMG on the heat pump sector within NI, [48]sought views on the barriers to domestic and non-domestic heat pump deployment. Among the barriers were lack of affordability, and a lack of access to low-cost finance. Based on the above, the department intend to offer a one-off capital grant towards the supply and installation of low carbon heating technology to help consumers towards the upfront capital costs and assist with cash flow. In this respect the consumer will only need to prove to the department that they meet the eligibility criteria once to receive financial support and this also reduces the administration cost for the department. Financial support that may be offered by the department should be at an appropriate level to encourage uptake of the low carbon heating technology whilst providing value for money to the taxpayer. By ensuring that the support mechanism is simple, and not technically complex, reduces the risk of overcompensation and allows for ease of budget management. If financial support is provided by way of a low-interest loan or loan guarantee, there will be a risk to the department of unrecoverable debt, which would be difficult for budget management purposes.

Table 5 shows the different financial support options that may be available and how these would adhere to administration criteria.

48 KPMG research study report - Heat pump sector in Northern Ireland

Table 5 – Summary of administration criteria applied to financial support options.

Type of financial support method	Easy for applicants to apply	Straight forward and low cost to administer	No ongoing obligations for the consumer	Lower risk of over-compensation	Help with upfront capital costs	Effective budget management
Government Grant – one-off payment towards upfront costs.	Criteria likely to be met	Criteria likely to be met	Criteria likely to be met	Criteria likely to be met	Criteria likely to be met	Criteria likely to be met
Government Grant – recurring payments of a fixed amount	Criteria likely to be met	Criteria less likely to be met	Criteria unlikely to be met	Criteria likely to be met	Criteria less likely to be met	Criteria likely to be met
Government Grant – recurring payments of a variable amount (based on inputs, such as a tariff for example)	Criteria likely to be met	Criteria unlikely to be met	Criteria unlikely to be met	Criteria less likely to be met	Criteria less likely to be met	Criteria less likely to be met
Government low-interest loan- one-off payment.	Criteria likely to be met	Criteria likely to be met	Criteria likely to be met	Criteria less likely to be met*	Criteria likely to be met	Criteria less likely to be met**
Government low-interest loan - paid in stages.	Criteria likely to be met	Criteria unlikely to be met	Criteria unlikely to be met	Criteria less likely to be met*	Criteria less likely to be met	Criteria less likely to be met**
Government loan guarantee.	Criteria likely to be met	Criteria likely to be met	Criteria likely to be met	Criteria less likely to be met*	Criteria likely to be met	Criteria unlikely likely to be met**

*Unrecoverable debt can result in the government paying more to achieve policy objectives
** Unrecoverable debt can make it more difficult to effectively manage budget

Questions

Question 24
Do you agree with the criteria for the administration of support for low carbon heating technologies?

- ❑ Yes
- ❑ No

If no, please give reasons for your answer.

Question 25
Do you agree with the approach to offer support by providing a one-off capital grant?

- ❑ Yes
- ❑ No

If no, please give reasons for your answer.

Support schemes in other jurisdictions

There are support schemes for low carbon heating technologies currently in operation within Great Britain and the Republic of Ireland (excluding RHI schemes).

Table 6 shows the different types of financial support offered for various low carbon heating technologies by jurisdictions in the UK and ROI and shows the level of financial support available.

Table 6 – Support schemes for low carbon heating technology (excluding RHI) in the UK and ROI.

England and Wales	Scotland	ROI	NI
Boiler Upgrade Scheme.[49] £5,000 towards the cost and installation of a Biomass Boiler. £7,500 towards the cost and installation of an Air Source Heat Pump (ASHP), Ground Source Heat Pump (GSHP), including Water Source Heat Pumps (WSHPs). Amounts above are paid as a one-off grant amount.	Warmer Homes Scotland.[50] A grant or an interest free loan, or both. Maximum funding amount: Heat Pumps (either Air Source to Water, Ground Source to Water, Water Source to Water, or Hybrid Air Source to Water): £7,500 grant plus additional £7,500 optional loan, Or £9,000 grant plus additional £7,500 optional loan (if the household qualifies for the rural uplift). Solar Photovoltaic (PV) panels: £6,000 - (£1,250 of the £6,000 loan is available as a grant, but only if taken as a package of measures) Solar water heating systems: £5,000 (loan only, no grant available) Hybrid Solar PV/water heating systems: £5,000 (loan only, no grant available) Energy storage systems (heat or electric batteries): £6,000 (£1,250 of the £6,000 loan is available as a grant, but only if taken as a package of measures). Wind or hydro turbines: £2,500 (loan only, no grant available) Biomass Boilers or Stoves (non-automated, non-pellet stoves or room heaters are not eligible): £7,500 grant potentially available upon evidence that a heat pump is unsuitable for the property, Or £9,000 grant if the household qualifies for the rural uplift. Connections to a renewably powered heat network scheme: £7,500 (loan only, no grant available).	Home Energy grants[51] to include: Individual energy upgrade grants. Managed by the homeowner (part funded by SEAI) Up to €6,500 for an ASHP, GSHP, Exhaust Air to Water Heat Pump and Water to Water Heat Pump Up to €3,500 for an Air-to-Air Heat Pump Up to €1,200 towards Solar Thermal. Up to €2,400 towards solar PV. Whole energy upgrade solution Managed by a one stop shop, (part funded by SEAI) Up to €6,500 for Heat Pump systems, Up to €2,000 for a central heating system for a Heat Pump, Up to €3,500 for a Heat Pump - Air to Air, Launch bonus for reaching B2 with a Heat Pump €2,000, Up to €1,200 for solar hot water Up to €700 for heating controls A fully funded Energy Upgrade Managed by SEAI. All amounts above are paid as a one-off grant amount.	NISEP - Efficiency plus Heat Pump Scheme (administered by the Energy Saving Trust). Offered during 2023-24[52]. The ASHP installation should only go ahead if an MCS compliant heat loss calculation shows that the property is suitable. This will usually require full loft insulation and/or cavity wall insulation. To qualify for this grant you must: Be a homeowner in the Phoenix Energy licensed area, Have a single annual household income of less than £28,000, Have a total annual household income of less than £35,000.

49 Boiler Upgrade Scheme - Ofgem
50 Home Energy Scotland - Grant and Loan overview
51 Energy Efficient Homes - Home Energy Grants - SEAI
52 NISEP - List of schemes 2023-2024

The department needs to consider the financial support approach for eligible technologies if funding were to become available.

Option 1 – Apply the same amount of financial support for all eligible technologies.
This option would allow the consumer to make the decision as to which eligible low carbon heating technology provided the best value for money, based on market conditions at that time, but would predominately incentivise ASHP's due to their significantly lower price point compared to GSHP's. This would be a simple financial support funding approach but would not consider the varying costs of installing different low carbon heating technologies within NI.

Option 2 – Apply different amounts of financial support per eligible technology type.
This option would consider the differences in costs of installing various eligible technologies.

Questions

Question 26
Which option do you think should be the approach to the level of financial support for eligible technologies? Please tick one box only.

- ❑ Option 1 – apply the same amount of funding for all eligible technologies.
- ❑ Option 2 – apply different amounts of funding per eligible technology type.
- ❑ Option 3 – other (please specify).

Please give reasons for your answer.

Question 27
Are there any cost barriers beyond the cost of the technology that you feel may impact on the successful rollout of low carbon heating technology support?

- ❑ Yes
- ❑ No

Please give reasons for your answer.

Question 28
Do you have suggestions as to how the department can ensure financial support delivers the best possible value for money?

- ❑ Yes
- ❑ No

Please give reasons for your answer.

Chapter 5: Supply Chain and Skills

One of the supporting criteria that has been adopted to guide the pathway to net zero as outlined in the Energy Strategy is, 'We will create new jobs and grow a skills base for the low carbon economy through innovation, support and focusing on our competitive strengths.' New skills are required to build, install and maintain heat pumps within the local renewable heating sector.

Currently, the deployment of low carbon heating systems, including heat pumps, in NI is very small relative to the size of the heating market as a whole and below the level required to meet future carbon budget targets. Given that NI has approximately 800k dwellings and most boiler sales are for replacement, the retrofit market represents the major growth opportunity for the deployment of heat pump technologies in the long term. The heat pump market and manufacturing base is less mature than that of other countries in Europe with comparable populations, economies and climates. The purpose of this chapter is to discuss how the provision of low carbon heat support can help to stimulate demand and thereby aid as a catalyst for growth within the local renewable heating sector, developing skills and creating good, well-paid jobs and career pathways within the local economy.

Supply Chain – manufacturing

The Energy Strategy aims to ensure the transition to net zero is compatible with growth in the economy, by delivering economic benefits, attracting investment to the region and positioning local companies to compete for the global investment being made in the renewables sector.

There are several businesses across the region who manufacture and assemble heat pumps and associated components, providing valuable manufacturing and support jobs. This provides an opportunity for local installers to use local products and therefore streamline their supply chains by avoiding shipping costs and potentially reduced delivery times. There is an opportunity for suppliers of heat pump technologies to supply into other markets as global demand for renewable heating increases, with opportunities to expand exports and attract inward investment within the local economy, increasing their share of the international market. Clear policy direction from government can help to ensure long-term market development and sustainability.

Support is available throughout the UK (including NI) through the 'Heat Pump Investment Accelerator Competition,' which is a UK wide scheme that has been launched to incentivise the production of heat pumps and their components. The funding will go towards eligible capital costs relating to the construction of new factories, or the expansion, retooling or reworking of existing factories, to produce heat pumps and/or their components. The total funding available for the competition is up to £30 million, with the maximum amount available for any single project capped at £15 million. Another source of funding to develop the supply chain for heat pumps is the 'Heat Pump Ready Programme'[53] which is part of £1 billion Net Zero Innovation Portfolio (NZIP) aimed at growing the sector in the UK.

53 UK Government - Information about the Heat Pump Ready Programme

Questions

Question 29
Is the supply chain and manufacturing base in NI well established to cope with demand for installations of low carbon heating technologies if demand increases?

- ❑ Yes
- ❑ No

Please give reasons for your answer

Question 30
Is there any evidence of after-care delays with repairs and maintenance of heat pumps due to supply chain shortages and delays that may cause someone to be without heating?

- ❑ Yes
- ❑ No

If yes, please provide evidence.

Growing the NI installer base

There is a need to increase the number of skilled members of the workforce to support the anticipated growth within the renewables sector. For heat pumps, a skills gap has been identified where there is a lack of installers to support the required growth in demand as we progress to decarbonise residential heat in support of climate change targets. As part of the CCC's stretch ambition pathway towards net zero in NI, the deployment rate of heat pumps on average from 2030 to 2045 is anticipated to be 36k per year, this is a substantial uplift from the deployment rate at present. As of the end of April 2024, there were less than a dozen MCS certified installers that were based in Northern Ireland.[54] There are known heating installation firms who offer low carbon technologies such as heat pumps that are not registered with MCS but this number is difficult to determine and no definitive record is available. A low carbon heat support scheme would provide a mechanism that can help stimulate demand for the installation of low carbon heat technologies and lead to scale and growth of the installer base for low carbon heating, encouraging firms to invest in this area.

Installer training and skills

Skills audit research completed on behalf of the department in June 2023 noted that the skills required to install heat pumps can be broken down into three categories[55]:

- Assessment and system design;
- System installation and
- Electrical work.

54 MCS - Find a Contractor
55 Energy and Utility Skills - Investigating the skills required for a transition to an advanced zero emission, indigenous diverse energy secure and circular economy in Northern Ireland

It was noted in the research that limitations on the ability of plumbers to offer a 'single stop' service to replace a gas hot water system for example with a heat pump (due to the need for electrical trades licensing) has consistently been identified as a barrier to heat pump deployment. There is a shortage of qualified electricians within the local market, and it can take up four years to achieve the appropriate qualifications. The demand for electricians is expected to increase as the renewable sector grows through demand for heat pumps, solar PV and electric vehicles.

Widespread heat pump deployment will require both upskilling of the current workforce and the training of the next generation. The skills audit research highlighted that the retraining of existing gas and oil heating engineers or plumbers is a relatively straightforward process due to the overlap in skills needed to install a heat pump and those needed to install a gas or oil boiler. This means that for boiler engineers and plumbers, a three to five-day heat pump training course is usually sufficient to gain the necessary installation and, more importantly, assessment and design knowledge needed to get started as a heat pump engineer.

Skills were identified by industry and linked to priority economic sectors, one of which is green technologies. The South Eastern Regional College and Southern Regional College currently deliver a number of Level 3 green skills courses focused on low carbon heating technology including the design, installation and maintenance of Air Source Heat Pumps, with heat pump related courses under development with South West College and North West Regional College.

New apprenticeships will have a key role to play in training the next generation of heating engineers to achieve the growth necessary within the renewable sector. An apprenticeship is a programme of study and work that allows individuals to gain a formal qualification while learning new skills and knowledge in a chosen career. They are a paid option for anyone who wishes to gain experience, upskill or change their career pathway. The longer-term commitment to training the next generation of heating engineers will require high quality and engaging careers education advice, information and guidance in order to attract young people and adults into these careers and high-quality entry-level training provision. Offering training locally will support an increase in local productivity, growing the skills across the regional economy and thus reducing the need to obtain skilled workers from elsewhere. Training within the industry is necessary if the department is to offer support for low carbon heating technologies. If a scheme increases the demand for renewable technologies, it is likely that the availability and supply of heat pump installers will not be sufficient to meet this demand without skills intervention.

Questions

Question 31
How can growth of the skills base within the heat pump industry be supported by the private sector and government to complement any support for low carbon heating in

a) the short – medium term (up to 10 years) and
b) the long term (over 10 years)?

Please provide any evidence you may have.

Question 32
Is there an adequate amount of heat pump installers within NI to cope with demand for installations as well as aftercare and repairs/maintenance should demand for heat pumps increase in the short – medium term?

- ❑ Yes
- ❑ No

Please give reasons for your answer

Question 33
What actions can be taken to support the scaling and growth of the low carbon industry, particularly installers, to meet future demand projections of heat pump deployment targets?

Please give reasons for your answer