

MCS Charitable Foundation

Our vision is a world where everyone has access to affordable and reliable renewable energy and low carbon technologies – for the benefit of our environment, our communities and the general public. As a Foundation we work to increase public confidence, awareness and access to renewable energy and low carbon solutions across the UK. We support education and engagement programmes, fund research and facilitate innovative solutions to drive widespread adoption. In addition, the Foundation oversees the [Microgeneration Certification Scheme \(MCS\)](#) which defines, maintains and improves quality standards for renewable energy at buildings scale.

MCS Service Company Ltd (MCS Certified)

Since 2008, MCS has been the only recognised Standard for UK products and their installation in the small-scale renewables sector. It is a mark of quality. We create and maintain standards that allows for the certification of low-carbon products and installers used to produce electricity and heat from renewable sources. We are impartial: technology neutral, manufacturer neutral, and supportive of Installers committed to quality installations and consumer protection. Membership of MCS demonstrates adherence to recognised industry standards; highlighting quality, competency and compliance. Our mission is to give people confidence in low-carbon energy technology by defining, maintaining and improving quality.

1. What has been the impact of past and current policies for low carbon heat, and what lessons can be learnt, including examples from devolved administrations and international comparators?

- 1.1. They UK can learn from other countries about the successful uptake of low carbon heating schemes. There are several examples of successful schemes which have **provided loans at 0% interest rates or 100% tax rebates** e.g. Italy, Germany, Austria, Sweden as well as Scotland¹. Learning from failings within previous incentive schemes is vital if we are to replicate successful models here in the UK. The Green Deal had an average **interest rate** of 9.3% APR. Typically, the loans were to be paid back over 12 years for heating systems and 25 years for insulation measures.² The interest rate for the Green Deal was much higher than base interest rates and so was less attractive to borrow, especially as a personal loan. Markets such as Sweden and Switzerland have a renewables penetration of 95% and 80% respectively back in 2014. In developing markets like Austria, Finland, France, Germany and Norway heat pumps have reached a share greater than 35% of the market and can now be considered as the standard solution.³ Incentives and tariffs for heat pumps in the UK were never high enough or available for long enough for widespread adoption. In 2018, the 28 European Union members had approximately 35.2 million aerothermal heat pumps and roughly two million ground source heat pumps in operation. Italy was the European country,

¹ Homes Energy Scotland <https://www.gov.scot/policies/home-energy-and-fuel-poverty/energy-saving-home-improvements/>

² The Green Age 19 June 2017 . <https://www.thegreenage.co.uk/the-green-deal-is-back/#:~:text=The%20average%20interest%20rate%20for,25%20years%20for%20insulation%20measures>

³ European Heat Pump Market and Statistics Report 2014, Page 45, Market Penetration https://www.ehpa.org/fileadmin/red/07_Market_Data/2013/EHPA_Statistics_Report_2014_ONLINE_VERSION.pdf

with the highest number of heat pumps in operation as of 2018, with approximately 19.6 million units.⁴ In Italy they have very progressive policies; when purchasing a heat pump or other green energy source consumers are entitled to a 110% refund on the purchase price of their heating system via five annual tax breaks. Consumers also have the option to receive a discount of up to 100% on the purchase price of a heating system directly via the installer of the system, who, in turn, becomes the new bearer of the credit and can apply for tax breaks. Alternatively, they can apply to receive a refund of up to 100% via a “credit pass” to the installer of the heating system, a bank, or another 3rd party.⁵ This is type of investment and subsidy that is required to transform markets over shorter periods of time and transform how people view energy.

- 1.2. A positive lesson the UK has learnt through current Government retrofitting schemes is that all installations are required to be **MCS approved, which** provides the quality, standards and customer assurances needed to have confidence in renewables technology. Going forward it is vital that all installations (new build or retrofit) are mandated to adhere to the quality and standards under the MCS Certified scheme. When considering new build at present there is no requirement to have any installation standards and this could potentially open the market to substandard and poor-quality installations, which in turn could damage the green economic recovery and tarnish the reputation of renewables. Standards must be the cornerstone of any market shift to low carbon heating and MCS was set up by the Government as the standard organisation for domestic renewables and should be the required standard in any new or revised building regulations to simplify schemes for consumers in the same way that GasSafe has done.
- 1.3. Some incentive schemes have been short lived,⁶ changed or are amended, which creates cliff edges in the renewables market and provides a roller coaster ride for businesses and contractors. The Government needs to look at long term approaches taken in other countries to provide incentives, tax breaks or 0% interest loans as part of long-term strategic approach to transforming the market (e.g. 10 years plus). These initiatives are needed to support the development of the market in a sustainable way where business can grow and invest in manufacturing, as well as recruiting new staff allow a new Green Economy to flourish.
- 1.4. Another lesson to be learnt is the application of consistent policies for new builds with clear regulations to install low carbon technology, as was used in Austria. They had a policy and Climate & Energy Fund which cut across several Government departments and had an integrated planning and implementation approach to deliver low carbon homes.⁷ The Government should adopt a similar policy to make sure that every Government Department is delivering on a zero carbon future and that an integrated energy, transport and housing policy is developed.
- 1.5. A key lesson from Italy can be looking at Tax breaks worth 110% of the cost of the equipment and the installation fees and the positive role that taxation can play on reducing costs. A simple initiative would be **removing VAT from all domestic renewables, installations and associated heating systems** and setting the rate at 0% VAT on all products for a period of 10 years. This would simplify the taxation on retrofitting, helping both

⁴ Number of heat pumps in operation in the European Union (EU) 2013-2018, Published by N. Sönnichsen, Apr 1, 2020 <https://www.statista.com/statistics/739745/heat-pumps-in-operation-eu/#:~:text=Italy%20was%20European%20country%2C%20with,with%20approximately%2019.6%20million%20units.>

⁵ Italian heat pump incentive a sustainable blueprint <https://www.coolingpost.com/world-news/italian-heat-pump-incentive-a-sustainable-blueprint/>

⁶ Green Homes Grant Scheme BEIS <https://www.gov.uk/guidance/apply-for-the-green-homes-grant-scheme>

⁷ Integrated National Energy and Climate Plan for Austria 2021-2030

https://ec.europa.eu/energy/sites/ener/files/documents/at_final_necp_main_en.pdf

consumers and installers. The current VAT rate fluctuates between 5% and 20%, depending on what low carbon solution you are installing and if you meet key requirements based on age or in receipt of social benefits. We hope the Government will use the opportunity to determine our own VAT rates to state that 'Zero Carbon = Zero VAT' for domestic renewables, installations and associated heating systems.

- 1.6. Current retrofitting and installation incentive schemes have always relied on personal capital or match funding to be able to take advantage of current incentive schemes. There has always been a degree of match funding up to set limits within each scheme. This type of approach can exclude those on lower incomes and those in fuel poverty and a Government task force needs to examine how it can decarbonise these homes and support these families. One solution that could help is the Government re-establishing a **Net Zero Development Bank, which can also provide** 100% of the loan at 0% interest rate similar to Italy, providing funding costs upfront and helping to remove barrier to these lower income groups.⁸ These loans should be repaid through an energy tariff no greater than the current properties energy bills over a set period of time, depending on the cost of the work conducted. It is also vital that those who live in social housing on low incomes and those in fuel poverty receive 100% subsidies for the work to retrofit their homes.
- 1.7. **The Renewable Heat Incentive**⁹ has been quite successful at bringing forward some heat pump projects, but only in the last three years or so of the scheme. This is because it offered near guaranteed tariffs on a demand-led basis. The level of the tariffs for both domestic and non-domestic schemes has been significantly increased towards the end of the scheme which has helped incentivise uptake in an emerging market where broader policy (e.g. the relative price of gas and electricity) currently acts to disincentivise low carbon heating. However, the RHI was not as successful as it could have been because the rules for applying and how the funding is structured across the different technologies were relatively complex and this has led to lower domestic uptake than was forecast in the original impact assessments. The Heat Network Investment Project (HNIP) has also been successful. It has brought forward several projects and encouraged more low carbon heat networks than would otherwise have been the case. It would have been more successful if it had been possible to put in place wider policy changes to support heat network connections; for example, incentivising connections to non-domestic buildings through concession areas.

2. What key policies, priorities and timelines should be included in the Government's forthcoming 'Buildings and Heat Strategy' to ensure that the UK is on track to deliver Net Zero? What are the most urgent decisions and actions that need to be taken over the course of this Parliament (by 2024)?

- 2.1. **Removing VAT from all domestic renewables** (including heat pumps) as well as the installation costs and setting the rate at 0%, so Zero carbon = Zero VAT for a period of 10 years. This will remove the current complex VAT system, with variable rates from 5% through to 20%. This will help reduce costs and increase the uptake of heat pumps and other domestic renewables across domestic and business sectors. It is important to send clear long-term messages to businesses and consumers to help develop and establish the renewables and zero carbon heating market and taxation incentives via VAT has a vital role to play in helping achieve the Government 10 Point Plan and Net Zero targets.

⁸ Italian heat pump incentive a sustainable blueprint <https://www.coolingpost.com/world-news/italian-heat-pump-incentive-a-sustainable-blueprint/>

⁹ Domestic RHI <https://www.ofgem.gov.uk/environmental-programmes/domestic-rhi>

- 2.2. If the Government is serious about increasing the uptake of heat pumps, then as a matter of urgency, it needs to **change the Building Regulations**, so that there is a requirement for heat pumps to be installed as the primary heating method in all new homes from December 2023 and help reach the 600,000 heat pump installations a year target. This will force a shift in the marketplace to allow heat pumps to become the norm. With up to 300,000 new homes being built every year and domestic renewables becoming a requirement, this will stimulate the Green Economy and create sustainable jobs and growth. It will provide the opportunity to invest in businesses, improve manufacturing supply chains and allow the upskilling of the workforce creating new jobs and encouraging installers to become MCS certified. It is also vital that any installation of heat pumps or other renewables is conducted to the highest standards and covered under the MCS assurance scheme as is standard for any current Government incentive scheme. MCS provides the quality assurance and customer confidence in the new technology and prevents substandard and poor installations which would damage the heat pump market. These Building regulations need reviewing e.g. Part L in relation to technologies and low carbon solutions to make sure standards required reflect changes in technology to heat pumps. New Building Regulation changes also need to stipulate a 55°C flow temp for heating systems.
- 2.3. The Government needs to proactively **raise awareness of heat pump technology** as a viable alternative to current fossil fuel heating system and need to start informing consumers that, as part of a low carbon future, fossil fuels will be phased out. There is also a need to make consumers aware in advance of alternative heating systems, like heat pumps, during annual service of existing gas/oil boilers and help prepare for changes and to think ahead when installing their next system, rather than reacting to a boiler failure and distressed purchases. Government information and communication is vital, along with standardised information for the retrofitting process, which also needs updating on an annual basis, so the information is consistent and high quality across the UK. There also needs to be investment set up a national energy information service underpinned by a network of local and regional one-stop-shop hubs. This is to ensure independent and consistent advice and support to householders through a whole house retrofit approach.
- 2.4. The Government as a matter of urgency needs to introduce **a phase out date for gas LPG and oil heating** within new homes and would urge a more rapid course of action so that by December 2023 all new homes will no longer have fossil fuel heating systems, as recommended by the Committee for Climate Change. The Government will need to prepare industry and consumers through public information work and to publicise this date in advance. This signal gives time for the boiler industry to retrain to new business models and stimulate heat pump manufacturing in the UK in a sustainable way that provides certainty.
- 2.5. **The right level of subsidies and incentives** are also going to be important over the next five to 10 years to start to stimulate the retrofit market within the UK. This will only take us so far, so is important but there is still a vital need for new legislation and regulation, which is the only way that a substantial shift in the market will take place and allow the uptake of heat pumps and other zero carbon heating technologies within homes. Regulation is going to be the key in transitioning to a zero-carbon future and this needs to be implemented with the next 24 months if we are to hit Net Zero targets.
- 2.6. It is important that we analyse and, where appropriate, replicate positive steps taken in other countries to help increase the uptake of heat pumps and other zero carbon heating options e.g. **Government loans of 100% of the cost at 0% interest**

rates in Sweden, Germany, Austria and in Scotland. The use of integrated departmental planning and heating policies across Government to help establish heat pump technology as the norm. Without the Government prioritising the issue and providing the right regulations, incentives, and tax breaks it will be difficult to achieve the shift to low carbon domestic heating solutions required to meet the Net Zero target of 2050.

- 2.7. The Government also needs to lead by example and work on **the wholesale conversion of all Government and Public buildings to heat pump technologies**. This will provide a thought leadership by example and start to help decarbonise Government Buildings. Currently the Palace of Westminster is due for a major renovation and restoration project, so now would be an ideal time to look at replacing the heating and cooling system with a zero-carbon alternative.
- 2.8. MCS would strongly recommend a **migration of the current environmental levies away from electricity towards oil & gas**. Currently there are perverse incentives which are still supporting fossil fuels in the UK. There needs to be a systematic increase in the price of gas progressively over 15 years to make sure there is more adoption of zero carbon alternatives. Obviously there needs to be support and help for those in fuel poverty and assistance in migrating those people in social housing over to low carbon systems of heating. This will require taking a whole house approach to tackle fuel poverty, so substantial investment and determination will be required, not only from this Government, but from successive ones to achieve the decarbonisation of heating and a shift towards heat pumps and other zero carbon heating technologies.
- 2.9. **Previous incentive schemes have not been high enough** or long enough to encourage high volumes of heat pump installations to be adopted, with consumers favouring instead cheaper renewable technologies such as Solar PV. To provide for a significant uplift in the annual volume of domestic heat pumps above the current level of 18,000 (MCS data for 2019)¹⁰ installations, the sector needs long term and therefore sustainable policies, regulation and planning changes and the associated incentive and tax schemes. This will encourage a necessary growth in the supply chain, through installer and manufacturer investment essential to the delivery of installation volumes closer to 1 million Heat Pumps per annum.
- 2.10. Going forward it is vital that **quality and standards** are maintained not only for heat pumps, but also for all domestic renewables and that any new Building Regulations require installations to be installed to MCS or higher standards. MCS provide the quality assurance scheme, which in turn provides consumer confidence in renewable technology and will encourage the uptake of heat pumps. This is currently a requirement under current Government incentive schemes on all retrofit installations, which must be MCS Certified and this policy needs to be extended to new build housing for domestic renewables, including Heat Pump installation.
- 2.11. The Government needs a clear and agreed road map on building a zero-carbon future.¹¹ **New Building regulations**¹² need to be modified to remove oil, LPG and natural gas heating options by 2023 and only allow heat pumps or other zero carbon heating options for new builds. In the Future Homes Standard consultation document only two options were given in section 3.9 and both contained heating via Gas Boilers. In light of the pledges to install 600,000 heat pumps a year by 2028, it seems a sensible solution to mandate heat pumps for all appropriate new homes under new Building Regulations.

¹⁰ <https://www.heatpumps.org.uk/wp-content/uploads/2019/11/A-Roadmap-for-the-Role-of-Heat-Pumps.pdf>

¹¹ IPPR Roadmap to COP26 <https://www.ippr.org/files/2020-11/the-road-to-cop-26-nov2020.pdf>

¹² Future Homes Standard <https://www.gov.uk/government/consultations/the-future-homes-standard-changes-to-part-l-and-part-f-of-the-building-regulations-for-new-dwellings>

- These revised Planning Regulations need to be included in the 'Heat & Buildings Strategy' and introduced by 2023 at the latest. Developing Net Zero homes means that renewables as well as grid-based solutions should be part of any new development. All new homes should have a requirement under these new Planning Regulations that stipulate at least 50% of that home's energy needs will be met by domestic renewables within that home or community. New Building Regulations need to make sure that fossil fuel heating systems (like oil and gas) are no longer installed in new homes as soon as is possible and stopped by 2023 at the latest. This provides clarity and certainty for the building sector that we are building a zero-carbon future and domestic renewables will be at the heart of that decision, not fossil fuels.
- 2.12. The Government needs to set up a **cross departmental working panel** to deliver an integrated decarbonising heat strategy, which in turn prevents silo working and allows integrated policies and incentives to achieve more, similar to the Austrian example.
 - 2.13. **Introduce a net zero consumer engagement strategy;** including how government can help consumers become engaged in preparing for decarbonisation of their home heating and improvements to energy efficiency before their existing boiler system breaks down.
 - 2.14. **Set out revised long-term domestic retrofit targets that are consistent with reaching net zero.** This must include a rising trajectory of minimum standards and targets for average building performance. Set out a clear, strategic plan that shows when key decisions will be made and how much advance notice industry will be given to make investment decisions.
 - 2.15. Ensure domestic new build standards from 2020 do not result in homes being built that require costly retrofitting in the future. Mandate improvements to energy efficiency and heat decarbonisation at trigger points for existing domestic buildings (e.g. sale of the house).^{13, 14}
 - 2.16. Ensure future reforms of Building Regulations focus on maximising a building's flexible potential, both by improving thermal inertia to enable more flexible energy use and by supporting deployment of storage (including battery storage, thermal storage through hot water tanks and thermal batteries, and heat network thermal stores).
 - 2.17. Introduce **Government support and a long-term strategy for education and training in green jobs and**, in particular, the construction sector. This should include grants focused on reskilling by the UK and devolved governments. This programme should build

¹³ Department for Business, Energy and Industrial Strategy, Clean Growth Strategy, 2017:

<https://www.gov.uk/government/publications/clean-growth-strategy>

Committee on Climate Change, Progress Report to Parliament, 2018:

<https://www.theccc.org.uk/publication/reducing-ukemissions-2018-progress-report-to-parliament/#outline>

ENA, Electricity Networks Association backs the Committee on Climate Change's Net Zero Report, 2019:

<http://www.energynetworks.org/news/press-releases/2019/may/energy-networksassociation-backs-the-committee-on-climate-change-s-net-zero-report.html>

UKERC, Written Evidence Submitted to POST Inquiry on Clean Growth, 2018:

<http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/scie-nc-and-technology-committee/technologies-for-meeting-clean-growth-emissionsreduction-targets/written/92215.html>

National Grid Gas, Future of Gas, 2019: <https://futureofgas.uk/>

Ofgem, Future Insights: The Decarbonisation of Heat, 2016:

https://www.ofgem.gov.uk/system/files/docs/2016/11/ofgem_future_insights_programme_-_the_decarbonisation_of_heat.pdf

The Energyst, Ofgem Heat: Decarbonising heat the biggest energy challenge, 2019:

<https://theenergyst.com/ofgem-chief-decarbonising-heat-key-challenge/>

¹⁴ Committee on Climate Change, Progress Report to Parliament, 2018:

<https://www.theccc.org.uk/publication/reducing-ukemissions-2018-progress-report-to-parliament/#outline>

on the good work already being undertaken through Trustmark and PAS 2030/2035 and ongoing work to develop skills in the flexibility sector.

- 2.18. Set out how the £3bn investment through the Chancellor's Plan for Jobs will evolve into schemes that deliver the remainder of the £9.2bn investment for in energy efficiency from the Conservative Party Manifesto.
 - 2.19. Stipulate that any heat installations funded through Government support must have **smart control systems** to ensure zero carbon heating solutions are installed 'smart as standard'.
 - 2.20. Ensure that the Energy Technologies List is updated to include all relevant new technologies and that only green zero carbon options will be considered.
 - 2.21. Funding and incentives for low carbon heat must be designed to underpin the development and expansion of microgeneration. There should be a clear vision of the scope and role of domestic microgeneration within the overall carbon reduction policy and clear, ambitious targets against which we can measure the scale and penetration of the technologies. Too much attention is being placed on large infrastructure projects and renewables strategies must also include domestic renewables as part of the mix, which can play a vital role in decarbonising our buildings across the UK.
 - 2.22. It should be noted that proposed grants to be introduced like the Clean Heat Grant Scheme are not sufficient. The amount of grant and the flat-rate, technology neutral approach needs reconsideration. A £4k flat grant is too blunt an instrument and fails to take account of the significant cost and benefit differences between low-carbon technologies. The grant should be proportionate to supply and install costs which do not appear to be part of the CHGS design. The design of new schemes and incentives is vital in decarbonising buildings across the UK.
3. **Which technologies are the most viable to deliver the decarbonisation of heating, and what would be the most appropriate mix of technologies across the UK?**

3.1. **Domestic renewables within homes and communities** offer the most viable way to deliver the decarbonisation of heating and energy use within the home. There needs to be a mixed approach and a requirement to install microgeneration systems, so the appropriate technology is being deployed for the area and housing type, so one size does not fit all. Independent assessment of each building can recommend the most appropriate solutions and technologies as part of a wider retrofit programme that looks at the whole house, rather than one element heating, as they are all connected.

3.2. Looking at **energy efficiency measures in conjunction with domestic renewables** for existing homes, so it needs a whole house approach to help decarbonising heat and energy needed to heat a home.

3.3. The technologies most suited to decarbonisation are:

- Ground/Water Source Heat Pumps,
- Air Source Heat pumps,
- Solar Thermal etc
- Direct electrification of heating
- Mechanical ventilation and heat recovery systems

3.4. It is important to note that **Heat Pumps are effective in all settings and all homes**, and that there is a heat pump solution for every domestic environment and business environment.

3.5. Going forward it is vital that **quality and standards are maintained** not only for heat pumps, but also for all domestic renewables and that any new Planning Regulations

require installations to be installed to MCS or higher standards. MCS provides the quality assurance infrastructure, which in turn provides consumer confidence in renewable technology and will encourage the uptake of heat pumps. MCS Certified installations are currently a requirement under any Government incentive scheme on all retrofit installations. This same assurance and quality standard also needs to be extended to new build housing, including Heat Pump installations and therefore be recognised as the only industry installation standard.

- 3.6. As we start building better homes and using more energy efficient technologies, an integrated approach to heating might lie in combined solutions like domestic Solar Thermal and Heat Pump installations in new homes.
- 3.7. To reach Net Zero, we will need to use all the tools and technologies at our disposal, and we see a role for a wide mixture of heat decarbonisation solutions across the UK. This view is supported by Government and many stakeholders, including the Climate Change Committee¹⁵ and domestic renewables must be at the forefront on new policy initiatives as part of the solution to decarbonise homes.

4. What are the barriers to scaling up low carbon heating technologies? What is needed to overcome these barriers?

- 4.1. **One of the main barriers has been a lack of parity with base unit and installation costs, which** often act as a barrier and a fear of something different or new. There is also the element of disruption within the home with new heating systems being installed and potential ground works as well as an element of forward planning to replace a new heating system. It is important that the Government can help reduce the capital costs of the equipment and associated installation costs of heat pumps and although installation at scale will help reduce cost, there will need to be tax breaks and incentives to help people adopt low carbon solutions which are more expensive in the short term, but will deliver long term benefits. In Italy we have seen how tax incentives and rebate schemes massively reduce the installation costs of technologies like heat pumps and has led to one of the largest adoptions of heat pumps within Europe.¹⁶

¹⁵ Department for Business, Energy and Industrial Strategy, Clean Growth Strategy, 2017:

<https://www.gov.uk/government/publications/clean-growth-strategy>

ENA, Electricity Networks Association backs the Committee on Climate Change's Net Zero Report, 2019:

<http://www.energynetworks.org/news/press-releases/2019/may/energy-networksassociation-backs-the-committee-on-climate-change's-net-zero-report.html>

UKERC, Written Evidence Submitted to POST Inquiry on Clean Growth, 2018:

<http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/scie-nce-and-technology-committee/technologies-for-meeting-clean-growth-emissionsreduction-targets/written/92215.html>

National Grid Gas, Future of Gas, 2019: <https://futureofgas.uk/>

Ofgem, Future Insights: The Decarbonisation of Heat, 2016:

[https://www.ofgem.gov.uk/system/files/docs/2016/11/ofgem_future_insights_programme_e_-_the_decarbonisation_of_heat.pdf](https://www.ofgem.gov.uk/system/files/docs/2016/11/ofgem_future_insights_programme_-_the_decarbonisation_of_heat.pdf)

The Energyst, Ofgem Heat: Decarbonising heat the biggest energy challenge, 2019:

<https://theenergyst.com/ofgem-chief-decarbonising-heat-key-challenge/>

¹⁶ Italian heat pump incentive a sustainable blueprint <https://www.coolingpost.com/world-news/italian-heat-pump-incentive-a-sustainable-blueprint/>

- 4.2. **Tax incentives and complex VAT rules around retrofitting, whole heating systems and different renewable technology have all helped increase costs, as well as perverse subsidies being given to energy sources from fossil fuels.** Removing VAT from all domestic renewables (including heat pumps) as well as the installation costs and associated heating systems and setting the rate at 0% VAT, so Zero Carbon = Zero VAT for domestic renewables for a period of 10 years would help the market and reduce costs. This measure is supported by contractors, installers and the building industry.
 - 4.3. If the Government is serious about increasing the uptake of heat pumps then as a matter of urgency it needs to **change the Planning Regulations**, so that there is a requirement for heat pumps to be installed as the primary heating method in all new homes from 2023 and that Gas and Oil heating systems are no longer allowed to be fitted to any new build. This will force a shift in the marketplace to allow heat pumps to become the new norm and allow us to move away from fossil fuels. Having such regulations will help create a new and consistent market with up to 300,000 new homes being built every year and installed with heat pumps. It will provide the opportunity to invest in businesses, improve manufacturing supply chains and allow the upskilling of the workforce creating new jobs and allow installers to become MCS certified.
 - 4.4. It is also vital that any installation of heat pumps is conducted to the highest standards and covered under the MCS assurance scheme as is standard for any current Government incentive scheme. MCS provides the quality assurance and customer confidence in the new technology and prevents substandard and poor installations which would damage the heat pump market. These Building regulations need reviewing e.g. Part L in relation to technologies and low carbon solutions to make sure standards required reflect changes in technology to heat pumps.
 - 4.5. **Short term incentive schemes** although welcome can also act as a barrier, as certain schemes incentivise single or cheaper technologies or may offer a flat rate excluding options like heat pumps. The length of any scheme can stimulate demand, but when that scheme is ending or is changed in any way, we often see a sharp decline in installations, creating a cliff edge for installers. It also prevents a whole house approach to retrofitting being adopted and lacks any long-term strategic approach.
 - 4.6. Other barriers are around capacity issues around manufacturing and supply from other countries for low carbon heating equipment. Although some of the supply issues may be Covid related at present, we also must consider the potential impacts of Brexit and future trade deals. For the reduction in cost to occur we need to see an increase in the market size to help investors and companies grow to meet this new demand. Manufacturers will respond to a strong clear regulatory environment which provides certainty. This will then deliver the economies of scale required and will help reduce unit costs.
 - 4.7. It is important that the overall mix of carbon pricing and support for green technologies incentivises households and companies to invest in low carbon heating rather than a new fossil fuel boiler. The impact of different policies that price or signal carbon use on commercial and domestic buildings is quite patchy. Ensuring these incentives are right should include review of carbon pricing for commercial buildings and domestic homes (including CCL and the balance of carbon pricing on oil and gas) as well as a clear strategy and funding support to bring down the cost of less mature low carbon heat technologies.
5. **How can the costs of decarbonising heat be distributed fairly across consumers, taxpayers, business and government, taking account of the fuel poor and communities affected by the transition? What is the impact of the existing distribution of environmental levies across**

electricity, gas and fuel bills on drivers for switching to low carbon heating, and should this distribution be reviewed?

- 5.1. The Government should set up a new Green Investment Bank which is funded by the taxpayer/Government providing 100% loans at 0% interest rates for whole house retrofitting. Retrofitting of homes and associated loans for retrofitting should only follow on after information and advice from an independent assessor has looked at the property, taking a whole house approach to what is required to reduce energy use and the most suitable options for zero carbon heating. This loan is then secured against the property, not as an individual loan and paid back through an energy tariff associated with that property, which is no greater than your current combined energy Bill. So, a buy now pay later approach, removing barriers to adopting low carbon heating technology. It is also beneficial to target areas on a street by street basis to help deliver the economies of scale and retrofit similar housing types at the same time to minimise disruption to those people who are taking advantage of the scheme.
 - 5.2. **In decarbonising heat and distributing the costs fairly across consumers, taxpayers, business and government there needs to be an energy level playing field.** Perverse incentives on Gas, oil and non-green forms of electricity, need migrating to zero carbon options including heat pumps. An incremental carbon tax needs introducing, like the petrol escalator of many years. There also needs to be protection for households which are suffering fuel poverty or are on low incomes who could be adversely affected. They should be helped and supported via 100% free Government Grants to help with the transition to zero carbon heating. Current incentive schemes rely on households making substantial financial contribution, which is beyond most low-income households. Again, a street by street approach is needed and the use of community and district heat networks could also help provide solutions. The role of domestic renewables is a way the Government can deliver low cost energy to households, which will also help future issues around fuel poverty, providing zero carbon solutions and low energy bills after the initial works have been conducted will be positive for these households.
6. **What incentives and regulatory measures should be employed to encourage and ensure households take up low carbon heat, and how will these need to vary for different household types?**
- 6.1. **Incentives, tax breaks and subsidies for heat pumps** and installation costs are vital to bring down costs to consumers. The increase in demand due to regulation changes in planning will also help drive the number of heat pumps and zero carbon heating option into homes.
 - 6.2. **Removing VAT from all domestic renewables** (equipment and installation costs and associated heating systems) should happen from Dec 2021 as we are able to determine our own VAT rules from 1st January 2021. As a regulatory measure it requires no primary legislation and is a simple tax rule change that the Chancellor can announce and will not take up valuable Parliamentary time.
 - 6.3. The Government should also consider **extending the Green Homes Grant** scheme for a period of 10 years, so incentive schemes are long-term, stable and provide certainty in the market to really see benefits.

- 6.4. For retrofitting: The Government needs to review and update and standardise all **retrofitting information** which is reviewed on an annual basis to make sure it remains relevant. There needs to be public awareness and information campaigns by the Government who are proactively highlighting green homes and zero carbon technologies. New whole home assessments are needed to look at each individual house, list the measures required to upgrade such a home and the most appropriate technologies to be used. Then a whole homes approach can be taken, prior to the installation of new heating systems and a 0% loan from a Green Investment Bank with an energy tariff to repay the loan no greater than your existing energy bill.
- 6.5. **Low income households and those living in fuel poverty will need support.** The private rental sector should be required to provide the highest EPC C or higher ratings for homes which are to be rented out or leased. Social housing will need investment from the Government and also have support from Local Authorities to systematically retrofit social housing on a street by street basis to create the transformation shift required, which in turn will help tackle fuel poverty.
- 6.6. Regulatory measures should also be applied to new build homes, as well as existing homes to install zero/low carbon heating. As part of an integrated regulatory framework the Government needs to **issue new Planning Regulations** which should be introduced from March 2022 at the latest, phasing out fossil fuels in all new homes. There needs to be a regulation requirement that new build will contain renewable heat and domestic renewable generation as an integral part of any new building or generated within the local community. The regulatory measure is important to consider here, especially as the Government aims to build at least 300,000 homes per year, meaning that 1.5 million homes could be built by 2025 that need some degree of retrofitting in the future. Regulation is vital for delivering new infrastructure within our homes and communities, so things like Rapid Electric Vehicle charging points are built into new homes and could also be considered for some retrofitting solutions, where appropriate.
- 6.7. To meet our net zero targets, we will need a framework to support households and industry to make the right choices of how to decarbonise their homes. The Governments of the UK will need to set up a **national energy information service** underpinned by a network of local and regional one-stop-shop hubs. This is to ensure independent and consistent advice and support to householders through a whole house retrofit approach. The information needs to be reviewed and updated on an annual basis or if new regulations or legislation is introduced. This should be funded by the Governments of the UK and delivered through Local Authorities and individual home assessments need to be free to encourage consumer up take or may even need to be a mandatory requirement prior to sale of that property, in the same way that EPC ratings are required.
- 6.8. Domestic **consumers should be adequately incentivised** to take up low carbon heating by (a) cost, (b) good consumer service, and (c) a simple way to achieve statutory decarbonisation targets, particularly at trigger points e.g. when a boiler breaks down. The majority of domestic consumers will make the choice to install a new heating system in a distress situation – their boiler has suddenly broken down, and they need a replacement, fast. The installation of low carbon heating systems often requires an element of forward planning, be that to upgrade the energy efficiency of a building, to make space for a heat pump, to increase the size of radiators to support a lower temperature system, or to time with installation of a heat network connection. Currently, consumers often do not plan for their next heating system, but this will have to change and will need support from the Government. Industry tradespeople will tend to recommend technology that is familiar and well understood to consumers – and many are not trained to install low carbon systems. As such, domestic consumers are still being recommended higher carbon solutions. There is a need for trained retrofit coordinators/assessor/advisors who can provide a whole house,

low carbon solutions to consumers and this will have to be funded by the Government and delivered through Local Authorities, prior to a boiler failing to help with pre-planning zero carbon alternatives like heat pumps.

7. **What action is required to ensure that households are engaged, informed, supported and protected during the transition to low carbon heat, including measures to minimise disruption in homes and to maintain consumer choice?**

- 7.1. The Governments of the UK set up a **national energy information service** underpinned by a network of local and regional one-stop-shop hubs. This is to ensure independent and consistent advice and support to householders through a whole house retrofit approach. The information needs to be reviewed and updated on an annual basis or if new regulations or legislation is introduced. This will have to be funded by the Government and delivered through Local Authorities and individual home assessments need to be free to encourage consumer take up or may even need a mandatory requirement to have an assessment prior to sale in the same way that EPC ratings are required. PAS 2035 covers how to assess dwellings for retrofit, identify improvement options, design and specify Energy Efficiency Measures (EEM) and monitor retrofit projects. This will mean the existing network of assessors will need upskilling and expanding to deliver to zero carbon options and advice helping to reduce energy consumption and replace fossil fuels.
- 7.2. The benefits of low carbon heating need to be clear and transparent to consumers and should be coupled with **National Awareness Campaign**, which MCS can help with messaging and advice, that aims to change our understanding about domestic energy use and technology options available. Consumers need to be made aware of the low carbon heating and this can only be achieved through mass public information campaigns, like the Brexit one run by the Government. This is about transitioning the UK to a low carbon economy and awareness of zero carbon domestic heating is a vital tool in helping to achieve that goal. These Public Awareness Campaigns need to be proactively highlighting green heating and zero carbon technologies. This needs to be promoted as the norm and to reassure that this is established technology and part of decarbonising our homes and transitioning to carbon free future. It needs to look at the benefits, like comfort, lower bills and reducing pollution and as a solution to tackling the Climate Crisis. This is only something that the Government can do. It would also be useful to build in any phase out dates of fossil fuel heating types or fuels as part of that awareness campaign.
- 7.3. Previous incentive schemes have not been high enough to encourage the adoption volumes needed for heat pump installations, with consumers favouring cheaper renewable technologies such as Solar PV and biomass. To provide for a significant uplift in the annual volume of domestic heat pumps above the current level of 18,000 (MCS data for 2019), the sector needs **long term and therefore sustainable policies and associated incentive schemes**. This will encourage a necessary growth in the supply chain, through installer and manufacturer investment essential to the delivery of installation volumes closer to 1m Heat Pumps per annum.
- 7.4. Going forward it is vital that **quality and standards** are maintained not only for heat pumps, but also for all domestic renewables and that any new regulations require installations to be installed to MCS or higher standards. MCS provides for the quality assurance infrastructure, which in turn provides consumer confidence in new technology and will encourage the uptake of heat pumps. This is currently a requirement under current

Government incentive schemes on all retrofit installations, which must be MCS Certified and needs to be extended to all new build housing Heat Pump installations as well and therefore MCS should be recognised as the industry Standard assurance scheme.

- 7.5. As part of any awareness campaign run by the Government it is important to have some **baseline data**. Research conducted by the Energy Systems Catapult which looks at domestic attitudes to heat and heating¹⁷. While 75% of people believe climate change is a serious threat, participants were still unclear as to which activities in their lives emit carbon – with only 49% (31% of households) realising natural gas heating contributes to carbon emissions. Less than 20% of people would consider switching to low carbon heating and they realise making this change is both difficult and expensive. Just less than half of homeowners agree that moving to a renewable heating system will significantly reduce their personal impact on climate change. Participants were asked how much they agreed and disagreed that moving to one of the low carbon technologies will reduce their impact on climate change and of those that agreed, 45% said heat pumps. Research has shown that households often have a very complicated relationship with their heating systems. People would generally prefer to put up with poorly performing heating systems rather than have to suffer the disruption of installing a new one¹⁸. This is compounded by the apparent lack of awareness of low carbon heating systems.
- 7.6. The Committee on Climate Change (CCC) found that 57% of people had never heard of or knew very little about the need to switch away from natural gas for heating. BEIS data shows that 68% of people had never heard of, or knew very little, about renewable heating systems, although a third of respondents claimed to be aware of heat pumps¹⁹. This suggests that consumers are not aware of the need to switch away from natural gas and the alternative low carbon heating options. Therefore, there is expected to be little awareness that they will have to experience some level of disruption to support the decarbonisation of the heating sector. Bringing consumers with us on our journey to net zero is imperative – and indeed engagement with consumers can unlock wider system benefits. Given the urgency of net zero, we recommend that BEIS regularly assess and monitor public awareness and acceptability of in-home disruption, alongside a nationwide retrofit of the UK's domestic building stock. To improve domestic awareness of what it will take to meet net zero there needs to be an initial undertaking from policy makers to understand how the transition will affect different tenures or households.
- 7.7. There is an important need for **more retrofit coordinators** who can provide impartial advice on low carbon heating solutions in addition to energy efficiency. This would ensure customers are well informed about opportunities to make get decarbonisation and to engage through campaigns similar to Power Responsive^{20,21}. While social landlords are generally well informed about the retrofit measures available, research conducted by RegenSW11 found that private owner-occupiers either are not aware of retrofit solutions and technologies or do not fully understand them. This is particularly true for renewable heat and intensive energy efficiency measures. It is said to be especially difficult to engage with low income and vulnerable households, particularly regarding intensive energy efficiency measures funded through ECO. The research found that private owner occupiers do not clearly understand that the subsidies they receive are due to policies such as ECO

¹⁷ Energy Systems Catapult (2020) Understanding Net Zero: A Consumer Perspective <https://es.catapult.org.uk/wp-content/uploads/2020/04/Understanding-Net-Zero-A-Consumer-Perspective.pdf>

¹⁸ Energy Systems Catapult (2018) How can people get the heat they want, without the carbon?

¹⁹ Department for Business, Energy and Industrial Strategy (2019) Public Attitudes Tracker Wave 28

²⁰ Chilvers J, Pallett H and Hargreaves T. (2018) "Ecologies of participation in socio-technical change: The case of energy system transitions." Energy Research & Social Science 42: 199-210

²¹ Policy Connect (2019) Uncomfortable Homes Truths: Why Britain Urgently Needs A Low Carbon Heat Strategy

and Green Deal, as most advertising tends to refer only vaguely to how the cost of specific measures is reduced by government subsidies. By 2022, BEIS should draft and commence a net zero engagement strategy, with explicit aims to: (1) make consumers aware of the net zero transition and the role that they have to play in it – including focusing on opportunities such as domestic DSR; (2) help consumers to understand that they may have to experience some level of in-home disruption; and (3) give consumers a clear route to engaging on the net zero transition – through their local authority. This strategy should consider the impact of net zero on different households by tenure. It should make consumers aware of the opportunities they can already access to decarbonise their homes and improve their energy efficiency. In the mid-term, BEIS should look to develop a comprehensive engagement strategy that is facilitated at local authority level. Different areas of the UK will install different heating and energy efficiency solutions, due to the different opportunities and constraints they face. As a result, different areas of the UK will require tailored engagement strategies, as they will take action at different times, in different ways, and engage with different stakeholders. What role does participation have to play in acceptability? There is a clear need for governance structures and organisational formats that are participatory, inclusive and mindful of the lived experiences of local people. Citizens often remain locked out of the decision-making processes of the energy transition. In addition, the amount of effort it takes to participate will also affect the acceptability. Local oppositions to the deployment of renewable energy technologies have been significantly higher than expected in Europe²². In numerous instances, these oppositions have been in reaction to the disempowerment of local rights and entitlements associated with specific developments. Considerable research²³ has shown that public involvement in decision making drives consumer acceptance. Consumer buy-in has been shown to be critical for how we bring consumers along.²⁴

8. Where should responsibility lie for the governance, coordination and delivery of low carbon heating? What will these organisations need in order to deliver such responsibilities?

- 8.1. The Government must take responsibility for the coordination and delivery of low carbon heating and use new regulations, legislation and long-term incentive schemes, so that a transition to a low carbon heating can occur across the UK. The Government should implement as a matter of urgency new building regulations which require zero carbon heating options becoming mandatory in new homes, as soon as possible and would suggest they are introduced at the earliest available time from March 2022. Introduce long term incentive schemes which are at least 10 years in length to provide certainty in the marketplace for training, new jobs and investment to avoid the roller coast ride of past incentive scheme which have created cliff edges in the domestic renewable sector. Without a stable government framework and set of fixed conditions it will be difficult for zero or low carbon technologies to be adopted.
- 8.2. As part of the transition to a carbon free future it is vital that cross governmental departmental working and delivery groups are set up that cover Treasury, BEIS, MHCLG,

²² Lehmann P, Creutzig F, Ehlers MH, Friedrichsen N, Heuson C, Hirth L, Pietzcker R (2012) Carbon lock-out: advancing renewable energy policy in Europe

²³ Citizens Advice Scotland (2020) Engaging Hearts and Minds; Ofwat (2016) Towards Water– policy issues: customer engagement and outcomes; Audit Scotland (2019) Principles For Community

²⁴ Citizens Advice (2018) Strengthening the voice of consumers in energy networks’ business planning

Transport and Defra to deliver an integrated investment and development plan with integrated legislation and to break down silo working practices and burdens being placed on single departments.

- 8.3. The Government needs to develop an integrated and strategic plan with timelines and a roadmap to get to Net Zero, that looks at a mix of zero carbon options from domestic renewable and local heat networks through to large infrastructure projects which will decarbonise the grid like offshore wind and large scale solar installations.
- 8.4. **The governance, coordination and delivery of low carbon heating can be stimulated through** tax incentives, subsidies and rebates to reduce costs and aid the adoption of low carbon heating solutions. These regulatory changes all lie within the responsibility of Government and are tools which will produce a levelling effect on zero carbon heating options.
- 8.5. **Regulation changes** are a major driver in creating change and providing clear messages and a stable marketplace for investors, contractors and consumers. Simple changes to Building Regulations (Part L) and how our homes are built and heated lie with the Government and there has to be an effort to bring forward proposed changes to Planning regulations so all new homes will be heated by zero carbon sources by March 2022. Only through early regulation changes can we make the progress required to transition to a zero-carbon future. If we wait until 2025 up to 1.5 million homes will have been built that need retrofitting, so it is better to start building those homes now, stimulating businesses and installers across the UK and creating new jobs in the Green Economy.
- 8.6. There needs to be a systematic approach to retrofitting as incentives alone will not be enough to encourage a 100% uptake and a **systematic street by street approach** will be needed to transform nearly 1.1 million homes a year from 2027 onwards. By taking a street by street or community by community approach you can achieve the economies of scale and contractors can work together to transform similar house types at the same time. Retrofitting also needs to happen across the whole of the UK, which will stimulate local jobs and create a national conversation on helping to tackle the Climate Emergency. It also demonstrates that more action is needed than just changing our energy provider if we are to tackle the Climate Emergency.
- 8.7. **A Green Investment Bank** is vital if we are to see the type of investment and upscaling that is required to retrofit 29 million dwellings.
- 8.8. All installations need to be to a required standard e.g. MCS or higher to provide the quality of installations, standards and assurance which in turn provide consumer confidence. We recommend that the MCS becomes the single standard for all renewables, as is currently the case with retrofitting work and should also be applied to new build as well.
- 8.9. Domestic renewables and heat pumps along with solar thermal can provide solutions that work today. The Government needs to invest in these tried and tested solutions which can instantly start decarbonising homes today, rather than waiting five or 10 years until new technologies or solutions may emerge.
- 8.10. Local authorities will have to play a vital role in decision-making in achieving Net Zero. At the moment, the question about the role of local authorities in reaching net zero remains unanswered, but increasingly we see discussions point to the vital role that they can and will necessarily have to play. Many local authorities have declared climate emergencies, recognising that their decisions affect local decarbonisation, and some are successfully making use of existing devolved powers. However, greater clarity about their role is needed to stimulate the investment needed to meet Net Zero and in delivering a Street-by-Street approach to retrofitting.
- 8.11. The Government needs to establish a **National Delivery Body for heat decarbonisation**, beginning with the immediate creation of a centre for expertise and knowledge sharing, responsible for collating information and evidence to support the

decarbonisation of heat, creating a central repository for evidence and information provision to support long-term decision making on low carbon heat and retrofitting. The Heat & Buildings Strategy should set out a role for a National Delivery Body in coordinating the heat transition.

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December 2020