



Llywodraeth Cymru  
Welsh Government

Number: WG49895

# Heat Strategy for Wales

## Welsh Government Consultation Response Summary Report

July 2024

Mae'r ddogfen hon ar gael yn Gymraeg hefyd / This document is also available in Welsh  
Rydym yn croesawu gohebiaeth a galwadau ffôn yn Gymraeg / We welcome correspondence and telephone calls in Welsh

## **Overview**

We wanted your views on our heat strategy for Wales. Our aim is to develop a decarbonised heat system that delivers on our net zero ambitions. This document contains a summary of the responses received and further response from Welsh Government to some of the common concerns voiced.

## **Action Required**

This document is for information only.

## **Further information and related documents**

Large print, Braille and alternative language versions of this document are available on request.

## **Contact details**

For further information:

Energy Division

Welsh Government

Cathays Park

Cardiff

CF10 3NQ

Email: [YmatebionYnni-EnergyResponses@gov.wales](mailto:YmatebionYnni-EnergyResponses@gov.wales)

## **Additional copies**

This summary of response and copies of all the consultation documentation are published in electronic form only and can be accessed on the Welsh Government's website.

Link to the consultation documentation: [Heat strategy for Wales | GOV.WALES](#)

# Contents

<b>1.</b>	<b>Introduction .....</b>	<b>1</b>
<b>2.</b>	<b>Approach to the consultation .....</b>	<b>2</b>
	Scale of response .....	2
	Types of responders.....	2
	Our approach .....	3
<b>3.</b>	<b>Consultation questions assessment .....</b>	<b>5</b>
	Section 2: A vision for heat in Wales .....	5
	Section 3: Our enabling framework .....	7
	Section 4: Transforming our networks.....	15
	Section 4: Improving the energy performance of our homes.....	22
	Section 4: Evolving our businesses.....	32
	Section 5: Future-proofing our industry .....	35
	Section 6: Leading the way with public services .....	40
	Section 7: Taking action .....	43
<b>4.</b>	<b>Welsh Government Response to the Consultation .....</b>	<b>48</b>
	Policy changes since the consultation launch .....	49
	A response to the key concerns voiced.....	51
	Conclusion and next steps .....	58

# 1. Introduction

The Welsh Government ran a public consultation from 16 August 2023 to 8 November 2023 on our draft [Heat Strategy for Wales](#). One hundred and twenty-seven (127) consultation responses were received. We thank all for their time in preparing a response, and we welcome the feedback and interest in the Heat Strategy for Wales. We attribute the high number of responses in part to the high profile of this policy in meeting our Net Zero ambitions.

The clearest finding to emerge from this consultation is the wide variety of views on this subject area. Very few of the 127 responses that we received expressed identical views on what the government's heat priorities should be, while a number expressed diametrically opposing viewpoints, often with valid points made on either side. In addition to the 127 written responses received, Welsh Government officials have listened to the views of a range of other stakeholders during the consultation period.

The final version of the Heat Strategy for Wales will be published alongside this consultation response summary report. Whilst the Strategy sets out the long-term vision and objectives, the Action Plan will set the specific short-term activities needed. The Action Plan will be monitored as we progress to ensure our ambitions and activity reflect the changing landscape as we transition to low carbon heat.

## 2. Approach to the consultation

### Scale of response

One hundred and twenty-seven (127) responses were submitted, with 62 responses being received via the online form and 65 by email. Most of the email responses followed the structure of the consultation document closely; however, 15 of the email responses provided a general statement or selected the questions most important to them to provide feedback. All responses were accepted irrespective of how they were submitted or the manner of the response.

Some of the responses received went into considerable detail and expanded at length on issues. Although the points raised in those responses have not been reproduced in this summary document, they have been read in full and will help inform further policy development. Where respondents have indicated that they would welcome further discussions on specific topics, Welsh Government officials may get in touch with those organisations or individuals to schedule conversations in due course.

### Types of responders

Respondents ranged from individual members of the public to small and medium-sized enterprises (SMEs), to large organisations, sector associations and professional standards agencies. Despite the difference in sizes, all responses were given the same weight in the reported figures.

All respondents were assigned a sector category that reflected their type of organisation. The number of respondents by sector are as follows:

Sector	Number
Bank / Finance	3
Charity / Community Group	14
Consultancy / Advisory	12
Housing Association / Developer	3
Individual Members of the Public	25
Public Sector Body / Group	15
Standards Body / Sector Association / Professional Association	27
Technology / Manufacturer	9

Note that the consultation did not ask respondents to categorise themselves, the above sector categorisation is based on a review of the respondent organisation's area of interest. Several respondents did not fall cleanly into any one category but were assigned the most appropriate category.

## Our approach

To best consider the responses to the Heat Strategy consultation, a two-stage approach to the review was taken.

Firstly, a quantitative analysis of the responses was undertaken to understand the headline numbers for agreement or disagreement with each question. The process for this was as follows:

1. Consolidation of all consultation responses from online forms, emails, and documents into a single model.
2. Draw out the stated agreement or disagreement from the responses, responses for quantification were categorised as 'Yes', 'Neutral', 'No Comment' and 'No'.

3. Analysis of results to present the overall response to the consultation for each question.

The quantitative analysis of responses has the following considerations:

- Of the 127 responses to the consultation, only 112 responses followed the consultation structure to allow quantification of their response.
- 'Yes' responses show agreement with the question, and 'No' responses show disagreement.
- Responses with a comment but with no clear indication of agreement or disagreement were considered as 'Neutral' responses, whereas responses left blank were considered as 'No Comment'.
- Questions 23, 26, and 29 did not ask a direct Yes / No question, so these questions are not included in the quantitative analysis of results.
- An equal weighting to all responses was given.

Secondly, a qualitative assessment was undertaken of all the written responses to each question. The process for this was as follows:

1. Review and understand the perspective of each written response, considering the responders' sector type and area of interest.
2. Draw out the key qualitative points of each response, considering the areas of environmental, political, social, technological, or skills as the key points of concern.
3. Review the responses to understand the areas of support or concern, and suggestions for consideration.
4. Consolidation of key points to understand common areas of support or concern.
5. Share results for consideration across Welsh Government policy departments.

Further to the consideration of the consultation responses, a review of the political and policy changes since the consultation launch was undertaken. This is made up of both Welsh Government and UK Government publications and statements which influence the Heat Strategy, details are included in Section 4.

# 3. Consultation questions assessment

## Section 2: A vision for heat in Wales

### Question 1

**Vision:** Do you agree with our vision? (Yes / No) Please suggest amendments if you think it could be stronger.

Response	Number
Yes	71
Neutral	4
No comment	14
No	23

Of the 112 responses, there were; 71 Yes, 4 Neutral, 14 No Comment, and 23 No.

63% of respondents agreed with the vision overall with only 21% of respondents disagreeing. Of those disagreeing, thirteen (13) were categorised as individuals.

Of the Yes and Neutral responses, in general, respondents positively received the draft consultation. The focus on a fair and just transition for all was welcomed. Most responses emphasised a need for further focus on a particular area but there was no common consensus on what that area should be with; hydrogen development, alternative liquid fuels, suitability of old houses to heat pumps, heat pump regulations, cooling and overheating being some of the areas mentioned.

Of those who disagreed or who had concerns, the economic cost of heat pumps, the narrowing of hydrogen options, energy grid resilience, heat pump suitability for historic buildings, skill shortages and a lack of detail in the Strategy were some of the issues mentioned.



## Question 2

**Objectives:** The Heat Strategy for Wales policies are broken down into 17 objectives within six groups. Do you agree they adequately cover the areas where Welsh Government needs to focus? (Yes / No) If you think there are any areas missing, please explain what they are.

Response	Number
Yes	61
Neutral	3
No comment	21
No	27

Of the 112 responses, there were; 61 Yes, 3 Neutral, 21 No Comment, and 27 No.

54% of respondents agreed with only 24% of respondents disagreeing. Of those respondents disagreeing around half were categorised as individuals.

Of the Yes and Neutral respondents, they welcomed the comprehensiveness of the draft consultation but emphasised a need for further focus on a range of issues from heating and cooling, water saving, heat pump operational costs or regulation development. The need for more research on alternative liquid fuels and hydrogen fuel options was also highlighted.

Of those who disagreed, there were doubts about the thoroughness of the Strategy with a lack of suitable consideration of the economic cost of heat pumps, hydrogen for heating, and heat pump suitability for historic buildings amongst others. There was also concern that the draft Strategy did not do enough or allocate enough resources to make the public aware of available support.

## Section 3: Our enabling framework

### Question 3

**Planning:** Our Strategy identifies that the current permitted development rights related to heat pumps are a barrier to heat pump installation rollout. Do you agree? (Yes/No) Please explain.

Response	Number
Yes	60
Neutral	3
No comment	33
No	16

Of the 112 responses, there were; 60 Yes, 3 Neutral, 33 No Comment, and 16 No.

53% of respondents agreed with the question with a relatively few 14% of respondents disagreeing.

Of the Yes responses, they welcomed the proposed review of development rights citing concerns over; heat pump adoption in smaller properties being limited by the 3 metre boundary rule, the hindering of innovation in heat pump installations, and a desire to bring Wales in line with other parts of the UK.

Of those who disagreed, rather than the specifics of heat pump development rights there was concern over the general suitability of heat pumps to Welsh housing stock, and a hesitancy about the widespread adoption of heat pumps and a desire for a mixed approach to heating decarbonisation.

## Question 4

**Planning:** Each local authority in Wales is producing a local area energy plan (LAEP). This Strategy proposes the LAEPs should be used to help deliver place-based heat decarbonisation. Do you agree with this approach? (Yes/No) Please provide evidence, where relevant.

Response	Number
Yes	68
Neutral	4
No comment	22
No	18

Of the 112 responses, there were; 68 Yes, 4 Neutral, 22 No Comment and 18 No.

61% of respondents agreed with the question with 16% of respondents disagreeing.

Of the Yes responses there was a strong opinion that local authorities were more likely to draw on local expertise, have better community engagement and be better able to identify zoned areas for different heating approaches effectively.

Of those who disagreed, some preferred a national strategy, or there was concern over the narrowing in the range of heating options, the lack of skills and cost implications.

## Question 5

**Understanding and engagement:** Does the Strategy suitably address the advice needed to install low carbon heat? (Yes/No) Please explain which groups should be involved in raising awareness and providing advice.

Response	Number
Yes	27
Neutral	8
No comment	41
No	36

Of the 112 responses, there were; 27 Yes, 8 Neutral 41, No Comment, and 36 No.

Only 24% of responses agreed directly with the question, with the bulk of respondents being neutral and a relatively high 33% of respondents disagreeing.

While the negative response is relatively high for this question, whether agreeing or disagreeing, responders tended to follow with a suggestion for improvement and a call for better outreach. Given the overall high level of agreement with the draft Strategy, the wording of the question may have led more respondents than usual to disagree with this question.

Within the negative comments, many said that actions didn't go far enough to support the public in the level of investment or the degree of change in heating described by the consultation. Consumer awareness, psychology and culture also needed to be considered. A perceived bias against rural areas and historical buildings in favour of urban reform was suggested and there should be more engagement with rural and historic property groups. Comments were made on the Strategy being vague or incomplete in places.

Of the positive comments, there was a call to support a more diverse range of heating solutions, a call for further research and to define costs, a call for cheaper and cleaner

electricity generation and clear and impartial information for consumers and businesses.

While many groups that could be involved in raising awareness were named, no particular group or organisation was commonly cited by respondents.

## Question 6

**Standards:** Do you believe the public available specification (PAS) standards are sufficient to ensure high-quality work and a whole-building approach? (Yes / No)  
Please explain. How can the adoption and implementation of these standards be further encouraged?

Response	Number
Yes	61
Neutral	2
No comment	34
No	15

Of the 112 responses, there were; 61 Yes, 2 Neutral, 34 No Comment, and 15 No.

52% of respondents agreed with the question with only 12% of respondents disagreeing.

In general, there was confidence and support in the use of PAS standards to ensure high-quality and whole building approaches to work. There were some calls for additional quality frameworks and more consumer protection, but conversely, some responded that they were concerned about the potential for cost increases in achieving PAS standards and that they weren't always applicable, such as for historic buildings.

We noted that many respondents had little knowledge of PAS, and it was felt that the Heat Strategy for Wales itself did not explain this in detail. We have noted this concern, and will ensure further information is made available in future.

## Question 7

**Skills:** Do you agree that Welsh Government has a role in understanding and subsequently supporting the development of the necessary skills for heat decarbonisation? (Yes / No) Please highlight any emerging skills / roles which we should support.

Response	Number
Yes	61
Neutral	1
No comment	33
No	17

Of the 112 responses, there were; 61 Yes, 1 Neutral, 33 No Comment, and 17 No.

54% of respondents agreed with the question with 15% of respondents disagreeing.

Of the Yes responses, there was a strong recognition that there was a lack of skills in the workforce and the Welsh Government has a role to play in investing and co-ordinating a national level approach, with particular mention to the Net Zero Skills plan. There were no specific points of disagreement.

Of emerging skills and roles that should be supported,

- Skills to support local manufacturing of retrofit building materials
- Heating engineer apprenticeships and retraining for 'older' workers
- Skills for retrofit and decarbonising of historic buildings
- Retrofit co-ordinators and assessors
- Skills in establishing training courses for trainers and certification awarding bodies
- Heat network building and design skills
- More students who are STEM educated and have an engineering discipline training including electrical engineers

- Support for lesser used renewable technologies (such as solar thermal) so that the skills are preserved to facilitate consumer choice
- Skills in ground source heat pumps, ground thermal capacity, recharge rates and temperature dynamics
- Skills in the hydrogen industry
- Changes to the school STEM subjects to encourage understanding of heat decarbonisation and encourage skilled trade career pathways (instead of the perceived superior academic career pathway)



## Question 8

**Costs:** Do you agree with the position set out in the Strategy that the UK Government should move environmental levies from electricity bills to general taxation? (Yes / No)  
What additional policies should be implemented to ensure a fairer distribution of costs?

Response	Number
Yes	50
Neutral	4
No comment	37
No	21

Of the 112 responses, there were; 50 Yes, 4 Neutral, 37 No Comment and 21 No.

45% of responses agreed with the question with 19% of respondents disagreeing.

Of those comments supporting the move, there was a common argument that the moving of environmental levies to general taxation would help reduce electricity costs to consumers thereby helping with fuel poverty for electrically heated households and promoting the uptake of electrical heating. Various responses suggested additional policies creating targeted financial support for low-income households and a potential carbon tax to create the necessary funding.

There were a wide variety of concerns, such as the already high level of general taxation and that moving levies now and in future would only increase the level further. Some responses were concerned that shifting electricity grid costs to the gas grid would worsen fuel poverty by increasing the burden on vulnerable gas customer households. Others suggested the opposite and stated worries about the Clean Heat Market Mechanism and advocated for a direct carbon tax (in various forms) on oil and gas.

## Section 4: Transforming our networks

### Question 9

**Electricity networks:** Do you agree that upgrading Welsh electricity networks for net zero will require clear leadership and plans from Welsh Government and local authorities? (Yes / No) Please explain your reasoning and highlight any further roles for Welsh Government on this challenge.

Response	Number
Yes	61
Neutral	6
No comment	31
No	14

Of the 112 responses, there were; 61 Yes, 6 Neutral, 31 No Comment and 14 No.

54% of responses agreed with the question with 13% of responses disagreeing.

There was a consensus that the Welsh Government should play a leadership role in the upgrading of electricity networks but in close collaboration with stakeholders such as Ofgem, National Grid, local authorities and community groups.

There was criticism that the Strategy was lacking specific details and costings, and that the Welsh Government weren't the appropriate body to manage infrastructure changes due to perceived political interference.

## Question 10

**Heat network zoning:** Do you agree that local area energy plans (LAEPs), led by local authorities, is an appropriate method for identifying areas for heat networks? (Yes / No) Please explain.

Response	Number
Yes	56
Neutral	2
No comment	38
No	16

Of the 112 responses, there were; 56 Yes, 6 Neutral, 38 No Comment and 16 No.

50% of respondents agreed with the question with 14% of respondents disagreeing.

Local authorities and LAEPs were widely considered to be best placed to identify areas for heat networks. There was some concern over local authority expertise and that the Welsh Government should provide some support. The need for liaison with external stakeholders, especially building owners, and the need for wider public support for heat networks were mentioned. Several mentions were made of the importance of capturing waste heat from industrial and power generation sources as part of 'joined-up' thinking and that heat networks were a natural solution to dispense that captured heat. The Heat Network Zoning Model developed in England was suggested as an alternative to LAEPs. Some responses disagreed with the use of heat networks in general.

Note: An error in the online form stopped some responders from leaving comments to Q10. Where appropriate comments given to Q11 were referenced.

## Question 11a&b

**Heat network connections:** A. Do you agree that new housing developments and large commercial buildings should be required to connect to new district heat networks? (Yes / No) B. Should small scale, ambient temperature, heat networks be included in this obligation? (Yes / No)

### Response to Q11 part A

Response	Number
Yes	35
Neutral	6
No comment	44
No	27

Of the 112 responses to the first part of the question, there were; 35 Yes, 6 Neutral, 44 No Comment and 27 No.

The majority of responses were neutral or no comment, only 31% of responses agreed while 24% of respondents disagreed. There were 27 No responses, however these remained the least popular response out of the Yes and No categories.

Positive comments agreed that the connection of large commercial buildings and new housing developments to a heat network would lead to lower operational and energy costs. The upfront capital cost was recognised as a barrier and so an anchored customer base would help de-risk investment. That heat networks were easier to build at the beginning rather than retrofitted afterwards was discussed. Heat networks also open immediate or future opportunities to use industrial waste heat.

While the connection of large commercial buildings and even public buildings to heat networks was widely supported and considered sensible, there were some concerns over the required connection of housing developments to heat networks. Respondents commented that alternative solutions (rather than the required connection to a heat network) should be made available to developers, such as improvements to housing insulation or installing other energy technologies. While heat networks could be the

default option in an area, developers should be given the chance to demonstrate that other heating methods would offer even greater energy savings and lower running costs. An opinion was raised that requiring a heat network connection would have a knock-on negative effect on the rates of new house building.

For individual homeowners, there was concern about potential negatives in being on a required heat network, such as the creation of heating monopolies and the subsequent potential for bad practices and the potential weak consumer protection. There was concern about potential fuel-price shocks without a choice in heat provider. Some suggested that consumer choice was paramount and that if heat networks were the most efficient solution, then customers would naturally join such a network in time without the need for regulation.

### Response to Q11 part B

Response	Number
Yes	34
Neutral	6
No comment	48
No	24

Of the 112 responses to the first part of the question, there were; 34 Yes, 6 Neutral, 48 No Comment and 24 No. The majority of responses were Neutral or No Comment, only 30% of responses agreed and 21% of respondents disagreed.

There was some confusion within responses over the difference between ambient-loop heat networks (a 2-stage heating loop that has a large, centralised heat pump feed further smaller heat pumps placed at each building) and a traditional heat network (typically a single and centralised heat source). Of those respondents who responded positively, they saw the potential for ambient loops but perhaps especially where community acceptance and engagement were high. Negative comments in responses were nearly identical to those for heat networks in general (please see above Part A).

## Question 12

**Heat network support:** Do you agree heat network development requires further funding and support? (Yes / No) Please explain.

Response	Number
Yes	52
Neutral	4
No comment	43
No	13

Of the 112 responses, there were; 52 Yes, 4 Neutral, 43 No Comment, and 13 No.

46% of respondents agreed with the question while only 12% of respondents disagreed.

There was agreement on the need for further funding and support for heat network development. Respondents recognised the importance of stable policy and a commitment to skills and training, as a clear signal for the feasibility of large capital projects given risks are still high. A diverse and competitive market for projects was to be encouraged.

Concerns given were on the feasibility of green hydrogen as a fuel for heat networks and the difficulty in attaining funding.

### Question 13

**Hydrogen for heat:** The Strategy states that based on evidence gathered heat pumps will be the championed solution for most buildings heat. Hydrogen's role will be in defined zones for high-temperature industry, as well as for wider net zero solutions prioritised by how useful hydrogen will be (known as 'the hydrogen ladder'). Do you agree that a clear statement is needed on hydrogen's role in meeting Wales' heat decarbonisation ambitions? (Yes/No) Please explain.

Response	Number
Yes	60
Neutral	4
No comment	33
No	15

Of the 112 responses, there were; 60 Yes, 4 Neutral, 33 No Comment, and 15 No.

54% of respondents agreed with the question with only 13% of respondents disagreeing.

There was a consensus that there was a need for clarity and to set clear expectations for investment in hydrogen networks. There were calls for impartiality on hydrogen with discussion to be led by efficiency and costs. There were calls for funding and the development of further case studies.

The comments in disagreement mostly focussed on not prematurely ruling out hydrogen and that Wales should collaborate closely with other UK governments on hydrogen development. Other concerns were on the suitability of hydrogen for heat, the safety of hydrogen, and that nuclear was a more well-known source of energy.

Some responders felt that the Strategy does not go far enough in its steer for heat pumps as the main solution for most buildings and that leaving any ambiguity with the door open for hydrogen will stifle progress for low carbon heat in the near term. Others felt that the Strategy was not open enough to innovation and the opportunity for

hydrogen as a heating fuel, highlighting that the Strategy may stifle hydrogen infrastructure investment in Wales.

Some responders commented on other technology, including heat pumps driven by alternative fuels such as hydrogen while others highlighted that partial decarbonisation of the gas grid would be possible by blending hydrogen and natural gas together at source.

A few supported the hydrogen ladder's approach to qualifying the use of hydrogen while others disapproved citing that the picture painted by the ladder was an over-simplification.



## Section 4: Improving the energy performance of our homes

### Question 14

**A clear framework:** Do you agree that stronger regulation is needed to encourage the uptake of low carbon heat and more energy efficient homes? (Yes / No) What other interventions must be implemented alongside stronger regulation to ensure no one is left behind?

Response	Number
Yes	53
Neutral	5
No comment	26
No	28

Of the 112 responses, there were; 53 Yes, 5 Neutral, 26 No Comment, and 28 No.

47% of respondents agreed while 25% of respondents disagreed.

There were numerous and disparate comments on this question.

New build homes – some responses argued that the upcoming Future Homes Standard and subsequent standards would be enough (note that the Future Homes Standard is England only). Others argued that Wales should have even stronger regulations and should push towards very low heat demand houses (often the Passivhaus standard is given by example). Others argued that incentives, such as the Development Bank of Wales Green Homes Incentive, could help raise standards in new build. Some highlighted the availability of concrete alternatives in construction (note: concrete is a significant contributor to carbon emissions), while conversely, others wanted to recognise the heat ‘capture and release’ benefits of concrete use in homes.

Existing build homes – some argued for stronger regulations. Regulations would give the people and the market certainty when making decisions. Regulations were seen as a necessary signal in order for companies to justify investment.

Some suggested regulations were,

- Tariffs on non Net Zero home equipment
- Cut-off dates for new gas installations in rental properties
- Minimum energy efficiency regulations to apply to all domestic properties and not only rental properties

Others argued that regulations would have negative consequences. They would hurt low to middle income families disproportionately, be inappropriate before the heat transition as a whole was well underway and specifically before heat pumps are widely accepted and understood, dampen market innovation, or lead to companies and people moving to nearby England.

The most common alternative given to stronger regulations was the use of incentives, either pushing or pulling (negative or positive)

- Direct subsidies to low or middle incomes families
- Green mortgages – suppliers rewarding energy efficiency
- Brown mortgages - suppliers to penalise those with an energy inefficient home.
- Higher council tax or Stamp Duty for energy inefficient homes
- More Boiler Upgrade Scheme funding
- Cheap loans to finance house upgrades or even repairs
- Heat pump specific electricity tariffs, smart controls and flexible demand and self-optimising running of heat pumps
- Property Letting rates (rental fees) limited if property not attaining a minimum energy performance
- House upgrades funded through PAYE and being tax deductible

Many responses mentioned funding and grants (sometimes in tandem with regulations) as an alternative to regulations alone.

Some responses pointed towards purely market forces as the way forward, or that affordability would naturally lead to uptake, or that actions should empower residents and local organisations and not government. Some responses mentioned that they used their heating little and therefore didn't see the value in insulation upgrades to their home.

The majority of responses were concerned about affordability, choice and a fair transition.

A response mentioned the need to ease permitted development rules for heat pumps in national parks. Some responses noted that EPCs didn't yet include hydrogen appliances. Others suggested that the EPC be reformatted so that the scoring reflected the costs of insulation improvements rather than be based purely on the absolute measurements of energy use. Others mentioned that caravans were often not included in home energy regulations.

There was acknowledgement that some powers required to enact regulations were devolved to Welsh Government while others were reserved for UK Government and that Wales would have to work with UK Government to implement changes involving those reserved powers.

Many noted that public awareness of the transition was key for grass roots support and that change couldn't come through regulations alone. A response noted that regulations should be industry facing. A response mentioned that hybrid 'combi boiler and heat pump' heating systems could ease the transition by making users more familiar with heat pump technology. Another mentioned voluntary carbon markets, and that embodied carbon must be accounted for in building materials. Another response that a public awareness campaign for heat networks and local authority advice were needed.

## Question 15

**Holistic approach to fuel poverty:** The Warm Homes Programme has been offering new gas boilers, where appropriate, to those eligible. Do you agree that our future investments in energy efficiency must, where possible, simultaneously support our heat decarbonisation pathway? (Yes / No) Please explain and expand on opportunities to address fuel poverty holistically.

Response	Number
Yes	71
Neutral	1
No comment	27
No	13

Of the 112 responses, there were; 71 Yes, 1 Neutral, 27 No Comment, and 13 No.

63% of respondents agreed with the question with 12% of respondents disagreeing.

There was widespread agreement that future investments made through government-funded schemes should align with the heat decarbonisation pathway. In practice, this was considered to mean stopping the installation of new natural gas boilers and instead installing heat pumps.

Other technology options besides heat pumps were also suggested such as hydrogen (or hydrogen-ready) , electric or renewable gas boilers.

There was an emphasis in responses on a holistic approach, where the installation of a heat pump should coincide with fabric and insulation improvements to the home. Furthermore, the move to a heat pump should coincide with increased support involved with the switch.

Some comments recognised the challenges coming from higher upfront and running costs of heat pumps compared to a natural gas boiler, and that not installing gas boilers could cause further fuel poverty. Others suggested natural gas boilers could still be a viable choice for a homeowner but only if no other low-carbon technology was

viable. Meanwhile others worried that installing gas boilers had a negative effect in the long term, locking-in those on the lowest incomes into being users of the gas grid where, as the user-base decreased, prices could rise or fluctuate more widely. By contrast, those on the electric grid for heating would benefit from more price stability, potential price controls, specific heat pump tariffs and benefit from ongoing greater levels of innovation in the electric grid, benefits that are attractive for those in fuel poverty.

A comment mentioned that natural gas boilers could continue to be considered for those with particular safety and special needs.

A fair and just transition for all was often commented upon. Support should extend not only to those on low incomes, but also to those with families, retired and on fixed incomes and those on middle incomes. A comment mentioned that fuel poverty can be addressed also by lowering energy prices as much as reducing energy demand.

## Question 16

**Traditional buildings:** Do you agree that demonstration projects for historic and traditional building retrofit are needed? (Yes / No) Are there further interventions needed to grow the market for traditional building retrofit?

Response	Number
Yes	72
Neutral	2
No comment	26
No	12

Of the 112 responses, there were; 72 Yes, 2 Neutral, 26 No Comment, and 12 No.

Identically to Q15, 63% of respondents agreed with the question with 12% of respondents disagreeing.

There was widespread agreement that demonstration or 'exemplar' projects were needed. The benefits cited were that as historic or traditional buildings are perceived as hard to treat that they make good projects to instil confidence in retrofit for all types of buildings. Demonstrations also promote the dissemination of learnings and a way for government to identify potential pitfalls and blockers in the process early. Some responders noted that the 'do-nothing' cost could potentially be the loss of some traditional or historic buildings.

Responders had a variety of concerns and ideas about what should be the focus point of demonstration or exemplar projects.

Often mentioned was the need for a holistic approach to historic and traditional buildings retrofit that specifically takes into account working on listed buildings. Planning consent, the presence of protected animal species among other hazards needs to be considered alongside the need for retrofit.

Several responses mentioned that data from past or existing demonstration projects within and outside Wales could support and would need to be captured. Reports from

Historic Environment Scotland or BEAMA were mentioned. Likewise, collaboration between stakeholders, such as historic site maintainers and societies (Historic England, Historic Environment Scotland, Cadw, National Trust, Grosvenor, Historic Houses, National Historic Assets of Wales, Historic Wales) and research establishments is needed to achieve best results in demonstration projects and to ensure that any gaps in knowledge are identified and filled.

Several responses mentioned that there may not be a one-size fits all solution to retrofit. There were several comments on the need of a range of support from government, including grants targeted to historic building retrofit.

A response mentioned a need for a public advisory service to support retrofit.

A few responses highlighted that the definition of comfort in retrofit should be based on the user experience, health & wellbeing and not just the technical achievements.

Meanwhile another response suggested an EPC update should follow every retrofit.

Another response highlighted that standards in retrofit and heating being applied inappropriately could do more harm than good in historic buildings. Standards could mandate a level of comfort never practically achieved before in an historic building before leading to unsightly and unneeded building upgrades.

There were concerns around Welsh Permitted Development Rights and minimum spacing requirements limiting heat pump uptake, as well as concern that 'unlooping' domestic home electrical connections in older properties could be a cost that was passed on to the consumer and would then become a potential barrier. There was a concern that some thought and consideration should be given to 'hiding' the external modules of heat pumps in order to preserve a buildings special appearance.

Of those who disagreed or had concerns about demonstration projects, comments included reference of the cost to the taxpayer of such projects, that demonstration projects could never fully represent all the variations in property types, that owners/users of buildings would follow market drivers in having a retrofit without the need for intervention. Others stated that they needed no further convincing and they already believed that retrofit and heat pumps would work so no further demonstration

was needed. In keeping with this response, a number of responses suggested that training and qualifications were a higher priority for government.

There was a disagreement with the studies used and referenced in the making of the strategy. The strategy considers no house to be unsuitable for heat pumps, whereas a response cites a different study that finds that 37-54% of UK housing would be unsuitable either due to space or fabric limitations.

There was also disagreement with the strategy's mainly electrification of heat principle. Responders suggests alternative technologies and hybrid heat pump systems (including hybridisation with wood stoves) could be more feasible, and prove cost-effective to homeowners. In line with this, several responders called for a detailed assessment of housing stock.



## Question 17

**Smart meters and variable tariffs:** Do you agree that emphasis on smart meter rollout and variable tariffs are important to address now, to minimise bills during the transition to low carbon heat? (Yes / No) How best can Welsh Government support this, while advocating for those who are unable to participate in energy flexibility?

Response	Number
Yes	55
Neutral	5
No comment	35
No	17

Of the 112 responses, there were; 55 Yes, 5 Neutral, 35 No Comment, and 17 No.

49% of responses agreed with the question with 15% of responses disagreeing.

Of those who responded, there was widespread support for a smart-meter rollout as it empowers users to manage their energy consumption and minimise their bills, either using variable-rate tariffs or by being more energy aware in general. There was a call for the removal of legacy prepayment meters to be replaced with smart meters.

Despite the overall support, there were concerns that the fuel-poor and other vulnerable groups might find variable-rate tariffs confusing, causing anxiety or negative self-rationing behaviour. Others called to ensure that energy pricing remained affordable for all during the transition, particularly those who couldn't participate in energy flexibility.

Of the negative responses, based on previous experiences there was scepticism that smart meters could be rolled out successfully or that they were effective in changing behaviour or represented value for money.

## Question 18

**Upfront cost of heat pumps:** Do you agree that dedicated long-term finance packages are needed to support the installation of heat pumps? (Yes/No) Please explain.

Response	Number
Yes	62
Neutral	4
No comment	33
No	13

Of the 112 responses, there were; 62 Yes, 4 Neutral, 33 No Comment and 13 No.

55% of respondents agreed with the question with only 12% of respondents disagreeing.

There was a common consensus that the high upfront cost of heat pumps is a barrier and that long-term loan programs were needed. Many responses also noted that loans should not be restricted to only heat pumps, but also to other retrofit energy efficiency measures and technologies and even to home repair measures.

Of the negative comments, there was doubt that heat pumps could be a solution for some buildings. There was concern over rising household debt and that any subsidy or grants would inadvertently go to well-off households with lower income households unable to take advantage.

## Section 4: Evolving our businesses

### Question 19

**Regulation:** Do you agree that stronger regulation is needed to phase out fossil fuel boilers, on and off-grid, in commercial properties? (Yes/No) What other interventions must be implemented alongside this stronger regulation to ensure this transition does not have adverse impact on businesses.

Response	Number
Yes	40
Neutral	3
No comment	43
No	26

Of the 112 responses, there were; 40 Yes, 3 Neutral, 43 No Comment, and 26 No.

36% of respondents agreed with the question with 23% of respondents disagreeing. Neutral or No Comment answers were the most common, with agreement with the question still outnumbering disagreement.

Responses to the question were narrowly in support of regulation, with many answering that regulation might be necessary in order to phase out fossil fuel boilers in commercial properties. However, the use of regulations came with strong caveats such as the need for clear and stable government policies, lengthy timetables for implementation and support for SMEs to make the change.

Many others said that regulations were not required and that clear timetables for hitting decarbonisation standards (such as the Minimum Energy Efficiency Standard (MEES)) or building Energy Performance Certificates (EPCs) were enough. Others thought that change should be economically driven and that market forces supplemented by grants might be an answer. Some respondents were concerned that regulations against fossil fuel boilers may unfairly affect the uptake of sustainable liquid fuels such as bio-LPG or hydrogen.

## Question 20

**Accelerator programme:** Do you agree that an accelerator programme is needed to share best practices and build confidence in low carbon heat, across different commercial building types? (Yes / No) Please explain.

Response	Number
Yes	48
Neutral	3
No comment	49
No	12

Of the 112 responses, there were; 48 Yes, 3 Neutral, 49 No Comment, and 12 No.

43% of respondents agreed with the question with only 11% of respondents disagreeing. Neutral or no comment was again the most common response.

Of those respondents answering the question, a large majority agreed an accelerator programme would instil confidence in decarbonisation through the sharing of best practices and case studies, and promoting skills development.

Some respondents expressed frustration at the creation of more programmes and questioned their value given the amount of knowledge already available.

## Question 21

**Net zero targets and tracking:** Do you agree that heat decarbonisation will require us to foster a culture of transparency and accountability for businesses? (Yes / No) With reference to heat decarbonisation, what more should Welsh Government do to ensure reliable information is communicated to customers?

Response	Number
Yes	45
Neutral	4
No comment	51
No	12

Of the 112 responses, there were; 45 Yes, 4 Neutral, 51 No Comment, and 12 No.

40% of respondents agreed with the question with only 11% of respondents disagreeing. Neutral or No Comment was again the most common response.

Respondents were largely in favour of transparency and accountability and highlighted the need for incentives and support to foster a culture that embodies these principles.

Concerns were raised about the potential burden on businesses, particularly in terms of additional requirements and reporting mechanisms.

## Section 5: Future-proofing our industry

### Question 22

**Industrial roadmaps:** Do you agree that we should create decarbonisation roadmaps across key industrial applications, and if so which champion the best available techniques? (Yes / No) Should Net Zero Industry Wales have a role in this process? How can the identified techniques be effectively disseminated and further incentivised?

Response	Number
Yes	36
Neutral	4
No comment	57
No	15

Of the 112 responses, there were; 36 Yes, 4 Neutral, 57 No Comment, and 15 No.

A relatively low 32% of respondents agreed with the question but only 13% of respondents disagreed. Neutral or No Comment answers were the most common, however agreement with the question outnumbered disagreement by more than a factor of two.

While Net Zero Industry Wales is mentioned in the question, we do not imply they are party to the consultation directly or that the draft Heat Strategy necessarily reflects their views.

The majority agreed that industry-led roadmaps to decarbonisation should be created and that Net Zero Industry Wales could play a role in the process. Respondents suggested that there were alternative existing roadmaps, such as those being developed by the South Wales Industrial Cluster and the cement industry that could be supported.

Suggestions for techniques to disseminate learnings were; BAT (best available techniques), through academic partnerships, the SWITCH accelerator programme, to

work closely with the existing knowledge bases such as the HyNet programme or via industry-embedded partners such as Net-Zero Industry Wales that could aggregate techniques.

We apologise for the grammatical errors in the English language version of the question. The question should have been as follows;

“Do you agree that we should create decarbonisation roadmaps across key industrial applications, and if so, should we champion the best available techniques? (Yes/No)  
What role should Net Zero Industry Wales have in this process? How can the identified techniques be effectively disseminated and further incentivised?”

### Question 23

**Small and medium-sized enterprises (SMEs):** As an integral part of the industrial sector, what specific resources or assistance are needed to help industrial SMEs with their heat decarbonisation?

Response	Number
Yes	n/a
Neutral	n/a
No comment	n/a
No	n/a

Responses highlighted that SMEs played a vital role in the Welsh economy and due to their small size what they lacked the most was impartial specialised advice in heat decarbonisation. Several common solutions were suggested; access to timely education and advice, incentives and grants, and strong signalling from government. Other suggestions were a 'one-stop shop' organisation for support, or that larger companies should mentor their smaller supply-chain suppliers. A response noted that the challenge was the same for organisations of all sizes, not in particular SMEs.



## Question 24

**Industrial hydrogen:** Do you agree that Welsh Government has a role in understanding and mapping future demand for hydrogen from high temperature industrial heat, to ensure the infrastructure is in place to allow fuel switching? (Yes / No) Please explain and expand on Welsh Government's role, if applicable.

Response	Number
Yes	47
Neutral	3
No comment	51
No	11

Of the 112 responses, there were; 47 Yes, 3 Neutral, 51 No Comment, and 11 No.

42% of respondents agreed with the question with 10% of respondents disagreeing. Neutral or No Comment answers were the most common, followed closely by responses in agreement with a minority disagreeing.

There was common agreement that Welsh Government should play a role in the planning and modelling of hydrogen hubs however, there was not much consensus on priorities. Comments or suggestions to the Welsh Government spanned a range of perspectives:

- The Welsh Government should collaborate closely with District Network Operators and Net Zero Industry Wales for actions within Wales and the South Wales Industrial Cluster for actions outside Wales,
- hydrogen should only be promoted where other options are not feasible,
- that low-carbon hydrogen could help with electrical grid constraints,
- that industrial gas boilers should be asked to make the switch to being hydrogen ready,
- that the distinction between hydrogen as a chemical feedstock and as a heating fuel should be made clear,
- The Welsh Government should be part of the wider UK effort on hydrogen,

- Welsh Government should minimise its direct role in the private economic sector.

Of the negative responses, there was also concern that hydrogen was an unproven technology or that its development should only be considered where other options were not available in order not to waste resources.

## Section 6: Leading the way with public services

### Question 25

**Leading the way:** Public buildings provide vital services across Welsh communities. Do you agree that a near-term focus for this Heat Strategy should be to improve resilience, by continuing to decouple our public buildings from fossil fuels and improve their energy efficiency? (Yes / No) How can this help lead the way to decarbonise the rest of Wales' buildings?

Response	Number
Yes	47
Neutral	4
No comment	49
No	12

Of the 112 responses, there were; 47 Yes, 4 Neutral, 49 No Comment, and 12 No.

42% of responses agreed with the question with only 11% of responses disagreeing. Neutral or No Comment answers were the most common, followed closely by responses in agreement with a minority disagreeing.

There was a common agreement that public buildings should lead the way in decarbonisation. Comments suggested this would save money, set an example to follow, provide case studies to build confidence, encourage innovation and lead to learning for the wider economy. Other comments mentioned the need for retrofit approaches to be standards-led such as the PAS2030/2035. A few respondents suggested building improvements should only be implemented where there was a clear cost-cutting argument.

## Question 26

**Collaboration:** Our Strategy states the need for public bodies to collaborate effectively to ensure successful and cost-effective transitions. How best can Welsh Government support effective collaboration and shared learning?

Response	Number
Yes	n/a
Neutral	n/a
No comment	n/a
No	n/a

Respondents thought the Welsh Government had a role to play by supporting existing organisations such as the Welsh Government Energy Service, Welsh Zero Carbon Hub, SPECIFIC, the former Active Buildings Centre, the Local Government Climate Strategy Panel, and The Low Carbon Hub.

Direct actions suggested were the creation of various online knowledge platforms, apps and webinars. Negative comments focussed on the need to: avoid duplicating effort, have transparency in findings, and avoid overcomplicated administration. One response highlighted that the problem goes beyond Wales and that the private sector may already provide or better provide solutions.

## Question 27

**Resource and skills:** We have identified that skills and capacity building in public bodies are essential to support local area energy planning, resource local planning authorities, and deliver the transition on the public estate. Do you agree that the Energy Service is best placed to support this upskilling and provide additional resource? (Yes / No) Please explain.

Response	Number
Yes	25
Neutral	5
No comment	67
No	15

Of the 112 responses, there were; 25 Yes, 5 Neutral, 67 No Comment, and 15 No.

A low 22% of respondents agreed with the question with 14% of respondents disagreeing. Neutral and No Comment answers were by far the most common.

The low number of either Yes or No responses (compared to neutral or no comment responses) may come from the relative obscurity of the Energy Service to the general public. A few responders commented that they didn't know the Energy Service and had to look it up.

Of those positive responses, they agreed that the Energy Service was best placed and had a history of being effective. Some responses worried that additional resources and funding would be necessary to provide the necessary level of support. Other organisations and methods to provide upskilling were mentioned in comments such as the Welsh Local Government Associations' Transition & Recovery Support Programme, Regional Skills Partnerships or local authority cross-training of staff.

There was no particular consensus in the negative responses, however, we did receive comments that the Energy Service required increased capacity, and that their role is not to actively provide project management.

## Section 7: Taking action

### Question 28

**Our asks of others:** Do you agree that we have identified the main asks of others?  
(Yes / No) Please explain.

Response	Number
Yes	29
Neutral	4
No comment	53
No	26

Of the 112 responses, there were; 29 Yes, 4 Neutral, 53 No Comment, and 26 No.

Only 26% of responses agreed directly with the question, with almost the same number (23%) disagreeing. The bulk of respondents were Neutral or No Comment. Whether agreeing or disagreeing, subsequent comments tended to have a suggestion for improvement. Given the overall high level of agreement with the draft consultation Strategy, the wording of the question may have led more respondents than usual to disagree with this question.

Of the positive comments, there was agreement that the consultation involved joined-up thinking and was comprehensive.

The negative comments were more disparate, and some are listed here:

- Welsh Government should seek more collaboration with others outside Wales, including third parties and other governments.
- Welsh Government should ask more of the UK Government, especially arguing against the relaxation of energy efficiency requirements to private rental accommodation and the delaying of phasing out of petrol and diesel cars.
- There was not enough discussion about the correct sites for new nuclear power stations.

- There were concerns about the affordability of the Heat Strategy.
- Welsh Government should do more to promote electricity market reform, including the removal of some of the environmental levies, while also safeguarding the key levies that support the transition.
- More discussion was needed on reviewing regulations to allow easier 'private wire' electricity supply or micro-grids formation.
- More discussion was needed on water efficiency.
- The use of secondary heating in homes (such as stoves) should be considered again in the Heat Strategy as people use them practically for heating their homes.
- There was not sufficient engagement with landlords and their agents.
- More discussion was needed with CADW and other historic building related groups.
- More communication and involvement with local community groups.
- More should be done to create a voluntary carbon market.
- More detail was needed in the Strategy.

## Question 29

**Costs and savings:** The costs set out in the Strategy are drawn from the Climate Change Committee analysis. Is there additional evidence on the costs and potential savings that we should consider?

Response	Number
Yes	n/a
Neutral	n/a
No comment	n/a
No	n/a

We thank all for their comments on costs and for bringing any evidence to our attention. Some of the evidence brought to our attention is listed below:

- [Whole Energy System Modelling for Heat Decarbonisation, Imperial College London, 2021](#)
- [The Role and Value of Hydrogen in Future Zero Carbon Great Britain's Energy System, Imperial College London, October 2023](#)
- [UKERC Decarbonising Home Heating: An Evidence Review of Domestic Heat Pump Installed Costs](#)
- [Future Energy Grids Wales Reports](#)
- [Ivanova D., Barrett J, Wiedenhofer D, Macura B, Callaghan M, Creutzig F. Quantifying the potential for climate change mitigation of consumption options. Environ Res Lett. 2020;15\(9\):093001. doi:10.1088/1748-9326/ab8589](#)
- [Roof and loft insulation guide - Energy Saving Trust](#) (amongst other guides)
- [Element Energy – Low carbon heat study](#)
- [The UK Social Value Bank Calculator](#)
- [LCPDelta Report – Analysis of the Draft Heat Strategy for Wales](#)



### Question 30

**Our routemap:** Do you agree that our policies routemap is sufficiently clear? (Yes / No)  
Please explain.

Response	Number
Yes	38
Neutral	4
No comment	50
No	20

Of the 112 responses, there were; 38 Yes, 4 Neutral, 50 No Comment, and 20 No.

34% of responses agreed directly with the question, with fewer (18%) disagreeing. The bulk of respondents were Neutral or No Comment. Whether agreeing or disagreeing, subsequent comments tended to have a suggestion for improvement.

Within responses there was a consensus that the roadmap was sufficiently clear. A respondent noted that the timelines were tight but were clear and appropriate given the need for change.

Other responses noted the need for Welsh and UK policies to be aligned, in particular with respect to private landlord rental property EPC requirements and the phase-out of fossil fuel boilers. Others noted the performance gap between modelled EPC results and real-life energy use was not addressed. There were comments that current modelling methods undervalued ground-source heat pumps.

Several comments asked for more specific dates on the timeline; calling for either yearly target dates, interim targets, and multiple scenario modelling for medium to long-term timescales to account for uncertainties.

A comment suggested the timeline underappreciates the scale of electric grid reform required while another suggested that electric grid scaling-up be included on the roadmap.

### Question 31

**Our pathway:** The Strategy is based on the Climate Change Committee’s Balanced Pathway. Do you agree with this approach? (Yes / No) Please explain.

Response	Number
Yes	40
Neutral	1
No comment	49
No	22

Of the 112 responses, there were; 40 Yes, 1 Neutral, 49 No Comment, and 22 No.

36% of responses agreed directly with the question, with fewer (20%) disagreeing. The bulk of respondents gave Neutral or No Comment. Whether agreeing or disagreeing, subsequent comments tended to have a suggestion for improvement.

There was a consensus that the Climate Change Committee (CCC) were the appropriate advisor and that the balanced pathway was the appropriate approach.

Other comments suggested that alternative inputs should be considered such as the ‘Future Energy Scenarios - Consumer Transition Scenario’ or the CCC’s Widespread Engagement Pathway. A response suggested that all current pathways were too slow.

With respect to hydrogen for heating, some comments in disagreement expressed that the draft Heat Strategy was not a true representation of the CCC Balanced Pathway.

There were comments asking for a stronger emphasis on the fabric-first approach, but also comments against this asking instead for emphasis on a heat pump first approach.

Many comments called for flexibility going forward and regular review.

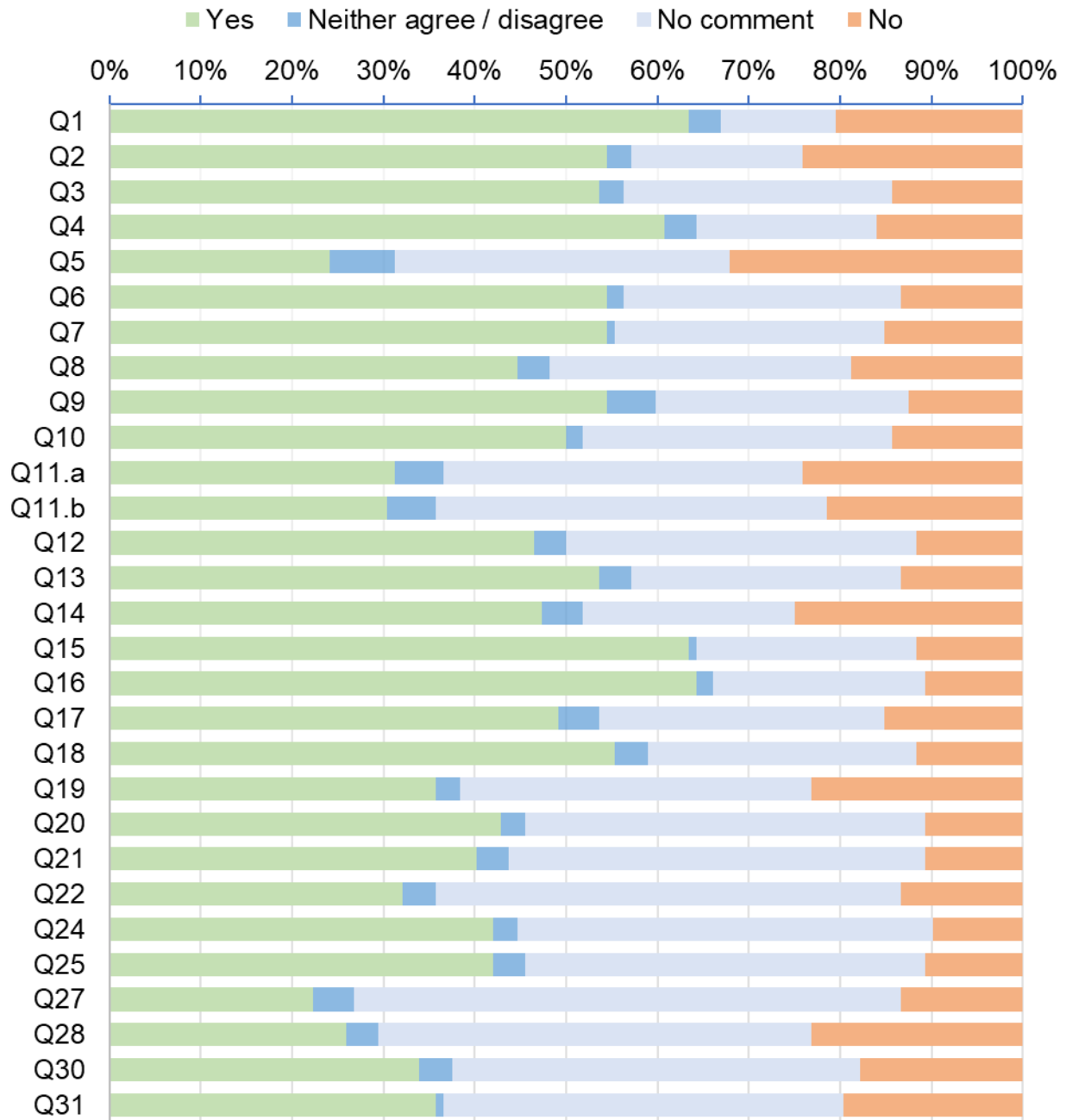
## 4. Welsh Government Response to the Consultation

The Welsh Government ran a public consultation from 16 August 2023 to 8 November 2023 on our draft Heat Strategy for Wales. One hundred and twenty-seven (127) consultation responses were received. We thank all for their time in preparing a response, and we welcome the feedback and interest in the Heat Strategy for Wales. Many provided additional information and constructive comments that will help inform further work. We attribute the high number of responses in part to the high profile of this strategy in meeting our Net Zero ambitions.

Overall, we consider that the draft Heat Strategy was well received, with agreement for many of the individual questions being 50% or more (see Figure 1 below). The first question in the consultation asked respondents if they agreed with the vision as set out in the Strategy; a 63% Yes demonstrates a very high level of agreement. This shows broad acceptance of the Strategy for the low carbon heat transition in Wales.

Across the consultation questions, there was broadly a 10-20% level of disagreement. When considering the type of respondent, the majority of the negative responses were in the main from individual members of the public. This highlights the need for ongoing communication and outreach to the wider public.

Figure 1 gives a snapshot of the 112 responses where the response was clear (of 127 total consultation responses received). Note questions 23, 26, and 29 did not ask a Yes / No question and therefore for clarity are not included in the chart.



**Figure 1: Proportion of Yes, Neutral, No Comment, and No responses received to each question (in percentages)**

## Policy changes since the consultation launch

There have been several announcements and policy changes since the consultation launch in August 2023. Each has had some impact on the draft Heat Strategy, and we have made adjustments where necessary.

UK wide we have seen:

- [UK Government announcements](#) in September 2023 softening restrictions on new fossil fuel gas boiler sales to poorer households and removing plans to fine landlords of private rental accommodation who fail to upgrade the energy efficiency of their properties to level 'C' or better by 2025. Under the new plans about a fifth of households will still be able to buy a fossil fuel gas boiler after 2035 and there is no new timeline for requiring energy efficiency upgrades to rental properties.
- The Boiler Upgrade Scheme (BUS) grant offering for heat pump installation has been [increased by 50%](#) to £7,500.
- The [Clean Heat Market Mechanism \(CHMM\)](#), which places an obligation on boiler manufacturers to increase the consumer demand for heat pumps or hybrid systems, was due to come into effect April 2024 but now has been delayed until April 2025.
- The [National Infrastructure Commission 2nd National Infrastructure Assessment Report](#) was published and strongly advocates for the electrification for heat.
- [The Future Homes and Building Standards: 2023 consultation](#) launch.
- British Standards Institute published updated PAS 2035/2030:2023 standards.

Within Wales we have seen;

- Progress on planning reviews for [air source heat pump noise and permitted development rights](#).
- The introduction of business rates support for renewable energy machinery and [for heat networks](#).
- Progress on setting the carbon intensity for hydrogen and the definition of low-carbon hydrogen.
- The Welsh public sector leading the heating transition with a £60M [low carbon heat capital grant](#) to upgrade heating systems in local authorities.
- A refreshed manufacturing action plan has been launched, [A manufacturing future for Wales: our journey to Wales 4.0](#).
- A new edition of [Planning Policy Wales](#). The Welsh Government has set challenging targets for decarbonisation and increased renewable energy generation.

## A response to the key concerns voiced

Within the responses, some key concerns were often raised. This is our response to some of those key comments given in the consultation responses.

### **Fuel Poverty - ensuring that policies and actions do not increase fuel poverty**

Welsh Government recognises that fuel poverty is a key issue, and our objective is to tackle fuel poverty and the decarbonisation of homes with effective and co—ordinated strategies that recognise the need for a just transition.

The Heat Strategy aims to address fuel poverty during and post transition. The vision is for a future that has zero-carbon heat that is affordable for all. Currently, we have policies & actions to target fuel poverty such as the Warm Home Programme and the Optimised Retrofit Programme and we closely monitor the impact of these programs. From efforts to improve our data collection, our access to data and information is improving all the time and we aim for no-one to become trapped in a vicious cycle of high energy costs. Retrofit measures need to be affordable with an offering of clear and trusted advice available to all.

### **Regulatory powers in Wales for energy efficiency**

There was some confusion on what powers Wales has in regard to making new regulations about energy efficiency. This was seen in some of the responses to Question 14 in particular. Wales is already using its powers to require high standards of energy efficiency and low carbon homes. For instance, our Welsh Development Quality Requirements and Welsh Housing Quality Standard set the mandatory quality standards for new and existing social housing. In general, our Building Regulations are driving energy efficiency and a move towards low carbon heating solutions. We will explore further regulatory interventions within our powers should they be required, to supplement our enabling framework and actions. We look forward to working with the UK Government on reserved issues such as the minimum energy efficiency standards

in the private rented sector in order to improve homes and reduce energy bills for tenants in Wales.

### **The suitability of heritage and traditional building for heat pumps.**

We recognise that historic and traditional houses can be difficult to decarbonise. That is why we are considering all potential options available for low carbon affordable heat. The [Energy Systems Catapult report](#) demonstrated that all houses are suitable for some form of heat pumps. However, historic houses represent a unique type of house that may require custom solutions. Work needs to be done to generate case studies, increase specialist skills and pass on learnings from project to project. Each conversion of a historic house is likely to be unique but feasible.

Heat pump design is improving to better suit certain more challenging properties e.g. high temperature refrigerants and two stage heat pumps.

Although technological improvement and innovation can help, the underlying issue is the cost of electricity when running at these higher flow temperatures, we will continue to press the UK Government for a price review of gas and electricity pricing.

### **A fair and just transition for all – the potential for heat pumps to cost more and rural communities to be disadvantaged.**

Welsh Government acknowledges the concerns of cost of running heat pumps. It is imperative that consumers have correct and trusted advice on the right low carbon heating solution for them. The running costs of a heat pump will be lower in an energy efficient home, and for optimum efficiency a heat pump needs to be installed correctly. Heat pumps are significantly more efficient than gas boilers but the pricing of electricity relative to gas means that consumers often do not gain from this improvement. It is why we are calling on the UK Government to rebalance the cost of electricity relative to gas, removing levies placed on electricity to general taxation.

Welsh Government recognises the different challenges across our communities, and particularly the importance of rural communities. Like hard-to-treat homes, rural

communities will need a place-based solution that meets the needs of consumers. The Local Area Energy Plans (LAEPS) will start to detail plans for all areas of Wales identifying the optimum solution for decarbonisation of energy in a place.

**Some domestic and commercial buildings will be hard to make more energy efficient due to their design and ownership models and therefore heat pumps maybe a costly solution.**

We recognise that there is a vast array of property types and ownership models and existing energy arrangements (grid and off grid). Some properties will be easier to decarbonise than others while some properties will need novel solutions.

The Strategy also acknowledges these challenges. There are studies and demonstrators, and we need to continue to learn from these and understand where gaps in our knowledge remain. We will build on ways to share best practice. Owner occupied and private rented properties have different challenges and the Heat Strategy recognises this. Within the commercial sector we need to understand different options that ensure a fair transition for all. The strategy has been updated to reflect this.

**Hydrogen can be a widespread heating solution – the strategy does not follow the UK CCC balanced pathway view.**

Welsh Government recognises that hydrogen has a place in our future energy system. However, there is uncertainty over where in the economy and to what scale hydrogen will play a role. Hydrogen as a flexible storage solution and fuel will be pursued as part of our efforts to transition to increased renewable energy. ([Net Zero Wales Carbon Budget 2 \(2021 to 2025\) | GOV.WALES](#))

The current consensus is that low carbon hydrogen will be primarily used for hard-to-treat sectors such as high temperature industry use. Hydrogen for domestic heating may be used where there is industry use e.g around hydrogen hubs. This is also the view taken by the CCC (Climate Change Committee) and is part of it's balanced



pathway. Hydrogen fuel for heating remains a viable solution in and around hydrogen hubs and will be reflected in LAEPs.

The Strategy has been updated to reference the UK CCC and Future Energy Wales (FEW). In addition rather than using the term green hydrogen, we now refer to the recognised UK standard for low carbon hydrogen.

We will shortly be consulting on a preferred policy position on hydrogen and the strategy has been updated to reflect this.

**Welsh Government may not be able to make an impact and this transition is dependent on many other factors.**

We recognise that due to the complex nature of heat this will require many actors to work together.

The purpose of this consultation is to understand where Welsh Government should take a role, and where Welsh Government is able to lead the heat transition. The response from nearly all sectors welcomed a role for Welsh Government in collaboration with other partners.

**Welsh Government will need additional funding.**

We acknowledge people's concerns about the need for further funding.

The strategy focuses on what are the levers we can use to make the move to low carbon heating a straightforward choice and at either no or low additional costs e.g. planning amendments will not require budget, other areas are supported in existing budgets e.g. Warm Homes Programme. Putting in place the enabling actions will help ensure low carbon heating becomes the most common and viable option e.g. when equipment does come to its end of life, the savings and benefits of low carbon heating will outweigh the costs.

**Wales's low overall carbon emissions compared to China or India globally, questioning why Wales needs to take this action.**

Our Future Generations Act compels us to act. Other countries may have larger emissions than Wales but nonetheless, Wales can lead the way in having a strategy and a plan to full decarbonisation of its economy and benefit as a result.

**Wales does not have a skilled workforce to support the transition to low carbon heat.**

We acknowledge that the transition to low carbon heating will require more skilled people and in some cases new skills. We also see this as opportunity to grow the economy benefiting local communities as well as helping ensure large business remain competitive and grow.

Many responses highlighted the breadth of skills required. We recently consulted on a Net Zero Skills Plan and committed to undertake a consultation to look at the skills landscape across our eight emission sectors in more detail. This consultation document set out our understanding on the current position on skills for each sector, links to existing policy commitments and what skills are needed in the short, medium, and long term. Electricity and heat generation is one of the emission sectors. The outcome of this consultation will support the development of sector skills roadmaps.

**There are limited case studies, and the technology is not mature.**

Case studies are an excellent opportunity to learn and share with many. This is being built up through current programs and working with other stakeholders.

For example, the Innovative Housing Program took a test and learn approach, trialling new methods and technology, case studies from this and other projects are now being added to the Zero Carbon Hwb ([Home - Carbon Hwb \(zerocarbonhwb.cymru\)](http://zerocarbonhwb.cymru)). In addition, we continue to work with the supply chain through our programs to help it grow and adapt to growing demand.

**The upgrades required for the electricity grid to support electrified heat are very expensive.**

Welsh Government recognises that the future energy system will need investment across a range of areas. This needs to be done in ways that create desirable jobs in the clean industries of the future and is funded in a progressive way, so the costs fall to those most able to pay them.

Analysis from our Future Grids for Wales report ([Future energy grids for Wales: reports | GOV.WALES](#)) shows that Wales's electricity demand may almost triple by 2050 and updating Wales's grid is essential if we are to have an energy system fit for purpose in the long term.

Alongside higher demand, significant increases in renewable electricity generation will also require new electricity transmission network infrastructure.

**Wales has many areas where grid constraints will limit electrification.**

Welsh Government acknowledges that areas of Wales have grid constraints. In 2021 we worked with grid operators and Ofgem to develop a long-term plan for energy networks in Wales to enable a more strategic plan for the people of Wales. ([Future energy grids for Wales: reports | GOV.WALES](#))

In addition, the Local Area Energy Plans have been developed for each local authority area and these take a whole system approach (including grid) looking at energy demand, supply, population and housing in any given area. These LAEPs will be collected together to form an aggregated view and the network section of the Strategy has been updated to better reflect this.

**Why are we not including cooling?**

Welsh Government recognises that with global temperatures rising, summer heatwaves in the UK will become more common and the need for cooling for comfort increases.

The latest evidence from the Climate Change Committee has highlighted the increasing risks of heatwaves and associated risks of overheating indoors. There is a need to take steps where possible to protect vulnerable people, and this should be a key consideration when deciding appropriate retrofit solutions. Care would be needed to consider cooling needs as part of building fabric improvements and the Welsh Government is doing by its commitment to PAS2030/2035 standards in retrofit.

The Welsh Government is due to publish a new national climate resilience strategy later this year. The strategy will set out the cross-sector actions being taken by the Welsh Government and others in Wales to address the risks arising from climate change.

### **The use of Bio derived LPG, rDME and HVO as a low carbon alternative fuels**

Welsh Government acknowledges concerns raised about rural and in particular off grid communities.

Low carbon alternative fuels were highlighted by many respondents as a potential solution in rural areas who are off grid and often in hard-to-treat homes. The true carbon content of these type of fuels is complex due to different sources of feedstocks, processing required, transport requirements. It's also unclear whether these will be widely available for all. We want to focus on low carbon heat technology that will be widely available and not tie people into solutions that become niche and therefore potentially expensive and unsupported. This was reflected in a recent question asked at the Senedd. ([Written Question - WQ90989 - Welsh Parliament \(senedd.wales\)](#))

## Conclusion and next steps

The responses to the consultation have in the main shown support for the draft Heat Strategy for Wales. This is encouraging and gives confidence to our approach to the direction of travel for heat in Wales. In reflection on the responses, the Heat Strategy for Wales will be progressed to the final version with some targeted updates.

The consultation responses highlighted the reach of the Heat Strategy for Wales; it has the potential to impact the whole of society in Wales. The consultation highlighted the significant challenge to bring the public, businesses, and communities on the journey, and ensure that the transition is both affordable and brings opportunities for our economy and communities.

We have revised the strategy to take into account some of the points raised and add further clarity e.g. emphasised the need for a just and fair transition, clarified the role of hydrogen and recognition of where we need to do further work.

We will continue to work across Government developing the actions needed to deliver on our pathway. The Action Plan looks at the short-term steps we need to take around the critical enabling actions, those actions we need to do in the short term to ensure long term success.

It is encouraging to see that the scale of change needed has been understood by most and we value people's continued support to transition to low carbon heat that is affordable to all.