

New Build Heat Standard 2024 Island Communities Impact Assessment

June 2023

Island Communities Impact Assessment

Name of Policy, Strategy or Service

New Build Heat Standard

Objectives

The New Build Heat Standard (NBHS) will prohibit the use of direct emissions heating systems in new buildings applying for a building warrant from 1 April 2024 onwards. Instead, where there is an installed heating system contained within the curtilage of a new building, it will be required to be a zero direct emissions heating (ZDEH) system i.e. one which produces negligible direct greenhouse gas emissions at the point of use.

The objective of this policy is to prevent greenhouse gas emissions associated with delivering space heating, hot water, and cooling in new buildings and conversions of existing buildings (in specific circumstances).

Outcomes

It is expected that the following four key outcomes will be delivered through the introduction of the NBHS:

- Our new buildings no longer contribute to climate change.
- The systems we use to heat our buildings provide us with a reliable supply of heat.
- Opportunities for retraining and upskilling of workforce across Scotland.
- Our indoor and outdoor spaces are with cleaner air.

These outcomes are universal, and do not differ across the islands.

In addition to the above, the introduction of the NBHS aligns with the National Performance Framework, meeting three of the National Outcomes:

- We value, enjoy, protect, and enhance our environment
- We have a globally competitive, entrepreneurial, inclusive, and sustainable economy
- We have thriving and innovative businesses, with quality jobs and fair work for everyone

Directly applicable National Indicators, which measure progress to delivering Scotland's National Outcomes are:

- Reduce Greenhouse Gas Emissions
- Improve Scotland's reputation
- Improve people's perceptions of their neighbourhood
- Reduce Scotland's carbon footprint

Data Gathering

Available Data

The following publications provide an insight into the energy landscape across Scotland's islands:

- The cost of remoteness - reflecting higher living costs in remote rural Scotland when measuring fuel poverty¹
- A Minimum Income Standard for Remote Rural Scotland: A Policy Update²
- Information gathered during the completion of a Scottish Government commissioned Broad Evidence Review³ on implications of the Heat in Buildings strategy on inequality and domestic consumers (for forthcoming publication and which highlighted data from the Scottish House Conditions Survey 2019⁴
- Small Islands Energy System Overview⁵
- Fuel Poverty Strategy Islands Communities Impact Assessment⁶
- Heat in buildings strategy: island communities impact assessment⁷

Key Stakeholders

The key stakeholders identified are as follows:

- Developers (both domestic and non-domestic)
- Manufacturers and installers of heating systems

In addition, the policy will directly impact people purchasing new homes, and will indirectly affect those either living in or using new buildings – as well as those undertaking conversions of existing buildings (however, as previously noted, this is only where certain criteria are met).

At the beginning of the policy development process, a series of informal, face-to-face meetings were held with trade groups and organisations representing the above stakeholder groups.

Following this, an external working group was established in May 2020 to provide advice and expertise on development of the NBHS. This group – independently co-chaired by Professor Lynne Sullivan OBE – has met on a number of occasions to act

¹ [The cost of remoteness - reflecting higher living costs in remote rural Scotland when measuring fuel poverty: research report - gov.scot \(www.gov.scot\)](#) – Scottish Government (September 2021)

² [A Minimum Income Standard for Remote Rural Scotland: A Policy Update](#), Loughborough University's Centre for Research in Social Policy and Highland and Islands Enterprise (HIE) (October 2016)

³ To note: some of the islands relevant data gathered has been included in this ICIA but may not be included in the final report owing to the broader nature of the final research publication.

⁴ [Scottish house condition survey: 2019 key findings](#), Scottish Government (December 2021)

⁵ [Small Islands Energy System Overview](#), HIE, April 2020.

⁶ [Fuel Poverty \(Targets, Definition and Strategy\) \(Scotland\) Bill: island communities impact assessment](#), Scottish Government (May 2019)

⁷ [Heat in buildings strategy: island communities impact assessment](#), Scottish Government (November 2021)

as a “critical friend” in the development of the regulations. The group, which has 16 external members, also features islands representation.

Difference between Islands

To identify differences in new-build domestic properties between Scottish islands, submissions to the Scottish Energy Performance Certificate Register (SEPCR) were used.

EPCs for new dwellings for which the date of assessment was conducted since 2018 were used as the basis for comparison. The results are shown in the table below for new builds’ main fuel type. From the fifth row, one sees that the Orkney Islands have the highest proportion of new builds using ZDEH systems, though the proportion is generally high across all islands. Further analysis reveals that the vast majority of ZDEH systems being adopted are heat pumps.

Table: Main fuel type of new-build dwellings in the Scottish Islands (Q1:18 – Q3:22)⁸

Postcode ⁹	ZDEH (%)	DEH (%)	Total New-Builds
HS1 – HS9	86	14	430
IV41 – IV49; IV55 – IV63	83	17	240
KA27	92	8	90
KW15 – KW17	98	2	450
PA20; PA41 – PA78	85	15	230
PH42 – PH44	0	100	10
ZE1 – ZE3	94	6	300

Notes: TOTAL rounded to nearest 10. ZDEH mainly relates to electricity and communal heating arrangements. DEH stands for Direct Emissions Heat.

In addition to looking at new-build rates for the island communities, the number of Microgeneration Certification Scheme (MCS) certified contractors registered in each region was investigated. Due to the resolution of the data, results can only be presented at the level of local authorities.

For context, Glasgow City is the local authority with the highest number of MCS certified contractors at 19. However, when measured relative to the number of households within each Authority area, the Shetland Islands have the highest number at just over 1,500 households per contractor - whereas Glasgow City sits at almost 16,000. This ratio is highest for Aberdeen City at almost 54,500. Across 30 local authorities in Scotland, the average is just over 18,000.¹⁰

⁸ [statistics.gov.scot : Domestic Energy Performance Certificates - Dataset to Q4 2022](https://statistics.gov.scot/collections/domestic-energy-performance-certificates-dataset-to-q4-2022), Scottish Government (2022). Accessed 10/02/2022.

⁹ As per the [Island Communities Impact Assessment \(ICIA\) for The Building \(Scotland\) Amendment Regulations 2022: Section 6 \(Energy\)](#), the second row of the table (after the headers) should correspond to Lewis & Harris, Scalpay, North & South Uist, Benbecula, and Barra; the third row should correspond to Skye and Raasay; the fourth row should correspond to Arran; the fifth row should correspond to the Orkney Islands; the sixth row should correspond to Bute, Gigha, Islay, Jura, Colonsay, Mull, Iona, Tiree, and Coll; the seventh row should correspond to Eigg, Rhum, Muck, and Canna; finally, the eighth row should correspond to the Shetland Islands.

¹⁰ To note, Clackmannanshire and Inverclyde are excluded in the calculation of this average, as they have 0 MCS certified contractors.

As such, the Scottish islands can be seen as being relatively well-placed in terms of access to technical expertise in small-scale domestic renewables, such as quality heat pump installation.¹¹

Table: MCS certified contractors registered in the Scottish Islands^{12, 13}

Local Authority	Households	MCS Contactors	Households Per Contractor
Argyll and Bute	42,000	7	6,000
Highland	111,000	17	7,000
Na h-Eileanan Siar	13,000	5	3,000
North Ayrshire	65,000	3	22,000
Orkney Islands	11,000	5	2,000
Shetland Islands	11,000	7	2,000

Notes: Households and Households Per Contractor rounded to nearest 1,000.

Existing Mitigations

The NBHS will be implemented using the Scottish Government’s fully devolved building regulations, by prohibiting the installation of direct emissions heating systems in new buildings.

However, the nature of building regulations and their application as national standards means that requirements are applied equally across all Scottish local authority areas.

Consultation

Previous Engagement

In 2021, an ICIA was undertaken as part of the Scottish Government’s Heat in Buildings Strategy¹⁴.

Following a desktop literature review and direct engagement with representatives from Highlands and Islands Enterprise (HIE), a number of challenges were identified relating to island communities. However, it is important to highlight these challenges were not specifically for new buildings – instead, the focus was predominantly on the existing building stock across Scotland’s islands:

- Higher living costs, heating costs and installation costs for heating systems.
- An increase in fuel poverty rates (between 2018 and 2019, rates of fuel poverty increased in remote rural areas from 33% to 43%).

¹¹ As a caveat to the above, the workforce size of each MCS contractor is unknown. It could be possible that those contractors operating in cities employ more installers than those in rural areas.

¹² [Households and Dwellings in Scotland, 2021 | National Records of Scotland \(nrsotland.gov.uk\)](https://nrsotland.gov.uk), NRS (2022). *Households and Dwellings in Scotland, 2021* [Table 1, 2021].

¹³ [About the MCS Data Dashboard - MCS \(mcs-certified.com\)](https://mcs-certified.com), MCS (2022). *MCS Data Dashboard*. Accessed 22/02/2023.

¹⁴ [Supporting documents - Heat in buildings strategy: island communities impact assessment - gov.scot \(www.gov.scot\)](https://www.gov.scot)

- Supply chain and skills, including the availability and supply of workers, a lack of accommodation for workers not resident on the islands, and challenges in obtaining parts for service and maintenance.
- Weather disruption, which could impact project timescales and costs.

NBHS Public Consultations

An initial public scoping consultation¹⁵ to seek stakeholder views on a number of key issues was launched in December 2020 and ran for a 12 week period. A second public consultation on the NBHS (the “Part II” consultation¹⁶) ran from 28 July 2022 to 20 October 2022.

We received responses from 2 island councils, alongside a number of responses from bodies that represent the whole of Scotland.

No specific consultation questions relating to islands communities were included in either consultation paper. However, islands themed workshops were held during both consultations.

These workshops were held online to ensure as much representation from islands communities as possible. Attendees were present from a host of organisations, including private developers, local authorities, and housing associations.

Specific questions relating to impacts on islands communities included the following:

Workshop no.1: 17 February 2021

Specific questions relating to socio-economic impacts included the following:

- What would be the challenges and opportunities for island communities in relation to skills development based on zero emissions heating systems?
- Do you think industry and consumers based within islands communities will face additional costs in complying with this Standard?
- Do you think the introduction of this Standard would limit choice and information available to consumers within islands communities?

Workshop no.2: 20 September 2022

Specific questions relating to socio-economic impacts included the following:

- Are there any unintended consequences of excluding bioenergy in new buildings, specifically across Scotland’s islands and remote areas?
- Based on what we have discussed in regard to the NBHS, is there anything within the proposal that you feel would have a significantly different impact on island communities?

Assessment

¹⁵ [New Build Heat Standard - scoping consultation: analysis - gov.scot \(www.gov.scot\)](https://www.gov.scot/publications/new-build-heat-standard-scoping-consultation-analysis/pages/2.aspx), Scottish Government (2021).

¹⁶ [New build heat standard consultation: part II - Scottish Government - Citizen Space](https://www.gov.scot/publications/new-build-heat-standard-consultation-part-ii/pages/2.aspx), Scottish Government (2022).

Workshop Feedback

Across both workshops, a number of common challenges were identified:

Costs

- Predominantly relating to additional labour costs (when compared to mainland Scotland), particularly in islands where there may be capacity issues within the supply chain to deliver the requirements of the NBHS (both in terms of installation and maintenance of ZDEH systems).
- Overheads such as increased transport cost due to remoteness. This also included costs associated with ferries to access certain islands, and the need for accommodation in certain circumstances.
- Costs associated with dealing with any waste generated from on-site activities.
- Consequences from adverse/ unpredictable weather – potentially resulting in (for example) installers/ maintenance engineers of ZDEH systems being unable to commute back from more remote islands.

Governance

- Participants highlighted concerns around potential dubious work being carried out by contractors. Specific concerns related to a lack of oversight/ governance as compliance organisations may not have the capacity to attend remote sites.

Participants did, however, suggest potential positives that the NBHS would bring. Many of Scotland's islands have been installing ZDEH systems for a number of years successfully due to (for example) a lack of access to the mains gas grid – and participants recognised opportunities to use or sell this experience elsewhere. For example, in the past five years from Q1 of 2018 to Q3 of 2022, the percentage of new-build homes constructed in the Scottish islands with a heat pump as their main heating system was almost 75%, with a further 11% being built with communal heating arrangements. This is in stark contrast to Scotland as a whole, which has seen around 80% of new homes constructed with mains gas boilers as their main heating system over the same period.¹⁷

Consultation Feedback

A key concern highlighted within both consultations was in relation to the capacity of Scotland's electricity grid network. Although the NBHS will be technology neutral, it is anticipated that there will be a greater deployment of technologies such as heat pumps from 1 April 2024 onwards.

Within the Part II consultation analysis, it was noted that a number of respondents highlighted that this is a particular challenge for island communities – due to, for example, low grid capacity being available.

However, concerns around grid capacity were not unique to Scotland's islands.

¹⁷ statistics.gov.scot : Domestic Energy Performance Certificates - Dataset to Q4 2022, Scottish Government (2022). Accessed 10/02/2022.

In addition, a number of respondents proposed exemptions to the exclusion of bioenergy systems. 35% of respondents believed there would be specific situations where bioenergy systems would be required in new buildings – and, of those who answered ‘yes’, the most common theme was an ‘ask’ for exemptions for rural and off-grid areas. This was, predominantly, due to a perceived lack of/ robustness of the energy networks in these areas, and to provide an emergency back-up where supplies were at risk from events such as Storm Arwen.

Analysis of Energy Performance Certificates (EPCs) for new-build households on Scottish islands suggests almost 70% (c. 1,200) of those for which the date of assessment was conducted since 2018 did **not** use wood in either (a) their main heating system, (b) their secondary heating system, or (c) their hot water system. Of the just over 30% (c. 550) that do have “wood” listed as a fuel for one of these systems, only 1 to 2 percentage-points (c. 30 households) use wood as a fuel in their main heating system. The other 28 to 29 percentage-points use wood as a fuel in their *secondary* heating system, namely room heaters.

This can be compared against figures for the stock of new-build domestic EPCs as a whole over the same period. Of the just over 92,800 certificates, 96% (c. 89,200) did **not** have wood listed in either (a) their main heating system, (b) their secondary heating system, or (c) their hot water system. Of those that did (c. 3,600), only 235 had wood listed against their main heating system, suggesting wood fuel plays a secondary role in heating in new-builds.

Further Research

CXC: Zero Emissions Heating in New Buildings across Scottish Islands¹⁸

In 2022, the Scottish Government commissioned research which considered the key challenges and opportunities associated with delivering the NBHS in new buildings across Scotland’s islands and remote areas in order inform this ICIA.

The research concluded that the uptake of ZDEH technologies in new buildings (both domestic and non-domestic) in island and remote areas of Scotland does not face more significant barriers than in other parts of Scotland.

An extract of the key findings of this report is contained below:

Current situation & Choice of technology

- Island regions are ahead of the legislation in terms of installing ZDEH technologies in new build properties. These technologies include electric storage heaters, direct electric heaters, electric boilers, and air and ground source heat pumps.
- Many communities began installing ZDEH systems a decade ago because there is no connection to the mains gas network, and local authorities and housing associations are also already installing electric heating technologies over DEH alternatives.
- The introduction of the New Build Heat Standard in 2024 was found to not have a significant impact on the heating technologies that are being installed in new build properties, because these are already suitable.

¹⁸ [Projects \(climatexchange.org.uk\)](https://projects.climatexchange.org.uk), ClimateXChange (2023).

- Electric storage heating and heat pumps are the most common ZDEH technologies across these regions.
- The suitability of different technologies varies with location, type of housing and the availability of specialists to install and maintain the system.
- Island communities are already implementing lessons learned from the use of ZDEH technologies. As standard, heat pumps installed in coastal and island locations are coated with enhanced corrosion protection to shield against coastal weather.

Consumers & Costs

- There are no consumer behaviours specific to island and remote communities that would prevent the adoption of ZDEH technologies in new buildings.
- There are no significant cost barriers to the adoption of ZDEH technologies in private new buildings. While the more expensive ZDEH technologies have a higher capital cost than fossil fuel-based systems, the difference in total lifecycle is marginal.

Supply chain

- The main cost pressures come from higher maintenance costs and additional travel requirements to island and remote locations for specialist contractors.
- A lack of sufficient specialists across these regions could be a constraining factor in both newbuild and retrofit situations. While there are specialists across Scotland, including on islands and in remote locations, many are reluctant to travel from the mainland to island regions due to the additional cost of travel and accommodation.

Electricity network

- The main vulnerability of the electricity network infrastructure in these communities is the limited interconnectivity with the mainland. Most have a single point of connection.
- The electricity network across the whole of Scotland would need to be reinforced in many areas to accommodate a significant increase in the uptake of ZDEH technologies, but this is also the case across most of mainland Scotland and not a barrier to ZDEH on the Scottish islands.

Locogen: Zero direct emissions heat in new build affordable homes

In 2021, Locogen undertook an evaluation of ZDEH systems in 21 recently completed or live Scottish affordable housing projects. The key objectives of this study were to assess the estimated, actual, and counterfactual costs of the projects' heating systems, to determine the drivers behind decision making for each project, and to provide recommendations for further study in future evaluations.¹⁹

While the research was not islands-specific, the research team found that, following stakeholder engagement as part of the research process, supply chain issues around islands and remote areas were highlighted. Similar to the findings recorded elsewhere in this document, these concerns predominantly related to the availability of suitably qualified ZDEH contractors.

¹⁹ [Evaluation of renewable and zero emissions heating systems in affordable housing projects: Final Report \(www.gov.scot\)](https://www.gov.scot/publications/evaluation-renewable-zero-emissions-heating-systems-affordable-housing-projects/final-report/pages/110.aspx), Scottish Government (2021)

Following the conclusion and publication of this project, Locogen were appointed to undertake the “Phase 2” evaluation project of new build affordable homes. The objective of this research was to assess the actual running costs of ZDEH systems, to understand the impact these technologies have on tenant satisfaction, and to develop five case studies of ZDEH projects for knowledge share (including best practice and lessons learned).²⁰

Two of the projects who participated in the case studies were located on islands: Lewis and Skye. The ZDEH systems installed (air source heat pumps) were rated 8/10 by both housing associations, who have been installing these types of heating systems for over 10 years – and both housing associations reported very high levels of tenant satisfaction with their heat pumps.²¹

Decision

The Scottish Government consulted extensively in the lead up to implementation of the New Build Heat Standard 2024 legislation. This was achieved through two public consultations and through continued, ad-hoc engagement with key stakeholders.

To support the development of this ICIA, independent research was also commissioned to gain a greater understanding of the challenges associated with delivering the NBHS across Scotland’s islands communities.

As noted above, this research has demonstrated that the uptake of ZDEH technologies in new buildings in island and remote areas of Scotland do not face more significant barriers than in other parts of Scotland.

Therefore, we do not believe that it would be reasonable to provide different geographical solutions relating to the prohibition of DEH systems within new domestic and non-domestic buildings, nor do we believe that the NBHS will have a disproportionately adverse effect on Scotland’s island communities.

While there are challenges associated with the delivery of the NBHS requirements, they – predominantly – relate to issues with the supply chain and are shared with other areas of Scotland.

Supply Chain Mitigation

Through our Heat in Buildings Supply Chains Delivery Plan, we have set out practical steps we are taking to support the growth of the green heat sector to overcome supply chain constraints and fill the skills gap. We recognise that training is not equally available across all geographic areas and in some instances, people need to travel considerable distances to access specific training. For this reason, we have invested in a mobile training centre for heat pump installation, accessible to any

²⁰ [Evaluation of Renewable and Zero Direct Emissions Heating Systems in Affordable Housing Projects \(Phase 2\): Final Report \(www.gov.scot\)](https://www.gov.scot/publications/evaluation-renewable-zero-direct-emissions-heating-systems-affordable-housing-projects-phase-2-final-report/pages/110-to-114.aspx), Scottish Government (2022)

²¹ [Case Study: Zero Direct Emissions Heat in New Build Affordable Homes \(www.gov.scot\)](https://www.gov.scot/publications/case-study-zero-direct-emissions-heat-new-build-affordable-homes/pages/1-to-10.aspx), Scottish Government (2022)

college in Scotland which - while being hosted by South Lanarkshire College - will be capable in delivering on site training across all areas of Scotland.

Improving Quality Assurance

In designing Scottish Government support schemes for ZDEH technologies, we are committed to a requirement for strong quality assurance: ensuring that all work is carried out by skilled operatives, in accordance with enforceable industry standards with adequate redress in place to protect consumers.

We published our Heat in Buildings Quality Assurance policy statement²² on 7 June 2022. This policy statement covers the standards, skills and certification required for installers on Scottish Government schemes, ways to tackle scams and mis-selling and how to improve public engagement.

By requiring improved standards for our own schemes and by supporting consumers to access trusted suppliers while avoiding bad actors, we hope to encourage a greater level of skills and competence in the industry more generally and foster a more secure sector that customers can be confident in regardless of how their work is funded.

Continued Support for Affordable Homes

Through the Scottish Government's Affordable Housing Supply Programme (AHSP), many affordable housing providers across Scotland have been – and continue to be - supported to encourage the early adoption of ZDEH systems.

This has been particularly prevalent in remote rural and off gas areas - including islands such as Arran, Barra, Cumbrae, Islay, Orkney, Skye, and Shetland - where ZDEH technologies (such as air source heat pumps) have been in use for many years.

The AHSP baseline benchmarks recognise there are additional costs associated with delivering homes in island communities and, as a result of this, higher benchmarks are in place for homes delivered in island authorities.

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²² [Heat in Buildings strategy - quality assurance: policy statement - gov.scot \(www.gov.scot\)](https://www.gov.scot/publications/heat-in-buildings-strategy-quality-assurance-policy-statement-2022/pages/12.aspx) , Scottish Government (2022)



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