

SKILLS FOR AN INTEGRATED AND CUSTOMER FOCUSSED RETROFIT PROCESS

**A FORESIGHTING
PROJECT**



GATSBY

EXECUTIVE SUMMARY

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The retrofitting of homes to make them less leaky and more affordable to heat can help alleviate the cost-of-living crisis being felt acutely across the UK, as well as significantly reduce our carbon footprint. At a time when child food poverty has doubled in the past year, and 3.26 million households are in fuel poverty, it has never been so important to accelerate the retrofitting of our homes.

However, as the government's own Mission Zero independent review highlighted, 'there is a significant skills supply gap for energy efficiency and low carbon heating', and 'there is a lack of information and advice for consumers on how to upgrade their home'.

Foresighting, an activity that forecasts emerging skills and identifies the gaps in current provision and future need, has the potential to future-proof the UK's workforce. In this project, ESC focussed on identifying the skills and knowledge required to create a Net-Zero mission-driven, customer-focused workforce that employs a whole-systems approach to both the supply chain and individual properties and embraces the use of innovative digital tools.



Foresighting skills for net zero homes

- ✿ The project has created an evidence base to demonstrate where specific skills gaps exist at present, most pressing in customer advice and low carbon heating design. It has also identified the wider need to train practitioners to employ an integrated approach to retrofit.
- ✿ In addition to identifying these key skills gaps, the Foresighting exercise demonstrated that there is currently a lack of training provision for monitoring and evaluating retrofit measures post-installation. The use of digital tools to accurately measure energy usage in properties will help set consumers' expectations about the outcomes retrofit measures can help deliver and provide a means to monitor the ongoing performance of those measures. This will build consumer confidence, encourage uptake, and boost customer satisfaction, but only if the workforce has the skills to implement this vital technology.
- ✿ 70% of the knowledge and skills required to support and deliver an integrated and customer-focussed retrofit process (as perceived by our experts) are not supported by current IfATE standards, but the findings from this Foresighting activity have already been incorporated into the consultation process by the Institute for Apprenticeships and Technical Education when updating existing standards.

Training has traditionally been updated and revised based on demand from industry, but demand will also be dependant on a retrofit process that provides good customer experiences and outcomes. A satisfactory customer journey will only happen if the workforce has the requisite skills, and the challenge now is to work with training providers and industry to prepare learning resources for practitioners that are accessible, informative, and that are demonstrably worthy of investing in for the future success of their business.

Training will need to move away from a standardised model to a more personalised approach that can cater for new entrants from a range of backgrounds and experience, thus growing and widening the talent pool in a sector that requires creative thinking and problem-solving abilities to solve the complex challenges involved in retrofitting the UK's housing stock.

- ¹ <https://foodfoundation.org.uk/publication/child-food-insecurity-doubles-fueling-calls-urgent-expansion-free-school-meals>
- ² <https://www.nea.org.uk/news/new-data-shows-government-is-now-300-years-behind-targets-to-help-low-income-homes-meet-energy-efficiency-targets/?parent=about-us/media-centre/media/>
- ³ <https://www.gov.uk/government/publications/review-of-net-zero>

BACKGROUND

This work carries on from the work done in Phase 1 – the outputs of this work can be found in the Foresighting Skills for Net Zero Homes Phase 1 report⁴, published in January 2022. Phase 1 summarised the findings of three pieces of research reviewing the current state of the retrofit sector.



Figure 1: Foresighting Phase 1 research activity

Literature Review • Open source reports • Academic literature	Learning from ESC innovation programmes • Electrification of Heat • Smart Systems and Heat • Modern Energy Partners	Expert interviews • Installers • Educators • Technologists
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Through the above 3 research activities ESC were able to capture the main challenges and barriers being faced by the retrofit sector.

Figure 2: Foresighting Phase 1 key barriers

Consumer confidence and trust Lack of: • Good quality information • Customer care • Good quality data • Thorough property assessment	Quality and governance Certification and QA: • Certification doesn't ensure quality • Low quality undermines trust • Low demand means limited opportunities to improve	Systems integration Lack of: • Coordination across processes / roles • Knowledge sharing • Shared understanding
For customers: • Lots to manage • Hard to differentiate quality • Lack of trust = low demand	Training schemes: • Focus on qualification rather than competency • Limited ongoing learning • Significant gaps	Value added by: • Integration • Standardised processes • Whole house approach ...but currently perceived as an obstacle

Several of the key barriers identified above relate to structural issues within the sector, but the research also identified 4 priority skills gaps:

- ✱ Property assessment
- ✱ Advice and customer care
- ✱ Low carbon heating installation
- ✱ Technology integration

The insights gained from this first phase of work informed the choice of our Foresighting subject in the Phase 2 work, which is the topic of this report.

⁴ <https://es.catapult.org.uk/report/foresighting-skills-for-net-zero-homes/>

DATA ANALYSIS

3.1 Overview

Experts from both the retrofit and education sectors contributed to the project to create an extensive list of Knowledge & Skills (K & S) Statements. These statements used a standardised language and vocabulary, so that we can start to build a truly integrated, whole-systems approach to tackle the challenges we face. However, with the retrofit sector covering such a broad range of trades and skills, it will take a coordinated effort from all stakeholders to effectively retrofit homes to reduce costs and improve comfort for householders and meet our carbon reduction targets at the pace and scale required.

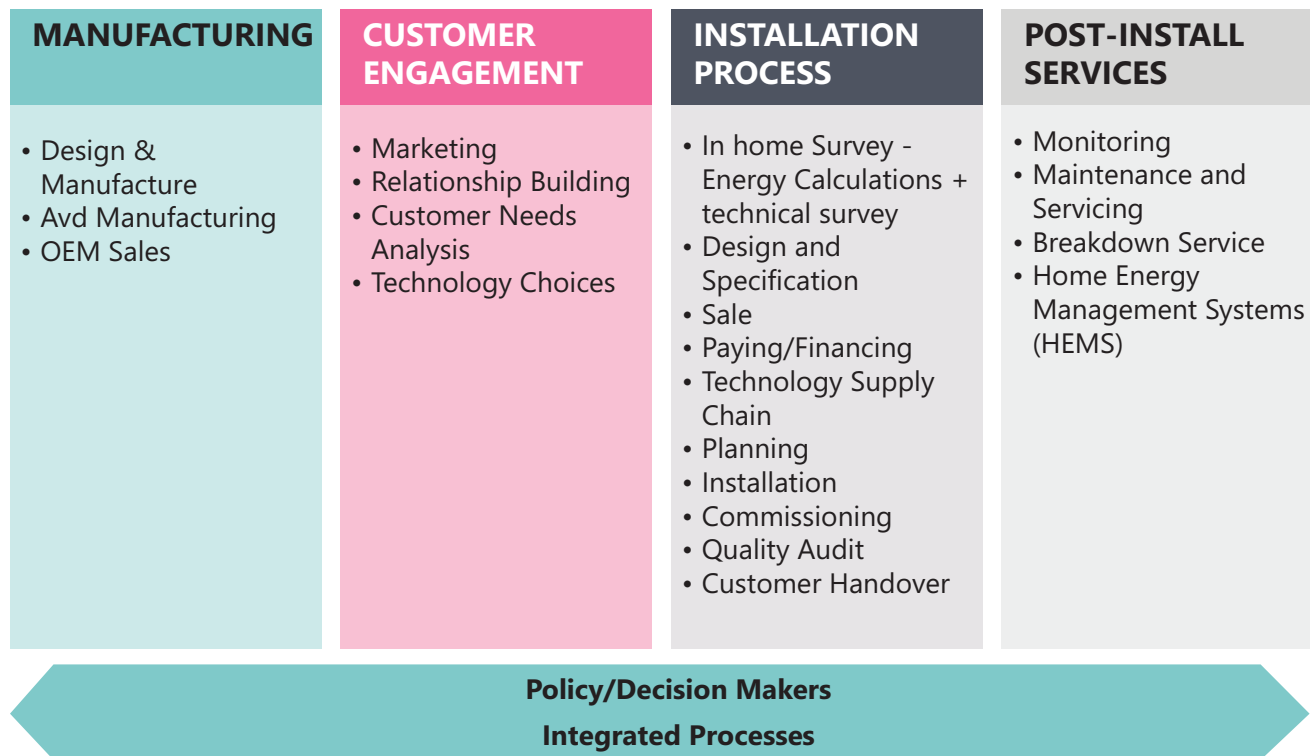
The future K & S statements identified in this Foresighting process were not well met in existing IfATE standards. An IfATE standard covers guidance and requirements relating to all stages of the development process for apprenticeships i.e. it is the skills they define as essential to fulfil a particular role. In total 860 future K & S statements were identified from the expert workshops, of which 259

(30%) are present in existing standards. This indicates that 70% of the knowledge and skills required to support and deliver an integrated and customer-focussed retrofit process (as perceived by our experts) are not supported by current IfATE standards.

To ensure the learnings would be relevant to a wider audience, it was important to position the K & S statements (and consequently visualise where key gaps exist) within a retrofit process that is familiar to stakeholders in the sector.

ESC created a retrofit process model (see Figure 3 below) that comprised four main stages - manufacturing, customer engagement, installation, and post-installation services. Policy and decision makers act across all and may influence all four of these stages. Equally, developing an integrated retrofit process will require interventions across all four stages. The K & S statements were then allocated to the stages

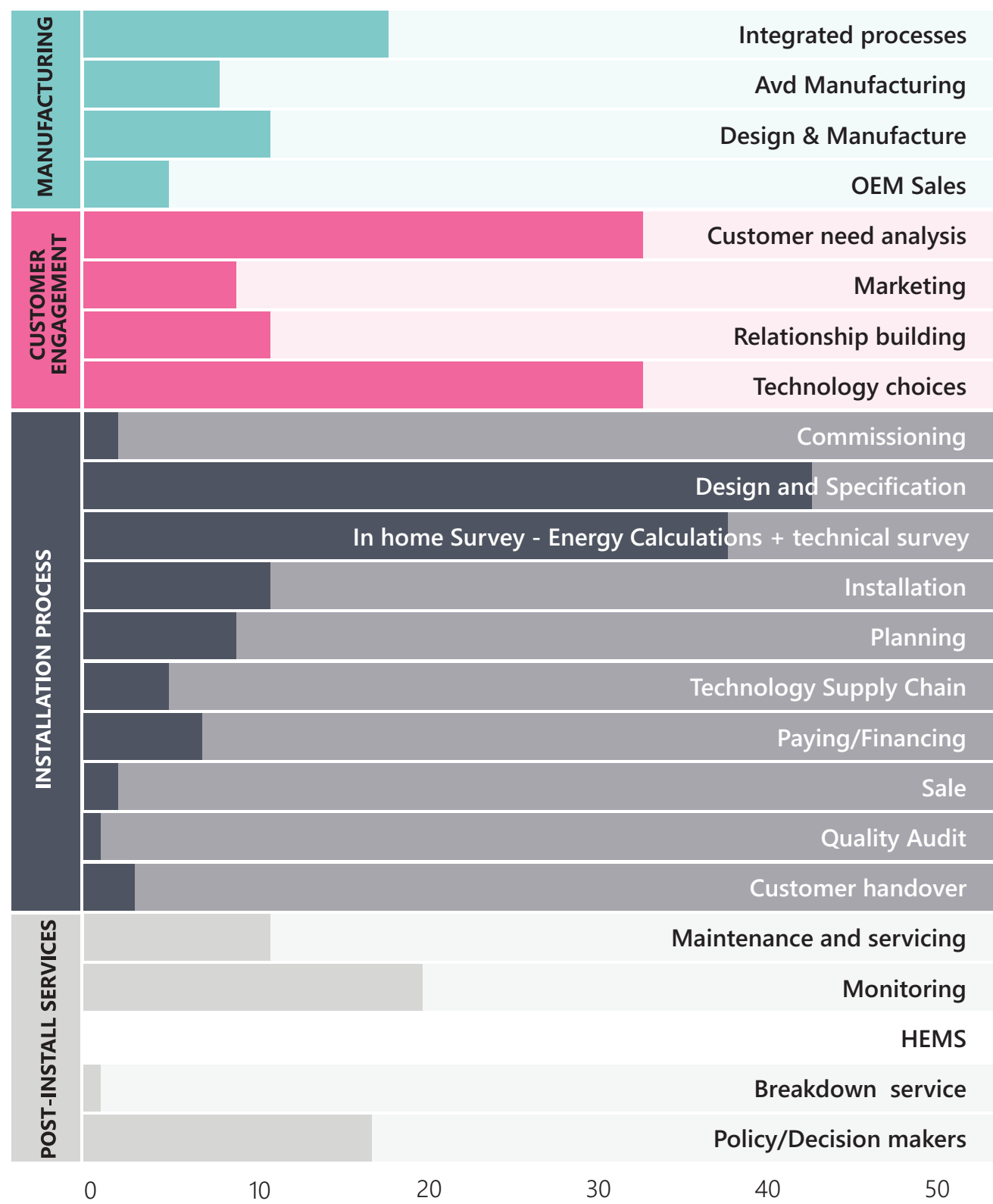
Figure 3: Retrofit Process



Using the skills that require Level 2/3 qualifications as an example, several key gaps were identified in the retrofit process, most notably in the areas of:

- ⚙ Design and Specification
- ⚙ In-home survey – Energy calculations and technical survey
- ⚙ Technology choices
- ⚙ Customer need analysis
- ⚙ Monitoring

Figure 4: Level 2/3 Qualifications - unmatched skills



With regards to the missing skills related to post-install monitoring, it is worth noting that not only is there a lack of Occupation Standards in this area but there is also no specialist training covering this aspect of retrofit. Most 'evaluation' carried out as part of the PAS2035 framework is delivered by the Retrofit Coordinator.

In the table above there are no missing skills recorded for HEMS. According to the experts participating in our Foresighting process the missing skills for this element of the retrofit process are required to have level 4 to 7 qualifications.

As innovative new digital tools are introduced to the market that enable householders to monitor the performance of their retrofit measures, the workforce will need to learn the skills to not only install these tools where necessary, but also gain the skills to educate the householder on how to read the monitoring system and recognise when issues arise.

The ability to monitor outcomes will be critical to gaining customer trust and confidence, itself a vital aspect of achieving the scale of retrofit required to meet our Net-Zero targets.



3. 2 INTEGRATED PROCESSES AND A CUSTOMER PERSPECTIVE

The aim of our Foresighting activity was to identify what skills were needed to create an integrated and customer-focused retrofit process. At present, as highlighted in our previous research, the customer journey is complex and fragmented, causing high levels of customer dissatisfaction and ultimately, high levels of householders deciding not to go ahead with work.

To tackle this issue, the retrofit process must become more integrated and seamless, and to achieve this there are Skills and Knowledge that pertain to an awareness of a whole-systems approach that must be

acquired by the workforce.

Of the 601 missing skills identified by our experts, 30% were categorised as being essential to create an integrated process. Most of these skills were within the role groups that required educational levels between 4 and 7.

Examples of some the missing skills designed to create a more integrated retrofit process are shown in the list below.

Integrated Processes

Verify the outcomes of testing the new forecasting system with peers within the organisation

Describe approaches and processes which allow SMEs opportunities to work together

Provide the outputs from an existing system to monitor and simplify the installation process to the stakeholders

Obtain the data from installers relating to processing times and sequence of activities

Model the entire installation process with correct sequencing, dependencies, and activity interfaces independently

Investigate the instances of post-installation non-compliance in terms of reasons and lessons learnt

Illustrate the entire process from warehouse to the point of application and how digital Bill of Materials can support this

Creating a smoother and more efficient retrofit process by integrating the K & S statements identified in this Foresighting cycle into the training curriculum will ultimately improve the customer offer and experience, vital if we are to achieve the scale required to reach our Net Zero targets.

As well as working with ESC's own Consumer Insights team, we also benefitted from the expertise of Citizens Advice and the Centre of Sustainable Energy, who participated in the Employer workshops and were able to add their knowledge and experience of the customer perspective.

As highlighted in the Citizens Advice report The Net Zero Protections Puzzle "currently, for consumers considering home energy improvements there are too many opportunities for things to go wrong. It all needs to be a lot simpler".

During this cost-of-living crisis we know that households are struggling with paying bills and debt is rising as a result. Insulating and decarbonising homes can reduce ongoing costs but customers need help to understand the process and must be given access to commercially independent advice on which measures are suitable for their property and circumstances. At present there is a postcode lottery as to whether people have access to free, good quality advice.

CUSTOMER PERSPECTIVE WHAT'S MISSING

Understanding the needs of the customer was a central thread to our Foresighting work and below are just some of the K & S statements that were not matched to existing IfATE statements in the current standards.



⁴ <https://retrofit.support/>

- ✱ Produce consumer friendly design information in a suitable format
- ✱ Identify which of the design details will be of use to the consumers
- ✱ Investigate the features of a consumer-friendly language
- ✱ Consider how use of illustrations and diagrams could replace technical text
- ✱ Acquire AI assisted interactive database linking consumer needs to targets of retrofitting system
- ✱ Provide interactive online one to one tutorial support for users via conference platforms such as MS Teams or Zoom
- ✱ Evaluate residents' perception of impact on their comfort and wellbeing as a result of retrofit
- ✱ Assess human comfort requirements within residential buildings with reference to CIBSE Guide A and legislation
- ✱ Develop clear and easy to understand user instructions for customers and property owners or occupants for eLearning
- ✱ Develop a customer centric culture and demonstrate support as proactive, thoughtful, and creative



Identifying these skills gaps is the first stage in the Skills Value Chain as defined by the High Value Manufacturing Catapult in their report Manufacturing the Future Workforce (2020). The next stage is to use these K & S statements to help shape and define role definitions, and then develop modular curriculum and content.

⁵ <https://es.catapult.org.uk/report/foresighting-skills-for-net-zero-homes/>

⁶ <https://www.citizensadvice.org.uk/about-us/our-work/policy/policy-research-topics/energy-policy-research-and-consultation-responses/energy-policy-research/the-net-zero-protections-puzzle-helping-people-piece-together-home-energy-improvements/>

⁷ <https://www.mcscharitablefoundation.org/energising-advice-report>

⁸ <http://hvm.catapult.org.uk/mtfw/>



IMPACT

Much progress has been made during this Foresighting exercise, such as the identification of skills gaps in the key areas of:

- ✿ Design and Specification
- ✿ In-home survey – Energy calculations and technical survey
- ✿ Technology choices
- ✿ Customer need analysis
- ✿ Monitoring

860 K & S statements have been produced covering every aspect of the retrofit process, from the design and manufacturing of low carbon heating technology and digital tools, through to the technical expertise required for low carbon heating system design and installation, and the softer skills and knowledge required to translate technical jargon and terminology into more customer-friendly language. The stakeholders involved considered the needs of the retrofit process with an emphasis on the customer perspective and an integrated process that has been missing from existing standards up to this point.

K & S statements from this Foresighting activity have been added to the consultation process by the Institute for Apprenticeships and Technical Education when updating existing standards.

The identification of these skills gaps in the existing occupation standards required for retrofit has provided a starting point for more focused and detailed Foresighting activity to come.

Insights have been gained on how to improve the Foresighting process, in the areas of:

- ✿ The identification of a Foresighting Subject
- ✿ Defining metrics
- ✿ Quality of data
- ✿ Sample bias
- ✿ Research methodology

Adapting the outputs for a wider audience not yet familiar with the concept of Foresighting

Going forward, the Foresighting process needs to be coordinated with partners in the education sector, such as the Institute of Apprenticeships and Technical Education (IfATE), and with Further Education (FE) colleges to ensure that the insights gained through Foresighting are easily and promptly integrated into existing training provision.

In their Further Education Colleges and Innovation report from October 2020, the Gatsby Foundation highlights the importance of the Innovation Systems approach for FE colleges and concludes that the 'dissemination of knowledge back into the collective innovation ecosystem is a major role played by institutions and places of learning'. It will be critical that we are able to transfer the insights gained through Foresighting to FE colleges and other educational establishments in an accessible, efficient, and flexible manner that can be updated and modernised on a continuous basis. The Association of Colleges are well-placed to help coordinate efforts and the Foresighting Hub in development is seeking to investigate future steps to encourage closer links with the FE colleges.

As we grapple with the scale of the retrofit challenge ahead, women and ethnic minorities represent an untapped talent pool that could address the UK's labour and skills shortage. With women accounting for only 2% of the heating industry workforce

and only 5% of those in the heating sector having an ethnic minority background, real change can and needs to happen to address the industry skills shortage and meet the decarbonisation challenge. The need for increased diversity must be reflected within the Foresighting process itself.

NEXT STEPS

Additional work will add further value to the insights gained so far and there are several follow-on projects and activities that will increase the impact of the work delivered so far::

1. Work with project sponsors where they have identified a need within their organisation to develop learning modules based on K & S statements already identified. The area of customer advice on retrofit has already been identified as a major priority for all sponsors participating in this project.
2. Complete a new Foresighting cycle focussing one of the main priority areas where a 'technology' or 'digital tool' will improve the customer experience. Using the insights gained through this project as well as progressing through the new 'Activity 0' process will enable us to focus the next Foresighting cycle on an appropriate subject, linked to an emerging technology. At this stage the potential areas of focus will be:
 - Customer Advice
 - Monitoring of energy usage post-install
3. Link new Foresighting cycle with activity taking place in the new build sector to provide insights on areas of shared skills and knowledge. Innovative solutions for the roll-out of retrofit across the UK's housing stock could potentially include more collaboration between new-build operators and the retrofit sector.
4. Embed diversity in the Foresighting process ensuring there is a diverse representation of participants from the sector. Solving complex problems will be achieved by bringing different perspectives, experiences and thinking styles to the table.
5. Work with FE colleges to identify ways to transfer knowledge and insights gained through the Foresighting process into training modules and curriculum. To maximise the impact of Foresighting it must create outputs that can be easily adopted by the education sector.

⁹ <https://www.gatsby.org.uk/education/latest/further-education-colleges-and-innovation-new-report>

¹⁰ <https://es.catapult.org.uk/report/skills-diversity-in-heating/>

¹¹ ESC is currently working on the development of an accepted standard methodology for measuring energy savings. A report on this work can be found at <https://es.catapult.org.uk/report/metered-energy-savings/>

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Energy Systems Catapult

7th Floor, Cannon House
18 Priory Queensway
Birmingham B4 6BS

Telephone +44 (0)121 203 3700
Email info@es.catapult.org.uk

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