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Energy Companies Obligation (ECO)

Technical Monitoring Report

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December 2015

Introduction

ECO1

This report presents the results of technical monitoring: independent inspections of the quality and reliability of measures, submitted against the ECO1 obligation period from 01 January 2013 to 31 March 2015.

We are publishing this report as part of our commitment to transparency and will discuss the findings with the Department of Energy and Climate Change (DECC), energy companies, industry groups and accreditation/certification bodies to help drive improvements in installation quality.

The report shows that over the course of ECO1, overall failure rates for inspected measures decreased, with the majority of this decrease attributable to falling rates of scoring failures. Different measure types saw different levels of failure, with solid wall insulation outperforming all other major measure types. 100,731 measures were inspected over the course of the entire obligation.

ECO2

This report does not relate to the ongoing obligation period (ECO2) which runs from 01 April 2015 to 31 March 2017. The findings of ECO1 have however been used to inform our monitoring regime for the ECO2 obligation (01 April 2015 – 31 March 2017). As a result, our response to poor performance is both more timely and more focused.

What was ECO1 technical monitoring?

Ofgem required energy companies to conduct technical monitoring inspections to verify the quality of installation and the accuracy of savings calculations of their ECO measures. Suppliers had to commission qualified, independent agents to conduct the monitoring. Technical Monitoring Agents (TMAs) assessed measures against a standard questionnaire developed by Ofgem in collaboration with energy companies and industry experts.[1] We required energy companies to conduct monitoring on five per cent of measures installed in each quarter, across a representative sample of measure types, geographical areas, installers and obligations/sub-obligations.

Energy companies submitted the results of technical monitoring unaltered directly to Ofgem each quarter. We gave energy companies the opportunity to rectify measures that had failed technical monitoring. If a measure failed on quality of installation, energy companies needed to carry out remedial works to ensure that standards of installation were met. If a measure failed on accuracy of savings, we required energy companies to rescore the measures. Energy companies could report measures that had been incorrectly classified as fails. These measures were reclassified to passes. The results in this report present the final and most accurate picture by omitting any reclassified measures from analysis. Energy companies were not required to conduct remedial works or rescore measures that were reclassified to passes.

[1] Energy companies obligation: Technical Monitoring Questions

Why did Ofgem require this technical monitoring?

Technical monitoring was introduced to ensure that ECO measures complied with relevant standards of installation and that savings were calculated accurately. Failure to comply with these standards or calculate the correct savings could lead to negative impacts on consumers receiving the measures and a failure of the measure to produce the claimed carbon or cost savings.

Measures installed under ECO had to be installed in accordance with the Publicly Available Specification (PAS) 2030, where the standard applied. This requirement was often met by measures being installed by a Green Deal Certified installer. However, Green Deal Certification Bodies, who certify such installers, generally focused on work conducted under the Green Deal scheme. Additionally, Green Deal Certification bodies only conducted site audits on 1% of installations for each installer.

Assessors who provided the savings calculations would be subject to quality control by their accreditation body, but this generally did not involve on-site monitoring of the assessed properties to verify the inputs used for the calculation.

Monitoring of energy efficiency measures installed under ECO was formally required under ministerial direction on 9 February 2015. The direction was issued to ensure that ECO complies with Article 7(6) of the Energy Efficiency Directive, which requires Member States to put in place measurement, control and verification systems for energy efficiency obligation schemes.[2]

We expected energy companies to actively work to improve the quality of ECO measure installations. If a measure failed to comply with a standard relating to its installation, we expected the supplier to remedy the failure. If a measure failed monitoring due to inaccurate scoring inputs, we expected the supplier to provide a new score for the measure. Where appropriate, we could revoke the savings attributed to a measure that failed technical monitoring if the relevant corrective action was not taken. By the end of the Scheme, suppliers had rectified the majority of failed measures.

Overall ECO1 Monitoring Failure Rates

Of the 1,460,829 measures installed under ECO1, 100,731 measures were inspected. This equates to a monitoring rate of 6.90%.[3]

15,006 measures failed inspection on either an aspect of installation quality or due to an inaccurate scoring input, or both. This equates to an overall failure rate of 14.9%.

9,963 measures failed monitoring on an aspect of installation quality. This equates to an installation failure rate of 9.9%. A summary of the most commonly failed questions is given in Appendix 1.

6,498 measures failed monitoring due to an inaccurate scoring input. This equates to a scoring failure rate of 6.5%.[4]

Failure Rates by Measure Type

Installation Fails

Figure 1 below details the installation failure rates of the five most common measure types notified under ECO1, along with the overall failure rate for all measures. These failures have been categorised as either type 1 or type 2 failures. Type 1 failures are those that can have a significant impact on the carbon or cost savings achieved by a measure. Type 2 failures indicate areas where best practices have not been followed,

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[2] Energy Efficiency Directive

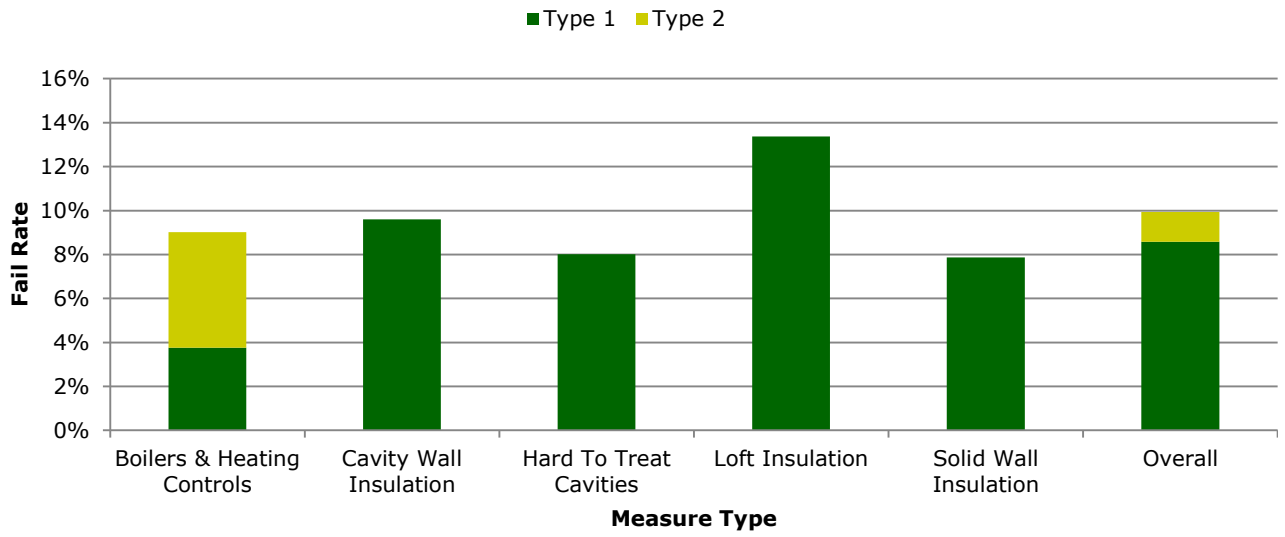
[3] This number excludes excess actions (measures carried forward from previous energy efficiency schemes into ECO1) as these were not subject to technical monitoring.

[4] That the sum of the separate installation and scoring failure rates is higher than 14.9% is caused by measures failing both installation and scoring, which are double counted when these failure rates are added together.

but carbon or cost savings are unlikely to be significantly affected. We were therefore more concered about type 1 failures. The distinction between these two failure types is explained in Appendix 1.

The figure for solid wall insulation (SWI) combines external and internal wall insulation (EWI and IWI). The majority of solid wall measures installed under ECO were external wall insulation measures.

Figure 1: Installation failure rates by measure type

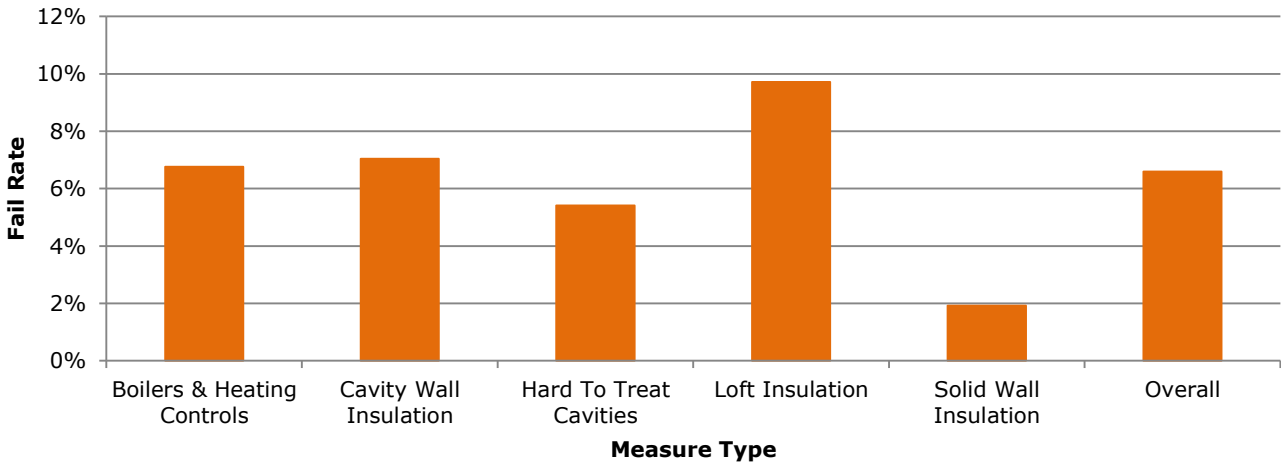


Boilers and heating controls are grouped together as no distinction was made between the two measure types during the initial phase of ECO1 monitoring. The majority of these measures were boilers. While boilers had a mix of type 1 and type 2 failures, we considered all failed heating control measures to be type 2 failures.

We have worked with energy companies to ensure that correct guidance has been given to installers and monitoring agents to ensure that standards of installation were met. For more information relating to the most commonly failing questions, see Appendix 2.

Scoring Fails

Figure 2: Scoring failure rates for the five most common measure types notified under ECO, along with the overall fail rate for all measures.



The high scoring failure rate for loft insulation was largely related to fails on questions regarding the thickness of existing loft insulation. Over the course of the ECO1 obligation we became aware of concerns

regarding the claimed depths of existing loft insulation and the savings claimed on those measures installed. Together with suppliers we investigated a number of these measures to establish whether claimed scores were accurate. Where this was not the cases, suppliers were required to rescore the measures and, if appropriate, take anti-fraud action. Based on our learnings, we introduced new evidencing requirements for loft insulation and enhanced our guidance on scoring these measures for the ECO2 obligation period. We also engaged with energy companies, who conducted their own internal audits to ensure that loft insulation was scored as accurately as possible.

Failure Rates over time

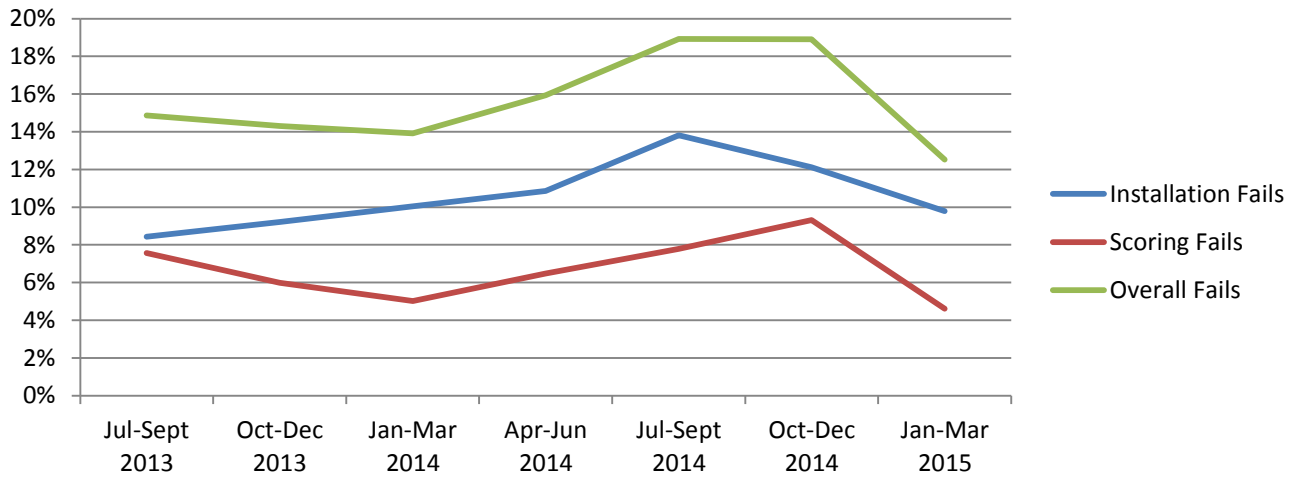
Figure 3 below shows the change in fail rates over time for all measure types. The first two quarters of the ECO1 obligation period have been omitted, because inspections conducted during this period were done using a different question set, which means failure rates are not comparable with later quarters. Previous technical monitoring reports considered the failure rates for measures monitored in a specific quarter, whilst this report considers the failure rates for measures installed in a specific quarter.[5] We could only employ this method after the end of the Scheme when there was no further movement in the number of measures installed in a quarter that had been subjected to monitoring.

Some monitoring inspections were conducted before or during installation of a measure and in some cases the installation was not completed and/or the measure was not notified to Ofgem. These inspections account for less than 5% of the total number of inspections conducted in ECO1 and are excluded from this analysis as they do not have a date of installation.

Failure rates over time

Figure 3 shows that there was a small decrease in failure rates during the ECO1 obligation period. This decrease is interrupted by three quarters of elevated fail rates between April and December 2014, which can be mainly attributed to an increase in scoring fails. As can be seen in figures 4 to 6 below, this trend is reflected in the separate fail rates for boilers & heating controls, cavity wall insulation and loft insulation.

Figure 3: Changes in failure rates over time



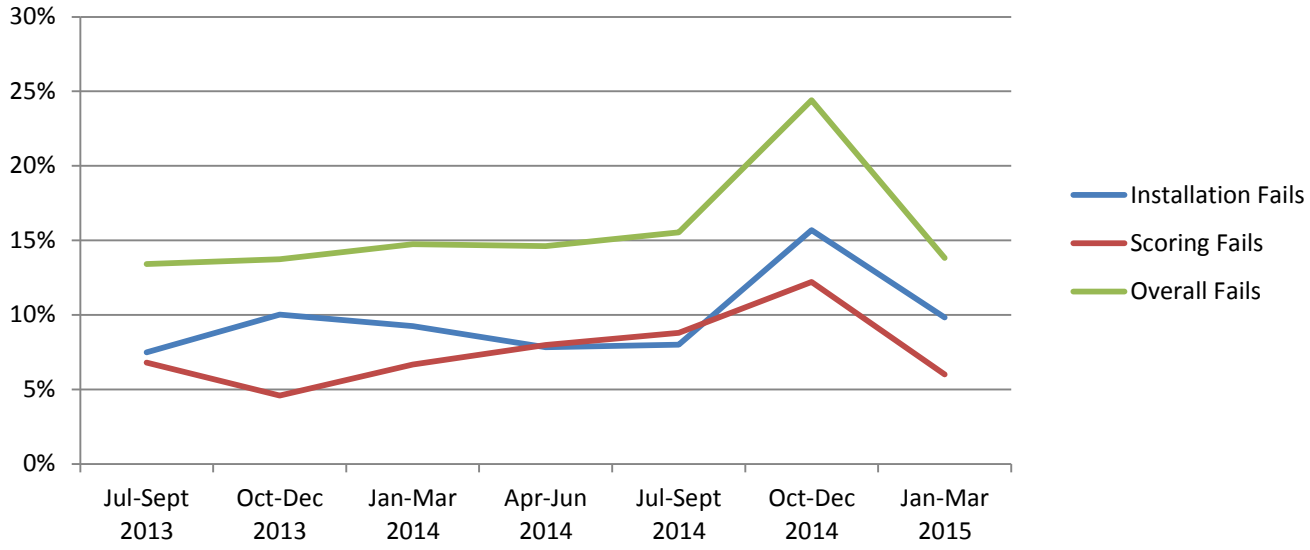
The changes in failure rate over time are given for the measure types with the highest delivery in Figures 4-7 below. With the exception of loft insulation, overall failure rates decreased during the ECO1 obligation period. This effect is more pronounced for scoring.

Failure rates for boilers and heating controls, given in Figure 4, did not vary significantly across the obligation period, with the exception of a significant spike in fails in measures installed from October to December

[5] Previous technical monitoring reports for ECO1 can be found in our publications library: https://www.ofgem.gov.uk/environmental-programmes/energy-company-obligation-eco/publications-library-energy-company-obligation-eco

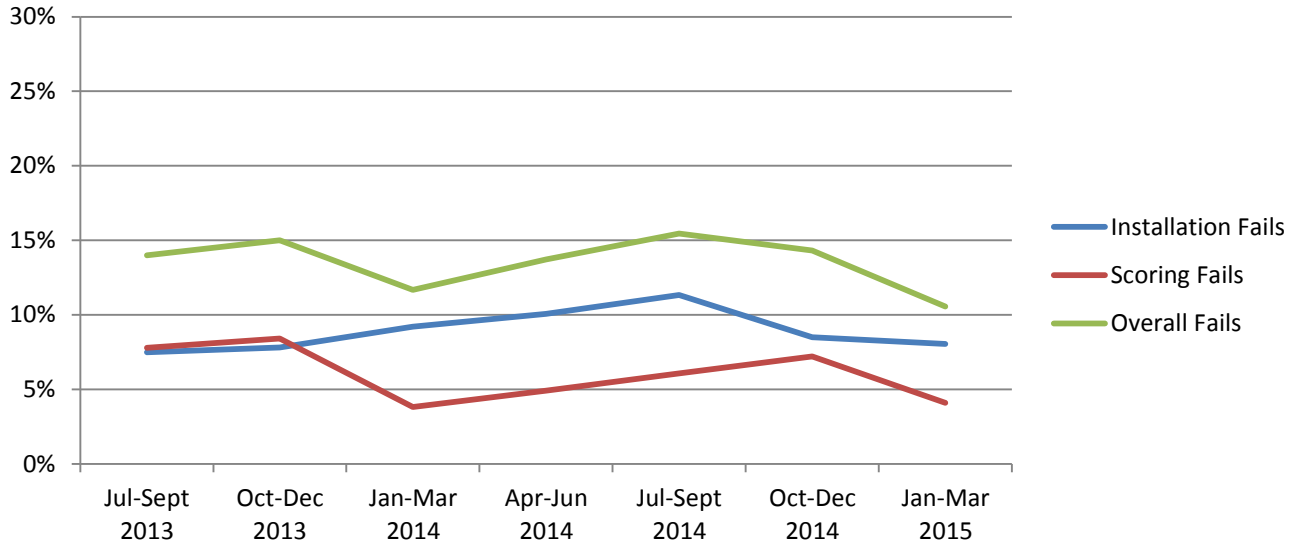
2014. Delivery of boilers and heating controls was relatively low during this quarter, and the spike was caused by a particularly high failure rate in a small set of measures.[6]

Figure 4: Boilers and Heating Controls



Standard and 'hard-to-treat' cavity wall insulation are grouped together in Figure 5, as delivery of 'hard-to-treat' cavity wall insulation was largely replaced by delivery of standard cavity wall insulation following the amendments to the ECO legislation. Taken across the whole of ECO1, the overall failure rate for cavity wall insulation dropped, mainly as a result of a decrease in scoring fails.

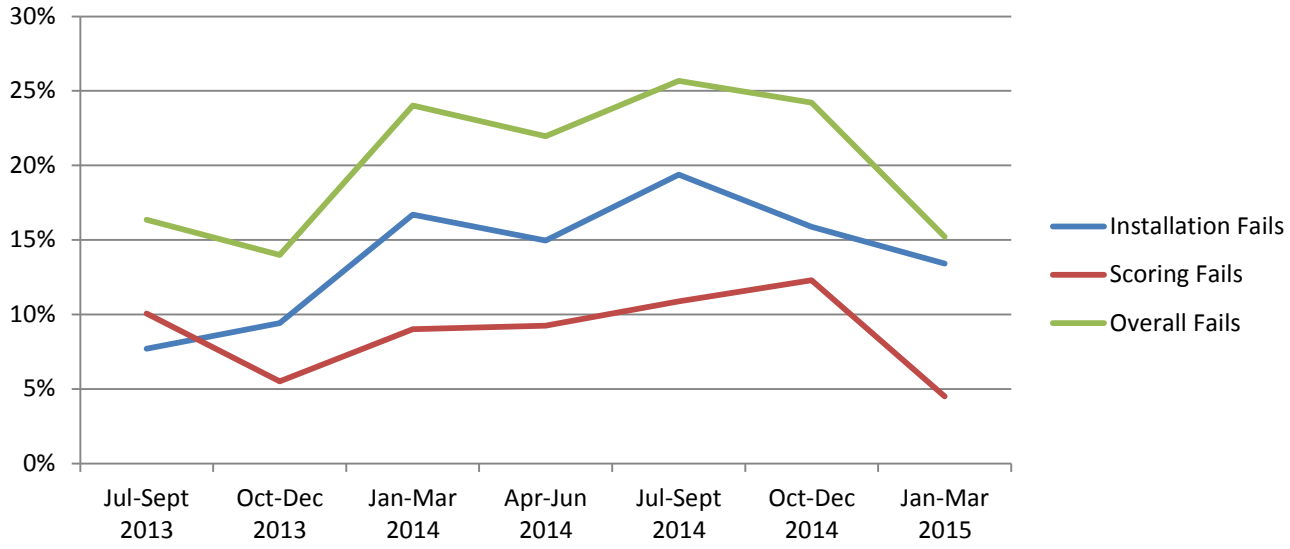
Figure 5: Cavity Wall Insulation (including 'hard-to-treat' cavities)



Loft insulation measures have seen a variation in failure rates, a combination of a reduction in scoring fails which may be driven by greater scrutiny over lofts later in the Scheme, and gradually rising installation fails until September 2014.

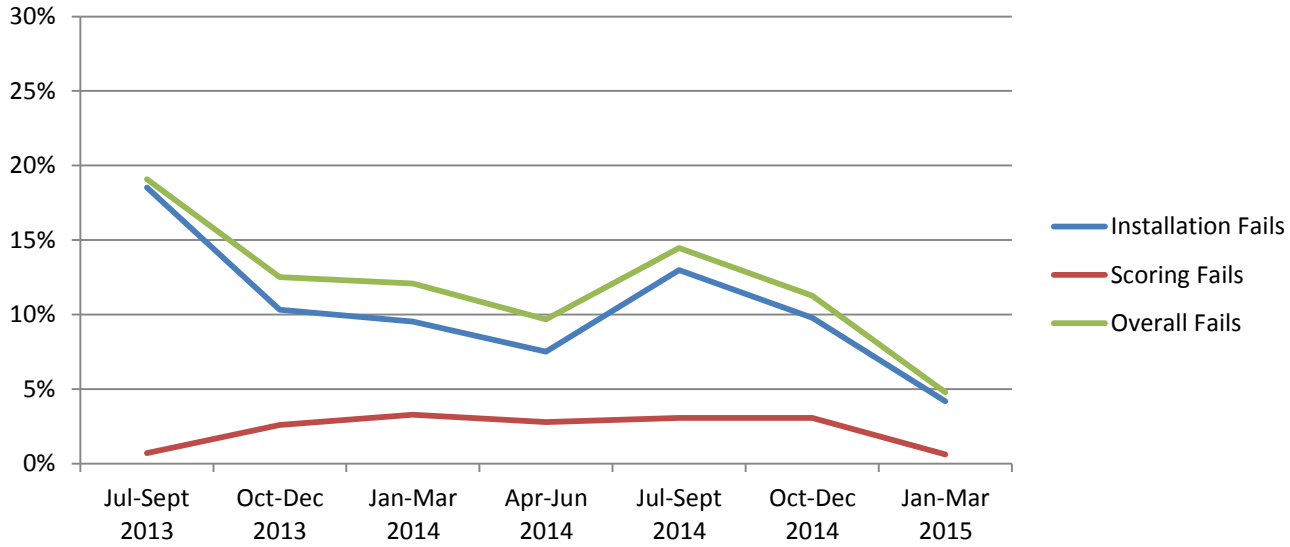
[6] Only 26,725 boiler and heating control measures were installed during this quarter, or 6.6% of all boiler and heating control installations. This is less than half the expected number if installations had been distributed equally across all quarters.

Figure 6: Loft Insulation



Failure rates for solid wall insulation declined across the obligation period. Given the relatively low level of scoring failures for solid wall insulation, the trend for the overall failure rate closely follows the gradual decline of the installation failure rate.

Figure 7: Solid Wall Insulation (including EWI and IWI)



Response to technical monitoring results

When a measure failed technical monitoring on a standard of installation, energy companies had to carry out remedial work to resolve the fail. Once this remedial work had been conducted, a further inspection had to take place to ensure that remedial work had addressed the cause of the original failure. When a measure failed technical monitoring due to inaccurate scoring inputs, energy companies had to provide a corrected score for the measure.

Initial progress towards remediating and rescoring measures was slow, which resulted in a build-up of failed measures, despite our stated expectation in the ECO1 Guidance for Suppliers that technical monitoring fails should be remediated within three months of being discovered. This led to delays between the measures

being installed and remedial or rescoring action being initiated. This complicated the remediation process and occasionally left failed measures unresolved. It also had an impact on consumers in some instances, either requiring numerous additional visits to resolve any issues or leaving them with measures that were not achieving the expected savings. In some cases, scoring fails could not be correctly rescored because suppliers were unable to gain access to properties to record the correct inputs for scoring calculations.

Throughout the ECO1 obligation period we engaged with energy companies to encourage remediation and rescoring. As a result, significant progress was made in resolving the majority of outstanding technical monitoring fails. Of the 9,963 measures that failed monitoring on a standard of installation, 7,446 have been successfully remediated (75% of the total). Of the 6,498 measures that failed on accuracy of scores, 5,331 have been rescored (82% of the total). The average revision of a score (both upward and downward) as a result of rescoring was a 48% change compared to the original score. The net change across the entire Scheme is lower, however, because upwards and downwards revisions cancelled each other out. Rescoring activity has resulted in the following corrections to obligations:

- **CERO**: An upwards adjustment of 850 tCO_2;
- **CSCO**: A downwards adjustment of 6,519 tCO_2;
- **HHCRO**: A downwards adjustment of £1,287,371.

Where a fail was not adequately remedied, we investigated to determine if further action was warranted. If appropriate, we refused or revoked approval of the measure. A total of 2,448 measures had their approval refused or revoked as a result of technical monitoring. The majority of these measures had failed on standards of installation and were revoked because remedial works had either not been carried out, or had not successfully passed reinspection.

Conclusions

- Overall failure rates for both installation quality and accuracy of scoring were higher than anticipated, and as a result we will maintain our focus on improving quality of installation and accuracy of scoring.
- For most measure types, installation fail rates have remained relatively constant across the Scheme period, with the exception of SWI which has shown a marked improvement in quality.
- Scoring failure rates decreased as the Scheme progressed. Scoring failures were spread relatively evenly across a larger number of questions, which suggests there was no specific causes of inaccurate scoring that drove failure rates, but rather that the improvements were due to the supply chain becoming more accustomed to ECO scoring methods.
- Where measures were rescored, the rescore typically resulted in a significant change in savings. Net aggregate correction to scores is less significant as scores were revised both upwards and downwards.
- Changes implemented in ECO2 are driving further improvements in installation quality, accuracy of scores, and the timely reaction to poor performance. These changes include:
    - shortened timescales between the installation and inspection of measures;
    - targeted responses to poor performance at the individual installer level;
    - clearer guidance on how poor performance needs to be addressed;
    - increased engagement with suppliers and the supply chain.

Still have questions?

For enquiries regarding ECO (with the exception of the media), please contact the ECO team via email at ECO@ofgem.gov.uk. For all media enquiries, please contact the press office on 0207 901 3111 or Stuart.Forsyth@ofgem.gov.uk.

Appendix 1: Definition of type 1 and type 2 fails[7]

Type 1 fails

Ofgem classifies type 1 fails to be those that can moderately or significantly reduce the ability of a measure to deliver carbon or cost savings to consumers.

Examples and explanations

Measure type	Question
Loft Insulation	Q28) Has insulation been close butted?
Cavity Wall Insulation	Q27) Have all injection holes been made good?
Boiler Repairs and Boiler Replacements	Q23) Is the boiler connected to a functioning domestic heating (and, if applicable, hot water) system?

- If loft insulation is not close butted, cold air can pass through the insulation, reducing its effectiveness. A failure on this question also shows that the insulation is susceptible to condensation and damp, which may result in degradation of the insulation, and a reduction in its performance.
- If injection holes are not made good following installation of cavity wall insulation, condensation and damp may degrade the insulation, reducing its performance.
- A boiler that is not connected to a functioning heating system will be unable to provide heating and hot water to a home, and therefore will not deliver any savings to the occupant.

Type 2 fails

Ofgem classifies type 2 fails as those that may have little or no direct impact on the carbon or cost savings attributed to the measure, but still impact on the quality of the installation or indicate that installers have not followed best practice.

Examples and explanations

Measure type	Question
Boiler Repairs and Boiler Replacements	Q27) Does the occupant confirm they know how to use the new boiler?
Boiler Repairs and Boiler Replacements	Q28) Is all reinstatement work to an acceptable standard?

- Boiler question 27 could be failed if an installer failed to inform the occupant how to use their boiler, or the occupier may not have been present at installation. In either case, the boiler may be functioning, but we expect that sufficient instructions on how to operate boilers are provided to occupants.
- Reinstatement work includes tasks such as repainting around a new boiler, or refilling drill holes, which do not affect the performance of the boiler in most instances. However, failures on this question still reflect issues with the installation of the measure.

Project plan questions

The Ofgem technical monitoring questionnaire also included installation questions about the project plans used during the installation of ECO measures. When technical monitoring inspections occur after the installation of the measure, these questions are treated as 'for information only' as it is not expected that project plans are kept on site after installation. For the purpose of this report, they are therefore not treated as fails.

[7] Note that this distinction is separate, and not analogous, to the major/minor classification used in past technical monitoring of energy efficiency schemes.

Appendix 2: Commonly failed installation questions

The most commonly failed questions for each measure shown in the report are listed below.

Boiler Installation, Boiler Repair, Heating Controls	
Q28) Is all reinstatement work to an acceptable standard?	Type 2
Q26) Are the water pipes connected to the cylinder insulated?	Type 1
Q27) Does the occupant confirm they know how to use the new boiler/controls?	Type 2

Cavity Wall Insulation	
Q27) Have all injection holes been made good? (Post installation question only)	Type 1
Q26) Does the drilling pattern ensure an even distribution of material, and conform to the appropriate materials compliance certificate? (Post installation question only)	Type 1

Hard-to-Treat Cavity Wall Insulation	
Q34) Does the drilling pattern ensure an even distribution of material, and conform to the appropriate materials compliance certificate? (Post installation question only)	Type 1
Q35) Have all injection holes been made good? (Post installation question only)	Type 1

Heating Controls	
Q22) Does the occupant confirm they know how to use the new controls?	Type 2

Solid Wall Insulation (The two most common fails relate to external wall insulation)	
Q43) Has the finishing coat/cladding been applied as specified in the project plan and is the installation water tight? (Post installation question only)	Type 1
Q42) Where services have penetrated the insulation board have these been sealed appropriately? (Post installation question only)	Type 1

Loft Insulation	
Q31) Has the loft hatch been properly draught-proofed as specified in PAS 2030:2012?	Type 1
Q30) Has the loft hatch been properly insulated as specified in PAS 2030:2012?	Type 1