

# Response to ECO2 consultation on Technical and Score Monitoring

## Consultation

**Publication date:** 07 December 2016

**Contact:** Frank Hemmes

**Team:** Energy Efficiency and Social Programmes

**Email:** [eco@ofgem.gov.uk](mailto:eco@ofgem.gov.uk)

### Overview:

From 13 September to 11 October we consulted on a number of proposed changes to the way we will implement technical and score monitoring in the ECO Scheme from April 2017.

This document summarises the responses to our consultation and sets out our final position. Where suitable, we also explain why we choose not to incorporate suggestions or comments.

Some of the decisions in this document depend on the introduction of deemed scores for ECO after April 2017, as proposed by the Department for Business, Energy and Industrial Strategy (BEIS). This document outlines how some aspects of score monitoring would change if deemed scores are indeed introduced.

# Contents

---

<b>Contents</b>	<b>2</b>
<b>Background</b>	<b>3</b>
<b>1. Responses to question 1</b>	<b>4</b>
<b>2. Responses to question 2</b>	<b>7</b>
<b>3. Responses to question 3</b>	<b>9</b>
<b>4. Responses to question 4</b>	<b>13</b>
<b>5. Responses to question 5</b>	<b>15</b>
<b>6. Responses to question 6</b>	<b>20</b>
<b>7. Response to question 7</b>	<b>30</b>
<b>8. Response to question 8</b>	<b>31</b>
<b>9. Response to question 9</b>	<b>34</b>
<b>10. Response to question 10</b>	<b>38</b>

## Background

---

The Energy Company Obligation (ECO) is a Government scheme which requires larger energy companies to deliver energy efficiency measures to domestic premises in Great Britain. The current scheme runs from 1 April 2015 to 31 March 2017 and is referred to as ECO2. It is administered by Ofgem E-Serve ('we', 'us' and 'our').

We published our consultation on 13 September 2016 to gather feedback on several suggested changes to the way we intend to implement technical and score monitoring in ECO after March 2017. Some of these changes are driven by the proposed introduction of deemed scores by the Department for Business, Energy and Industrial Strategy. Other changes are the result of our experience with implementing the process during ECO2, and seek to further simplify and streamline the monitoring process.

**Note that the monitoring questions included in this document are provisional to the extent that we reserve the right to make minor textual changes. We will shortly be publishing the monitoring question set for both score and technical monitoring on the same webpage as this consultation response. Stakeholders should refer to the question set as the definitive list of all monitoring questions.**

# 1. Responses to question 1

---

1.1. Question 1 proposed to lower the trigger point for score monitoring failure rates to be the same as for technical monitoring. Because there are two trigger points, we split this question into two parts.

## Question 1.1

Do you agree that the failure trigger point for score monitoring should be set at 10%? If not, what should the threshold be and why?

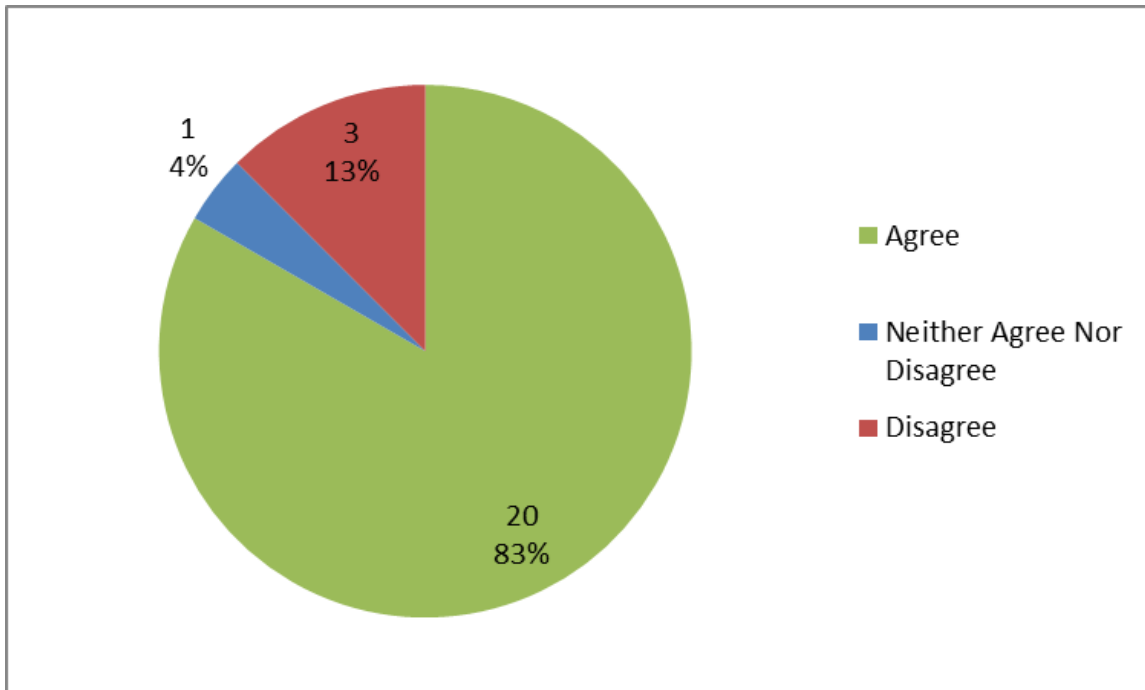


Figure 1: Pie chart of responses to question 1.1.

1.2. Twenty-four stakeholders responded to this question and their answers are shown in Figure 1.

1.3. 83% of respondents agreed with our proposal to change the failure trigger point for score monitoring from 20% to 10%, although it was noted that this was dependent on the introduction of deemed scores.

1.4. Among those who disagreed, there was support for either a higher (15%) or lower (5%) trigger point than we proposed. The lower trigger point was suggested by stakeholders who argued that it is significantly less likely to select an inaccurate deemed score than it is to use an incorrect SAP/RdSAP input, and that the trigger failure rate should be lower to reflect this. One stakeholder suggested a 15% trigger failure rate would be more appropriate. While they agreed with the expectation that

the fail rate when using deemed scores would be lower than it is for SAP/RdSAP scores, they felt that 10% was too low.

1.5. We believe that reducing the score monitoring failure trigger point to 5% would be a too large reduction compared to the current trigger point of 20%, especially as the expected failure rate for score monitoring under deemed score is currently an estimate. In addition, we believe there are additional benefits to using the same trigger point for score and technical monitoring, as it reduces complexity and cause for confusion. Given that the majority of stakeholders supported our proposal, we will lower the failure trigger point for score monitoring to 10%.

### Decision

We will set the failure rate trigger point at which an installer or measure type will be placed on the pathway for score monitoring at 10%.

### Question 1.2

Do you agree that the score monitoring fail rate above which a subset of measures is considered to be of 'high concern' should be set at 25%? If not, what do you believe the threshold should be and why?

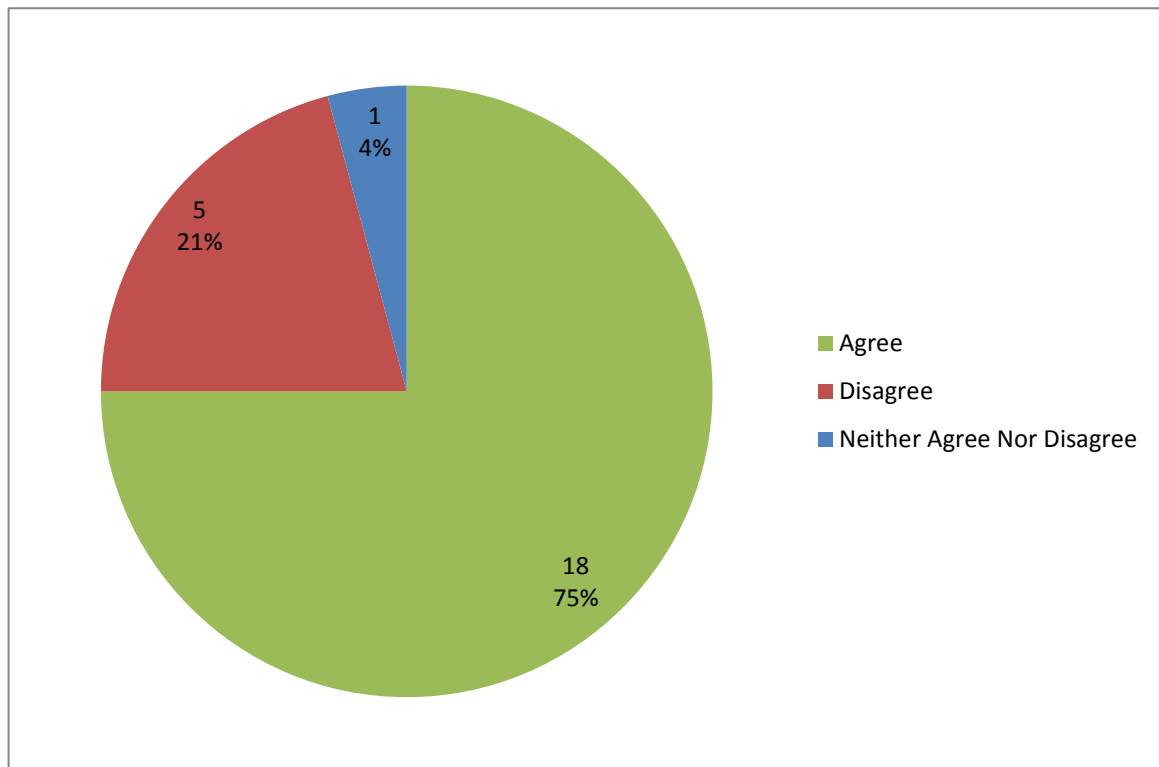


Figure 2: Pie chart of responses to question 1.2.

1.6. Twenty-four stakeholders responded to this question, and their answers are shown in Figure 2.

1.7. 75% of respondents agreed with our proposal to set the score monitoring failure rate above which a subset of measures is considered to be 'high risk' at 25%. This would make it the same as for technical monitoring.

1.8. All stakeholders that disagreed argued that any subset of measures with a failure rate higher than the 10% referred to in question 1.1 should be considered as 'high concern', and that a split into two pathways was therefore not necessary.

1.9. We believe that given the high impact of individual inspection results on the overall performance for installers small sample sizes, it is not proportionate to treat every subset of measures with a score monitoring failure rate higher than 10% as 'high risk'. The use of two pathways allows us to take a more proportionate and targeted approach and take into account the level of risk and the robustness of the initial monitoring results.

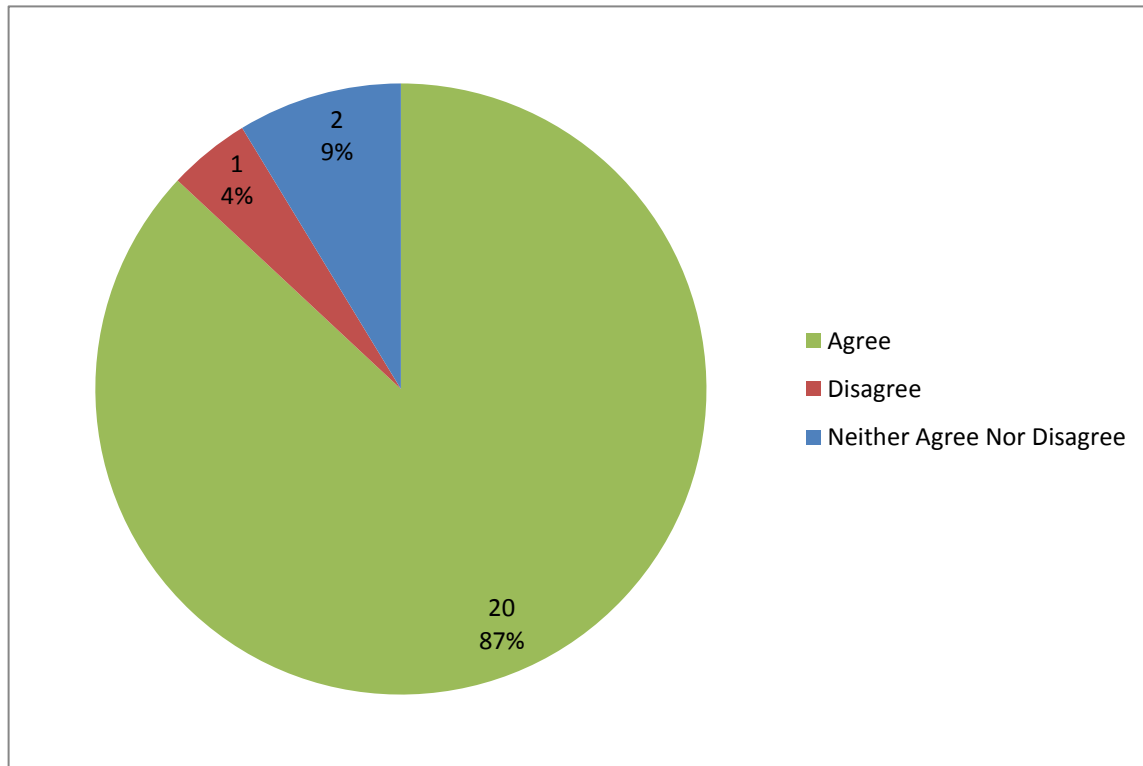
**Decision**

We will set the score monitoring failure rate above which measures will be considered of 'high concern' at 25%.

## 2. Responses to question 2

### Question 2.1

Do you agree the required additional assurances should be based on which pathway an installer is placed on? If not, please explain why not.



**Figure 3: Pie chart of responses to question 2.1.**

2.1. Twenty-three stakeholders responded to question 2.1, with the answers displayed in Figure 3.

2.2. 87% of respondents agreed with our proposal to directly link the additional assurance requirements for a subset of measures placed on a pathway, to the pathway that these measures are placed on. This is a change from the current situation, where the failure rate trigger points that determine the levels of additional assurances we require are slightly different from those that determine which pathway a subset of measures is on.

2.3. One respondent believed aligning the additional assurance requirements with the pathways for score monitoring was not appropriate, on the grounds that there should only be one pathway for score monitoring. Our position on this argument is included in the section above on question 1.2

**Decision**

We will base our requirements for additional assurances directly on the pathway that a subset of measures is on, which will further simplify the pathways process.



## 3. Responses to question 3

Question 3 proposed to make the share of mid-installation inspections a mandatory requirement, instead of the current guideline. This question was split into two parts.

### Question 3.1

Do you agree with the introduction of target ranges for mid-installation inspections for measure types with both mid-installation and post-installation questions? If not, please explain why.

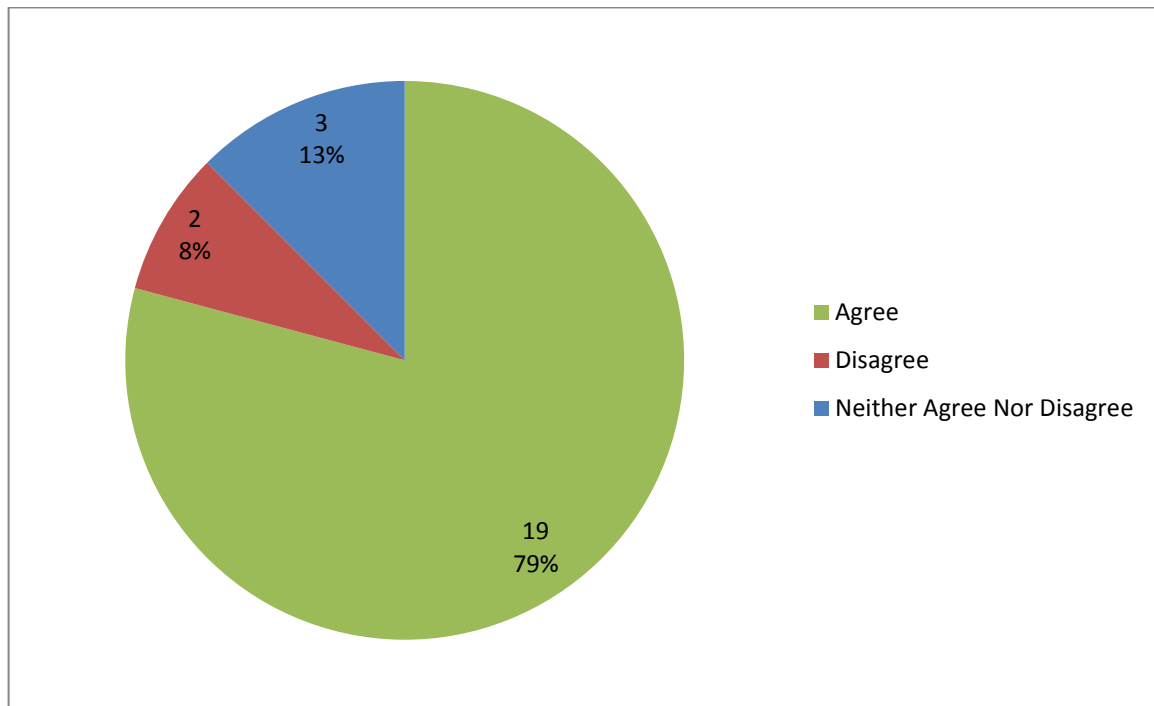


Figure 4: Pie chart of responses to question 3.1.

3.1. Twenty-four stakeholders responded to question 3.1, with 79% agreeing with our proposal to introduce a requirement for mid-installation inspections in principle. The results are displayed in Figure 4.

3.2. A number of respondents, among both those who agreed and those who disagreed, articulated a preference for a slightly different approach that was first suggested at our consultation workshop on 28 September 2016 and reiterated in the consultation responses.

3.3. Several respondents suggested that it would be more practical to set a minimum monitoring requirement for mid-installation monitoring, rather than require that a given share of all monitoring was mid-installation monitoring. The respondents' proposal was to introduce a mid-installation requirement of 2% monitoring for relevant measure types, accompanied by an identical post-installation requirement.

3.4. To understand the difference between our original proposal, and the alternative method suggested, please see the two examples below:

**Example 1 – Supplier monitors 5% of 1000 measures**

Original proposal:

The proposed range for mid-installation inspections is 40% to 60% of all measures monitored. In this case, 5% of 1000 measures were monitored, which is equal to 50 inspections. To meet the requirement 40% to 60% of these 50 measures need to be mid-installation inspections, which equates to 20 to 30 measures.

Alternative proposal:

The supplier needs to conduct mid-installation inspections on at least 2% of the 1000 measures, as well as at least 2% post-installation inspections. In this case, that means at least 20 mid-installation inspections and 20 post-installation inspections. The remaining 10 inspections can be split either way.

**Example 2 – Supplier monitors 10% of 1000 measures**

Original proposal:

The supplier monitors 10% of 1000 measures, which are 100 measures. Of these, between 40% and 60% need to be mid-installation inspections. This means the supplier needs to do at least 40 mid-installation inspections (and at most 60).

Alternative proposal:

The supplier needs to conduct mid-installation inspections on at least 2% of the 1000 measures. This means at least 20 mid-installation inspections. The supplier also needs to do at least 2% post-installation inspections, so another 20 measures. The supplier can then split the remaining 6% of measures inspected how they see fit.

3.5. As is evident from the examples above, the alternative method reduces the administrative complexity for suppliers when they monitor more measures than the minimum 5% requirement, which is not uncommon. This is because the original method scaled with the total number of measures monitored. The alternative method is instead a fixed percentage of the total number of measures installed, as can be seen from the fact that the requirement is exactly the same in both examples regardless of how many measures the supplier decided to monitor.

3.6. We believe that the alternative method proposed by suppliers gives them more flexibility in how to meet the mid-installation monitoring requirements, while at the same time giving us the confidence that sufficient mid-installation inspections will be conducted for the relevant measure types. We will modify this requirement for small installers<sup>1</sup>.

---

<sup>1</sup> Those with fewer than 100 measures installed for one supplier in a quarter.

**Decision**

For measures that require both mid-installation and post-installation inspections, we will introduce a minimum monitoring requirement of 2% for both types of inspections. For any monitoring done above these two minimum requirements, the supplier may choose whether to use mid-installation or post-installation inspections, or a combination of both.

Note that where we introduce a separate monitoring requirement for 2% mid-installation inspections and a requirement for 2% post-installation inspections, the overall monitoring requirement remains 5% of all measures, not 4%.

**Question 3.2**

Do you consider the ranges proposed above to be reasonable? If not, please indicate for each measure type where you disagree what you would consider a reasonable range and why.

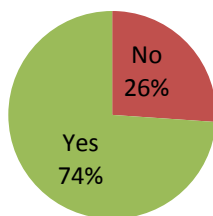
3.7. We proposed ranges for mid-installation inspections for the three measure types listed below:

Measure type	Minimum proportion of mid-installation inspections	Maximum proportion of mid-installation inspections
Solid wall insulation (SWI)	40%	60%
Flat roof insulation (FRI)	40%	60%
Under floor insulation (UFI)	40%	60%

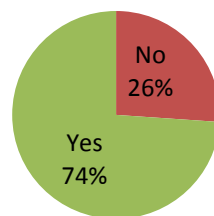
3.8. In addition to the proposals above, some stakeholders also proposed a split between mid-installation and post-installation questions for room-in-roof insulation (RIRI) measures. A more detailed discussion on RIRI can be found in chapter 9 below.

3.9. The results for each of the three measure types was as follows:

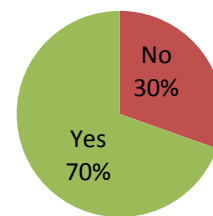
**Solid wall insulation**



**Flat roof insulation**



**Under floor insulation**



3.10. The charts above show there is support for the proposed ranges for all three measures types. Furthermore, some of the stakeholders who disagreed with our proposal indicated that they would accept the proposal if the alternative method set

out in paragraph 3.3 was used instead of our original proposal. As stated in the previous section, we have decided to use that alternative approach.

3.11. Of the remaining stakeholders who disagreed, some thought that the targets for mid-installation inspections were too high, whereas others thought they were too low. In addition, some commented that the administrative burden of meeting the requirements would be high.

3.12. The proposed ranges were based on the current guidelines for mid-installation inspections as stated in our Explanatory Note for Monitoring<sup>2</sup>. These guidelines have been in operation throughout ECO2, and suppliers have so far broadly adhered to them

3.13. In addition, we believe that our decision to adopt the alternative approach to set a 2% mid-installation monitoring requirement, and a 2% post-installation monitoring requirement, as outlined in our decision on question 3.1, will make it easier for suppliers to comply with this requirement.

#### **Decision**

We will introduce a mid-installation monitoring requirement of 2% and a post-installation monitoring requirement of 2% for SWI, FRI, and UFI measures.

---

<sup>2</sup>

[https://www.ofgem.gov.uk/system/files/docs/2016/02/m\\_explanatory\\_notes\\_for\\_monitoring\\_v1.1.pdf](https://www.ofgem.gov.uk/system/files/docs/2016/02/m_explanatory_notes_for_monitoring_v1.1.pdf)

## 4. Responses to question 4

### Question 4.1

Do you agree that we should remove the best practice monitoring questions? If not, please explain why.

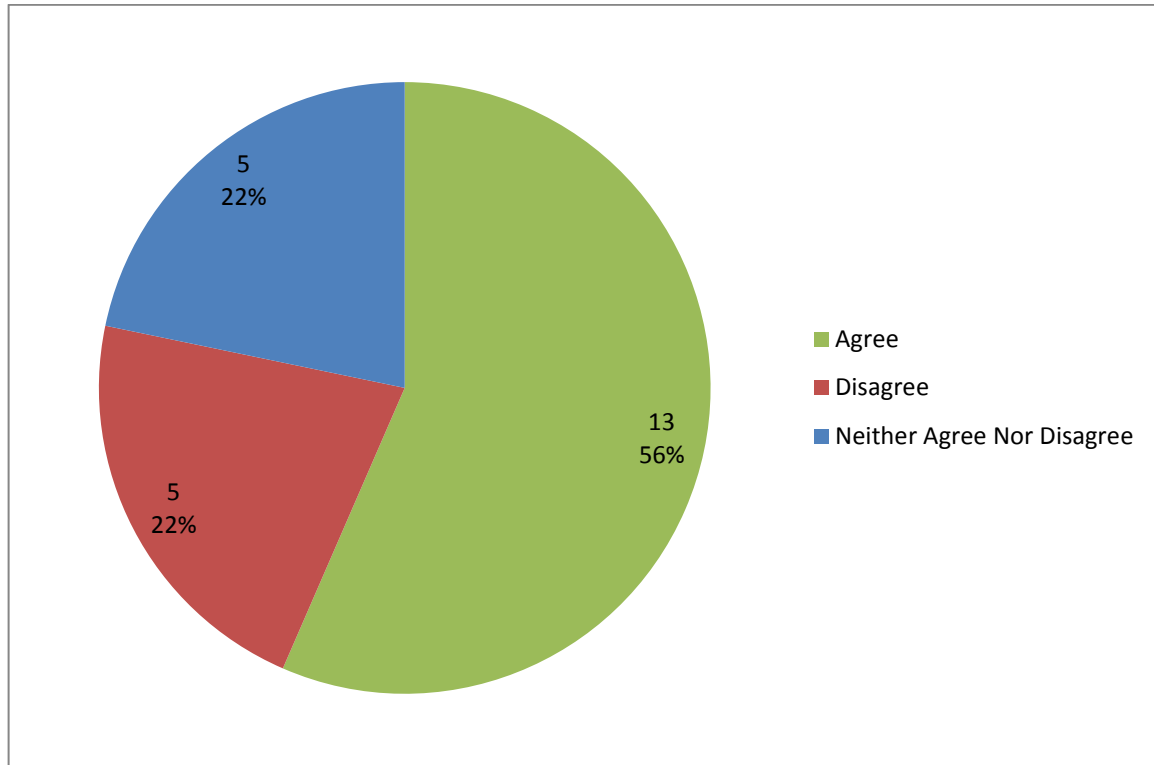


Figure 5: Pie chart of responses to question 4.1.

4.1. Twenty-three stakeholders responded to our question on best practice monitoring, with slightly over half supporting our proposal to remove it.

4.2. Of the five respondents who disagreed, three argued that instead of removing best practice monitoring, the best practice questions should be made compulsory and be merged into the standard technical monitoring questions.

4.3. The two other stakeholders argued that because best practice monitoring is voluntary, there is no need to remove it as suppliers can decide for themselves whether to conduct best practice monitoring or not.

4.4. Our experience in ECO2 is that most suppliers do not report best practice monitoring. This means that any results of best practice monitoring that we do receive are of limited value, because they usually only cover small numbers of measures and are not consistent across ECO. The added value of best practice monitoring is therefore marginal. For this reason, we propose to remove it even as a voluntary requirement.

4.5. The current set of best practice monitoring questions is mainly derived from ECO1 technical monitoring questions that verified elements of an installation that had a less direct impact on the ability of a measure to deliver savings, were concerned with the customer journey, or were difficult to verify. We decided to remove these questions from the technical monitoring set of questions to make technical monitoring more focused and to more strictly enforce the requirement that failed measures are remediated. However, we retained these questions as best practice monitoring questions to enable suppliers to continue to report on these aspects of the installation in order to encourage best practice in the supply chain. Best practice monitoring fails did however not require any form of remedial action from the supplier, nor did they trigger the pathways to compliance.

4.6. However, we are aware that suppliers use their own sets of additional questions to target monitoring inspections to aspects of the installation suppliers deem important. We do not have sight of these questions.

4.7. Based on the above, we have come to the conclusion that suppliers prefer to use their own sets of additional questions instead of the best practice monitoring questions provided by Ofgem.

4.8. We have, however, reviewed the existing best practice monitoring questions to see if any these could be included in technical monitoring as mandatory questions. We have decided to include the following questions in technical monitoring when we publish the new technical monitoring question set that takes effect 1 April 2017:

Question number	Question
NBBP.4	If original heating controls remain, do they function correctly with the boiler?
EWIBP.1	Is there evidence of damage to the EWI fabric as a result of water ingress?
EWI.17	Have all exterior facing wall areas (above DPC) been insulated to reduce the effects of thermal bridging?
LITUBP.2 / LIVBP.2	Have any and all working pipes and tanks been properly insulated?

**Decision**

We will remove best practice monitoring, but will also engage with suppliers on the additional questions they currently append to our monitoring question set, with the aim to harmonize these additional questions across suppliers.

We will include a number of questions that are currently best practice questions as technical monitoring questions.

## 5. Responses to question 5

5.1. In its [Help to Heat consultation](#), the Department for Business, Energy and Industrial Strategy (BEIS) proposed to introduce deemed scores for the extension to ECO2 from 1 April 2017 to 1 April 2018.

5.2. In response to this, we proposed the introduction of six common score monitoring questions, to replace the existing score monitoring questions. We also proposed the introduction of a number of measure-specific questions:

- 1) Does the measure installed match the notified measure type?
- 2) Does the primary fuel type match the notified primary fuel type?
- 3) Does the property type match the notified property type?
- 4) Does the number of bedrooms match the notified number of bedrooms?
- 5) Is the claimed percentage of measure installed a reasonable reflection of the actual percentage of measure installed?
- 6) Is the claimed percentage of property treated a reasonable reflection of the actual percentage of property treated?

### Question 5.1

Do you agree with the proposed list of common score monitoring questions? If not, please indicate which questions you do not agree with and why.

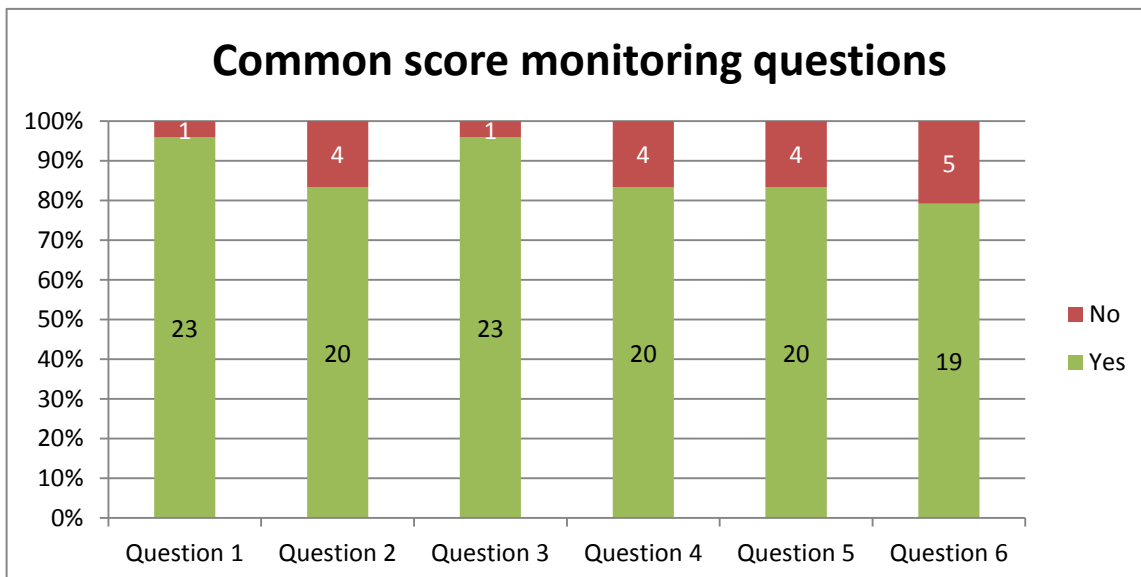


Figure 6: Column chart of responses to question 5.1.

5.3. Figure 6 shows the responses for each of the common monitoring questions we proposed. Overall, twenty-four stakeholders gave feedback on all six questions.

5.4. The paragraphs below outline the feedback and our response on each of the proposed questions.

**Question 1 (“Does the measure installed match the notified measure type?”)**

5.5. The stakeholder who disagreed with this proposed question did not set out the reason for their disagreement.

**Question 2 (“Does the primary fuel type match the notified primary fuel type?”)**

5.6. All respondents who disagreed pointed out that deemed scores refer to ‘heating type’, rather than ‘primary fuel type’.

5.7. We will update this question to ensure that it matches the deemed scores terminology.

**Question 3 (“Does the property type match the notified property type?”)**

5.8. The one respondent who did not agree with this question stated that they would agree if the proposed question matched the wording used for deemed scores.

5.9. As for question 2, we will update the final version to match the wording used for deemed scores.

**Question 4 (“Does the number of bedrooms match the notified number of bedrooms?”)**

5.10. Eight respondents asked that E-Serve clearly define a ‘bedroom’ in the context of deemed scores. This included some respondents who agreed with the proposed question.

5.11. We refer to the guidelines provided in our deemed scores consultation response. We will include these guidelines in the guidance and explanatory notes for monitoring, to ensure that this definition is used consistently.

**Question 5 (“Is the claimed percentage of measure installed a reasonable reflection of the actual percentage of measure installed?”)**

5.12. Although there was support for this question, we have come to the conclusion that as the ‘percentage of measure installed’ is not a factor used in the determination of the deemed score of a measure, it is not appropriate to include this as part of score monitoring.



**Question 6 (“Is the claimed percentage of property treated a reasonable reflection of the actual percentage of property treated?”)**

5.13. Four of the five stakeholders who disagreed with this question commented that they were unsure how to interpret ‘a reasonable reflection’. The other stakeholder who disagreed did not see the difference between this question and question 5.

5.14. We refer to our response to the ECO2: Deemed Scores consultation for a detailed description of the difference between percentage of property treated and percentage of measure installed. The score monitoring questions will follow this difference.

5.15. In our response to the ECO2: Deemed Scores consultation, we set out our decision to apply the ‘percentage of property treated’ in 10% intervals. In other words, when calculating a deemed score the percentage of property treated will always be a multiple of 10%.

5.16. We believe that using 10% intervals for the percentage of measure installed when calculating a deemed score greatly reduces the chance of disagreement between the person selecting the deemed score and a monitoring agent.

5.17. We have therefore decided to rephrase the question to: *“Is the notified percentage of property treated a reasonable reflection of the actual percentage of property treated when rounded to the nearest multiple of 10%?”*.

5.18. We have decided not to introduce an additional tolerance of 10%. Introducing such a tolerance on top of the use of 10% intervals means that a measure which treated 56% of a property could be claimed as treating 70% of the property without failing score monitoring. We believe that the risk of scores being manipulated into a higher 10% bracket is higher than the risk of measures being incorrectly failed by a score monitoring agent.

5.19. We believe that the addition of ‘reasonable reflection’ to the question ensures that in cases where the percentage of measure installed is roughly halfway between two multiples of 10% (e.g. 85%), the monitoring agent will take a pragmatic view and accept that both rounding up and rounding down are acceptable.

**Decision**

We will introduce five of the six proposed questions as the common score monitoring questions that will apply to all measure types, provided BEIS decides to introduce deemed scores. These five new questions, and any other measure type specific questions, will completely replace the existing score monitoring questions.

Where necessary, we will rephrase the proposed questions to ensure that they match the wording used in the deemed scores documents. Similarly, we will provide

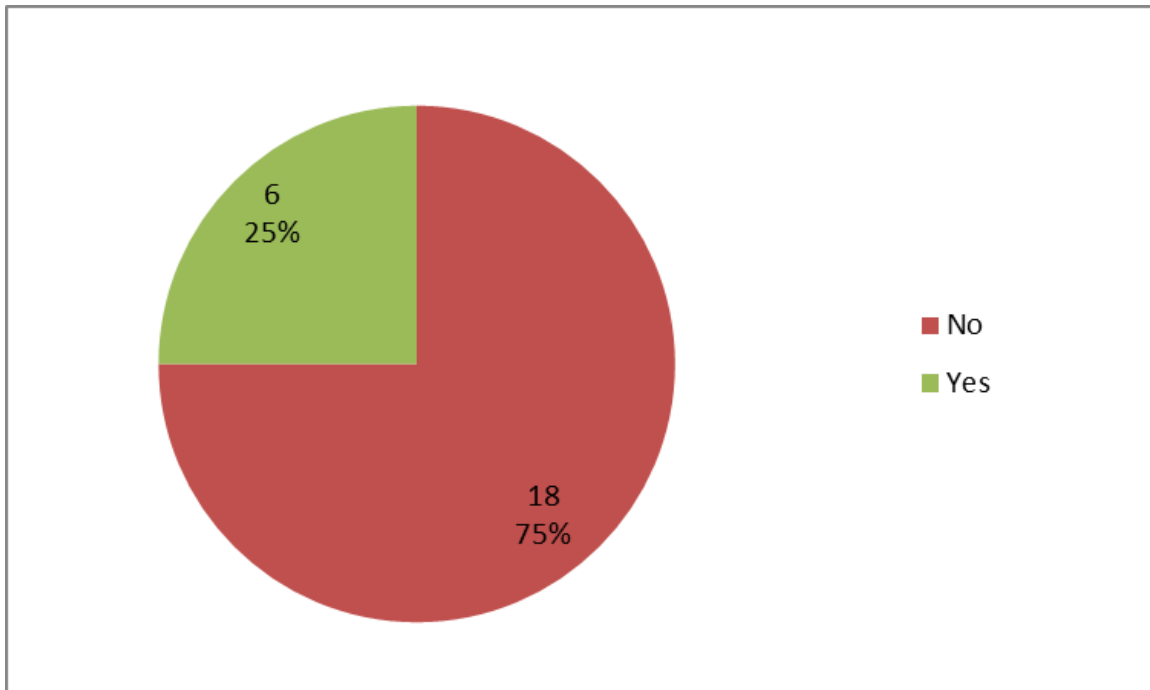
explanatory notes on the definition of a 'bedroom' that will match the guidance we will provide for deemed scores.

Questions 6 will be changed to the following:

*"Is the notified percentage of property treated a reasonable reflection of the actual percentage of property treated when rounded to the nearest multiple of 10%?"*.

### Question 5.2

Do you think any further common questions should be added? If yes, please indicate what further questions you want to see included.



**Figure 7: Pie chart of responses to question 5.2.**

5.20. Twenty-four stakeholders responded to our question on adding further common score monitoring questions, with 75% stating they thought there would be no value in adding any further questions.

5.21. Of the six respondents who thought there should be further common score monitoring questions, two listed specific questions they believed should be added:

- *Is there evidence that each individual property has been assessed as being suitable in its current state for the measure installed?*
- *Is there evidence that the property has been assessed as suitable to receive the measure?*

5.22. These questions both relate to a suitability assessment being carried out for the measure in line with the requirements in PAS.

5.23. We believe a score monitoring agent will not be able to ascertain this after the installation has taken place without introducing a secondary requirement for the suitability assessment to be either left on-site or being made available to the score monitoring agent via a different route. We do not think it is reasonable to introduce such a requirement and have decided not to include it as an additional question.

5.24. Although the question could instead be asked at the mid-installation stage, we note that all other score monitoring questions are asked at the post-installation stage. We do not think it is reasonable to introduce the need for mid-installation score monitoring inspections with the sole purpose of asking a single question.

5.25. Three responses remarked upon the need to assess RIRI measures as each of the separate constituent measures. This is not feasible as the score monitoring questions are defined with reference to the measure types defined under ECO. As this section of the consultation deals with questions that are common to all measure types, we did not think it was appropriate to consider this suggestion here.

5.26. The final comment related to whether the previous score monitoring question relating to new builds and extensions would be retained. This question verifies the requirement that measures installed to new builds or extensions only claim the savings achieved above the level already mandated by Building Regulations. As SAP/RdSAP calculations will no longer apply with the anticipated introduction of deemed scores, this difference is no longer relevant and therefore requires no verification. We have therefore decided not to retain this question.

### **Decision**

We will not introduce any further common score monitoring questions.

## 6. Responses to question 6

6.1. In addition to score monitoring questions for all measures listed above, we propose to introduce the following measure-specific score monitoring questions:

Measure Type	Questions
Cavity Wall Insulation	1) Does the product installed at the premises match the product used to determine the notified score?
Loft Insulation	2) Is there a pre-existing insulation level declaration present? 3) Has the loft hatch been insulated to the appropriate standards?
High performing external doors	4) Has the correct measure type been selected for the part of the door that is glazed?
Park homes	5) Does the park home size match the notified park home size?
Solar PV	6) Does the number of panels installed match the number of panels claimed for?
Electric storage heater	7) Does the type of electric storage heater installed match the type of electric storage heater notified?
Boiler	8) Does the type of boiler installed match the type of boiler notified? 9) Do the heating controls installed encompass a programmer, thermostat and TRVs to at least 50% of all radiators?
Heating controls	10) Do the heating controls installed encompass a programmer, thermostat and TRVs to at least 50% of all radiators?
Room-in-Roof measure	11) If the Room-in-Roof measure has been notified as having insulated the residual loft space, has the residual loft space been insulated?
All heating measures	12) Does the wall construction type notified match at least 50% of the total external wall area of the property?

6.2. All of the above questions would be asked as part of post-installation inspections.

### Question 6.1

Do you agree that the proposed measure specific score monitoring questions will allow us to verify the deemed scores as currently laid out in BEIS's and our consultations? If not, please propose alternatives and indicate with which questions you disagree, and why.

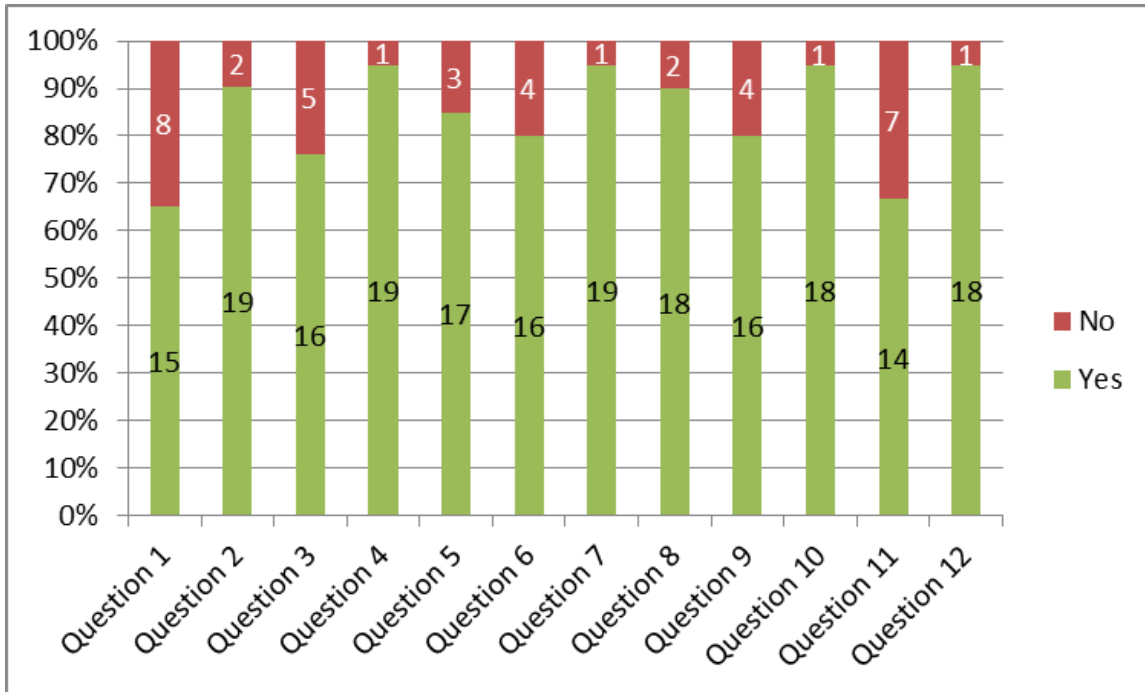


Figure 8: Column chart of responses to question 6.1.

6.3. Figure 8 shows the responses for each of the measure specific score monitoring questions we proposed. Overall, twenty-three stakeholders gave feedback on all twelve questions.

6.4. The paragraphs below outline the feedback and our response on each of the proposed questions.

**Question 1 (“Cavity Wall Insulation - Does the product installed at the premises match the product used to determine the notified score?”)**

6.5. Twenty-three stakeholders responded to this question. Eight stakeholders disagreed with the introduction of this question.

6.6. The stakeholders who disagreed believed that it would not be possible for the monitoring agent to verify the product used without an invasive survey. In particular, the Association of Technical Monitoring Agents noted that they did not believe this question was feasible.

6.7. Although a majority of respondents supported the introduction of this question, we believe that the concerns about its feasibility are warranted. We have therefore decided not to introduce this question.

6.8. We recognise that verifying the type of product used is particularly relevant for CWI to ensure that the correct score has been assigned. While we believe that score monitoring is not the appropriate method to verify the use of a particular product, we will consider separately, what other methods may be appropriate.

**Question 2 (“Loft Insulation - Is there a pre-existing insulation level declaration present?”)**

6.9. Twenty-one stakeholders responded to this question, with two stakeholders disagreeing with the introduction of the proposed monitoring question.

6.10. Both of the respondents who disagreed pointed out the risk that the occupant removes the declaration before the monitoring inspection takes place. One stakeholder asked whether the proposed declaration will be introduced in addition to, or as a replacement of, the existing virgin loft insulation declaration.

6.11. Although we acknowledge that there is a chance that the occupant may remove the declaration before the inspection takes place, we believe that this chance is small now that monitoring inspections take place relatively quickly after the completion of the installation of a measure. In addition, given the large difference in the proposed deemed scores for a loft insulation measure with little pre-existing insulation and a measure with a lot of pre-existing insulation, we consider it vital to the integrity of the scheme to verify whether the correct deemed score has been selected.

6.12. We have therefore decided to introduce this question. Note that the final decision on this depends on the outcome of our currently ongoing consultation on the ECO2 transition<sup>3</sup>, in which we are currently consulting on the best method to verify the level of pre-existing loft insulation. We can confirm that if we were to introduce a declaration for this purpose, it would replace the existing virgin loft insulation declaration.

**Question 3 (“Loft Insulation - Has the loft hatch been insulated to the appropriate standards?”)**

6.13. Twenty-one stakeholders responded to this question, with five respondents disagreeing with our proposed introduction of it.

6.14. All stakeholders who disagreed with our proposed monitoring question argued that this question relates to a technical aspect of the installation rather than a scoring aspect.

6.15. Whether or not the loft hatch is insulated can be represented in the savings score claimed for the measure by adjusting the notified percentage to which the property was treated. We are also aware that in some cases, installers may not have insulated the loft hatch on the request of the occupant. However, we agree with the point that if the loft hatch is not insulated, this can also be remediated via the technical route of applying insulation to the loft hatch. We also acknowledge that the loft hatch is not a direct parameter in the selection of a deemed score.

---

<sup>3</sup> <https://www.ofgem.gov.uk/publications-and-updates/eco2-transition-consultation-part-one>

6.16. We have therefore decided not to introduce this score monitoring question, but to retain the existing technical monitoring question on insulation of the loft hatch.

**Question 4 ("High performing external doors - Has the correct measure type been selected for the part of the door that is glazed?")**

6.17. Twenty stakeholders responded to this question, of which one disagreed with the proposed introduction. This stakeholder argued that there is no differentiation between different types of high performing external doors (HPEDs).

6.18. We refer to the Deemed Scores Matrix v1.1<sup>4</sup>, which lists the different parameters used to select the correct deemed scores. This matrix differentiates between high performing external doors on the basis of the relative size of the glazed area of the door. The glazed area is therefore a relevant parameter that can be verified through score monitoring.

6.19. We have decided to introduce this question as the only disagreeing response appears to be based on a misunderstanding of the deemed scores methodology for HPEDs.

**Question 5 ("Park homes - Does the park home size match the notified park home size?")**

6.20. Twenty stakeholders responded to this question, of which three disagreed.

6.21. All three respondents who disagreed with the proposed question argued that park home measures should instead be covered through existing questions on solid wall insulation and loft insulation. However, these responses seemed to refer to the technical aspects of park home insulation instead of the parameters used to select the correct deemed score. Whether or not the correct size of the park home has been selected is not related to whether or not the technical aspects of the installation are assessed as one measure or as a combination of solid wall and loft insulation measures.

6.22. We have therefore decided to introduce this question.

**Question 6 ("Solar PV - Does the number of panels installed match the number of panels claimed for?")**

---

4

[https://www.ofgem.gov.uk/system/files/docs/2016/11/the\\_deemed\\_scores\\_matrix\\_v1.1\\_1.xls](https://www.ofgem.gov.uk/system/files/docs/2016/11/the_deemed_scores_matrix_v1.1_1.xls)  
x

6.23. Twenty stakeholders responded to this question, four of which disagreed with our proposed introduction of this score monitoring question.

6.24. All respondents who disagree pointed out that the number of panels is not a relevant parameter for determining the correct deemed score for a solar PV measure.

6.25. In our Deemed Scores Consultation Response, we decided not to introduce differentiation for Solar PV measures based on either the number of panels or the size of the system. This means there is no longer a parameter to verify using score monitoring.

6.26. We have therefore decided not to introduce this question.

**Question 7 ("Electric Storage Heater - Does the type of electric storage heater installed match the type of electric storage heater notified?")**

6.27. Twenty stakeholders responded to this question of which one disagreed. The comment provided referenced 'normal percentage reduction' which does not relate to this question.

6.28. We have therefore decided to introduce this question.

**Question 8 ("Boiler - Does the type of boiler installed match the type of boiler notified?")**

6.29. Twenty stakeholders responded to this question of which two disagreed. Both comments provided requested clarification on what 'type of boiler' means.

6.30. As with the common score monitoring questions, we will ensure that wording such as 'type of boiler' will match the wording used in our deemed scores guidance. This should ensure that the score monitoring agent is able to appropriately interpret the questions.

6.31. We have therefore decided to introduce this question.

**Question 9 ("Boiler - Do the heating controls installed encompass a programmer, thermostat and TRVs to at least 50% of all radiators?")**

6.32. Since we published this consultation, we have published our response to the ECO2 Deemed Scores consultation. In our response to that consultation we set out our decision to require that where a boiler is installed or repaired, heating controls must be present and functioning. To recognise the impact on savings of existing controls we have introduced different deemed scores depending on whether a supplier needs to upgrade or install heating controls or whether heating controls already existed. This change impacts on this question as proposed in our consultation.



6.33. If the supplier has upgraded or installed the heating controls, they will notify the boiler and heating controls as separate measures. Verification of whether the heating controls encompass all the required elements is therefore achieved through Question 10, listed below. However, where the supplier does not need to upgrade or install the heating controls, we will need to verify whether or not the pre-existing heating controls meet our requirements.

6.34. To this end, we will introduce the following question for *boilers notified with pre-existing heating controls* : "Do the pre-existing heating controls encompass a programmer, thermostat and TRVs to at least 50% of all radiators?".

6.35. We will introduce this question as a technical monitoring question rather than score monitoring. This is because if a measure were to fail this question, the appropriate method of remediation is to install suitable heating controls, rather than rescore the measure. Rescoring the associated boiler measure will remain an option for suppliers, but only in cases where providing suitable heating controls is not feasible.

**Question 10 ("Heating Controls - Do the heating controls installed encompass a programmer, thermostat and TRVs to at least 50% of all radiators?")**

6.36. Nineteen stakeholders responded to this question of which one disagreed. This stakeholder did not provide any comment. We have decided to introduce this question. However, where the heating controls do not encompass all the elements listed in the question, we believe that the appropriate course of action is for the supplier to ensure that suitable heating controls are installed. As this is a technical solution, we have therefore decided to introduce this question as a technical monitoring question, rather than score monitoring.

**Question 11 ("Room-In-Roof - If the Room-in-Roof measure has been notified as having insulated the residual loft space, has the residual loft space been insulated?")**

6.37. Twenty-one stakeholders responded to this question, of which seven disagreed with our proposed score monitoring question.

6.38. Some respondents argued that a room in roof insulation measure is not a single measure type, but an aggregate of various different types of insulation, e.g. solid wall and loft insulation. They argued that room in roof should therefore be assessed using the questions for those different measure types. Two other stakeholders also argued that as it is possible to remediate the lack of insulation of the residual loft space, this question should be introduced as a technical monitoring rather than a score monitoring question.

6.39. The score monitoring questions are based on the measure types defined in the Deemed Scores Matrix, and are meant to verify that an installer has selected the correct deemed score. Room in roof insulation measures are treated as a specific

measure type in our Deemed Scores Matrix and as such we believe they need to be covered by specific score monitoring questions.

6.40. Similarly, although it is possible to treat the lack of residual loft insulation after a measure is inspected, the presence of residual loft insulation is in the first instance one of the parameters used to determine the appropriate deemed score. In addition, we believe that in most cases where the residual space is not insulated, this will be because insulation is for some reason not possible. In those cases, technical remediation may not be possible and it is instead important that the correct score is selected.

6.41. We will therefore introduce this question, but where a measure fails on this question we will allow suppliers to also pursue technical remediation instead of rescoring the measure. We will also ensure that this question comes with an 'Unable to validate' option for cases where the residual loft spaces cannot be accessed.

**Question 12 ("All heating measures - Does the wall construction type notified match at least 50% of the total external wall area of the property?")**

6.42. Nineteen stakeholders responded to this question of which one disagreed. This stakeholder did not provide any comment and we have therefore decided to introduce this question.

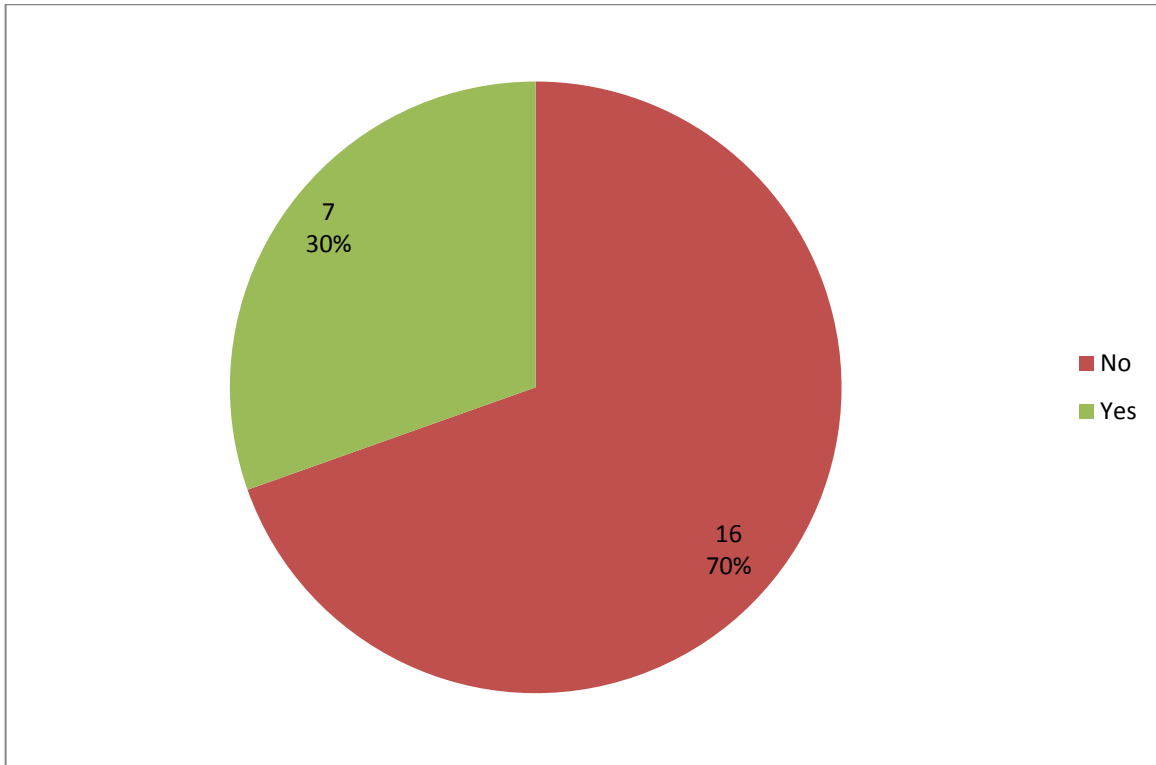
**Decision**

We have decided to introduce suggested questions 2, 4, 5, 7, 8, 9, 10, 11 and 12. In addition, we will retain a question equivalent to suggested question 3 as a technical monitoring question.

We will not introduce questions 1 and 6.

**Question 6.2**

Do you believe any further score monitoring questions are needed for specific measure types? If yes, please indicate what questions you would like to be added and why.



**Figure 9: Pie chart of responses to question 6.2.**

6.43. Twenty-three stakeholders responded to this question, and seven of them believed that additional score monitoring questions may be needed.

6.44. There were two themes to the suggestions made by the seven stakeholders who believed more questions were necessary. Some stakeholders argued that more questions should be introduced for RIRI measures that checked the constituent elements of a RIRI installation (e.g. solid wall and loft insulation). Other stakeholders argued that more specific questions for solid wall insulation measures should be introduced.

### **Suggestions for RIRI measures**

6.45. The stakeholders who proposed further questions for RIRI measures presented the same argument as was given in response to the proposed question on RIRI in the previous section. We refer to our arguments in paragraphs 6.38 and 6.39 for the reasons why we believe disaggregating the RIRI measure into separate measures for its constituent elements is not appropriate.

### **Suggestions for SWI measures**

6.46. Across all stakeholders who suggested further questions for SWI measures were necessary, four different additional questions emerged:

- A check of the wall type of the property;
- A check of the age of the property;
- A check of the U-value difference; and,
- A check of the thickness of the insulation applied.

6.47. We will treat each of these suggestions in turn.

### **Wall type**

6.48. Some stakeholders pointed out that the wall type of the property has a bearing on the determination of a deemed score for the property, and that there should therefore be a question that verifies the correct wall type was selected.

6.49. We acknowledge that our Deemed Scores Matrix v1.1. differentiates between SWI installed to a solid brick wall, a solid non-brick wall, or a cavity wall. We expect that it will be possible for a monitoring agent to determine the type of wall even after the insulation has been applied in most cases. We therefore believe this suggestion has merit.

6.50. We will include a score monitoring question for SWI measures on the wall type to which the SWI was installed. We will ensure that this question has an 'Unable to validate' option for cases where the monitoring agent is not able to determine the wall type.

### **Property age**

6.51. Some stakeholders pointed out that the age of the property is a factor in determining the correct deemed score, and that there should therefore be a question that verifies if the correct age range has been selected.

6.52. We acknowledge that our Deemed Scores Matrix v1.1. provides different deemed scores for SWI measures based on different age bands. While we understand that it may be difficult for the monitoring agent to establish the exact age band of the property, we expect that a monitoring agent will be able to determine whether the age range selected for the deemed score is reasonable.

6.53. We will therefore include a score monitoring question for SWI measures to check if the selected age range for the property is a reasonably accurate reflection of the age of the property.

### **U-value difference**

6.54. One stakeholder suggested that the monitoring agent should verify that both the pre-installation and post-installation U-values for the property were correct.

6.55. Our deemed scores methodology does not rely directly on a U-value calculation to determine the correct score for a measure. Instead, the score is

inferred using a number of other parameters, such as the age of the property and the wall type. We therefore do not believe it is necessary to include a question that seeks to verify the U-value difference for an SWI measure.

6.56. In addition, calculating the U-value for a wall may require invasive methods, e.g. to establish a cavity width or material type. One of the principles of score monitoring is that it relies on non-invasive methods only. This means that verification of U-value calculation inputs is not suitable for score monitoring.

6.57. We have therefore decided not to introduce a question to verify the U-value difference for SWI measures.

### **Insulation thickness**

6.58. Some stakeholders pointed out that the thickness of the insulation applied is a factor in determining the deemed score, and that there should therefore be a question that verifies the thickness applied.

6.59. We acknowledge that our Deemed Scores Matrix v1.1. differentiates between SWI installations based on the thickness of the insulation that was applied. Although we expect that monitoring agents will in some cases not be able to determine the insulation depth after the installation, we believe that this will be possible in sufficient cases to warrant introducing this question.

6.60. We will therefore introduce a question to verify the thickness of the applied wall insulation for SWI measures. We will ensure that this question has an 'Unable to validate' option for cases where the monitoring agent is not able to verify the thickness using non-invasive methods.

### **Decision**

Based on the suggestions provided by stakeholders, we have decided to include three further score monitoring questions that are specific to SWI measures. These questions will verify the property age, the thickness of the applied insulation and the wall type of the property.

## 7. Response to question 7

### Question 7.1

Do you agree it is no longer necessary for a score monitoring agent to have DEA accreditation or similar qualifications? If not, please explain why you believe DEA accreditation or similar qualifications should be necessary.

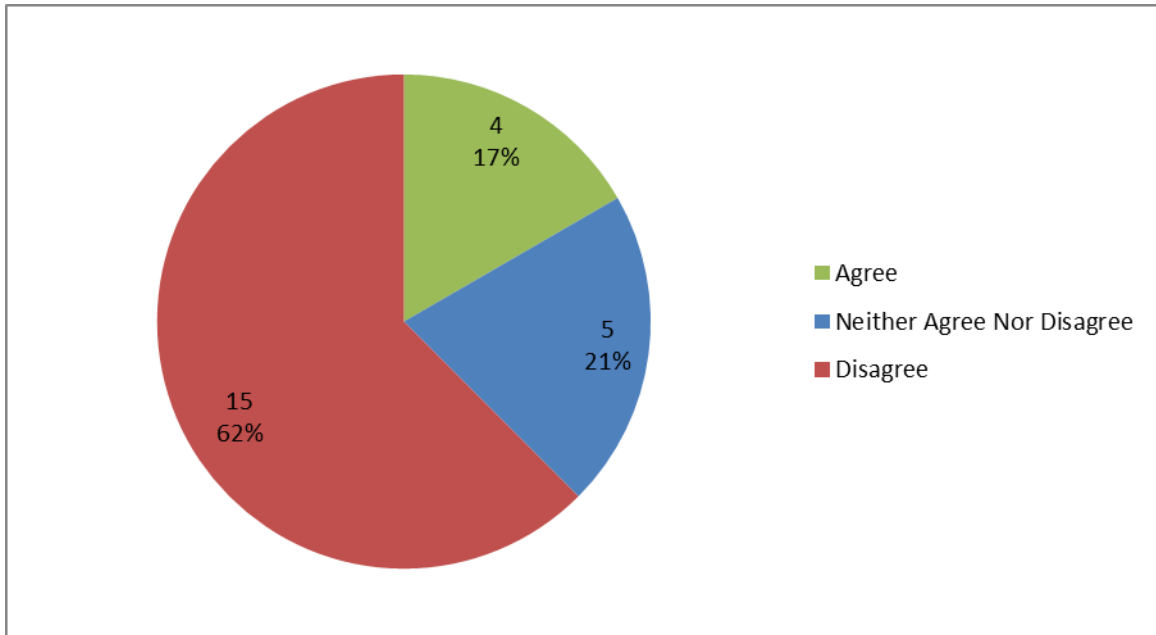


Figure 10: Pie chart of responses to question 7.1.

7.1. Twenty-four stakeholders responded to our question on suitable qualifications for score monitoring agents, with 62% stating they disagreed that it is no longer necessary for a score monitoring agent to have DEA accreditation or similar qualifications.

7.2. The general feedback from the respondents that disagreed was that some form of qualification remains necessary to ensure that monitoring agents have sufficient skills and experience to carry out inspections.

7.3. In the absence of alternatives, DEA accreditation was considered the most suitable type of qualification for monitoring agents.

### Decision

We will retain the requirement for score monitoring agents to have DEA accreditation until an alternative is available.

## 8. Response to question 8

8.1. To improve technical monitoring of DHS measures, we proposed to remove the existing set of questions and replace it with a new set. These new DHS technical monitoring questions would apply to all DHS measures<sup>5</sup> and follow the same logic as technical monitoring questions for other measure types.

8.2. The proposed new questions that we consulted on are listed below:

DHS measure type	Question Number	Question
Precondition 1: for all non multi storey properties and all top floor premises in multi-storey buildings	DHS.1	Is 50% or more of all roof areas or exterior facing walls insulated?
Precondition 2: All premises in multi-storey properties excluding premises on the top floor	DHS. 2	Are any of the following true: <ul style="list-style-type: none"> <li>- One or more parts of the exterior facing walls of the multi-storey building in which the premises is located are of solid wall construction;</li> <li>- All cavity walls have been insulated with cavity wall insulation; or</li> <li>- Any cavity walls which have not been insulated have visible signs to indicate they cannot be insulated with cavity wall insulation.</li> </ul>
All DHS measures	DHS.3	Does the DHS measure provide working space heating in the domestic premises?
All DHS measures	DHS.4	Does the DHS measure provide working hot water in the domestic premises?

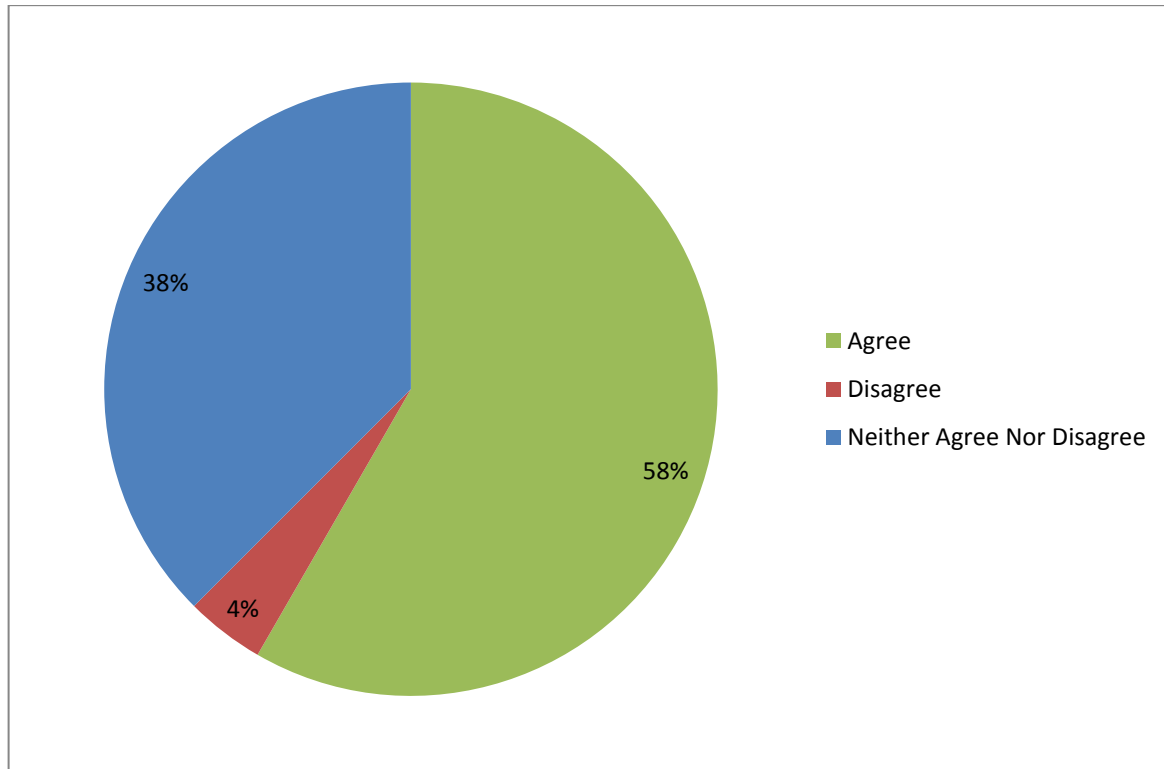
8.3. All questions would be asked post-installation.

---

<sup>5</sup> Although not every question would apply in every circumstance. A 'N/A' option will be provided where relevant.

**Question 8.1**

Do you think questions DHS.1 and DHS.2 are sufficient to check if the pre-conditions have been met for a DHS measure, where applicable? If not, please indicate if you believe questions should be added, removed, or changed.



**Figure 11: Pie chart of responses to question 8.1.**

8.4. Twenty-four stakeholders responded to our question on whether questions DHS.1 and DHS.2 are sufficient to check if pre-conditions have, where applicable, been met for a DHS measure.

8.5. Of the twenty-four respondents 58% agreed DHS.1 and DHS.2 were sufficient.

8.6. The one respondent that disagreed proposed that DHS.1 should also check the minimum insulation thickness had been met.

8.7. The pre-conditions as set out in our guidance specify a minimum thickness for loft insulation, but not for other insulation types. Nonetheless, we see merit in ensuring that where loft insulation has been counted towards the DHS pre-conditions, this has been installed to the correct thickness. We will therefore modify the proposed question to read: *“Is 50% or more of all roof areas or exterior facing walls insulated, with any loft insulation being at least 100mm thick?”*.



8.8. A number of respondents who did agree also asked us to clarify whether every single property connected to a district heating system would need to be monitored.

8.9. As with all other monitoring questions, the monitoring requirement for DHS measures is that a supplier monitor 5% of all measures notified in a particular quarter. As DHS connection into a property is notified as an individual measure, this means there is no requirement to monitor every single property connected to a DHS project. Note that the 5% requirement is based on all measures notified by a supplier in a given quarter, which means that the total number of measures monitored for a particular DHS project may be more or less than 5%.

8.10. Finally, some respondents suggested that in addition to DHS.3 and DHS.4, more questions should be introduced to test of the heating system itself is functioning properly.

8.11. We are of the view that, given the wide range of possible district heating systems, as well as their technical complexity, it is not reasonable to expect monitoring agents to be able to properly assess every DHS measure. Instead, we expect that where the DHS is not functioning properly, this will become evident through questions DHS.3 and DHS.4. We have therefore decided not to introduce any further questions that monitor the district heating system directly.

**Decision**

We will introduce proposed DHS questions 2, 3 and 4 to the technical monitoring question set, as well as a modified version of DHS question 1.

## 9. Response to question 9

---

9.1. Over the course of ECO2, we became aware that the supply chain was not clear about which elements of a room-in-roof needed to be insulated to meet the requirement that 100% of a measure is installed. We clarified our expectations during ECO2. We propose to add the following questions for RIRI measures to bring technical monitoring in line with the guidance we issued in ECO2:

- Has insulation been installed to all dormer windows cheek walls and ceilings within the room-in-roof?
- Has insulation been installed to all gable walls within the room-in-roof?
- Has insulation been installed to all party walls within the room-in-roof that are either cavity walls or solid walls bordering an unheated space?
- Have all hatches installed as part of the room-in-roof insulation been insulated as specified in PAS 2030:2014?
- Have any tanks or pipework present in the residual area been insulated?

9.2. All questions would be asked post-installation.

9.3. We also propose to change the existing RIRI technical monitoring questions from mid-installation questions to post-installation questions. This is to ensure that the installation has been completed by the time the technical monitoring inspection takes place, and avoid a situation where the technical monitoring agent cannot properly inspect a measure because the installation is still in progress.

9.4. The existing RIRI technical monitoring questions are listed below<sup>6</sup>:

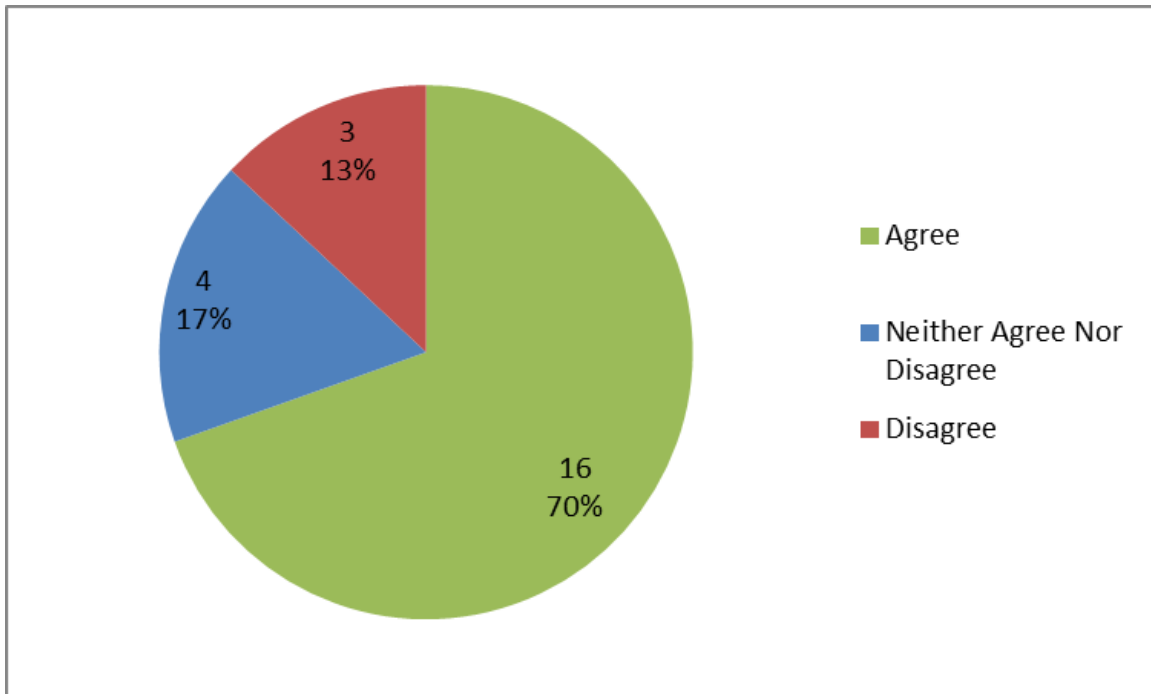
Question Number	Question
RIRI.1	Has insulation been installed to all stud walls within the room in the roof?
RIRI.2	Has insulation been installed to all sloping ceilings within the room in the roof?
RIRI.3	Has insulation been installed to the ceiling within the room in the roof?
RIRI.5	Where down lighters or services have been fitted through the existing ceiling, have any measures been taken to prevent air leakage around down lights into the roof void?

---

<sup>6</sup> Question RIRI.4 was removed in the course of ECO2.

**Question 9.1**

Do you agree that the proposed questions will improve standards of installation for RIRI measures? If not, please indicate with which questions you disagree and why.



**Figure 12: Pie chart of responses to question 9.1.**

9.5. Twenty-three stakeholders responded to our question on whether the proposed questions would improve standards of installation for RIRI measures, with 70% agreeing.

9.6. Of the three that disagreed with the proposed questions, all argued that more RIRI questions should be introduced that reference each of the separate constituent measures.

9.7. We do not consider it feasible to monitor RIRI measures by applying the monitoring questions for the different measure types of which a RIRI may be composed. The monitoring questions are designed with reference to the measure types defined under ECO, including RIRI. We believe that disaggregating the monitoring questions for RIRI will introduce unnecessary confusion and further administrative burden, while not providing clear extra benefits compared to the use of RIRI specific questions.

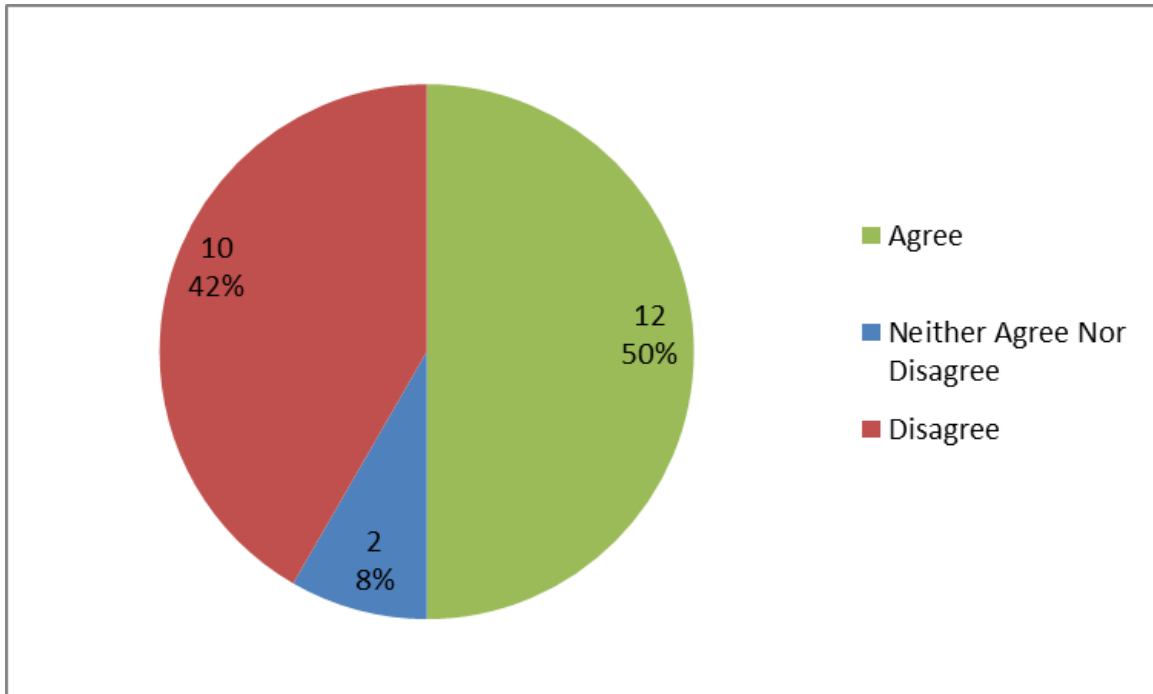
9.8. As most respondents support the introduction of the RIRI questions we proposed, we have decided not to disaggregate the RIRI questions and introduce the proposed questions.

**Decision**

We will introduce the proposed questions for RIRI measures.

**Question 9.2**

Do you believe that changing the existing RIRI questions from mid-installation to post-installation stage will enable the monitoring agent to better verify whether the RIRI has been correctly insulated? If not, please indicate why not.



**Figure 13: Pie chart of responses to question 9.2.**

9.9. Twenty-four stakeholders responded to our question on whether changing the existing RIRI questions from mid-installation to post-installation stage will enable the monitoring agent to better verify whether the RIRI has been correctly insulated.

9.10. Across all three types of response there was support for implementing RIRI questions at both stages of installation. This feedback also accounted for those responses that disagreed with our proposal.

9.11. Generally, the comments provided explained that although it is not always possible to complete mid-installation inspections for RIRI measures, some aspects of the installation can only be inspected at this stage.

9.12. Similarly, there are some aspects of RIRI measures that can only be inspected at the post-installation stage.

9.13. On balance, respondents suggested that it was therefore best to use both mid-installation and post-installation inspections to get the highest level of scrutiny for RIRI measures, provided an 'Unable to validate' option was included for instances where a monitoring agent was not able to verify a particular element.

**Decision**

We will implement the proposed RIRI questions at both mid-installation and post-installation stage, using the 2% mid-installation inspection requirement and 2% post-installation inspection requirement outlined in chapter 3.

## 10. Response to question 10

10.1. In addition to our proposals for new measures for DHS and RIRI measures, we also had some further proposals for new technical monitoring questions that are measure type specific. In addition, we asked respondents if they had any further suggestions for removing, changing or adding technical monitoring questions.

10.2. We proposed the following technical monitoring questions for specific measure types:

Measure Type	Proposed Question
FRI	Has the area between the wall and flat roof slab been insulated to prevent cold bridging?
PWI	Does the drilling pattern conform to the appropriate materials compliance certificate?
	Have all injection holes been filled?
Air source heat pump	Does the heat pump provide working space heating in the domestic premises?
	Does the heat pump provide working hot water in the domestic premises?
Ground source heat pump	Does the heat pump provide working space heating in the domestic premises?
	Does the heat pump provide working hot water in the domestic premises?
Biomass boilers	Does the boiler provide working space heating in the domestic premises?
	Does the boiler provide working hot water in the domestic premises?

### Question 10.1

Do you agree with the introduction of the above questions? If not, please tell us why

10.3. Figure 14 shows the responses for each of the proposed questions. The number of stakeholders that responded was slightly different for each question. Twenty-three stakeholders gave a preference for the question "Does the drilling pattern conform to the appropriate materials compliance certificate". Most other questions received twenty responses.

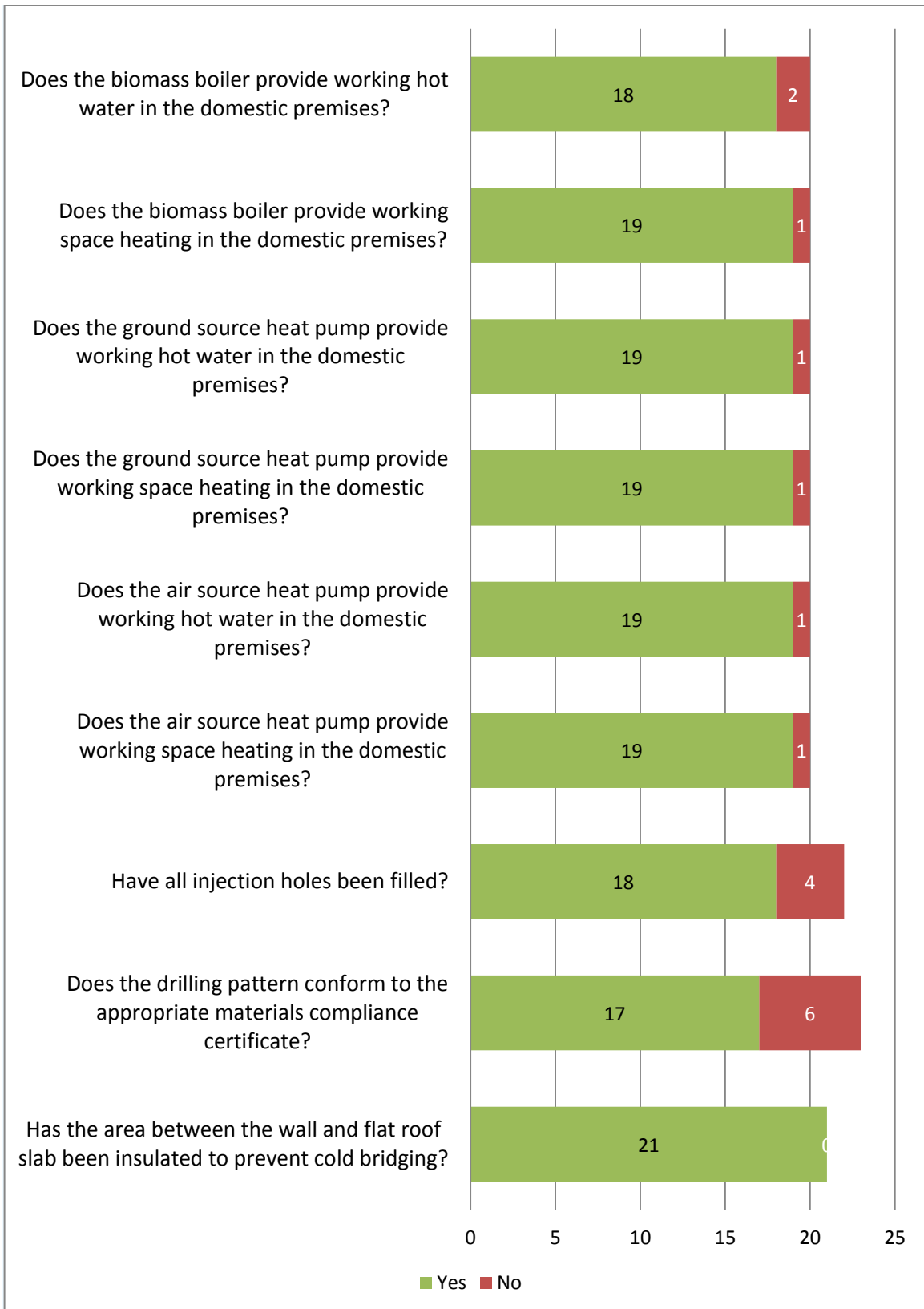


Figure 14: Bar chart of responses to question 10.1.

### **Proposed questions for heating measures**

10.4. One stakeholder responded with 'No' to all the questions on heat pumps and biomass boiler, suggesting that the question should instead verify whether the heating source was a primary or secondary heating source for the property, in order to check that the heating source was appropriate for the property and its function.

10.5. Where a heating source does not service the entire property, this should be taken into account when determining the deemed score by using the correct 'percentage of property treated'. We therefore believe that the issue of whether a heating source is a secondary heating source or not is covered by the relevant score monitoring question and does not need to be addressed again as part of technical monitoring.

10.6. The additional respondent who disagreed with our proposed question "Does the biomass boiler provide working hot water in the premises" did not leave a comment in support of their answer.

10.7. We have therefore decided to introduce all these questions as proposed.

### **Proposed questions for Flat Roof Insulation**

10.8. All stakeholders who responded agreed with our proposed question for Flat Roof Insulation. We will therefore introduce this question.

### **Proposed questions for Party Wall Insulation**

10.9. Twenty-two stakeholders gave a view on our proposed question on injection holes, and twenty-three stakeholders did so for our proposed question on drilling patterns.

10.10. For both proposed questions, all stakeholders who disagreed argued that it is likely that the wall will have been treated in such a way that the drilling pattern and injection holes may no longer be visible (e.g. by painting or wallpapering). This would mean that the question cannot be answered.

10.11. We accept these comments, and will include an 'Unable to validate' option for both questions to allow the monitoring agent to indicate they were unable to observe the injection holes and/or the drilling pattern. We expect that generally, PWI will be installed in properties in conjunction with other measures, and therefore the risk of monitoring agents visiting a property to only record 'Unable to validate' will be low.

10.12. We have therefore decided to introduce both questions as proposed.

### **Decision**



We will introduce all the proposed questions, but will ensure that where applicable, an 'Unable to validate' option is included for instances where the monitoring agent cannot answer the question.

### Question 10.2

Do you think we should change any of the existing technical monitoring questions? If so, please indicate which one(s) and explain why it should be changed.

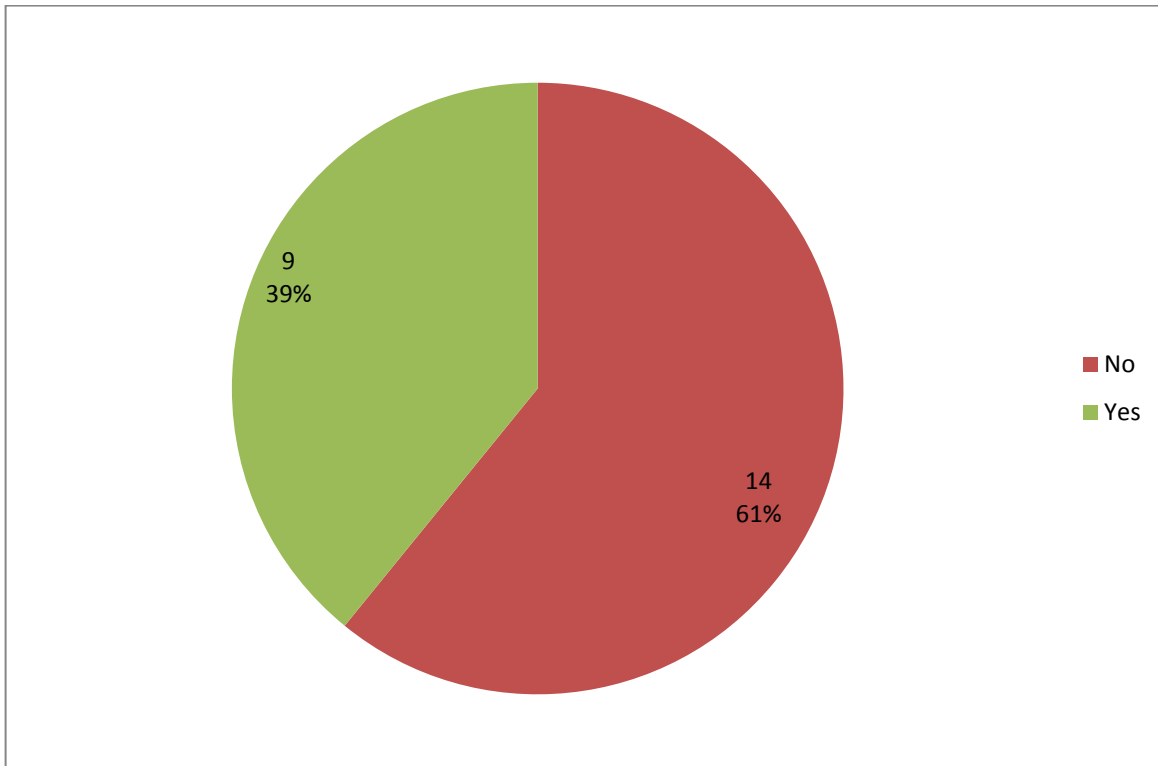


Figure 15: Pie chart of responses to question 10.2.

10.13. Twenty-three stakeholders responded to this question, with nine of them suggesting changes to existing monitoring questions. We have listed the proposed changes below, as well as our decision for each suggestion.

10.14. Where multiple respondents suggested the same changes, we have only listed these suggestions once. Similarly, where respondents suggested new questions instead of changes to existing questions, we have included these suggestions below with question 10.4.

Existing question <sup>7</sup>	Suggested change
BR.1/NB.1	Change wording to 'Boiler <b>and/or</b> hot water storage vessel'.
CWI.1	Change to: "Is there evidence that the pre installation assessment of suitability has been subject to independent verification by desktop or equivalent review by a competent person."
CWI.5	Change to "Has insulation material been injected into all injection holes and in a manner consistent with the appropriate materials compliance certificate?"
ESHR.2	Add "Unable to validate" for cases where the ESH not currently active.
EWI.1 (a)	Change the PAS reference to correct version.
EWI.1 (b)	Broaden this to verify that there is at least one carded operative for every four operatives per site, as well as per location (which can include multiple properties).
EWI.13	Consider also asking this question at the mid-installation stage.
EWI.16 (a)	Add an N/A option where further insulation was not feasible without restricting access.
EWI.16 (b)	Change to: "Have window and door reveals been insulated with L-shaped pieces, which avoid joints in the insulation adjacent to the reveal corners?"
EWI.16 (c)	Change to "Where appropriate have the window and door reveals been insulated?"
EWI.17	Change to "Has combustion ventilation been installed for existing gas, biomass or solid fuel appliances?"
EWI.2 (a)	Change to: "Have both the pre-installation building condition survey and the pre-installation building type survey been completed fully in accordance with PAS2030?"
EWI.2 (b)	Include more specific references to combustion ventilation.
EWI.4	Include references to other utility mains (e.g. gas/lights/water).
EWI.7	Change to "Are the minimum dimensions of any cut boards, and the fixing pattern used, in accordance with the system certificate?"
IWI.1	Broaden this to verify that there is at least one carded operative for every four operatives per site, as well as per location (which can include multiple properties).
IWI.5	Add an N/A option as it doesn't apply to all measures.
IWI.6	Add an N/A option as it doesn't apply to all measures.
NB.1	Insert a reference to pipework being within the building envelope

<sup>7</sup> For ease of reference, where multiple suggestions were made for the same question, these are differentiated by appending a letter to the question number.

10.15. We regard a number of these suggestions as 'housekeeping' changes that do not change the substance of the question. This applies, for example, to suggestions to add an 'N/A' option for a question or slightly change the wording. The questions that we deem 'housekeeping' are: BR.1/NB.1, ESHR.2, EWI.1 (a), EWI.16 (a), IWI.5 and IWI.6. We have decided to introduce all of these changes.

10.16. **CWI.1**: The purpose of technical monitoring is to verify whether the installation meets certain standards through on-site verification. The proposed change seeks to verify that a particular process has taken place, which cannot be verified on-site by a monitoring agent. We have therefore decided not to accept this change.

10.17. **CWI.5**: We believe that the proposed change makes this question more specific by introducing the reference to the materials compliance certificate. We therefore accept this change.

10.18. **EWI.1 (b) & IWI.1**: We accept the suggestion to verify that there is not only a carded operative on-site, but also that the appropriate ratio of carded to non-carded operatives on a site is met. However, we cannot broaden this question to encompass a 'location' that contains multiple properties, as the monitoring requirement only applies to individual measures, and therefore by extension only covers individual properties ('sites'). We will therefore accept this change partially.

10.19. **EWI.2 (a)**: We accept the change to include a reference to the pre-installation building type survey as well as the pre-installation building condition survey.

10.20. **EWI.2 (b)**: We have received several suggestions to include additional questions around ventilation. Instead of changing EWI.2, we have decided to introduce such a question. For more details, please see the section on question 10.3 below.

10.21. **EWI.4**: We believe that introducing a reference to other utilities brings this question more in line with EWI.12, which also references a wider range of utilities. We therefore accept this change.

10.22. **EWI.7**: We believe that introducing a reference to the systems certificate makes the question more precise while at the same time allowing a wider range of fixing patterns than is the case with the current question. We expect this will result in a more accurate application of this question and fewer 'false fails' and therefore accept this change.

10.23. **EWI.13**: We believe that introducing this question at the mid-installation stage would fit well with the existing question EWI.12. We therefore accept the suggestion to pose this question at both the mid-installation and post-installation stage.

10.24. **EWI.16 (b) & (c)**: We believe that the reference to L-shaped pieces makes this question unnecessarily prescriptive and could result in 'false fails' in cases where L-shaped pieces are not appropriate. We believe that insertion of the word 'appropriate' will help to avoid 'false fails' in instances where applying insulation to the reveals is not appropriate. We therefore accept this change. We have therefore decided to change this question to "Where appropriate, have window and door reveals been insulated in line with the system designer's specifications?"

10.25. **EWI.17**: The current question verifies whether all exterior facing wall areas have been insulated, and does not refer to combustion vents. Given that the proposed change would completely alter the nature of this question, we have instead treated this as request for an additional question rather than a suggested change to EWI.17. We have therefore decided to retain EWI.17 as is.

10.26. **NB.1**: We believe that the suggested changes make it clearer that NB.1 is not concerned with e.g. condensate or PRV pipework that extrudes from the building, thus removing a potential cause for confusion and 'false fails'. We therefore accept this change.

#### Decision

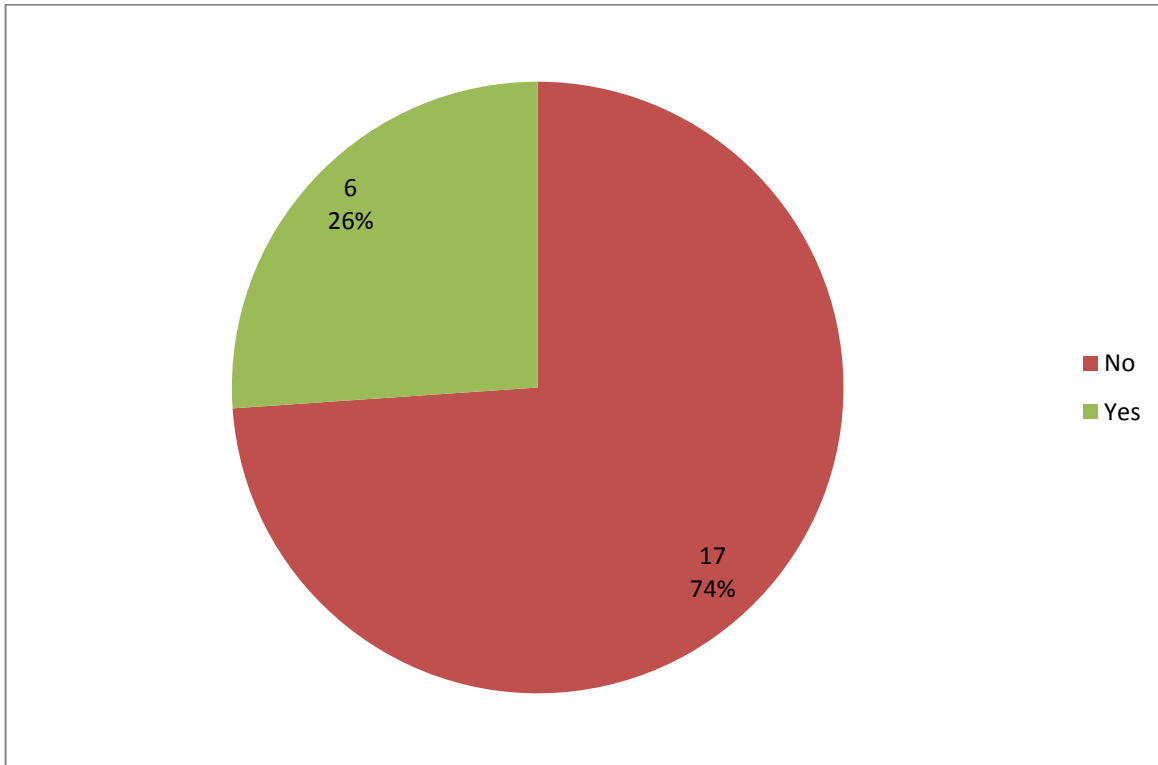
For ease of comparison, the table below lists the questions where we have decided to make a substantive change in response to some of the suggestions received in response to our consultation.

Question Number	Current Version	New Version
CWI.5	Have all injection holes been filled?	Has insulation material been injected into all injection holes and in a manner consistent with the appropriate materials compliance certificate?
EWI.1	Is there at least one carded operative that meets the competence requirements for the relevant tasks as specified in B4-l4 of Table B4 of PAS:2030:2014?	Is there at least one carded operative for every four operatives present on site that meets the competence requirements for the relevant tasks as specified in B4-l4 of Table B4 of PAS:2030:2014?
EWI.2	Has the pre-installation survey been completed fully in accordance to PAS2030:2014?	Have both the pre-installation building condition survey and the pre-installation building type survey been completed fully in accordance with PAS2030?
EWI.4	Where telecommunications are affected by the EWI installation, has the relevant telecoms provider been contacted?	Where utilities (e.g. telecommunications, gas, water) are affected by the EWI installation, has the relevant utility provider been contacted?
EWI.7	Are only full or half insulation boards fitted in an interlocking pattern?	Are the minimum dimensions of any cut boards, and the fixing pattern used, in accordance with the system certificate?

EWI.16	Have window and door reveals been insulated?	Where appropriate, have window and door reveals been insulated in line with the system designer's specifications?
NB.1	Where a boiler and hot water storage vessel have been repaired or replaced, have any associated replacement pipes or pipes that have been exposed as part of the works or are now otherwise accessible been insulated where possible?	Where a boiler and/or hot water storage vessel have been repaired or replaced, have any associated replacement pipes or pipes within the building envelope that have been exposed as part of the works or are now otherwise accessible been insulated where possible?

**Question 10.3**

Do you think we should remove any of the existing technical monitoring questions? If so, please indicate which one(s) and explain why they should be removed.



**Figure 16: Pie chart of responses to question 10.3.**

10.27. Twenty-three stakeholders responded to this question, with six in favour of removing some of the existing questions.

10.28. Of the six stakeholders suggesting questions could be removed, four referred back to the suggestions they had made in response to question 10.2, or indicated that they believed this question to be the same as question 10.2

10.29. One stakeholder suggested that E-Serve removes any questions with a low failure rate in order to simplify the scheme. We disagree with this suggestion because some faults with an installation may have a severe impact on the ability of the measure to generate savings, despite these faults not being very prevalent. We have therefore decided not to pursue this method for identifying potential questions to remove.

10.30. The last stakeholder suggested removal of a large number of questions that cover aspects of an installation that are also referenced in PAS, arguing that ECO should not seek to replicate PAS. However, we believe that it is premature to increase the reliance on other quality assurance mechanisms while the results of the Bonfield Review have not yet been published. We will review the need for certain technical monitoring questions in light of the recommendations of the Bonfield Review once the report of the Review has been published and the recommendations have been implemented by industry.

**Question 10.4**

Do you think we should add any further technical monitoring questions? If so, please indicate what questions you believe should be added, and for what measure type.

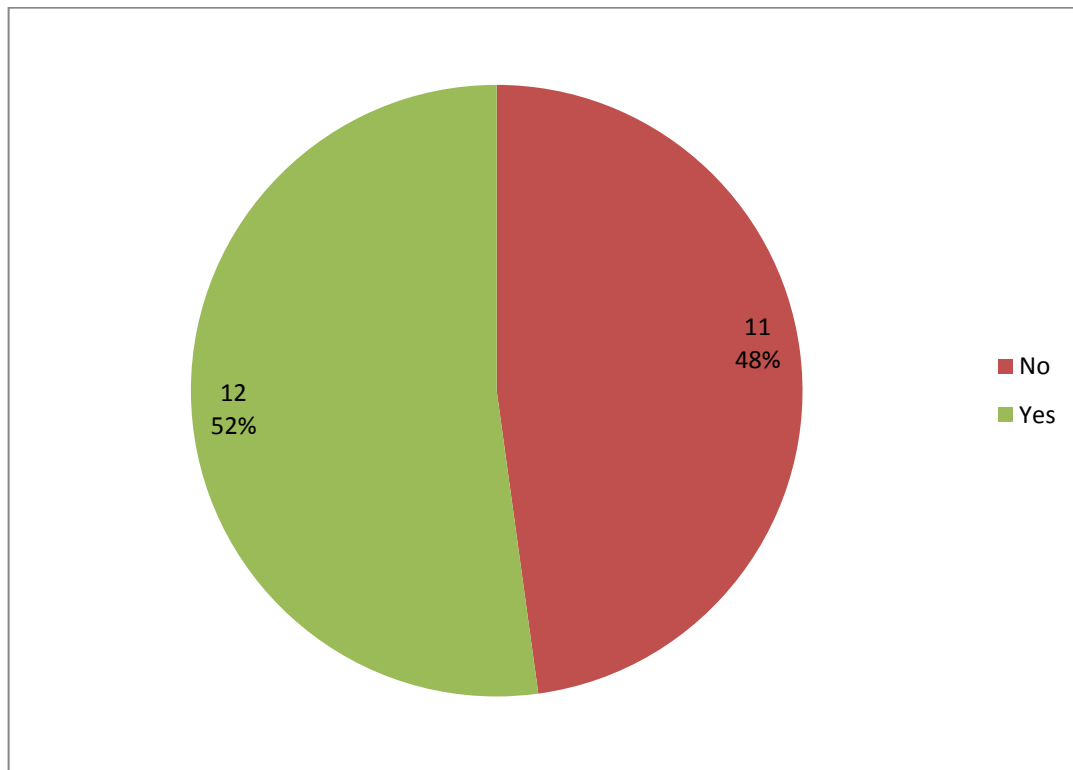


Figure 17: Pie chart of responses to question 10.4

10.31. Twenty-one stakeholders responded to this question, of which twelve believed that further technical monitoring questions should be introduced.

10.32. A total of nineteen questions have been suggested, with almost half (nine) of them relating to cavity wall insulation. These questions are provided in the table below. For ease of reference we have given each question a reference.

Measure Type	Reference	Proposed Question
CWI	CWI-NQ.1	Are redundant Cavity vents correctly sealed?
CWI	CWI-NQ.2	Have Underfloor vents been safeguard?
CWI	CWI-NQ.3	Have Combustion vents safeguarded?
CWI	CWI-NQ.4	Is there any evidence of injection points in close proximity to combustion flues?
CWI	CWI-NQ.5	Have room vents been fitted to provide combustion air where required?
CWI	CWI-NQ.6	Is there any evidence of the escape of insulation?
CWI	CWI-NQ.7	Do ground levels indicate adequate clearance in relation to the DPC?
CWI	CWI-NQ.8	Are there signs of existing damp or condensation issues?
CWI	CWI-NQ.9	Question on presence of a primary combustion vent?
EWI	EWI-NQ.1	Have all exterior window and door seals been applied and finished off satisfactorily?
EWI	EWI-NQ.2	Have all details been designed and installed to minimise the risks of cold bridging, for example by removing, relocating or extending where feasible structures such as meter boxes, pipework, flues and roofline details to allow continuity of insulation?
EWI	EWI-NQ.3	Have window and door reveals been insulated with L-shaped pieces, which avoid joints in the insulation adjacent to the reveal corners?
IWI	IWI-NQ.4	Have all details been designed and installed to minimise the risks of cold bridging, for example by removing, relocating or extending where feasible structures such as meter boxes, switches, sockets, radiators, pipework, flues, ducts, etc?
PWI	PWI-NQ.1	has installation of party wall insulation compromised any existing cavity wall insulation present in the property, by way of disturbing the existing cwi material in any way, or any barrier (cavity brush) previously installed, used to separate properties, to stop material ingress in adjoining properties and minimise material loss into party walls?
RIRI	RIRI-NQ.1	Has insulation been installed to dormer window cheeks and ceiling?
RIRI	RIRI-NQ.2	Has the gable wall been insulated?
RIRI	RIRI-NQ.3	Have all hatched been insulated as specified in PAS2030?
RIRI	RIRI-NQ.4	Is the type and application of the insulation suitable for the proposed measure
UFI	UFI-NQ.1	Is the type and application of the insulation suitable for the proposed measure

10.33. Four of the proposed questions were similar to either questions proposed by us as part of question 10.1 of the consultation, or to questions proposed by other stakeholders in response to question 10.2 of the consultation. These questions are: EWI-NQ.3, RIRI-NQ.1, RIRI-NQ.2 and RIRI-NQ.3. As these questions have already been treated elsewhere, we will not discuss them in this section.

10.34. The remaining proposed questions are discussed below: .

10.35. **CWI-NQ.1, CWI-NQ.2, CWI-NQ.3:** The first three proposals all relate to vents that need to be either sealed or safeguarded as a result of the cavity wall insulation having been applied. We see merit in this question, but believe that rather than introducing this as three separate questions they can be combined. We have therefore decided to introduce the following question: "*Have all vents been safeguarded and have redundant vents been sealed?*".

10.36. We expect that where this question fails, the TMA will be able to provide details to the supplier and installer on which vent was the cause of the fail, so that the appropriate remedial actions can be undertaken.

10.37. **CWI-NQ.4:** We believe that this question is not sufficiently specific for the monitoring agent to answer, as it is not clear what minimum distance is required. Furthermore, we understand that the proximity of injection holes to combustion vents and flues does not have a direct bearing on the ability of the measure to generate savings. As our remit is focused on ensuring that measures installed under ECO are able to generate the claimed savings, and have been scored correctly, we do not use monitoring questions that do not verify either of those two aspects.

10.38. We have therefore decided not to introduce this question, but we note that suppliers have the discretion to append this as a health & safety question. We will work with suppliers through the ECO Reporting Working Group on harmonizing health & safety questions in order to promote best practice, ensure consistency and minimize the burden on the supply chain.

10.39. **CWI-NQ.5:** We understand that this question verifies whether the appropriate actions have been taken to ensure any solid fuel heating systems are capable of venting through the cavity wall insulation. As with CWI-NQ.5, we see this primarily as a health & safety issue, which suppliers may want to address by appending this as a health & safety question. We will not introduce this question as part of the Ofgem technical monitoring question set.

10.40. **CWI-NQ.6:** We believe the proposed question is an easy way for the monitoring agent to verify if there is leakage of the insulation. As this will identify properties where the CWI measure installed is likely to fail or already failing, we have decided to introduce this question.

10.41. **CWI-NQ.7:** We understand that the requirements for clearance around the DPC is dependent on the insulation product that was used. The monitoring agent will not know what product has been installed, unless an invasive test is performed to discover this on-site. A core principle of monitoring is that all questions can be answered without invasive testing. We have therefore decided not to introduce this question.

10.42. **CWI-NQ.8:** As with CWI-NQ.6, we believe that this presents an easy way for the monitoring agent to verify whether or not the insulation is failing or likely to fail.



We note, however, that it will be difficult for the monitoring agent to ascertain whether any damp was present before the installation of the measure, or appeared afterwards. We have therefore decided to introduce this question, but without the reference to 'existing' issues.

10.43. **CWI-NQ.9**: As with CWI-NQ.5, we understand that this is primarily a question that verifies matters of health & safety. We have therefore decided not to introduce this question, but as noted before, will work with suppliers through the ECO Reporting Working Group on identifying opportunities to harmonize the health and safety questionnaires that suppliers append to the Ofgem monitoring questions.

10.44. **EWI-NQ.1**: While we agree that the proposed question has merit, we believe that asking if the seals have been finished 'satisfactorily' is not sufficiently specific. We have therefore decided to introduce this question, but with a specific reference to the system designer's specifications: "*Have all exterior window and door seals been applied and finished off in line with the system designer's specifications?*"

10.45. **EWI-NQ.2**: Although we acknowledge that the prevention of cold bridging is important to safeguard the proper functioning of external wall insulation, we believe the proposed question relates to too many elements and relies too much on a subjective judgment made by the monitoring agent to be practical. We have therefore decided not to introduce this question in the proposed form. However, we believe that it will be possible to introduce a question for around rooflines specifically, as suggested in the proposed question. We have therefore decided to introduce the question "*Where necessary, has the roofline been extended to cover the EWI works and prevent water ingress?*"

10.46. **IWI-NQ.1**: As with EWI-NQ.2, we believe this question covers too many elements and is too prone to subjective judgment from the monitoring agent to be practical. We will therefore not introduce this question.

10.47. **PWI-NQ.1**: We understand that this test cannot be carried out without invasive testing, such as by use of a boroscope. As mentioned in response to proposed question CWI-NQ.7, a core principle of monitoring is that it must be possible to be carried out without invasive testing. We have therefore decided not to introduce this question.

10.48. **RIRI-NQ.4 & UFI-NQ.1**: We understand the objective of these questions to be to verify whether the insulation material used is suitable for either room-in-roof or underfloor insulation. We agree with this objective, but believe that this is already covered by some of the existing or proposed questions for RIRI and UFI measures, such as existing questions UFI.2. We therefore expect that monitoring agents can use the existing questions to indicate cases where incorrect insulation material has been used, and do not think it is necessary to introduce further questions.

### Decision

Based on the suggestions received, we have decided to introduce the following technical monitoring questions:



<b>Measure type</b>	<b>New question</b>
CWI	Have all vents been safeguarded and have redundant vents been sealed?
	Is there any evidence of the escape of insulation?
	Are there any signs of damp or condensation affecting the insulation?
EWI	Have all exterior window and door seals been applied and finished off in line with the system designer's specifications?
	Where necessary, has the roofline been extended to cover the EWI works and prevent water ingress?