

Minutes of the ECO Innovation Technical Advisory Panel

From: Roisin Curran

Date: 16 March 2021

Location: Conference call

Time: 9:00am

The technical advisory panel (TAP) has been set up to review ECO demonstration and innovation applications. It is formed by a number of independent panel members, with its Chair and Secretariat function provided by Ofgem. The TAP makes recommendations to Ofgem to approve or reject certain ECO applications. It does not, in and of itself, make any decisions to approve or reject such applications. Accordingly, these minutes provide a summary of each discrete review undertaken by the TAP as discussed by TAP members during group meetings. The TAP review is limited to the material submitted by applicants at application stage, or in subsequent correspondence, and these minutes provide a summary of the opinions offered by TAP members on the material submitted insofar as they inform the eventual recommendation made by the TAP. These minutes are reviewed by the TAP members prior to publication. These minutes do not represent a formal statement of opinion by Ofgem in regard to any product, measure, or application received by Ofgem in relation to ECO. Applicants who wish to challenge the opinions contained within these minutes may contact Ofgem directly.

Present

David Glew, Leeds Beckett University

Jason Palmer, Cambridge Energy

Neil Cutland, Cutland Consulting Ltd

Hunter Danskin, BEIS

Kate Fielding, BEIS

Kay Popoola, BEIS

Grace Reeve, BEIS

Eric Baster, Ofgem

Roisin Curran (Chair), Ofgem

John Shiell (Secretariat), Ofgem

Introductory remarks by the Chair

The Chair welcomed all panel members to the meeting. Andy Morrall sent his apologies.

1. Innovation Measure Application: Mudrock Spray Foam IWI

- 1.1. The application relates to an IWI system using spray foam insulation, which claims a reduced cost and installation time due to less material being required and the simplicity of the method.
- 1.2. The panel were reasonably confident that the use of spray foam insulation for IWI was materially different to measures previously delivered under ECO, as it is less commonly used for IWI in comparison to other methods. It was suggested that further assurance from the applicant would help to further strengthen the case.
- 1.3. The evidence provided was insufficient for the panel to provide a recommendation on whether it was an improvement on other IWI installation methods. The panel questioned whether some improvements cited by the applicant, such as ease and speed of install, reduced labour costs, and reduced disruption for the householder, would be achievable. For example, the preparation for spraying alone may take longer than for standard IWI installations due to the additional steps of stripping plaster, installing battens, and covering surfaces. In addition, the householder must be absent from the property for eight hours after the installation is complete, which would further increase disruption. The panel requested robust evidence of the reduced installation time and labour costs compared to standard alternatives, and asked that comparisons cover the entirety of the installation from arriving on-site to completing the job.
- 1.4. The BBA certificate did not reflect the claimed improvement in thermal performance, and showed the thermal conductivity of the product to be closer to that of mineral wool. Other claimed improvements of increased airtightness, increase in the range of properties IWI could be installed to, and the reduced remedial work required were not

well explained, and no comparisons were provided to demonstrate the product was an improvement in these areas.

- 1.5. The panel agreed that the product is capable of achieving cost savings, although suggested the applicant engage with Ofgem to ensure the insulation material is scored appropriately.
- 1.6. The panel recommended the applicant propose additional technical monitoring questions to ensure the insulation material fills the full depth of the timber battens, and that surface dampness is below 20% prior to installation.
- 1.7. The limited information on the installation process made it difficult for the panel to review the safety and risk aspects of the application. In addition to further detail on the installation process, such as how floor voids (both inter-storey and under timber ground floors), flues, penetrations and reveals are treated, the panel requested detailed information on the prep work involved, what checks are in place, and the practicalities of ensuring adequate ventilation and absence of the householder.
- 1.8. The panel noted the application for Mudrock Pitched Roof Insulation included a condensation risk analysis, and safety precautions to be taken by the installer that were not included in the IWI application. The panel asked for clarification on the differences between the products, including whether or not respirators are also a requirement for the application of IWI.
- 1.9. The panel noted the product can only be applied within a narrow range of temperatures, and to surfaces with a moisture content below 20%. It was unclear how this would be verified prior to installation, and the panel had concerns around the practicalities of installing to under heated properties in winter.
- 1.10. The panel recommended the application is referred back to the applicant to provide evidence of the claimed improvements, installation process, safety and risks associated with the measure, and additional technical monitoring questions.

2. Innovation Measure Application: Mudrock Spray Foam Pitched Roof Insulation

- 2.1. The application relates to a pitched roof insulation using spray foam, which claims reduced costs and installation time due to the simplicity of the installation method and less materials being required.
- 2.2. The panel were of the view that spray foam insulation is commonly used to treat pitched roofs, and requested evidence to demonstrate how the product is materially different.
- 2.3. The panel agreed the evidence provided was insufficient to determine whether it was an improvement on other loft insulation methods. The panel were of the view that spraying insulation is likely to be quicker than using PIR to insulate rafters, although no evidence was provided to support this. It was also unclear how the costs, or speed of install was an improvement on standard loft insulation at joist level. No additional benefits to installing loft insulation at rafter rather than joist level were claimed by the applicant.
- 2.4. The panel agreed the product is capable of achieving cost savings, and that the existing deemed scores for Loft Insulation would be appropriate.
- 2.5. The applicant proposed removing some technical monitoring questions, although it was not clear why the applicant felt the questions should be removed, and no alternative questions proposed. In addition to clarifying the above, the panel suggested that additional questions were proposed by the applicant to check the moisture levels of the roof timbers were below the required 20% specified in the BBA certificate.
- 2.6. The limited information on the installation process, and logistics involved, made it difficult for the panel to review the safety and risk aspects of the product. For example, it was unclear how the high ventilation rates required during and after installation could be achieved in the loft space once it had been made airtight. The panel also questioned if permanent ventilation would be installed to the loft space to allow warm humid air to escape, and reduce the risk of condensation. The panel requested more detailed information, and assurance that the health and safety risks associated with installation had been fully considered. A further clarification was raised on the application temperatures for the product.

- 2.7. The panel noted the installation process specified in the application did not seem to be covered by the BBA certificate provided, and requested further clarification on this. Notably, the BBA certificate refers to air gaps and soffit vents, but the application suggests that these will be absent post-installation.
- 2.8. The panel agreed the product could have a positive impact on fuel poverty and those vulnerable to the effects of the cold.
- 2.9. The panel recommended the application is referred back to applicant to provide evidence on the materially different and improvement aspects, along with clarification on the technical monitoring questions, and assurance that the safety and risks had been fully considered.

3. Innovation Measure Application: Structerm Hybrid EWI

- 3.1. The application relates to a hybrid EWI system which uses a combination of standard EWI and structural EWI (SEWI), with the aim of increasing the range of properties in which solid wall insulation (SWI) can be installed.
- 3.2. The panel were unsure why the application was made for a hybrid solution, when the SEWI seemed like the innovative product. It was unclear how the hybrid approach of using a combination of SWI products on a property was innovative, or how the specific combination of products could be considered a single innovation measure. They recommended that a new application is submitted for the SEWI as an innovation measure. It was noted that it may still be possible to apply an uplift for an entire system where the SEWI was proven to be needed even when used in conjunction with standard SWI where the SEWI was not necessary.
- 3.3. There was limited information on the installation process, including how the junctions between the SEWI and standard EWI are treated.
- 3.4. The panel agreed the product was capable of achieving cost savings, and the current deemed scores for EWI are likely to be appropriate, however sight of the thermal bridging calculations would be required to confirm this to understand how the addition of the metal frame in the system affects heat loss and internal surface temperatures.

- 3.5. There was insufficient information on the installation process for the panel to comment on the technical monitoring questions, and suggested the applicant should consider whether the current technical and score monitoring questions would be appropriate for the product. The panel also suggested consideration was given to how suitability of the property would be evidenced, for example through a chartered surveyors report.
- 3.6. The panel were unable to review the safety of installation and risks associated with the product due to the limited information provided. It was noted the product had a BBA certificate, however a copy was not submitted as part of the application. The panel requested assurance that all the relevant risks, and health and safety aspects had been fully considered for the product.
- 3.7. The panel agreed the product would have a positive impact on fuel poverty and those vulnerable to the effects of the cold.
- 3.8. The panel recommended the application is rejected with merit in a fresh application for the SEWI with the option (as opposed to requirement) of combination with SWI where relevant, and the above points on the improvement of the product are addressed along with safety, risks, and technical and score monitoring.

4. Innovation Measure Application: SuperFOIL SF19+ IWI

- 4.1. The application relates to an insulated multifoil vapour control layer (VCL), which claims the product is a thinner and more flexible form of IWI, thereby reducing the overall thickness along with installation time and costs.
- 4.2. The panel agreed the product would be materially different if it was able to be used as a standalone product for IWI, however noted that the BBA certificate specified it should be used in conjunction with other insulation materials to achieve the required U-value.
- 4.3. There was no evidence to support the claimed improvements of reduced installation time, and the panel were unclear how this could be achieved with the additional steps involved in the installation. It was also unclear how the thickness of the installation would be reduced, particularly considering the depth of the air gaps required. The panel did not consider the evidence of reduced costs comparing the multifoil product to PIR boards to be reflective of the installation. The panel requested robust evidence of the reduced installation time and costs compared to standard alternatives, and asked that

the entirety of the installation process and materials used from arriving on-site to completing the job is included in the comparisons.

- 4.4. The panel noted the claimed improvements were based on the installation method and thermal performance stated in the application, which differed to the BBA certificate provided. Additional U-value calculations were submitted by the applicant, although it was unclear what figures and material properties the calculations were based on, and how these were determined. One panel member questioned how two vapour control layers within the product would impact interstitial condensation of the IWI measure as a whole (for example, moisture could still accumulate between the outside wall and the foil), and whether this was intended to be considered an improvement.
- 4.5. The panel agreed the product is capable of achieving some cost savings, however based on the current BBA certificate, the panel were of the view that the current deemed scores for IWI would not be appropriate for the product.
- 4.6. The panel suggested the applicant propose additional technical monitoring questions to ensure overlaps and the size of the air gap on both sides of the foil has been maintained, and that the cavity is completely sealed, given the importance of these to achieve the thermal conductivity stated in the BBA certificate. The panel also questioned why a hotline was being set up for technical monitoring agents.
- 4.7. The panel were not satisfied with the safety of the proposed installation method as it was not in line with the BBA certificate. One panel member cited a guidance note¹ from the Building Control Alliance, which states they "*consider the use of these products to be acceptable, providing that they are used strictly in accordance with the manner described on the certificate*". The panel requested that an updated BBA certificate is provided which covers the proposed method of installing the product without any additional insulation.
- 4.8. The panel had concerns the product was more sensitive to error during installation as the performance was highly dependent on a sufficient sealed air gap being maintained and requested assurance from the applicant as to what safeguards were in place. The panel also requested information on how penetrations would be treated.

¹ <http://buildingcontrolalliance.org/wp-content/uploads/2017/04/BCA-GN-6-Use-of-Multifoil-insulation-products-2-Jan13.pdf>

- 4.9. The panel questioned whether the risks associated with the product had been fully considered. For example, it was unclear how the risk of the sealed air gap being punctured after installation would be avoided, and what impact this would have on the effectiveness of the product. It was also unclear whether mobile phone or Wi-Fi signals would be affected by the product, and how this would impact the operation of smart home devices such as smart thermostats. One panel member noted the condensation risk analysis provided was based on low occupancy, and requested further clarification as this was not defined.
- 4.10. The panel agreed that the product would have a positive impact on fuel poverty and those vulnerable to the effects of the cold, when compared to doing nothing.
- 4.11. The panel recommended the application was referred back to applicant for an updated BBA certificate to include the proposed method of installation. Evidence to demonstrate the performance and claimed improvements, and clarification of whether the twin VCL is a significant part of the claimed improvement, should be provided along with additional technical monitoring questions and assurance that the safety and risk aspects had been fully considered for the product.

5. Additional Discussion: Schneider Wiser Heating Controls IM

- 5.1. The panel discussed an application for smart heating controls that was previously reviewed at the November 2020 TAP meeting², and was referred back to the applicant to provide more detailed information on the operation of the product, and the safeguards in place.
- 5.2. The panel appreciated the detail provided in the responses, although this raised some concerns over the lack of a manual override, and the potential for the householder to be without heating if the connection to the hub drops, or the batteries fail. One panel member noted that this is particularly important in ECO target households where under heating may be a risk, replacement batteries may not be immediately available and thought it would be useful to understand how the cost of replacement batteries may offset savings in fuel bills achieved.

² Minutes: https://www.ofgem.gov.uk/system/files/docs/2020/12/tap_minutes_24_nov_2020.pdf

- 5.3. The panel requested evidence of the average battery life, how long users take to replace the battery, and how often the product drops out of signal for current users. It was noted that some data from the previous DA was not included as evidence for the IM, this would have been helpful in understanding some of the usability issues raised.
- 5.4. One panel member noted that the system is controlled entirely from a smartphone, and the potential negative effect of this if only one member of the household has control.
- 5.5. Overall, the panel were unsure about the product's suitability to be delivered widely under ECO, particularly with the potential for vulnerable households to be left without heating.

6. Additional Discussion: Energiesprong DA Amendment Request

- 6.1. The panel discussed an amendment request for the Energiesprong demonstration action. The applicant requested an amendment to the property archetypes for half of the properties used in the trial, and to allow the BTS SmartHTC method to be used on the full sample rather than the previously proposed portion of the sample.
- 6.2. The panel were satisfied that the change to property archetype was acceptable, and suggested that it would actually improve the representativeness of the sample.
- 6.3. The panel considered the proposed change to the HTC method which would reduce the energy monitoring frequency and duration for a small proportion of the overall sample. Due to the high cost savings expected for Energiesprong, the panel were satisfied that the proposed amendment to the monitoring methodology would still allow cost savings to be determined. The panel noted this was based on the assumption that the pre-installation monitoring data was sufficient for the HTC to be determined, and the before and after results compared.
- 6.4. The panel recommended that the amendment request should be approved on the basis that sufficient pre-installation monitoring data is collected.

7. Additional Discussion: BTS SmartHTC Methodology

- 7.1. The panel discussed a request from Build Test Solutions (BTS) to consider offering further guidance on a minimum energy monitoring frequency, and duration that would be acceptable for demonstration actions. A report was submitted by BTS to support the

proposed minimum energy monitoring frequency of before and after meter reads over a total of six weeks. This report compared the SmartHTC method with an adapted version of the more widely used co-heating test to determine HTC.

- 7.2. The panel noted the legislative requirements for demonstration actions, under which the performance monitoring methodology must be reasonably expected to produce a statistically significant result in order to determine whether the measure achieves cost savings. As each product differs in expected cost savings and associated variables, the panel were of the view that it would be misleading to issue a blanket statement dictating the form or duration of monitoring. The panel re-iterated the onus is on the applicant to demonstrate that the proposed methodology is reasonably expected to result in a statistically significant difference for their product. It was noted that a suitable duration of monitoring for the SmartHTC or any alternative test must be determined by three factors; 1) the uncertainty of the test, 2) the predicted savings of the product and the 3) sample size of the experiment. It is probable therefore that a shorter duration of monitoring of the BTS system may be suitable for some products, but not others.
- 7.3. The panel agreed that the report provided by BTS helped to demonstrate the methodology could be used to determine the approximate HTC of a property, but did not focus on the comparison of HTCs before and after a retrofit and if there should be consideration of compounding uncertainty in having 2 HTCs calculated. The reports did not provide assurance that a statistically significant difference between the before and after results could be achieved in all cases, particularly given the SmartHTC method is more suited to passive measures. Low expected cost savings and reliance on behaviour change of some demonstration actions may require the design and duration of the experiment to capture different likely use phases of the occupant, not the technical requirements of the test method.
- 7.4. The panel had concerns that the method proposed by BTS increased the uncertainty by reducing both the monitoring duration and frequency, thereby changing the accuracy of the test from what was agreed. The low expected cost savings and behavioural aspect of some measures further increases the risk that a statistically significant result will not be obtained.

- 7.5. The panel were sympathetic to the issues faced by applicants, and stressed the need for greater assurance that a proposed methodology would meet the legislative requirements. It was suggested that if BTS could produce evidence of the minimum sample size required to achieve a statistically significant difference in before and after results over a range of expected cost savings (taking account of the degree of uncertainty with active and semi-active measures), the panel would consider this when reviewing future applications for amendments to demonstration actions.
- 7.6. The panel recommended, with reference to the requirements of the ECO3 Order, that applicants must submit an amendment request to Ofgem in respect of a specific application if they wish to make any changes to the agreed methodology. The panel wished to add they were open to alternative proposals which provided a lower uncertainty.

8. Date of next meeting

- 8.1. The next meeting of the TAP is to be confirmed, with the TAP dates for the coming year to be published on the Ofgem website.