

## Minutes of the ECO Innovation Technical Advisory Panel

From: Roisin Curran

Date: 15 July 2019

Location: London

Time: 9:00

### Present

David Glew, Leeds Beckett University

Jason Palmer, Cambridge Energy

Neil Cutland, Cutland Consulting Ltd

Hunter Danskin, BEIS

Andrej Miller, BEIS

Adam Bricknell, BEIS

Eric Baster, Ofgem

Carmel Golden (Chair), Ofgem

Roisin Curran (Secretariat), Ofgem

Kay Popoola (Observer), BEIS

### Introductory remarks by the Chair

The Chair welcomed all panel members to the meeting.

#### 1. Innovation Measure Application: Climabead

1.1. The application was for a new installation technique to reduce the installation time of Party cavity wall insulation (CWI), and make it less intrusive for the householder.

1.2. The panel agreed the product was 'materially different'.

1.1. The panel agreed the product was an 'improvement' by reducing disruption to the householder when filling the loft space, and agreed that it had potential to result in time saving during installation. However, members noted that there was a lack of practical evidence to demonstrate these benefits. There was also a lack of evidence to show that a full fill of the cavity is achieved despite the reduced number of drill holes.

1.2. There were concerns that the measure would not be materially different or an improvement in properties that did not require the loft space to be insulated. For example, properties where the 'gable wall' (above the roof joists) is capped, with a solid party wall above.

1.3. One panel member questioned how cables within party walls would be dealt with, and whether existing safeguards for CWI products in this respect are sufficient.

- 1.4. Additional Technical Monitoring questions were suggested to ensure the measure would be installed correctly in properties that would benefit from the improvements. These included evidence of the number of drilling holes.
- 1.5. The panel agreed that the product could positively impact on fuel poverty.
- 1.6. It was recommended that more definitive evidence should be requested to demonstrate the disruption and time saving benefits, and to show that a correct fill of the cavity is achieved despite the reduced number of drill holes.
- 1.7. It was suggested that restrictions are considered on the type of properties the measure could be installed in, as the products main benefits may not be relevant to all properties.
- 1.8. The panel recommended the application is approved subject to further evidence being provided to support the improvements and effectiveness of the product.

## **2. Innovation Measure Application: Soltherm**

- 2.1. The application was for an external wall insulation (EWI) system intended to achieve an extended lifetime.
- 2.2. The panel agreed that the evidence provided was not sufficient to show it is materially different to, or an improvement on, EWI systems already installed under ECO.
- 2.3. The panel were of the opinion that an increased lifetime over existing systems could constitute an improvement, but that the claimed increase was not supported by evidence as the results of testing were not yet available.
- 2.4. One panel member also questioned the test method. Whilst one standard hygrothermal test cycle relates to a given expected lifetime, evidence was not provided to support the assumption that multiple consecutive test cycles corresponds to a multiple of this lifetime.
- 2.5. The panel were also of the opinion that the baseline for comparisons should be broader: innovation measures must be materially different to existing products used under ECO, not just one alternative from the same manufacturer. One panel member noted that, whilst this system's finish may reduce moisture ingress, they questioned whether this represented a performance improvement when compared to existing EWI systems using expanded polystyrene board rather than mineral wool.
- 2.6. The panel noted the application was lacking in detail with regard to the breathable wall and its location within the system. The panel also questioned what the maintenance requirements of the system are, as it seemed likely that specific products would be required to maintain some of the claimed benefits.
- 2.7. The panel did not propose any specific technical monitoring questions, and didn't raise any concerns relating to safety and standards.
- 2.8. The panel recommended the application is referred back to the applicant to address the points raised above, and in particular those regarding the test method, results and baseline for comparisons.

### **3. Innovation Measure Application: InstaClad**

- 3.1. The application related to a EWI system with features intended to enable it to be installed more quickly than existing systems, and in a wider range of weather conditions.
- 3.2. The panel were content that these features make the system materially different to measures already installed under ECO.
- 3.3. The panel agreed that the analysis of the installation times of the InstaClad system and existing EWI products and the impact on these of weather conditions presented in the application show that the system is an 'improvement' on current EWI.
- 3.4. There wasn't sufficient detail in the application for the panel to be confident that the system would not permit airflow behind the insulation boards.
- 3.5. One member questioned whether the metal rail structure used to fix the insulation boards meant that the system weighs more than others, and if so, whether this is accounted for in pre-installation assessments.
- 3.6. The panel did not propose any additional technical Monitoring questions for the product, and didn't raise any concerns with regard to safety and standards.
- 3.7. The panel agreed that this could help increase the number of properties treated, which would impact Fuel Poverty and those vulnerable to the effects of cold.
- 3.8. The panel recommended the application is approved subject to clarification of the mechanisms by which airflow behind the boards is prevented, and confirmation that pre-installation assessments take account the weight of the system.

### **4. Innovation Measure Application: NEST SS Algorithm**

- 4.1. The application relates to a smart thermostat with an additional software feature intended to increase energy savings by reducing set point temperature below the user's selected level at times when this is not likely to be noticed.
- 4.2. The panel agreed the product was 'materially different' to measures so far notified under ECO, and were content with the evidence provided that the feature does increase energy savings.
- 4.3. The panel noted that the evidence provided was 'hours of heating' rather than gas use per se. Boiler modulation means the two are not equivalent.
- 4.4. The panel noted that it is difficult to assess whether a software feature which could be relatively easily rolled out to existing products constitutes 'an improvement on the measures that would otherwise be promoted' within ECO. The panel concluded on balance that, as this feature represents an addition to functionality and has so far only been used in limited trials, this criterion can be considered to be met.
- 4.5. The panel noted that the use of the feature is optional for households, but that the applicant proposes the uplift applies to all Nest thermostats installed after this application. Savings presented in the application are a weighted average across all trial participants who were offered the feature, rather than just those who accepted it.

- 4.6. The panel discussed the impact on fuel poverty and those vulnerable to the effects of the cold. Whilst energy savings are favourable, a concern was raised that a feature which reduces temperatures below those selected may be dangerous to vulnerable people in fuel poverty who already have heating set at a low level.
- 4.7. The panel recommended the application is approved subject to clarification on the safeguards in place to protect vulnerable households from temperature reductions below safe levels.

## **5. Demonstration Action Application: Energiesprong**

- 5.1. The application relates to a 'whole house' retrofit system.
- 5.2. One member of the panel had an involvement with the project, and did not take part in the review of the application.
- 5.3. A key question for the panel was whether the Energiesprong is materially different from measures installed under ECO previously. The panel noted that the ECO scheme is conceived around the installation of individual measures, making it difficult to assess an approach such as Energiesprong's.
- 5.4. The panel concluded on balance that the installation of multiple measures in a property at the same time is not in itself materially different. The panel was of the opinion that a case could potentially be made that specific elements of the Energiesprong system are materially different to the measures they correspond to, but the current application does not do this.
- 5.5. The panel considered that the application didn't establish that the project would provide value for money. At the end of the contractual lifetime, it is predicted the product would have generated enough savings to repay 28% of the initial cost. An application including only those costs related to the materially different elements of the system may offer better value.
- 5.6. It was unclear what the applicant is hoping to achieve from the additional data obtained during the proposed monitoring period. Clarification on the benefit and use of the information gained may have helped in demonstrating value for money.
- 5.7. The panel were of the view that the application failed to establish that a sample size of over 300 was required to demonstrate the effectiveness of the measure at achieving cost savings. Given the size of the saving expected, in the absence of detailed justification, a considerably smaller sample would be expected.
- 5.8. The panel agreed the existing ECO Technical Monitoring requirements were not appropriate for the product, and specific questions would be required.
- 5.9. The panel agreed the product is at TRL9 as it is deployed on the market.
- 5.10. The panel agreed the safety arrangements for the equipment and installation were reasonable.
- 5.11. The panel agreed the aftercare arrangements were reasonable.

- 5.12. The panel agreed this product could have a positive impact on Fuel Poverty and those vulnerable to the effects of cold, but noted that this would have a large impact on energy bills for the benefit of a few.
- 5.13. The panel recommended the application is declined, but considered that there is merit in a re-application with an adjusted approach. Options that could be explored are a demonstration action application, focussing on the aspects of the system which are materially different to existing measures; innovation measure applications, again in relation to aspects of the system which are materially different to existing measures; or a monitored measure project.

## **6. Demonstration Action Application: Powerflow**

- 6.1. The application relates to a system which uses excess electricity generated by PV panels to contribute to space heating and hot water demands.
- 6.2. A key issue with the application was that the system was poorly described. It was not clear from the simplistic diagrams provided how the system provides the functionality claimed in the text. In particular, the diagrams did not explain how it provides space heating, and it is a central eligibility requirement for ECO measures that they provide a space heating cost saving.
- 6.3. The lack of clarity with regard to how the system operated meant that the panel were unable to confirm that the measure is materially different, or whether it is reasonably expected to achieve cost savings. The fact that the system as proposed did not appear to have been trialled at any properties contributed to uncertainty.
- 6.4. The panel were of the view that the predicted cost savings and estimate were not reasonable, a key reason being that the saving was based on a single project incorporating a 9.6kW PV system and not a more representative 4kW domestic PV system. The panel noted that separate analysis of space heating and hot water cost savings would be helpful, given the importance of the former for eligibility.
- 6.5. The panel agreed the monitoring proposal was not sufficiently detailed and would benefit from additional attention. Specific points raised included the difficulty of establishing a precise baseline when bottled gas is used, the purpose of the control group, and a lack of evidence to show that heat loss from outside storage tanks can be ignored. The panel would also expect to see an independent body or person with recognised expertise in monitoring projects involved in at least the design of the monitoring plan and the verification of results.
- 6.6. The panel broadly felt the cost of the proposal was not reasonable. One panel member noted that the administrative costs were over 20% of the total project costs.
- 6.7. The panel agreed the number of properties was insufficient to provide a degree of confidence in the performance of the measure. The range of property types included was also limited. The panel noted that the application requests advice on sample size, but this is not part of their remit – proposals should be fully developed prior to submission. If expert advice is required, this should be independently obtained as part of development.
- 6.8. The panel were content that the components of the system are at TRL9.

- 6.9. The panel agreed the safety arrangements for the equipment and installation were reasonable.
- 6.10. The panel were content with the aftercare arrangements.
- 6.11. The panel agreed this product could have a positive impact on Fuel Poverty for some property types.
- 6.12. The panel recommended the application is declined with merit to re-apply if the points raised by the panel can be addressed, and overall quality improved with regard to clarity and precision.

## **7. Demonstration Action Application: Tadpole**

- 7.1. The application was for a product to increase the efficiency of a wet central heating system by removing dissolved oxygen.
- 7.2. The panel agreed the product was 'materially different'.
- 7.3. The panel were of the view that the evidence presented was not sufficient to support a reasonable expectation the product would achieve cost savings. The case studies provided were of very limited value as they did not include clear explanations of methodology or, in most cases, any detailed data. There was no clear explanation of the mechanism by which savings would be made, and one panel member questioned the assertion that the return water temperature would be higher if heat transfer to the radiators was increased
- 7.4. The panel did not agree the predicted cost savings and estimate were reasonable. The product claimed savings were made by increasing the efficiency of the boiler, however the predicted increase would result in boiler efficiencies of over 100%.
- 7.5. The panel did not agree the planned monitoring/testing methodology was reasonable. The plan lacked detail, and information on how variables would be controlled to establish savings attributable to the product. The panel noted that finding a control group may be difficult as properties would need to be matched not just on the characteristics of the house but on the characteristics of the heating systems.
- 7.6. The panel noted that connections to meters without pulse outputs did not seem to be included in the monitoring costs. The cost of the proposal was high given the level of uncertainty regarding the potential cost savings that could be achieved by the measure. The panel agreed that additional assurance was required of the potential for cost savings in order to be satisfied that the application represented value for money. The panel suggested lab testing in controlled conditions to establish that the product was capable of producing a cost saving.
- 7.7. The panel agreed the number of properties was too low to provide a degree of confidence in the performance of the measure, and that a range of heating systems and property types would also need to be included. The panel anticipate a high number of variables could affect the efficiency of a heating system; maintenance, repairs, and age amongst others. These factors would need to be addressed by the methodology.
- 7.8. The panel agreed the product is at TRL9 as it is deployed on the market.

7.9. The panel agreed the equipment and installation safety arrangements were reasonable.

7.10. The panel agreed the aftercare arrangements were reasonable.

7.11. The panel agreed this product could have a positive impact on Fuel Poverty and those vulnerable to the effects of cold.

7.12. The panel recommended the application is rejected, but agreed there could be merit in a future application if they could provide evidence of cost savings in the form of a scientific study or lab test with suitable methodology and detailed results. A future application should also address the points raised on the monitoring plan.

### **Date of next meeting**

The next meeting of the TAP would be on Wednesday 31 July 2019 in London.