

Minutes of the ECO Innovation Technical Advisory Panel

From: Roisin Curran

Date: 17 October 2019

Location: London

Time: 09:00

Present

Christopher Mack (Chair), Ofgem

Eric Baster, Ofgem

Patrick Mason, Ofgem

John Shiell, Ofgem

Neil Cutland, Cutland Consulting Ltd

David Glew, Leeds Beckett University

Jason Palmer, Cambridge Energy

Andrej Miller, BEIS

Kay Popoola, BEIS

Introductory remarks by the Chair

The Chair welcomed all panel members to the meeting.

1. Innovation Measure Application: Viessmann Vitocalor

- 1.1. This application was for a domestic CHP unit consisting of a natural gas boiler and fuel cell to provide space heating, hot water, and electricity. The fuel cell is intended to assist space heating through the waste heat produced whilst converting hydrogen into electricity.
- 1.2. The panel agreed that the renewable element of this product is significant.
- 1.3. The panel agreed that the unit is materially different, but questioned whether the Vitocalor is an improvement when compared to other micro-CHP units.

- 1.4. The panel agreed that the Vitovalor could achieve cost savings when replacing an old, inefficient gas boiler. However, they raised concerns over the cost savings achieved when compared to a new, efficient gas boiler. The panel also questioned whether the applicant had taken into account the energy costs of re-forming methane using partial oxidation, or the associated emissions.
- 1.5. The panel were content with the technical evidence provided with the application, however, asked for further evidence to demonstrate actual cost savings in different domestic properties. One panel member asked if the applicant could provide any data/evidence from the 50 UK installs and 3000 EU installs they have already completed.
- 1.6. The panel questioned the benefit of the unit in properties with lower energy use, given that fuel poor consumers tend to under-heat their properties and use less electricity than average. If they use less electricity, they may be less likely to see savings from the measure. They questioned whether installers/surveyors will assess the size of the property and potential energy use.
- 1.7. The panel questioned whether the output of Hydrogen and CO / CO₂ would introduce additional checks, and whether the unit would be less safe than a standard gas boiler if it is not regularly serviced. They queried whether this would require additional technical monitoring, and whether there would be a need for specialist fuel cell CHP engineers to support this, as well as the planned maintenance.
- 1.8. The panel were concerned that the additional £500 maintenance charge for the fuel cell component would make the product unsuitable for fuel poor households.
- 1.9. The panel recommended that the application was approved subject to the above clarifications on cost savings and safety of the product.

2. Innovation Measure Application: Soltherm FSC-EWI

- 2.1. This application was for Soltherm's 'Fire Safe Composite' external wall insulation. The product claims better fire safety than standard EPS EWI, while keeping costs low.

- 2.2. The panel deemed the product to be materially different based on its improved fire safety when compared to standard EWI, and cost saving when compared to mineral wool EWI.
- 2.3. The panel agreed that the product is capable of achieving cost savings.
- 2.4. The application states that the product is an improvement on two types of EWI – mineral wool and standard EPS. The product is cheaper than mineral wool and more fire retardant than standard EPS. The panel asked for further information on how the product is an improvement on other types of EWI, such as PIR boards and phenolic insulation.
- 2.5. The panel questioned how the labour cost can be the same as for standard EPS, given that there are additional requirements such as mineral wool reinforced lintels and fire compartmentalisation cubicles.
- 2.6. The panel requested that the applicant should propose a way for Technical Monitoring to check that the fire breaks / cubicles have been installed in the correct locations. One panel member queried whether a check would need to be introduced to ensure that this insulation has actually been installed, given that the finished product will look identical to standard EPS EWI.
- 2.7. The panel were unsure of the product's fire safety rating, and asked for further information on the BS EN 1350 rating of A2/B. They also asked how this rating compares to other types of EWI, and if any other products have this rating. The panel also noted that an A2/B rating would allow for flaming droplets to an extent, and that the product claims to prevent these. Based on the above queries, the panel recommended that the opinion of an independent fire safety expert should be obtained.
- 2.8. The panel agreed that the product could have a positive effect on fuel poverty and those vulnerable to the effects of cold.
- 2.9. The panel recommended that the application was approved subject to the above clarifications on the improvement, installation costs and fire safety rating.

3. Demonstration Action Application: ProPerla

- 3.1. The application was for a waterproof masonry coating aimed at preventing moisture penetration into external walls on the basis that drier walls have better thermal insulation properties.
- 3.2. The panel agreed that the product is materially different to measures previously delivered under ECO.
- 3.3. The panel agreed that the product is reasonably expected to achieve some cost saving.
- 3.4. The panel agreed that evidence had been provided to support the claim that dry bricks conduct less heat than wet bricks, and that this would most likely result in a cost saving.
- 3.5. The panel appreciated that the purpose of this Demonstration Action is to acquire data on the level of cost savings achievable by the product. However, they suggested that some basic modelling based on the data they already have could be completed to demonstrate potential savings in domestic properties.
- 3.6. The panel agreed that the attributed lifetime of the measure is reasonable.
- 3.7. The panel noted that there is already a Demonstration Action application under review for a similar product. One panel member raised a concern that getting similar data from two demonstration actions may not provide good value for money. It was suggested that, within the context of ECO Innovation, it could be more useful for these applicants to align their monitoring proposals to provide more valuable data.
- 3.8. The panel agreed that the costs of installation and monitoring are reasonable.
- 3.9. The panel agreed that the credentials of relevant testing and research bodies are reasonable.
- 3.10. One panel member suggested that because the product would provide a relatively small cost saving, the suggested sample size of 100 properties may not be enough to effectively demonstrate a saving.

3.11. The panel agreed that the product meets the relevant criteria and is at TRL9.

3.12. With regards to the safety and aftercare arrangements, the panel recommended that assurance should be provided to demonstrate that the product will not exacerbate interstitial condensation issues. One panel member also questioned whether the applicant had considered aftercare arrangements for the monitoring equipment. They asked whether BTS would be responsible for this.

3.13. The panel agreed that the product could have a positive effect on fuel poverty and the effects of cold.

3.14. The panel recommended the application is referred back to the applicant to address the points raised above.

4. Demonstration Action Application: CB Energy

4.1. The application was for a boiler optimisation device intended to reduce fuel use by increasing the length of time between boiler burn cycles. An application was previously made for the July TAP, which was rejected with merit in a fresh application.

4.2. The panel agreed that the product is materially different to measures previously delivered under ECO.

4.3. The panel agreed that the product is likely to achieve some cost saving, although the magnitude was debated. See also 4.6 below.

4.4. One panel member questioned why the applicant had only provided the appendices instead of the full BRE report which had been previously requested.

4.5. One panel member suggested that the cooling time could vary significantly between different boilers, and that the boilers in the example given are particularly inefficient to begin with. It was suggested that these boilers may need to be replaced/upgraded to more efficient versions anyway.

- 4.6. One panel member noted that the figure (0-16%) found in the BRE testing was for commercial buildings which generally have longer heating cycles. This may be closer to zero for domestic properties which have more intermittent heating patterns.
- 4.7. One panel member reiterated a concern raised at the July TAP regarding comfort levels for the occupants. The mechanism for achieving cost savings is still not entirely clear, and the concern is that - unless the laws of thermodynamics are being broken - it seems that comfort levels must be lower. The panel agreed that, in order to test this, a longitudinal survey would be required as part of the monitoring plan. An evaluation on the impact on the occupants should be provided, notably whether they noticed any change in thermal comfort during the 'optimiser off' days.
- 4.8. One panel member noted that that only a small number of properties would have internal temperature sensors and gas meter monitoring. The panel agreed that it would be appropriate to have these installed in every property in the demonstration action. Additionally, it would be useful to install temperature monitoring in each home to measure if internal temperatures are lower when the optimiser is working.
- 4.9. One panel member reiterated a concern from the previous panel – if the product can be turned off and on by the consumer, this could affect the accuracy of monitoring results.
- 4.10. The panel requested that the applicant provide a more detailed breakdown of the overall project costs.
- 4.11. The panel requested more detail and justification on the credibility of those responsible for data collection and monitoring.
- 4.12. One panel member noted that although the sample size was reasonable, there was very little justification for why it had been chosen.
- 4.13. The panel were content that evidence had been provided to demonstrate the appropriate TRL.

- 4.14. The panel reiterated a point made at the July panel – that the product may breach the terms of a boiler’s warranty or service plan. They agreed that the applicant still hadn’t fully addressed this issue, or how it would be dealt with.
- 4.15. One panel member questioned whether changes would need to be made to the product at the end of the demonstration action – particularly if they will be doing day on/day off monitoring, will they need to deactivate this behaviour at the end of the trial? Another panel member questioned whether the applicant had considered how they will stop collecting data at the end of the trial, and the implications of GDPR if they failed to do this. They also questioned whether or not the product has an on/off switch, as this could potentially result in inaccurate monitoring results from consumers turning the product on/off.
- 4.16. The panel agreed that the product could have a positive effect on fuel poverty and the effects of cold.
- 4.17. The panel recommended the application is referred back to the applicant to address the points raised above.

5. Demonstration Action Application: Energiesprong

- 5.1. The application relates to a ‘whole house’ retrofit system. An application was previously made for the July TAP, which was rejected with merit in a fresh application.
- 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. The panel agreed that the renewable element of the measure is significant, and that, after the clarifications provided, the measure can be considered ‘materially different’.
- 5.4. The panel agreed that the measure is expected to achieve cost savings, but noted that (according to the applicants’ own data) there may be a proportion of these properties where the consumer would not save any money.

- 5.5. The panel agreed that delivery of this measure with the comfort plan may result in consumers paying the same as, or more than they currently pay, which does not align with the intent of ECO.
- 5.6. The panel requested a further breakdown of the actual monetary saving on space heating that could be noticed by the consumer. They also asked why the comfort plan needs to be incorporated into this ECO demonstration action, and if it could be completed with this aspect removed. They noted that the comfort plan is designed to recoup upfront capital expenditure, and that this should be included as part of the overall cost of the Demonstration Action. In this case there would be nothing to recoup and the occupants should receive the entire benefit of lower energy bills.
- 5.7. The panel also questioned how the comfort plan fits in with reducing bills for fuel poor customers. Will consumers be paying less after the measure is installed as part of this demonstration action? Sharing of savings with the landlord and/or developer is a good objective, but does not fit in with ECO intent. One panel member suggested that a better approach, for the purpose of an ECO Demonstration Action, may be to reduce the number of homes in the trial and ensure that they are fully funded with no comfort plan.
- 5.8. One panel member noted that the contract between the various parties involved is crucial to delivering the guaranteed performance and maintenance plan.
- 5.9. One panel member questioned whether maintenance would need to be completed by a bespoke, specifically trained person/company, and whether parts of the system can be easily removed if they fail.
- 5.10. The panel questioned why not all homes were being fully monitored. Particularly energy use before retrofit and in-home temperature monitoring. It was suggested that the applicant further reduce the sample size to reduce costs and get more value from performance monitoring, by fully monitoring all the homes included in the smaller sample.
- 5.11. The panel did not agree that the monitoring costs were reasonable and questioned why the cost per property had increased significantly from the figure stated in the July application. One member questioned why the 10% administration cost was so high, and

why the prototype (TRL 7) cost is the same as the cost of deliverable product (TRL 8 and 9).

5.12. The panel agreed that the credentials of relevant testing and research bodies are reasonable.

5.13. The panel queried why, given the magnitude of expected savings, the demonstration action would need such a large sample size (125 properties). It was suggested that reducing this number would still provide appropriate accuracy, reduce costs and therefore improve value for money.

5.14. The panel were content that evidence had been provided to demonstrate the appropriate TRL.

5.15. The panel agreed that the safety arrangements were reasonable.

5.16. The panel agreed that the demonstration action could have a positive effect on fuel poverty and the effects of cold if the comfort plan was removed.

5.17. The panel recommended the application is referred back to the applicant to address the points raised on the comfort plan, cost savings and general costs, the sample size, and aftercare arrangements.

Date of next meeting

The next meeting of the TAP is yet to be confirmed.