

Minutes of the ECO Innovation Technical Advisory Panel

From: Jessica Kissack

Date: 3 April 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

Jessica Kissack (Chair), Ofgem

Luciano Santos (Secretariat), Ofgem

Kay Popoola (Observer), BEIS

Introductory remarks by the Chair

The Chair welcomed all panel members to the meeting.

1. Innovation Measure Application: Q-Bot

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

1.2. The panel agreed the product was capable of achieving cost savings.

1.3. The panel agreed the product was an 'improvement'.

1.4. One panel member raised a concern that the installation method would mean the ability to conduct technical monitoring of the measure would be reduced. One member stated the information gathered as part of the installation process should enhance current Technical Monitoring information.

1.5. One panel member raised the issue of the impact of spillages but agreed with other members that any standard spillage would evaporate.

1.6. One panel member raised a concern around the approach to electric wires and other services under the floorboards. Unclear from application how wiring attached/in close proximity to the underfloor boards would be dealt with as part of the installation of the product.

- 1.7. One panel member raised a concern about fire safety of insulation but agreed that the fire safety statement provided by the applicant satisfied their concerns.
- 1.8. The panel agreed that the product could positively impact on fuel poverty.
- 1.9. The panel had a general discussion regarding the fact that an application which involved measuring actual savings may have been preferable. In applying for an innovation measure based on the existing underfloor insulation deemed score, one of the claimed benefits of the product (airtightness improvements) is not tested and accounted for. However the proposed approach is acceptable within ECO.
- 1.10. One panel member asked whether there was evidence of the lifetime of the product. The panel noted that the BBA certificate provided an indicative lifetime for the product.
- 1.11. The panel recommended the application is approved subject to further clarifications being provided regarding the approach to wiring and other services under the floorboards.

2. Innovation Measure Application: HydroGenie

- 2.1. The panel agreed the product was 'materially different'.
- 2.2. The panel raised a concern that given this was a new type of measure, this product could set a standard for products removing air from central heating systems.
- 2.3. The panel agreed there was insufficient evidence to support the assertion the product was capable of achieving cost savings. One panel member referred to the outcomes of research on a similar product, where it was found that claimed improvements in the efficiency of the heating system were in fact realised by the servicing of the central heating system, including adjusting flow and return temperatures, draining or cleaning of the heating system (flushing the heat exchanger etc) that accompanied the installation of this type of product. Although the product may assist in ensuring systems are in good working order to achieve efficiencies, it may be difficult to assert that systems without the device fitted are not also appropriately maintained. Any additional savings require greater evidence.
- 2.4. The panel agreed that the report on cost savings provided as part of the application did not provide sufficient evidence of actual cost savings. The panel agreed that additional testing was required in order to evidence whether the product did or did not achieve cost savings. Of particular interest would be the persistence of any benefit for an untreated system after an extended period.
- 2.5. The panel suggested that if the product applied as a demonstration action it could be eligible.
- 2.6. The panel recommended the application is rejected but there could be merit in a future innovation measure application once information was known about the actual cost savings achieved. Alternatively the product could apply as a demonstration action in advance of actual cost savings being determined.

3. Innovation Measure Application: Switchee

- 3.1. The panel discussed various aspects of claims for the product being 'materially different'. In particular, the panel noted that the fact that the product doesn't rely on Wi-Fi to operate, it has more sensors than other smart thermostats, it provides for an appointment booking system and it is a 'fit and forget' product, means that it is 'materially different'.
- 3.2. The panel discussed other aspects of the product which could affect the benefit of the measure for residents. One panel member raised a concern regarding the annual data charge in terms of who is expected to pay this, and if it is the landlord, what happens if this payment lapses. One panel member raised a concern about the broader connectivity features of the product eg whether it is capable of being set up with a smart phone.
- 3.3. The panel agreed the product was capable of achieving cost savings.
- 3.4. The panel agreed the product was an 'improvement'.
- 3.5. The panel agreed the existing Technical Monitoring question is likely to cover this product, subject to further clarification. Suggested that an additional question be included to understand who is contracted to pay the annual data charge.
- 3.6. The panel agreed the measure appears to meet the safety and standard requirements for ECO3.
- 3.7. The panel noted that earlier discussions regarding the service charge, accessibility and contractual arrangements would affect the impact of the product on Fuel Poverty and those vulnerable to the effects of cold. The panel also noted that alerts regarding Fuel Poverty and under-heating could potentially increase heating (and therefore the cost of heating) in a home. The panel noted that comfort taking is an acceptable outcome of ECO.
- 3.8. The panel recommended the application is approved subject to further clarifications being provided regarding who is contracted to pay the annual data charge and more information on the scenario where payment of this charge lapses. Clarification also requested on the broader connectivity features of the product eg is it able to be set up with a smart phone.

4. Demonstration Action Application: AirEx

- 4.1. The panel agreed the product was 'materially different'.
- 4.2. The panel agreed the product was reasonably expected to achieve cost savings.
- 4.3. The panel agreed the predicted cost savings and estimate were reasonable.
- 4.4. The panel did not agree the attributed lifetime of the measure was reasonable. The panel raised concerns about the requirement for active maintenance by the householder with respect to battery lifetimes and Wi-Fi connectivity.
- 4.5. The panel felt that this was a very comprehensive and well-written proposal. However, the panel did not agree the monitoring proposal was reasonable. One member stated that the proposal was not intending to monitor the variables which are most relevant to understanding the cost savings achieved by the product. The panel agreed that the proposal to monitor U-Values over a two week period would be insufficient to get a

meaningful result regarding the cost savings achieved by the product. The panel stated that a large number of variables would affect the results, such as external air temperature, wind speed, and wind direction. The panel agreed there was a lack of clarity about how energy saving is derived from U value measurement. There was further doubt about the value of the experimental snapshot U value measurement techniques, especially as there didn't appear to be any overlap proposed between the properties receiving conventional and experimental U value measurements.

- 4.6. The panel discussed various potential alternative monitoring approaches. For all approaches, a minimum of one heating season for monitoring was recommended by panel. One approach discussed was to monitor direct measurement of energy use before and after install. Another was to calculate energy saving based on measured difference in average temperature in the floor void before and after installation of the measure. A third approach was to measure U-Values with the vent open and closed, and to calculate savings based on the measurement of the proportion of time the measure is open and closed.
- 4.7. The panel agreed that more information on the location of the properties to be monitored should be included to ensure that the range of cost savings achieved by the product in different climatic locations could be assessed. The panel stated the number of properties for delivery of measures had been discussed as part of the monitoring proposal, and was not adequate to provide a degree of confidence in the performance of the measure.
- 4.8. The panel suggested that the monitoring should include a higher number of properties in order for the results to be statistically significant. A control group should be included if there wasn't going to be extended periods of before and after monitoring.
- 4.9. The panel had a general discussion about the usefulness of an analysis of appropriate sample sizes for monitoring proposals to achieve statistical significance. Action taken to produce analysis.
- 4.10. The panel agreed the cost of installation and monitoring are reasonable.
- 4.11. The panel agreed the credentials of laboratory tests / test house or research author are reasonable.
- 4.12. The panel did not feel that the proposal to take snapshots of data readings during Technical Monitoring added any value.
- 4.13. The panel agreed evidence of laboratory testing and limited testing is reasonable.
- 4.14. The panel agreed in general that the safety arrangements for the equipment and installation were reasonable. Clarity requested on how the product fails 'open'. The panel discussed the requirement for the product to not be installed in radon areas and suggested it must be specified that the product is not installed in radon areas.
- 4.15. The panel agreed the aftercare arrangements were reasonable.
- 4.16. The panel agreed this product could have a positive impact on Fuel Poverty and those vulnerable to the effects of cold.

4.17. The panel recommended the application is referred back to the applicant for reconsideration of the monitoring proposal.

5. Demonstration Action Application: Radbot

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

5.2. The panel agreed the product was reasonably expected to achieve cost savings.

5.3. The panel did not agree the predicted cost savings and estimate were reasonable, but noted that the monitoring would provide evidence as to what was reasonable.

5.4. The panel were uncertain as to whether the monitoring methodology was reasonable. The panel said more clarity was required as to what homes were included in the monitoring sample; between the homes monitored under this application and those currently being monitored under a pre-existing project, a representative sample of the housing stock should be achieved.

5.5. The panel had questions on how unconnected changes in energy use would be removed from the results. One panel member stated they should clarify whether adjustments will be made for weather and temperature when calculating real savings.

5.6. The panel suggested a number of ways monitoring plans could be strengthened. These include the inclusion of a control group or continuous before and after monitoring, to help account for population-wide trends; the extension of monitoring to cover two heating seasons; and gas metering in 100% of the properties. Another suggested it could be helpful if occupancy data can still be obtained from the product when it is in 'non-smart' TRV mode.

5.7. The panel agreed the cost of installation and monitoring were reasonable.

5.8. The panel agreed the credentials of laboratory tests / test house or research author were reasonable. One panel member noted that there was a lack of information on any quality assurance checks which would be carried out on the data.

5.9. The panel tentatively agreed the number of properties was adequate to provide a degree of confidence in the performance of the measure, although this was subject to the clarifications identified as part of the discussion on the monitoring proposal. One panel member suggested that a larger sample size would be preferred.

5.10. The panel agreed the existing ECO Technical Monitoring requirements were not appropriate for the product. The panel were satisfied that the proposals in the application to develop technical monitoring requirements were reasonable.

5.11. The panel agreed the product is at TRL9 as it is deployed on the market.

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

5.13. The panel broadly agreed the aftercare arrangements were reasonable, though raised a concern regarding the reliance on batteries and that the batteries required replacing after two years. The panel questioned whether further measures could be implemented to

encourage batteries to be replaced, and noted it would be preferable for the product to default to standard TRV functionality when batteries are flat.

5.14. The panel agreed this product could have a positive impact on Fuel Poverty and those vulnerable to the effects of cold, but noted that households in Fuel Poverty may be unlikely to replace the battery due to battery cost, or remove the battery for use in other home devices, which could significantly affect the impact of the product on Fuel Poverty.

5.15. The panel recommended the application is approved subject to further clarification being provided regarding the composition of the proposed monitoring sample, and what functionality the product defaults to when the batteries are flat or removed.

6. Demonstration Action Application: Schneider

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

6.2. The panel agreed the product was reasonably expected to achieve cost savings.

6.3. The panel discussed the lack of evidence to determine whether the predicted cost savings and estimate were reasonable, but noted the monitoring would provide evidence as to what was reasonable.

6.4. The panel broadly felt the monitoring proposal would be reasonable with some adjustment and clarifications. The panel agreed the control group should have standard heating controls rather than smart thermostats installed, as the performance of standard heating controls is better established. The panel asked how the monitoring will disaggregate hot water from the cost savings measured. The panel recommended the applicant complete the trial over 2 heating seasons, and requested further information on plans for ensuring property and occupancy types are mixed.

6.5. The panel broadly felt the cost of the proposal was reasonable. One panel member stated that a breakdown of the supplier administrative costs was required as it currently was close to 5% of the total project costs.

6.6. The panel agreed the credentials of laboratory tests / test house or research author were reasonable, though further clarification is required on the roles and tasks of each party.

6.7. The panel agreed the number of properties was adequate to provide a degree of confidence in the performance of the measure, provided a range of types and tenures is achieved.

6.8. The panel agreed the technical monitoring proposal was appropriate. One member suggested that an additional question should be included for the TM Agent to check whether the App is functioning.

6.9. The panel agreed the product is at TRL9 as it is deployed on the market.

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

6.11. The panel were broadly content with the aftercare arrangements, but asked for assurance that all aftercare requests would be honored if requested.

- 6.12. The panel raised a concern regarding the reliance on batteries and that the batteries required replacing after two years. The panel requested clarity on what the product defaults the radiator valve to if the battery is not replaced/is removed.
- 6.13. The panel agreed this product could have a positive impact on Fuel Poverty and those vulnerable to the effects of cold, but noted that households in Fuel Poverty may be unlikely to replace the battery due to battery cost, or remove the battery for use in other home devices, which could significantly affect the impact of the product on Fuel Poverty.
- 6.14. The panel recommended the application is approved subject to further clarification being provided regarding the control group, range of properties, supplier administrative costs and aftercare provisions.

7. Demonstration Action Application: Stormdry

- 7.1. The panel agreed the product was 'materially different'.
- 7.2. The panel agreed in theory the product was reasonably expected to achieve cost savings.
- 7.3. The panel did not agree the predicted cost savings and estimate were reasonable. Whilst it is accepted that wet bricks have a higher thermal conductivity than dry, further information is needed on brick moisture levels in existing buildings.
- 7.4. The panel did not agree the planned monitoring/testing methodology was reasonable. One panel member stated that the proposal would not establish key data: the degree to which a real world brick wall is wet, and with what frequency and duration. The potential for the product to achieve cost savings is premised on one research study conducted on soaking bricks in a test environment.
- 7.5. The panel agreed the proposal for data to be gathered through spot monitoring was insufficient to establish real world conditions – the data should be collected continuously. In addition, data should be collected alongside regarding moisture levels across the wall.
- 7.6. The panel did not agree the cost of monitoring was reasonable. The cost of the proposal was very 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 claimed cost savings in order to be satisfied that the application represented value for money.
- 7.7. The panel agreed the credentials of the laboratory test was reasonable.
- 7.8. The panel agreed the number of properties was adequate to provide a degree of confidence in the performance of the measure but it was unclear that the range of properties and walls was reasonable. The panel anticipate a high number of variables affect the extent and proportion of time that a brick would be wet; location, orientation, and exposure amongst others. These factors should be addressed by the methodology.
- 7.9. The panel agreed the product is at TRL9 as it is deployed on the market.
- 7.10. The panel agreed the technical monitoring proposal was relevant.
- 7.11. The panel agreed the equipment and installation safety arrangements were reasonable.

- 7.12. The panel agreed the aftercare arrangements were reasonable.
- 7.13. The panel agreed this product could have a positive impact on Fuel Poverty and those vulnerable to the effects of cold.
- 7.14. The panel recommended the application is rejected, but agreed there is merit in a future application if further information is available regarding the real world thermal performance of walls when wet and the frequency and duration of wall wetness across a range of locations and orientations. Alternatively the panel suggested an application could be submitted which was intended to monitor the information that was considered to be missing from this application, provided it represented better value for money.

8. Demonstration Action Application: GSHP and Smart Controls

- 8.1. The panel noted that none of the components of the system were materially different, but the notion of using them in combination was new.
- 8.2. The panel agreed the system was reasonably expected to achieve cost savings.
- 8.3. The panel stated the application did not provide sufficient information to determine whether the predicted cost savings and estimate were reasonable, or expected improvements in coefficients of performance.
- 8.4. The panel raised a concern that the basis by which the system would achieve cost savings is through an algorithm, but that the applicant had confirmed that the algorithm had not yet been developed. The panel agreed that this meant the system as a whole could not yet be considered to be at TRL 8.
- 8.5. The panel also noted there was very little detail provided on how the physical technology functions with regard to the thermal storage element, and without further information it was impossible to conduct an assessment.
- 8.6. The panel did not agree the monitoring proposal was sufficient, in particular that there was no proposed pre-installation monitoring. They also noted that the monitoring proposal was lacking in detail.
- 8.7. The panel did not consider the application represented value for money based on the information provided, in particular given the basis by which the cost savings would be achieved was not yet developed. The cost of the project was thought to be extremely high. The panel stated that additional evidence of potential cost savings was required in order to justify a project of this value. The panel also noted the cost breakdown was very high level.
- 8.8. The panel recommended the application is rejected absolutely.

Date of next meeting

The next meeting of the TAP would be on Monday 15 July 2019 in London.