WP5b ITT Clarification Questions and Answers

Q1. Will there be a requirement for the provision of BMS Control Solutions within this project?

A. Building Management Systems are not in the scope of this ITT. Proposals for Lot 3A: Burner integrated with a shell boiler (>400 kW) will need to be supplied as a complete package including the burner, boiler and the control system for those components. Proposals for Lot 3B: Control for a boiler cascade (<400 kW) need only provide the control for the boilers within the cascade.

Q2. As far as the H_2 purity is concerned, what is the gas purity level you are dealing with?

A. As per Annex 2, Figure 1 of the ITT, the gas quality proposed from Hy4Heat Work Package 2 should be considered as the gas that developed appliances will be supplied with.

Q3. Is the WP5B competition open to organisations outside the EU?

A. The competition is open to all organisations within the European Economic Area (EEA). Unoccupied trials and testing must be in done in Great Britain.

Q4. Is the competition open to companies that have a UK presence but are owned by groups that are based outside the EU?

A. The competition is open to all organisations within the European Economic Area (EEA). Unoccupied trials and testing must be in done in Great Britain. Organisations need to demonstrate a presence in the UK and that their products have a viable route to market in the UK.

Q5. Market research was supposed to be provided by the contractors awarded WP5a. When is this report going to be made available?

A. This report will not be available ahead of the tendering process for WP5b, the report will be made available when the work is complete.

Q6. Would a generic 500kW hydrogen/NG dual fuel burner, that could be applied to any shell and tube heat exchanger or any other heating application, be acceptable under Lot 3A as Innovative?

A. Lot 3A is for Projects developing the forced draft burner for a larger boiler unit (≥400 kW). The burner and shell boiler will need to be offered as a fully integrated product. Evidence of the burner being developed and integrated into a specific appliance is critical for completion of milestones 1-6. The potential for wider application of any burner developed in this programme is of particular interest and details of this should be included in the business plans that will need to be produced as part of milestone 7.

Q7. Would a burner only project under Lot 3A proving Hydrogen / NG dual fuel at 500KW be acceptable?

A. No, the burner and shell boiler will need to be offered as a fully integrated project.

Q8. Could a dual fuel hydrogen/NG burner with forced draught in the >30kW <400kW area for Lot 3 be a proposal without a specific reference application?

A. No, BEIS are not seeking development of burners of this type under Lot 3. The work is deemed too similar to that already funded under Hy4Heat Work Package 4. To meet the wet space heating power requirements specified, boiler cascade control systems are being procured under WP5b Lot 3B.

Q9. From the ITT, 'This would likely include appliance types that are common in the market as well as those for which hydrogen replacements are more technically challenging to develop.'

What does this mean? What does BEIS consider to be a product that is 'more technically challenging'?

A. BEIS are interested in receiving bids for common appliances that have large sales volumes and high market shares. Please refer to the evaluation criteria given in section 8 of the ITT. However, BEIS is aware that some commercial gas burning equipment, for example Chinese restaurant wok burners, launderette tumble dryers or craft torches, may also be challenging to convert to hydrogen but may not have large sale volumes. BEIS are interested in receiving bids for such products as well as common appliances.

Q10. From the ITT, 'Suppliers delivering fully certified appliances may need to price up to 20% more.'

Does this mean that if the indicative price is £100,000 an appliance that is fully certified with the 2 months demonstration 'needs' to price at £120,000? Presumably the total amount of £120,000 will be paid against the milestones in the contract, or will the added £20,000 be held until the trials are completed?

A. For suppliers meeting the core+ requirements, i.e. those that are developing fully certified appliances and that have demonstrated safety certified appliances for 2 months, it is acknowledged that more funding will likely be required. All prices given in the ITT are guidelines.

Yes - All payments will be made on delivery of milestones as per section 9 of the ITT.

Q11. In relation to project pricing, is the bidding amount judged against the guideline price, as for Hy4Heat WP4?

A. Price will be marked proportionately to the lowest bid within each sub-lot that is meeting the same requirements (i.e. core or core+ for appliance development). The lowest bid will receive maximum marks for the price element and then all other bids' prices will be marked proportionately to that bid. An example is given in section 8 of the ITT.

Q12. 'Price will be marked proportionately to the lowest bid within each sub-lot that is meeting the same requirements (i.e. core or core+ for appliance development). The lowest bid will receive maximum marks for the price element and then all other bids' prices will be marked proportionately to that bid.'

However, it is likely that this will not produce the 'highest quality proposal'. Can you assure us that 'meeting the same requirements' does mean that the price is judged against the proposal quality? A low price should not enable a low quality bid to be funded.

A. Meeting the same requirements refers only to bids meeting either the core or core+ requirements. e.g. the price of an appliance bidding into Lot 1A meeting the core requirements of the ITT will not be compared with an appliance also bidding into Lot 1A meeting the core+ requirements of the ITT.

Price makes up 25% of the overall score available (non-financial criteria make up the other 75%) and the minimum pass mark of the ITT is 60%. Low price and low quality bids will therefore not meet the pass criteria.

Q13. Please define the phrase 'widely selling'. Would say a burner for pottery kilns, which is not one of your examples, be deemed to be widely selling?

A. The list of example projects given in the ITT is non-exhaustive.

Widely selling refers to the market need for the proposal. WP5b suppliers should clearly evidence the market need for their proposals as part of their bids. Such evidence could include, for example, current market share, current and anticipated market sales, and any future market trends etc. Where possible, a reference natural gas product should be used to provide this justification.

Q14. Are the following components of burners under your definition of 'ancillary system component'.

- **The ignitor**
- **The flame detector**
- **The pilot flame**
- **Or would the 'system component' that includes the above be the 'flame ignition and supervision system'?**
- **Is the fuel injection nozzle a component?**
- **Is the flame stabiliser a component?**

A. No, the scope does not include appliance parts. Lot 5 is focused on the ancillary system components that are used by installers to complete the gas supply chain from the appliance isolation valve, up to and including the ECV. Therefore, the above would not be considered under Lot 5. If required, they should be included as part of the appliance development in Lots 1, 2, 3A or 4.

Q15. What is a Bunsen or micro burner?

A. Bunsen and micro burners are often used in laboratories to provided heating, sterilization, and combustion.

Q16. Would burger fryers and chapatti hot plates be included under Lot 1?

A. Yes, however all bids must address the objectives given in section 1.3 of the ITT.

Q17. A maximum of 9 projects under Lot 1 would seem to be the limit, is this the case? Could a single bidder bid for multiple burner types?

A. There will be a maximum of 18 projects under Lot 1. 3 projects meeting each of the core and the core+ requirements may be considered per sub-lot i.e. 3 sub lots x 2 requirements x 3 projects. A single bidder is welcome to develop multiple burner types as part of different applications. An application form must be submitted for each individual bid.

BEIS reserve the right to take a portfolio approach in the event that more bids are received than funds that are available. Funding will be allocated to the highest scoring bids in each sub-lot, and then allocated in ranked order from the highest scores in each sub-lot until the funding limit is reached.

Exceptions to this may include:

- Bids of insufficient quality;

- Bids that do not meet the ITT requirements;
- If funding has been allocated to identical technology of a higher score;
- If there is an imbalance of successful bids across the lots.

Q18. If a burner type is available in all three sizes classes, is that three separate funded projects?

A. For Lots 1, 2, 3A and 4 an entire appliance is required. Not only the burner. Successful bids demonstrating appliances of different power output which use the same burner type would be accepted as separate funded projects. Suppliers bidding for more than one project should provide details of any discount that they wish to offer on their costs. If they are awarded more than one project, to take account of any duplicated work in their multiple proposals. Any discount will not form part of the assessment of the cost but will be applied to the signed contracts.

Q19. Is it accepted that for non-aerated hydrogen flames the same colour of the NG aerated flame cannot be matched? Is the key requirement for hobs that the flame is visible?

A. Although, like-for-like should be strived for wherever possible, it is accepted that the hydrogen appliances will not be identical to the natural gas equivalents in all aspects of appearance. All open flames must be visible. The obvious route is visibility through provision of coloured flames, but if innovative alternatives are proposed they will be considered.

Q20. 'Provide a clear description of the proposed hydrogen appliance. Describe the approach…'

All this seems to imply that one design has to be proposed for a given application with reasons given for why this approach may work, before any work has been done. Is this a correct interpretation that one design should be proposed?

A. Bidders should include designs which they deem to be feasible in delivering the proposed hydrogen appliance. This could include multiple designs that they wish to test in order to meet the requirements set out in section 1.3 of the ITT.

Q21. We have two potential designs that we think are viable and they are substantially different. Can they be submitted as separate projects for the same reference product or do they need a different reference product? Could this different reference product be a different kW burner rating?

A. Designs which are significantly different and therefore include different approaches to appliance development i.e. different burner types, should be submitted as different applications. These could utilise the same reference product although the supplier must highlight in their applications how the designs differ and why both should be considered for funding.

Q22. Please explain what information on the proposed design and reference product that is required at Milestone 1 that is not required in the application.

A. Milestone 1 will require a more in-depth feasibility report than has been provided at the application stage. Details of what is required for completion of milestone 1 can be found in section 7.1 of the ITT.

Q23. It would appear that no experimental work is required in the first 3 months of the project to Milestone 1. Is this correct?

A. Milestone 1 is required to be delivered by the end of January 2020 and may not require experimental work if the supplier can provide all the relevant evidence required by the milestone. However, if milestones can be delivered early then this would be encouraged, milestone delivery dates are required as part of the bids and payment will be issued on milestone completion.

Q24. In Lot 2 Air heaters, are direct fired heaters included?

A. Yes, direct fired air heaters are included. All appliances must be designed for permanent installation and to use a fixed hydrogen supply. The Key challenges need to be addressed. Portable appliances are not included in Lot 2.

Q25. Where projects are for 'hydrogen ready', 'dual fuel' or adaptable' appliances, a detailed description of functionality and key components should be provided, including estimates of conversion times and component costs.'

A dual fuel appliance has no conversion time, which is why it is important to develop them. Can we just say this?

A. Yes. However, it will be necessary to demonstrate how the product can meet fully the specification of 'dual fuel' provided in Annex 1 of the ITT. The tenderer's plans to achieve this will need to be discussed in detail in their bid.

Q26. 'A final deliverable will include delivery of a business plan for scaling up the manufacture of appliances and training of installers in preparation for a potential future community trial and subsequent sales.'

A dual fuel appliance has no conversion required and no requirement to train conversion engineers. Can we simply say this and not be marked down? There will be a training need for engineers to familiarise them with the new dual fuel technology that will be in new appliances.

A. All training of installers, including that specific to the use of hydrogen rather than natural gas, should be included in the business plans including the training need for engineers to familiarise themselves with new dual fuel technologies. If no conversion is required then no training for this needs to be referenced.

Q27. Please define 'dumping' heat.

A. Heat must be provided as the primary function of appliances. The term dumping therefore refers to appliances that might produce heat as a by-product of producing electricity and have not utilised this heat.

Q28. The hydrogen purity specification includes 0% N_2 and 0% CO_2 and a Wobbe Index of 46, 99.9% hydrogen. Is commercially available bottled hydrogen a valid gas to use? Can you please confirm that this is the case?

A. Appliances should run on the gas standard given in appendix 2 of the ITT.

Q29. Will this low quality hydrogen specification, specifically the allowed 3% of inerts, be modified to enable dual fuel appliances to be produced with the same heat input?

A. No, the gas specification will not be modified for the purpose of Hy4Heat WP5b.

Q30. In WP5, Milestone 6 outlines a requirement for 5 fully boxed prototypes. Our technology used within our manufactured goods is very expensive and producing 5

fully boxed units would take the project significantly out of budget. With the time and budget restraints in mind, would one prototype be sufficient under this programme?

A. The ITT has been re-issued with milestone 6 amended (on pages 34, 45 and 46) to specify only one fully boxed appliance to be delivered for Lot 4: Combined Heat and Power. This is the only change made to the ITT.