

Network Innovation Competition 2020 Supplementary Answer form

Project Name	HyNTS FutureGrid Phase 1		
Question number	#3	Pro forma section	5
Question date	10/09/2020	Answer date	14/09/2020
Question summary	<p>Phases 2 and 3 depend on the success of phase 1. As per figure 10 page 65, phase 2 and 3 timelines overlap with phase 1. What is the consequence for those projects if phase 1 is unsuccessful? Please clarify any other interdependencies of outcomes within phase 1, and how network customer funds will be protected.</p>		

Answer (please retain document formatting and do not exceed 2 pages unless otherwise agreed with Ofgem)

At the heart of the FutureGrid programme is an offline transmission test facility that is representative of the National Transmission System (NTS). This offers an efficient, cost effective and flexible approach to testing and trialing of a wide range of potential scenarios of hydrogen and natural gas blends in a safe environment. Should a specific result or number of outcomes as part of the Phase 1 testing programme produce unexpected results then the test facility provides the opportunity to conduct more detailed and comprehensive testing and analysis to identify the route cause and develop a resolution to that specific issue. As the

Phase 1 programme seeks to test a wide range of assets and operating conditions it is expected that whilst there may be some unexpected results but it is highly unlikely that Phase 1 will be unsuccessful. This is based on the experience of international counterparts, a wide range of literature and the UK gas distribution networks.

The programme of work for FutureGrid overlaps to allow for an agile development of technology and testing capabilities on the test facility. There are many more complexities to Phase 2 to deliver offline testing capabilities for hydrogen separation technologies (deblending) and hydrogen in compressors which will require a longer period of Front End Engineering and Design (FEED). Therefore, the overlap of Phase 2 with Phase 1 is provided to allow for this work to be completed in good time and is sufficient to allow for the results from Phase 1 to directly input into the Phase 2 FEED. Phase 3a seeks to develop an online demonstration of hydrogen injection which will again require a longer period of FEED alongside the initial analysis required to identify the most suitable location for the first online demonstration. Whilst Phase 3 overlaps with Phase 2, it follows the end of Phase 1. This allows for the key outputs including the updated safety case and mitigations required for operating the NTS with hydrogen within a live environment to be factored into any planned approach. Phase 3b opens up the offline transmission test facility for third party testing and trials. This phase will depend on the third parties who require access to the facility and scale of testing they require. The initial steps of Phase 3 will be to secure the first tranche of third parties and complete the relevant design specifications and test plans for their specific equipment before conducting testing. These activities can be completed in parallel to Phase 2 which allows for the earliest possible access to be provided to third parties to utilise the facility.

By overlapping each phase, we will ensure that an accelerated approach to facilitating the hydrogen transition is possible, providing the widest possible set of testing conditions for third party testing and supply chain development. The agility and flexibility of the FutureGrid programme presents a cost-effective approach to provide a platform to test, trial and demonstrate the capability of NTS. With clear stage gates and clearly defined outcomes required to determine success of each deliverable within the project, network customer funds will be protected with the opportunity to halt the project. The project total investment of £12.7m with a projected £67m benefit offers over a 5:1 return on investment which presents a strong value proposition for network customer funds in seeking to address a critical question of the capability of the NTS to transport hydrogen.