

General -

Potential Savings - A key motivation for the advancement of a Smart Flexible Energy System is the claim that 'gross benefits to consumers of £3-8bn/yr can be realised in 2030' 'saving GB consumers £17-40bn cumulative by 2050'. These estimates must have been based on assumptions of the generation plant mix, system demand makeup and fuel prices and many others. This information should be made available as it will provide a useful guide as to what needs to happen to realise these benefits and for investors/developers to assess the veracity of the assumptions and the associated risks.

Investment Appraisal - There is little discussion of what information potential developers need to identify opportunities in the emerging sector. Investors need to be able to evaluate the potential returns and scale of the market and risks. NGC have a role to play in informing the market and fostering investment to enable benefits to be realised. The potential returns for flexibility in SO timescales are influenced by the size of the need that may be limited by successful balancing by BRPs and the level of competition. In Germany although the requirement for balancing has not changed significantly the balancing market prices have collapsed. This is due to a lot of generators, which have suffered from their utilisation being displaced by wind generation, all competing for the supply of balancing services against a limited requirement.

Q3 The application of storage schemes needs to recognise the importance of cycle efficiency that may be as low as 70% and 80% and less where transmission across the network incurs losses. These effects severely limit the opportunity for arbitrage and undermine the financial case. The market size is limited as prices converge through the application of schemes. More information is needed by investors to evaluate these effects.

Q4 The value of storage can be best realised when used to enable arbitrage in the energy market. Network operators should contract for demand side management to peak load and defer investment rather than own storage.

Q 11 To encourage investment in the provision of flexibility potential investors need to be able to evaluate the potential returns and scale of the market requirements and risks.

Q 23 Fundamental changes to distribution tariffs will be needed to support the costs of providing and operating a more active network with embedded generation and behind the meter generation. An analogy can be drawn between the uncoordinated use of the road network and its funding. Current use of system tariffs and payments associated with mitigating triad peaks are distorting the generation market.

Q 45 - Several references are made to the need for a holistic approach to managing developments without explaining how it will be realised. To manage significant change there is a need to clearly define respective roles and interface arrangements through a normal business process definition. This is essential to realise a workable holistic approach.

Q 46 - The paper focuses on balancing services and the SO role without distinguishing between the different timescales. It would help to distinguish between planning, operations in the wholesale market exercising price arbitrage and the essential total system balancing required following gate closure. The roles of the participants are likely to be different in each timescale. BRPs will seek to balance their positions while DSOs will manage any active network constraints prior to gate closure. There could be a case for market splitting as practiced in Nordpool when constraints become active. Following gate closure the TSO must assume balancing control to manage frequency for the system as a whole.