

Smart Metering Implementation Programme  
Department of Energy and Climate Change  
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Dear Sir/Madam

**Smart Metering Implementation Programme: Consultation on the second version of the of the Smart Metering Equipment Technical Specifications (URN 12D/258)**

National Grid welcomes the opportunity to comment on the Department of Energy and Climate Change's consultation on 'The Second Version of the Smart Metering Equipment Technical Specifications'. National Grid plays a vital role at the centre of the energy industry connecting millions of people safely, reliably and efficiently to the energy they use. National Grid owns and operates the high voltage electricity transmission system in England and Wales and as National Electricity Transmission System Operator (NETSO) operates the Scottish high voltage transmission system. National Grid also owns and operates the gas transmission system throughout Great Britain and through the low pressure gas distribution business, distributes gas in the heart of England to approximately eleven million offices, schools and homes. In addition, National Grid owns and operates significant electricity and gas assets in the US, operating in the states of New England and New York.

In the UK, National Grid's primary duties under the Electricity and Gas Acts are to develop and maintain efficient networks and also to facilitate competition in the generation and supply of electricity and the supply of gas. Activities include the residual balancing in close to real time of the electricity and gas markets. Through its subsidiaries, National Grid also owns and maintains around 18 million domestic and commercial meters, a Liquefied Natural Gas (LNG) importation terminal at the Isle of Grain, and has shared ownership and operation of the electricity interconnectors between England and France (IFA) and England and the Netherlands (BritNed). In addition, the wholly owned subsidiary, National Grid Carbon Limited, has advanced the transportation and storage elements of the Carbon Capture and Storage (CCS) supply chain.

Smart Meters and the development of Smart Grids will fundamentally change the market and impact all participants, consumers, suppliers, distribution companies and National Grid as the NETSO. Designs and specifications from both the whole market and networks chain down to the meter level need careful consideration to ensure the optimum solution is found ensuring customers do not face unnecessary costs.

We have included our response to specific questions below and also our general comments including those around Chapter 5, Governance and Assurance of Security and Interoperability.

***Governance and Assurance of Security and Interoperability***

The deployment of smart meters in the UK with enablement/disablement switches or valves that are remotely controllable allows for the possibility of widespread disconnection of electricity and/or gas supplies to domestic premises. This risk has the potential to affect the electricity and gas transmission network infrastructure that National Grid owns and/or operates.

### **Future Proofing**

The consultation states *"The Government is proposing to include a small number of additional functions to those included in SMETS 1. These relate mainly to additional requirements which can help to 'future proof' the smart metering system for the development of smart grids, helping to provide the basis for electricity Distribution Network Operators (DNOs) to effect smart grid management."* National Grid agrees with the principle of 'future proofing' as this is relevant across the whole of smart grid design and not just with regards to smart meters. Without 'future proofing' changes, redesign and replacement can be necessary and a more expensive alternative. We do believe that smart grid management needs to be a part of the whole system design and operation including and not just that of the DNOs to ensure whole value chain savings and efficiencies can be made. We understand the reason for Smart Meter implementation and roll out in the immediate timeframe to be focussed on the distribution networks and suppliers. However, we believe that the enduring role and opportunities for smart meters needs to consider the whole system and market chain in particular including transmission.

### **Consultation Questions**

**21. If DNOs were permitted to access remote disablement functions, should control logic be built into DCC systems or meters? If the logic should be built into meters, should the logic be specified in SMETS 2? Please provide rationale to support your position including estimates of the cost of delivering this functionality under the different options being considered and any evidence relating to safety issues associated with each option.**

Please see our response to question 31.

**23. Do you agree that randomisation offset capability should be included for auxiliary load control switches and registers as described above? Do you have views on the proposed range of the randomisation offset (i.e. 0 – 1799 seconds)? Please provide evidence on the cost of introducing this functionality.**

We need to ensure that the cumulative effect of demand switching does not drive up the requirement for frequency response. National Grid support the introduction of randomisation through smart meters which will reflect the existing RTS arrangements which allow for 7.5 minute resolution of switching times and the random allocation of +/- 3.5mins within each 7.5 minute period.

The introduction of time of use tariffs can change settlement period boundaries and if these were not randomised we could see instantaneous changes of demand at set time intervals, e.g. on the hour. This in turn would then increase the volumes of frequency response and reserve we would need to hold. The increase in frequency response would cause thermal plants to be operated more often and less efficiently with negative impacts on wear and tear, increases in carbon emissions and substantial increased costs to the consumer as a result of us having to procure larger volumes of services.

The joint paper by Eurelectric and the ENTSO-E, 'Deterministic frequency deviations root causes and proposals for potential solutions',<sup>1</sup> state that *"In the last few years practically all synchronous areas of ENTSO-E (similar to a number of other synchronous systems in the world) have been experiencing increasing frequency variations, amplitude and duration, at hour boundaries multiple times per day mainly during the ramping periods in the morning and the evening"* and that *"Increasing control reserves does not seem to substantially improve the situation; rather it increases system operation costs considerably."* The European situation is caused by cross border schedule changes whereas the UK would be impacted by settlement period changes but the impact of smart meters without randomisation would be similar. Retaining the current randomisation in the market (as proposed) would have the effect and benefit of mitigating these challenges as seen on the continent.

**29. Do you agree with the proposal that the communications hub should be specified such that it can support multiple smart electricity meters? How many smart electricity meters should be supported by each communications hub?**

We strongly support this proposal. The increasing levels of embedded generation provides increasing uncertainty in net demand levels and therefore managing this going forwards and future proofing our systems is imperative. The ability to support multiple smart meters within the home would be useful in understanding the demand and supply picture within homes which will be more important as more technologies are taken up for example homes with PV, heat pumps and electric vehicles.

**31. Do you agree with the proposed approach to the governance of security requirements? If you propose alternative arrangements please provide evidence to support your views.**

National Grid agrees in principle that a technical sub-committee of the Smart Energy Code (SEC) Panel should maintain the smart metering security requirements. Also, we agree that the sub-committee should draw upon risks assessments produced by SEC members but would like to clarify that this must include risk assessments produced by Government. As part of drawing upon these inputs, the Government risk assessment on smart metering should be shared with the technical sub-committee members just as they have been shared with the STEG members to date.

One aspect of maintaining the security requirements which has not been discussed is the security risks to requirements mapping. To ensure that security requirements chosen are fit for purpose and sufficient to mitigate the risks identified, an analysis exercise is required to map the security requirements against the risks they mitigate. By sharing this mapping with the members of the technical sub-committee, they will be better informed as to whether or not the security requirements adequately mitigate the risks.

Currently, any such mapping between risks identified in the Smart Metering IS1 Risk Assessment and the requirements within the Smart Metering Security Requirements v0.5 has not yet been shared with the STEG members. National Grid is subject to potential risk brought about by the introduction of smart metering in the UK, in particular, the use of an enablement/disablement switch or valve in meters which is remotely controllable allowing for the possibility of widespread shutoff of electricity and/or gas supplies to domestic premises. Any such events have the potential to impact on system security and we are reliant on the Smart Metering Implementation Programme at DECC to ensure that the necessary controls are in place to mitigate these risks.

We would welcome the opportunity to discuss, with DECC, the mapping between the security risks and requirements to ensure the risks have been fully identified with appropriate mitigating actions in particular those in the Smart Metering Security Requirements v0.5.

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<sup>1</sup> <https://www.entsoe.eu/news/announcements/newssingleview/article/the-report-on-deterministic-frequency-deviations-root-causes-and-proposals-for-potential-solu/>

***Conclusion***

Smart meters provide a massive opportunity to the UK, in an increasingly technical and automated world; security must be paramount for both the end customers and system security. The whole system design from the end consumer up to the transmission level needs careful consideration to ensure that knock on effects are foreseen, considered and managed otherwise some of the value intended for smart meters to deliver could be eroded and system security put at risk.

Yours faithfully

Craig Dyke