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14th August 2014

Dear Sirs

Energy Market Investigation: Statement of Issues

National Grid is pleased to have this opportunity to respond to the Statement of Issues document. This is an important investigation into a crucial sector at a time of great change requiring high levels of investment - it is vital that the investigation does what it can to repair consumer confidence.

National Grid group is responsible for a number of network infrastructure assets including the onshore high voltage electricity transmission assets in England & Wales, the high pressure gas transmission pipelines throughout Great Britain, gas distribution network serving approximately 11 million consumers in the heart of England, and a 50% share of the electricity interconnectors to France and the Netherlands. In addition, we operate the gas and electricity transmission systems across Great Britain, including electricity transmission assets owned by other parties in Scotland and offshore, and thereby we support the gas and electricity markets in a number of ways. The relationships between our primary business activities are shown schematically in Appendix 1.

On the basis of the explanation given in the Statement of Issues concerning the context, the approach and the initial theories of harm identified for the investigation into the supply and acquisition of electricity and gas in Great Britain, we agree with the CMA's intention to focus the investigation and we agree that the areas and issues identified are the most relevant. Therefore, we do not suggest any of the issues or areas identified should be excluded from the investigation or that there are significant issues missing, mischaracterised or incorrectly set aside at this time. In particular we agree that, while transmission and distribution networks (including our own) perform an important role linking energy supply and demand at a material cost to end consumers, the framework for regulation of those networks is well-designed and focusses networks on delivering good consumer outcomes; it should not be included within the scope.

The Statement does identify a number of aspects of wholesale electricity markets (including charging for access to the transmission network, complexity of market rules and dealing with transmission constraints) which need to be considered. Our response therefore focusses on these and other system operation (SO) considerations. Our response does not contain confidential information and we are happy for it to be published.

We are aware that we hold much information that may be relevant to the investigation. As well as that which is already published, we look forward to an opportunity to discuss the suitable format for further information provision; and to discuss its interpretation.

The remainder of our response identifies particular aspects of the issues identified in the Statement which we suggest are relevant to considering the functioning of existing arrangements and understanding the range of impacts if they are adjusted.

1) Ensuring the reliable supply of electricity

The Statement of Issues identifies the need to consider certain key characteristics of energy markets when assessing the nature of competition and developing potential remedies to any AECs. To this end, the Statement highlights the need for the continuous balancing of supply and demand in electricity and notes the discharge of this task by a system operator. This succinct summary of the need for balancing necessarily omits many details which are important in deciding the nature of the system operator's role. We suggest that an attempt at a full description of all the physical interactions in the electricity system and the range of potential options for interaction between the market and the system operator on them would not be consistent with the focused use of limited resources in this investigation. Instead, it may be fruitful to characterise the current arrangements and identify potential beneficial directions of adjustment for further detailed development later.

We characterise our system operator balancing role in terms of the management of those physical aspects which, due to the unavailability of sufficient information or suitable incentives, cannot be effectively managed by decentralised market parties[1]. On this basis, the market arrangements must not only be considered in terms of their impacts on competition but also in terms on their compatibility with the physical aspects of delivering the reliable supply required by consumers. In accordance with our duties under the Electricity Act, we have been actively engaged in the ongoing industry consideration and development of these aspects of the electricity arrangements[2]. We are, of course, very willing to address specific questions and proposals in this investigation as they arise.

2) Central vs decentralised generation unit scheduling and despatch

The NETA/BETTA market arrangements facilitate decentralised generation unit scheduling and dispatch by their owners up to a point just prior to real-time when the system operator becomes solely responsible for managing the residual market imbalance as well as continuing to resolve the range of other physical aspects collectively labelled "system balancing" in operational timescales. This arrangement encompasses a trade-off between the benefits that can accrue from the bespoke and dynamic optimisation of individual generating units by their owners under the competitive pressures from the wider market against those benefits that might better occur if the centralised system had more time and hence more scope to optimise (including facilitating better competition in those services associated with) resolution of the residual imbalance.

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[1] As well as the balance of production and consumption at time resolutions finer than the half-hour market trading blocks, the system operator also schedules frequency control capabilities and other reserve capacity of sufficient responsiveness to meet random variations in production and consumption. To manage supply voltages to required tolerances, reactive power capabilities from generators and network assets must be scheduled and utilised on a location specific basis in response to network flows. To ensure supply reliability, public safety and avoid equipment damage, circuit flows must be managed by switching, adjustment of controllable network devices and, if necessary, constraining market self-dispatch. System wide stability and adequate fault performance requires continuous active management of interactions between network and user equipment. As part of emergency condition readiness, black start capabilities are established.

[2] For example, see - http://www2.nationalgrid.com/uk/industry-information/electricity-transmission-system-operations/

By adapting our balancing activities, we have facilitated the changes from a day ahead central scheduling and dispatch (as used under the England & Wales Pool arrangements) to a gate closure[3] 3.5 hours prior to real-time under initial NETA and then a subsequent modification to 1 hour as currently used. It is possible that some parties will suggest that further benefits could occur if the time between the last opportunity to self-dispatch and real-time is further reduced or even removed so that, as is the case in gas trading arrangements, trading and self-dispatch can continue through the real-time delivery period. However, the improved scope for decentralised action and for individuals to reduce imbalance cash-out exposures must be considered against a) the resilience impacts of a reduced period in which the responsibility for residual action and its interaction with system issues is unambiguous and b) the potential increased opportunity for market power to be exercised when the opportunities for competition very near real-time are so restricted.

In order for the benefits of NETA/BETTA self-dispatch to be maintained for consumers, we suggest:

- There must continue to be effective incentives for parties to accurately & predictably self-dispatch. On this basis we support the improvements to the imbalance cash-out prices proposed in Ofgem's Electricity Balancing Significant Code Review[4].
- Timely & reliable information on self-dispatch intentions must continue to be provided to the SO.
- The following of SO instructions (which relate to system as well as market residual issues) must remain a priority.

Many parties have commented on the need for greater availability of competitively priced hedging products in the wholesale market. A more specific requirement has been highlighted by some operators of wind power plants who face exposure to imbalance cash-out prices due to their unavoidable variations caused by the changing availability of wind. To alleviate this risk and cost, some have suggested that special imbalance cash-out arrangements should be introduced for such producers, perhaps in accordance with the need for priority despatch under the EU Renewables Directive. However, we are sceptical about using centralised system measures to create special portfolios with preferential cash-out arrangements (for example, as has been established for some renewable energy providers in Spain). If such measures are valuable and efficient we would expect specialist aggregators to be successful in offering them in the market. Such an approach avoids the risks that new central systems for market subsets could introduce bias and distort competition and behaviours.

With reference to the arguments for developing spot market competition and improving the scope for market bid monitoring by returning to a greater degree of central dispatch, we note that some of the issues leading to the NETA market design (for example, the competition issues associated with the complex bids describing thermal plant dynamic capabilities) remain relevant and may become increasing important as generation and demand variability evolves[5].

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[3] Gate closure is here used to mean that point when physical market participants make their final notification to the system operator (including generator self-dispatch intentions) and also the last opportunity for market parties to notify contracts with the imbalance settlement system managed by Elexon. In electricity these two events are currently coincident but they occur at different times in GB gas trading arrangements.

[4] See - https://www.ofgem.gov.uk/electricity/wholesale-market/market-efficiency-review-and-reform/electricity-balancing-significant-code-review

[5] Our analysis of future balancing requirements with increasing amounts of variable wind and solar generation is available in our Operating in 2020 report – see http://www.nationalgrid.com/NR/rdonlyres/DF928C19-9210-4629-AB78-BBAA7AD8B89D/47178/Operatingin2020_finalversion0806_final.pdf
and our latest publications on Future Energy Scenarios – see http://www2.nationalgrid.com/uk/Industry-information/Future-of-Energy/

3) Harmonisation and integration of European markets

A particular topic which is relevant to several of the issues identified in the Statement is the introduction of new European market rules which is progressing at this time. Since their introduction recently, new European market coupling arrangements in North-Western Europe have already had observable effects by removing price differences between GB power exchanges[6] as well as improving the utilisation of interconnectors between UK and the neighbouring markets. Related developments concerning interconnector capacity allocation are likely to bring new opportunities to power exchanges and may help improve business volumes, liquidity and the dependability of the resulting spot market price-index. Other European code developments in progress (including, for example, those relating to inter-TSO balancing service exchanges, rule harmonisation and network cost allocations) are similarly relevant to facilitating competition between producers in European member states and/or adjacent market price areas.

4) Network access and charging

Given their importance and current profile, we anticipate that a number of parties may make submissions concerning our network access arrangements and transmission charges.

4.1) Transmission Access

Our duties with respect to transmission access seek to facilitate generator market entry by connecting and granting use of system rights to access the market in response to applications by these customers. We must also ensure the transmission system continues to meet certain reliability and quality standards (as set out in the National Electricity Transmission System Security and Quality of Supply Standards - NETS SQSS[7]) and remains economical in terms of operating costs such as those resulting from congestion and losses (which can be particularly significant when circuits are taken out of service to enable new construction and reinforcement). The outcome of the Transmission Access Review[8] (TAR) adjusted the extent to which new use of system rights for generators are made conditional on the establishment of new capacity and the completion of associated network reinforcements. In particular, the so called "connect & manage" approach requires us to grant access to new generators as soon as local connections can be established unless it is clear that operational costs will outweigh the wider benefits that could result. There is significant information published on the pipeline of generation projects requesting connection and access, the extent to which these have been affected by the timing of connection works, and the expected and actual impacts on congestion costs[9].

The Transmission Constraint Licence Condition was introduced by Ofgem to address market pricing risks associated with the increased levels of congestion that might result from connect and manage. It is our view that the TCLC has received close attention from balancing market participants and our analysis is that many participants have reviewed balancing pricing strategies, in particular for generators likely to be linked to congestion and for generators that are generally inactive in the balancing mechanism. There have been no occasions where we would consider that the actions of a market participant required investigation under the TCLC.

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[6] Under NETA/BETTA, power exchanges are discretionary and competitive introduction and contract settlement services. They have seen relatively low trading volumes compared to power exchanges in some other electricity markets and this has caused challenges in developing a reliable spot market index price in GB.

[7] See http://www2.nationalgrid.com/UK/Industry-information/Electricity-codes/System-Security-and-Quality-of-Supply-Standards/

[8] See https://www.ofgem.gov.uk/electricity/transmission-networks/transmission-access-review/

[9] See http://www2.nationalgrid.com/UK/Services/Electricity-connections/Industry-products/connect-and-manage/

4.2) Transmission Charges

The GB transmission network use of system (TNUoS) charging methodology approved by Ofgem signals the expected long-run cost[10] of providing transmission entry and exit capacity in different locations while ensuring the total revenue collected is in accordance with transmission price controls for all Transmission Owners (TOs). The fundamental purpose of the locational differentials in transmission charges is to help ensure GB consumers are served by appropriately located generation facilities thereby avoiding unnecessary network developments and/or operating costs. By reflecting the cost of serving transmission users in their chosen location, individual developers of new generators and factories will include the consequences to the transmission network in their financial decisions about progressing existing or selecting an alternative scheme. Also owners of existing facilities will consider the network effects in their decisions about retiring them or in their prioritisation of energy efficiency improvements. Overall, this process should ensure the efficient development of the electricity system, including the transmission network, and should facilitate effective competition.

Developments recently approved under Ofgem's Project TransmiT have sought to improve various aspects of the TNUoS charging methodology. These include the recognition of the likelihood that more variable generators like wind turbines will be able to share network capacity with fossil-fired plant in certain areas (because the fossil-fired generation will tend to run more when wind is not operating but will be displaced in the market when wind is available). This is consistent with changes to the way we design the transmission system as laid out in the NETS SQSS.

Both analysis during TAR and subsequently by academic teams early in Project TransmiT identified potential benefits if charges also signal the efficient use of existing transmission capacity in short-run timescales. As well as informing self-dispatch to manage congestion, such signals might also inform improved long-run signals. On the balance of the issues considered under TAR, the Secretary of State ruled that the system operator should not charge differentially on the basis of congestion and this is now incorporated in our transmission licence.

The European Commission's preferred method of signalling the implications of producing or consuming electricity in different locations is by means of the locational differentiation of markets and energy prices[11]. Although ultimately markets could provide a price signal at each network node (as is derived in a number of markets, most notably in North and South America) the EU target model initially expects larger price zones which are divisions or couplings of existing member state national markets. This approach signals the availability of network capacity in the short-run. Long-run signals are then expected to emerge from the pricing of either physical transmission capacity rights or financial price hedges (many of which are currently still under development). Under EU rules, it will be the responsibility of transmission system operators to advise national regulatory authorities about the benefits of splitting or joining market price areas. National Grid is currently considering how to discharge this duty including how to address the potential interactions between existing GB transmission charge signals and those that would emerge from GB market splitting or coupling. Given their role in signalling long-run network implications, it is understandable that transmission users find year on year volatility in our tariffs challenging and unhelpful. We are very mindful of the difficulties that such variability causes market participants and the potential impact on competition they may have. However our customers have told us that such variability is manageable if it is predictable. We

[10] This cost reflects the typical cost of establishing and maintaining a unit of transmission (the capacity to carry 1 MW a distance of 1 km). It is derived using typical equipment capital costs, regulated costs of capital and maintenance rates. It reflects the need for undergrounding and the need for parallel capacity to meet network resilience standards. For more information see http://www2.nationalgrid.com/UK/Industry-information/System-charges/Electricity-transmission-Charges/

[11] See http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:211:0055:0093:EN:PDF and http://www.acer.europa.eu/Electricity/FG_and_network_codes/Electricity%20FG%20%20network%20codes/FG-2011-E-002.pdf

help improve the predictability of TNUoS charges through a number of activities such as tariff forecasts (of up to 5 years), webinars, and the release of our tariff model on request, and continue to work with stakeholders to make improvements in this area.

5) Participation and responsiveness of demand

As a financially incentivised system operator with a direct exposure to balancing costs we have been active in encouraging the participation of the demand side so that there is increased competition in the provision of various balancing services. We have also sought to ensure network charges provide consistent locational signals to suppliers and hence the distribution connected "embedded" producers who generate electricity local to consumers. In both these areas there are practical issues that limit achievement of the ideal:

- In operational timescales, even with improving control automation, we have limited capability and time to manage large numbers of small service providers to meet fast changing conditions. For this reason we specify minimum service sizes (for example, 3MW for the smallest dispatchable reserve block) and favour the use of service aggregators who can not only meet the size thresholds but also add value by improving observability and dependability of the service capability. In the future we expect to work increasingly closely with distribution system operators who will be central in operating smart networks.
- In transmission charging we recognise current metering limitations by translating capacity related costs into equivalents that may be used by suppliers for those customers who do not have capacity (peak demand) measuring metering.

For both these areas, we look forward to the improvements and opportunities that smart metering in electricity may deliver.

With the introduction of the EMR capacity mechanism and any potential procurement of the new supplementary balancing reserve services, there will be capacity related costs which are additional to those associated with existing operational reserves being addressed in Ofgem's Electricity Balancing Significant Code Review. While DECC has identified an initial capacity cost charging mechanism, we anticipate the industry governance forums will be active in seeking a consistent and effective treatment of all these costs in market prices.

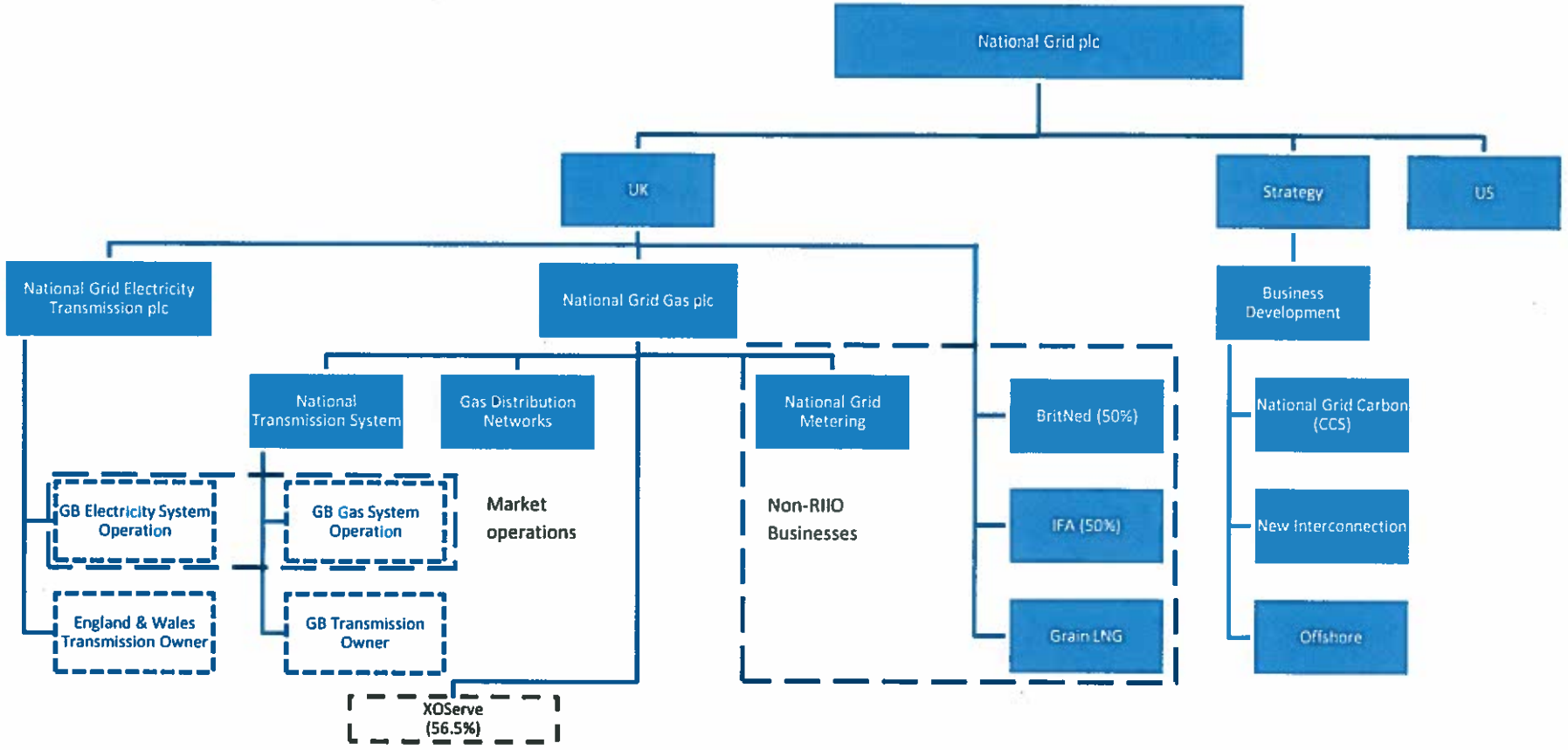
I hope the points set out in this response are helpful in the process of designing the investigation and planning how best to get the information you require. We look forward to opportunities to assist further with the investigation as it progresses.

Yours faithfully

K. Clayton

Karen Clayton
UK General Counsel & Company Secretary

Appendix 1: Organisational Structure of National Grid's Primary Business Activities



This diagram is a hybrid showing key features of company structure and management organisation. A more detailed company structure diagram including holding companies is shown in https://www.ofgem.gov.uk/ofgem-publications/39879/20120308-open-letter-synergies-and-conflicts.pdf
We have rigorous compliance regimes in place to manage risks arising from potential conflicts of interests, see - http://www2.nationalgrid.com/UK/Industry-information/Compliance/.