

Our Ref: (S)998/hf

12 November 2014

Mr Jon Parker
Future Networks Team
Ofgem,
9 Millbank,
London
SW1P 3GE

Dear Mr Parker,

**INTEGRATED TRANSMISSION PLANNING AND REGULATION (ITPR) PROJECT:
DRAFT CONCLUSIONS**

The Integrated Transmission Planning and Regulation (ITPR) project is a review of the existing arrangements for planning and delivering the onshore, offshore and cross-border electricity transmission networks in GB. It aims to ensure that transmission is developed in an efficient, coordinated and economic manner, with the right investments made to protect existing and future consumers.

In its response the Institution of Engineering and Technology (IET) has focussed on the system aspects, including consideration of how the proposals for transmission system planning might work alongside IET recommendations for a system architect role to enable whole system technical integration of the end to end electricity system. We should like to emphasise that although the ISO should improve coordination in the planning of offshore and onshore transmission, and interconnectors, there remains an increasing need for co-ordination of transmission with distribution network planning, and indeed whole electricity system planning, if the potential benefits of an integrated approach are to be fully realised. Thus, whilst establishing an ISO is a complementary initiative to establishing a System Architect, it is neither a substitute nor a reason to defer action.

We have studied the draft conclusions of the ITPR study and hope that our detailed responses to your questions are of assistance to the Team.

Question 1: What are your views on our proposed enhancements to the SO role in system planning, including the specific roles we have proposed the SO would undertake for onshore, offshore and interconnection planning?

The IET broadly supports the proposed enhancements to NGET's ISO role. We agree that an Independent System Operator (ISO) role is preferable to an Independent Design Authority (IDA) role. The electricity system will become increasingly dynamic as synchronous generation capacity is displaced by non-synchronous / decoupled generation associated with wind and solar PV; electricity demand becomes increasingly impacted by electric alternatives to heating and road transport; and as consumers' electricity usage patterns

become increasingly influenced by time-of-use variable rate tariffs (including dynamic ToU tariffs) supported by smart meters and new 'demand-side' products offered by new market entrants (for example aggregators offering reserve and balancing services to the NETSO).

Both outage and contingency planning (the former in respect of planned construction and maintenance outages, the latter in respect of unplanned network outages and losses of in-feeds) will become increasingly important. The overall impact of a more dynamic electricity system is that operational as well as investment planning will become increasingly critical to ensuring that the system remains efficient, co-ordinated, secure and stable, and able to meet future requirements for reliability and power quality. It follows that an IDA might have only a partial influence over critical system operability criteria, whereas an ISO would have influence across both investment and operational planning aspects of the electricity system and, importantly, be in a position to determine the optimum contribution from both in terms of ensuring the efficient, economic and coordinated development of the system. This would be an important input to the proposed Network Options Assessment (NOA) process when considering alternative new investment options, including options for distribution system support and non-asset options such as ancillary services provided by DSOs and 3rd parties to support system balancing, stability, reactive power and power quality requirements. It would also be an important input to both NGET's NDP and to TOs' strategic wider works (SWW) needs case submissions, and similarly to an OFTO's wider network benefit investment (WNBI) needs case options.

The rapidly changing generation mix has implications not only for the operational characteristics of the electricity system (for example in terms of inertia and fault levels which have a direct bearing on system stability, protection co-ordination, power quality, and fault ride-through capability of distributed generation) but also for the location and distribution of generation assets and the potential inter-day and intra-day variations in output. Solar PV generation, which is invariably connected to distribution networks (along with smaller scale onshore wind farms) is already having a direct impact on the direction of power flows at GSPs and in future will have an increasing impact on power flows across transmission network boundaries. It follows that the ISO will need to have greater visibility of DG development and increasingly take account of DG connections and their contributions to GSP power flows under varying (intermittent) generation / demand scenarios in determining the need for transmission system investment under the CION process and in assessing options under the NOA process.

We note the proposal that the ISO should refer to NGET's Future Energy Scenarios (FES) (in addition to 'reasonable assumptions about other markets') when assessing the costs and benefits of developing interconnectors. Whilst we believe that the FES (which will remain under continuous review) provides a set of credible future GB electricity generation and demand scenarios, the investment requirements (including costs and benefits of interconnectors) under alternative scenarios will vary considerably. Moreover, NGET's FES's are, by definition, *scenarios* and not necessarily aligned to GB government energy policy objectives. In particular, there is no direct correlation between NGET's FES and 'The Carbon Plan' (or DECC's 4th Carbon budget scenarios). The IET would see merit in DECC's 4th (and subsequently 5th) Carbon Budgets and NGET's Electricity Ten Year Statement (ETYS) and FES being better aligned as this should lead to greater investor confidence in the direction and continuity of government energy policy. It will be important, however, that such alignment does not allow aspiration to outweigh objectivity, and that NGET's FES's continue to reflect credible outcomes.

Whilst the ISO's oversight will need to extend as a minimum to both onshore and offshore transmission and interconnectors, the IET believes that the need for electricity system integration extends beyond the transmission system. We expand on this in our response to Q2 below. Furthermore, we would note here that when considering the modelling of key system constraints that if breached will jeopardise national system integrity, it is important to adopt scenario assumptions that are 'credible worst case' rather than 'central'. Excursions beyond a central case may be tolerable if the consequence of them is sub-optimality; it is an

entirely different matter if the consequences jeopardise the security of critical national infrastructure.

Question 2: Are there other roles that you think an enhanced SO could or should undertake in order to better support the development of an efficient transmission and interconnector network?

For the reasons outlined in our response to Q1, The IET agrees broadly with the statement under para 2.54 that the SO should support relevant parties in developing and assessing options to ensure adequate power quality, albeit we would extend the scope of power quality to also embrace voltage steady state and dynamic stability, angular stability (fault ride-through capability) and reactive power, in addition to harmonic distortion and voltage imbalance (NPS). NGET's System Operability Framework (SOF) illustrates clearly why these are critical considerations which will require closer consideration as a consequence of the future generation and demand scenarios described in NGET's FES.

Meanwhile, the Smart Grid Forum is currently undertaking work under its 'DS2030' project to understand the viability of smart grid solutions to economically address the direct impact of DG, micro-generation, electric vehicle charging, and heat pumps on electricity distribution systems, taking account of the impact on electricity distributions systems of scenarios described in NGET's SOF. The project has a 2030 horizon and will conclude in summer 2015. The application of smart technologies and conventional investments in electricity distribution networks will require careful co-ordination, including co-ordination with transmission system investments.

However, coupled with our comments under Q1 above, we believe it is questionable whether in the longer term it is practicable or appropriate for NGET to alone undertake the expanded 'whole electricity system' role that we allude to (i.e. over and above the enhanced SO role defined in the ITPR project draft conclusions). Whilst the ITPR project has reasonably confined its scope to determining how transmission system investment might be better managed and co-ordinated through an integrated approach, the rapidly changing nature of the electricity distribution system and emerging 'beyond the meter' options give rise to a need for an integrated 'whole electricity system' approach. The ISO would need to work closely with DNOs in order to ensure that full account is taken of DG projections, demand forecasts and smart grid developments that will impact the transmission system. Similarly, it will be important to ensure that transmission system developments identified in the SOF are taken into account in DNOs' investment and operational planning procedures. The current 'Week 28 / 42' procedure could be developed to form the foundation for this enhanced information exchange requirement. However, in the longer term, consideration will need to be given to the establishment of a role which has the responsibility and authority to ensure the necessary integration of transmission and distribution network development, taking account of the impact of intermittent DG and emerging consumer interactions with the distribution system, as well as issues impacting the transmission system directly.

The IET has highlighted its concerns and recommendations in its Power Networks Joint Vision report: *'Electricity Networks, Handling a Shock to the System'* published in December 2013 which describes the whole system challenges facing Britain's electricity network. Foremost amongst six key recommendations in that report is the establishment of a System Architect charged with the responsibility of ensuring whole (electricity) system integration. Since then the IET's PNJV members have subsequently considered options for electricity system integration and how the role of a System Architect might be discharged. This work has been informed by a further report, published in October 2013: *'Transforming the Electricity System - How other Sectors have met the Challenge of System Integration'* which reports on how the role of System Architect is discharged in other UK sectors. These reports can be accessed directly from The IET's PNJV website: www.theiet.org/pnjv

Whilst the establishment of an ISO is a complementary proposal, and a potential foundation for further scope development, it will be important not to undermine the current political momentum and wide stakeholder support for the establishment of an Electricity System Architect¹.

In terms of the RIIO price control process, whereas the ITPR draft conclusions suggest that the ISO would play a role in respect of RIIO ET2 investment plans, an SA would have a role in also supporting the development of RIIO ED2 business plans, and potentially in supporting investment proposals from a needs case and technical assurance perspective.

The SA would complement the role of an ISO as summarised under paras 2.50 - 2.58 in that it would ensure integration in the design, planning and operation of the whole of the electricity system. In due course that role might be extended to technical operability with other energy vectors. We agree, however, that the ISO should not be a directive system planner. Similarly, the SA would not seek to direct how system investment is achieved; rather it would establish the principles by which system interoperability by the relevant parties is achieved and provide assurance that the procedures put in place are sufficiently robust and that whole-system integration is being maintained.

In conclusion, the IET believes the establishment of an ISO is a pragmatic proposal which should meet the immediate objectives described in the ITPR draft conclusions consultation. However, whilst it might be complementary to the objective of establishing of a System Architect with a remit extending across the whole electricity system, the establishment of an ISO is most certainly not a substitute. Neither does the establishment of an ISO reduce the importance or urgency of establishing a System Architect.

Question 3: What are your views on the specific obligations for TOs that might be needed to support our proposed enhanced SO role?

The development of an integrated electricity system and a coordinated approach to (investment and operational) planning is now essential to meeting UK's ambitions for affordable, secure and environmentally sustainable energy. Whilst the ITPR proposals will place additional responsibilities and obligations on existing TNOs and (both onshore and offshore) transmission system developers, the proposals should also lead to stronger business cases for investment. However, as we have explained in our response to Q1, whilst it is inevitable in the shorter term that there will be uncertainty in future electricity scenarios, it will be essential that government energy policy and NGET's FES are at least mutually consistent and that any change in policy direction is well signalled, otherwise investor confidence will be undermined by uncertainty, as will confidence in the technical appraisals and cost-benefit analyses undertaken in support of the NOA, NDP, SWW, WNBI, and CION processes.

The proposed obligations on TOs necessary to support the enhanced SO role are therefore reasonable and, subject to our comments regarding the requisite transparency of government energy policy and consistency in future energy scenarios, should be beneficial to TOs in terms both of clarity of requirements and enhanced business cases for investment. The benefits should outweigh any additional costs incurred by TOs in fulfilling these obligations.

¹ In the longer term the SA role is likely to need to embrace multiple energy vectors to ensure whole energy system integration.

Question 4: What are your views on our proposal that as part of its enhanced role, the SO should lead gateway assessments for offshore projects that include investment to provide wider network benefit?

The IET agrees that the SO could lead gateway assessments for offshore transmission systems that include investments for wider network benefits. This should ensure that Strategic wider works (SWW) proposals are holistic and well developed, and consistent with the proposed new licence obligation on NGET in respect of its Network options assessment (NOA) role and overall system integration role.

This response has been developed on behalf of the Board of Trustees by the IET's Energy Policy Panel who solicited feedback from the wider IET membership.

If the IET can be of any further assistance on these issues, please let me know.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Paul Davies', with a stylized flourish at the end.

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