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Your Ref:
Our Ref: OFGEM-L040610a
Direct Dial: 0131 625 1050
Email: Alex.Golder@psymetrix.com

PSYMETRIX LIMITED
Sanderson House
35 Water Street
Edinburgh EH6 6SU Scotland UK
Telephone: +44 (0)131 625 1050
Fax: +44 (0)131 625 1051

For the attention of Mr Jonas Törnquist

Head of Electricity Transmission Policy
Networks Division
Office of Gas and Electricity Markets
9 Millbank
London
SW1P 3GE

Dear Mr Törnquist,

Transmission Investment for Renewable Generation

We are pleased to take this opportunity to make what we trust is a constructive contribution to your consultation paper (98/04) on this very important and apposite subject.

For too long, in our view, there has been a presumption that investment in the infrastructure of the transmission network (as opposed to purely connection assets) is beneficial and cost-effective.

We do not consider that the experience of previous infrastructure investment fully bears out this presumption. In particular, the upgrading of the Anglo-Scottish interconnector capacity – first planned in 1980, constructed by the mid-90s, but not fully available until 2003 – illustrates the large gap, in capacity and in time, that can elapse between investment in the physical assets and their full utilisation by network users.

The situation as we see it, is as follows:-

- For any given transmission investment to be efficient, the planned thermal capacity must be available.
- If constraints require to be placed on the level of power transfers to ensure system security, the planned capacity will not be available and a fully efficient investment will not have been achieved.
- The need for system security constraints can arise because of the need to ensure adequate system electrical characteristics (e.g. good system damping, transient stability in the event of 'worst case' network faults, etc.).
- Design tools and techniques are readily available to predict transient stability margin at the design stage with reasonable probability. With good design, we do not anticipate that this will be a problem.
- The prediction of system damping margin can be much more difficult to achieve at the design stage and we see the outcome as being much more uncertain.
- Inadequate system damping could prevent the planned capacity from being available. The UK experience of the 1990s underlines the serious implications for transmission investment efficiency if the situation is not adequately managed
- The realisation of a buoyant wholesale electricity market with increased levels of commercial power transactions and system flows, is likely to have a side-effect in that system damping may well be adversely affected.
- If the anticipated increase in transmission capacity is not realised, then renewables generators that expect to be able to connect will not be able to do so and the level of renewables connections may well fall short of the Government targets.
- In the situation where there is a short-fall in actually available capacity, whichever of the proposed investment repayment mechanisms is adopted by OFGEM, the outcome will be unsatisfactory for one or more of the following:-

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- Government - whose ‘renewables’ targets will not be achieved
- TOs - who may not receive their anticipated return on investment
- Network users - who may be unable to connect
- Electricity consumers - who will ultimately have to bear the cost of any increased security related constraints (running to perhaps £100M/year) and for the provision of transmission capacity that is not actually delivered.

- Consequently it is imperative that TOs take all reasonable and cost-effective measures to ensure that system electrical characteristics do not limit transmission capacity thereby inhibiting a buoyant wholesale electricity market and bringing about an inefficient transmission reinforcement investment.

The cost of managing this situation and ensuring maximum available transmission capacity is likely to be a very small proportion of the cost of transmission reinforcement and as such represents a very compelling and prudent course of action.

An important preliminary step in managing the situation is to ensure that the SO works to a published and agreed minimum acceptable damping standard (a requirement that appears to have been deleted from the current version of “NGC Transmission System Security and Quality of Supply Standard”). Thereafter, the SO should establish the current level of system damping and be able to track trends in system damping as there is increased renewables penetration and increased market buoyancy.

In conclusion:-

> *Reasonable and prudent steps are imperative to ensure that the experience in the UK during the 1990s is not repeated. During this time inadequate electrical characteristics limited the available transmission capacity. Timely and judicious measures need to be taken to ensure that power system electrical characteristics are managed in order to make available the full planned capacity for network users. Key to this is the management of system damping, an electrical characteristic that is very difficult to adequately predict at the design stage. Adoption of and compliance with system damping management standards is essential to ensure system security and promotion of a fully efficient investment in transmission reinforcement.*

We will of course be pleased to discuss our comments in greater detail with you or your technical advisers, if you so wish.

Yours sincerely,

Alex Golder
Director, Psymetrix