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27 September 2004

Dear Jonas,

Transmission Investment for Renewable Generation

Further to our recent response to the consultation on transmission investment for renewable generation, I have attached a short note on our assessment of the 20% factor SKM have applied to renewable generation in their appraisal of the transmission capacity requirements.

This can be appended to our response.

Yours sincerely,

David Densley
Regulation Manager

Comments on SKM's proposal for a 20% capacity factor:

SKM have questioned the appropriateness of using the existing deterministic security standards for planning the transmission system when significant volumes of wind generation are present. SKM have suggested that the appropriate capacity factor assigned to wind generation for deterministic planning purposes should be 20%.

The intention of the Scottish TL security standards is to ensure the security of the **main transmission system**, not the security of demand for which there is a separate standard to cover how much demand can be lost for a given fault event and demand group size.

We do not accept the methodology being suggested by SKM with respect to the capacity factor assigned to wind generation and its outcome of 20%.

The use by SKM of the 20% capacity factor is derived from work which the Technical Steering Group (the Chair of Workstream 3 is Mike Barlow, SSE) have been undertaking to provide a new P2/6 security of supply standard. This group have assessed the system security contribution that wind generation can make to a demand group as an alternative to securing the demand via say a 'third circuit'. This approach is fundamentally different to that for determining transmission system capacity and security.

As an example of the different approaches, if the demand group under consideration was Newcastle and there was 100MW of locally connected wind generation, then the contribution that this generation would make to the demand security would only be 20MW or less. This is based on the ability of 100MW of installed plant to continuously deliver a given output (up to 20%) for the required period of local network depletion. This would be available as an alternative to providing an additional circuit with a 20MW capacity.

If the 100MW of wind generation was not located in Newcastle but in the north of Scotland, then this generation would require full access to the transmission system so that the 20MW of system security contribution for Newcastle could be delivered.

However, since 20 MW represents the minimum level of output that can be relied upon, in practice their output will be 20 MW or more <u>all</u> the time. To build a circuit that can only deliver 20MW would imply that their output is actually always constrained. This would not be economic or efficient. Even so, this does not necessarily imply that infrastructure to accommodate the full 100 MW is necessary or efficient.

In fact, rather than build transmission infrastructure to accommodate the full 100MW, our analysis of windfarm outputs suggests that a diversity factor can be applied to

provide a more efficient system of lower capacity. A factor of 60% is representative of the expected winter seasonal output (based on real wind farm data as presented in the reports to Ofgem and SKM). We believe this to be the most appropriate factor for deterministic security assessment which will maintain system security and result in efficient sizing of the network. This approach is consistent with the way the hydro generation is treated under the existing deterministic security standard. The deterministic analysis will of course be confirmed by an economic analysis.

In order to maintain compliance with our existing security standards, we intend to continue using the 60% factor for wind generation in our deterministic planning work.