

DS3 Programme Advisory Council System Services Update

The power system of Ireland and Northern Ireland is in a period of transition due to national and European policy drivers, particularly with respect to renewable energy. This transition will result in a fundamental change to the power system generation portfolio, the system operational characteristics under both steady-state and transient conditions and significantly transform the composition and need for essential system services. To satisfy their respective obligations, under legislation and licence, to ensure system services are available to meet the needs of the system in line with policy objectives, EirGrid and SONI are undertaking a fundamental review of the System Services for the power system.

A preliminary system services consultation paper was published in December 2011; 28 responses were received to this paper. The paper was the first part of a multi-stage consultation process which will culminate in a decision at the end of 2012 on the future arrangements for System Services in Ireland and Northern Ireland. This update outlines the proposed content of the next System Services consultation paper which is expected to be published in June 2012.

The upcoming System Services consultation paper will include the following:

- A summary of main points from the responses to the December 2011 preliminary consultation paper and the System Operators' view on these.
- A review of existing Harmonised Ancillary Services (HAS) arrangements.
- Highlights from the International Review completed in January 2012 including any aspects that are particularly relevant for this paper.
- An outline of the future technical operational needs of the power system to facilitate the secure and efficient operation of the power system out to 2020 and to facilitate the renewable electricity policy targets.
- A description of the proposed products required to address the technical needs. More details on the proposals will be brought forward in a further consultation paper in September/October based on industry responses and further analysis.
- A description of the contractual arrangements and the remuneration approach designed to achieve effective delivery of the required future system services.
- Throughout this consultation phase, industry will be invited to comment on the product options and the key aspects of the paper.

As mentioned, the upcoming consultation will propose a range of new system service products to address and mitigate the identified inadequacies. In particular, the following new products are proposed to address the challenges associated with frequency control and voltage control for a power system with high levels of variable non-synchronous generation.

Synchronous Inertial Response and Fast Frequency Response

Synchronous Inertial Response (SIR) is the response in terms of active power output and synchronising torque that a unit can provide following disturbances. It is a response that is immediately available because of the nature of synchronous machines and is a key determinant of the strength and stability of the power system. With increasing non-synchronous generation there is a need to incentivise this type of response from units that can provide it at low levels of MW output. With appropriate control systems, synchronous and non-synchronous generators can provide Fast Frequency Response (FFR) to changes in frequency that supplements any inherent inertial response. Both SIR and FFR may, in the event of a power imbalance, help increase the time to reach a nadir and help mitigate the RoCoF in the same period, thus lessening the extent of the frequency transient.

Ramping

The management of variability and uncertainty is critical for the secure operation of a power system with high levels of variable generation. Detailed analysis has shown that portfolios that are capacity adequate are unlikely to be ramping adequate over all the necessary timeframes to efficiently and effectively manage the variable renewable sources, changes in interconnector flows and unexpected changes in conventional generation availability. To incentivise the portfolio to provide the necessary margins to securely operate the power system, a new ramping product is being proposed over three distinct product time horizons to reward those units that did not generate but whom the TSOs were confident could have generated if required.

Fast Post-Fault Active Power Recovery

Units that can recover their MW output quickly following a voltage disturbance (including transmission faults) can mitigate the impact of such disturbances on the system frequency. If a large number of generators do not recover their MW output following a transmission fault, a significant power imbalance can occur, giving rise to a severe frequency transient. It is proposed to introduce a service that rewards generators that make a positive contribution to system security in terms of fast post-fault active power recovery.

Dynamic Reactive Power Capability

With up to 75% instantaneous penetration of non-synchronous generation there will be fewer conventional units left on the system and the electrical distance between these units will be increased. The synchronous torque holding these units together as one system will be substantially weakened. With an increase in the dynamic reactive power capability of non-synchronous generation during disturbances it has been shown that the system integrity need not be compromised. It is proposed to introduce a service that rewards generators that make a positive contribution to system security during transient voltage events.

Note: System Operators will confirm their view that wind farms should be included in the provision of System Services which they can technically provide per the specified criteria.