

CIGRE Study Committee C2

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP


WG N° JWG C2/C6.36	Name of Convenor : Michael Power (Ireland) E-mail address: Michael.power@ucd.ie
Technical Issues # : 5	Strategic Directions # : 2
The WG applies to distribution networks: Yes	
Title of the Group: System Operation Emphasising DSO/TSO Interaction and Co-Ordination	
<p>Scope, deliverables and proposed time schedule of the Group :</p> <p>Background :</p> <p>The penetration of renewable and distributed generation as well as the emergence of demand-side response have influenced all facets of power system planning and operation. From the perspective of system operation these new resources bring challenges and the need for another level of preparedness for both the transmission system operator (TSO) and the distribution system operator (DSO).</p> <p>The aim of this work is to define a catalogue of procedures so that the TSO and DSO can interact in order to maximise the benefits of renewable / distributed generation and demand-side response while maintaining overall system adequacy and security. Additionally, the work will analyse how best to optimise and deliver the ancillary services which are available from DSO connected resources.</p> <p>Scope :</p> <ol style="list-style-type: none"> 1. Co-ordination of transmission and distribution grid codes for generator performance for global issues such as frequency control and voltage disturbances. 2. Frequency control which will include primary, secondary and tertiary reserves, switchable and interruptible loads and automatic frequency relays. 3. Reactive power management which will include control of distributed generating units, operation of compensation resources and transformer operations. 4. Restoration plans, practice and procedures which will include black start and islanding, commissioning with and without energisation and co-ordination across different grid levels. The advent of distributed generation will have a significant effect on all existing restoration plans and procedures. 5. Coordinated operational planning and management including data exchange and aggregation, operation actions, congestion management, System Protection Schemes (SPS) for automatic load shedding, as well as real-time preventive measures such as manual load shedding. 6. Real-time data exchange, between the DSO and TSO, including grid topologies, demand forecasts, real and reactive power flows and voltage measurements. <p>Deliverables : Report to be published in Electra or technical brochure with summary in Electra</p> <p>Time Schedule : start : June 2015 Final report : June 2017</p>	
Comments from Chairmen of SCs concerned :	
Approval by Technical Committee Chairman : Date : 23/06/2015 	

Table 1: Technical Issues of the TC project “Network of the Future” (cf. Electra 256 June 2011)

1	Active Distribution Networks resulting in bidirectional flows within distribution level and to the upstream network.
2	The application of advanced metering and resulting massive need for exchange of information.
3	The growth in the application of HVDC and power electronics at all voltage levels and its impact on power quality, system control, and system security, and standardisation.
4	The need for the development and massive installation of energy storage systems, and the impact this can have on the power system development and operation.
5	New concepts for system operation and control to take account of active customer interactions and different generation types.
6	New concepts for protection to respond to the developing grid and different characteristics of generation.
7	New concepts in planning to take into account increasing environmental constraints, and new technology solutions for active and reactive power flow control.
8	New tools for system technical performance assessment, because of new Customer, Generator and Network characteristics.
9	Increase of right of way capacity and use of overhead, underground and subsea infrastructure, and its consequence on the technical performance and reliability of the network.
10	An increasing need for keeping Stakeholders aware of the technical and commercial consequences and keeping them engaged during the development of the network of the future.

Table 2: Strategic directions of the TC (cf. Electra 249 April 2010)

1	The electrical power system of the future
2	Making the best use of the existing system
3	Focus on the environment and sustainability
4	Preparation of material readable for non technical audience