

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP

WG* N° B5.54	Name of Convenor : Nirmal Nair (NZ) E-mail address: n.nair@auckland.ac.nz
Technical Issues # (2): 1, 5, 6	Strategic Directions # (3): 1, 2
The WG applies to distribution networks (4): Yes	
Title of the Group: Protection and Automation Issues of Islanded Systems during System Restoration/Black Start	
<p>Scope, deliverables and proposed time schedule of the Group :</p> <p>Background:</p> <p>With the increasing level of distributed generation and also energy storage systems, there is now an increasing possibility to create distinct self-sustaining islands, should the need arise during system disturbances. This however produces a number of challenges and issues, such as islanded system balancing, which would likely involve some load shedding to balance the capacity with load. Additionally, increasing demand and the closure of aging fossil fuel power plants due to strict emission targets, may lead to smaller operating margins and an associated need for more innovative techniques for the avoidance of blackouts and the associated disruption during restoration of the system.</p> <p>Without islands, an entire system can be lost, possibly requiring a black start. At best any islands need to be re-synchronised with the larger network when the systems are ready to be connected again.</p> <p>Scope :</p> <p>The working group will study current practices and possibilities, drawing on experiences wherever possible to provide examples, whilst making recommendations for best practice and opportunities for Protection and Automation Issues of Islanded Systems during System Restoration/Black Start. The requirements for communications and auxiliary supplies in order to sustain islands and provide information about them to control centres to enable later re-synchronisation will also be considered. With islanded systems, opportunities exist to make use of dynamic protection settings, which change to provide optimum protection under both normal and islanded system operation/restoration, whilst wide area synchronisation offers new possibilities during System Restoration/Black Start.</p> <p>Reference will be made to Technical Brochure 200 - Isolation And Restoration Policies Against System Collapse as required.</p> <p>Interaction with other B5 WGs and with other SCs</p> <p>SC.C2, SC.C1 and SC.C6 may nominate members to contribute with planning and system operational aspects.</p> <p>Deliverables :</p> <ul style="list-style-type: none"> • Technical brochure • Summary in Electra • Power Point slides for Tutorial 	

Time Schedule : start : 2014

Final report : 2016

Comments from Chairmen of SCs concerned:

Approval by CIGRE Technical Committee Chairman :
Date : 09/12/2013

A handwritten signature in black ink, appearing to read "M. Wald".

- (1) Joint Working Group (JWG) - (2) See attached table 1 – (3) See attached table 2
- (4) Delete as appropriate

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	Interactive communication with the public and with political decision maker