




CIGRE Study Committee C5

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP¹

WG N° C5.26	Name of Convenor: Kankar Bhattacharya (CANADA) E-mail address: kankar@uwaterloo.ca	
Strategic Directions #²: (1)		Technical Issues #³: (5, 8)
The WG applies to distribution networks⁴: Yes		
Potential Benefit of WG work #⁶: (2, 3)		
Title of the Group: Auction Markets and Other Procurement Mechanisms for Demand Response Services		
<p>Background: Demand response (DR), which enables customers to reduce their electricity consumption in response to prices and system needs, is playing an increasingly important role in power system operation. DR allows the Independent System Operator (ISO) to tap into existing facilities and procure reserves and energy balancing services. DR programs are being implemented by ISOs to alter the load shape in response to price signals or to operator requests during critical conditions. Many ISOs are transitioning the procurement of wholesale DR from a contract-based method to a market-based approach referred to as <i>DR Auction</i> to improve customer participation. This is one of the key features of smart grids that has strengthened the interest in demand-side resources such as distributed generation, on-site storage, and DR. In the context of electricity markets, DR is expected to improve the flexibility of demand, and provide an enduring mechanism to develop and expand upon demand side resources. Therefore, how the DR services are procured- via auction markets, long-term contractual mechanisms, or other, and implemented in market operations in various electricity markets around the world is worth studying and understanding. The Working Group (WG) will identify the various complexities in different DR procurement mechanisms, and their operational aspects. The WG will identify the barriers in different models and develop a global outlook for management of DR services.</p> <p>Scope:</p> <ol style="list-style-type: none"> 1. Examine the role of transmission system operators (TSOs) and distribution system operators (DSOs) in managing DR services, such as the operational time frames, the existing DR service procurement mechanisms, the payment methods, and activation of such services. 2. Examine the development of DR auction in various markets around the world: auction process, time frame, bid structure, development of the ISO's DR curve, and the pricing mechanism. 3. Examine the performance of DR procurement mechanisms, currently in place. 4. Study feasibility and viability of standard DR procurement models for different market structures. <p>These tasks will involve a survey on DR procurement mechanisms, contract frameworks, market design, and their pricing mechanisms. Also, a survey on best practices for DR activation in markets will be carried out to develop performance indicators. Finally, recommendations for standard procurement models for DR services suited to different market structures will be proposed.</p> <p>Deliverables:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Technical Brochure and Executive summary in Electra <input checked="" type="checkbox"/> Electra report <input checked="" type="checkbox"/> Tutorial⁵ <p>Time Schedule: start: May 2017 Final Report: August 2019</p> <p>Approval by Technical Committee Chairman: </p> <p>Date: 11/08/2017</p>		

Notes: ¹ or Joint Working Group (JWG), ² See attached Table 2, ³ See attached Table 1, ⁴ Delete as appropriate, ⁵ Presentation of the work done by the WG, ⁶ See attached table 3

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
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 (ref. 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

Table 3: Potential benefit of work

1	Commercial, business or economic benefit for industry or the community can be identified as a direct result of this work
2	Existing or future high interest in the work from a wide range of stakeholders
3	Work is likely to contribute to new or revised industry standards or with other long term interest for the Electric Power Industry
4	State-of-the-art or innovative solutions or new technical direction
5	Guide or survey related to existing techniques. Or an update on past work or previous Technical Brochures
6	Work likely to have a safety or environmental benefit