



CIGRE Study Committee C5

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP (1)

WG* N° C5.24	Name of Convenor: Elizabeth (Beth) LaRose	
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Technical Issues # 1, 2, 5		Strategic Directions # 1, 2
The WG applies to distribution networks (4): Yes		
Title of the Group: Exploring the Market-based value of Smart Grid developments		
Scope, deliverables and proposed time schedule of the Group:		
Background:		
<p>What is the market-based value of a smarter grid? Increasingly technologies are deployed across transmission and distribution grids that boast capabilities to automate, enhance, simplify, reduce costs and improve our lives. In addition to the technical advantages, the market-based benefits of smart grid advanced functions can be quantified and articulated in the context of electricity markets and commercial risk mitigation to demonstrate their full value.</p>		
Justification:		
<p>As functions of smart grid technology are deployed, various approaches to quantify the market-based and commercial risk management value can be evaluated. A cross discipline, multi-country team can explore, report on and propose some methodologies for accounting for these values and net benefits in the context of electricity markets and commercial risk mitigation.</p>		
Purpose:		
<p>The purpose of this working group is to explore and provide the types and (ranges of) the market-based and strategic values associated with smart grid technologies and propose methods for accounting for these values. This work can build on previous work such as:</p>		
<p>“Estimating the costs and benefits of the smart grid in the United States”, Clark W. Gellings, Electra December 2011 No. 259</p>		
<p>“Estimating the Costs and Benefits of the Smart Grid,” EPRI, Palo Alto, CA: 2011. 1022519</p>		
<p>“Microgrids 1 Engineering, Economics, & Experience”, Working Group C6.22 Microgrids Evolution Roadmap, October 2015, C. Marnay (US), Convenor, with C. Abbey (CA) & G. Joos (CA), Secretaries, and 22 Contributing Members, ISBN: 978-2-85873-338-5</p>		
<p>Additional resources and references: Smart Grid Consumer Collaborative (SGCC) (www.smartgridcc.org) for examples of research done on the market-based economic benefits for the end use consumer.</p>		
Scope:		
<ul style="list-style-type: none"> • Investigate the market-based, strategic values of advanced smart grid functions via research of previous works, publication and practices. • Conduct industry survey with diverse industry and community stakeholders e.g. utilities, industrial/ commercial, developers, residential/small retail, residential consumer. • Propose a common/consistent methodology to evaluate the potential market-based and strategic benefits of smart grids in the context of electricity markets and commercial risk mitigation. 		

Deliverables:

Technical Brochure and/or Electra article. Conference/Scientific papers that provide an overview of the analysis results on market benefits of smart grid and proposed methods for accounting for the values in the context of electricity markets, and risk mitigation. Tutorial material as required.

Time Schedule: Start: 02 2017**Final report:** 12 2018*Planned schedule of activities:*

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|--|-------------------|
| • Approval of Terms of Reference | Q4 2016 |
| • Develop final work plan and recruit members | Q1 2017 |
| • Conduct research | Q2, Q3 2017 |
| • Develop and conduct industry survey | Q2 – Q4 2017 |
| • Determine accepted/standard/typical values | Q4 2017 – Q1 2018 |
| • Draft Report on survey results, proposed methods | Q2 2018 |
| • Publish report | Q4 2018 |

Comments from Chairmen of SCs concerned:**Approval by Technical Committee Chairman:****Date:** 01/12/2016

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