



CIGRE Study Committee C5

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

<b>WG* N° C5.21</b>	<b>Name of Convenor :</b> Adam Keech (USA) <b>E-mail address:</b> <a href="mailto:adam.keech@pjm.com">adam.keech@pjm.com</a>
<b>Technical Issues # (2): 10</b>	<b>Strategic Directions # (3): 3</b>
<b>The WG applies to distribution networks (4): No</b>	
<b>Title of the Group: Impacts of Environmental Regulations on Power Markets</b>	
<b>Scope, deliverables and proposed time schedule of the Group :</b>	
<b>Background :</b> Environmental regulations are typically put in place to either incentivize the use of renewable resources such as wind and solar PV or discourage the use of conventional, fossil resources that do not have the appropriate retrofits to limit pollutants such as sulfur, nitrogen and carbon. While the intention of many environmental regulations is to promote the use of clean, renewable energy, often little attention is paid to how the regulations will impact wholesale market design and operation. Regulations that incentivize renewables via an out-of-market payment such as a tax credit can undermine wholesale market prices and deplete revenue streams for conventional assets and potentially force them into early retirement. This can impact resource adequacy and can make power market incentives ineffective as renewable resources often cannot provide the same services as conventional resources.  The purpose of this group will be to research the relevant environmental regulations in different areas of the world and document their impacts on power market design and market operation. The group will also focus on how these regulations impact long-term resource investment signals and market price signals. The group will explore alternative market solutions that are needed to address these problems.	
<b>Scope :</b> This group will collect information regarding the environmental regulations in different parts of the world and report on how they are being implemented, any market design or regulatory changes needed for that implementation and the expected or observed impacts of the environmental regulation.	
<b>Deliverables :</b> <ol style="list-style-type: none"><li>1. One technical brochure with a summary in Electra capturing the environmental drivers impact different areas of the world.</li></ol>	
<i>Potential future work:</i> <ol style="list-style-type: none"><li>2. One technical brochure with a summary in Electra exploring the long-term impacts on resource investment signals and market price signals of specific environmental regulations with suggestions for market-based solutions to address those issues.</li></ol>	
<b>Time Schedule :</b> start : March 2015	<b>Final report :</b> August 2016
<i>For deliverable #1:</i>	

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|---|---------------|
| • Approval of Terms of Reference              | January 2015  |
| • Develop final work plan and recruit members | May 2015      |
| • Develop and distribute questionnaires       | November 2015 |
| • Compile and analyze data                    | January 2016  |
| • Develop case studies                        | March 2016    |
| • Draft Report on survey results              | May 2016      |
| • Publish report                              | August 2016   |

**Comments from Chairmen of SCs concerned :**

**Approval by Technical Committee Chairman :**  
**Date :** 28/11/2014

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)**

<b>1</b>	Active Distribution Networks resulting in bidirectional flows within distribution level and to the upstream network.
<b>2</b>	The application of advanced metering and resulting massive need for exchange of information.
<b>3</b>	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.
<b>4</b>	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.
<b>5</b>	New concepts for system operation and control to take account of active customer interactions and different generation types.
<b>6</b>	New concepts for protection to respond to the developing grid and different characteristics of generation.
<b>7</b>	New concepts in planning to take into account increasing environmental constraints, and new technology solutions for active and reactive power flow control.
<b>8</b>	New tools for system technical performance assessment, because of new Customer, Generator and Network characteristics.
<b>9</b>	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.
<b>10</b>	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)**

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