Issue 1.0

IEA Implementing Agreement on Electricity Networks Analysis, Research & Development (ENARD)

Annex I Workshop
"Balancing the Variability in Renewable Electricity Supplies:- new challenges and opportunities"

to be held
at Energinet.dk,
Fredericia, Denmark,
Tuesday 20th and morning of Wednesday 21st October 2009.

1. Introduction

ENARD is the International Energy Agency (IEA) Implementing Agreement on Electricity Networks Analysis, Research & Development. It provides an international forum for information exchange, research, analysis and collaborative research and development across a range of electricity transmission and distribution (T&D) network issues. Its vision is to facilitate the uptake of new operating procedures, architectures, methodologies and technologies in electricity T&D networks, such as to enhance their overall performance in relation to the developing challenges of network renewal, renewables integration and network resilience. Further information on ENARD and its activities may be obtained from the ENARD web-site at www.iea-enard.org.

ENARD's Annex I work programme is concerned with the structured collation, analysis and dissemination of a range of T&D related information and data, whilst also serving as the essential mechanism, to help define and structure future activities. The definition of such future activities is addressed via the organization and delivery of a series of topical experts' meetings and workshops, including the forthcoming Balancing Workshop, to be held in Fredericia, Denmark.

The Workshop is aimed at stimulating discussion in relation to the emerging challenge associated with balancing the increasing amounts of time variable renewable generation, which is expected to be deployed on electricity T&D networks worldwide, over the next decade and beyond. Various actual and potential solutions mechanisms are possible here, including system level solutions, distributed energy storage, interaction with the demand side and the application of advanced control techniques. The workshop will aim to establish the current status of such solution mechanisms and identify the challenges and barriers, still to be addressed. The requirements for future actions and initiatives will be identified and these will be encapsulated, in terms of messages for policy makers.

2. Programme

Tuesday 20th October 2009	
08:30	**Registration**
09:00	Welcome & introductory remarks – Stig Goethe, Chair of ENARD Implementing Agreement and President of Power Circle, Sweden
Keynote Address	
09:10	System Balancing in Commercial Electricity Markets – the Energinet.dk Perspective, 10 years on - Peter Jørgensen, Vice-President, Electricity System Development, Energinet.dk
Session 1: Setting the Scene	
09:30	ENARD, the IEA Implementing Agreement on Electricity Networks Analysis, Research and Development and the present workshop - John Baker, Operating Agent, ENARD Annex I
09:45	Future Grid Storage Capacity Requirements:- an IEA Perspective – Shin-ichi Inage, International Energy Agency, Paris
10:15	Coffee
Session 2: System Level Solutions	
10:40	Future Balancing Requirements in the Electricity System GB under the National Grid "Gone Green" Scenario – David Coan, National Grid plc, UK
11:05	Unleashing the Potential of the Norwegian Hydro Resource to Provide a Regional Service to the UCTE System – Lars Audun Fodstad, Senior Vice President, Statkraft Energy AS, Norway
11:30	The Real Time Management of Wind Intermittency in the Spanish Context – Vicente J. Gonzalez, Head of R&D and EU Projects Department, RED Electrica de Espana, Spain
Session 3: Morning Panel Session	
11:55	Panel Discussion
12:10	Lunch

Session 4: Electrical Energy Storage and Advanced Network Solutions	
13:00	Roll-out and Commercial Deployment of the NGK NaS Advanced Battery Storage System – NGK, Japan (speaker to be confirmed)
13:25	Developments in Vanadium Redox Flow Cell Energy Storage Systems – Hugh Sharman, Prudent Energy, China
13:50	Application of Advanced Control Techniques in Wind Turbines – Bjorn Andresen, Head of Department – Wind Farm Electrical Interface, Siemens Wind Power A/S, Denmark
14:15	Tea
Session 5: Demand Side Developments	
14:35	The Demand Side Contribution – Recent Developments in the IEA Implementing Agreement on Demand Side Management –Seppo Karkkainen, VTT /IEA Implementing Agreement on Demand Side Management
15:00	Electrification of Transport – Bo Normark, President, Power Circle, Sweden
15:25	The Contribution of Thermal Storage Solutions towards System Balancing – Dr.Astrid Wille, Forschungszentrum Julich GmbH, Chair, IEA Implementing Agreement on Energy Conservation through Energy Storage
15:50	Hydrogen Based Solutions – Dr.Luis Correas, Foundation for the Development of New Hydrogen Technologies/IEA Implementing Agreement on Hydrogen
Session 6: Afternoon Panel Session	
16:15	Panel Discussion
Session 7: Formation of Working Groups	
16:30	Introduction to aim and objectives of Working Groups - John Baker, Operating Agent, ENARD Annex I
16:45	Formation of Working Groups – election of facilitators
16:50	Close of Day One

Wednesday 21st October 2009	
Session 8: Working Group Discussions	
08:30	Working Group discussions • System Level Solutions • Distributed Solutions • The Demand Side Contribution
10:15	Coffee
10:45	Working Groups report • System Level Solutions • Distributed Solutions • The Demand Side Contribution
11:40	General Discussion
12:00	Workshop Overview and Implications – John Baker, Operating Agent, ENARD Annex I
12:15	Lunch and Close of Workshop
13:15	Optional technical visit to Energinet.dk Control Room

3. Who Should Attend?

The Workshop will appeal to all those with an interest in management and balancing of the projected future large scale penetrations of time variable renewable electricity supplies, including:-

- Distribution System Operator Planning and Operational Engineers;
- Transmission System Operator Planning and Operational Engineers
- Investment Planners and Managers;
- Technology and Systems Developers;
- Strategists and Policy Makers; and
- Regulators.

4. Outputs

The principal workshop outputs will include:-

- full discussion and debate of a range of pertinent issues in relation to the balancing of the variability of renewable energy supplies;
- identification and evaluation of current “state-of-the-art”;
- identification of future R&D needs;
- recommendations for future actions and initiatives;
- key messages for policy makers.

J N Baker,
ENARD Annex I Operating Agent.
EA Technology.

2nd July 2009.