

Annex XXIII

ROLE OF THE DEMAND SIDE IN DELIVERING EFFECTIVE SMART GRIDS

1. Description of Technical Sector

The current pace of change throughout the electricity supply industry is unprecedented, largely driven by the wide ranging measures being implemented to reduce the emissions of greenhouse gas emissions. In particular, the increasing move towards the wide-scale deployment of time variable renewable generation, presents a number of challenges in relation to the balance of supply and demand. No longer is it considered viable for electricity to be provided ‘on demand’ in response to the requirements of end-users. Rather, a co-ordinated approach is required whereby energy production and demand are integrated to ensure the use of renewables can be optimised whilst also minimising the use fossil fired generation. Such an approach is the essence of the Smart Grid concept.

Whilst there is considerable focus on the technological aspects of delivering Smart Grids, for example through the development of new technologies and initiatives to enable the demand side to become active participants in the market, little is understood of the extent to which consumers are willing to embrace these new technologies and initiatives. However, there is a risk that if customers are not willing to adopt new approaches to the way that they consume electricity, Smart Grids may not be able to achieve their full potential.

This new Task therefore seeks to explore the potential risks and rewards associated with Smart Grids from the perspective of customers and identify best practices to ensure the demand side become an integral component of a successful Smart Grid.

2. Aim and Objectives

The overall aim of Task XXIII is to identify and where possible quantify the risks and rewards associated with Smart Meters and Smart Grids from the perspective of the consumer, both now and in the future. By identifying the potential risks and rewards the Task would seek to identify best practice guidelines in order to ensure the demand side contributes to the delivery of effective Smart Grids.

The specific objectives of Task XXIII are to:

- Understand the impact of the structure of energy markets on the interactions of consumers with Smart Grids;
- Explore the impact of technologies on the ability (and willingness) of customers to contribute towards the successful implementation of Smart Grids;

- Identify the risks and rewards associated with Smart Grids from the perspective of customers;
- Understand the opportunity for stakeholders to influence these risks and rewards;
- Identify tools to minimise the risks and maximise the rewards associated with the Smart Grid from the point of view of the consumer, whilst still satisfying the needs of other stakeholders;
- Understand customer reactions and preferences to offers and opportunities that a smart grid might provide (including local supply); and
- Understand regulatory options, practice and consequences.

The scope of the project will be limited to customers with Smart Meters and thus, likely to be expected to play an important part in the future Smart Grids as they become deployed. This will therefore include:

- Residential customers; and
- Small commercial, business and local authority customers, i.e. those that are treated in a similar way to residential customers (for example have similar metering arrangements, or have similar access to the energy market).

3. Means

The objectives shall be achieved by the Participants in the following Subtasks:

(a) Subtask 1: Impact of energy markets on the role of customers

This Subtask will map the interactions of different stakeholders in a ‘market map’ for each participating country, with the consumer as the central focus. This will include power and information flows, ownership of meter data and responsibility for billing and metering.

(b) Subtask 2: Interaction between technology and customers

This Subtask will draw upon the available information on Smart Grid enabling technologies in order to consider the appropriateness of these technologies, both from the customer and the Smart Grid industry perspective.

(c) Subtask 3: Identification of Risks and Rewards associated with Smart Grids

This Subtask will identify, and where possible quantify, the possible risks and rewards relating to the Smart Grid from the consumer perspective

(d) Subtask 4: Defining offers and programmes (tools) to help ensure Smart Grids meet needs of customers

This Subtask will highlight the costs and benefits associated with different approaches to Smart Grid implementation

(e) Subtask 5: Synthesis and Dissemination

This Subtask will bring the results of Subtasks 1 to 4 together and disseminate the results via a series of regional workshops organised and delivered by the Task participants.

4. Results

The principal deliverables for Task XXII will be one or more reports containing:

- A clear statement of the definition of a Smart Grid used throughout the task;
- Market maps for all participating countries showing the power and information flows between different stakeholders from the point of view of the consumer;
- The risks and rewards relating to the Smart Grid concept, from the point of the view, including an understanding of the drivers of other stakeholders;
- A review of technology development, identifying both the TRL and MRL of each relevant component of the Smart Grid concept;
- The identification of tools required to engage with the consumer to realise the greatest benefits from the Smart Grid, and how to make these tools as effective as possible.

5. Time Schedule

This Annex shall enter into force at such time as the Executive Committee, acting by unanimity of those Contracting Parties which have communicated to the Executive Director a Notice of Participation in this Annex, determines that there is sufficient participation to perform Task XXII, taking account of both cost-sharing and task-sharing elements of the Annex. This Annex shall remain in force for a period of 18 months after entering into force. Within the limits of the term of the Implementing Agreement, this Annex may be extended by two or more Participants in Task XXIII, acting in the Executive Committee, and shall thereafter apply only to those Participants.

6. Specific Obligations and Responsibilities of the Participants

Each Task Expert shall:

- (a) Undertake about 7 person-weeks of work during the expected 18 month duration of Task XXIII.
- (b) Contribute their knowledge to the progress of Task XXIII.
- (c) Carry out any research work within their country which is required for Task XXIII.
- (d) Where participation in Task XXII involves several organisations in their country, coordinate contributions by these organisations to the work of Task XXIII.
- (e) Attend up to four Experts Meetings and participate actively in these meetings.

- (f) Analyse and comment on draft versions of work carried out by the Operating Agent and other Task Experts.

7. Specific Obligations and Responsibilities of the Operating Agent

In addition to the obligations enumerated in Article 6 of this Implementing Agreement, the Operating Agent shall:

- (a) Manage and coordinate the successful completion of the Task XXIII Subtasks and the work of the different Task Experts in accordance with the Task XXIII Work Plan.
- (b) Provide reports to the Executive Committee on the progress and results of the work performed under the Task XXIII Work Plan every six months.
- (c) Provide to the Executive Committee within three months after completion of all work under the Task XXIII Work Plan, a Final Management Report for its approval.
- (e) Use its best efforts, in collaboration with the Participants, to avoid duplication with activities of other related programmes and projects implemented by, or under the auspices of the Agency or by other bodies.
- (e) Market and disseminate information about Task XXIII to raise and maintain interest in, and understanding of, the Task and the IEA DSM Programme.

8. Funding

The Task XXIII Budget is set at £279 220 based upon five participating countries. This amount will fund the Operating Agent's labour and expenses in managing and coordinating the successful completion of the Task XXIII Subtasks and in accomplishing its other obligations as Operating Agent. Each Participant in Task XXIII will contribute an equal share of the Task XXIII Budget

If the number of Participants is less than five, the value of each Participant's share of the Task XXIII Budget will be £55 844 and the overall budget of Task XIX will be reduced and the programme of work revised accordingly. Any revision to the programme of work will be agreed upon by the Executive Committee, acting by majority of the Participants in Task XXIII.

The Operating Agent shall send invoices to the Participants at the commencement of the Task and thereafter at the ninth month. Payments from each Participant must be received by the Operating Agent no later than 30 days after the Participant's receipt of the Operating Agent's invoice.

If necessary, an increase in the Task XXIII Budget may be agreed upon by the Executive Committee, acting by unanimity of the Participants in Task XXIII.

In addition to its share of the Task XXIII Budget, each Participant shall bear all the costs of its own participation in Task XXIII, and the costs it incurs in carrying out its obligations under this Annex, including necessary travel costs.

9. Information and Intellectual Property

The principal results and outputs of this Task will remain confidential to the Participants for a period of 12 months after the completion of the Task, unless all Participants agree to an earlier release of information.

The Task is not anticipated to lead to the development of any new Intellectual Property. The ownership of any Intellectual Property that may arise shall be established in accordance with the terms set out within this Implementing Agreement.

10. Operating Agent

EA Technology Limited, acting through the United Kingdom, is designated as Operating Agent.

11. Participants in the Task

The Contracting Parties which are Participants in this Task are the following:

NL Agency, Netherlands

ENOVA, Norway

Korea Power Exchange, Republic of Korea

Swedish Energy Agency, Sweden