European Commission's Communication on "Smart Grids: from Innovation to Deployment"

A EURELECTRIC response paper

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European Commission's Communication on "Smart Grids: from innovation to deployment"

SG Regulation for Smart Grids

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EURELECTRIC Response to the European Commission's Communication "Smart Grids: from Innovation to Deployment"

1. Background & Introduction

In November 2010, the European Commission launched the Task Force Smart Grids, a consultation body set up to advise on policy and regulatory directions at European level, and to coordinate the first steps towards the implementation of smart grids under the provision of the Third Energy Package. Some 15 EURELECTRIC Distribution System Operators (DSOs) experts and several energy supplier representatives have been participating in the expert groups created under the Steering Committee. They have provided extensive input to the European Commission's Smart Grid Task Force and its 3 Expert Groups on functionalities of Smart Meters/Grids, data security and confidentiality and roles and responsibilities of actors involved in Smart Grids.

Following the contributions of the Task Force on Smart Grids, the European Commission (EC) took good note that functionalities of Smart Grids have been identified (and agreed on) and experts supported the preparation of a mandate on standardisation for Smart Grids.

Apart from these two deliverables, the Task Force Smart Grids identified three remaining issues, which will need to be addressed in the near future if Smart Grids deployment is to be accelerated: (1) there is a gap in terms of incentives for investments in Smart Grids; (2) the reliability of the existing framework to guarantee data confidentiality/customer protection needs to be assessed and where relevant adequately tailored and (3) all the actors in the electricity supply chain should be aware of and commit to their future roles and responsibilities[1], in particular when it comes to demand response with smart meters.

To address these open issues and keep a close monitoring on other important policy aspects such as data privacy and standardisation for Smart Grids, the European Commission has published its Communication "Smart Grids: from Innovation to Deployment" on 12 April, in order to explain its general policy approach and the next regulatory milestones foreseen on Smart Grids.

EURELECTRIC, the association representing the European electricity industry, has structured its response in two steps:

- In a short note published on the day of the Communication release, EURELECTRIC explained that it welcomed the Communication and believed the paper addressed the main regulatory elements currently hampering the implementation of Smart Grids in Europe.
- In a longer statement - this paper - EURELECTRIC now develops a more detailed response to the Commission's Communication and elaborates suggestions that pave the way towards a swift deployment of Smart Grids in Europe.

[1] Task Force Smart Grids Expert Group 3 Report, page 7

2. EURELECTRIC's Key messages

Deploying Smart Grids for customers and a low-carbon society

EURELECTRIC warmly supports the strong customer-centric focus of the Communication and believes that a successful implementation of Smart Grids requires placing customers at the very heart of the new system. Equally, EURELECTRIC sees Smart Grids as a key enabler for achieving the EU's ambitious energy targets, in particular integrating the Renewable Energy Sources and meeting the energy efficiency targets. It is therefore an instrument to move towards a low-carbon society.

- **Smart Grids will lead to a real win-win situation for both customers and the electric system as a whole**. On the one hand, Smart Grids will empower customers to know better and actively manage their energy consumption. On the other hand, they will lead to a more flexible electricity demand through a higher reliance on dynamic price signals. This will, in turn, bring new demand-side solutions to ensure a smooth integration of intermittent RES in an electric system which has a clear need for a diversified portfolio of flexibility options.

- **It follows from the above that Smart grids are not an end in itself**. They will be deployed by DSOs where economically viable: they should bring value both to the end-customers and to the electric system as a whole.

- **Smart Grids imply the evolution towards 'Smart Energy Systems' in which generators, DSOs, suppliers and customers will all be key players**. Smart Grids should hence be perceived as more than a technical infrastructure operated by DSOs. Once in place, this market platform will enable suppliers to offer new products and services to the benefit of customers.

- **To push Smart Grids forward, two main pre-requisites must be fulfilled**: regulatory incentives for investments in Smart Grids must be delivered together with a sound market model which underpins customer engagement.

DSOs must be given a chance to invest

EURELECTRIC invites the Commission to acknowledge more explicitly that the deployment of Smart Grids in Europe will be performed by DSOs. The major part of investments will fall on them. Moreover, EURELECTRIC encourages the European Union to recognise that Smart Grids investments are currently hampered by a lack of political leadership among most Member States to allow for distribution grid investments (including innovative and ICT-based investments) that would give system operators the tools to cope with the 20/20/20 objectives.

- **As part of their tasks[2] to operate, maintain and develop electricity distribution systems, DSOs will increasingly rely on ICT-based tools (e.g. SCADA and automatised devices with self-healing capabilities) that will assist them in managing their network**. As responsible for power quality to consumers and for the grid operation, DSOs will perform the investments in Smart Grids (from the transmission line exit point to the smart meters - included), while investments in Smart Homes and the provision of demand side participation products (beyond the smart meters) should be left to market dynamics. While benefits of Smart Grids will be spread to the whole society, a large part of the upfront capital expenditures will be borne by DSOs.

- **Barriers to investments should be removed to put DSOs in a position to invest in « smarter grids ».** Currently, **i**n the vast majority of Member States DSOs are indeed constrained by outdated economic regulatory models to follow business as usual approaches (more copper and iron) and are hampered from investing in innovative solutions (smart meters, supervision and monitoring devices, automation of the network, etc) even though this forward-looking approach would allow them to mitigate the anticipated increase of their expenditures.

- **The EURELECTRIC survey "Regulation for Smart Grids"[3] (published in February 2011) revealed a lack of consistency and missing incentives for Smart Grids investments in national regulation and the overall European energy policy.** EURELECTRIC therefore considers that economic regulation at Member State level should be revised to incentivise new investments and the implementation of smart grids where it is economically viable. The traditional regulatory framework has incentivised DSOs to reduce costs, including expenditure in areas such as R&D and skills renewal, whose benefits often go beyond the lifetime of a price review period. A paradigm shift is necessary: allowances should be dealt with in a long-term perspective.

[2] Art.25 – Directive 2009/72/EC (also known as the 3rd Directive)
[3] EURELECTRIC Report on Regulation for Smart Grids, February 2011.

- **EURELECTRIC regrets that the Commission Communication gives the wrong impression that Smart Grids investments (also in the grid infrastructure) will be delivered by market actors** and feels that the document has been elaborated on the basis of particular market designs (in particular UK and Germany), in which the metering business has been liberalised. The German experience proves that metering liberalisation has, so far, not delivered the expected benefits to both customers and the system[4].

- **EURELECTRIC believes that Smart Meters will become part of the electricity infrastructure** where proven reasonable by Member States' Cost-Benefits-Analyses (CBAs). We support a DSO-led roll-out with clear payback through regulated grid tariffs for reasons linked to economies of scale and to operational simplicity[5].

Smart Grids is a step-by-step process

Given the complexity of Smart Grids and its incremental nature, a one-size-fits-all approach to its development will not deliver. Smartness levels should not be imposed to DSOs from Brussels.

- **The need for and the development of Smart Grids will largely depend on the (currently diverse) conditions of the present European distribution grid and on the challenges presented by the implementation of the 20/20/20 targets which differ from country to country. Member States should do more to develop incentives for Smart Grids investments.**

- **As the International Energy Agency (IEA) put it in a recent report: *"the 'smartening' of the electricity system is an evolutionary process, not a one-time event"***[6] hence *"deployment needs to be discussed at the regional level, where important factors such as the age of infrastructure, demand growth, generation make-up, and regulatory and market structures vary significantly".*

- **EURELECTRIC believes that Smart Grids, as an evolutionary process, will develop over time and according to local needs.** Europe's distribution grids are diverse and their characteristics are influenced by local conditions (RES penetration, regulatory framework, state of the grid, etc.). **The subsidiarity principle should hence be respected.** We expect the development of Smart Grids to differ according to current regional modernisation levels of the distribution grid.

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[4] Germany: Monitoring Bericht BNetzA - p 275 ff. specially figure 198 p 278: http://www.bundesnetzagentur.de/SharedDocs/Downloads/DE/BNetzA/Presse/Berichte/2010/Monitoringbericht2010Energiepdf.pdf;jsessionid=D8080D6DA1AA5C811E0887B7DA78D8C7?__blob=publicationFile

[5] Moreover, there has to be recognition that smart grid developments need to take into account smart metering deployments that may have already been completed or are in progress. This is particularly important where the parties responsible for smart metering deployment (e.g. energy suppliers/retailers in GB) are not the same as smart grid operators but where smart metering infrastructure may be used for smart grid purposes.

[6] IEA Technology Roadmap on Smart Grids, April 2011

- **Regulatory requirements should reflect this incremental nature and should not be too prescriptive on a European level.** Requesting Member States to elaborate Action Plans – as the Commission is proposing in its Communication - strikes the right balance in this regard, and is supported by EURELECTRIC.

- **Action Plans should require reforms by those Member States who 'lag behind' in terms of smart regulation for Smart Grids** and should encourage them – for example by pointing out at best practices such as the Italian incentive-scheme for Smart Grids[7] – to develop positive financial incentives for DSOs to invest and ensure Smart Grids implementation.

Smart Grids will enable the development of a new customer-centric demand response market model

Smart Grids will enable the take-off of a demand response market with smart meters, where suppliers will be able to offer innovative services and products based on customers' consumption profiles and preferences (e.g. dynamic pricing, critical peak pricing) and will allow for a smarter network management by DSOs.

- **Suppliers**' activities focus on selling energy and on related services and products. They shall remain the **major point of contact to customers** (to make the major retail market processes simpler from a customer perspective). **DSOs**, on the other hand, physically deliver the energy and are focused on grid stability and security of supply. They shall play the role of **neutral market facilitators**[8] to ensure robust and efficient retail market processes by providing information to market actors in a transparent, non-discriminatory and efficient way.

- **Customers will have to be at the very heart of the demand response market model, and will have to be engaged.** This means that customers' confidentiality and data privacy will have to be adequately safeguarded, for instance through a 'privacy by design model' and drawing lessons from sectors such as banking and telecoms, to ensure that the benefits of smart grids are fully delivered.

- **Suppliers will need to translate the complexity and sophistication of well-functioning demand response markets into the simplicity that customers demand, by packaging attractive products.**

- **Moreover, the successful development of a demand response market with smart meters will require a proper regulatory framework (e.g. removal of end-user regulated prices) and a retail market design based on clear roles and responsibilities for market players and system operators.**

[7] WACC + 2 % for Smart Grids investments.
[8] We acknowledge however that in the UK market, this task can be performed by another actor.

3. Detailed response to the points raised by the Commission

3.1 On the development of European Smart Grids standards

EURELECTRIC supports the development of European standards for Smart Grids by end 2012 at the latest.

Standards are a key requirement for deployment of Smart Grids as they will provide cost-efficient solutions for market actors. Set at European level, they will enable interoperability, avoiding the high compliance costs of diverging national approaches that could otherwise hold back the large-scale deployment of Smart Grids.

Different types of standards need to be defined. Technical standards for communicating and collecting data need to be developed in order to integrate the various communication technologies and electrical architectures of the smart grid solution. To facilitate the large-scale deployment of e-mobility, a standardized charging interface will be necessary to ensure interoperability and connectivity between electricity supply points and the charging infrastructure for electric vehicles. Standardized communication and data protocols will enable DSOs to improve the transfer of verified customer data to service providers.

3.2 On data privacy and security issues

EURELECTRIC believes that clear and consistent data privacy and security requirements are essential and will provide a sound basis for the acceptance of Smart Grids by customers. We hence support the monitoring of the provisions of national sectoral legislation taking into account the data protection specificities of Smart Grids.

EURELECTRIC considers that this objective can be achieved by the 'privacy by design' approach[9], provided that technical standards define the minimal requirements for technical interfaces and do not anticipate and determine *ex ante* possible market evolutions. Otherwise there is the risk that an economically optimal solution with maximum benefits for all stakeholders could not be realized. Lastly, sunk costs due to the setting of new technical standards have to be avoided and additional costs that will arise have to be approved by the NRAs in order to avoid new obstacles to investments.

The Communication states that "*if the data processed are technical and do not relate to an identified or identifiable natural person, then Distributed System Operators (DSOs), smart meter operators and energy service companies could process such data without needing to seek prior consent from grid users*". Since this paragraph only relates to technical data, suppliers should also be included in the above list, alongside ESCOs.

To follow on these important topics, **EURELECTRIC is willing to contribute to the discussion about network and information security within the new expert group.**

[9] as defined by the Task Force Smart Grids' Expert Group 2

3.3 On regulatory incentives for Smart Grids deployment

Smart Grids benefit everybody. But DSOs will bear most of the costs and risks of rapidly introducing new technologies on a large scale because traditional methods of regulation do not always provide the right incentives for investments in innovation. For many regulated companies therefore, their current return on investment is lower than their cost of capital.

EURELECTRIC hence strongly supports the Commission's proposal to introduce regulatory incentives for Smart Grids. EURELECTRIC considers that tariff schemes developed by National Regulatory Authorities (NRAs) should stimulate investment in future technologies that can improve the networks. They should introduce a stable long-term regulatory framework that will provide network operators with a reasonable rate of return for cost-efficient grid investments as well as incentives to increase efficiency, foster the integration of Distributed Generation and ensure security of supply. This also implies drawing a clear line to distinguish which activities should be regulated and which should be market-driven. Smart metering deployment and grid automation, for instance, must be tariff-financed, whilst the offering services and products to customers should be competence of suppliers and other players operating in the competitive segment of the market.

What is needed is a stable and balanced regulatory framework that provides long-term incentives for efficient delivery on the one hand, including incentives for innovation, and on the other hand provides the necessary financial resources to allow DSOs to invest in R&D, demonstration and implementation of smart grids. The regulatory framework should become more flexible and recognise innovative investments and reflect uncertainty.

As far as the roll-out of Smart Meters is concerned, **EURELECTRIC invites the Commission to take due regard to the ERGEG Guidelines of Good Practices on Smart Metering** (published in 2010) when defining minimal functionalities. Results from our survey on Regulation for Smart Grids show that the priority for a successful and rapid roll-out of Smart Meters is regulatory certainty on cost-recovery and responsibility for the roll-out. These considerations and the results from Member States' Cost-Benefit-Analyses should be taken into account when establishing the guidelines on the Smart Meter implementation plans of Member States, which the Commission intends to elaborate.

EURELECTRIC supports the development - at Member State level - of National Roadmaps/Action Plans on Smart Grids. The Plans should in particular specify the positive incentives and policy measures undertaken by Member States to lift regulatory barriers and encourage investments in Smart Grids. The European Commission should monitor progress of the Plans and should encourage best practices.

As regards the reliance on Key Performance Indicators, **EURELECTRIC deems it important that KPIs are implemented with caution. KPIs should be measurable and their design should make it possible for DSOs to impact them**. Moreover, the incentives and goals expected from new KPIs should be communicated and they have to be consistent with the whole regulatory scheme. Counterproductive incentives have to be avoided and the regulatory model should remain comprehensible.

3.4 On the development of a competitive demand response market in the interest of consumers

EURELECTRIC believes that a clear distinction between the competitive and the regulated segment of the market should be safeguarded. Smart grids will provide the platform where suppliers and newcomers (e.g. ESCOs, load aggregators) will 'package' new products, will be able to better balance their supply portfolio and to offer aggregated flexible load to both market players and system operators.

In managing distribution grids, DSOs shall act as neutral market facilitators: they will enable market players to offer new services by providing them with information in a transparent and non-discriminatory manner. DSOs will play a central role in collecting smart metering and other network data (verifying and processing it) and making the metered data available to third parties. With these data, suppliers will be able to provide customers with innovative products and services based on individual consumption profiles and preferences (e.g. dynamic pricing, critical peak pricing). The take-off of demand response markets will also allow DSOs to perform a smarter network management.

EURELECTRIC notes that in a number of European Member States, other actors than the DSO perform the information hub function and we foresee that different models might appear in different Member States. However, regardless of the "information hub solution" chosen, it is essential that DSOs have a direct access to the technical data they need to operate their network; likewise, it is essential that suppliers (those who are given customer consent) have access to commercial data to offer innovative products to customers.

EURELECTRIC considers that customers' participation in the market will be enhanced through displays and feedback technologies offered by suppliers and through automated signals based on commercial agreements. Smart meters will enable customers to receive accurate bills frequently enough (according to their preference) to manage their consumption. However, neither the frequency nor the means through which customers receive this information should be regulated. On the contrary, suppliers should be left room to compete on these aspects in their offers, also taking into consideration that customers' profiles and preferences differ widely.

Suppliers will need to translate the complexity and sophistication of well-functioning demand response markets into the simplicity that customers demand, by packaging attractive products.

If customers are to benefit from a demand response market, the conditions for its well-functioning should be in place. Besides the clear roles and responsibilities just described, well-functioning wholesale markets with transparent price mechanisms are essential to ensure that competition between retail electricity suppliers is not distorted. Moreover, end-user regulated prices (currently present in 19 out of 27 Member States[10]) shall be phased out so that customers can increase their awareness of the value of shifting their consumption and therefore actively participate in the market.

[10] ERGEG Status Review on End-User Price Regulation, 2010.

3.5 On the need for continuous support to innovation and its rapid application

In its "Regulation for Smart Grids Report" (February 2011) **EURELECTRIC called for the introduction of incentives for DSOs to encourage the trialling and development of Smart Grid applications**.

The report stated: "DSOs have been facing little technological innovation in the last 20 years in the way they plan, invest in and operate their networks. Innovation has been mainly about how to reduce OPEX or create new more efficient financial structures. Little money has been spent on technical innovation. In the future however, significant innovation will be needed if networks are to play their part in the efficient delivery of a low carbon economy through smarter grids. New technologies, in particular communication technologies, will need to be tested to determine what works in practice and what is cost-effective. For this technology shift to occur, DSOs will need appropriate incentives to innovate".

One example of such an incentive can be found in Great Britain where the energy regulator Ofgem introduced in 2010 the Low Carbon Networks Fund that made available to projects (led by DSOs) up to £500m to develop new innovative solutions (technological, operational and commercial) over the next five years. The Fund is primarily designed for large scale innovation projects with potential low carbon and environmental benefits which will stimulate learning processes to the benefit of all GB customers.

The IEA in its recent report 'Technology Roadmap on Smart Grids"[11] also hinted at the need for large scale demonstration projects, as only through *"shared learning, reduction of risks and dissemination of best practices, can the development of Smart Grids be accelerated".*

EURELECTRIC therefore welcomes the Commission's acknowledgment of the crucial importance of innovation in the modernisation of Europe's energy networks and its call for a 'continued R&D effort towards advanced electricity network technology'. It also strongly supports the Commission's recommendation for the development of new large scale demonstration initiatives for rapid Smart Grids deployment, as proposed within the European Electricity Grid Initiative.

EURELECTRIC will also be pleased to contribute to the proposed EU Initiative 'Smart Cities and Communities'.

[11] Technology Roadmap: Smart Grids, OECD/IEA, Paris, 2011.

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