

COMMENTS ON ERGEG POSITION PAPER ON SMART GRIDS

INTRODUCTION

EDP Distribuição, Energia, SA, referred to as EDPD in the remaining of this document, welcomes the position paper on Smart Grids by the ERGEG as well as the opportunity to comment on the views and on the specific questions which it addresses.

EDPD has launched INOVGRID - an ambitious smart grid initiative – in November 2007, with a number of industrial and academic partners to plan, test and deliver the deployment of smart grid technologies in its distribution networks. This initiative has been designed to deliver value for the stakeholders involved: network operator, suppliers, customers (whether consumers, producers or “prosumers”) and regulation. It is expected to have a considerable impact in terms of environmental sustainability, energy efficiency and additional stimulus for the development of new energy tariffs, innovative services, and technological expertise, contributing to 2020 targets and to foster competition in energy supply and provision of value added services. A number of pilot projects are being run with the support of the Portuguese regulator ERSE, most notably the largest pre roll-out project which is being set up in the municipality of Évora, implementing a Smart City concept that will involve over 30 000 customers.

The ERGEG has rightly identified a number of challenges and outcomes which can now be revisited in light of the recently published European legislative package as well as the European political commitment with 2020 targets.

There are a number of key issues which EDPD regards as crucial for the successful deployment of a smart grid infrastructure and associated services, particularly within

the present context of significant innovation, uncertain future scenarios and solutions that involve multiple stakeholders.

Clearly, the risks associated to smart grids require an adequate risk management that calls for answers to the following questions: how to minimize the global risk? How should this risk be shared? What regulatory approach should be implemented that conveniently addresses these questions, taking into account the risk sharing which should not increase by itself the overall risks perceived by DSOs.

At this stage, the main challenge is to fully understand the roles of the key stakeholders and to define an adequate regulatory framework. This requires the development of models within the industry that facilitate the correct identification of costs and benefits derived from smart grids by the stakeholders. A regulatory framework that adequately and transparently balances costs and benefits should be developed. EDPD would like to highlight the fact that efficiency gains derived by DSOs from smart grid technologies represent a fraction of the overall system gains and are unlikely to cover the costs incurred by DSOs. Anyway, EDPD considers the overall appraisal of smart grid initiatives is clearly positive as far as the cost benefit analysis is concerned.

EDPD would like to notice that the strength of the benefits derived from smart grids, regarded as an enabling technology, is heavily dependent, at present, of the incentive framework and obstacles perceived by end-users in relation to other technologies such as distributed generation, demand side management and electric mobility.

From the perspective of DSOs, there should be an incentive in place to unleash expertise and best practice in order to promote investment in smart grids. Standard rates of return do not incentivise DSOs to plan, build, operate and maintain networks differently in order to comply with adequate levels of security and quality of supply,

at present. Therefore, EDPD envisages the adoption of incentives, namely in the form of additional premia on innovative investment, in order to accommodate new smart grid technologies.

The decoupling of the revenues of DSOs from the volume of energy supplied is a major issue which should be addressed. As explained in this document, the management of DSOs may perceive conflicting goals for the business, considering the energy efficiency targets towards which smart grids are supposed to contribute and total revenues earned.

Provided these key concerns are adequately addressed, EDPD is confident that smart grids will be successfully implemented with major benefits for all the stakeholders. The INOVGRID initiative is part of this fundamental evolution of the UE electricity grids.

Section 1 – Introduction

1. Do you consider that networks, transmission and distribution, are facing new challenges that will require significant innovation in the near future?

EDPD acknowledges the need to deliver significant innovation in the near future to cope with the challenges that network businesses are experiencing, at present. EDPD and other European network operators have currently several pilot projects under way that are testing a wide range of innovative solutions in several areas. Particularly, there is still a gap to bridge concerning the full roll-out of solutions which are not yet established technologies. This is particularly true in the distribution network, where new challenges such as the integration of massive intermittent distributed generation, the active participation of customers in demand response programmes and the dissemination of the electric vehicle definitely require new innovative solutions for the grid.

2. Do you agree with the ERGEG's understanding of smart grid? If not, please specify why not.

EDPD would add the following remarks to the understanding of smart grid expressed by the ERGEG. The definition proposed replaced “can intelligently integrate the behaviour and actions of all users...”, which could be found in the EURELECTRIC definition as quoted in the position paper, by “can cost efficiently integrate the behaviour and actions of all users...”. EDPD fears that the proposed modification is overly focused on network issues whereas smart grid solutions require the intelligent involvement of all stakeholders in order to achieve EU 20/20/20 goals. The proposed definition may in fact be overlooking the role of key stakeholders who will in fact derive economic advantage from smart grids. Overall economic efficiency must be considered on the cost-effectiveness analysis of the implementation of smart grids.

3. Do you agree that objectives of reducing energy consumption impose the need for decoupling regulated companies' profit from the volume of energy supplied? How can this be implemented?

Within the context of the EU 20/20/20 targets, energy efficiency is one of the fundamental aspects to pursue. EDPD is fully committed to contributing to meet these targets and, consequently, EDPD supports network incentives that promote energy efficiency.

It is desirable that network revenues are decoupled from the volume of distributed energy. Otherwise, contradictory signals could be perceived by a regulated network operator as energy efficiency and profit maximization would become conflicting objectives.

EDPD sees it appropriate that network operator revenues are mainly established as a function of a relatively fixed cost basis (regardless of energy consumption), of investment volume as well as of adequate remuneration of the regulated asset base. Additionally, innovation should be promoted as much as possible through incentive schemes such as those designed to deliver the reduction of network losses or improved quality of supply. Cost-effective innovative technologies, in particular, should be incentivised through a higher than standard rate of return to cover the necessary investment as well as the large-scale implementation of new technologies.

Section 2 – Drivers for smart grids

4. Do you agree with the drivers that have been identified in the consultation document? If not, please offer your comments on the drivers including additional ones.

EDPD agrees with the drivers but a more explicit and autonomous reference should be made to electric mobility as a driver for the smart grid development given the impact of this technology. ERGEG just mentioned the electric vehicle within an active end user participation possibility enabled by smart grid technology.

Section 3 – Smart grid opportunities and regulatory challenges

5. Do you agree that a user-centric approach should be adopted when considering the deployment of smart grids?

EDPD agrees that a user-centric approach should be adopted when considering the deployment of smart grids as electricity networks exist for the sole purpose of serving those who connect to it. Nevertheless, any approach should take into account those network developments that do not immediately impact the users or are not immediately required to provide them an acceptable supply. These network developments should be addressed from the initial stage of the deployment of smart grids in order to guarantee the sustainable evolution of the network and its ability to respond to future needs (e.g. network reinforcements which enable a widespread V2G scenario feasibility, “business as usual” type network investment to cope with a varying transition period towards a smart grid paradigm in order to maintain appropriate security and reliability standards, new network infrastructure design, equipment and control that can accommodate the requirements of smart grid technology to be deployed in the near future, network expansion due to significant load requirements and connection of dispersed generation).

6. How should energy suppliers and energy service companies act in the process of deploying smart grids solution?

Energy suppliers and ESCo are naturally in direct contact with end-use customers and will be, therefore, best positioned to offer new tariffs and new energy services that are supported through the smart grid platform. Consequently, the services that can be offered by energy suppliers and ESCos depend and may be limited by the functionalities of the smart grid platform.

Thus, the service interface between the platform and their users (energy suppliers and ESCos) must be defined by the grid operator with the support and the inputs received from them, in order to conceive a solution that supports the requirements associated with the development of new tariffs and new energy services to meet end user expectations, as much as possible.

7. Do you think that the current and future needs of network users have been properly identified in Section 3.3?

The needs of users of Electric Vehicles (EV) should be explicitly referred in section 3.3 of the position paper, given the very specific new needs of these network users and the high impact on the grid foreseen for the massive use of EV.

8. Do you think that the main future network challenges and possible solutions have been identified in Section 3.4 and 3.5 respectively? If not, please provide details of additional challenges/solutions.

As commented on the previous question, there should be a more explicit mention to the widespread use of EVs considering the challenge and the target solutions that must be implemented.

9. Do you expect smarter grid solutions to be essential and/or lower cost than conventional solutions in the next few years? Do you have any evidence that they already are? If so, please provide details.

Smarter grid solutions will be essential in the next few years in order to reach 20/20/20 objectives and to respond to the challenges which were identified in the document. Given the significant amount of investment envisaged in new smart grid technologies when compared to conventional network investment solutions, smarter grid solutions will expectedly be more costly than conventional solutions despite the

reduction of grid operational costs that may be possible to achieve. Anyway, all the benefits derived from smart grid solutions must be considered in the social welfare cost-benefit analysis.

10. Would you add to or change the regulatory challenges set out in Section 3.6?

EDPD would like to highlight a few remarks with regard to the regulatory challenges set out in Section 3.6. It is important that new regulatory models decouple the volume of energy supplied from the profits of grid operators. Also, incentive mechanisms should be put in place to enable network companies to pursue innovative solutions where these can be considered as beneficial. More challenging solutions should therefore be rewarded accordingly.

Section 4 – Priorities for Regulation

11. Do you agree that regulators should focus on outputs (i.e. the benefits of smart grids) rather than inputs (i.e. the technical details)?

EDPD considers it is important that regulators focus both on outputs and on inputs. This is particularly important in periods of significant innovation, uncertain future scenarios and solutions involving multiple stakeholders.

The identification of the benefits that may be derived from smart grids is useful to allocate the costs to the beneficiaries of the smart grid infrastructure. EDPD would like to highlight the fact that efficiency gains derived by DSOs from smart grid technologies represent a fraction of the overall system gains and are unlikely to cover the costs incurred by DSOs. Anyway, EDPD considers the overall appraisal of smart grid initiatives is clearly positive as far as the cost benefit analysis is concerned.

12. Which effects and benefits of smartness could be added to the list (1) - (7) presented in Section 4.1, Table 1? Which effects in this list are more significant to achieving EU targets? How can medium and long-term benefits (e.g. generation diversification and sustainability) be taken into account and measured in a future regulation?

In general, the proposal document does not distinguish between transmission and distribution network management. EDPD would like distribution network activities to be explicitly considered in the list referred.

Particularly, it should be mentioned that although there are, at present, certain activities which are associated to transmission network operators only, within a smart grid framework they may be performed at the distribution level as well. This may be accomplished through widespread social access to the provision of system services (such as frequency support, voluntary distributed interruption availability, peak demand shaving services, etc). All the advantages for the power system in general which are associated to DSM technologies should be considered as these can be captured through the implementation of smart grids. Also, more and better quality data may be acquired through smart grid platforms which will enable the optimization of network management and operation.

These benefits may be measured, for instance, through the reduction of the energy bills of consumers, through the costs associated with the provision of system services, through the measurement of asset utilization indexes, by measuring the displacement of peak hour consumption to non-peak hours as well as by the amount of peak generation investment that can be postponed.

Ultimately, EDPD acknowledges all costs and benefits shall be passed to the grid users through a carefully balanced regulation.

13. Which output measures should be in place to incentivise the performance of network companies? Which performance indicators can easily be assessed and cleansed of grid external effects? Which are suitable for European-level benchmarking and which others could suffer significant differences due to peculiar features of national/regional networks?

Smart grids are an essential, yet not sufficient condition to capture a large set of benefits. Smart grids are just one enabling piece of the whole system. The attainment of all the potential benefits and their general success is highly dependent of countless external factors (e.g. the benefits derived from smart grids

may be highly reduced if the policies and incentives promoting DSM or the use of electric vehicles is not in place, if ESCOS are not pro-active).

Performance indicators are important in so far as they may enable the measurement of the implementation success of smart grid technologies.

Nevertheless, benchmarking exercises based on these indicators may prove inadequate. Benchmarking exercises should be carefully carried out considering all the external factors (that might be difficult to cleanse), namely the particular development status of each network, inherent network characteristics due, for instance, to population density or consumption patterns which are, in turn, closely linked to the climate in each country or, indeed, its socio-economic development policy.

Given the lack of operational experience, performance indicators and benchmarking data, smart grids demonstration projects should be supported also as a way of filling this gap.

14. Do you think that network companies need to be incentivised to pursue innovative solutions? How and what output measures could be set to ensure that the network companies pursue innovative solutions/technologies?

EDPD agrees that network companies need to be incentivised in order to successfully pursue innovative solutions. Any output measures to be set should take into consideration each system reality. The benefits of smart grids may vary with the particular philosophy of the SmartGrid vision that is being implemented, with the network development starting point, with the national energy policy (regarding, for instance distributed and renewable energy sources , the electric vehicle, support schemes for energy efficiency).

The incentive framework should consider the migration from a “business as usual” situation to another, where the technology to be implemented is not as mature yet. Consequently, additional premia payments to network operators must be considered, otherwise there is no incentive to implement innovative solutions to move from the status quo.

In practice, there is currently not enough experience available for establishing output measures that ensure network companies pursue innovative solutions/technologies. This experience will be acquired with pilot projects in the area of smart grids.

15. Do you consider that existing standards or lack of standards represent a barrier to the deployment of smart grids?

EDPD regards the existence of standards as a requirement to create economies of scale which may result in a lower amount of investment that needs to be made. Compatibility and common standards should be developed and enforced so that the solutions can easily be expanded and be more flexible. Cooperation among stakeholders is of utmost importance for the definition of wide accepted standards.

16. Do you think that other barriers to deployment than those mentioned in this paper can be already identified?

Insofar as SmartGrids are an instrument that is needed as acknowledged in the position paper – but not sufficient by itself to address the challenges identified – it is necessary to ensure the coordination of all measures that impact, directly or indirectly, the success of the implementation of SmartGrids. For instance, this process should take place within an environment that is favourable to, for instance, energy efficiency targeted measures (namely DSM measures), to the integration of distributed generation and to the deployment of the electric vehicle. Simultaneously, regulation should be changed in order to incentivise the implementation of innovative network technology.

17. Do you believe new smart grid technologies could create cross subsidies between DSO and TSO network activities and other non-network activities?

EDPD is concerned that if the SmartGrid regulatory framework fails to correctly allocate costs and benefits among agents, cross subsidies will occur. Such a situation

is always true for any activity where costs and benefits are not correctly allocated. The key challenge is to correctly identify both costs and benefits as well as the respective recipients.

18. What do you consider to be the regulatory priorities for electricity networks in relation to meeting the 2020 targets?

EDPD appreciates that the European Commission has acknowledged the importance of implementing smart grid technologies across Europe in Directive 2009/73/EC considering the ambitious 2020 targets that have been established. EDPD would like to highlight the underlying fundamental change in the traditional role of distribution system operators which have mainly focused in the past in providing a secure and reliable electricity supply to their customers. EDPD is now challenged, as other distribution system operators, to equip its networks in order to provide new services to customers who should contribute to attain EU and national 2020 targets. Logically, the regulatory priorities should include the integration of renewable energy sources, the implementation of DSM technologies, the facilitation of distributed generation connection and the promotion of electric mobility.

Considering the volatility associated to the production of RES that is firmly expected to be connected to the power system, it is essential that flexible mechanisms are in place to enable the integration of offer and demand. These will be supported on smart grid based technologies which are the enabling platform to actively and efficiently manage demand, to accommodate the growing impact of distributed generation (in terms of facilitating the implementation of DSO network management regulations) as well as the widespread use of electric vehicles (V2G mode). EDPD considers a predictable and transparent regulatory framework for the European internal electricity market as a decisive contribution to meet the 2020 targets. Also, ensuring adequate return is an essential pre-requisite to secure sufficient network investment as well as the coexistence of harmonized rules across European systems. With respect to the present economic and financial difficult context, EDPD would also like to point out that the power system sector is particularly well positioned to seize the opportunity to contribute to the economic recovery by delivering and

incorporating technological development in the electric grid infrastructure. There are various smart grid pilot projects under way, technology is being matured and is being brought into production. Regulators should now take the appropriate measures to support the development of smart grids, allowing a fair rate of return when DSOs contribute to meeting efficiency and RES targets.