European Federation of Local Public Energy Distribution Companies
Confédération Européenne des Distributeurs d'Energie Publics Communaux

C E D E C

ERGEG Public Consultation

Smart Grids

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CEDEC Position Paper

CEDEC defends, at European level, the interests of local energy companies.

CEDEC represents 1500 companies with a total turnover of about 100 billion Euros, and more than 250.000 employees. Together, they serve 60 million electricity and gas customers.

These predominantly medium-sized and small local energy companies have developed activities as electricity and heat generators, electricity and gas distribution grid and metering operators and electricity and gas suppliers.

CEDEC attaches great importance to this public consultation and to the future recommendations on smart 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?

The transmission and, in particular, the distribution networks will change with regard to setup and structure (monitoring, measuring and active control elements). This will become necessary on account of energy producers and consumers gearing their behaviour according to supply and demand. The increasing number of decentralised production plants (with mostly fluctuating supply), especially away from the classic places of consumption, mean that new transportation capacities are required in the transmission and distribution networks or will also be present in the future according to needs where there is a shift of consumer and production locations. Constant monitoring of the low and medium-voltage networks is still the exception at present, which is why there will be considerable changes in these networks with the active smart grid customers (small energy production plants and energy consumers) in this regard. This development will occur not only in relation to capacity adjustments but, rather, also with regard to the monitoring and control elements so as to also be able to provide an efficient and stable network as well as network quality in the future.
The distribution network level is at least equally important for the future of European energy supplies as the transmission networks. Only when there is sufficient expansion at the level of the distribution network operators in addition to the transmission networks will it be possible to transport energy produced at a different site to the place it is needed in European cities and load centres.
Intelligent systems including consumers, small producers and virtual power stations require the permanent information-technology networking of these plants at local level. For this reason, the distribution network has to be the focus of developments towards the smart grid.
The investments and expenditure (network adjustments) made necessary by the new demands on the transmission and distribution networks need to be supported by an appropriate regulatory system in this regard. This applies, in particular, with regard to reasonable remuneration and a sensible introductory period.

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

With the definition of the term "smart grid", it should be borne in mind that it does not represent a pure network operator issue (although the name suggests this) but, rather, the basis for moving away from centralised in favour of decentralised power supply. The term "smart grid" therefore describes the cooperation of all market participants in the future.
When understanding the concept of reducing network losses, it should be mentioned that inefficiencies can also arise in the case of particular types of decentralised production. In particular

when the moment of maximum production coincides with a moment of low demand (e.g. possible in the case of photovoltaic systems of domestic customers), losses can occur when no storage facilities are available.

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?

A clear distinction must be made between revenues (that cover costs through network tariffs) and profits (as remuneration of the capital invested).
A capital remuneration arrangement for regulated network operators depending on the output quantity supplied would indeed counteract the energy reduction objectives. A system in which the profits are detached from the quantity supplied would certainly be more sensible. Output in kWh is no longer appropriate as a calculation basis for the regulated profit in the future in terms of regulation.

Networks are normally designed in relation to output requirements (feed-in/feed-out capacity and their transmission/distribution). One approach for decoupling revenues from volumes could therefore be (completely or partially) capacity-dependent tariffs (e.g. based on the installed output) insofar as these are possible within the regulatory regime currently in force. Recording output would then only take place for information purposes and be used for subsequent stages in the value-chain.

As far as regulated companies' profits are concerned, they are decoupled from the volume of energy supplied when profit is based on the value of the network through RAB-based methodologies (RAB x WACC or Regulated Asset Base x Weighted Average Cost of Capital). In addition, a profit bonus could be paid out, for example, calculated on the basis of the extent to which consumption has declined due to the increase of energy efficiency in the network.

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.

Basically, all the drivers have been identified which give rise to the need to develop a smart grid. However, another important driver concerns the network operators (transmission and distribution networks), on account of these having an interest in safe, secure and economical operation of the networks.
Furthermore, it is, above all, the distribution network operators that form the connecting link between the other identified drivers (producers, network users, communication) and which therefore play a key role in the smart grid.

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?

In broad areas, it is sensible to conduct the development towards a smart grid with a focus on the end customers. However, focusing solely on the end customers runs the risk of cost-intensive investments in the entire value-chain, not producing any recognisable advantage for the final customer in the end.
In addition to the final customers, adequate consideration should therefore also be given to the market participants directly associated with them, e.g. metering operators and very small production plants. In Germany, for example through the E-Energy projects, such views are applied on several levels of the value-chain, up to and including new services.
The focus on final customers should consequently be extended to include a view of the market participants directly associated with them.

The user-centric vision should be coupled with a DSO-driven vision, as smart grids also have as an essential objective the more efficient management of networks : enhancing energy efficiency through reduction of losses, and guaranteeing network stability given the fundamentally changing production and consumption patterns.

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

Energy suppliers and energy service providers can make a substantial contribution to the development of a smart grid. New services could be offered on the basis of the communicative and technical possibilities of a smart grid through, for example, appropriately structured tariffs, direct customer advice, and personal contacts with customers including references to consumer behaviour. In this way, it would also be possible to assist the distribution network operators with the implementation of intelligent control by coordinating decentralised production and consumption by customers.
This would enable energy service companies to be of active help in reorganising and developing the required periphery (monitoring, control, communication) as well as with the operation of the distribution networks, whereby there is a need for closer interaction with the telecommunication sector and its possibilities with regard to overall development.

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

The essential trends have been pointed out and explained in a comprehensible manner. What is important is that the necessary expansion and conversion of the networks is possible promptly in technical, economic and licensing terms in accordance with the needs of the network users. The general political and regulatory conditions need to be created according to the new requirements in this regard because lengthy procedures would obstruct rapid development in a number of Member States.

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.

The main aspects of the networks of the future have been demonstrated and the important areas of action and regulation referred to. However, a number of points do require greater detail:

Other important areas of action include, for example, the provisions relating to responsibility for network stability, security and guaranteeing energy transmission at the agreed time by the individual network users. The quality (network stability, security) in the networks is determined by a large number of technical parameters relating to the network structure and the network users connected to them. These points also play a decisive role in an overall smart system.

Furthermore, the inclusion of all end customers in the smart grid as well as all measuring equipment (smart metering), ICT integration of decentralised production and storage facilities, plus all the equipment in the distribution network at the low-voltage level will increase the need for economical, broadband and IP-based communication links.
This involves the need for unified expansion and the advancement of a broadband infrastructure required for this in the distribution network in relation to devices, systems and equipment. The distribution network operator will become a communication infrastructure operator.

As already mentioned in a number of preceding sections, a large number of investments need to be made in the distribution networks, in particular. In this context, carrying out such investments can be seen as a challenge in a regulatory environment. What is needed here are appropriate incentives through the regulator.

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.

Smart networks at the distribution network level require substantial investments, especially in infrastructure and communication technologies. However, there is the dilemma that those who should/could invest in smart networks do not have any regulatory incentives for such investments. If incentives are given accordingly, the introduction of a smart grid will nevertheless lead to higher costs initially. This is caused solely by the installation of monitoring and control equipment, communication technology, as well as the computing power then needed for the control programs and the network expansions and modifications brought about by the change in user behaviour. The costs of the overall system could fall in subsequent years in the further course of development and observing all the levels in the value-chain as well as under the premise of new energy services emerging.

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

In view of the general European objectives, the thesis is, in particular, that the ICT investments required in relation to developing the smart grid with a large number of new services have to be shared among the different stakeholders through a corresponding regulatory framework and cannot be borne by the network alone. Reference should, moreover, be made to the fact that further regulatory adjustments are needed in a number of Member States (e.g. restrictions arising from the right of adjustment when setting tariffs).

The overriding objective of the regulators at EU and national level should be to set suitable statutory and regulatory standards for the realisation of smart grids. Investments that only lead to higher costs in the end without any macro-economic advantage are neither desirable nor economically meaningful (e.g. in the case of network operators without any recognition of costs by the regulators, customer without lower prices).

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)?

We agree that the observations should focus on fewer technical details than a meaningful input/output ratio. Before a measure is stipulated, an examination should be carried out with regard to how reasonable it is in technical and economic terms.

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?

The table appears to be complete. No further comments.

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?

The results for the implementation of a smart grid could, for example, be measured by reaching a degree of realisation and fulfilment of a smart grid related to the actual and individual needs of all network users in the network area. The avoidance of long-term network bottlenecks through the smart grid, without the bottlenecks concerning network expansions and modifications that continue to exist on account of external obstacles under regulative law (delays in approval), could serve as a reference value. The security and quality of supply, as well as adequate network dimensioning in addition to the degree of performance of a smart grid in relation to the needs of the network users, adjusted according to stipulations under regulative law (such 100% penetration of smart meters in various European countries without taking account of customer needs), is a standard for comparison at the European level.

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?

The distribution network operators need incentives in order to be involved in and advance solutions for a smart grid as active driving forces. This could ensue, for example, through support and recognition of research and development costs as an incentive in the individual regulatory systems or through broader support.
Network operators who invest and thus push forward the development of a smart grid should also be rewarded for this. This can speed up development considerably, especially with the introduction of new technologies.

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

Yes.
The risk that exists with regard to potential unprofitable investments for developments that will not assert themselves or appear too expensive is a particularly major obstacle to the introduction of smart grids. It has already become evident with the introduction of smart metering that the

implementation of a new technology can only be carried out very slowly without generally acknowledged, reliable and functioning standards.

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

From our point of view, the subject of the security of information (security, privacy) and safety as the essential basis for the implementation of a smart grid as a critical infrastructure as well as the examination of system solutions cannot be emphasised enough. This interdisciplinary issue should be handled separately in the document as a decisive factor for success.
Besides a clear statement concerning investment incentives, there is also no illustration of the effects of a lack of acceptance among consumers if they do not receive any clear financial advantage.
A further obstacle is represented by the individual conditions in the Member States, which are not explained either. In Belgium, for example, regional and supra-regional regulators operate in a different manner. Whereas some support new investments, others practice pure cost cutbacks, which hinder investment.
There is a lack of standardised parameters and formalities.

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

See answers to 1 und 8:
The distribution network level is equally important for the future of European energy supply as the transmission networks: only when sufficient expansion also takes place at the level of the distribution network operators in addition to the transmission networks will it be possible to transport the energy produced at a different site to the place it is needed in European cities and load centres. The development of a trans-European electricity and gas network right into the distribution level is therefore essential for the transportation of solar and wind energy to local consumption points.

DSO and TSO have to perform different tasks within the context of smart grids, which means there is only minor overlapping in terms of content.
However, the exchange of data information via the TSO and DSO level is required in order to ensure network stability. Standardised basic conditions have to be established in this regard. The necessary network links and expansions of the transmission and distribution networks also have to be carried out with the same sense of importance.

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

To reach the 20-20-20 targets, the regulatory authorities of the EU Member States should establish an appropriate, stable and more investment-friendly regulatory framework. The focus should therefore be extended from the promotion of competition to the points concerning security of supply, investment and infrastructure expansion.