

Netbeheer Nederland's reaction to the ERGEG public consultation paper E09-EQS-30-04: "Position Paper on Smart Grids"

Netbeheer Nederland (Association of Energy Network Operators in the Netherlands)

Introduction

Netbeheer Nederland is the association in the Dutch energy sector that represents the interests of national and regional electricity and gas network operators in the Netherlands. In total, Netbeheer Nederland represents 11 network operators, whose grids supply energy to approximately 17 million consumers.

In the Netherlands, through a process of unbundling, the network operators' ownership of the energy networks has been strictly separated from the other parties active on the energy market (generators, traders and retailers). Network operators are public companies whose shares are owned by governments – local, regional and/or national. In the Netherlands, unbundling of ownership has been applied not only to the transmission networks but also to the distribution networks.

Network operators in the Netherlands have two main tasks: they facilitate the smooth functioning of the market, and they manage the physical infrastructure of the energy transport network. Netbeheer Nederland promotes a dialogue between relevant governmental bodies and market participants about the contribution network operators can make towards achieving a sustainable energy supply.

The Distribution System Operators (DSOs) united in Netbeheer Nederland have read ERGEG's public consultation paper with great interest. They welcome the work done by ERGEG and its invitation to contribute to the consultation process by responding to the questions posed in their public consultation paper on smart grids.

Netbeheer Nederland's response to ERGEG's questions consists of two parts: some general remarks, followed by answers to the specific questions put in the consultation paper.

General remarks

- Netbeheer Nederland is a supporter of the liberalized internal energy market. We believe that a mature competitive market, together with healthy regulation, is best able to address all the challenges that the market faces regarding security of supply, reasonable pricing, renewable energy sources and smart grids.
- After reading the consultation paper, we would like to point out that there is a strong suggestion throughout the paper that the implementation of smart grids is an objective in itself, rather than simply a means for facilitating future developments. In addition, we would like to remark that long-term infrastructural issues (path dependencies and large-scale investments in infrastructure) and approaches for realizing economic efficiency are also drivers of smart grids.
- Smart grids should not be solely seen as the means for achieving EU climate policies and targets. Smart grids should also be seen as a means for achieving other objectives, such as adding flexibility to path-dependent infrastructures, achieving economic efficiencies with regard to investments and facilitating the energy market, to mention just a few.
- The consultation paper implies that customers are highly motivated to participate in the energy supply system to achieve EU objectives and that their acceptance of innovation is high. We strongly doubt this assumption.
- We should be broadening our perspective by viewing the entire energy chain – not forgetting the participants in the chain or the fact that electricity and gas are energy carriers. This would benefit the EU 2020 efforts enormously.
- We would like to emphasize the differences in time horizons between the various parties and organizations involved in the supply of energy. The time horizons of all stakeholders need to be aligned.
- New or modified regulations are needed, and not only for financing: legislation and regulation is needed to address privacy and security issues, as well as the (future) roles and responsibilities of stakeholders. There is a need for more flexibility for the products to be implemented. In the implementation of products such as smart meters, regulations should take into account aspects such as these.
- Incentives for DSOs to invest in products and developments that are wanted by society as a whole (i.e. the government), but not yet by individual customers, may best be kept separate from the normal revenues of DSOs. For short-term conventional network goals, the current regulatory regime is sufficient. For long-term goals, however, “add-ons” to the regulatory system are needed that offer investors more security.
- Challenges to be taken up by regulators are:
 - o Stimulate “just in time” innovation
 - o Increase opportunities for network operators to invest in developments to meet the challenges of the future (for example, provisions for the settlement of stranded assets)
 - o Stimulate alignment with regional and local parties and organizations to optimize local energy production, transport and distribution, and consumption.

Answers to specific questions in the consultation paper

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?

We do indeed consider that, due to a variety of factors, transmission and distribution networks are facing new and big challenges with regard to the future. It seems to us that the position paper focuses on the influence of technological innovations on finding solutions, whereas we believe that social and/or economic (non-technical) innovation should also be considered. Although future developments are uncertain, we want to stress that innovation is needed to meet the challenges.

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

We partly agree with ERGEG's understanding of smart grids. We would like to add that a smart grid is not an objective in its own right, but rather a means for using and operating networks more efficiently and for facilitating a transition towards the establishment of a sustainable energy supply. In our opinion, a smart grid is more than just "IT on top of the traditional hardware". A smart grid is also a part of an efficient and effective management of the extension and replacement of network components and installations. The term smart grid represents a philosophy of how a power system should be designed, built and operated to maximize overall societal benefits and sustain security of supply.

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?

It is important that tariffs are a clear and fair reflection of the costs incurred. A regulated company is a facilitator of the market that operates independently of the volume of energy being distributed. As a facilitator, it has little influence on energy consumption. Decoupling of the revenues allowed under the volume-distributed system and changing to a capacity-based revenue system is one approach that should be considered. Add-ons to the system could compensate for any negative influences on investment levels in the long term. A regulated company can also facilitate initiatives for optimizing the energy chain. The facilitation of societal incentives to reduce CO₂ emissions is more a political or societal issue than one for grid companies.

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.

We agree with you on the drivers you have identified, but we would like to make some remarks relating to these drivers, as well as adding a few more to the list. We have doubts about the motivation and willingness of consumers (both as consumers and producers – "prosumers") to increase the level

of their participation in the energy supply system. This strength of this assumption needs to be taken into account.

In addition, the shift in energy demand from heat and gas to electricity (e.g. heat pumps and electric vehicles) caused by new, sustainable energy technologies will increase the amount of fluctuations in the network. The higher loads (frequencies and amplitudes) will increase the need for maintenance and investments over shorter periods of time than would conventionally be the case.

On a higher level - considering exergetic principles - additional drivers can be distinguished when considering electricity supply in combination with other forms of energy (gas, heat and cooling), such as electricity supply combined with micro-CHP (gas, heat and electricity) on the consumer's premises or combined with biogas transport and distribution. A high level approach would underpin the need for a smart grid. In this respect, we doubt the effectiveness of the top-down approach described in the position paper. Developments of this nature should come predominantly from the market; we would like to avoid technology-push development.

Large-scale renewable energy sources, including intermittent generation

The environment could benefit from small-scale initiatives that encourage consumer participation and involvement. Such initiatives may also provide the structures needed for investment.

Distributed generation, including small-scale renewable energy sources

Research, development and innovation aimed at creating new, and as yet unknown, technologies has not been considered in the consultation paper.

Improved operational security

The impact on reliability and operational security of an energy system of increasingly complexity, the increased interdependency, and aspects such as "synchronous failures" are not mentioned in the paper.

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?

We agree that a user-centric approach should be used. Nevertheless other approaches to the deployment of smart grids may be useful. From an overarching point of view, a society-based approach is the most important if energy efficiency and CO₂ reduction are considered to be the highest goals. This approach would require an analysis of the entire energy chain. In such an analysis other "views" than a user-centric approach - a grid-centric view and a system's view – have their value.

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

This question implies that the deployment of smart grids is the ultimate objective. In our view, the deployment of smart grids should be a means for facilitating the transition needed to achieve a sustainable energy supply and for adding more flexibility to the grid, thus enabling responses to new developments. The question needs to be addressed as to how retailers and energy service providers and network operators should go about achieving their objectives concerning the environment and, at the same time, maintain and secure the energy supply and the integrity of their networks. We believe that an integrated approach (combining electricity, gas, heat and cooling), a quick start with pilot projects, and attention to the different roles of players in the market is the way to go. Key to the success of this process is **cooperation**.

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

No, they have not been identified to the full extent. We would like to point out that network companies, retail suppliers and ESCOs operating on a smart grid are also dependent on new (and more) information to be able to operate the grid and serve their clients. Furthermore, the needs and interests of a (probably) large group of consumers who are not interested in innovation will have to be respected. With regard to future users, there might be hybrid forms and/or a split between services to clients and/or services to the grid.

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.

Yes, the most important aspects are considered in Sections 3.4 and 3.5.. The future grid will increase the complexity of the network and difficulties with regard to maintenance and repairs. The lifetime expectancies of IT products (3–7 years) is shorter than current primary network components and installations (25–45 years). Controlling power quality will become more complex as a result of the implementation of more and decentralized loads and production.

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.

Yes, without any doubt, smart grids means the addition of more ICT to the energy grid. We would like to point out that an energy infrastructure based on mature technologies is well known, whereas its rapid development with IT is most likely to generate solutions of a limited lifespan but with high costs. Unnecessary investments can be avoided through increased insight into the condition, monitoring and management of energy flows in the grid.

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

First of all, we feel we should provide you with a short introduction to the regulatory forces at play within the Dutch DSO sector. In the Netherlands, price-cap regulation with yardstick competition is in place. Allowed revenues are derived from the average costs in the previous few years. This means that a network operator who invests before other operators do will be 'punished': he will be estimated

to be less efficient than the other operators, and hence he will be allowed less revenue. In theory, he will be 'rewarded' with higher revenues as soon as the other operators start investing, but:

- some operators might never invest, and
- there is the risk of changes in the regulatory system.

Hence, system operators in the Netherlands have an incentive to postpone investments. The same goes for their operational expenditures, e.g. in innovation.

Despite having said this, we can inform you that we agree entirely with ERGEG's vision on innovation. In a consultation round at the end of 2009, some network companies advised the Dutch regulator to leave costs for innovation (CAPEX as well as OPEX) out of the system of yardstick competition, while other network companies advised the regulator to incorporate a forward-looking component in the yardstick, to deal with expected increases in costs. Whatever approach is chosen, network companies should be compensated for increasing costs caused by innovation.

The most important regulatory challenge we see is how to design a regulatory framework that is able to pay due attention to the objectives set to achieve a sustainable energy supply AND at the same time address issues of economic efficiency. This regulatory framework should be stable enough to be able to set fair boundaries within which stakeholders can have their playing field, but at the same time be flexible enough to allow adjustment in times when rapid developments and marked changes take place. The framework should be designed to allow anticipation of future developments.

As for your remarks on users' needs, we note that we are on the eve of major change in our thinking (as well as network topology) and that this also applies for regulators, producers, suppliers and consumers. Measures must be taken to prevent DSOs from being "punished" for making costs for the energy transition now, as some of these will, even in the near future, turn out to be in vain simply because needs change over time. We would like to stipulate that the regulators bear a major responsibility concerning these risks.

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 strongly agree that regulators should not focus on the technical details of the grids themselves. Regulators should only focus on fine tuning the regulatory system for dealing with investment in smart grids.

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 performance indicators mentioned in Table 1 are not indicators as a result of their inherent nature. The risk with regard to performance indicators is that they can encourage “strategic” behaviour and that they become objectives in themselves, rather than being just a means for measuring performance. Some indicators that might be more beneficial than others for achieving EU targets are:

- energy not withdrawn from renewable sources due to congestion
- time to connect a new user (for which different target groups should be distinguished)
- level of losses in distribution networks.

Regardless of the circumstances, the regulator should take into account regional differences between the various distribution operators.

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?

Output measures that we consider to be promising are:

- grid safety
- sufficient connection capacity
- grid quality and quality of delivered service.

We would like to remark that the outputs to be defined should incorporate incentives that encourage parties and organisations to operate proactively and that they should be based on expectations for and visions of the future, instead of performance in the past. Outputs to be defined should be transparent for all relevant stakeholders.

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?

With regard to innovation for the existing business activities and functions of network companies, there are adequate incentives within the framework that is currently in place in the Netherlands. With regard to future, uncertain developments and the decisions now to be made, we feel strongly that the current framework is not suitable for network companies to pursue innovative solutions.

Providing network companies with incentives is one way of stimulating them to innovate. The question remains, however, what form these incentives should take. One could introduce a rewards/penalties system for certain aspects of the business, but for it to work the impact would have to be substantial. Also, the question arises whether the rewards/penalties system should be a zero-sum game for all the network companies together.

In the Netherlands we have a regulation model based on yardstick competition. However, the Electricity Act also leaves room open for special treatment in cases of substantial investments, more

or less as an add-on to the system. These substantial investments, if approved by the regulator, are exempted from the yardstick system and may be recouped through tariffs. So far, the regulator has not made use of this feature of the Act for DSO investments. Since the process of developing smart-grid standards is relatively recent, and since the size of the investment may become substantial – whereas output criteria will not be available at the start – we advise the regulator to be more flexible and treat investments in smart grids (including innovation) as add-ons (if these investments are not part of an ongoing historical trend). This would require that some formal agreements and working arrangements be made with the regulator and/or government (e.g. how to present these costs: would they have to be authorized prior to making commitments; and how could they be distinguished from regular activities?).

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

The absence of standards seems to us to create a barrier for deployment of smart grids. The absence of standards increases the risk of stranded assets occurring within the network. Decisions with regard to standardization result in great path dependencies for network companies. For this reason, initiatives to facilitate standardization should come from the market place..

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

Other barriers to deployment are:

- The roles and responsibilities of players in the market are still unclear and uncertain.
- This uncertainty in the market withholds entrepreneurs from taking business initiatives for sustainable energy.
- The division of roles and responsibilities between network companies and market parties is still unclear.
- Consumers are still unaware of the existence new, innovative technologies and, therefore, they are also unaware of the new, active roles that those technologies could play within smart grids.
- The current regulatory framework is based on encouraging efficiency, whereas smart grids will require system innovations in the infrastructure.
- Split incentives and the settlement of costs and benefits among different parties and organizations.
- Privacy and security issues still have to be adequately solved.
- Time to return on investment is longer than the regulatory time frame.
- Issues related to stranded assets have still not been adequately dealt with.

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

In the Netherlands, ownership of the TSOs and DSOs is spread amongst municipal, provincial and national governments. Given the abundance of customer information that will be available through smart grids, it is difficult to say upfront whether cross-subsidization from non-network activities will occur. What is of no value for one party could be valuable for another. A clear understanding of the objective and the responsibilities of the regulated company is a necessity.

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

We recognize the following regulatory priorities:

- Stimulate the development of a European standard for smart meters.
- Stimulate an understanding of the difference between information needed for customer services (the market) and information needed for grid operators (public).
- Stimulate investments in innovation and smart grids. Creating add-ons within the regulatory system seems to be preferable.
- When new performance indicators are introduced, regulators should (a) minimize the administrative burden, (b) take into account regional differences between the DSOs and (c) by all means prevent sub-optimization.

Furthermore, regulators should discuss the possibilities they have to play a more active role in the regulatory process, especially in the implementation of a stable regulatory framework – now and in the future – and with regard to future and non-conventional investments.

We hope that our response will make a positive contribution to the consultation process. Please do not hesitate to contact us if you would like to discuss in more detail any of the issues we have raised.

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