

EURELECTRIC's vision about the role of Distribution System Operators (DSOs)

A EURELECTRIC paper

February 2016

EURELECTRIC is the voice of the electricity industry in Europe.

We speak for more than 3,500 companies in power generation, distribution, and supply.

We Stand for:

Carbon-neutral electricity by 2050

We have committed to making Europe's electricity cleaner. To deliver, we need to make use of **all low-carbon technologies**: more renewables, but also clean coal and gas, and nuclear. Efficient electric technologies in **transport and buildings**, combined with the development of smart grids and a major push in **energy efficiency** play a key role in reducing fossil fuel consumption and making our electricity more sustainable.

Competitive electricity for our customers

We support well-functioning, distortion-free **energy and carbon markets** as the best way to produce electricity and reduce emissions cost-efficiently. Integrated EU-wide electricity and gas markets are also crucial to offer our customers the **full benefits of liberalisation**: they ensure the best use of generation resources, improve **security of supply**, allow full EU-wide competition, and increase **customer choice**.

Continent-wide electricity through a coherent European approach

Europe's energy and climate challenges can only be solved by **European – or even global – policies**, not incoherent national measures. Such policies should complement, not contradict each other: coherent and integrated approaches reduce costs. This will encourage **effective investment** to ensure a sustainable and reliable electricity supply for Europe's businesses and consumers.

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EXECUTIVE SUMMARY

- **DSOs are key players for enabling a successful energy transition while providing a high-quality service to all customers.** DSOs must act as neutral market facilitators and guarantee distribution system stability, power quality, technical efficiency and cost effectiveness in the future evolution of energy networks towards a smarter grid concept. DSOs are local or regional operators and, as such, they must work to the benefit of customers¹.
- **DSOs are adapting to an evolving energy market by implementing changes in the way they operate and plan their networks.** They are best placed to support evolving energy systems at local and regional level and are already implementing active (network or system) management solutions. New elements connected to the distribution grid trigger more active grid management, for example, distributed generation, storage facilities, demand-side response, smart charging and ICT solutions. As a result, more information is being produced which must be adequately managed and protected. As a bare minimum, DSOs will interface with smart meters to understand real customer demand/load profiles, thus doing away with estimated ones. By managing their network with more advanced ICT tools, DSOs have begun to deal with certain grid issues such as network congestion or voltage constraints in a smarter way. Flexibility is an important aspect of the new, more active way in which distribution grids will have to be managed. National legislation and energy regulation must be adapted to make sure that flexibility develops to its full potential.
- **Energy regulators should recognise the broadening role of DSOs as neutral market facilitators and encourage efficient technological innovation.** However, performing this new role will lead to extra costs related, inter alia, to the introduction of smart grid solutions and the increasing complexity of data handling. Energy regulators should implement mechanisms which create incremental incentives for innovative grid projects and recognise the trade-off between OPEX-based 'smart' innovation and CAPEX-based grid reinforcement (the traditional approach). DSOs must be compensated for efficient innovation-related costs, which should be properly assessed and recognised as part of the allowed regulatory revenue. More active system management reduces overall cost, ensures quicker connections, is faster than traditional, capital-intensive network reinforcement and has been well-received by customers. DSOs must operate within a sound remuneration framework and be provided with an adequate return on capital investment.
- **DSOs should adequately support their customers.** DSOs are in a unique position as the technical contact point for distribution customers to meet their needs and choices in terms of connection, quality, security, and continuity of power supply. DSO activities must be separate from - and complementary to - transmission system operator (TSO) ones, keeping in mind that DSOs are the only

¹ By 'customers' we mean, throughout the whole paper, all network customers who have a contractual relationship with the distribution grid operator – whether producers, retailers, aggregators, energy service companies connected to the distribution network, end-consumers (connection contracts), or prosumers (those who both produce and consume electricity).

players capable of exploiting the benefits of a local approach in terms of grid management and customer support. Besides, should flexibility services (following a market test) be developed and needed for DSOs as a network management solution, DSOs should be in charge of managing such services. DSOs should not go beyond the meter and interact with customer appliances, or directly with residential end-customers, on flexibility issues.

- **Data management must be fair, efficient, transparent, and non-discriminatory.** Data management is key. Although various options are open to Member States in this field, data managers must be neutral and must have experience in managing large amounts of data at different levels and through different regions. DSOs, in contrast with TSOs, have such experience and any policy alternative should be supported by a robust business case. DSOs are now embracing the technical (active grids/systems) and commercial (demand side response, aggregation, local management of grid constraints, local balancing) changes needed to support the evolving energy market. DSO functions will have to be repowered so that DSOs can play an active facilitation role below transmission level across the market, thus guaranteeing system stability, preventing local interruptions, and enabling markets and services² in a neutral and non-discriminatory manner. DSOs and energy regulators must ensure that residential customers are clear that their main relationship is with retailers, whilst recognising that, from time to time, DSOs will have a direct relationship with residential customers for emergencies or other services such as new connections. More sophisticated or larger customers may sell their flexibility, either directly or through suppliers and aggregators, to DSOs in order to ensure grid stability.
- **Network tariffs must be cost-reflective and exclude energy policy or other system costs.** Tariff structures must incentivise and reveal actual customer behaviour to ensure grid stability. They should be cost-reflective over time, non-discriminatory, and must exclude non-distribution costs which unduly distort price signals and may trigger the development of inefficient distributed energy technologies affecting overall welfare. Due to the nature of network costs, which are predominantly fixed over time, network tariffs should be increasingly (albeit not completely) capacity-based without distorting energy efficiency objectives.
- **Micro grids should be regulated on a level playing field with existing grids.** Regulation must make sure that specific areas are not picked up by micro grid developers simply on the basis of profit margin considerations in the absence of universal service obligations (which conventional DSOs are subject to). National regulators should guarantee that those customers who are connected to a micro grid have the same technical and commercial rights as others. In many situations, European DSOs are in the best position to evaluate the need or opportunity for establishing a micro grid and run it. In all cases, unduly justified opportunistic behaviour by new entrants must be avoided.
- **Local flexibility markets, especially at lower voltage levels, might not be sufficiently liquid in some local cases.** The DSO's new role will introduce the need for flexibility due to the non-firm nature of some connections. Recently, the most controversial area in downstream markets policy discussions is the debate on how DSOs will satisfy these new flexibility needs. Several possibilities must be examined (also in regulatory terms), on a case-by-case basis, before choosing between direct flexibility procurement and local flexibility markets via retailers and aggregators. At some point in the future, which is still to be decided, a market/regulatory liquidity test might be developed to ensure that DSOs do not inhibit market-based services in this stability activity.

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DSO Committee

² New services revolve around smart homes/Internet of Things as well as the electrification, at least in some European member states, of heating and cooling in addition to transport.

DSOs are key players for enabling a successful energy transition while providing a high-quality service to all customers

The energy sector is transforming fast. As a result of energy policy focussing on strict environmental objectives aimed at reducing carbon emissions, the penetration of decentralised distributed generation is constantly increasing, coupled with more active consumers/prosumers and the electrification of transport. This period of transformation is changing the energy landscape: new industry players are emerging and interacting with DSOs. Prosumers, aggregators and distributed storage providers are examples of new participants that will continue to increase over time. They will interact and use the networks in a more complex manner. Subject to regulatory terms, DSOs will be the independent and neutral operators of new, local market arrangements designed to ensure that the evolution is efficient and effective in terms of market enablement and customer empowerment. DSOs must act as neutral market facilitators.

Being at the heart of the changes that are happening within their own networks, and with a deep understanding of how their own distribution systems work and operate, DSOs are in a position to act as neutral energy market facilitators and coordinators of all network customers.

In addition, taking the policy option of a DSO-based approach (subject to cost-benefit assessment) makes the creation of new entities and the required legislation and governance to rule them unnecessary. Neutrality and non-discrimination can be perfectly guaranteed with adequate ring-fencing, as prescribed by current European legislation.

A key part of the DSO's role in facilitating the energy market is data management. The goal of any data management system does not revolve around ownership, but rather around correct and fair information sharing in an efficient, transparent, non-discriminatory way. Current IT systems already allow multiple DSO/TSO/retailers to make data available to each other on non-discriminatory grounds, based on who is entitled to access any given piece of information, when, and to what extent in terms of granularity and aggregation. The issue of concentrating data in a global hub must be proven in terms of net benefits and should be considered by individual countries on a case by case basis. There is no 'one-size-fits-all' approach to data management. Different data hubs, formats and market models have been (or are being) implemented in different Member States. The evolution of technology and ICT systems, alongside the deployment of smart meter infrastructure, will enable much better observability and operability of the distribution grid, thus speeding up the achievement of smart grids.

All of the aforementioned issues have been addressed by the European Commission in its 2015 Summer Energy Package, consisting of a market design consultation and an official communication on the "New Deal for Energy Consumers", as well as by Europe's energy regulators through CEER's "Future Role of the DSO" consultation.

The discussion about the renewed role of DSOs takes place as new policy-making objectives are increasingly driven by the willingness to pursue more competition and create new market opportunities. Under this new scenario, customers will benefit from having access to more information and choice. In many cases, DSOs will have to manage their networks in a more active way and share information to make the transition possible. This will be done by clarifying their involvement in data management, which should no longer be considered as a 'grey area'.

However, as competition and choices increase for the customer, new data privacy challenges emerge. The transformation will lead to a ramp-up in information and data flows, leading to the need for appropriate measures to be established to guarantee secure, neutral and efficient data management.

EURELECTRIC firmly believes that the role of the DSO in this new environment will be crucial. The evolution of the energy sector towards a smarter system will only be possible if the DSO plays an active coordinating role between all market participants, facilitating markets and services in a neutral and non-discriminatory manner. DSOs are key to upgrading and operating an increasingly more complex network, allowing market parties to enable customers to optimise the way they use energy and benefit from it while keeping costs and complexity at acceptable levels.

DSOs are adapting to an evolving energy market by implementing changes in the way they operate and plan their networks

A network evolution has already started and this is just the beginning of the journey. DSOs are establishing a foundation of smarter network monitoring, improved metering, control (including distributed generation) and automation to best fulfil their security of supply obligations in a changing context made up of distributed generation, self/micro-generation, electric transport, new uses of electricity, more active customers and much smarter distribution grids. Smart meters are widely being deployed, distributed generation continues to expand, and customers are expected to play a more active role in demand response and energy efficiency. In summary, flexibility must be stimulated and correctly valued, so that customers can benefit from the services they may be willing and able to provide to local systems.

Meanwhile, DSOs are facing more complex grid operations, characterised by increasingly intermittent and bidirectional energy flows, whilst at the same time being responsible for system quality and security in their core business and fulfilling other legal obligations. As a result of this, DSOs are reorganising themselves in terms of new organisational business models, re-training of crucial staff, digitalisation of grid operations and other important managerial issues³.

This bigger role in system operation is also known as Active System Management. By using flexible ICT techniques to enable smart grids, DSOs have begun to manage capacity in their network and, although their role will not fundamentally change, they will need a bigger toolbox to move from the traditional “Connect and Forget” concept towards a “Connect and Manage” one.

Through wide scale trials and demonstrations⁴, DSOs have shown that they can increase existing network headroom through innovative ideas (e.g. using dynamic asset rating and voltage control), which has led to the optimisation of distributed generation connected in a given area without having to invest in traditional reinforcement options.

Where legislation allows, DSOs have signed flexible contracts for network customers. These flexible network customers have been providing services, which they are remunerated for, and help network operators manage certain grid issues such as network congestion or voltage constraints. As things stand, flexibility procurement on an open market must be further developed in most European countries in order

³ Organisational changes might include structural reorganisation, creating new departments and/or new procedures, defining new technical skills for smart grid services, promoting such services, as well as the deployment of smart meters in those countries where the DSO is responsible for that, facilitating demand response through active network management, and so on.

⁴ For instance, in mainland Great Britain, as part of the regulator’s Low Carbon Networks Fund and Network Innovation Competitions initiatives, as well as in France, as part of the government’s smart grid funding initiatives throughout the country (Paris region and South-East). More generally, North West Europe (France, the UK, the Benelux) – together with Scandinavia, Italy, and Spain - seems to be the most active European region in terms of smart grid investment according to the EU’s Joint Research Centre (JRC) which estimated that, as of 2014, more than EUR 3bn had been invested in smart grid projects in the EU as a whole.

for flexibility to achieve its full benefits and enable DSOs to fully capture the optimisation potential of active system management.

Not only is grid operation changing due to an increase in the pace of network innovation, grid planning is also being affected by the new technical and economic landscape. This is because network customers can (or will) be in a position to offer flexibility services directly, or through suppliers and aggregators, to the DSO through procurement processes. These procurement services will increase customer involvement in demand response. Along with the availability of increased information, using the distribution network more flexibly and having more precise and timely information at hand will guarantee that grid capacity is optimised during the network planning process, thus helping DSOs better plan their grids and making it easier for policy-makers, through more efficient grids, to achieve their environmental targets.

It is under this new scenario that the importance of secure, high quality and robust data management techniques has become apparent. Smart meters, distributed generation, storage facilities, demand-side response, smart charging and ICT solutions installed in the grid are producing more and more data that has to be adequately managed and protected.

EURELECTRIC recognises that the DSO approach as neutral market facilitator must be shown and documented as being the most efficient and effective solution in terms of both cost and complexity minimisation⁵. Only DSOs can prove this in a clear-cut fashion. Distribution must be viewed as a stand-alone activity with appropriate ring-fencing measures, which include data management and privacy governance.

DSOs are the impartial market facilitators enabling access to, and use of, the distribution grid. They will share relevant information with all parties and create an adequate level playing field in which competition is fostered and new energy services can be provided on a competitive basis while still respecting data privacy. DSOs must also make sure that the whole system is as resilient as possible against cyber-attacks and other privacy violations.

In summary, DSOs are adapting to this evolving environment, implementing the required changes in the way they operate and plan their networks to face future challenges. The DSOs' role will not fundamentally change, but will have to be repowered and strengthened.

Energy regulators should recognise the broadening role of DSOs as neutral market facilitators and encourage efficient technological innovation

Changes are taking place and energy regulators must ensure that they benefit customers and other network customers. Policy, regulations, roles and procedures have to be set taking into account efficiency and non-discrimination. The new setup must make sure that costs are minimised whilst competition is nurtured and a level playing field is guaranteed for all market participants.

To meet the challenges ahead, national energy regulators must make sure that DSOs are properly incentivised through a sound regulatory methodology covering both traditional and innovation-related assets. Regulatory schemes must incentivise DSOs to be efficient on a total cost basis⁶, to deliver long-term investment according to a predictable and consistent regulatory framework, and to make efficient trade-offs between active system management (including flexibility and storage procurement) and physical grid reinforcement.

⁵ A thorough and unbiased cost-benefit analysis of the proposed regulatory options must always be carried out to ensure that any new measures are truly beneficial to the majority of electricity customers.

⁶ To overcome OPEX/CAPEX trade-offs in terms of regulatory incentives.

Amongst growing concerns about high electricity bills across the EU, it is important to limit and/or avoid any unnecessary extra costs. Any proposal of creating new regulated entities such as separate and regulated data hubs⁷ should be carefully assessed to make sure that the benefits accruing from new solutions are truly superior to any resulting increase in the cost and/or complexity of the system.

DSOs need to be fairly rewarded for innovation and smart solutions as this will lower costs for all customers. Regulatory models need to incentivise and reward innovation, rather than penalise it. Incentivising innovative operational (OPEX) solutions alongside traditional grid reinforcement options saves money, allows the economy to grow through more efficient connections and more effective system management, and reduces future electricity bills.

DSOs should adequately support their customers

Electricity distribution is a local/regional activity in which the interaction with customers⁸ and local stakeholders (such as city councils) is very important. In contrast with the transmission network, in which connected customers and connection points to other networks are very few, distribution networks are usually characterised by a large number of customers, self-generators and larger-scale (distributed) generators.

The connection of a greater number of generation resources (such as renewables) to satisfy demand will require substantial growth in the size and complexity of distribution grids. We expect the European Commission's DSO/TSO Platform to recognise that DSOs are best placed to manage very large numbers of connected customers and to balance local grids because TSOs (high voltage and extra high voltage operators) are not used to managing very high numbers of connection points more or less densely spread across the territory.

The close relationship between DSOs and network customers starts with the request for a connection to the grid and continues as DSOs must always deliver adequate ongoing levels of technical power quality. Power flows and information will be increasingly bidirectional across the value chain, both upstream (DSO v TSO) and downstream (DSO v retailers and third-party demand response aggregators). Another important change, which will influence the way in which distribution grids will be planned and operated in future, is the emergence of electrical appliances which, whilst being more energy-efficient, sometimes tend to have higher peak-demand consumption features⁹.

To manage the network efficiently and meet new expectations, strong local vision and agile coordination is crucial. DSOs are neutrally placed on a level-playing field between supply and demand, and as such they may procure flexibility services on a market basis (where either a sufficiently liquid local flexibility market exists, or can be sustainably created) in order to make sure that distribution systems are more cost-effective. Through procurement of flexibility services, end-customers may ease congestion and voltage constraints, in addition to other services which they might sell to, or buy from, other market players.

Geographical proximity, in addition to the knowledge of distribution grid planning and operation, allows DSOs to be in a unique position as the technical customer contact point for specific technical requests and/or emergency situations.

⁷ There are a number of regulated data hubs in some Member States. It is still early days to judge whether or not the economics of such solutions is working.

⁸ Whether they are electricity customers directly connected to the DSO or smaller end-customers connected through suppliers (grid customers) or aggregators.

⁹ For instance, heat pumps and modern storage heating systems.

In addition, network tariffs (or distribution system charges) should be cost-reflective over time, non-discriminatory and exclude non-distribution costs which unduly distort price signals and may trigger the development of inefficient distributed energy technologies affecting overall welfare. Due to the nature of network costs, which are predominantly fixed over time, network tariffs should be increasingly (albeit not completely¹⁰) capacity-based without distorting energy efficiency objectives.

In many countries, national legislation will have to be adapted to help flexibility develop in full. Regulators and policy-makers will need to define how any new services will be regulated. They will need to adapt technical codes and governance rules related to grid planning and operation, as well as grid connection. If our aim is to make sure that network customers behave in a flexible way, legislation and regulation must also be flexible enough to facilitate this transition, allowing and fostering agreements between network customers and DSOs.

Data management must be fair, efficient, transparent and non-discriminatory

Data management is key. Although various options are open to Member States in this field, data managers must be neutral and must have experience in managing large amounts of data at different levels and through different regions. DSOs, in contrast with TSOs, have such experience and any policy alternative should be supported by a robust business case.

As a general principle, the data exchange service should be a common one throughout the national market and not necessarily be owned by DSOs (or TSOs for that matter)¹¹. However, master metering data (on consumption) should be stored by the DSOs to reduce costs and increase efficiency. This is because the DSO will need (smart) metering values for its own purposes, namely network optimisation calculations, overall system monitoring and to achieve a better understanding of actual demand profiles as part of its own grid planning activities.

There are European examples where data hubs are used and others where they are not necessarily needed (GB and Italy are in favour of a non-DSO solution; Austria is in favour of a DSO solution; in Germany there seems to be no need for any specific data hub solution). Germany's case is interesting because this country represents the largest electricity market in Europe and has several hundred DSOs as well as a developed retail market. Their solution is one of "radial communication flows", where market participants and customers get data directly from the smart meter without using any data hub or the DSO.

Information needs across the value chain (DSOs, TSOs, retailers, providers of balancing services, aggregators) vary considerably as a function of the nature of the activities being undertaken. Only part of the information gathered from final customers needs sharing for truly competitive markets to work properly. Common information to be shared would typically be about meter (consumption) readings, information about metering points, technical information regarding connection points and some contractual customer data relevant to retail market functioning in terms of switching.

The ultimate goal of any data management system does not revolve around ownership. In the absence of any discrimination in terms of access and timing of data, as well as data format, we do not see any problem with different hub ownership structures. The latter would only become a critical factor in the presence of access and/or timing discrimination.

¹⁰ EURELECTRIC is not proposing to shift the whole distribution charge towards a full capacity component. It is proposing that the capacity component of the overall charge is increased.

¹¹ Member States might (and probably will) go for different models in this area as they see fit. However, we do stand for harmonised data management procedures at European level to enhance the DSOs' capability of managing mass data on a consistent basis and use it for network stabilisation and optimisation purposes.

The crucial issue here is the fair sharing of information in an efficient, transparent, and non-discriminatory way. With the notable exception of those countries which have chosen an individual data hub, there is no obvious need for a common European position or approach in favour of a global/common data hub. Having one, depending on local circumstances, might imply additional complexity and costs that remain to be tested (with positive experience so far in Italy and some issues in GB). Current Information and Communications Technology (ICT) systems already allow multiple DSO/TSO/retailers to make data available to each other on a non-discriminatory basis.

There are situations in particular countries where a central data hub can be cheaper and more efficient but there is no general, EU-wide rule. There is no one-size-fits-all when it comes to choosing whether or not a centralised hub is cheaper or more convenient than a decentralised solution, unless an unambiguous cost-benefit analysis is successfully performed.

Further topics

Europe-wide standardisation of basic smart meter functionalities across Europe

Basic smart meter functionalities should be standardised at a minimum level to satisfy needs from customer and market players. Smart meter infrastructure does not need to – or, in many cases, simply cannot – be standardised due to important technical differences across Member States.

From a European perspective, however, it would be important to get to a point where smart meters across Europe have a minimum agreed common set of functionalities. These would include basic concepts like: connect/disconnect remote operations; provide readings to the consumer; support advanced tariff systems; power outage notifications etc. As roll-out programmes are underway in many countries, impact assessments might have to be carried out to fully evaluate the adoption of common standards in this field. Besides, the format of the smart metering information which is made available to the end-user could also be standardised, similar to the 'Green Button' initiative in the US¹². Regarding telecommunications standards, there is no need to standardise any solution, as it is preferable that the parties in charge of them decide the best alternative to follow.

Micro grids should be regulated on a level playing field with existing grids

Micro grids¹³ will develop over the coming years and become more and more common. The main drivers of this are the increased benefits resulting from the aggregation and decentralised control of demand, storage and (where applicable) decentralised generation for improved security of supply and resilience. DSOs will need to adapt to a system environment where micro grids are a reality, with suitably adapted grid rules and market regulations. From a DSO perspective, it is important to understand how micro grids will affect local/regional systems, maximise the benefits of their existence and efficiently align with the business models which will prevail.

¹² 'Green Button' is a US initiative driven by the idea that electricity customers should be able to securely download their own energy usage information from their utility or electricity supplier. It is an industry-led effort responding to a White House call for utilities to provide electricity customers with easy access to their energy usage data in a consumer-friendly and computer-friendly format via a "Green Button" on utility websites, which can be accessed via Web and smartphone tools.

¹³ Micro grids are modern, localised, small-scale grids which can disconnect from the centralised network and operate autonomously, strengthen grid resilience and help mitigate grid disturbances. They are typically low-voltage AC grids and employ a mixture of different distributed energy resources, with an increasing tendency towards moving to fully renewable sources where locally feasible.

There are several real-life examples of micro grids connected to the local DSO. These examples provide valuable knowledge for evaluating what a fair network charging framework should be for connecting micro grids to the rest of the grid and to provide them with the main-grid services they expect to receive. Micro grids must self-balance at the connection point with the DSO. This means that the DSO will need to cover the extra fixed costs imposed on it as a result of the need to connect micro grids. More capacity-orientated network charges will be required as a result of this, to make it possible for DSOs to accommodate micro grids on a fair basis.

Micro grids are the best available solution for the provision of electricity in areas where virtually no network electricity infrastructure exists. As the economic development of these regions gradually improves, these micro grids will naturally evolve into larger grids, taking advantage of the benefits of meshed interconnection and resource sharing.

In areas where electricity infrastructure is already developed, micro grids can play a role if very high quality of service is required. Fully developed micro grids can provide additional resilience for critical loads and support services, when connected to the wider distribution network, in order to improve overall system security.

Proper regulation of micro grids in already developed electricity systems is a key element. The customers of micro grids must have the same rights and obligations as the customers of the wider, integrated distribution grid. The development of parallel micro grid solutions as a result of ill-defined competition rules might give rise to a less efficient system which is more expensive to final customers. It is therefore necessary that micro grids face a regulatory framework that is fully consistent with the one used for the wider grid. In fully developed interconnected grids, the local DSO will be the best choice for the development and operation of micro grids¹⁴.

Local flexibility markets, especially at lower voltage levels, might not be sufficiently liquid in some local cases

DSOs will need to manage their networks differently and procure flexibility resources. However, it is necessary to bear in mind that the scope and firmness of flexibility services is not comparable to developing new assets. Flexibility services may be of great help for distribution grid operation and to fix short-term problems, but one cannot rely on them to solve security of supply issues in the longer- term.

As neutral market facilitators, DSOs may procure services, either via established level-playing field markets or through bilateral agreements when local markets are illiquid and regulators allow alternative solutions. In any case, it is the end-customer who must ultimately source and make such services available if interested. The DSO must be able to communicate to customers and market parties, such as retailers and aggregators, that there is a need for a certain service so that they can then decide whether or not to participate while still complying with the terms and conditions of their other market arrangements (for instance, a smart heating aggregation scheme or similar). Sophisticated and sizeable customers can engage with DSOs directly¹⁵.

DSOs will want to access local capability/flexibility markets to reduce cost and investment levels. It is therefore important to develop a clear definition of how flexibility should be managed at a local/regional

¹⁴ In this respect, energy regulators must ensure a level playing field in the development of micro grids by guaranteeing fair and non-discriminatory economic regulation in order to avoid any opportunistic entry behaviour.

¹⁵ Sizeable customers are typically non-residential. Sophisticated customers can be both residential and commercial/industrial. Residential customers might become more sophisticated in future, and this must be welcomed.

level. Given the geographical limitations of flexibility for active DSO grid management, it is important to ensure fully working, well-populated markets with enough players in place. Otherwise, alternative solutions might be more cost-efficient not only from a DSO perspective, but also – more widely – from a whole energy system perspective. Several pilot and case studies are already available to evaluate the grid optimisation potential of substituting investment in cables and transformers by the use of active flexibility, whether directly procured or fully market-based, depending on local/regional circumstances and on the extent to which flexibility markets can be effectively ‘populated’. Several possible business models must be examined at this stage, as it is still premature to identify any exclusive solution to the issue.

EURELECTRIC pursues in all its activities the application of the following sustainable development values:

Economic Development

▶ Growth, added-value, efficiency

Environmental Leadership

▶ Commitment, innovation, pro-activeness

Social Responsibility

▶ Transparency, ethics, accountability



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