DISTRIBUTION SYSTEM OPERATORS TRANSFORMING THE CUSTOMER EXPERIENCE

GEODE Working Group Customer Dialogue

May 2019

GEODE
The Voice of local Energy Distributors across Europe

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Introduction

The traditional roles in the electricity market of producers, distributors and retailers are all evolving due to new technology, new regulatory frameworks and new customer needs. As a consequence, the relationship between the Distribution System Operator (DSO) and its electricity customers is also changing.

Historically, the customer's contact with the DSO was mainly through meter readings or the electricity bill. In the coming years, more customers will have smart meters installed, and the use of electronic invoicing is increasing rapidly. A big shift can already be seen to more technical issues in the questions and needs the customers have.

Customers ask how to connect to the grid, how to install EV-charging and solar panels; they also ask about capacity requirements or how to react to capacity signals. Only the DSO can facilitate the connection of the customer's new technology to the grid. Although these technology services are provided by market actors, the DSO is always involved in the connection process and needs to communicate with the customer on practical and technical issues.

In a time when the role of the DSO becomes increasingly important in a more complex and decentralised energy system, the DSO is still not always at the forefront of the customer's mind. On the contrary, the DSO often remains as the unseen actor. This has to change.

This report will discuss **how to communicate with customers in a "customer centric" way and how the DSO can enhance the relationship with its electricity customers on grid related issues.** It will show, from a communications perspective, how the DSO is in the position to actively create value for the customer and offer a number of advantages to the customer connected to the distribution grid, creating a win-win situation for both the connected customer and the DSO (the report does not propose describing the roles and responsibilities of the DSO).

This report is addressed to several groups: to DSOs to contribute towards improving their own customer communications approach and visibility; to DSO customers so they better know who their DSO is, what the DSO can do for them and what the benefits of keeping connected to the grid; and last but not least, to regulators and decision-makers, as jointly together we ensure customers can most easily become active energy actors.

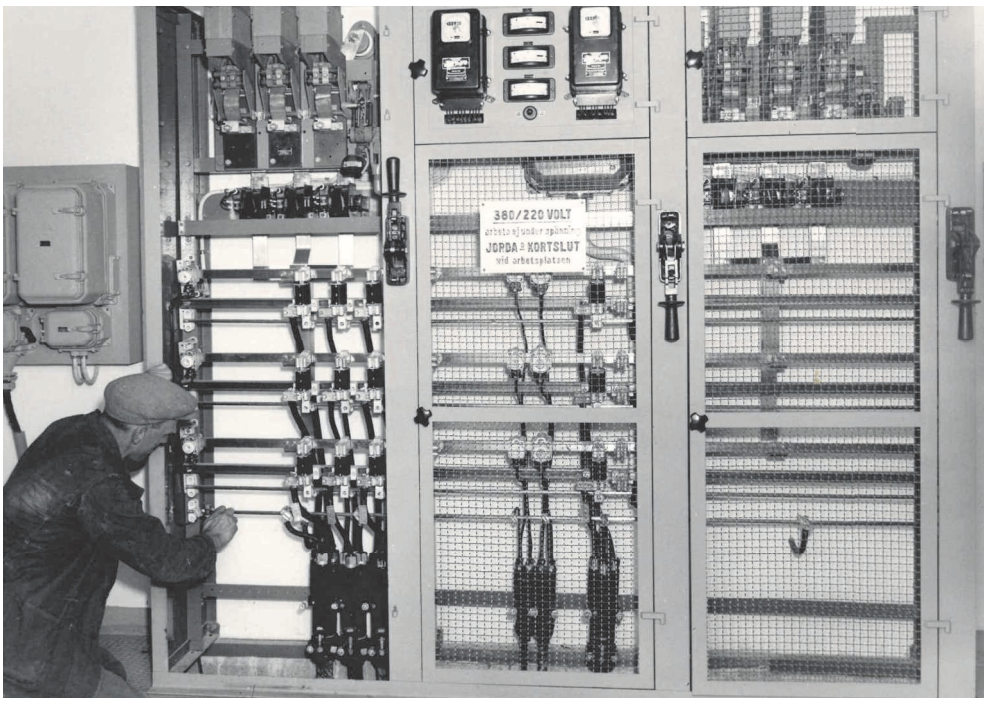
A number of best practice examples from more advanced GEODE members on customer relation management and communications are also presented in this report.

Chapter 1
From connection point to active prosumer. An evolving relationship between the DSO and its customers

THE FIRST HUNDRED YEARS DISTRIBUTING ELECTRICITY

The relationship between the DSO and its customers has changed significantly since the introduction of distributed electricity in the early 20th century. Production, distribution and supply of electricity were once considered as one service in Europe. The price offered for these services was usually decided politically.

The main focus and task of the distribution branch of the local electricity company was to ensure that there were no power outages and to restore power as quickly as possible when they occurred. Distributors from across Europe became very good at this, resulting in perhaps the highest grid reliability in the world. This was, and still is, a major benefit for European citizens and the industry. This is also part of the foundation for the development of modern European welfare states.



Source: Tekniska Verken i Linköping AB

At most times, the customer's only contact with the electricity distributor was through the manual meter readings done once per year in most European countries, at the customer's home.

A sudden power outage was also a reason for the customer to contact its electricity distributor. At the time, an hour or two without power usually did not generate too many calls to the distributor as people simply waited for the power to return. The consequences of power outages had much less impact on customers compared to today.

All in all, the customer-distributor communications were mainly manual and in person after connecting the customer, strictly limited to managing power outages and billing. The customers were consumers of electricity and often referred to as "connection points" by the distributor - which gives a hint of the approach to the management of the relationship back then.

Source: Tekniska Verken i Linköping AB

THE NEW MILLENNIUM – A NEW RELATIONSHIP BETWEEN THE DSO AND ITS CUSTOMERS

In the late 1990´s, the electricity market went through a number of major changes. New legal requirements in Europe[1] led to business separation 'unbundling' of production and sales from transmission and distribution of electricity – the hour of birth of the modern DSO. At the same time, the world became more and more technological.

The DSOs' customers became more reliant on electricity in their everyday lives, some even started producing their own. Even minor outages for a few seconds could result in huge consequences for production, trade, communications and transport. Communicating well with the customer became more important than ever before.

This shift in the energy system moving towards a more complex and decentralised model is significantly changing both the role of the DSO and of the customer and consequently the way they communicate also has to evolve. A new type of customer – the prosumer – has evolved over the past few years. The prosumer can both be a single customer with solar panels on his/her roof, and a community of customers organised in an energy community. The prosumer's needs differ from "classic" customer needs, at times feeding excess electricity into the grid and at other times demanding it from the grid. In both cases, there must be an uninterrupted connection to the grid which only the DSO can provide.

At the same time, the DSO is now turning into an active neutral market facilitator for demand response services, energy storage and production from distributed energy resources, whereas customers have a diverse number of choices, solutions and needs in generation and demand, requiring more and specific technical advice and guidance from the DSO in terms of the connection and the grid capacity. Hence, it is of crucial importance for the DSO to enhance the customers' awareness of the DSO and its tasks.

The challenge is that the DSO is not usually at the forefront of the customers' mind. On the contrary, the DSO is often the invisible actor in a time when the role of the DSO, as previously described, is becoming increasingly important. To best serve its customers, the DSO needs to improve its visibility. Customers need to know who their DSO is when they need advice/solutions to their technical grid queries. Regardless of the regulatory framework, the DSO must be allowed and have the ability to communicate efficiently with its customers.

[1] First Energy Package –Directive 96/92/EC concerning common rules for the internal market in electricity

Chapter 2
The DSO - best partner for today's customer

Today's DSO is well prepared to meet its customers' new expectations and needs, remaining their best and most reliable partner when the former 'connection points' have turned into more active energy market participants.

Self-consumption, storage, e-mobility, micro-grids, energy communities and off-grid trends are bringing new opportunities and alternatives for the customer but also challenges as the customers do not always know how to proceed. The DSO enables all these new developments from a technical standpoint, and naturally the DSO wants to partner up with customers to facilitate their increasingly active role in the energy market as a trustworthy and reliable partner. The DSO can guide the customer to find the best solutions for them and for the grid and will also always be there to provide the reliable connection to the grid.

At the same time, such new developments also carry certain risks for operating the grid in terms of security of supply. It is the DSOs' role to facilitate customers to be more flexible and to ensure the energy system works efficiently. A closer communication between the customer and the DSO is of high importance for efficient grid operation at the lowest possible cost in the years to come.

FROM PASSIVE TO PROACTIVE COMMUNICATION BETWEEN THE DSO AND ITS CUSTOMERS

The traditional communication between the DSO and its customers has until now been characterised by a mostly passive approach: the DSO often expecting the customer to take the first step.

This approach is changing. New technologies now enable the DSO to adopt a more proactive approach towards customer communication.

One good example is the DSO´s warnings of power outages. The DSO is the actor responsible for maintaining the grid, and thus has the most up-to-date information on current outages as well as for identifying the failure location for establishing restoration of power. The DSO has to be able to use modern digital technology to forward such information to the customer directly. Instead of the customer calling the DSO for information, the DSO should provide up-to-date information right away and even before outages occur using the customers' preferred method of communication (e.g. e-mail, SMS or smartphone applications etc). This proactive approach can save the customer considerable time and effort.

Example I

Hafslund Nett, Outage information
Norway

The **DSO's company app** has a map that shows where in the distribution grid area there are outages. Customers also receive an SMS on outages in their home, the expected time needed to restore power, and when the electricity is back on. The app also includes information on what to do when the light goes out. E.g. "Check if the neighbour still has light", etc. This is to keep the customer fully informed and helps customers avoid having to make calls.

Example II

Outage information
Finland

In Finland Smart Meters were fully rolled out by 2014. Smart metering systems have made it possible to locate outages with greater precision in the low voltage network.

The DSOs in Finland use a **free SMS-service to inform customers about outages and their estimated duration**. The DSO sends the customer an SMS free of charge if there is an interruption at the customer's consumption site. This has been found very useful especially for customers with multiple consumption sites, e.g. summerhouse owners. Most DSOs also have a power outage map, which provides customers with real time information on outage areas in the network and, particularly useful, with the DSO's estimation of outage end time.

Outage Map

The main challenge for the DSO is to forecast the customer's information needs and to approach the customer with tailor-made technical information about their future needs (e.g. when customers are installing a solar panel or buying an EV, they might need information on the connection process and/or if more capacity is needed). In practice, a possible solution is that the DSO cooperates with other market actors such as PV-installers, companies providing services related to electric cars or construction firms planning to expand a housing project, and together they can provide the correct technical advice to the connected customer.

Example III

"Elsmart"
Norway

A system for communications between electricians and the DSO. It is a good example of how to improve the customer's connection process.

See link (only in Norwegian):
https://www.powel.com/no/about/produktinfo/powel-elsmart/

Other examples of proactive communication are high consumption warnings on the grid tariff. In most countries, the DSO is not the customer's point of contact on invoice issues, although in future it might be necessary for the DSO to give warnings about high consumption when capacity tariffs come into force. If capacity tariffs are implemented, it is the DSO's task to make sure customers understand them and react appropriately. Therefore, the DSOs have to give the customer as much information as possible to make sure that customers are aware of the effects of their consumption and don't get a shock when they receive their electricity bill. The DSO has to be able to send the right capacity signals through to the customer, and also give warnings when the customer consumes in a way that is disadvantageous for the tariff.

This sort of dynamic communication approach towards the customer will help the customer and also re-inforce recognition that the DSO is a professional organisation that cares for its customers.

CONNECTING THE CUSTOMER TO THE GRID – CUSTOMERS DEMAND INFORMATION AND ADVICE AS EARLY AS POSSIBLE

It is a top priority on the DSO's agenda to actively ensure that customers see the benefits and convenience of staying connected to the grid. Sharing available and useful information with them is essential. Such information can be advice on connections and grid tariffs as well as better self-service options to access information directly.

The DSO should always take a proactive communications approach towards customers and establish an open dialogue on grid related issues with those planning to connect to the grid, install solar panels, storage devices or charging stations for electric vehicles. Then, hand in hand with the customer, connect all their assets to the grid. To achieve this, it is very important that the DSO is involved at an early planning stage in the development of new activities by the customers.

Example IV

Hafslund Nett
Norway

Hafslund Nett

The grid company has established a marketing team that travels around to talk to different groups of customers advising them on how to best connect EV charging infrastructure and how much capacity will be needed, the connection of new installations, regulation for prosumers and much more. The company believes that this proactive information will be useful for the customer.

Larger commercial customers usually have personal contacts in the grid company they can call for information and advice.

When DSOs connect homes to the grid, they have to offer automated or online services from the request for connection to the day when the lights go on for the first time. In addition, clearly communicating the requirements for connection and the defined costs provides transparency and hence increases the value for the customer.

GUIDING THE CUSTOMER THROUGH GRID TARIFFS

As we move towards an electricity system with more renewable electricity production, the significance of capacity increases. Today's electricity markets only provide price signals for energy, and the DSO is the only actor with responsibility for capacity which has a direct connection with the end customer. More and more countries are introducing capacity based tariffs to give the customer an appropriate price signal. This tariff principle is essential for the transformation of the European energy system and requires the DSO to be able to communicate with the customer.

One of the DSO's main ways to communicate with customers is through network tariffs, even though in many countries this is done via the supplier. Customers naturally care about how much they spend on electricity, and it is important that DSOs communicate - either directly or through the supplier - the various types and level of their tariffs.

Information about the best grid tariff options available should be simple and clear, to facilitate more cost-efficient behaviour. This includes ensuring that market price signals reach the customer - and are noticed and well understood. If capacity grid tariffs are implemented in a supplier centric model, regulators have to provide a framework which ensures that suppliers pass the capacity signal including the appropriate grid tariff on to the customer.

New grid tariff structures can ensure and facilitate customers to participate in demand response activities and hence reduce their own costs when responding to price signals and shifting consumption away from peak hours. Explaining and applying such complex matters requires an understandable tariff structure, a clear language and simple customer-DSO communications.

Example V

Hafslund Nett
Norway

The grid company has reached out to some larger customers offering them advice on their grid tariffs and how to better react to the capacity signals from the DSO.

Chapter 3
The DSO - trustworthy and always accessible to customers

Ensuring security of supply and proper maintenance of the power grid is and always will be the DSO's "raison d'être". The key role of the DSO is to "keep the lights on", which is often taken for granted by today's electricity customers.

Electricity distribution systems do not draw much attention from consumers. Electricity, and especially the distribution grid, is not always of great interest – probably because people are used to grids that function extremely well, and the work to make it happen is just not seen.

With the consumer becoming a prosumer, and with decentralised energy systems and new generation and consumption patterns, the DSO is in a position to actively create a higher value for the connected customer. Therefore, we recommend that DSOs, if they haven't already, should start to make customers aware of who they are, what they are responsible for and what they can offer customers when connected to the grid. In a nutshell, the smart DSO builds trust and is a reliable partner for the customer, as a part of everyday life, helping them, reducing complexity, providing them with anticipated and quick grid response times (e.g. in case of outages) and high data security standards in the world of big data.

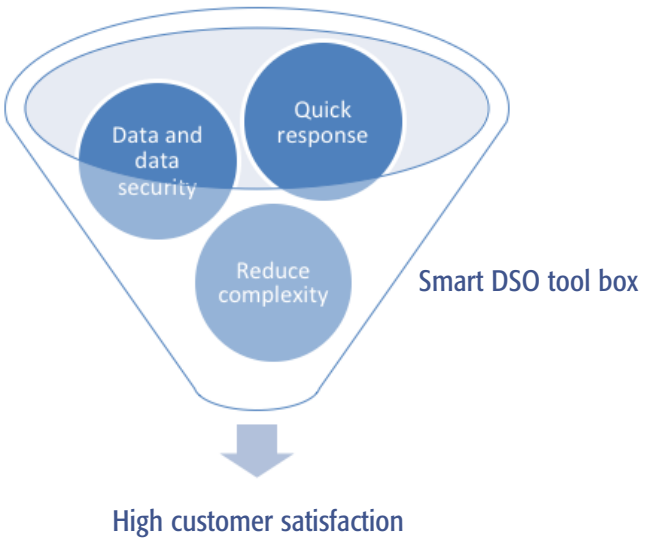


Figure 1. The smart DSO building trust

THE DSO BUILDS TRUST BY BEING VISIBLE AND NEUTRAL TOWARDS ALL CUSTOMERS

The DSO is by nature a stable partner as it is the one always there in the background. Even when changing supplier, a customer will still remain connected to the same distribution network. The DSO is the only actor that has a guaranteed long time relationship with the customer. This enables the DSO to provide the customer with historical data about his/her connection point such as consumption trends and other technical details or what kind of connections were made and when. Such information can be very important for the customer and demands communication with the DSO.

Everyone has to be able to connect to and use the grid, without discrimination. This includes all sorts of distributed generation as well as active, passive and vulnerable customers. The DSO must serve them all equally. In order to meet the customer's expectations, the DSO must shift, if it hasn't already done so, to a stronger customer focus. The DSO should try to understand what information the customer needs and how to best give this information. A good approach is standardised digital information on the general questions and more personalised information/guidance on the more difficult ones. The DSO's language must be adjusted so that the customer can readily understand and relate to the technical information provided.

A DSO must always strive towards excellence when it comes to providing information, connecting customers, giving advice on grid tariffs and handling outages. Usually it may be a long time between each communication with a customer, but when it happens, the DSO must deliver. This is a rather different situation than perhaps other market players face e.g. suppliers that interact with their customer regularly.

For some DSOs this will be a new approach towards customers and it will require a change of mind, learning to take advantage of every opportunity to meet and be close to the customer in a smart way – something that maybe has not been done enough in the past (e.g. when doing construction work on roads or on city streets the DSO should use this opportunity to advertise the DSO logo to inform customers that *"your DSO is working to improve your electricity grid"*).

Example VI

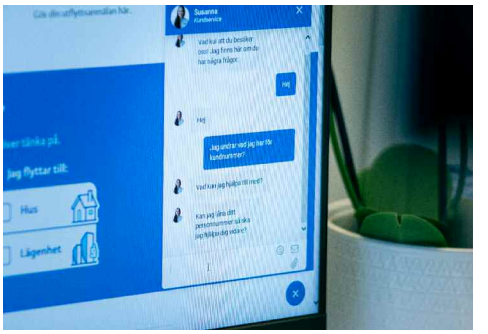
Agder Energi
Norway

Making their presence known in the form of visiting customers in person - this is possible for local distributors as they are physically close to the customer - for instance in times of outages caused by extreme weather conditions.

Source: Tekniska Verken i Linköping AB

THE DSO BUILDS TRUST BY REACTING QUICKLY TO CUSTOMERS' NEEDS

Customer inquiries should always be handled appropriately and promptly. Ensuring a quick response time to requests by using all available channels, improves the customer satisfaction. DSOs are operating help desks with physical customer service call centers as well as "chat" services with artificial intelligence agents providing automated answers to customer requests. Customers also now tend to use new ways of contact, such as apps and websites if offered. This trend is likely to increase with better automation and more intelligent software – but also requires investments by the DSO into their IT systems, in addition to human resources.



Source: Tekniska Verken i Linköping AB

Example VII

Elenia Oy
Finland

All Finnish customers have Smart Meters since 2014. Back in 2013 Elenia Oy launched a mobile app "Elenia Mukana" as a new service channel. Via this mobile app Elenia's customers can follow their electricity consumption in kWh and €. The app provides the status of power to their premises. Customers can send the DSO pictures of potential faults with the precise location information.

In 2015 **Elenia**[2] **Aina** was launched as a service provided to the customer by the DSO. Elenia Aina is a digital customer service channel which monitors hourly electricity consumption amongst other things.

https://www.elenia.fi/aina

THE DSO BUILDS TRUST BY HANDLING DATA IN A SECURE WAY

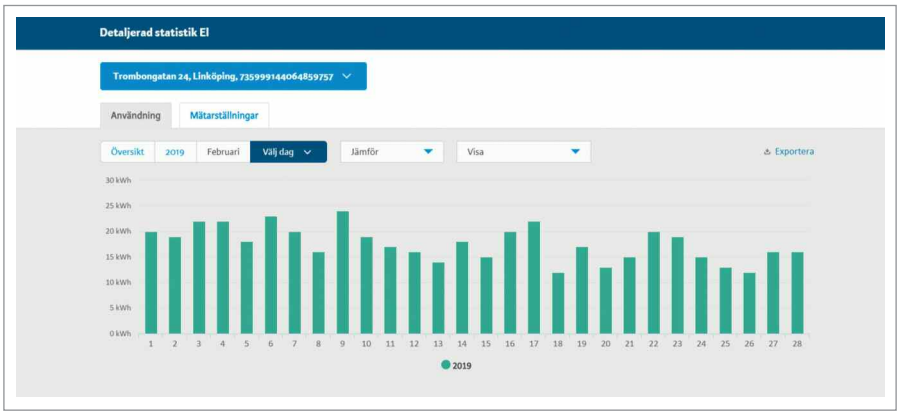
In most European Member States the DSO is in charge of smart meters and its data. Smart metering systems will help ensure DSOs provide accurate data for invoices and report on customers' exact consumption data, both for selected periods of time and for comparing consumption over a period of time. This range of options made available to the DSOs and to customers will make it easier to understand how much energy is consumed and what for, facilitating customers' use of their smart appliances so they can benefit from demand response services.

[2] Elenia is a Finnish DSO that is ownership unbundled

Example VIII

Tekniska Verken Linköping
Sweden - "My Pages"

The DSO provides the customer detailed statistics for their electricity usage, which are then exportable to other analysis programs etc.



Example IX

Hafslund Nett
Norway

All customers have smart meters installed. Through the **DSO's company app** the customer gets information on their hourly, monthly and annual consumption and can compare this historical data. Hafslund Nett has employed four students to improve this app and explain invoices to customers. This is because "high-tech" industries need help to speak in a language that their customers understand.

See link here (in Norwegian) about how Hafslund Nett explains the electricity bill to customers through the app:

https://www.mynewsdesk.com/no/hafslund-nett/news/studenter-lager-app-som-forklarer-stroemregningen-din-353955

Example X

Energy consumption reporting – case Finland

DSOs provide advanced energy consumption information to their customers using smart metering data. This information can be communicated to the customer through many channels such as the web, smartphones and in-home displays. One example of this kind of service is the **mandatory DSO web-portal.**

In the picture below is an example of a portal used by one Finnish DSO. This portal can be accessed by the customer via internet or a smart phone. The portal is protected by a customer specific password.

Protection of customer data has become a core task for the DSO and will become even more important in the future as the DSO manages large amounts of personal data with improved quality. If analysed in detail, it shows the need for increased focus on cyber security measures.

Energy consumption data is sensitive personal information. The customers' data is always safe in the DSO's hands and will never be handed over to any other parties without prior consent from the customer. Making data accessible to third party actors, with customer consent, is an important task for the DSO, whilst always ensuring data privacy. By doing so, the DSO facilitates smart services being offered to customers by retailers, aggregators or other energy service providers.

THE DSO BUILDS TRUST THROUGH EXCELLENCE IN CUSTOMER SERVICE

It is crucially important for the DSO's customer satisfaction to provide 24/7 accessibility for customer enquiries. Other market actors do not provide this service. Customer satisfaction has become a key priority for DSOs.

Example XI

Energy Networks Association, UK -
105 Single Emergency Number, (SEN)

The severe storm events in UK over the winter 2013/14 period and the electricity supply disruptions they caused highlighted that the general public is often confused about what number to call to report an electricity network supply issue and obtain important information or advice – with many contacting their electricity supplier.

Accordingly, in March 2014, Energy Networks Association (ENA) was charged by DECC (Government) to deliver a single emergency number (SEN) for use in England, Wales and Scotland, on behalf of all electricity Network Operators, for the general public to be able to contact their electricity Network Operator in case of a power cut. Service Go-Live in September 2016. Since then Network Operators continue to advance consumer awareness and promotion of the 105 service by embedding 105 branding into existing marketing channels as well as through a variety of campaigns including TV, radio and digital advertising.

The 105 Single Emergency Number supports customer service by providing a quick, easy and memorable number for the public to use to connect to their local Network Operator. This allows Network Operators to quickly respond to issues concerning a power cut, electricity network safety event or other grid supply issues and helps to reduce the response time to restore power to homes and businesses.

To maximise customer satisfaction DSOs should focus on the Customer Experience[3] and Customer Journey[4] and take measurements of certain key customer touch points. Customer satisfaction measurement is necessary for the improvement of best practice, process optimisation, and for the development of strategic measurements in general.

[3] Customer Experience is the sum of all interactions a customer has with a company (Customer enquiries process and core processes).

[4] Customer Journey is the full process starting with the customer need and ends with its fulfillment (after finishing all sub-processes, all interactions with touchpoints, and all response times).

Chapter 4
Key Recommendations

- Today's DSO is well prepared to meet the new expectations and needs of our customers, but the DSO should be visible to the customer and use clear language in communications.

- The DSO should partner up with customers to facilitate their increasingly active role in the energy market as a trustworthy and reliable partner for technical aspects on grid related issues.

- The DSO should facilitate customers becoming more flexible, to make the energy system work at optimum efficiency. Clear communications between the customer and the DSO is therefore of high importance to ensure efficient grid operation at the lowest possible cost in future years.

- National Regulators have to provide a regulatory framework which ensures that market price signals in the network tariff reach the customer - and are noticed and well understood, regardless of the market model in place (e.g. supplier centric model).

- The DSO should prioritise forecasting the customer's information needs and provide the customer with the appropriate, tailor-made technical information about grid related issues.

- Regardless of the regulatory framework, the DSO must be allowed and able to communicate efficiently with its customers.

- The DSO's proactive communication approach towards the customer for grid related issues will also, as a bonus, enhance the recognition of the DSO as a professional actor that cares for its customer.

- It is a DSO priority to actively ensure that customers appreciate the benefits and convenience of staying connected to the grid.

ACKNOWLEDGEMENTS

GEODE would like to thank the experts from our editing team who devoted time and expertise to contribute to this report. We are particularly grateful to Jane May, Energy Networks Association (UK), for her linguistic support. Also, we direct a special thanks to Santi Martinez, former chair of GEODE WG Customer Dialogue, for introducing the idea of this report and establishing the way forward.

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