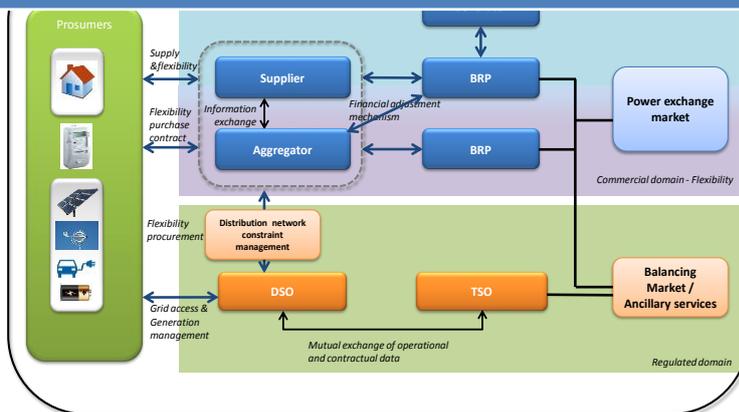


2015

Regulatory Recommendations for the Deployment of Flexibility *Refinement of Recommendations*



ANNEX to EG3 Report

SMART GRID TASK FORCE

September 2015

Refinement of EG 3 recommendations

EG3 report 'Regulatory Recommendations for the Deployment of Flexibility' was successfully adopted in Q1 2015. The recommendations of the EG3 report are identifying the issues and who should further develop the solution. In this way the report and recommendations represent a useful step for present discussions at EU and member state level or inside EG3 partners.

Following the recommendations of the main report and the consensus achieved during 2014, EG3 decided to launch an additional stream of work in order to refine some of the recommendations. The group views that all fourteen recommendations are equally important for achieving a level playing field for demand side participation in the market, but also in order to incentivise different actors to get involved. However, due to time constraints the group selected six recommendations related to market, consumer and regulatory issues, which are more relevant for an imminent step forward in order to exploit the flexibility potential.

EG3 recognises that the proposed framework and actions may not be the only option and that other options are possible and may be more effective at EU or national level, depending on the circumstances. However, this work represents a high consensus among various stakeholders of the energy industry, and provides possible solutions in order to introduce demand side flexibility in the full range of energy markets, while creating a suitable framework for all actors involved.

Objective of this assignment:

- refine the recommendations in line with the Energy Union's Market Design Initiative and Retail Communication of 15 July 2015¹;
- enhance EG3 input to Market Design Initiative while keeping high added value at EU level with the existing stakeholders in EG3.

The final objective is that this refinement of recommendations will be useful to the Commission in the framework of the Retail Market and the Market Design Initiatives

The recommendations and their meanings, as concluded in the EG3 report, remain unchanged.

The selected recommendations were refined and further developed for a better understanding from a broader audience, on the following basis:

- The existing recommendation: What
- Explaining: Why
- Developing: How (making it more explicit leading to more concrete actions)
- Target group: Who (EU, Member States, NRA's)

¹ <http://ec.europa.eu/energy/en/topics/markets-and-consumers>

EG3 Editorial Team

Nomination	Name
European Commission	Manuel Sánchez, Chair of EG3 Kostas Stamatis Michaela Kollau Ullrike Nuscheler Niels Ladefoged Erika Busechian Lance Boxall
CEER	<u>Consumer group</u> Annick Cable Antonio Ocana Andy Burgess
	<u>Markets group</u> Karin Widegren Romain Benquey (co-chair of ACER/CEER Flexibility Task Force) Andy Neidert Stefan Voegel Chiara Redaelli Sam Cope
	<u>Regulation group</u> Andy Burgess Nathan Macwhinnie Christine Mueller Edwin Edelenbos Luuk Spee Stefan Voegel
CECED	Marco Signa, Whirlpool (Italy)
Eurelectric	Pavla Mandatova
CEDEC	Peter Hermans, Stadin (NL)

EG3 Expert Group

Nomination	Name
BEREC	Maarten de Klijn, ACM (Netherlands) Soeren Nuebel, BNETZA (Germany)
CECED	Candice Richaud, CECEC (Belgium) Christophe Arnaud, CECEC (Belgium)
CEDEC	Falk Engelmann - VKU (Germany) Paul De Wit - Alliander (Netherlands) Alternates: Gert De Block, Katrin Schenk
COGEN	Fiona Riddoch, Managing Director
Consumer Futures	Heidi Ranscombe
DIGITAL EUROPE	Hamid Amir-Alikhani, Panasonic (Germany) Klaus-Dieter Axt, DigitalEurope, Director
EASE	Julia Ioannou, Policy Officer, European Association for Storage of Energy
ECOS	Dania Cristofaro Thomas Willson
EDSO	Olivier Chatillon from ERDF Florian Chapalain, EDSO secretariat
SolarPower Europe	Alexandre Roesch, Belgium Carlos Dierckxsens, 3E (Belgium) Alternate: Giorgia Concas, Belgium
ENTSO-E	Chloe Latour (RTE, FR)

Refinement of Recommendations - Annex to EG3 Report "Regulatory Recommendations for the Deployment of Flexibility"

	Thong Vu Van (Senior R&D Advisor, ENTSO-E) Alternate: Jesús Mendiola Wippermann (REE)
ETNO	Lorenzo Pupillo, Telecom Italia Rainer Koch, DEUTSCHE TELEKOM AG Alternate: Francesco Versace
Eurelectric	Alain Taccoen (EDF) Marcus Merkel (EWE NETZ) (Germany) Alternate: Joao MARTINS DE CARVALHO (EdP), Marion LABATUT, EURELECTRIC (Belgium)
EUROGAS	Eva Hennig, Eurogas (Belgium) Hartwig Ziegle, RWE (Germany) Alternate: Margot Loudon, Eurogas (Belgium)
EUTC	Miguel Angel Sánchez Fornié (Iberdrola, Spain) Duncan Botting (UK)
ESMIG	John Harris Willem Strabbing Alternate: Thomas Weisshaupt
IFIEC	Peter Claes, Vice-President of IFIEC Europe
GEODE	Carmen Gimeno, GEODE Hans Taus, Wiener Netze GmbH (Austria)
GSMA	Svetlana Grant, GSMA
ORGALIME	Patrick BERNARD, Schneider Electric (France) Ulrich FIKAR, Orgalime (Belgium) Renzo Coccioni, Schneider Electric (France)
RAP	Phil Baker Mike Hogan
SEDC	Frauke Thies, Executive Director SEDC Yannick Phulpin, EDF Research
T&D	Guillermo Amann, Ormazabal (Spain) Jochen Kreusel, ABB (Germany)

Markets group

Co- Chair:

Pavla Mandatova (EURELECTRIC)
Karin Widegren (CEER/ACER)

Participants:

Christophe Arnaud (CECED)
Paul de Wit (CEDEC)
Fiona Riddoch (COGEN)
Maria Joao Duarte (EASE)
Dania Cristofaro (ECOS)
Olivier Chatillon (EDSO4SG)
Chloe Latour (ENTSO-E)
Hartwig Ziegler (Eurogas)
Peter Claes (IFIIEC Europe)
Hans Taus (Geode)
Ulrich Fikar (Orgalime)
Philip Baker (RAP)
Jessica Stromback (SEDC)
Jochen Kreusel (T&D Europe)

CEER:

Romain Benquey (CRE)
Andy Neidert (BNetzA)
Stefan Voegel (E-Control)
Chiara Redaelli (Ofgem)
Sam Cope (Ofgem)

Objectives

The text of the refinement document should be complementary to the existing main EG3 report and should cover maximum 5 pages. In the kick-off EG3 meeting it was decided that the market group would work on the following two EG3 recommendations:

- RECOMMENDATION 1. ASSESS THE FLEXIBILITY POTENTIAL AND MAXIMISE THE VALUE OF FLEXIBILITY
- RECOMMENDATION 3. CONTRACTUAL ARRANGEMENTS

Existing recommendations of the EG3 report

RECOMMENDATION 1 - ASSESS THE FLEXIBILITY POTENTIAL AND MAXIMISE THE VALUE OF FLEXIBILITY:

Member States should assess, under the guidance of the European Commission, the overall Demand Side Flexibility (DSF) potential (realistic vs. theoretical), which DSF potential is already used and what upfront investments will be necessary to tap realistically achievable potential for different types of consumers (i.e. residential, commercial and industrial). A Cost Benefit Analysis, overall impact analysis and ambition setting are needed.

Based on such an assessment, Member States and NRAs should ensure that the value of flexibility is maximised to the consumers and other providers of that flexibility, and continues to be maximised in an evolving market over time. When developing new flexibility services for different types of customers, a careful assessment of costs and benefits related to different market design options should be undertaken.

RECOMMENDATION 3 on CONTRACTUAL ARRANGEMENTS:

Contractual arrangements should be simple, transparent and fair and allow consumers to access any service provider of their choosing, without previous permission of the BRP or supplier (although it may be necessary to protect consumers from multiple contracts for flexibility that conflict).

In the case of demand response being activated by a third party aggregation service provider, the BRP/Supplier should always be informed. Standard contracts should be put in place to ensure smooth contractual process, fair financial adjustment mechanism and standard communications procedures between aggregation service provider and the BRP/supplier. Where required, contracts, communication and money flows can be directed through an independent third party.

In the case of flexibility being valued through supply contracts, this does not apply.

Only when it is proved that existing means of metering would not be sufficient to measure flexibility provided by consumers, the aggregator should be allowed to provide the appropriate means of measuring that service. As regards data used for settlement purposes, that data needs to be certified by an independent third party, such as the TSO or DSO.

To protect consumers from unnecessary administrative and legal burdens, the aggregated pool of demand side resources should be treated as a single resource. Pre-qualification, verification should wherever possible be performed at this pooled level. For grid constraint management on the DSO level, local specifications will need to be taken into account.

European Commission and NRAs should collaborate in order to ensure that the regulatory framework enables the creation of these contractual arrangements.

RECOMMENDATION 1 - ASSESS THE FLEXIBILITY POTENTIAL AND MAXIMISE THE VALUE OF FLEXIBILITY:

Why is this important?

The concept of demand side flexibility² is sufficiently new and Europe lacks a robust assessment on which policy makers can base their proposals. As national markets differ quite substantially a clear understanding at national level of the potential for DSF and tracking progress in different market segments is of utmost importance to harness the benefits of DSF in the most cost efficient way. A theoretical approach is insufficient.

The benefits of specific measures to tap the potential of DSF in each market segments and for each consumer category and certain significant appliance/machinery categories should be assessed as a base for political discussions about market opportunities. These opportunities will be dependent on national characteristic i.e. to which extent flexibility is used already today, the total volume of the market, price volatility, existence and price of other flexibility resources and competition in the market etc. Tapping the realistically achievable potential on top of the one already in use in any market segment may require upfront investments and additional administrative costs (data handling, information exchange etc.) which also will be dependent on national market design.

Hence costs and benefits are specific for each national market, which motivates making cost benefit analysis on national level related to different market design options as a base for choosing solutions that fully include the value of flexibility to all consumers and other providers of flexibility through activating all competent sources.

How can the recommendation be more explicit - what needs to be done to fulfil the recommendation?

The value of actual and potential flexibility resources (centralized and decentralized), in different market segments within relevant markets and for different types of consumers should be accurately estimated. To ensure that this value will be realised, an assessment of the potential is required in parallel with calculation of the societal costs and benefits³. The assessment of the flexibility potential made on national level needs to be transparent and comparable.

² For a definition of demand side flexibility see the introduction to chapter 2 from Consumers group

³ Experience from methods developed within EU (Environment, health care etc.) for the calculation of societal cost could be a starting point

The European Commission should provide guidelines for such an assessment on how the flexibility potential in the Member States can be tapped, including a framework for a common assessment methodology including the following criteria:

- The EC should provide Member States and NRAs with common definitions of market segments (as outlined in the EG3 report), types of flexibility and customer groups.
- As a first step, Member States in conjunction with NRAs should assess the flexibility needs of the system which will ultimately reveal the value of flexibility. Secondly, they should identify the national flexibility potential including all categories of customers (residential, commercial, industrial, prosumers including DG and EVs) and competing flexibility options (flexible generation, DSR, storage and interconnections). Member States should then start assessing the customer segments with the largest potential and make a cost benefit analysis for those segments.
- Benefits are the overall avoided costs for the society through a more efficient use of the energy system as a whole, avoided network upgrade and increased possibilities for renewable integration.
- The costs of DSF include direct investment costs, costs to society to overcome institutional barriers for entering/operating the DSF market. Costs and benefits may vary greatly in each MS and between different DSF parties and consumer groups and might be rather hard to assess. Furthermore, the costs to consumers, which include a behavioural element, is especially hard to quantify. Nevertheless all these costs and benefits need to be considered as part of the assessment at least in qualitative terms.
- Assumptions on the level of take up of DSR, the level of response from those who signed-up to DSR programmes would need to be considered.
- The latest CBA work being carried out under the EED for DG ENER and much of the DG Environment work already in place should be included as a starting point for the common methodology.
- Guidelines on how to monitor progress including how to deal with the results from relevant CBA.

There should be a clear timeframe for member states initial assessment of the flexibility potential and progress should be monitored on a regular basis. The EC should provide a general guidance to MS and NRAs on how to regularly monitor the development of flexibility markets. In the monitoring process special attention should be given to flexibility markets influencing cross border trade to fulfil the integration of the internal energy markets.

RECOMMENDATION 3 - CONTRACTUAL ARRANGEMENTS

Definitions and applicability

Implicit valuation of demand response

Implicit demand response (also sometimes called "price-based") refers to consumers choosing to be exposed to *time-varying electricity prices or time-varying network grid tariffs* that reflect the value

and cost of electricity and/or transportation in different time periods. Armed with this information, consumers can decide – or automate the decision – to use less electricity at times of high prices and thereby reduce their energy bill. Time variable prices are offered by electricity suppliers or network operators. Examples include *time-of-use tariffs*, *critical peak pricing*, and *real-time pricing*.

It needs to be taken into account that where customers choose implicit demand response services embedded in their supply contracts (e.g. through time-varying prices) the contractual arrangements described in recommendation 3 and further in this section are not necessary. Indeed, the balance responsibility is not impacted⁴. Nor are they necessary for grid tariff schemes (time-of-use, etc.) or other DSO actions on customer sites which are known in advance by the concerned balance responsible party (BRP)/supplier/ (see recommendation 12 in the regulatory chapter regarding proposed requirements for these actions s). Furthermore, implicit demand response schemes do not require the definition of a baseline as accurate consumption measurement is sufficient.

Explicit valuation of demand response

In explicit demand response schemes (sometimes called “incentive-based”) the “freed-up/ shifted” electricity is traded in electricity markets or used for other purposes. Consumers receive specific remuneration to change their consumption upon request (using more or using less), e.g. triggered by activation of balancing energy, differences in electricity prices or a constraint on the network. The consumers can value its flexibility in electricity consumption individually or by contracting with a demand response aggregator. The latter can either be a third party aggregator or the customer’s supplier. When the customers’ supplier acts as demand response aggregator on its own balancing perimeter, the chain of balancing responsibility remains unchanged. In these cases, the arrangements in recommendation 3 are also not necessary.

It might also exist that aggregators’ contract directly with balance responsible parties or suppliers to provide them with flexibility, thereby acting as service providers for portfolio optimization. In these cases other arrangements than those in recommendation 3 will be necessary.

General principles

The valuation of the consumer’s flexibility through demand response aggregation offers an opportunity to expand the development of demand side flexibility and to increase competition in consumer centric services. Market design to promote demand side flexibility should guard consumer interests and create a level playing field for all competitors. Consumers who wish to earn from their flexibility should be able to freely choose between all market options and demand response service providers available.

Even though the starting point is that third party aggregators contract with customers without the need of an agreement from the customers’ BRP, there is still a need for some specific contractual arrangement based on a standardized framework with standardized processes. The objective should

⁴ I e there has to be an ex ante schedule that respects the demand variation expected from the variable commodity tariff but the BRP is able to internalize the effect.

be to identify prerequisites and the elements of such a standardized framework leaving flexibility to adjust to individual cases.

Scope/applicability of the recommendation

Recommendation 3:

- **focuses on market model where third party aggregation service providers (in the following referred to as aggregators) trade demand response products directly on the wholesale or balancing markets without any previous relation to the customers' supplier or BRP (in the following referred to as the BRP) and without being the balance responsible party for the supply of those customers.**⁵ The main principles in the recommendation are applicable to both gas and electricity markets, although the refinements of the different elements of the recommendation primarily focus the electricity market.
- is applicable to the contractual arrangement needed to tackle commercial entry barriers for third party demand response aggregation providers. An important part of such a contractual framework will be the guiding principles from recommendation 4 concerning the creation of a financial adjustment mechanism between BRPs/suppliers and aggregators in the case of a demand response action.
- **describes the relations between non-regulated actors (BRPs/suppliers and third party aggregation service providers) with the objective to create a level playing field between explicit valuation of demand response and generation assets in the merit order curve on all markets (day-ahead, intra-day, balancing) and for ancillary services and network congestion management.** Relations between regulated actors (DSOs and TSOs) are covered in other recommendations and the regulatory report, including situation where the local network restricts the possibilities for DR activation.
- does not apply to the contractual arrangements between an independent third party aggregator and the consumer. Relations between consumers and aggregators are addressed in Recommendation 8 of the consumer chapter.

Refine Recommendation 3

What is a standardized framework and why is it needed to ensure smooth contractual process and financial adjustment?

Using a standardized contractual framework does not refer to one party buying a service from another party. Through a standardized contractual framework all parties involved commit themselves to take on certain responsibilities and follow the specific requirements set up in the contract. Such a standardised contractual framework may be developed by the market actors themselves and be subject to regulatory oversight or it may be developed and accredited by the appropriate national authority within each MS. Taking national circumstances and market situations

⁵ Depending on the market regime finally chosen, aggregators still need to create a balance group/portfolio for their immediate operation with the national/control area balance coordinator in order to allow their actions to be "booked".

into account, NRAs should be able to introduce additional specific criteria for the application of the standardised framework.

To handle a situation where any of the parties do not sign up to the contractual framework, there will also be a need to include regulatory or legal requirements that safeguard customers' possibilities to sign up to the demand response contract of their choice.

A standardised framework should

- create a level playing field over which smaller companies can compete with larger companies encouraging market competition and improved services
- be cost efficient and allow for smooth market function
- provide visibility of DSR actions taken by aggregators to the BRP responsible for the balancing on its perimeter at the relevant aggregated level
- be flexible so that arrangements between parties can change as market conditions evolve. For instance standardized contractual frameworks may be more flexible than a fully regulated framework.
- Ensure that each demand response action is appropriately valued through a thoroughly defined baseline.

Elements of the standardized framework

- First the framework should define and describe the standardised market roles and their responsibilities. The framework should also describe the standardised processes. From these roles and processes the data exchange, measurement procedures, payments and settlement can be derived. There are four elements to be defined through a standardized framework to allow for healthy market functioning while allowing consumers to choose their aggregation service provider.
- *Volumes*: Standardised principles should set out robust requirements for measurement, verification and payment to determine the accurate volume of the shifted consumption. They thereby create the conditions required for fair payment to participants and stable market rules discouraging abusive practices by any parties. Verification of the changed electricity consumption due to the demand response activity, including definition of baseline, should be determined by a neutral body free of interest from any parties involved (suppliers, aggregators, consumers). –
- *Data Exchange*: A well-designed standardised framework should enable market participants to compete while protecting consumer rights – for example the right to data privacy. Standardisation sets out 'the rules of play'.
- *Sourcing Costs related to the volume of energy shifted through DR activation by third party aggregator (see financial adjustment mechanism in Recommendation 4 of the EG3 report)*: A well-designed standardised principles can ensure that neither BRP's nor aggregators (and ultimately consumers) are penalised through the standardized framework and that all related costs are designated towards the commercial actors who causes them and are not socialized to

all consumers. These standardized processes should ensure that demand response activations initiated by third party aggregators do not result in imbalances for the BRP of the involved consumers. The energy associated with demand response activations could for instance be taken into account by TSOs based on the data provided by the DSOs when relevant with an extension of the concept of Imbalance Adjustment of BRPs, while ensuring the overall consistency of energy allocations in the market. The standardised framework should then ensure that payments between the BRPs/suppliers and the aggregators reflect sourcing costs according to national market conditions.

- *Risk management, disagreements and other legal issues:* Standardized principles for any legal issues including where the companies should go when they disagree about any of the above.

Description of standardized framework elements:

The four elements which need to be included after a clear description of the roles, responsibilities and standardised processes, in a standardized framework are described in more details below. Alternatives could be explored by Member States depending on the markets, as long as the general principles of the framework are followed.

1. **Volumes:** The volume of flexible consumption being traded on the market is assessed against the baseline. The definition of this volume is necessary to know how much DR products is traded on the market and to calculate the payment of sourcing costs. Volumes of demand side flexibility are calculated as an estimation of the difference between what the consumer normally consumes (baseline) and their actual measured consumption at that hour (or shorter intervals depending on imbalance settlement period, this requires appropriate metering). The baseline needs to be calculated with a methodology with adequate mathematical properties.) based on other available measured consumption data or on a peer group comparison method.

Measurements and verifications should be accurate enough to allow for the definition of the baseline. To ensure fair treatment of participants and avoid free riding, it should be specified that suppliers, aggregators and consumers should have no influence on the baseline choice, though they should be consulted for technical information during the process. It should as far as possible be standardized taking into account that multiple standard baselines can exist to cover different types of DR activations on a range of different consumption sites. The existing baselines from the balancing markets in which DR already participates could be a starting point to define standard baselines methodologies. Depending on the market, these standard methodologies could for example be decided by the appropriate national authority within each MS (i.e. market players should not be able to choose the methodology and should have little or no possibility to play with the methodology). The baseline methodology should be transparent to all market participants

Robust baselines allow for the distinction between customer's reaction to prices and the specific DR action linked to the third party aggregator's activation. A robust baseline should also take into account the possible side-effects to these reactions to price signals (e.g. anticipation effects and rebound effects).

The volumes of demand response activated within the BRP perimeter should be *communicated* to the BRP at the relevant aggregated level based on the relevant standardized baselines.

The BRP is not responsible for and should not be penalized by imbalances caused by customers' incomplete reaction to third party aggregators demand response request. These imbalances are the responsibility of the aggregator.

2. **Data Exchange:** Data exchange is important to ensure smooth market processes and safe consumer participation. The BRP requires data in order to know what is taking place within their portfolios in order to properly maintain balance and forecast their portfolio consumption.

In the event of a DR action triggered by a third party aggregator, the BRP should not correct their planned energy delivery before or during the DR action, as the demand response volumes allocated to aggregators in this model should be sourced by the BRP. Shortly after gate-closure only the planned activations can be exchanged and perhaps the expected volumes- It depends on the definition of the standard processes whether or not this will be implemented. The real volumes can only be determined afterwards (day or month depending on the allocation process of the country).

As a basic principle the consumer has the right to decide which market participant has access to their detailed consumption data and for which purpose. As a part of the contractual framework the minimal information required for different processes should be determined. For additional information the customer must give his consent to the party who requests this information. A distinction between customers with measurement of their actual consumption (telemetered customers) and customers with less detailed data should be made.

It is important to define which level of information of data provides the BRP with the necessary information while protecting the privacy rights of the consumer and the commercial information of the aggregator. Each BRP should receive data at the relevant aggregated level concerning the activated demand side volumes on its balancing perimeter.

The aggregated data could be calculated and transferred by a neutral third party. In the Balancing Markets the TSO could be a party responsible for this task. In the wholesale market adequate information exchange framework should be put in place and could be done by a neutral body defined at the national level. Other forms of standardised communication of data that do not involve third parties are also possible.

The distribution of costs of the information system required should be assessed.

3. **Handling imbalances and sourcing costs of the demand response volume allocated to the third party aggregator (see financial adjustment mechanism in Recommendation 4 of the EG3 report):**

The transfer of balance responsibility on the allocated DR volume following an activation triggered by the third party aggregator should be neutral to the customer's BRP/supplier. For instance, demand response activations initiated by third party aggregators should not result in imbalances for the BRP of the involved consumers.

In addition, these standardized processes should integrate and handle imbalances linked to demand response activation, for example when the volume sold on the market does not correspond to the actual response of consumers. Depending on the balancing regime, the BRP may face an imbalance penalty when the aggregator action is taken into account during the imbalance settlement.

The standardised framework should thus lead to payments corresponding to the sourcing costs. In case of demand reduction, the third party will be allocated a volume it can trade while the customer's BRP/supplier will be allocated a volume it should source but cannot bill to the customer. Therefore, the third party aggregator should pay the customer's BRP/supplier for the DR volume it sourced but which was not used by its own consumers. Reversely, the customer's BRP should pay the aggregator in case of demand increase triggered by the third party aggregator.

According to this standardized framework the consumer who has reduced its consumption should only be billed on what he actually consumed if not contracted otherwise between the BRP and the consumer. For instance, an alternative solution for demand response (which can be applied for large consumers but also for small ones) exists in some countries whereby the energy sold on the market by the independent aggregator is invoiced to the consumer by the supplier as if it had been consumed. The subsequent payments then take place between the consumer and the aggregator directly. This alternative market design should remain and sound regulatory framework should ensure a fair allocation of costs and full transparency for consumers.

Within a standardized framework the aggregator should reimburse the BRP/supplier for the sourcing cost related to the DR action in a way that it captures sourcing risks. The payment of the sourcing cost should also be bi-directional. In other words, when the consumer uses less during a demand response action – the BRP/supplier is paid by the aggregator. When the consumer used more during a demand response action (due to low prices and high levels of renewables for example) the aggregator sells the energy to the BRP/supplier.

Different options to determine the sourcing price exist and can coexist, based on standardized processes. The different options may also be subject to different types of regulatory oversight depending on specific situations in MS, taking the general principles and scope of the standardised framework into account (see page 6-7):

- A supplier and third party aggregator should have the opportunity to reach a negotiated agreement if possible. In that case the sourcing price is *bilaterally agreed* between the BRP/supplier and the aggregator.
- A *set of price formulas* referring to publicly available market prices could be defined to reflect the sourcing cost in a way that it captures sourcing risks. A set of formulas should be able to neutrally capture and reflect the sourcing costs and thus facilitate the development of demand side flexibility. It is crucial that the sourcing costs are properly reflected otherwise there might be a risk for efficiency losses on the market, which would ultimately result in higher retail prices.
 - The use of a set of price formulas can facilitate direct settlement between aggregators and BRPs/suppliers without negotiation.

- Alternatively the money transfer and calculation of sourcing costs based on standardized formulas could be provided by a neutral third party. In the Balancing Markets the TSO has this information and could be responsible for money transfers as they are paying/charging all market participant anyway. In the wholesale market an appropriate solution need to be defined.

Further investigation is needed in order to assess realization of these options in detail, their cost for the system and their implementability.

4. **Risk management, disagreements and other legal issues:** the regulator or national competition authorities should oversee the functioning of the market as they do any other energy related market. The standardized contractual framework should allow efficient market functioning and provide the parties with solutions regarding a range of risks such as counterparty risk and credit risk.

Conclusion

The elements of a standardised framework described above allows for healthy market competition around demand side flexibility. Volumes, data transfer, balance correction and sourcing costs are critical elements which should be placed in a standardised framework and overseen by neutral third parties in order to create an even playing field and protect consumer interests.

To gain experience through monitoring of progress, exchange of experiences among MS and NRAs concerning for example price formulas and development of best practice will be a necessary first step. These activities will constitute useful input to determine the need for a more harmonized framework on EU level in a second step. NRAs will play a crucial role in this work.

Consumers group

Co-Chairs:

Marco Signa (CECED)
Annick Cable (CEER/ACER)

Participants:

Falk Engelmann (CEDEC)
Andy Burgess (CEER/ACER)
Antonio Ocana (CEER/ACER)
Heidi Ranscombe (Citizens Advice/BEUC)
Thomas Willson (ECOS)
Willem Strabbing (ESMIG)
Alain Taccoen (EURELECTRIC)
Duncan Botting (EUTC)
Peter Claes (FEBELIEC)
Carmen Gimeno (GEODE)
Patrick Bernard (Orgalime)

Introduction:

The EG3 Consumer Sub-group has focused on two priority recommendations relating to consumers. The overall aim is to remove barriers and enable consumers to participate in and provide demand-side flexibility (DSF)⁶.

As outlined in the Markets Chapter, there are two types of demand response valuation.

- Implicit demand response (sometimes called 'price-based') refers to consumers choosing to be exposed to time-varying energy prices that reflect the value and cost of gas/electricity in different time periods
- Explicit demand response schemes (sometimes called 'incentive based') are for 'freeing up' gas/electricity to react to a network constraint or high energy prices.

The purpose of this document is to provide concrete suggestions to act on the original two recommendations on consumers in the EG3 Report – a clear framework for domestic customers (#8) and timely access to metering data while ensuring customer privacy (#7). During the drafting process, suggestions were shared about the other two recommendations (#14 on smart appliances for end users, and #11 on energy-telco synergies) but there was insufficient time to explore and reach a consensus. We urge the Commission and other relevant parties to explore these matters further and make recommendations where appropriate.

Where possible, we acknowledge overlaps with other initiatives and reports focused on consumer interests.

Recommendation 8 - A Clear Framework For Domestic Consumers

Original text from the EG3 report:

*"To achieve inclusivity and a positive domestic customer reception of demand side flexibility options, **industry and NRAs should work together especially on the introduction of aggregation services and dynamic pricing, taking into account the following:***

- *Services and offers must be comprehensible.*
- *While recognising that customers can benefit from their ability to modify load through specific price offers, comparability in these offers must be supported.*
- *Identify feasible models for limiting the liability of customers when contracting with an aggregator or supplier.*
- *Ensure that information on flexibility services is simple and transparently provided to the customer.*
- *Enhance comparisons between services regarding flexibility by providing comparable key information without impeding competition and innovation.*

⁶ Demand-side flexibility can be defined as the capacity to change energy usage by end-use consumers (including residential) from their normal or current consumption patterns in response to market signals, such as time-variable energy prices or incentive payments, or in response to acceptance of the consumer's bid, alone or through aggregation, to sell demand reduction/increase at a price in gas and electricity markets or for internal portfolio optimisation, or bilaterally.

- *Consider the impact of demand side flexibility options on all domestic customers and especially vulnerable consumers, so that the benefits are shared appropriately and no one is adversely affected. Vulnerable customers may need additional protections.*

NRAs and consumer protection agencies should seek innovative solutions to ensure consumer protections are adapted and not relaxed to accommodate demand side flexibility options."

Further comments to act on this recommendation:

This recommendation refers to the specific needs of domestic consumers. The framework may also be useful for other types of consumers – notably small commercial and industrial consumers – who have similar needs to domestic consumers, e.g. relying on comparison tools and aggregation services to understand and choose from the available DSF options.

All types of consumers should have the opportunity to participate in DSF. Regulatory efforts to foster DSF should be consumer-centric so incentives for the various types of consumers will differ.

For the avoidance of doubt, consumer participation in DSF is voluntary and rewarded. Rewards are usually financial and can be in the form of a lower energy bill (when consumers change consumption according to time-variable energy prices), incentive payments or vouchers for reduced energy consumption. Domestic DSF is only one of several options, with overheads and risks.

To increase consumer interest and participation in DSF, the framework will depend on three components: information, comparison and protection.

Information

Information on the DSF services and offers should:

- be provided in a clear, comprehensible manner to accommodate different levels of knowledge and expertise. (Complexity is a significant barrier for consumers to opt in to DSF and the service provider should take all reasonable steps to help the consumer understand the DSF product/service.)
- outline the relevant features of the offer, for example is the valuation of demand response implicit or explicit?
- outline the **'expected delivery', benefits** and potential impact for the consumer, taking account of the consumer's consumption patterns and scope for DSF. For example, how will this consumer benefit from their ability to modify load through a specific offer?
- outline the **risks and consequences**, for example from missing the performance target
- provide consumers with a useful and transparent description of the **contractual terms and obligations** (e.g. entry/exit, performance, dispute resolution, collection and use of data, who is responsible for what)

- provide consumers with a reporting tool (for example, a section within the bill) that shows the impact of the DSF so the user is aware of the value of their flexibility, e.g. an estimation of the savings from providing DSF. Such reporting tools should be easily accessible and comprehensible for the consumer. Relevant parties should work together to consider how the financial value of implicit and explicit demand response could be reflected in such tools.

It might facilitate consumer engagement to coordinate information and efforts to raise awareness about DSF at a national or local level. And this could be incorporated into existing public campaigns to promote energy efficiency and empower all consumers.

Materials promoting DSF should not mislead consumers on the potential benefits, particularly if these depending on the use of particular smart appliances and/or the potential flexibility of a consumer's energy consumption pattern.

As set out in the Energy Efficiency Directive, all consumers should have access to information on energy consumption and costs as well as their historical consumption patterns.⁷ There is scope for further discussion on the granularity and standards on the format of data on historical consumption. (Standardising data format and exchange is mentioned in the section on Recommendation 7.)

Innovative software applications will need to be accommodated for, which consumers can choose to use to view and analyse their historical consumption data on personal devices, provided such applications adhere to the applicable rules on data privacy.⁸

Comparison

In an effort to empower domestic consumers, it is essential that comparison of DSF offers be supported.

DSF comparison tools can enhance comparisons between DSF services by providing comparable key information. Like price comparison tools, there are certain principles⁹ which should apply to all DSF comparison tools, to empower consumers and to ensure consumers can trust and make the most of the comparison tools:

- be independent from providers of DSF products and services
- be transparent and exhaustive in presenting the full range of options available
- be clear and comprehensible to help consumers understand the different options (Comparison tools should be able to filter the available DSF services in order to present the best option(s) for the consumer's circumstances.¹⁰)

⁷ In accordance with Article 10(2)b) of the Energy Efficiency Directive, Consumers should have access to their historical consumption to understand their consumption patterns and the impact of DSF. Consumers without internet access should have alternative means to access information on their individual energy consumption and costs.

⁸ There could be overlap between tools comparing DSF products, and tools that help the consumer monitor his DSF performance.

⁹ CEER Guidelines of Good Practice on Price Comparison Tools (Ref. C12-CEM-54-03), 10 July 2012.

¹⁰ Comparing implicit and explicit valuations of DSF offers is likely to be complex (more so than comparing implicit or traditional offers). As a result, there may be limits to the comparison tools. In such cases, the

- be correct, accurate, up to date and able to adapt swiftly as new technologies emerge and become more widespread
- be user-friendly and accessible¹¹

These principles could be captured in a certification system, which could be led by private or public bodies. Where a Member State already has a certification system of some form for comparison tools, this can be expanded to accommodate DSF comparison.

For the avoidance of doubt, comparison tools can be privately owned or provided by public authorities (e.g. NRAs, national sectorial ombudsman). Aside from the emergence of new tools run by different bodies, existing price comparison tools for domestic consumers should have the freedom to choose whether to incorporate comparison of DSF offers.

As new technologies and products emerge, the design of comparison tools should be able to evolve and adapt. They have the potential to foster the consumer's trust by developing innovative ways for identifying and comparing DSF products and services from different providers. Comparison tools could also be extended to smart appliances to promote the adoption of new technologies with proven benefits for consumers. Innovative providers of DSF services should not be impeded from presenting their services on comparison tools with other traditional offers. Efforts to encourage the development of comparison tools should focus on how these tools can engage in the new world of DSF, without restricting the design of such tools.

Consumers should have easy access to data on their load mix and recent consumption patterns to compare the impact of choosing from the different options identified in comparison tools.

Protection

Contractual terms between the consumer and DSF service provider should be fair and prevent excessive liability of consumers when contracting DSF products and services. As a minimum, they should cover the following three areas:

- Terms for entering and exiting a contract must respect the voluntary nature of DSF and without undue costs or loss of time.
- If a consumer fails to meet a performance target, it can result in costs but those costs should not be overly punitive. To help the consumer make an informed decision on the DSF offer, the consumer should be clearly informed in advance about the risk and consequence of any costs or penalties stemming from not meeting the performance target defined in the DSF contract.
- A clear process must be in place to resolve any disputes/complaints, as foreseen in the Third Package.¹² The consumer must be able to question its contract, billing and

comparison tool provider should take all reasonable steps to inform users of the limits of the tool for certain product combinations.

¹¹ Internet sites have become the prevailing method for comparison tools and local authorities should have alternative means to enable vulnerable consumers to compare DSF offers.

¹² See Article 3(13) of the Electricity Directive 2009/72/EC and Annex I par. 1(f). Equivalent provisions (Article 3(9) and Annex I par. 1(f)) are in the Gas Directive 2009/73/EC. These provisions put the obligation on Member States to have in place alternative dispute resolution (ADR) mechanisms (ombudsman or consumer body), and

customer service.¹³ Existing dispute resolution mechanisms should be improved and extended to facilitate switching between DSF service contracts with different suppliers and/or aggregators.

Smart home automation and intelligent energy management solutions should serve the consumer's voluntary participation in DSF.

Member States should ensure that:

- standards of consumer accessibility and fairness are not compromised when adapting consumer protections to foster DSR;
- regulations, redress and other policy frameworks (such as eco-design) are DSF-ready to be sure that the tariff design matches the innovation and the consumer protection framework;
- policy proposals understand and specify what will be the deliverables to the consumer;
- the engagement of domestic consumers be voluntary and appropriately rewarded¹⁴;
- the tariff design be crafted on the understanding of who the beneficiaries are;
- financial measures and incentives¹⁵ are considered to help consumers with costly switch to smart appliance and
- concurrent policies are coherent (if two separate policies need to be joined to deliver the promised consumer outcome, then there should be a cross-reference to those policy makers).

The Commission, Member States and NRAs should also consider the extent to which any existing practices used in other sectors (such as the financial services sector) can be adapted to help consumers understand the risks and benefits in order to make an informed choice on DSF services and offers.

Refine Recommendation 7 - Timely access to data while ensuring consumer privacy

Original text from the EG3 report:

"As access to data has significant potential to fuel market growth and market competition, the data manager should equally provide to all market parties – new and existing - sufficient, differentiated and timely data via appropriate market facilitation services.

also on suppliers to have in place a complaint handling procedure, putting in place a minimum framework for energy consumers.

¹³ Further discussions are necessary to consider how this should apply when the consumer has more than one contract, e.g. one contract with a third party aggregator, and one contract with a supplier.

¹⁴ Consumers who do not opt for DSF should not be penalized. Likewise, 'Last minute' changes and offers should reward those that can fulfil the requirements (e.g. because their smart meter has a higher frequency) without penalizing those that cannot. Rewards - for those who opt in - are on the assumption that the benefits will outweigh the implementation costs and the consumer's effort to change his/her behaviour.

¹⁵ For example, initial mandatory entry costs required at a consumer's premises to enable demand-response should not be neglected as this may become a barrier for many, especially economically vulnerable consumers.

To encourage energy service providers to offer contracts and services built around spot market prices, such as dynamic pricing and home and business automation controls, consumers should have the right to request and receive metering at a frequency corresponding to the national balancing settlement regime. Smart metering systems with a reading interval corresponding to the settlement time period are a technical prerequisite for participation in flexibility markets.

Accurate consumption information and accurate billing based on actual consumption are critical enablers of demand side flexibility, for domestic consumers in particular. Customers should maintain control of their data and always explicitly give their consent before their data is made available to third parties (to which the customer does not already have a contract).

The customer has the right to withdraw his/her consent. The data access should be monitored and protected by Member States.

NRAs should ensure these possibilities are in place, as well as how costs are recovered. The five CEER guiding principles of data management should be observed (Privacy and security, transparency, accuracy, accessibility and non-discrimination.)"

Further comments to act on this recommendation

What do we mean by data?

We recommend the Commission and relevant parties work together to clarify the types of data, the frequency it is collected from smart meters and for which purposes.

For this section, this recommendation refers specifically to the metering data from smart metering systems. A consumer's access to data on his/her historical consumption data is covered in the previous section. (Non-metering data collected from consumers (e.g. behaviour, preferences) should already be captured by existing data privacy rules.)

Timely access to metering data is useful for different parties for different commercial or technical reasons. For example:

- 'in the home' for the consumer to manage consumption (i.e. within the premise connected to the metering system);
- 'out of the home', for the DSO to optimize its operations to the benefit of the entire system, and for suppliers to bill consumers;
- for market participants authorised by the consumer to provide energy services such as DSF to the consumer (e.g. supplier, aggregator).

Consumer meter data, already protected by EU privacy legislation, should always be subject to the control of the consumer; meaning that specific parties which do not require the use of such data by law/regulation (e.g. for system operation), should be required to ask for consumers' consent in order to access or use it.

Within CEER, NRAs plan to do further work in this area, including providing further guidance on data and data reporting standardisation.

Standardisation of data

All parties that collect personal consumer metering data should give insight in their processes that collect, store and forward such data.¹⁶ As reflected in CEER's Advice on Customer Data Management For Better Retail Market Functioning (19 March 2015, Ref C14-RMF-68-03), NRAs should take interest in data formats and systems for exchanging data.¹⁷ CEER's document concludes there are significant benefits to be gained from standardising these, at least at national level.

This also ties in with how data can be made available to third parties authorised by the consumer to provide energy services such as DSF to the consumer.

Providing consumers with general information on metering data:

Consumers should be able to access online information on their rights with regard to customer data management, e.g. what data is stored and for how long, and on how they can access that data. As part of efforts to earn consumers' trust in DSF, the relevant body in each Member State (DSO, metering operator, or otherwise) should make general information on metering data management publicly available.¹⁸ This general information should include but not be limited to:

- a) the consumers' rights with regard to data management, including his/her ability to withdraw consent;
- b) what metering data is collected, how frequently and why¹⁹;
- c) how a consumer's metering data is stored and for how long;
- d) how a consumer's metering data is used by the DSO and market participants authorized by the consumer;
- e) how the consumer - and the market participants authorised by the consumer - can access the data;
- f) How long before the metering data collected by the relevant body are made available to the consumer - and market participants authorised by the customer.

The Commission should recognise that consumers have legal rights to maintain control their own data. Access to and handling of the consumer's metering data should be in line with the applicable data privacy rules.

Providing the consumer with access to his/her specific metering data

As mentioned in the original recommendation, consumers should have the right to request and receive consumption metering at a frequency corresponding at least to the national balancing settlement regime (for example, every half-hour), because smart metering systems with such a

¹⁶ One example of doing this is using the DPIA template developed by EG2 (see the EG2 2014 report ([link](#)) and the Commission Recommendation of 10 October 2014 on the Data Protection Impact Assessment Template for Smart Grid and Smart Metering Systems (2014/724/EU).

¹⁷ Due consideration should be given to the work in EG1 and EG2.

¹⁸ Cross reference: CEER Advice on Customer Data Management for Better Retail Market Functioning, Ref. C-14-RMF-68-03, 19 March 2015.

¹⁹ The Commission should wait for agreement to be reached in the EG2 within the Smart Grids Task Force on the detail of metering data collected by DSOs from consumers.

reading interval are a technical prerequisite for participation in flexibility markets. This frequency is suitable for 'out of home' purposes: e.g. generating data for billing²⁰, balancing and settlement purposes.

In order to promote and facilitate an efficient use of energy by small energy customers, including domestic customers, metering data should be provided 'in the home' to the consumer (or where relevant, the consumer's energy management system) via interfaces of the smart metering system as identified by the M/441 Smart Metering, Smart Meter Coordination Group (SMCG) and Smart Grid Coordination Group (SG-CG) of CEN, CENELEC, ETSI. These "H-interfaces" should then be open and use standards defined and maintained by the European or International Standardization Organisations. Where possible, these interfaces should enable the provision of "near real-time" data, i.e. a regular reading a short delay after the time of the energy being used. Access to near real-time data with these H-interfaces can enable the consumer, or its energy management system, to optimize his/her energy consumption.

Here is the minimum data to be provided in the home to the domestic consumer (or the consumer's Home Area Network (HAN)) via a standardized open interface on the smart metering system to understand and decide whether to change his/her current consumption:

- The meter reading indicating the total amount of energy being used at any given point in time – updated in real time or at regular time intervals (for example, every minute);²¹
- The time as measured by the smart meter's internal clock, so this can be used by the CEMS (Consumer Energy Management System) to apply the relevant in-use tariff.

There are several different ways smart metering systems can provide data to consumer's HAN. These could result in future innovation so it is important not to restrict to a single EU-wide solution for transferring data to the 'H-interfaces'. For markets not opting for widespread introduction of in-home display units (IHDs), this could be an area for innovative solutions to create alternative systems using the internet rather than IHDs.

The relevant body (DSO, metering operator or otherwise) should communicate to the customer any inaccuracies related to metering data and how these inaccuracies have been addressed.

The DSO's access to consumers' metering data:

For the avoidance of doubt, the DSO's access to metering data is relevant for the DSO to optimize the operation and planning of the distribution network, which is part of a DSO's core activities. For instance, metering data enables monitoring status or load and voltage in the distribution network. (Please note real-time meter readings are not a prerequisite to support this DSO task

The Commission should recognise that DSOs should make optimal use of data for efficient operation of the network.

²⁰ Please note, the metering frequency (e.g. every half-hour) and subsequent granularity of consumption data are distinct from the billing frequency (e.g. every three months). In general gas smart meters will deliver only operational m³. For billing purposes these values are converted with the calorific value and correction factors into kWh.

²¹ For the avoidance of doubt, this information is for use in the home and is distinct from the metering data collected for billing purposes at a frequency corresponding at least to the national balancing settlement regime.

Third parties' access to consumers' metering data in order to provide DSF services:

Where the consumer has provided a third party with consent to access his/her metering data for the purpose of providing DSF services (e.g. supplier, aggregator), the NRAs should allow such third parties to access the consumer's metering data. NRAs should explore this area further in the context of standardising data formats and exchange.

(The relevant part of Recommendation 7: "Customers should maintain control of their data and always explicitly give their consent before their data is made available to third parties (to which the customer does not already have a contract). The customer has the right to withdraw his/her consent. The data access should be monitored and protected by Member States.")

Regulatory group

Co- Chair:

Peter Hermans	(CEDEC)
Andy Burgess	(CEER)

Participants:

Fiona Riddoch	(COGEN)
Maria João Duarte	(EASE)
Thomas Willson	(ECOS)
Florian Chapalain	(EDSO)
Thong VU Van	(ENTSOE)
Alexandre Roesh	(SolarPower Europe)
John Harris	(ESMIG)
Marcus Merkel	(Eurelectric)
Eva Hennig	(Eurogas)
Yannick Pulpin	(SEDC)
Renzo Coccioni	(Orgalime)
Philip Baker	(RAC)
Guillermo Amann	(T&D)
Stefan Voegel	(CEER)
Christine Mueller	(CEER)
Edwin Edelenbos	(CEER)
Luuk Spee	(CEER)
Nathan Macwhinnie	(CEER)

Objectives

In the kick-off EG3 meeting it was decided that the regulatory group would work on the following two EG3 recommendations:

- RECOMMENDATION 12_ INCENTIVISE GRID OPERATORS TO ENABLE AND USE FLEXIBILITY
- RECOMMENDATION 13. IMPROVE PRICE SIGNALS TO INCENTIVISE CONSUMERS' RESPONSE

The regulatory group decided also to work on Recommendation 9 which has some links to recommendation 12 when it comes to constraint management from network operators.

RECOMMENDATION 12. INCENTIVISE GRID OPERATORS TO ENABLE AND USE FLEXIBILITY

In order to cope with increasing investment needs in network infrastructure, NRAs and Member States should incentivise grid operators to make efficient long-term investments that will support EU's Energy and Climate targets for 2030 rather than focus on short-term optimisation. This would reduce the risk of stranded assets at the expense of the generality of distribution network customers.

Measures for achieving this should include:

- *Member States and NRAs should ensure that grid operators are given the tools for optimising investment in networks through the use of flexibility and smart grids solutions. Member States and NRAs should remove regulatory provisions that prevent grid operators from having the option to contract flexibility, while maintaining their position as neutral market facilitators, where applicable. Cost recovery should be assured by NRAs when grid operators are purchasing flexibility for grid services in an efficient way.*
- *Innovative investments (such as smart metering roll out) should be treated adequately and their costs should be recovered on time. Regulation should be technology neutral and incentives for OPEX should be treated, similarly to incentives for CAPEX. Costs of demonstration and pilot projects should not be treated as costs under an efficiency incentive but under dedicated innovation/demonstration and pilot projects incentive.*
- *National regulatory authorities should define, on the basis of a wide stakeholders' consultation, transparent, fair and clear boundary conditions for the market-based, where possible, provision of flexibility services.*
- *Schemes allowing connecting grid customers to reduce their costs through adopting smart technologies (such as variable network access offered as a discounted connection) should be developed.*
- *The European Commission should consider the further funding of smart grid projects which should not be limited to any voltage level.*
- *Coordination between national and EU funding should be enhanced to make best use of the available financing possibilities.*

RECOMMENDATION 13. IMPROVE PRICE SIGNALS TO INCENTIVISE CONSUMERS' RESPONSE

NRAs and Member States should work towards creating a favourable business, regulatory and technological environment designing policies and measures tailored to the different groups of customers to effectively enhance their participation and engagement and to ensure value for money for consumers in the prioritization of investments to be undertaken via:

- *Progressively phasing out **regulated prices** for all customers.*
- *Enabling **innovative grid tariff structures** that incentivise network customers for delivering the needed flexibility to the system, (e.g. through time of use tariff schemes, more power/capacity based tariffs or different contractual options). Distribution network tariffs should be allowed to be cost-reflective and have a transparent allocation of network costs, with appropriate information, gradual transition and protections where necessary.*
- *Assessing the **impact of increasing taxes and levies** within the end-user electricity prices on customers' flexibility and better linking wholesale and retail energy prices that would allow providing better price signals for flexibility to customers.*
- ***Facilitating self-consumption** through efficient economic signals and incentives.*
- *Measures tailored to the different groups of consumers to **effectively enhance their participation**, such as facilitating frameworks for self-consumption, dedicated policies to help consumers control their energy costs and new types of contracts between consumers and suppliers and third party services. Specific benchmarks should be developed to assess ex post the efficiency of policies and ensure that concrete benefits are delivered to final consumers.*

A full assessment of the impact of the different policy alternatives on the respective consumer segments is required, including vulnerable consumers and residential customers for whom the benefits of flexibility will only become possible in the later stages of the development of markets with flexibility. Existing social and environment protections (including energy affordability, and fair and inclusive treatment of all customers should be safeguarded.

Refine Recommendation 12- incentivise grid operators to enable and use flexibility

1. Incentives for innovation

The existing recommendation states "Innovative investments should be treated adequately and their efficient costs should be recovered over an appropriate period of time"

Much of the energy sector is subject to regulation or rules. This reflects the fact that energy is an essential service, the significant presence of monopolies and the imperfect nature of some of the markets. For the potential of flexibility to be achieved, we need to be sure that there are no undue barriers and that incentives on grid operators promote the right behaviour and approach to innovation.

These activities can be broken down into two categories:

- Experimentation or Research and development (R&D) projects to prepare knowledge, test and develop new tools and practices
- Roll out of innovative solutions

1.1 Developing: How to make incentives for innovation more concrete?

National Regulatory Authorities (NRAs) should seek to ensure, if necessary through discussion with central or local government, that the structure of network regulation in their Member State promotes innovation and experimentation with new ways of managing energy networks where there is potential benefit to current or future consumers. This could include any cross-sectoral incentives in national legislation. They should ensure that any undue regulatory barriers to innovation are removed and that the return on investment is appropriate and reflects the nature of the benefit from the innovation and corresponding risks. The initiatives should focus on delivering potential long term value for money and benefits for customers and consumers. This will often go beyond the price control period and regulators should ensure that the price control period does not inhibit efficient long term planning.

NRAs should ensure that grid operators are encouraged to engage constructively with existing and future customers, including new entrants, and those with new ideas and new business models. Grid operators have this responsibility as a neutral market facilitator. Regulators themselves should ensure they adopt a positive approach to innovative initiatives which bring genuine benefits to existing or future consumers. Examples of approaches to innovative experiments and encouraging innovation include ex post reward of innovative approaches, innovation allowances within price control settlements, competitions for experimental projects which have the potential to benefit consumers in the long term, the Commission's Horizon 2020 programme, national schemes to promote research and development, and incentive schemes which involve sharing the efficiency benefits from innovation.

NRAs should also recognise that genuinely innovative projects which involve experimentation may fail to deliver the benefits hoped for. They should consider how to reflect this in the regulatory framework in their country and should treat the costs of failed experimentation fairly. This means that when a network operator would not benefit through a financial incentive from an experiment, for example under cost plus regulation, it is reasonable that the costs of an unsuccessful experiment are still recovered through regulation, except when failure is the result of poor management. There may be a need to distinguish between the level of risk involved in experimentation and the roll out of innovation which has already been trialled. The rollout of innovation which benefits consumers should be appropriately remunerated within the regulatory system. Regulators should consider this separately from experimentation in projects which have potential benefits.

1.2 Who should take action and when

Action should be taken by NRAs with Member States. This is already happening in many Member States but all NRAs should consider the existing arrangements and ensure they are fit for purpose.

2. Treatment of expenditure by network companies

The existing recommendation states that innovative approaches by grid operators should be recognised in the way regulators treat expenditure.

Traditional regulatory approaches can mean a return on investment in capital expenditure and a focus on efficiency savings in operating expenditure, particularly in the short term. This has brought benefits for consumers but could serve as a disincentive for innovation and the use of flexibility both in the short and long term.

2.1 Developing: How to make treatment of expenditure more concrete ?

The use of flexibility and “smart” initiatives, by both DSOs and TSOs and for both electricity and gas, should be treated equally to alternative measures such as network expansion, intelligent assets (e.g. intelligent substations) etc. NRAs should ensure that the treatment of expenditure (such as the rate of return on capital expenditure as opposed to operating expenditure) does not serve as disincentive to explore flexibility or innovation.

Some regulators adopt an approach where their scrutiny and treatment of expenditure is focused on the whole of expenditure rather than the precise amounts of operating and capital expenditure (OPEX and CAPEX). In some cases, rather than focus on interpreting the boundary between OPEX and CAPEX, this can involve determining a fixed proportion of expenditure (whether capex or opex) that will receive a rate of return while the remaining spend is recovered over a shorter period. This reduces incentives on companies to have a bias towards capital investments and contest the precise definition of all spend, since they are guaranteed to earn a rate of return on a set proportion of all expenditure. The precise proportion depends on the circumstances but should be based on the efficient plans or decisions of the companies including in the long term, recognising the level of investment required, also recognising areas where DSOs and TSOs could cooperate in the overall interests of consumers and markets, and areas in which benchmarking is applied where appropriate. Generally, NRAs will not want to increase the overall rate of return for network companies. This is about rebalancing or taking a combined view of different types of expenditure (considering total expenditure) to incentivise the right behaviour and to reflect the payback period of different types of expenditure²². There are also other approaches which reflect the different regulatory structures in each Member State, including the network company having an overall budget for expenditure and being rewarded for efficient use of that expenditure. The overriding principle of avoiding disincentives to flexibility through treatment of expenditure should however be addressed by NRAs.

More generally, grid operators should not be penalised for use of innovative approaches. NRAs should also consider whether to facilitate controlled “experimentation” in innovative ways of managing the grid.

²² Eg these expenditure categories could be:

- Grid infra CAPEX: LT depreciation (eg 25 or 40 years)
- ICT CAPEX: ST depreciation (eg 5 years)
- OPEX for procuring flexibility from the market
- OPEX for R&D related to the LT challenges (indicated in LT plan)
- OPEX for grid operations (subject to benchmarking)

2.2 Who should take action and when

Action should be taken by NRAs, when defining future price controls at national or regional level from now on.

3. Principles for DSOs and TSOs to use flexibilities

Recommendation 12 states:

....."Member States and NRAs should ensure that grid operators are given the tools for optimizing investment in networks through the use of flexibility and smart grids solutions."

....."National regulatory authorities should define, on the basis of a wide stakeholders' consultation, transparent, fair and clear boundary conditions for the market-based, where possible, provision of flexibility services".

This means that the DSOs and TSOs could procure and use flexibility services, where there is benefit, while respecting a set of principles defined at regulatory level.

In order for flexibilities to be used efficiently and securely, they must be able to access electricity markets but also be used by network operators when necessary.

Flexibilities can be procured by DSOs when mitigating grid constraints and by TSOs for constraints management and balancing purposes. Activation of flexibility options by DSOs or TSOs independently might impact each other's grid operations in such a way that system stability or security of supply may become at risk, and would lead to inefficient use of flexibility resources.

Without proper coordination between different markets, flexibilities could be forced to choose which market they want to access, resulting in losses of opportunities detrimental to social welfare.

3.1 Developing the set of principles (How making it more explicit leading to more concrete actions)

The following set of principles should guide the procurement and use of flexibilities for network management by DSOs and TSOs:

Transparency in communication to the market by DSOs and TSOs:

The actual status of the grid must be transparent for all the actors and not only in form of a (one way) signal from the grid operator to only the affected parties. Today these kinds of signals are at least partly sent by DSOs or TSOs to generators and/or large commercial or industrial consumers in case of grid constraints (voltage, current) or congestion (load capacity).

More transparency for all actors such as, for example, distributed generation connected to the grid or flexibility providers, could basically support new business models, which will be more dependent upon the state of the grid and/or the provision of transparent and trustworthy data. To achieve this transparency for all actors, a standard data format for communicating to the market could be

developed. This would help market parties with efficient processing of data from different DSOs and TSOs.

Coordination between TSOs and DSOs

With the rising numbers of decentralised generators or new decentralised demand (e mobility) also the importance of coordination between TSOs and DSOs in a given region and/or even locally (to cope with voltage issues) is increasing. The task of all actors, to jointly support “efficient overall system operation” in managing the load (the physics) alongside with market facilitation towards a single European Energy Market, needs a commonly accepted flexible and simple model based on basic general principles. Possible steps to enhance coordination between TSOs and DSOs are detailed in the chapter about Recommendation 9.

Flexibility products serving different markets

As flexibility products are intended to serve different markets (portfolio optimisation, balancing, constraints management), it is essential that these products are well defined, so that becomes clear which products could be offered to which markets. In that respect BRPs TSOs and DSOs should clearly express their needs²³, so that flexibility providers can develop products which effectively can be used in these markets.

The adequate level of information in relation to demand response activation (implicit and explicit) should allow the TSO and/or the DSO to check i) if the local grid conditions²⁴ allow for the execution of the planned flexibility services, ii) if the connection fulfils the technical requirement to operate on the electricity grid and iii) have the knowledge where in the distribution grid the potential flexibility providers are located. (make sentence better understandable)

Unlock the value of flexibility for constraints management on distribution grids by defining system states

The use of flexibility for mitigating constraints in distribution networks will, in fact, represent a new approach, next to traditional grid expansion, and as such may lead to more optimal grid expenditure. It is important, however, that the interaction between DSOs and markets on how and when to procure flexibility for this purpose, is well defined, so as to enable efficient and transparent market competition.

Network congestion problems should be addressed with non-discriminatory market-based solutions which give efficient economic signals to the market participants and distribution system operators involved.

Definition of system states in the distribution networks is thus key to providing transparency about grid constraints to the market and the creation of flexibility products.

²³ DSOs for example should express their near realtime and midterm needs, expressing requested load reduction, period (time and duration), on-off/ recurrent, and geographical area.

²⁴ In case the conditions are not met, it should follow regulation

In this respect the Traffic Light Concept could be a promising starting point, which could be further developed and experimented in Europe.

It is defined as a concept in which 3 grid states are identified, (green/amber/red), and forms the basis for the definition and implementation of grid state dependent market rules, which are required for a transparent communication between the smart grid and smart markets in case of grid constraints in distribution networks²⁵.

The development of this approach should enable flexible national solutions. However, to make it a more universal approach throughout Europe, stronger efforts and guidance are needed to define interaction between markets and grids – especially in the “amber phase”; in this way it contributes to the further development of the Internal European Energy Market.

Use of flexibility locally

The conditions under which flexibility markets could function, such as local market power, should be investigated. TSOs and DSOs should be allowed in certain circumstances to have bilateral flexibility contracts with customers in this geographical area, where it is efficient to do so and as long as these contracts are transparent and non-discriminatory. Bilateral contracts involving DSOs must not prevent a flexibility market in the future to develop, which is able to deliver flexibility services in that area.

This set of principles should be complemented and agreed upon by EC and Member States.

3.2 Further development of principles and the traffic light concept

The definition of the DSO-market interaction, related to the use of flexibility, is in its early stages.

- In the process of further development of designing solutions to use flexibilities for mitigating grid constraints in distribution networks, the following steps should be considered -The grid- market interaction rules, corresponding to the green, amber and red system state should be defined (for example: “green”: market is fully operating, no grid market interaction, “amber”: signalling to the market the request for flexibility to mitigate existing or predicted grid constraints, “red”: imminent grid stability/security of supply issue: DSO intervention overriding market functioning). The objective of actions to be taken in the amber state would be to return as fast as possible to the green state, and to reduce the number anomalies in the red state, which are currently increasing as a result of further integration of renewables (as today the amber state does not exist).
- These amber states should be made public in advance and be clear for all market players, this to avoid undue interference with market interests and market price developments
- It should be examined how to balance between transparency and consumer data privacy objectives

²⁵ The traffic light concept focuses on constraints management in distribution grids, and is not intended to be used for balancing purposes

- Define the relevant granularity of the grid network segments, for which grid status signals should be communicated to the market and how these status signals are communicated to the market (website, data, protocols etc.).
- DSOs should examine the possible use of flexibility for mitigating grid constraints, following technical and economic criteria and NRAs should allow (for the DSO contracts with flexibility providers/ aggregators for this purpose.
- DSOs and TSOs define a non-discriminatory framework agreement for contracting flexibility from the market, including processes related to requesting, bidding, accepting, activation payment and settlement of flexibility.
- Define the measurement methodology, as basis for the payment and settlement process between the DSO and the flexibility provider/ aggregator, as much as possible in line with existing procedures for balancing to avoid distortions
- It should be examined how gaming in the day ahead market and other markets (requiring DSO to procure flexibility for non-existing loads) can be avoided.
- Investigate how the coordination of TSOs and DSOs should be arranged when accessing the same flexibility products for different purposes. This requires the definition of clear principles and well aligned processes to minimise costs.

As today, DSOs are focused and partly already able to provide information on voltage and active/reactive power at least on transformer level (HV to MV level). Based on this, they could initially provide information on grid status and as such predict the yellow phase (based on actual and historical grid-load and weather data). Depending on grid operators' development and the numbers of RES generators connected, similar data is partly already available on substation (MV)-level. This also applies for the respective data of commercial and industrial users and generators >100 kW.

Therefore it would be required that all important information, to initially introduce the traffic light concept, will be available on distribution level. Further algorithms will have to be developed. These may include existing and future forecast information sent from BRPs to the system operator and DSOs.

Storage can be regarded as load and at the same time as power source, therefore storage providers (also being a flexibility provider) could also benefit from the transparency created by the traffic light concept.

3.3 Who should take action and when

Next steps should be DSOs and TSOs to work on the principles, for DSOs and TSOs to use flexibility and the further development of the market grid interaction for example through the tlc. Next to that it should be examined how the European Standards Organizations' (ESOs) could support the further development of the traffic light concept on use cases, processes, data models, protocols etc.

All stakeholders (EC, NRA, flexibility providers, energy service providers, retailers, BRPs, DSOs and TSOs) should work on the market design topics, related to DSOs and TSOs using flexibilities. Action should start as soon as possible.

Refine Recommendation 13 - Improve price signals to incentivise consumer responses

4 Network tariff aspects of demand side response prices signals²⁶

The existing recommendation: Network tariffs at distribution level, rather than system level, should be cost-reflective – and this is an existing requirement of European law. However, existing charging structures should also not inhibit the use of flexibility or the offer of demand side signals in retail markets. The range of tariffs types for grids tariffs is currently very large, from dynamic tariffs to capacity tariffs. There are also connection charges and a need to distinguish between having a connection and using a connection. There are different objectives in European legislation for grid tariffs, from liberalisation and cost reflectivity to energy efficiency. The DSO tariff structure should also promote the overall efficiency of the energy system, including the use of flexibility by DSOs or the offer of demand side signals in retail markets.

Explaining: WHY? If retail tariffs include a time of use element or promote demand side response, there is a need to consider whether network tariffs should change to reflect this (while also ensuring compatibility with other incentives for management of the grid). If network tariffs inhibit demand side response, this could affect retail markets and use of flexibility more generally.

Developing: HOW making it more explicit leads to more concrete actions?

The focus of this section is on network tariffs rather than on retail tariffs offered to consumers. We also do not address the question of regulated retail prices and the view that these may not help flexibility.

It is clear that there is a need to review distribution network tariffs in the light of developments in demand side response and flexibility. These may include price signals to consumers through retail tariffs, greater flexibility in connecting renewable generation, saving on infrastructure costs, and the increasing possibility of economically and technically viable storage. There is however no clear view as to how network tariffs should change. There is therefore a need for more detailed analysis of different options.

The first, basic, objective should be to ensure that network tariff structures at distribution level in each Member State, including where applicable at regional level, do not inhibit the development of flexibility and demand side response²⁷. The Mercados study for the Commission has shown that there

²⁶ This is about regulated network tariffs and not about retail tariffs for consumers

²⁷ This follows on from Article 15(4) of the Energy Efficiency Directive which states that tariffs should not inhibit energy efficiency.

are a large number of different tariff structures across the EU. NRAs should ensure that these do not present an undue barrier to the development of demand side response or use of flexibility. They should reflect the characteristics of prosumers, including both use of the system and connection charges. NRAs should also consider any possible disadvantages of dynamic network tariffs.

The second objective should be to examine whether there should be any significant change in the structure of charges. This could include analysis of (a) whether there should be a time of use element (b) whether charges should be based more on capacity (c) whether charges should reflect different services offered by distribution networks and (d) whether discounts might be offered. A consideration in all this should be the need for a coherent system wide approach and the benefit versus the cost of changing or administering the charging structure.

We recommend developing a clear overview of the pros and cons of the four described tariff structures. In this overview a differentiation between using a connection and having a connection could be taken into account

A further issue is the extent in each Member State to which the signal at network level is passed on to consumers in retail bills and the implications for network tariff design. We should also consider the need to avoid confusing end consumers and to ensure they understand their bills. Any tariffs seen by consumers should be as simple as possible.

In pursuing both of these objectives, NRAs should take account of research into consumer behaviour and should consider what this means, alongside other requirements of grid tariffs such as cost reflectivity and how to protect vulnerable customers, for price signals in network tariffs.

WHO? Logically this work should be led by NRAs.

WHEN? Over the next two to three years but with analysis of different options starting now.

Refine Recommendation 9 – Communication and coordination for secure grid operation

Recommendation of the EG3 report on flexibility states:

“DSOs and TSOs must have in place constraint management procedures in order to tackle constraints on their networks, including the right to require modification of flexibility activations in accordance with these procedures”.

With massive integration of DER and or EV, traditional electricity grid expansion may, from a societal perspective, become a too costly solution to mitigate grid constraints, this leading to more innovative solutions such as using flexibility.

To ensure safe, secure and efficient distribution and transmission network operation and development, both the DSOs and TSOs must therefore have access to flexibility services and all technical relevant data needed to perform their activities both at pre-qualification stage and in real time (or close to real time).

This can also be important for DSO gas grid if more bio-methane plants are injecting into the DSO grids or if more gas power plants of various sizes are built in exchange of coal powered plants. As these back-up plants of the future will be needed on dark windless days – probably in winter - their peak load could add up to the regular heating and industrial load. For these occasions short term flexibilities will be needed by the DSO.

Activation of flexibility options by DSOs or TSO independently might impact each other’s grid operations in such a way that system stability or security of supply may become at risk.

Implementation (next steps to make it more concrete)

The recently started dialogue²⁸ between DSOs and TSOs on communication and coordination challenges related to flexibility should be continued and should be augmented with dialogues on national level (where implementation will take place). Relevant and related topics as addressed in the EU network codes²⁹ could also be a valuable input for this dialogue.

The following objectives should be realised:

- Greater long term planning, wider stakeholder engagement and transparency at DSO level to inform TSOs and wider stakeholders. DSOs should be required to develop and publish long term plans for their networks, engaging effectively with their customers and wider stakeholders in this process. This would inform the Ten Year Network Development Statements, and better system planning, with NRAs overseeing the development and publication of these plans, building on the existing requirements on DSOs in Article 25(7) of the Electricity Directive. The Commission could support this.

²⁸ The DSO/TSO platform

²⁹ In particular the NC on operational planning & scheduling

- TSOs and DSOs should increase their cooperation, building on existing initiatives. In particular, system operation and emergency procedures should be designed, agreed and implemented in close coordination, taking into account their respective responsibilities.
 - DSOs and TSOs to coordinate system planning. Exchange³⁰ on a regular basis of elementary electrical models of the networks could be a starting point. Generation and demand forecasts could also be exchanged between system operators.
 - DSOs and TSOs shall exchange relevant operational data with each other, including their available network capacity at the TSO/DSO interface. They will have to agree on their data exchange processes and data models, formats, communications protocols used in these processes. When congestion in areas is predicted or occurs, DSOs and TSOs will make this information available to all concerned parties (BRP, aggregators, suppliers etc.).
 - Grid users should have access to all markets where they can value their flexibilities, and therefore be able to interact with system operators (DSOs and TSOs) who are responsible for operational security and the quality of supply of their respective networks. For flexibility providers and customers it should be clear "who" to contact for "what".
- A clear governance need to be in place:
- TSOs are responsible for overall system balance and security (frequency).
 - DSOs are responsible for the distribution of energy on distribution grids and mitigating grid constraints.
 - DSOs and TSOs collect data, from grid users connected to their networks and from flexibility providers and BRP's who provide them services and have an open exchange of this data, relevant for their tasks.
 - A hierarchy in problem resolution should be established (eg. system problems have the highest priority, local problems should be solved locally).
 - Further procedures to be designed at national level for demand side response and distributed generation regarding controllability and congestion management.
- Network operators must express their constraints to each other in advance, otherwise real time operation is not possible. Relevant activation of flexibility – or its modifications- by DSOs or TSOs shall be exchanged with each other. Regulated revenues should allow the recovery of these costs in a way that does not distort the optimal economical arbitrage for the system between distribution and transmission system grid reinforcement/development versus costs of managing grid congestions without this grid extension.

³⁰ In Germany an annual process between the TSO and the DSO is implemented, where the DSO is calculating the needed capacity for the next 12 months as it is part of the grid booking process. The technical university of Munich has done extensive work on the procedures and on the theories, especially how kWh and kWh/h are developing with further energy efficiency investments at the customers' sites.

Who should take action

The European Commission should work together with NRAs, DSOs and TSOs on the above issues and identify necessary actions. Existing country experiences could be shared between the actors.

When:

As creating a culture of cooperation requires time, as soon as possible, so that also the implementation of the first network codes can benefit from this.