

Public consultation feedback on the Demand Response Through Aggregation – a Harmonized Approach in the Baltic Region document

Question 1.1 - The essence of DR and the role of aggregator have been explained in the report. The TSOs see many benefits from including the DR in the electricity markets (as described in chapter 1). Please state benefits and risks you see in regards to a common Baltic framework for DR introduction in the balancing market? Please explain your point of view.	
BRP/Supplier responses	TSOs' comments
<p>Stakeholder 1 Benefits: More participants in the system could cause price decrease or increase when small volumes are needed regarding on the activation (to increase or decrease consumption). Risks: There is room for aggregator manipulations, as some conditions are forced on BRS, such as mandatory electricity sale based on reference price. Very important role plays baseline consumption methodology.</p>	<ul style="list-style-type: none"> • TSOs agree that increase in the number of participants in the market should decrease the energy price driven by the increased competition among the market participants as well as the influx of energy characterized with significantly lower costs per MWh. Therefore, it is expected that DR will reduce the overall balancing price, have positive impact on retail price and overall system security, compared to the situation where DR is not included in the market. • TSOs are expecting that the use of DR in balancing market will increase the system security in the Baltics where historically the balancing market liquidity has been limited due to the relatively small market size and the use of emergency reserves for balancing has been needed. • TSOs recognize the importance of reliable baseline methodology. A well-designed baseline methodology is simple, transparent, accurate and limits the risks of abuse by market participants. The initial analysis of potential baseline models has been presented in the report. During 2018 TSOs will conduct further analysis on baseline methodology. Results will be published and reviewed together with stakeholders.
<p>Stakeholder 2 DR itself is a necessary service in the market. It is defined in the report as a change in consumer's energy consumption/generation due to a reaction to price signals or by other measures. Today there are no restrictions for independent agregators to enter the market and it does not need any consent from electricity seller. Participation of DR in <u>balancing market</u> is one possible part of DR services and is much more complicated as energy transfer between different BRPs is involved. Integrated aggregation does not need very special regulation and should be encouraged in the market (smaller minimum requirement for capacity etc) Independent aggregation in the balancing market is more complicated and requires an approach which is not discriminative to other market players.</p>	<ul style="list-style-type: none"> • TSOs' goal is to create a common market framework that enables independent aggregators to enter the market without unnecessary restrictions while at the same time being non-discriminatory to all market players. • Currently, in the Baltics the only way how the independent aggregators can participate in the energy markets is via pilots that are temporary. As of now, the final market framework in the Baltics is not yet approved since the implementation of changes in national energy markets is closely linked with the legal framework for internal electricity markets set out in the Clean Energy Package which as of 03.2018 is not yet in force. • TSOs are expecting that the use of DR in balancing market will increase the system security in the Baltics where historically the balancing market liquidity has been limited due to the relatively small market size and the use of emergency reserves for balancing has been needed. The DR is characterized by higher flexibility as well as by significantly lower costs per MWh. Therefore, it is expected that DR will reduce the overall balancing price, have positive impact on retail price and overall system security, compared to the situation where DR is not included in the market. • Market framework supporting both integrated and independent aggregation is strongly endorsed by existing and upcoming EC regulatory framework. TSOs emphasize that disallowing independent aggregation or preferring one aggregation type over another is considered to be a discriminatory market practice.

	<ul style="list-style-type: none"> TSOs encourage BRPs to use the integrated aggregation and would like to emphasize that integrated aggregation is something that BRPs can use also by themselves for portfolio balancing. When the flexibility user is BRP, then BRP can have the bid requirements they like. But when the flexibility is offered to mFRR market there are very clear standard product rules which will apply to all offers and no exceptions can be made.
<p>Stakeholder 3 We see the benefits of the demand side response in case the system is fair for all market participants. The important aspect is to take into account that the demand reduction by end consumers is essentially sales of electricity to aggregator after the spot purchases have been executed. Therefore the balance manager has to be compensated for any imbalances due to aggregation in the market model. Due to difficult nature of the concept for end consumers it makes sense to have either a central compensating body or need for agreement between the balance manager and aggregator for such aggregation to happen.</p>	<ul style="list-style-type: none"> TSOs' goal is to find a market framework that is non-discriminatory to all market actors. It is important to state that DR in its essence should have many beneficial socio-economic effects, among them decreasing the regulation price and increasing the size of balancing market and liquidity, compared to the situation where DR is not included in the market, therefore being beneficial also to BRPs for decreasing their imbalance as well as for other market players (TSOs, DSOs, all consumers, etc.). TSOs would like to note that DR not only relates to load reduction. Consumer's load can be both increased and decreased via DR. Furthermore, aggregation services include not only DR but also distributed generation and storage. The final market framework should accommodate all types of aggregators. TSOs recognize that entrance of independent aggregator might bring some changes to the business processes of stakeholders. However, TSOs must point out that requiring aggregator to ensure BRPs consent before entering the market via pilot or otherwise is a direct violation of upcoming EC regulatory framework. TSOs' goal is to propose market framework that is non-discriminatory towards all market parties. TSOs recognize that the concept of DR (as well as distributed generation and system elasticity products in general) is relatively new in Baltics. TSOs will continue active communication and dialogue with stakeholders to facilitate better understanding about processes and decisions in regards to market framework.
BRPs & DSOs responses	TSOs' comments
<p>Stakeholder 4 We support the Baltic TSOs aim to have common framework for DR introduction in balancing market. However, we would like to underline, that consumers' metering data collection, validation and Exchange processes might differ between countries. The difference might affect the data exchange processes and has to be investigated during the pilot project</p>	<ul style="list-style-type: none"> TSOs appreciate stakeholder's support for common DR framework in the Baltics. TSOs agree that the differences regarding consumers' metering data collection, validation and exchange in the Baltic States are important aspects that should be taken into account. The current principles of metering data exchange processes in the Baltics are sufficiently aligned to not to restrict the set-up of a common market framework.
<p>Stakeholder 5 Benefits: - If aggregator is operating in all three countries, then the process of setting up technical framework and ensuring suitable quality is much faster and not tailor-made for each country - For aggregator, it is easier to integrate its platform with different TSOs</p>	<ul style="list-style-type: none"> TSOs appreciate stakeholder's support for a common DR framework in the Baltics. TSOs agree that harmonized market framework reduces the cost of doing business for market participants operating in two or more countries as well as set-up costs for new market entrants considering cross-border operations.
Aggregators' responses	TSOs' comments
<p>Stakeholder 6 Benefits: - More stable electricity grid, Lower grid fees (socio-economic effect), Lower electricity prices, Bringing consumers to the market, Rise of consumers awareness, Bringing consumers attention to their electricity consumption results in lower electricity consumption. Lower CO2 emissions,</p>	<ul style="list-style-type: none"> TSOs agree that there are considerable socio-economic benefits of introducing Demand response in the Baltic markets. Among the benefits TSOs are expecting is that the use of DR in balancing market will increase the system security in the Baltics where historically the balancing market liquidity has been limited due the relatively small market size and the use of emergency reserves for balancing has been needed. The DR is characterized by higher flexibility as well as with significantly lower costs per MWh. Therefore, it is expected that

<p>- We must remember that DR can affect consumers consumption in a positive way by making the consumption pattern generally more stable. That affects BRPs/electricity sellers business in a positive way.</p> <p>Risk:</p> <p>- As we only have one aggregator in the market and many BRPs, there is a risk that the rules will be made in a way that allows old electricity market participants to prevent consumers and independent aggregators to enter the market. Therefore the rule makers must have the long term view and social benefits in mind.</p> <p>- BRPs/electricity sellers have very many things they need to consider when predicting consumers electricity consumption. DR is just one more thing to consider and add to the risk margin of the existing calculations.</p> <p>- BRPs/electricity sellers are operating in a low margin business when we are talking about energy trading only. Therefore they may see a possibility to earn revenue through asking compensation for the DR events.</p>	<p>DR will reduce the overall balancing price, have positive impact on retail price and overall system security, compared to the situation where DR is not included in the market.</p> <ul style="list-style-type: none"> • TSOs recognize that it is important to remove entry barriers to new market entrants. • TSOs' goal is to propose a market framework that is non-discriminatory towards all market parties and enables the DR providers, integrated as well as independent aggregators and also separate large-scale consumers, to enter the market.
<p>Stakeholder 7</p> <p>Stakeholder 7 supports Baltic TSOs efforts to develop a common approach to the introduction of DR in the balancing market, all the more since this market is to be unified soon. Stakeholder 7 sees this as a part of a more general approach whereby DR is to be allowed to participate to all electricity markets, as per the European clean energy package, as an alternative to generation. It is important to ensure, from the start, a robust consistency among the approaches adopted for those various markets, be it for balancing or plain electricity market (e.g. day ahead). Indeed, in all markets, demand reduction (DR) can be used as an alternative to generation, and hence DR aggregators should be fully accepted to compete with generators, on an equal footing, as proposed by the European commission in the above mentioned package.</p>	<ul style="list-style-type: none"> • TSOs appreciate stakeholder's support for common DR framework in the Baltics. • TSOs are carefully following relevant existing and upcoming EC regulatory framework to ensure that the Baltic markets are compliant with guidelines set out. • TSOs agree that DR should be included to participate to all electricity markets and plan to continuously develop the market framework for this to be achieved. • Based on experiences in other EU countries different market timeframes may require different approaches, however, TSOs agree that in case such differentiation is necessary, consistency among the frameworks should be ensured.
<p>National Authority's response</p>	<p>TSOs' comments</p>
<p>Stakeholder 8</p> <p>As the Baltic market is relatively small and in the future will be even more tightly interconnected and interdependent, it is reasonable to have a joint approach to the electricity market. This also includes having a joint approach to DR in the Baltic market. The market functions, when there are sufficient bids and reasonable or no entry barriers to new entrants. Having different approaches for DR in each Baltic state, will increase costs for the consumers and negate the expected positive outcomes of introducing DR. If possible, the common framework should also include FI and SE (or facilitate DR between the Baltics and Nordics), as our system is largely interconnected with the Nordic system.</p> <p>The main risk for having a common approach is settling for the lowest common denominator – e.g. introducing relatively high entry barriers or removing most of the money from the DR market due to one party's interests.</p>	<ul style="list-style-type: none"> • TSOs appreciate stakeholder's support for the common DR framework in the Baltics. • TSOs agree that a harmonized market framework reduces the costs of doing business for market participants operating in two or more countries as well as reduces the set-up costs for new market entrants considering cross-border operations. • TSOs agree that it is important to remove entry barriers to new market entrants. TSOs' goal is to propose a market framework that is non-discriminatory towards all market parties. • TSOs carefully examine the benefits of harmonized models in the context of compromises each country has to make to obtain harmonized model. Based on the analysis TSOs have performed until now, the expected benefits of the application of a harmonized model outweigh the expected shortcomings from the compromises made. • TSOs already cooperate closely with Finnish TSO which is an observer in the Baltic DR working group. The Baltics and Nordics exchange data on pilot studies and other relevant information. • TSOs agree that cooperation with the Nordic countries should be explored and strived towards when deemed mutually beneficial. TSOs are keen to cooperate with NRAs towards this goal.

Question 1.2 - TSOs propose two alternative approaches for introduction of independent aggregation (details in chapter 4.2): Aggregator → Supplier Settlement Model Consumer → Supplier Agreement Model Please state benefits and risks for both of the alternatives. Please indicate the preferred option and argumentation for the choice.	
BRP/Supplier responses	TSOs' comments
<p>Stakeholder 1 We prefer Aggregator - Supplier Settlement Model because there is an agreement between interested parties. With Consumer - Supplier Agreement Model there are a possibility that mistakes will occur and BRP will be punished with imbalance.</p>	<ul style="list-style-type: none"> • TSOs would like to clarify that none of the proposed models require mandatory legal relationships between Aggregators and BRPs (Suppliers). Only voluntary agreements are possible. • TSOs would like to clarify that in Consumer-Supplier Agreement model the voluntary agreement between aggregators and suppliers (BRPs) is also possible, even if this model doesn't foresee a financial compensation to suppliers. TSOs would like to emphasize that cooperation between market participants is always a way forward for finding the best solutions in the market. • TSOs recognise that introduction of multiple BRP's per one metering point is challenging. The objective of a baseline methodology is to determine energy delivered via DR activation and accordingly attribute imbalance created by failure to deliver requested energy amount to the aggregator (aggregator's BRP).
<p>Stakeholder 2 In case of independent aggregation both approaches put some additional burden on the Supplier. If there is no limit to customers participating in balancing market and the number of end-customers is large, a separate IT solution must be developed to Data Warehouse, where it is possible to identify hourly amounts that are sold by individual clients for balancing service (mFRR product) and in case of Consumer-Supplier model also Sellers need to update their IT systems to invoice all customers accordingly.</p> <p>From these two approaches we prefer the Aggregator-Supplier settlement model as to our opinion in case of the other model it is very difficult for the Supplier to start communicating to all customers the new principles of invoicing for sold balancing product and also it is difficult for the customers to understand what they are invoiced for.</p> <p>It must be clear to all market participants that the price that TSO is paying to the customer through aggregator in case of the Consumer-Supplier model for balancing service/mFRR product (price EUR/MWh) consists of two components – electricity price and compensation for „balancing the system" or „not consuming the electricity". Basically customer is selling electricity (through aggregator) to TSO with regulating market price and is then buying it back from the Supplier. However it can create big misunderstandings for the customer who does not understand why he has to buy the electricity from the Supplier that he did not consume. The Aggregator-Supplier settlement model already takes the electricity component out of this settlement and is much more clear to customer and aggregator.</p>	<ul style="list-style-type: none"> • TSOs recognize that entrance of independent aggregator might bring some changes to the business processes of stakeholders, regardless of model chosen. This, however, is not a sufficient reason to enact market barriers or otherwise violate EC regulatory framework. That being said, TSOs, while analysing different options, are careful to take into account costs associated with a particular market framework (including IT development of TSO, DSO, BRP). • TSOs would like to emphasize that none of the compensation models proposed oblige BRPs (Suppliers) to start to fulfil new function or to develop new IT system. Accordingly, TSOs would strongly recommend each BRP to carefully evaluate whether any changes are really necessary. • TSOs agree that in case of Aggregator-Supplier model, reference price methodology is pivotal for ensuring non-discriminatory market framework. Accordingly, TSOs consider that such price should be set by NRAs. • TSOs recognize that the concept of DR (as well as distributed generation and system elasticity products in general) is relatively new in the Baltics. TSOs consider that while there is a room for discussion on the topic of the exact nature of the product, the DR resource owner trades, it is important to remember that balancing market is organized energy exchange and introduction of DR into balancing market is expected to reduce the overall balancing price, have positive impact on retail price and overall system security, compared to the situation where DR is not included in the market. TSOs will continue active communication with stakeholders to facilitate better understanding about processes and decisions in regards to DR market framework. • TSOs agree that costumers who sell their flexibility may have as a consequence a consumption pattern that is more difficult to forecast. Suppliers have the opportunity to take

	<p>this influence into account when setting the marginal price. However, a customer cannot be obliged to pay separately for the electricity they did not consume.</p>
<p>Stakeholder 3 Clearly only Aggregator -Supplier Settlement Model (with central settlement body) should be considered to avoid mess in end consumer communication and to make this model work at all due to potentially contradicting messages from Suppliers and Aggregators to the end consumers. This market needs clarity for the concept to succeed that can only be provided with full transparent „marketplace" organized by the TSOs.</p>	<ul style="list-style-type: none"> • TSOs' goal is to propose a market framework that is transparent, well explained and non-discriminatory towards all market parties. When the rules and responsibilities in market framework are set up clearly then both the proposed models would be clear and transparent. • TSOs recognize that the concept of DR (as well as distributed generation and system elasticity products in general) is relatively new in the Baltics. TSOs will continue active communication with stakeholders to facilitate better understanding about processes and decisions in regards to market framework.
<p>BRPs & DSOs responses</p>	<p>TSOs' comments</p>
<p>Stakeholder 4 We understand the importance to leave a possibility of choice for aggregator to enter the market either throughout the agreement with TSO or agreement with BRP/Supplier. However, it is unclear how the later choice would be affected in case the consumer would decide to switch the supplier. We would like to underline the risk, that such option could result market concentration and create a barrier for supplier switching in long run. Thus, reducing the competition on retail market. Further under Aggregator -> Supplier Settlement Model description (4.2) it is stated, that "For Aggregators unable to enter into business relationships with BRP/Supplier". The statement rise a question if aggregator is required to prove that he was unable to get an agreement with BRP/Supplier before he can choose this option. We would suggest to describe a detail process for aggregator to enter the market as well as how the information exchange between all parties will be organized. These processes should also be a subject of public consultation.</p>	<ul style="list-style-type: none"> • TSOs agree that introduction of new products/new market participants in the market should not create barriers for consumer switching. • TSOs would like to note that Aggregator-Supplier settlement model imply voluntary agreements between independent aggregator and relevant BRPs. Meaning that a market participant may choose to operate via central settlement arrangement instead of having the direct agreement with supplier(s) if that is in its best interest, proving its inability to get the contract with supplier/BRP is not necessary for aggregator, but at the same time notifying the TSO about the agreement reached is important in order to eliminate the aggregator from central settlement process with this BRP/Supplier. • The Annex II sections B and C of the TSOs' report included general description of the requirements for aggregators to enter the market. TSOs recognize that further elaboration on certain aspects (e.g. technical and telemetering requirements) are necessary.
<p>Stakeholder 5 Aggregator => Supplier Settlement Model Benefits - For Aggregator, it is much easier to aggregate customers, because there are less contracts with different parties; - Road to market for Aggregator is faster with Agr=>Sup settlement model without additional agreements with BRP/Supplier.</p> <p>Risks - All BRP costs must be compensated. There are additional market costs to BRP/Supplier, also from trading on intraday markets and future intraday auctions. If TSO pays only day-ahead Spot price, then it is less then total costs. Who pays the difference? This may introduce ill-behaved Aggregator who can systematically get intraday electricity with day-ahead price in cases when intraday price is high, whereas for BRP/Supplier the average purchase cost increases with Aggregator activity; - BRP must know near real time about all their portfolio measure points what amounts are planned to participate in DSR event and what was the actual DR amount for all DSR events.</p> <p>There are serious shortcomings in this model. Settlement at Day-Ahead electricity market price does not compensate cost of acquirement of electricity to the Supplier. The liquidity of</p>	<ul style="list-style-type: none"> • TSOs would like to point out that there is no noteworthy difference expected in the number of agreements required for aggregator to enter the market, between the compensation models proposed. Both models suggest voluntary agreements between market participants and every balance service provider (large generator or aggregator) needs to conclude an agreement with the relevant TSO. • TSOs would like to point out that the spot price in the report was used just as an example for reference price due to the reason that currently spot price is considered as an underlying market electricity price. In Finland spot price is being used as a reference price in their mFRR pilots, it is also used in France and some other EU countries. Nevertheless, TSOs agree that the market structure is changing. Therefore, in case the future market framework in the Baltics will need the reference price, a more profound analysis is needed to find the suitable reference price for our region. Additionally, it is important to state that in the final choice the reference price mechanism will be coordinated and agreed by NRAs. • TSOs recognise that introduction of multiple BRPs per one metering point is challenging. The objective of a baseline methodology is to determine energy delivered via DR activation and accordingly attribute imbalance created by failure to deliver requested energy amount to the aggregator (aggregator's BRP). • TSOs agree that data exchange between market participants is an important aspect to be further elaborated. Proper data exchange should allow BRPs to better manage their portfolio. The benefits and costs of providing BRPs with near real-time data on DR activations, given

<p>intraday market is increasing. Higher short-term trading volumes prior to delivery hour will fundamentally change the role of intraday market - from balancing management to a regular trading frame. Day-ahead Spot price is no longer an underlying market electricity price as reference basis and the value of electricity is dynamically changing until the delivery period starts. Because only the Supplier/BRP is aware of the actual value of electricity in real time, then in principle electricity aggregation can successfully be done only by establishing direct business relations with BRP. Indeed, the most efficient solution is that BRP and Aggregator are one party ("Integrated model").</p> <p>Consumer => Supplier Agreement Model</p> <p>Risks</p> <ul style="list-style-type: none"> - Please see arguments presented in point ii). This is not an acceptable model to consider. - IT systems and compensation errors. E.g. aggregator has some system errors and doesn't communicate necessary information to BRP. 	<p>the current metering data exchange timeframes, should be carefully examined. Currently the preliminary hourly data is available on the next day and the final hourly data the next month.</p> <ul style="list-style-type: none"> • TSOs are organizing pilot studies to test technical validity as well as data exchange processes. To extent it is technically feasible, the monitoring of the pilots should be available to different market participants involved (TSOs, aggregators, Consumers providing flexibility, Suppliers/ BRPs).
<p>Aggregators responses</p>	<p>TSOs' comments</p>
<p>Stakeholder 6</p> <p>The compensation mechanism is demanded by BRPs and electricity sellers. When looking from consumers or aggregators side then compensation must not be paid because of following reasons:</p> <ol style="list-style-type: none"> 1. Looking from consumers perspective, <u>consumers are selling flexibility</u>, not electricity. Flexibility is not a resource that consumers have had all the time. 2. Flexibility is a resource that must be created. It involves investments into technology, IT and change of the status quo. It also brings rise of risks, rise of discomfort, running costs, etc. 3. Lets take an imaginary 1MW ventilation and cooling device that normally consumes 500kWh off in one hour with the NPS price of 40eur/MWh. We turn it off for 1h for mFRR services and earn 60eur/MWh from the TSO. Then it is automatically turned on the next hour. Then the device has to work ~2 times harder (full power of 1MW) to restore the normal conditions in the building (e.g. air quality) and consumes 1MWh with the NPS price of 40eur/MWh. <p>Calculations show:</p> <p>In the first hour we save 20eur (not consuming) and earn 30eur (from the TSO). Total win is 50eur.</p> <p>In the second hour we spend 40eur to restore the needed conditions. Normally the consumption would have been 500KWh and the cost would have been 20eur. Total loss in 2nd hour is -20 eur.</p> <p>Total win in two following hours is 30 eur.</p> <p>If there rises a need to pay NPS price compensation -20 eur to BRP/electricity seller, then the total win is 10 eur for the consumer.</p> <p>If an independent aggregator has 20 MWh to offer to the market then the total earning is 200 eur.</p> <p>In Baltics we estimate that the average flexible load per consumer is ~50kWh. Then the earning per every consumer is only ~0,5 eur.</p> <p>Average investment per consumer is ~2000 eur. If there are 500 „events" in one year, where consumer can participate, then the payback period is more than 12 years.</p>	<ul style="list-style-type: none"> • TSOs agree that DR products enhance system flexibility and are needed. TSOs agree that DR resources allow to increase the liquidity of the energy markets and provide customers with more opportunities to participate. TSOs are especially keen to improve liquidity in the Baltic balancing market where historically the liquidity has been limited by the relatively small market size. Lower balancing costs are associated with significant social benefits due to the resulting lower retail price, diversifying energy-related services to the customers and opportunities to specialize in flexibility services. • TSOs consider that while there is room for discussion on the topic of the exact nature of the product the DR resource owner trades, it is important to remember that balancing market is organized energy exchange. EC regulation on guidelines on electricity balancing Article 49 imposes that BRP's declared position should be adjusted in accordance to balancing energy delivered/received within the imbalance settlement period. This should not be ignored. • TSOs consider that given the data that is currently available to TSOs and the multitude of different factors with expected opposing effects on energy prices, it is premature to claim the extent to which DR will impact the Baltic energy markets. Accordingly, TSOs are organizing pilot studies to learn more. • TSOs' goal is to propose a market framework that is transparent, well explained and non-discriminatory towards all market parties. • TSOs agree that storage is also system flexibility resource. TSOs have not considered differentiating compensation mechanisms based on the flexibility resource type.

<p>Life expectancy of installed technology is 10years. If we are talking about private consumers, then we can not see what is the stimuli for them to join the market. Our opinion is that to have the DR capability in our region, we must not consider compensations to BRPs/electricity sellers and/or the regulation market prices must be many times higher. According to our experience, considering the investment size and capital costs, consumers will most probably choose implicit DR. In total they will save more money and they are not exposed to risks and problems that come with explicit DR. If compensation needs to be paid, then we must consider: 1. the socio-economic effect that demand response has for the society: Less CO2 emissions, integration of renewable generation, lower investment needs for DSOs that bring lower grid fees, lower investment needs for TSOs that bring lower grid fees, lower electricity prices, etc... 2. Actual resource of flexibility: Battery – Regulation hour NPS price as a compensation can not be implemented. Battery is logically charged during the lowest price hours (usually night time) and the consumer pays for that energy anyway. Storage through preheating and pre-cooling – consumer pays for electricity in the night time or in lower price hours to have the flexibility of consumption during the potential critical hours if/when TSO may order regulation. In all possible cases the consumer pays money to its electricity seller for the ability to have flexibility. It is done through consuming more electricity before the regulation or after the regulation service is provided to the TSO. Aggregator to Supplier Settlement Model: It is good, that aggregator does not have to be dependent on BRP. Day-ahead spot price as a reference price is an unfair option.</p> <p>Consumer to Supplier Agreement Model: It is good, that aggregator does not have to be dependent on BRP. BRP/electricity seller calculates the risk margin for every consumer separately, according to its consumption pattern. So if the consumer is involved in demand response services, the electricity seller can calculate the potential risk in the risk margin. Our opinion is that market will work in favor of consumers here. So we must not notify BRP/electricity seller about aggregated consumers or consumers who can independently provide flexibility services.</p>	
<p>Stakeholder 7 Stakeholder’s full response is given in Appendix 1 . Some extracts from the response:</p> <p>In order to allow the participation of "small" consumers (including commercial and residential) who cover the main potential to develop DR (as described in the EC impact assessment of the package), it is necessary to establish a model that does not require consumers to be individually</p>	<ul style="list-style-type: none"> • TSOs agree that participation of small and medium DR resource owners should be organized via aggregator. Both models proposed in the report support unrestricted consumer access to aggregators. • TSOs take notice that Stakeholder 7 suggests an alternative compensation model for TSOs to consider. In the TSOs report the model is named "Socialized Settlement Model". Currently, EC regulation on guidelines on electricity balancing Article 49 imposes that

<p>involved or impacted, i.e. at retail level, by settlement rules required at wholesale level, i.e. for the provision of DR as an alternative to generation, in balancing or other markets. Therefore the second of the models above (Consumer à Supplier Agreement Model) should not be imposed. If ever it is allowed, there should still be another model allowing consumers to participate via an aggregator, and have only the aggregator involved in market settlement, not individual consumers.</p> <p>An alternative model to those developed in the consultation document is needed to comply with this aim. In particular, the first model would not comply with the provision quoted in the document whereby "most importantly, aggregators are not required to pay compensation to supplier/generator". This must apply equally to all markets, including balancing. This model is usually called the "net benefit model". We will describe it below, as it has not been analysed yet in the document. However, it is probably the only most effective model to implement the principles set forth by the existing and future legislation at European level.</p>	<p>BRP's declared position should be adjusted in accordance to balancing energy delivered/ received within the imbalance settlement period. The proposed use of this model violates this condition.</p> <ul style="list-style-type: none"> • TSOs consider that given the data that is currently available to TSOs and the multitude of different factors with expected opposing effects on energy prices, it is premature to claim the extent to which DR will impact energy markets. Accordingly, TSOs are organizing pilot studies to learn more.
<p>National Authority's response</p>	<p>TSOs' comments</p>
<p>Stakeholder 8 As DR is new to our region (relatively new to other EU countries as well), we should not prejudge the known and unknown models. Therefore, the market principles that are to be adopted for DR should be as future proof as possible (allow for known and novel models to be used).</p> <p>It should also be noted, that the entry barriers for the independent aggregators should be as low as possible. Current IT systems should enable to accept and process large amounts of data (e.g. bids) without much effort, therefore putting a high limit to the size of the bids should be thoroughly considered. The lower the bid sizes are, the more participants can enter the market and the more distributed (secure) system architecture we can achieve.</p>	<ul style="list-style-type: none"> • TSOs recognize that it is important to remove entry barriers to new market entrants. TSOs' goal is to propose a market framework that is non-discriminatory towards all market parties. • TSOs agree that lowering bid-size limits is beneficiary for removing market barriers. Currently in Balance service providers in the Baltic Balancing market already enjoys one of the lowest minimum bid sizes in the EU (1 MW). 1 MW is also the suggested minimum bid size in ENTSO-E standard product requirements.

Question 1.3 - The TSOs hope to gain vital insight into different market models via pilot projects conducted in the region (as described in chapter 6). Please state benefits and risks you see for pilot projects. Which of the alternatives would be the most interesting for piloting? Please explain your point of view. Would you be interested in participating in the pilot and if yes, to what capacity?	
BRP/Supplier responses	TSOs' comments
<p>Stakeholder 1 There should be possibility for BRP to become an aggregator. This way DR will be controlled. While BRP has all the infrastructure it will be easier to implement data exchanges. No additional agreement will be needed. All models, that could come to life should be tested as pilots in order to identify risks and prevent manipulation. Stakeholder 1 is interested in participating in pilots. We could test integrated model, possibly also independent aggregator model. Capacity will be aggregated based on consumers – not yet known.</p>	<ul style="list-style-type: none"> • TSOs note and appreciate that Stakeholder 1 is interested in participating in pilot studies. • TSOs would like to point out that BRPs are welcomed to assume the role of an aggregator. BRPs have the possibility to act both as integrated or independent aggregator. • TSOs see the value of testing considered models before implementing. After the initial analysis done in the report the two potential models that TSOs proposed are being tested - in Estonia the pilot for Consumer-Supplier Settlement model and in Finland the Centralized Settlement model is tested which is part of the Aggregator-Supplier Agreement model, presented in the report. TSOs are sharing the pilot knowledges with each other in order to choose the best market framework for the future. • TSOs recognize that introduction of an independent aggregator is more challenging, however market framework supporting both integrated and independent aggregation is strongly endorsed by existing and upcoming EC regulatory framework. TSOs emphasize that disallowing independent aggregation is considered to be a discriminatory market barrier. Furthermore, excluding independent aggregator from the market would have negative consequences as it would limit the positive impact that it is expected DR and aggregation will bring to the Baltic balancing market. Higher number of participants in market is expected to increase the market liquidity, reduce the overall balancing price and therefore have positive impact on retail price, compared to the situation where DR is not included in the market.
<p>Stakeholder 2 For piloting we see as best alternative integrated aggregation model or Aggregator-Supplier model. If Consumer-Supplier model is used, there should be consent from Supplier.</p>	<ul style="list-style-type: none"> • TSOs confirm that it is possible for BRPs to also pilot integrated model. • TSOs must point out that, requiring aggregator to ensure BRPs consent before entering the market via pilot or otherwise is a direct violation of upcoming EC regulatory framework.
<p>Stakeholder 3 It is very unfortunate that Elering in Estonia has started a pilot on Consumer-Supplier agreement model that has been already rejected by e.g., Finnish TSO Fingrid. This will create a lot of confusion in the market about the opportunity that is difficult enough to communicate to clients. We expect a very little success for that model unless the aggregator and the balance provider are not the same entity. We also see a potential threat of false expectations including justified expectation to expect the continuation of this system by the aggregators despite of the results on the pilot.</p>	<ul style="list-style-type: none"> • As evidenced by the ample diversity of DR market frameworks already in place in EU, different regions have different needs. TSOs are closely cooperating with Finnish TSO and Nordic TSOs in general to ensure that lessons learned are taken into account while developing and testing proposed market frameworks. • TSOs would like to point out that the purpose of piloting is to test the different models and choose the best for our region and market. Baltic and Nordic TSOs are doing a close cooperation to share their pilot knowledges. • TSOs agree that the risk of false expectation that the model piloted will be the model implemented regardless of the pilot study results, should not be disregarded. TSOs would like to point out that the current pilots are explicitly temporary. TSOs will continue to actively communicate both the role and results of the pilot studies.
<p>Stakeholder 4 We would like to congratulate TSOs on willingness to pilot DR market framework. Please be inform that we are planning to launch the DSR pilot project after the common Litgrid and ESO case study is finished. Thus, we would like to invite Baltic-Nordic TSOs to cooperate on DR pilot projects.</p>	<ul style="list-style-type: none"> • TSOs note and appreciate the Stakeholder 4's interest to participate in pilot studies. • TSOs agree that regional cooperation is important. Currently TSOs are closely cooperating with Finnish TSO and Nordic TSOs in general to ensure that lessons learned are taken into account while developing and testing proposed market frameworks.

BRPs & DSOs responses	TSOs' comments
<p>Stakeholder 5 Benefits</p> <ul style="list-style-type: none"> - Technical knowhow - Test customer motivation to work with current settlement model - As an aggregator is it possible to test value proposition for customer - Test different settlements models - See how communication works <p>Risks</p> <ul style="list-style-type: none"> - Technically difficult to get full hour of DR capability from a single customer - Customers are not interested with such a low financial benefit - High investment cost with little incentives. Setting up is costly. TSOs should consider subsidising pilot projects. E.g. get financial support from different programs (like Horizon2020), if it is too costly to support from own budget. Main benefit of DR comes from TSOs ensuring adequacy of supply and postponing investments, so DR market implementation should be also funded by TSOs. <p>Piloting dispatchable production should be treated in the same way as piloting consumption. Additional points:</p> <ul style="list-style-type: none"> - Is it possible to pilot with a unit that is under 500 kW? - Is it possible to specify pilot offer bids for shorter periods than 60mins? 	<ul style="list-style-type: none"> • TSOs agree that pilot studies are useful for testing data exchange, technical capabilities as well as market frameworks. • TSOs recognize that creating a portfolio for a pilot study is challenging as initial energy volumes are comparatively low. • TSOs recognize the opportunities provided by funding programmes such as Horizon 2020. TSOs are taking part in Horizon2020 call for 2018 to co-create a flexibility market platform. • All balance service providers in the Baltic Balancing market have to comply with the balancing market rules which includes the standard mFRR product specification. That means that the minimum capacity is 1MW and the maximum duration of the bid has to be 60 minutes. TSOs would like to clarify that 60-minute requirement refers to the bid in total not to a separate DR unit. Aggregators may activate different DR units sequentially.
<p>Aggregators responses</p> <p>Stakeholder 6 Pilot projects can show the potential problems and benefits to the electricity market in general, not only to BRPs/electricity sellers. Pilots show the real influence to all market participants separately (not only to BRPs/electricity sellers but also to consumers, DSOs, utilities, investment needs to the grid, etc.). Stakeholder 6 is very interested in participating in different pilots.</p>	<p>TSOs' comments</p> <ul style="list-style-type: none"> • TSOs note and appreciate that Stakeholder 6 is interested in participating in pilot studies.
<p>Stakeholder 7 Launching pilots is definitely a useful approach to fulling opening markets to DR, provided this is done with a view to establish DR as an alternative to generation in all markets. This means that: (i) DR should not be charged any compensation that generation would not bear; (ii) DR should operate under fair competition terms and conditions, and not subject to priorities or advantages given to competitors. With this view, the model proposed by Fingrid for its pilot is not consistent with any long term development of DR – and indeed not consistent with pure facts, as described above. The model considered by Elering is much more promising, as it ensures DR is paid the same price as generation when delivering similar balancing services to the TSO. Yet this model should be improved in order to:</p> <ul style="list-style-type: none"> - ensure that retailers (hence all consumers) share net benefits in a fair way; this would mean getting rid of the "correction" or adding to it a compensation by the TSO; - avoid any information be provided by DR aggregators to retailers/BRPs who are potential competitors, and hence should not interfere. 	<ul style="list-style-type: none"> • TSOs note and appreciate that Stakeholder 7 is interested in participating in pilot studies. • TSOs would like to emphasize that EC regulation on guidelines on electricity balancing Article 49 imposes that BRP's declared position should be adjusted in accordance to balancing energy delivered/received within the imbalance settlement period. The proposed model violates this condition. • TSOs consider that data exchange between market participants is an important aspect to be further elaborated. At the same time the agreements between market participants are voluntary, meaning the retailers have the right to take into account all the consumer's risks, as well as consumption's data volatility and harder predictability, when setting the marginal price. • Information sharing between market participants (aggregators and retailers/BRPs) about DR consumers would ultimately benefit the consumers as it would allow consumers to better compare different service providers' offers. All business operations have risks of competition therefore TSOs do not see that information sharing between aggregators and retailers may significantly worsen the situation in the market.

<p>As it stands, the pilot framework raises risks that retailers would charge participating consumers for electricity they do not consume (and no one generates), thus making it a very unfair deal for those consumers – and actually impeding any pilot involving small or medium size consumers. The first step to avoid this would be to add a new rule to the pilot framework stating that retailers cannot bill participating consumers for electricity they do not use themselves. Stakeholder 7 would be willing to invest in pilots provided the framework is properly set, with a long term view to develop DR and allow investments to run in a robust and consistent basis allowing DR to participate in all markets as an alternative to generation, on fair terms – including no compensation being charged to DR and no obligation to inform competitors.</p>	<ul style="list-style-type: none"> • TSOs understand that pilot studies carry intrinsic uncertainties for market participants and TSOs/DSOs, however they are pivotal for the development of the Baltic markets.
<p>National Authority’s response</p>	<p>TSOs’ comments</p>
<p>Stakeholder 8 Pilots help to understand the technical and legal bottlenecks and are therefore crucial for successful implementation of large systemic changes. Pilot projects also carry high reputation risk – if a pilot does not succeed (either due to limitation in the technical solution, administrative bottlenecks or issues with processes), it can cause loss of trust or interest among market participants and therefore reduce the probability of success of the full scale DR implementation. This risk can be reduced via open and preventative communication.</p>	<ul style="list-style-type: none"> • TSOs agree that pilot studies carry intrinsic uncertainties for market participants and TSOs/DSOs, however they are pivotal for the development of the Baltic markets. • TSOs ensure open and active communication to mitigate the risks indicated by Stakeholder 8.

Question 1.4 - DR usage causes energy transfers between different market players. In order to determine the amount of energy transfer a baseline methodology should be defined. The TSOs have done a provisional assessment of four possible baseline methodologies as presented in chapter 4 and found that the most accurate would be the "UK model". Please state benefits and risks you see for the proposed baseline methodology? Please explain your point of view. What other possible methodologies would you suggest?

BRPs/Suppliers responses	TSOs' comment
<p>Stakeholder 1 The best way would be to measure the exact tools used for DR by consumer. However, we understand that this is very inefficient, costly and timely to implement. In any theoretical determination there is a risk of systematic error – e.g. certain consumer with regular consumption will always be long/short at particular hours, so Agregator will always have error-flexibility (without any real DR flexibility) from this particular consumer that can be cashed out at favourable market conditions. This should be tested and tackled during Pilots.</p>	<ul style="list-style-type: none"> • TSOs agree that DR asset specific sub-meters are useful for improved precision of the estimation energy volumes delivered. However, the sub-meters should be used with the data of metering point, as metering points' data should be the basis for settlement calculation. Also the use of sub-meter does not alleviate the need for baseline methodology. • The reason settlement should be based on metering data lays on the issue that only using sub-meters' data covers a large potential risk for intended or unintended data manipulation. The risk is that the customer may change its consumption pattern with electricity devices that are not controlled by the DR tools during the DR, for example use a back-up heating device when the other heating device is switched off due to DR, so that there is no actual effect of DR for grid operator or TSO. Therefore, TSOs have found that the baseline methodology used in consumer's metering point would be a better way to measure the DR. • The baseline methodology's objective is to calculate the consumption/production volume that would have occurred if the activation by the independent aggregator would not have happened. This volume is necessary to determine the energy amount delivered via activation and in case of independent aggregator to estimate the imbalance attributed to the consumer's BRP and to Aggregator's BRP. When there is one BRP per metering point it is not important to determine the energy volume actually delivered amount, because both imbalance caused by inaccurate balancing energy delivery and imbalance caused by forecasting mistakes is attributed and compensated to/by the same BRP. • TSOs agree that the choice of the baseline methodology is challenging. • TSOs consider that further analysis regarding baseline methodology is needed. TSOs emphasize that the objective is to implement baseline methodology that is transparent, non-discriminatory and easy to understand to all stakeholders. Furthermore, TSOs plan to test the baseline methodologies during the pilots.
<p>Stakeholder 2 Average method is definitely not good as peaks hours can have very different consumption form hour before and after. All other methods do not at the moment take into account the weekend, which is also making a big difference. For large consumers, statistical models based on previous days are not relevant as in case of a large production facility, if the factory has consumed for example 1MW during last 10 days and is now consuming 0,1MW due to production capacity or other reasons, they can sell mFRR product 0,9MW and not change their consumption and according to baseline methodology it is considered that they have activated the whole amount.</p>	<ul style="list-style-type: none"> • TSOs would like to clarify that the baseline methodologies presented in the TSOs' report use "similar days' approach" meaning that the models recognize that workdays and weekends have different patterns. • TSOs would like to point out that large consumers may be expected to submit consumption forecasts that can then be used as a baseline. It is also possible that regarding consumers' consumption pattern (household, industrial, etc.) different baseline methodologies may be suitable. • TSOs agree that further analysis regarding baseline methodology is needed. TSOs emphasize that the objective is to implement baseline methodology(-ies) that is transparent, non-discriminatory and easy to understand to all stakeholders. Furthermore, TSOs plan to study baseline methodologies during the pilots more profoundly.

	<ul style="list-style-type: none"> • TSOs recognize that not all consumption patterns are repetitive on day-on-day basis. The simplest example is residential consumer, where there is distinct difference between workdays and weekends (holidays). To take this into account, the baseline model presented in the Report, uses the "similar days' approach" – meaning that the baseline is based on the last ten "similar" days (either weekends on workdays). The same approach could be applied to large manufacturing consumers and using "production days" as basis for the forecast of other "productions days" and "idle days" – basis for other idle days. The potential application of "similar days' approach" will be further examined by the working group.
<p>Stakeholder 3 Baseline methodology should not be a relevant issue at all as such market participation should be only allowed for distance hourly metering objects with separate measurement of DR effect. All examples of methodologies can result in totally random conclusions that have nothing to do with the particular Demand Response. Instead, we suggest that a clear criteria should be set for aggregators for measurement of individual Demand Response effect. All Demand Response should be considered executed only on measurement basis instead of some indirect methodology.</p>	<ul style="list-style-type: none"> • TSOs agree that DR asset specific sub-meters are useful for improved precision of the estimation energy volumes delivered. However, the use of sub-meters does not alleviate the need for methodology for this estimation. • The baseline methodology objective is to calculate the consumption/production volume that would have occurred if the activation by the independent aggregator would not have happened. This volume is necessary to determine the energy amount delivered via activation and in case of independent aggregator to estimate the imbalance attributed to the consumer's BRP and to Aggregator's BRP. When there is one BRP per metering point it is not important to determine the energy volume actually delivered amount, because both imbalance caused by inaccurate balancing energy delivery and imbalance caused by forecasting mistakes is attributed and compensated to/by the same BRP • TSOs agree that the choice of the baseline methodology is challenging. • TSOs consider that further analysis regarding baseline methodology is needed. TSOs emphasize that the objective is to implement baseline methodology that is transparent, non-discriminatory and easy to understand to all stakeholders. Furthermore, TSOs plan to test the baseline methodologies during the pilots.
<p>BRPs & DSOs responses</p>	<p>TSOs' comments</p>
<p>Stakeholder 4 Methodologies has to be check by in eachcountry. Such check could be a part of pilot project or a separate analyses can be made in close cooperation between DSO and TSOs. In addition, we would like to suggest the wider application of baseline methodology. We have witnessed that sometimes smart metering devices fail to record each hour of consumption leaving the "blank" gaps. The importance of such issue will increase after full scale smart meters rollout. Hence, we think, that agreed and approved methodology could also be applied to correct these errors. Hence, we would like to invite TSOs to cooperate on further development and testing of the baseline methodology.</p>	<ul style="list-style-type: none"> • TSOs agree that further analysis regarding baseline methodology is needed. TSOs emphasize that the objective is to implement baseline methodology that is transparent, non-discriminatory and easy to understand to all stakeholders. Furthermore, TSOs plan to test the baseline methodologies during the pilots.
<p>Stakeholder 5 UK Model Benefits: - Low costs for BRP - Should provide reasonable forecast error for customers with volatile consumption pattern - Forecast error is low => good Risks: - Requires further analysis by TSOs, also for weekends. This analysis should be shared with market participants</p>	<ul style="list-style-type: none"> • TSOs would like to clarify that the baseline methodologies presented in the TSOs' report use "similar days' approach" meaning that the models recognize that workdays and weekends have different patterns. • TSOs agree that further analysis regarding baseline methodology is needed. TSOs emphasize that the objective is to implement baseline methodology that is transparent, non-discriminatory and easy to understand to all stakeholders. Furthermore, TSOs plan to test the baseline methodologies during the pilots.

<p>Additional points: - Also, one alternative option is to use Weekly profile including holidays. e.g. Mondays to Mondays - What model is e.g. Fingrid planning to use? Baltic TSOs should closely cooperate with Nordic TSOs in working out the suitable baseline methodology.</p>	<ul style="list-style-type: none"> TSOs agree that regional cooperation is important. Currently TSOs are closely cooperating with Finnish TSO and Nordic TSOs in general. Currently neither Baltic nor Nordic TSOs have decided on the baseline methodology to employ.
<p>Aggregators responses</p>	<p>TSOs' comments</p>
<p>Stakeholder 6 UK Model: One potential problem is that adjustment with last 2 hours of the same day may prevent flexible loads, to offer regulation services in multiple hours in a row as the baseline goes lower. Enernoc model: Consumers are probably willing to bear more inconveniences to offer their flexibility to the market in multiple hours in a row and receive compensation. Our understanding is that baseline is not needed, because of the real time data measurements by aggregator or consumer. If still introduced, then for the sake of consumers to join the market, Enernoc version is preferred.</p>	<ul style="list-style-type: none"> TSOs would like to point out that real-time data even on sub-meter level does not alleviate the need for methodology for this estimation. TSOs agree that availability of metering data of higher time resolution would reduce the complexity of baseline model development. TSOs agree that benefits of allowing a DR unit to be activated in sequential hours should be assessed in the context of risks. If deemed beneficial, a solution for such situation should be created and a suitable baseline technology that enables this as much as possible should be developed. TSOs agree that further analysis regarding baseline methodology is needed. TSOs emphasize that the objective is to implement baseline methodology that is transparent, non-discriminatory and easy to understand to all stakeholders. Furthermore, TSOs plan to test the baseline methodologies during the pilots.
<p>Stakeholder 7 A baseline methodology is indeed necessary to assess the volume of DR delivered (no energy transfer though). Various methodologies can be used and coexist, depending on the type of DR. In the case of widespread DR, a real-time individually determined baseline would be safer. Indeed, methodologies including a reference to past / historical data of "similar" periods always include a risk of very different behaviour the day DR occurs. Widespread DR refers to DR delivered from a large number of consumers' sites (e.g. over 100), and made of short curtailments on each site (typically 5, 10, 15, 20, 30 mn). In such cases, the baseline for each consumer is obvious: it can be assessed as the consumption just before curtailment, i.e. the 5 or 10 mn before. This is a very reliable way to assess what the consumption of this site would have been without curtailing order, i.e. its baseline. Then the global baseline for a set of hundreds of sites is simply obtained by adding the individual baselines determined for each site. This methodology is based on data measured in real time, not forecasts or historical averages – and hence is the most reliable in the case of widespread DR. This methodology may not be as robust for industrial DR, delivered from few sites curtailed during longer periods. However, the best methodology should be chosen for each kind of DR. For widespread DR, this RIB methodology (real-time individually determined baseline) should be considered by Baltic TSOs.</p>	<ul style="list-style-type: none"> TSOs agree that option of different methodologies for different types of DR assets (e.g. household appliances, industrial machinery) should be considered. TSOs agree that further analysis regarding baseline methodology is needed. TSOs emphasize that the objective is to implement baseline methodology that is transparent, non-discriminatory and easy to understand to all stakeholders. Furthermore, TSOs plan to test the baseline methodologies during the pilots.
<p>National Authority's response</p>	<p>TSOs' comments</p>
<p>Stakeholder 8 I suggest to look into FR, DK and DE approaches to the DR market. The DR market will only start, when there is sufficient money in the market. This can be achieved either through compensating energy transfers or capacity payments. Either way, the goal should be to reduce balancing cost for the society.</p>	<ul style="list-style-type: none"> TSOs agree that best practices in other markets as well as existing research should be used when developing such methodologies. It is however important to take into account that different markets and different metering data exchange procedures strongly influence the feasibility of the models. TSOs agree that capacity payments might be one option but in existing markets it is used for quick automatic reserves and not usually for mFRR.

Question 1.5 - Please feel free to share any other ideas and considerations regarding the TSOs' proposal	
BRPs/Suppliers responses	TSOs' comment
<p>Stakeholder 1 We see risks in forcing mandatory sale of electricity upon BRP on reference price and determining baseline of consumption. As this pricing and volume are not actual, it creates ground for exploitation without creating actual DR flexibility.</p>	<ul style="list-style-type: none"> TSOs agrees that in case of Aggregator-Supplier model, reference price methodology is pivotal for ensuring of non-discriminatory market framework. Accordingly, TSOs consider that such price should be set by NRAs.
<p>Stakeholder 3 The whole project documentation work is missing the criteria for Aggregators for measurement of Demand Response effect. This would enable for aggregators to set standards for its measurements and data flows to prove Demand Response at reasonable level.</p>	<ul style="list-style-type: none"> TSOs agree that the data exchange is not covered deeply in the report. The point of the report was to introduce the possible market frameworks and Settlement models TSOs will further elaborate the data exchange requirements and review them together with market participants.
<p>Stakeholder 4 We would like to underline that the current proposal is limited to mFRR product. However, we think that other ancillary service products (e.g. aFRR, FCR) have to be developed and prepared before the desynchronization from the IPS/UPS. Therefore, we would like to suggest to expend the development of these product in advance.</p> <ul style="list-style-type: none"> We would like to underline, that lack of appropriate framework for DR inclusion in different energy markets is not the only barrier for DR development in Lithuania. Other barriers, which limits households consumer interest in energy market has to be addressed. It was stated, that under current regulation Member State has to ensure consumer access to energy markets, either individually or through aggregation. The proposed model address the access through aggregation, but could also be expended for consumer access the market individually without the involvement of aggregator. It is noticed, that mFRR product required Validity period is equal to 60 min. This might be a barrier for DR as well. We would like to invite TSOs to increase the flexibility of existing products. Independent aggregator – Agr -> Sup Settlement Model process description (Annex II.B). The requirement for AGR registration as Energy Supplier was not reasoned in the document. We recognize aggregator and suppliers as two separate roles. Hence, such requirement has to be carefully checked with NRAs. ENTSOE and ACER underlines that the increasing volumes of DR and small-scale generation connected to distribution grids requires higher coordination between TSOs and DSOs. However, the roles of DSOs are not defined in this document. It would be beneficial to investigate the need to expend the coordination between DSOs and TSOs. E.g.: o In order to avoid double activation of the same resource in case the DSOs would like to procure flexible resources for distribution grid management. In order to exchange the consumers', who is providing DR services, consumption data between TSO and DSOs. 	<ul style="list-style-type: none"> TSOs agree that other ancillary service products should be developed before the desynchronization from the IPS/UPS. These preparations are already taking place and TSOs will consider DR resources as a source for the according energy products. TSOs recognize that it is important to remove entry barriers to new market entrants. TSOs' goal is to propose market framework that is non-discriminatory towards all market parties. TSOs would like to emphasize that consumers access to balancing market separately, if it can fill the minimum bid size claim, is not restricted with the proposed models. The current report was focused on aggregation model, as the more complex way for DR involvement to markets, but the same framework will apply to individual consumers as well. Exceptions may be necessary only in case of large consumers who buy their energy from the wholesale market by themselves. TSOs agree that all balance service providers in Baltic Balancing market have to comply with the balancing market rules which includes the standard mFRR product specification. That means that the minimum capacity is 1MW and the maximum duration of the bid has to be 60 minutes. TSOs would like to clarify that 60-minute requirement refers to the bid in total not to a separate DR unit. Aggregators may activate different DR units sequentially. The requirement for aggregator to be energy supplier is derived from the national legal framework already in place which is the reason it is not explained in the details. TSOs agree that TSO-DSO cooperation is not covered in the report. That does not mean that TSOs do not consider this an important aspect. For example, in Estonia the coordination process between DSO and TSO is studied in a separate pilot project. This year TSOs are taking part in Horizon2020 call for 2018 to co-create a flexibility market platform tackling TSO-DSO cooperation.
BRPs & DSOs responses	TSOs' comments
<p>Stakeholder 5 i) Comments on mFRR and demand response in the Baltic market:</p>	<ul style="list-style-type: none"> (I) Starting from 1st of January 2018 the Baltic region has a common balancing market with centralized bid activation management. This includes mFRR energy products

Allocation of Demand response (DR) flexibility to the mFRR market is an important milestone of balancing market development. A common Baltic framework for DR introduction in the balancing market helps to improve liquidity of mFRR market, favors competition between mFRR bids providers, guarantees transparency of Baltic-wide market due to harmonized rules and general approach as well as leads to lower implementation costs.

The introduction of Demand response in the Baltic balancing market is very welcomed. It must be also underlined that unfortunately during recent years, the mFRR market opportunities have been largely under-estimated and under-used by Baltic TSOs even for electricity producers who generally have much higher range of flexibility and more competitive prices compared to DR. The mFRR balancing market in the Baltics is currently missing web-based trading platform for user-friendly bid nominations, central management of mFRR resources and shared orderbook with HVDC connected market areas (with Finland, Sweden, Poland). These examples show that the Baltic TSOs still need to make serious and urgent efforts to create liquid mFRR market for efficient minimization of imbalancing costs of Baltic market participants. It must be mentioned that shortcomings in the current mFRR market arrangement have also contributed to a quite limited business interest for DR participants so far, which subsequently creates a need for TSOs to launch not-market-based DR pilot projects. Better regional cooperation by TSOs and solving the organizational market concept will enhance the liquidity of mFRR balancing market, which in turn will also help the smooth introduction of DR.

ii) Choice of settlement model types:

Hereby we would like to present the order of preference to be implemented in the Baltic market:

(A) Integrated aggregation model – the primary and *must-have* model in the market. BRPs should be fully encouraged and motivated to participate in DR, this should be long-term priority to avoid excessive investments in grid and reserves;

(B) In all cases the implemented DR market framework for independent aggregator should require agreement between aggregator and BRP/Supplier to cover respective costs involved by BRP/Supplier and transparent data about DR regulations;

(C) The alternative approach (these are so-called ‘last resort approaches’, meaning these should be less motivating than previous options) may be either: - to establish a regulated Standard Contract between aggregator and BRP/Supplier that ensures covering all costs involved and proper data movement; or

- Aggregator -> Supplier settlement model involving TSO, who facilitates cost allocation and all near-real time data movement.

We importantly emphasise that proposed Consumer -> Supplier agreement model is totally unacceptable due to the following reasons: 2

- It introduces unsuitable and unsustainable market design, where first options i.e. integrated model or voluntary agreement are unfavourable for Aggregator and therefore this model is discriminating against BRP/Supplier;

- By principle this is resale of electricity that the Supplier has bought from Spot and Intraday markets and must be disallowed without full compensation of involved costs. Especially in the case of "No settlement" model, unquantified amounts (in advance) of electricity is transferred from

shared via HVDC links with Finland and Sweden. TSOs are keen to further improve liquidity in the Baltic balancing market by introducing DR resources.

- (II) TSOs' goal is to propose market framework that is non-discriminatory towards all market parties. TSOs tried to address the concerns identified by Stakeholder 5:
 - As stated in the TSOs report, TSOs support integrated model and welcome BRPs/ Suppliers to expand the range of services they provide to their customers.
 - TSOs must point out that, requiring aggregator to ensure BRP's consent before entering the market via pilot or otherwise is a direct violation of upcoming EC regulatory framework.
 - TSOs agree that Consumers should not be responsible for facilitating data exchange between aggregator/ BRP/ TSO. That has not been implied in any of the market models proposed.
 - TSOs consider that given the data that is currently available to TSOs and the multitude of different factors with expected opposing effects on energy prices, it is premature to claim the extent to which DR will impact energy markets. Accordingly, TSOs are organizing pilot studies to learn more.
 - TSOs agree that increase in the number of participants in the market should decrease the energy price driven by the increased competition among the market participants as well as the influx of energy characterized with significantly lower costs per MWh. Therefore, it is expected that DR will reduce the overall balancing price, have positive impact on retail price and overall system security, compared to the situation where DR is not included in the market.
 - TSOs are expecting that the use of DR in balancing market will increase the system security in the Baltics where historically the balancing market liquidity has been limited due the relatively small market size and the use of emergency reserves for balancing has been needed.
- (III) TSOs agree that data exchange between market participants is an important aspect to be further elaborated. Proper data exchange should allow BRPs to better manage their portfolio. The benefits and costs of providing BRPs with near real-time data on DR activations, given the current metering data exchange timeframes, should be carefully examined. Currently the preliminary hourly data is available on the next day and the final hourly data the next month.
- (IV) TSOs agree that capacity payments might be one option but in existing markets it is used for quick automatic reserves and not usually for mFRR.
- (V) TSOs agree that pilot studies are useful for testing data exchange, technical capabilities as well as market frameworks. Furthermore, TSOs agree that regional cooperation is important. Currently TSOs are closely cooperating with Finnish TSO and Nordic TSOs in general to ensure that lessons learned are taken into account while developing and testing proposed market frameworks.
- (V) All balance service providers in the Baltic Balancing market have to comply with the balancing market rules which includes the standard mFRR product specification. That means that the minimum capacity is 1MW and the maximum duration of the bid

BRP/Supplier to Aggregator with no compensation – this model doesn't sustain the "Integrated model" or any reasonable market behaviour, since it would create market distortions where participants would only be interested in aggregating other market participants' clients; and

- In the end, the costs for Consumers increase more than benefits since Suppliers are expected to recover all costs from Consumers, without knowing the involved costs in advance. There would be high uncertainty about not fully compensated Aggregator activity for both Supplier and Consumer during long-term sales contracts. This may lead to very complex and ill-designed customer contracts, where either:
 - i) Participating customers get higher prices or additional invoices from Suppliers that contradict likely misleading information from aggregators that participating Consumer benefits greatly (Consumer is not able to keep full compensation, due to unseen additional costs or invoices); or
 - ii) All customers get somewhat higher prices, which is not proportional or fair market design in comparison to the gains from DR.
- This model overly complicates Consumer participation - Consumer should not be involved in market actions between Aggregator and BRP/Supplier, or required to provide information to BRP/Supplier about activated regulations carried out by Aggregator. Corresponding data should move through direct link between Aggregator and BRP/Supplier or through TSO infrastructure in real time. The movement of data should be verified by the TSO before accepting any DR bid.

For abovementioned reasons, we urge to *not* consider "No settlement", "Consumer settlement" and "Socialized settlement" models for future market design. These models should not be used for any pilot study, either.

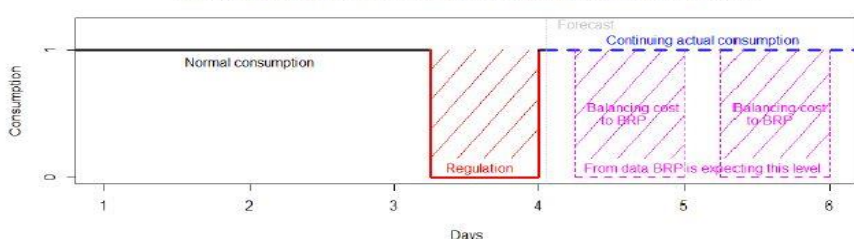
iii) Requirements of providing data about activations in BRP/Supplier's portfolio:

Regardless of model choice it should, as noted, be guaranteed that BRP/Supplier is given near real-time info about planned and actual changes in their portfolio volumes based for each involved measure points. With higher degree of using metered data about clients in BRP/Supplier's portfolio, future balancing market would require that any known deviations from regular consumption made on purpose (by TSO and Aggregator) should be also promptly sent to Supplier.

Otherwise there is increased cost of balancing to BRP/Supplier, something that DR should not introduce (in fact the uncertainty and increased balancing cost may outweigh benefits from DR). This comes from 2 timeframes:

- 1) Intraday balancing – without knowing that their near real-time data is changed (especially for larger industrial customers), BRP may make corrective actions during the same day that are unnecessary/costly and may increase system error/costs;
- 2) Day-ahead forecasting during next days – BRP/Supplier's same day plan gets corrected by TSO according to DR regulations in portfolio. But without knowing what changes are made by others in measured data (planned and actual) there is high risk of suffering noticeable balancing cost during next days. This is due to BRP/Supplier not knowing where the change came from (since Aggregator actions are not foreseeable for day-ahead planning and market design should not set any requirement for customer to notify about DR activation) and thus not knowing what amount to order from day ahead market to respective customers. We outline an example below:

has to be 60 minutes. TSOs would like to clarify that 60-minute requirement refers to the bid in total not to a separate DR unit. Aggregators may activate different DR units sequentially.

<p style="text-align: center;">BRP's uncertainty about customer's consumption after DR activation</p>  <p>Figure 1. Example: BRP without knowing that Regulation was activated by Aggregator, does not know where client's drop to consumption level 0 came from, and may expect 0 consumption also during next days' orders, getting noticeable balancing cost. To avoid this, info about DR regulations per measure point (both planned amount and actual) should be provided in near real-time by Aggregator and/or TSO.</p> <p>iv) Availability payment As a measure to motivate DR market and nominate all possible flexibility we suggest using availability payments covered from grid fees.</p> <p>v) Piloting Pilots should be organized in a non-discriminatory manner under same principles to all market participants. All future pilot study contracts in the Baltics should be re-designed, similarly to Finnish model var2 ("Central settlement" where Aggregator has balance responsibility). Concerning pilots, also several other questions need to be addressed, for example: is it possible to pilot with a <500 kW unit.</p>	
<p>Aggregators responses</p> <p>Stakeholder 6</p> <ol style="list-style-type: none"> 1. We must admit that consumers Are not electricity sellers. Electricity seller is someone totally different. 2. Consumers are selling their ability to be flexible in electricity consumption. 3. Our opinion is that consumer flexibility is measured in kW or MW only because of lack of vocabulary and definitions in the market rules and laws. 4. Flexibility in electricity consumption is not an existing resource that is easy to find, use and earn money with. 5. Flexible loads must be created by aggregator or consumer and when created, it needs constant attention, risk management, changing according to changes in consumers business, monitoring, development of technology and IT, machine learning, people to run the system, people to establish the system, maintenance, different protocols to communicate with market participants, licensing fees, insurance fees, programming of building management systems, etc... 6. TSO, the government and Regulator must have wider view of electricity market, keeping in mind final consumers security, welfare and possibility to understand its potential to influence the electricity market and have a reasonable compensation to contribute to the electricity market. 	<p>TSOs' comments</p> <ul style="list-style-type: none"> • TSOs agree that DR products enhance system flexibility and are needed. TSOs agree that DR resources allow to increase the liquidity of the energy markets. TSOs are especially keen to improve liquidity in the Baltic balancing market where historically the liquidity has been limited by the relatively small market size. Lower balancing costs are associated with significant social benefits due to the resulting lower retail price. • TSOs consider that while there is room for discussion on the topic of the exact nature of the product the DR resource owner trades, it is important to remember that balancing market is organized energy exchange. EC regulation on guidelines on electricity balancing Article 49 imposes that BRP's declared position should be adjusted in accordance to balancing energy delivered/received within the imbalance settlement period. This should not be ignored. • TSOs have reviewed stakeholder's 6 proposal regarding no compensation for activation below 60 minutes. The proposal however, has little application in a market where the imbalance settlement period is one hour. If the consumption was reduced during the first half of the hour but increased during the second half of the hour, the

<p>7. It is normal and expected behavior from BRPs and electricity sellers to fight against the flexible consumption to participate in the electricity market. It is normal that every change causes repulse reactions from old market participants who have no other interests than their own earnings.</p> <p>8. Overview of EU regulations clearly says that consumers must be brought to the market. They must participate in the electricity market and must not pay compensations to BRPs and electricity sellers.</p> <p>9. IDEA: If consumer participates in an „event 30 min or less, then there must not be a compensation to BRP/electricity seller. It is because if in the first 30 min the consumption is lower than the consumption in next 30 min is higher (compensation curve). This results as a 60 min regulation period with no influence to BRPs portfolio. In this case there is no need to share consumers data who participates in DR services to BRP.</p>	<p>total energy volume delivered to the system via activation would be equal to zero. Such situation is not profitable to any market participant. It can be up for discussion for future if it is possible to get more granularity in remote meters' data, instead of hourly data use for example 15 min data. This could solve this issue. When according to GLEB imbalance settlement period will be changed to 15 minutes the product specifications are expected to be changed and the issue about metering data granularity can be opened again.</p>
<p>National Authority's response</p> <p>Stakeholder 8</p> <p>The referred proposals for changing Electricity Directive and Electricity Regulation have changed considerably since they were first published in 2016. Although the new versions published by the Council of the EU are not binding, they are a result of 1+ years of discussions and therefore reflect the direction of the DR regulation framework on the EU level. Please try to use the latest versions (the latest versions available at http://www.consilium.europa.eu/register/en/content/int?typ=ADV or from the Ministries).</p> <p>We hope that you will present the results of the consultation early 2018. The next steps should also include proposals to the Ministries for changing the existing legislation (if that is needed).</p>	<p>TSOs' comments</p> <ul style="list-style-type: none"> • TSOs agree that the implementation of changes in national energy markets is closely linked with the legal framework for internal electricity markets set out in Clean Energy Package which as of 03.2018 is not yet in force.

Appendix 1. Stakeholder 7's full response to question 2

TSOs propose two alternative approaches for introduction of independent aggregation: (1) Aggregator-Supplier Settlement Model; (2) Consumer-Supplier Agreement Model. Please state benefits and risks for both of the alternatives. Please indicate the preferred option and argumentation for the choice.

In order to allow the participation of "small" consumers (including commercial and residential) who cover the main potential to develop DR (as described in the EC impact assessment of the package), it is necessary to establish a model that does not require consumers to be individually involved or impacted, i.e. at retail level, by settlement rules required at wholesale level, i.e. for the provision of DR as an alternative to generation, in balancing or other markets.

Therefore the second of the models above should not be imposed. If ever it is allowed, there should still be another model allowing consumers to participate via an aggregator, and have only the aggregator involved in market settlement, not individual consumers.

However, the first model still needs some adaptations to really allow DR to participate in the markets as an alternative to generation, on an equal footing. Indeed, this is the aim and principles set forth in the current 2012 directive on energy efficiency still in force, and further detailed by the Clean energy package, as recalled in the consultation document (p. 9).

An alternative model to those developed in the consultation document is needed to comply with this aim. In particular, the first model would not comply with the provision quoted in the document whereby "*most importantly, aggregators are not required to pay compensation to supplier/generator*". This must apply equally to all markets, including balancing.

This model is usually called the "net benefit model". We will describe it below, as it has not been analysed yet in the document. However, it is probably the only most effective model to implement the principles set forth by the existing and future legislation at European level.

This model is based on the physical fact that DR is an alternative to generation. In other words, the more DR is dispatched, the less generation is. Hence, **the concept of "transfer of energy" is inappropriate, basically because DR is delivered instead of energy, which is not generated.**

Considering that DR is based on energy (although energy is not delivered) means creating a fiction and putting consistency of the system at risk. This is all the more obvious when DR is used for balancing: demand is reduced because the amount of energy generated would not be sufficient to match demand otherwise. In other words, as opposed to the point 1. in the diagram from Fingrid in the document page 20, the correct assumption is not that suppliers/BRPs bought in the market the amounts to match demand without DR, but that they did not. To clear any doubts, one only needs to consider the fact that DR is needed insofar as **BRPs did not buy enough** in the market. The less they bought, the more DR is needed. In an extreme situation, suppose BRPs did not buy any electricity in the market, and DR is used for balancing: then DR ensures balancing by curtailing all consumption. It is quite obvious that no energy is neither generated nor consumed: no energy exists, and DR is not related to any "transfer of energy". What is usually called "transfer of energy" is not based on actual energy: it is only an accounting practice suggested in certain models to perform settlement among BRPs. However, it is based on a total fiction. Therefore, other models are possible. This fiction is not based on what DR really is, and actually, does not take into account the fact that DR is an alternative to generation, used instead of energy. The "net benefit model" reflects reality, and hence is safer.

In particular, because no energy is neither generated nor, a fortiori, transferred from suppliers to DR providers/aggregators, no compensation should be paid by the aggregators to suppliers.

Because of this fact, **the simplest model would be the so-called "no settlement" model**. However, the consultation document suggests this model would not be appropriate. The reasons for this suggestion remain unclear. Again, the document mentions here to an "energy transfer", which refers to no real energy.

To our understanding, a "no settlement model" would provide BRPs of participating consumers the exact same situation as (with the existing rules) when consumers reduce their consumption unexpectedly and spontaneously (without DR being dispatched by the TSO): in such case, those BRPs are compensated for their positive imbalance (if any, i.e. if those BRPs are not those who failed to purchase enough electricity for consumers to use without demand reduction). The only difference with DR being dispatched by the TSO is not for BRPs of those consumers reducing their demand, but for the TSO himself. Indeed, the TSO would have to pay DR.

As stated by all EU texts, TSOs should accept DR bids on the same basis as bids from generators, without discrimination, and included, without charging a "compensation" specifically to DR. The model used by Fingrid in their pilot is not compliant with this principle.

The "no settlement model" would fully comply, while ensuring that BRPs of participating consumers are compensated by the TSO for their positive imbalances (if any) under the same terms and conditions as in the current rules when consumers reduce their consumption unexpectedly.

The only issue to deal with in this model is the fact that the TSO would pay for DR, and this would be a cost he would not be able to recoup from BRPs, because BRPs would be overall balanced (after DR). This is why it is usually suggested that the

TSO should (accounting-wise) "correct" the portfolio of the BRPs of consumers participating in DR. Such accounting correction is not physical, yet it would deprive those BRPs of their positive imbalances. Hence, it is likely that the TSO would have to financially compensate those BRPs for "correcting their portfolio" (i.e. adding to their position a consumption that does not occur and is a total fiction). This approach leads to another model for settlement: the net benefit model.

The **net benefit** approach is based on the fact that, while DR may entail costs for market participants, it also entails benefits for all retailers and BRPs. Indeed, reducing demand means the most expensive generation will not be dispatched, hence the market price settles at a reduced level, so that sourcing costs are reduced for all those buying in the market. Provided the overall benefit for retailers/BRPs is greater than the costs DR may entail for them, they will capture a net benefit thanks to DR participation. Hence, there is no reason to add to this benefit a "compensation" for their costs, as long as costs are already offset by huge benefits¹. The only thing to be tackled via the "model" is not a compensation from DR to retailers/BRPs, but a way to ensure that benefits and costs are both fairly shared among them. A simple way to implement this is to include in the overall settlement process by the TSO:

- a correction of the position of the retailers/BRPs of curtailed consumers, and a payment to them from the TSO;
- a provision whereby the TSO will spread this expense among all retailers (or all BRPs - or possibly all consumers directly, provided the retail market is competitive enough to ensure retailers will transfer their benefits to consumers).

This ensures that all retailers benefit equally from DR reducing overall sourcing costs. Hence all consumers will benefit from DR – not only participating consumers, but all of them indeed.

On top of the economic benefits of having DR in the market, it should be emphasised that:

- DR contributes to the balance of the system, in two steps:
 1. Being bought in the market rather than generation, DR ensures less generation occurs;
 2. Being delivered physically in real time, DR ensures less consumption occurs.
 As a consequence, the system is perfectly balanced by using DR, as it would be using only generation, but with less generation and consumption.
- However, be it with or without DR, all the electricity generated and injected in the grid is simultaneously taken off the grid and consumed, and hence all the available electricity is paid to retailers by those consumers who use it. If ever a compensation for energy flows may be needed, that would be among retailers, and not by charging DR aggregators or participating consumers. Conversely, charging those would mean billing electricity that was neither generated nor consumed, precisely thanks to DR.

However, DR aggregators should be or have a BRP themselves, as generators do: in both cases, this BRP is responsible for any differences between the volumes sold in the market and the volumes actually delivered (by physically changing consumption, in the case of DR, and by injecting electricity, in the case of generation). Overall, DR should be allowed to participate in all markets as an alternative to generation, with the same balance responsibility to deliver, and without any payment charged to DR. There should be only two exceptions when DR could be charged:

- if ever DR fails to be delivered: this would entail imbalance penalties for the BRP of the DR aggregator;
- if ever and only insofar as the benefits entailed by DR for all retailers (by reducing their sourcing costs) would not exceed, as it usually does, the cost of DR seen from retailers.

Overall, the vision of DR participation in all electricity markets, without any payment being charged to DR except under these exceptional circumstances, can be summarized as follows:

SUMMARY - DR participation in electricity markets to benefit all consumers

A/ DR should participate in the market as an alternative competing with generation, in order to increase reliability of the power system, and to reduce sourcing costs for all.

- a) When DR is bought in the market, generation is not, so that less electricity will be generated, and the purchasing price will be lower, to the benefit of all retailers.
- b) Then, when DR is delivered, less electricity is consumed. Thus DR ensures balance of the system (cheaper than generation).

B/ Having DR participate in the market results in a double effect for retailers:

- i. on the one side, « costs »: retailers buy DR instead of generation, and cannot bill it to consumers, as these consume less;
- ii. on the other side, huge benefits: because demand is reduced, the market will settle at a lower wholesale price, so that retailers will save on all their sourcing costs.

The first effect can be seen as costs for retailers; the second one means huge benefits for retailers, so that overall, DR entails huge NET benefits for retailers, to be ultimately transferred to customers.

Therefore, retailers should not receive any compensation from DR for their « costs », since it is overall net benefits. Conversely, charging DR such payment would simply kill DR, and its related net benefits.

C/ Hence, a payment from DR should be clearly excluded. Exceptions should only be considered, provided certain conditions are met, only in the exceptional circumstances sätted as follows:

- 1) if ever the « cost » (mentioned in B-i) would exceed the benefits (B-ii), and only up to the difference: although this is very unlikely to ever happen, such provision would ensure that DR is ALWAYS profitable to retailers, and hence to all consumers;

2) if DR sold is, in fact, not delivered: this is similar to a failing generator, and in both cases the imbalance thus created will entail penalty for the failing party (and the penalty will be charged via its BRP to the TSO as a « negative imbalance payment »,based only on the difference between DR volumes sold and DR volumes delivered).

The following illustrations are extracts from studies published by RAP (the Regulatory Assistance Project) showing that benefits of having DR participate in various electricity wholesale markets in Europe are consistently always more than ten times greater than costs.

