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ENTSO-E survey on market efficiency with regard to bidding zone configuration

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Foreword

As the organisation representing the interests of over 100 energy trading companies in Europe, the European Federation of Energy Traders (EFET) very closely follows and participates in the debates concerning the review of bidding zones. EFET favours stability in the configuration of bidding zones along the lines of long-standing structural congestions. This certainty and continuity are essential to underpin cross-border competition, liquidity in the forward, day-ahead and intraday wholesale power markets. Liquid wholesale markets are essential to manage and reduce risks for market participants, and thus to allow for timely investments in generation, storage and demand response. By lowering risks and thereby risk premiums, liquid wholesale markets bring down financing costs for investments. This results in a general increase in socio-economic welfare.

A stable configuration of bidding zones should produce reliable price signals, and, especially in the case of larger zones where many generators and suppliers are active, underpin competition between market participants across all timeframes of the market. Stability and certainty in the delineation of bidding zones is particularly important in current period of uncertainty for the market, with many new features being implemented such as day-ahead flow-based market coupling (which is expected to become even more complex with the inclusion of the CEE region), the upcoming establishment of the cross-border intraday continuous trading platform, and various challenges relating to the performance of coupling algorithms. **Any review of the delineation of bidding zones, even a review implicating just two zones or nations, must be transparently organised and objectively implemented.** It must take in a serious and thorough analysis of market efficiency, including effects on competition and liquidity, in different bidding zone configuration scenarios.

In the context of the bidding zone review initiated by ACER and ENTSO-E according to articles 32 to 34 of the Capacity Allocation and Congestion Management Guideline (CACM GL, EU Regulation 2015/1222), the bidding zone review should encompass criteria related to price signals, market liquidity, market power, effective competition, transition costs and transactions costs. EFET welcomes the opportunity to provide comments on the questionnaire issued by ENTSO-E in order to gather market participants' input to help the organisation's analysis of the market-related aspects of its study.

As a crucial point about the introduction to the questionnaire, before giving our answers to individual questions, we recall that a reliable long-run signal for transmission infrastructure development and investment is a useful by-product of a stable and transparent bidding zones design affecting the forward timeframe of the market. **However, this is not the main purpose of ensuring competition in the forward market and liquidity in electricity forward and future contracts and in forward transmission rights,** as implied in the ENTSO-E opening paragraph. TSOs should be able to evaluate the costs and socio-economic benefits of transmission infrastructure investments irrespective of bidding zone delineations. **Competition and liquidity in the forward timeframe, including across bidding zone borders, are essential for the overall health of the internal power market in their own right**, not just for the benefit of those taking a view on the build-out of the grid.

Introduction

1. **What do you consider as most relevant indicators for the accuracy and robustness of short and long run price signals?**

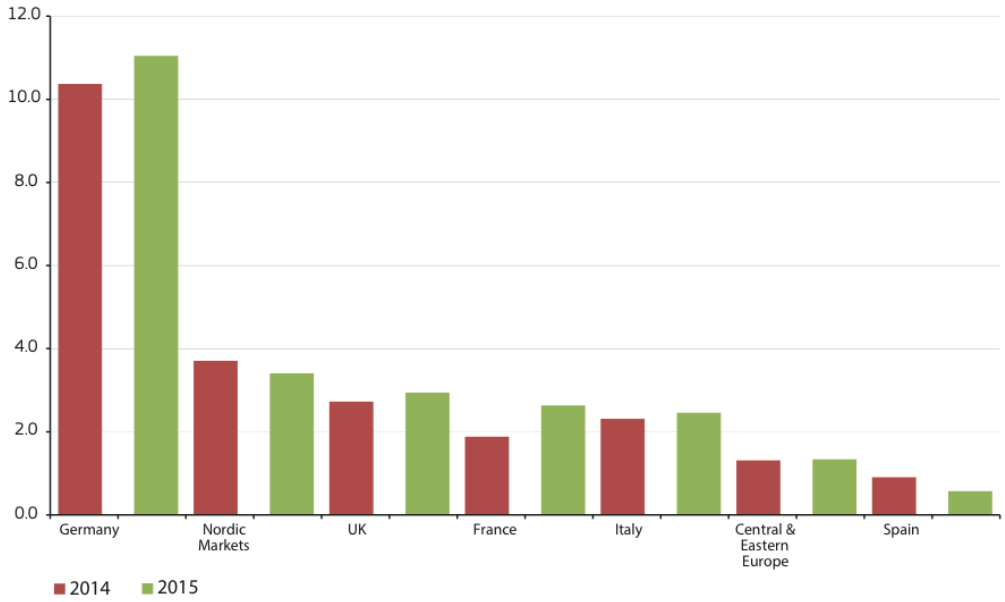
Short and long term price signals are important for efficient dispatch and operational planning decisions, and are closely related to the investment climate. The more undistorted the signals, the better the decisions made by market participants will be, and the better they will manage their market risks and take investment decisions.
Here is a list of principles and proposed indicators:

- **Liquid forward markets**: in a liquid market, any amount of energy (coal, gas, power, carbon, oil etc.) can be bought or sold at any time without causing a significant movement in the energy price. Liquid markets allow market participants to manage their risk in the market in a dynamic manner. This in turn increases market efficiency and arguably the robustness of the price signals. In the context of the bidding zone configuration, churn rate, market depth and bid-offer spread are very important measures:
    - **Churn rate:** the number of times electricity is traded before it is consumed. The most liquid electricity market in Europe, Germany, has a churn rate of 10[1]. This level is considered acceptable, while markets

[1] The ECA report on European Electricity Forward Markets and Hedging Products submitted to ACER in 2015 (http://www.acer.europa.eu/en/electricity/market%20monitoring/documents_public/eca%20report%20on%20europ

with a churn rate below 4 or 5 are considered illiquid – which is the case of most other European markets. See the graph below for a pan-European comparison (source: European Commission[2]).

FIGURE 17 – ANNUAL CHURN RATES ON SELECTED EUROPEAN WHOLESALE ELECTRICITY MARKETS



Source: Trayport, London Energy Brokers Association (LEBA), ENTSO-E and own computations

- **Bid-offer spread:** bid-offer (or bid-ask) spreads represent the cost of getting into or out of a position in the market. As noted in the ECA report on European Electricity Forward Markets and Hedging Products submitted to ACER in 2015, bid-offer spreads should be interpreted in two manners:
  - *"As a measure of liquidity: Small bid-ask spreads suggest that it is easier for traders to enter or exit the market as they will be able to find counterparties with whom to trade.*
  - *As a measure of the costs of trading, or the 'cost of liquidity': The larger the spread, the more a trader will have to adjust their price expectations in order to make a trade, effectively adding costs to the trade. This may be referred to as the premium paid in return for the ability to trade readily."*

ean%20electricity%20forward%20markets.pdf) mentions various minimum thresholds used to qualify a market that has an acceptable (albeit not fully satisfactory churn) rate:

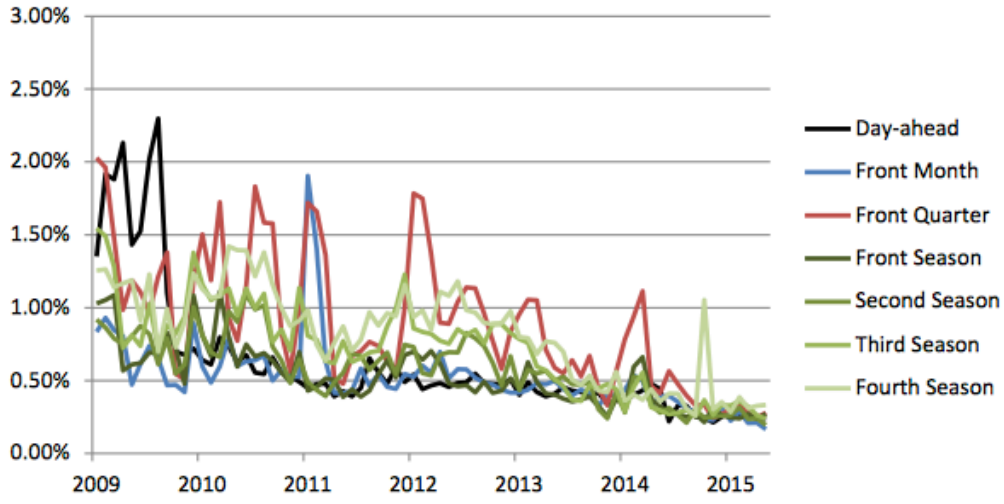
- UK regulator Ofgem: minimum churn rate of 7: http://www.publications.parliament.uk/pa/cm201213/cmselect/cmenergy/writev/consumer/ce3 3.htm,
- ACER gas target model: minimum churn rate of 8: http://www.acer.europa.eu/Media/Events/3rd-Gas-Target-Model-Stakeholders-Workshop/Documents/03.%20Boltz%20objective%20and%20criteria.pdf
- Oxford Institute of Energy Studies: minimum churn rate of 10 (for gas): http://www.oxfordenergy.org/wpcms/wp- content/uploads/2011/03/NG49.pdf

[2] Quarterly report on European electricity markets, Volume 9: Q4 2015-Q1 2016, European Commission, DG Energy, Market Observatory for Energy, available at: https://ec.europa.eu/energy/sites/ener/files/documents/quarterly_report_on_european_electricity_markets_q4_2015-q1_2016.pdf.

In a liquid market, bid-offer spreads should be fairly small in relation to the market price, i.e. 1% or less of the MWh price. See the graphs below for examples of bid-offer spreads for various electricity base-load products in Great Britain (source: Ofgem[3]) and the Netherlands (source: ACM[4]).

GB:

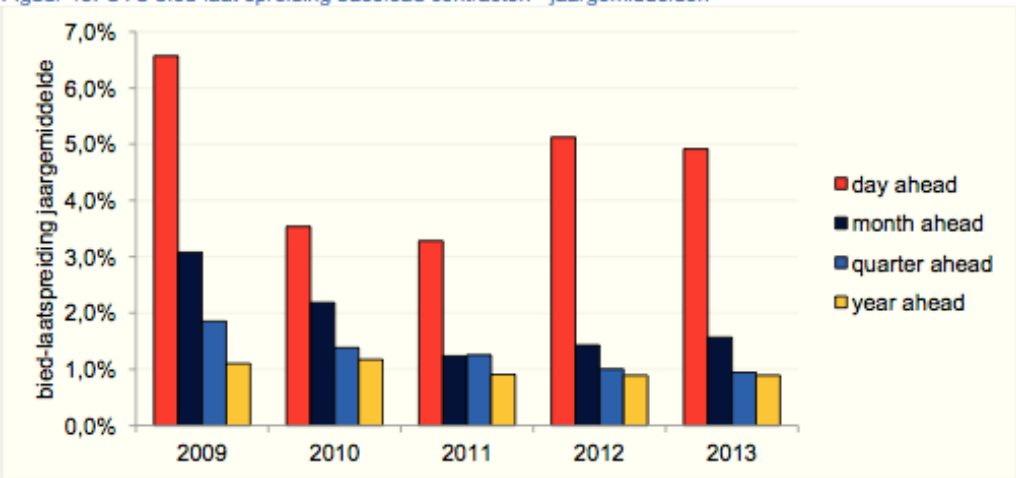
Figure 31: Electricity bid-offer spreads for select OTC baseload products, 2009 to 2015



Source: ICIS, Ofgem analysis

NL:

Figuur 48: OTC bied-laat spreiding baseload contracten - jaargemiddelden[23]

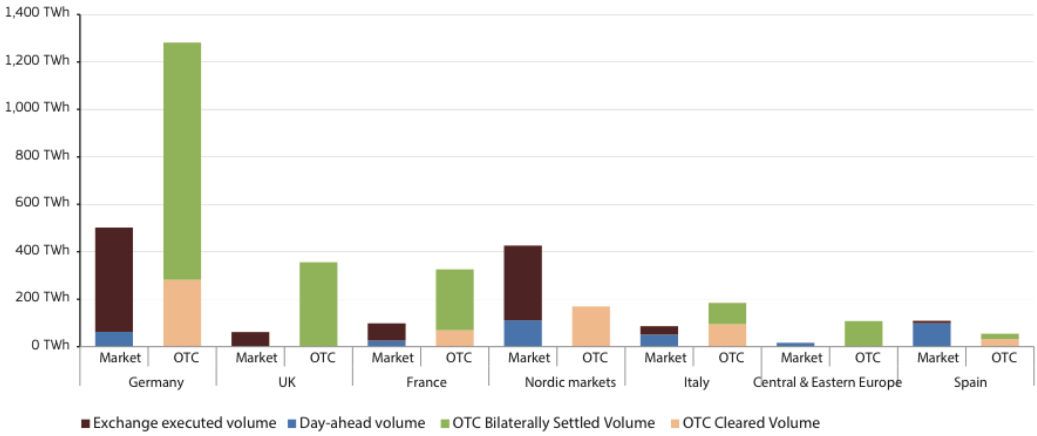


Bron: Bloomberg

[3] Wholesale Energy Markets in 2015, Ofgem report, 9 September 2015, available at: https://www.ofgem.gov.uk/sites/default/files/docs/2015/09/wholesale_energy_markets_in_2015_final_0.pdf.
[4] ACM Liquidity report 2014, Wholesale gas and electricity markets, available at: https://www.acm.nl/nl/publicaties/publicatie/13457/Liquiditeitsrapport-2014-Groothandelsmarkten-gas-en-elektriciteit/.

- **Market depth**: the extent to which a market can absorb transaction volumes without it having a major impact on the price. Higher market depth shows confidence in the market and reflects the accuracy of the price signals. The volumes of MWh traded are amongst the best indicators of market depth, and with the implementation of REMIT, the date is available not only for exchange-based transactions but also OTC. The graph below shows a comparison of traded electricity volumes – exchange-based and OTC – in various European countries/regions (source: European Commission[5]).

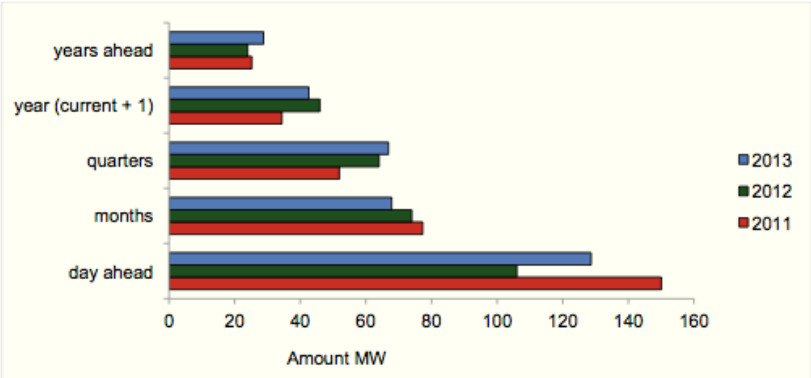
FIGURE 16 – COMPARISON OF ELECTRICITY TRADED VOLUMES IN SOME IMPORTANT DAY-AHEAD, FORWARD AND OTC MARKETS, FIRST QUARTER OF 2016



Source: Platts, wholesale power markets, Trayport, London Energy Brokers Association (LEBA) and own computations

Market depth can then be estimated in terms of MW until which market participants can trade without significantly affecting the market price. The graph below shows such an assessment for various time horizons on the Dutch OTC electricity market (source: ACM[6]).

Figuur 49: OTC marktdiepte 2011-2013



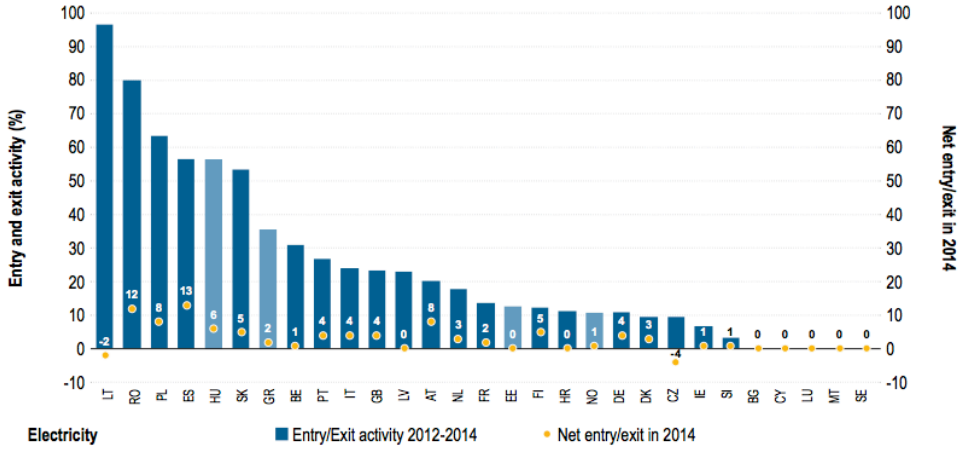
Bron: CODATA liquidity study 2013

[5] Quarterly report on European electricity markets, Volume 9: Q4 2015-Q1 2016, European Commission, DG Energy, Market Observatory for Energy, available at: https://ec.europa.eu/energy/sites/ener/files/documents/quarterly_report_on_european_electricity_markets_q4_2015-q1_2016.pdf.

[6] ACM Liquidity report 2014, Wholesale gas and electricity markets, available at: https://www.acm.nl/nl/publicaties/publicatie/13457/Liquiditeitsrapport-2014-Groothandelsmarkten-gas-en-elektriciteit/.

- **Competition in all segments of the market:** well-defined bidding zones should foster competition in all segments of the market, i.e. in all timeframes of the wholesale electricity market including across borders, as well as on the retail market. A number of measures can be used to assess the degree of competition:
  - **Market entry/exit activity**: entry/exit activity shows how easily market participants can take the decision to enter or exit a market based on commercial consideration and if regulatory and administrative barriers are reasonably low. Note that this indicator is imperfect for comparisons as newly liberalised markets tend to have a temporarily high entry/exit activity that does not fairly represent the current level of competition in those markets, although it can be a good indicator for its evolution in the future (as shown in the graph below, source: ACER[7]).

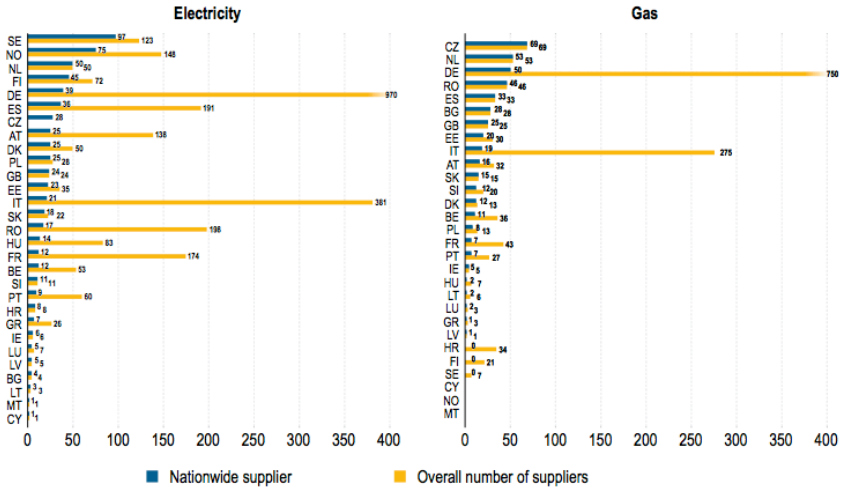
Figure 22: Entry/exit activity of nationwide suppliers (3-year average) in retail markets for households 2012–2014 (%)



  - **the number and variety of market participants**: the entry/exit activity needs to be matched with this indicator that shows the reality of the attractiveness of a given market, and its adaptability to various market participants' business models. The graph below shows a pan-European comparison of the number of retail suppliers for gas and electricity (source: ACER[8]).

[7] ACER 2015 Market Monitoring Report, available at: http://www.acer.europa.eu/official_documents/acts_of_the_agency/publication/acer_market_monitoring_report_2015.pdf.
[8] ACER 2015 Market Monitoring Report, available at: http://www.acer.europa.eu/official_documents/acts_of_the_agency/publication/acer_market_monitoring_report_2015.pdf.

Figure 19: Overall number of suppliers and number of nationwide suppliers active in the retail electricity and gas markets for households in the EU MSs and Norway – 2014

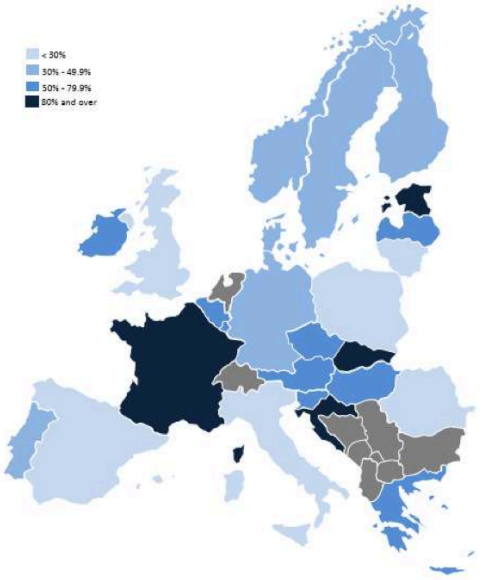


Source: CEER National Indicators Database (2015).

Note: To make the figure clearer, the scale is limited to 400. The number of nationwide electricity suppliers for the Czech Republic is based on the ACER Database and shows the situation in Prague. The various footnotes under the relevant category in the CEER database suggest that not all NRAs are reporting only on the number of active household suppliers, but in some cases these figures also include all licensed suppliers. However, very often not all licenced suppliers are also active in the market, as suppliers may obtain a licence but decide to wait to start supplying consumers or simply, at later stage, choose not to enter the market at all.

- **Market concentration**: market concentration indicates the market share of each market participant in a given market. In comparison with the previous indicator, it allows not only to see how many market participants there are on a market and how diverse they are, but also how influential they can be on the market. The map below shows market concentration on the generation side of the wholesale electricity market (source: Economic Consulting Associates[9]).

Figure 1 Share of supply by largest generator

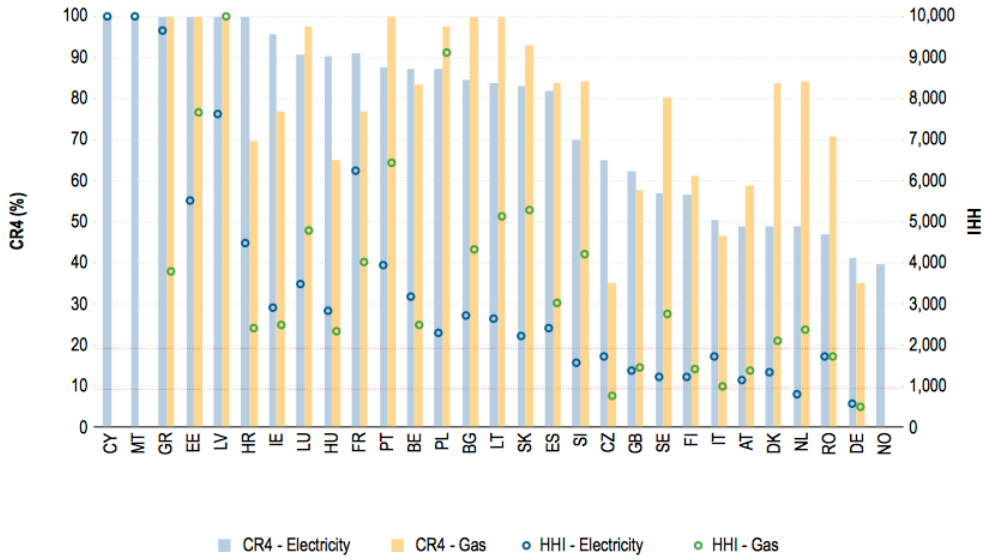


Source: Eurostat

[9] ECA report on European Electricity Forward Markets and Hedging Products submitted to ACER in 2015, available at: http://www.acer.europa.eu/en/electricity/market%20monitoring/documents_public/eca%20report%20on%20european%20electricity%20forward%20markets.pdf.

Various indices have been developed to quantify the many aspects of market concentration, such as the Herfindahl–Hirschman Index or the CR4. The lower both these indices are, the less concentrated and the more competitive the market is. The graph below shows a pan-European comparison for both the CR4 and the HHI, for gas and electricity retail markets (Source: ACER[10]).

Figure 16: Market concentration in retail electricity and gas markets – 2013 (% and HHI)



Source: Datamonitor's data (2014) and ACER calculations

Note: According to the Dutch regulator ACM, CR4 data for the Netherlands is different: i.e. electricity: 85.8%, gas: 83.8%.

2. **Market simulations based on fundamental models usually provide lower price volatility compare to real market results. Can you share your experience with assessing of price volatility which results from market simulation? How to express/measure price volatility and which indicators could be used?**

First of all, we reject any notion that price volatility is of itself bad and would be a counter-indicator for any particular bidding zone configuration. Quite dramatic variations in diurnal and seasonal prices may well provide an accurate reflection of the value of flexible capacity in a market short of supply in certain hours or months.
In addition, it is not necessarily the case that fundamental models provide lower volatility than eventually observed in the market. Also, the model results do not matter in this context: volatility can either be measured historically from market price changes or derived from quoted options.

[10] ACER 2014 Market Monitoring Report, available at: http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER_Market_Monitoring_Report_2014.pdf.

3. **What do you consider as a reference evolution of price volatility in time (years) or what would be your recommendation to find such reference price volatility? What price volatility do you consider as high volatility and acceptable volatility in terms of time (years) and EUR/MWh?**

A direct answer is not meaningful in this case as price volatility is not the right indicator for robustness of prices in the first place, nor is it useful in relation to bidding zone configuration. High and low volatility can go together with both liquid and illiquid markets. However, a liquid market typically ensures robustness of price signals.

4. **At which level would you consider varying prices in the timeframe of a year (so from one hour to the other or from one week to the other) an issue for traders and investors? At which level would you consider a high electricity price sensitivity with regard to different framework scenarios an issue for investors (power plants)?**

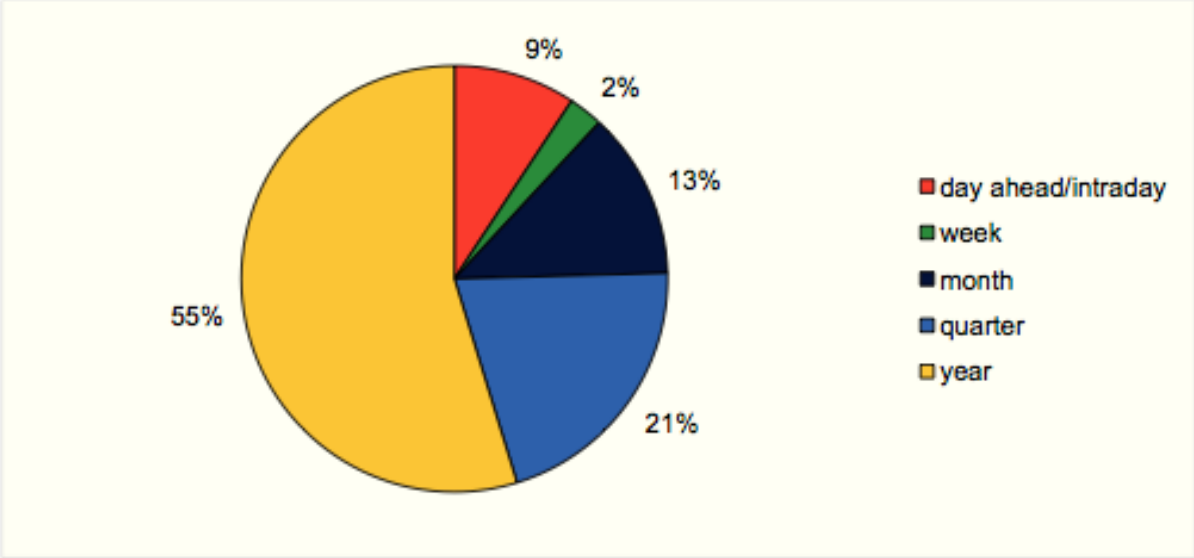
Price volatility is usually not seen as an issue for traders or investors. Traders anticipate and react to volatile markets, by trading around the fundamental longer-term equilibrium. For investors it may be a more complex challenge, but as long as there are hedging instruments available – again liquidity is key in this matter – it is not an issue for them or other market participants. In the past, investments have been made under comparable volatile circumstances.

5. **How important are forward / future price signals for investments and trading? What effect does a split/merge have on hedging price risks of investments?**

Forward and future prices are the key signals for investment and dispatch decisions. Well-functioning, liquid forward markets are vital to have reliable and efficient decisions in the market. Both generators and suppliers need the forward markets to buy and sell electricity, and to hedge their expose to short time prices. As a result, forward markets have been the backbone of the electricity sector liberalisation and remain where most of the electricity is traded. The graph below shows the example of the Dutch electricity market in 2013, where more than 90% of the volumes are traded forward (source: ACM[11]).

[11] ACM Liquidity report 2014, Wholesale gas and electricity markets, available at: https://www.acm.nl/nl/publicaties/publicatie/13457/Liquiditeitsrapport-2014-Groothandelsmarkten-gas-en-elektriciteit/.

Figuur 34: Verdeling volumes naar producten, 2013[13]



Bron: CODATA liquidity study 2013

The existence of liquid forward markets reduces risks for new investments, and therefore reduces risk premiums and overall costs. Hence the liquidity and therewith the trust in the market is an essential part in ensuring system adequacy, in particular considering the time needed to build power generation and transmission infrastructure. We observe that large zones have generally seen competition and liquidity steadily increase.

EFET favours stability in the configuration of bidding zones along the lines of long-standing structural congestions. This certainty and continuity are essential to underpin liquidity, investments in generation and demand-response on the basis stable price signals stemming from fair competition between market participants in all segments of the market, including in the crucial forward timeframe, and signal the need for transmission infrastructure developments. Bidding zones delineation should also ensure supply competition, which provides customer choice, product innovation and variety, and improved efficiency. These are the reasons why we generally favour larger bidding zones, as they allow for more liquidity and competition – at wholesale and retail levels – over smaller, inevitably less liquid zones.

6. **How good are the price signals and hedging possibilities given by a system price in combination with contracts for differences (e.g. Nordic market design)?**

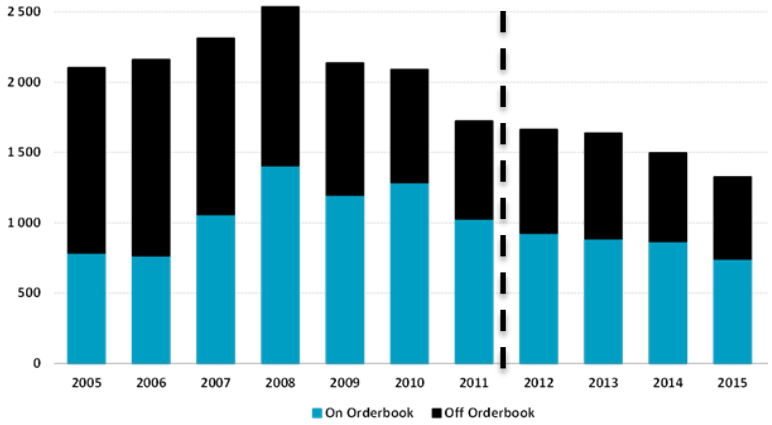
Changes to the zoning model have led to competition and liquidity losses, especially in the forward timeframe, as exemplified by the bidding zone reconfiguration in Sweden in 2011[12]. Our observation of the market on a daily basis induces EFET to

[12] A reality check on the market impact of splitting bidding zones, EFET memo, June 2016. Available at: http://www.efet.org/Cms_Data/Contents/EFET/Folders/Documents/EnergyMarkets/ElectPosPapers/~contents/4L8JKNAX7C4W4YLS/EFET-memo_Swedish-zones-reform.pdf

set the record straight on this point: the 2011 reform in Sweden has been associated with a negative trend in the liquidity of the forward market in power and the liquidity of the market in the contracts for difference (so-called Electricity Price Area Differentials or EPADs) used to hedge forward positions (thus price and volume risks) in particular bidding zones against the system price. The effect is significant, and while other elements may have contributed to it – such as the economic downturn of the late 2000s – the appetite for hedging products has decreased at a far more worrying pace in the Nordic region than on the continent.

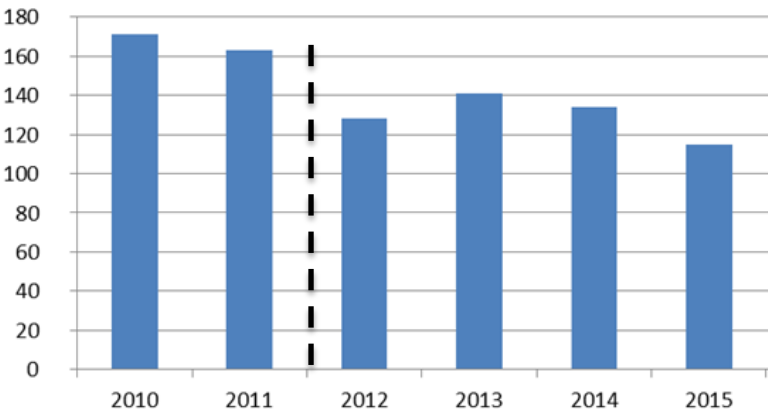
7. **Can you provide any concrete example or experience where price signals were/are inappropriate/appropriate for short-term utilisation or long-term development of the power system?**

Taking the example of the 2011 bidding zones redesign in Sweden, one can observe that on a regional basis, the volumes of future contracts traded on Nasdaq-OMX has decreased by over 20% from 2011 to 2015:



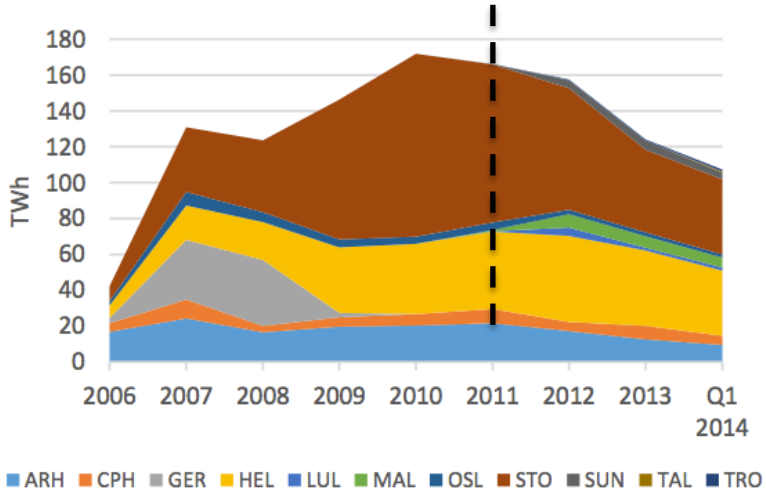
Nasdaq cleared futures aggregated (TWh)

A similar trend can be observed in the liquidity of EPADs, which serve as hedging instruments in the price between each zone in the region and the system price. A cumulative drop of close to 30% can be observed across the region:



Nasdaq EPADs cleared and traded (TWh)
Source: Nasdaq data

The picture is yet more striking when breaking down the volumes of EPADs transacted per bidding zone, where a cumulative drop of over 40% can be observed in Sweden (note the sharp decrease in EPADs liquidity in the SE3 (STO) zone in brown below):



Nasdaq EPADs cleared and traded (TWh)
Source: ResearchGate

The table below further shows that the liquidity plunge of EPADs (-28% in the region; -42% in Sweden) far outweighs the slight drop in electricity consumption (-4% in the region; -5% in Sweden) in the period between 2010 and 2013. In parallel, churn rates have dropped by 39% in Sweden over that period (compared to a decrease of 17% in Denmark, and an increase of 11% in Finland):

	Area	2010	2011	2012	2013
*Electricity consumption (GWh)**	DK	35640	34458	34268	32350
	EE	8011	7827	8138	8049
	FI	87467	84244	85125	84044
	NO	129792	122020	127863	127843
	SE	147090	139222	141996	139576
*EPAD volume traded (GWh)***	DK	26634	29534	22325	20111
	EE				93
	FI	39259	43250	47942	42106
	NO	3930	4253	2981	2685
	SE	102055	89054	84293	58995
Churn rate	DK	0,75	0,86	0,65	0,62
	EE				0,01
	FI	0,45	0,51	0,56	0,50
	NO	0,03	0,03	0,02	0,02
	SE	0,69	0,64	0,59	0,42

Electricity consumption, EPADs and churn rate
Source: ResearchGate

8. **What can distort accurate price signals and what could prevent the distortion of prices signals?**

A pure energy-only market provides undistorted price signals. However, the European energy landscape is far from an energy-only market, and energy prices are being distorted by non market-based measures such as those described below:

- Politically driven interventions in the market:
    - Subsidies of all sorts, including to RES-E generators
    - Grid privileges awarded to certain RES-E generators (priority access and dispatch, lack of balancing responsibility)
    - Unnecessary and/or poorly designed capacity remuneration mechanisms (CRMs)
- Taxes, such as carbon taxes introduced in parallel to the EU ETS
- Different treatment of auto-generation and auto-storage (behind the meter)
- Market splitting
- Financial regulation – MiFID, EMIR, CRD, MAD/MAR
- Lack of competition (volumes, market parties, vertical integration).

9. **What could be the role of correct price signals in the future when congestion patterns are more unpredictable and security constraints more complex e.g. growing distributed intermittent generation, distributed electricity storage or electric cars?**

First of all, there is no such thing as a “correct” price signal. Price signals always reflect the state of the market, taking account of all the design features of the said market. As such, they will always be “correct”.

We assume the question aims to ask about the role of price signals once they are left to accurately reflect the balance of supply and demand without undue distortion, and that in a more complex environment. At EFET we believe that price signals can do a lot if they are not distorted; considering the expected increasing complexity of the power system in the coming years, a few key measures need to be enacted:

- **Regarding intermittent generation**: the development of RES-E generation has so far largely happened outside the realm of the electricity market, thereby distorting wholesale price signals and unnecessarily amplifying unscheduled flows in certain regions. Wherever this is not yet the case, it is essential that grid privileges enjoyed by RES-E producers are removed, i.e. that they become fully exposed to connection charges, redispatch procedures, congestion payments, and imbalance penalties, including – albeit indirectly – when they are connected to the distribution grid. This will sharpen price signals, reduce unscheduled flows and allow all market participants to be exposed to and take dispatch and investment decisions based on price signals. A gradual removal of financial privileges – starting with a market-

based allocation of subsidies but all the way to a complete suppression of subsidies for mature technologies – will also help improve the price signals for all market participants, including demand-response providers and storage facility operators.

- **Regarding demand-side response**: demand-side response can play an important role in bringing more flexibility to the market, especially in an environment with more intermittent power generation from RES-E. We believe that only meaningful – significantly higher than today – prices can help the emergence of sizeable demand-response capacity beyond the few large industrials that are currently active on the market. Also, third-party aggregators of demand-side capacity should participate on a level-playing field with other market participants, i.e. assume directly or bear the financial consequences of balancing responsibility, and inform as well as remunerate the relevant balancing responsible parties for any energy re-routed on behalf of a customer.
- **Regarding storage**: using flexibility from storage can help reduce overall system costs once cost-efficient storage solutions emerge, both at a wholesale and distributed level. However, to ensure that price signals are not distorted, storage ownership and operation needs to remain a commercial activity carried out by market participants, in line with the principle of unbundling enshrined in the EU Third Energy Package. In addition, DSO or TSO ownership/operation would inefficient, as specific regulations and monitoring are needed to avoid that DSO/TSO owned or operated storage could be used on the market. Such assets would then only be used for grid support, and not for market purposes, and thus the value of the assets would be reduced. Therefore, DSOs or TSOs contracting flexibility services from market parties (instead of owning & operating own storage) is always more efficient, as the tapping on storage assets would be cheaper for DSOs/TSOs, and market participants could deliver the storage-related services not from one storage facility but from a pool of assets, as is currently the case in the generation business.

10. In general: do you have any other observations/remarks you would like to place with respect to price signals within the framework of a bidding zone reconfiguration?

As already mentioned in our introduction to this consultation response, we would like to recall the primary objective of bidding zones delineation and their potential reconfiguration **Competition and liquidity in the forward timeframe, including across bidding zone borders, are essential for the overall health of the internal power market in their own right**, not just to ensure an appropriate signal for transmission investment new-build, as hinted in the opening paragraph of the ENTSO-E consultation document.

While indeed a reliable long-run signal for transmission infrastructure development and investment is a useful by-product of a stable and transparent bidding zones design**, the main purpose of bidding zones delineation and their possible reconfiguration is to ensure fair competition and a high level of liquidity in all segments of the electricity market, including across borders.**

Market liquidity

11. What do you consider as most relevant indicator for market liquidity?

All indicators for liquidity are very much related and be used on equal terms, although some are more telling or easier to measure than others. Nevertheless, EFET considers churn rates, bid/offer spreads, market depth and trading volumes better indicators than lot sizes.

12. How important is cross-zonal exchange for market liquidity in relation to the bidding zone size itself (also considering that, for example, a split in one bidding zone may increase exchange capacity in neighbouring bidding zones)? (Please provide some real-life business-case examples) What is your preferred measurement technique for this latter aspect?

Zonal systems like the one in place in Europe are based on the abstraction that each zone is a congestion-free copper plate – though this is not always the reality in physical terms. Defined amounts of capacity are then allocated between the bidding zones. By nature, the energy exchanges between bidding zones will be structurally smaller than that exchanged between bidding zones as it is unlimited. However, both types of energy exchanges are vital for a proper functioning of the electricity market at a pan-European level, and the design of cross zonal hedging instruments (PTRs and FTRs) as well as the capacity calculation and allocation methodologies associated to them are key to guaranteeing that cross-zonal capacities are used to their full potential.

We expect that liquidity would not increase in case markets based on large zones are split into smaller zones: in our view, in an optimistic scenario where market participants keep the same exact business activity and an existing zone is split into two zones, then the number of forward/future products would likely double, whereas the number of market participants and the total size of the market would remain equal. This can only result in lower liquidity and therefore higher risk premiums and higher costs. In an alternative scenario where some market participants would refocus their business in only one specific bidding zone by reducing market activity in or withdrawing completely from the other zone, liquidity and competition would be even more severely affected. Furthermore, it is not guaranteed in this case that market participants would have the same need for cross-border hedging, thereby reducing liquidity and competition on forward/future products as well. Bearing in mind that the relation is non-linear, only a small drop in liquidity could trigger a down-spiralling effect.

13. **Are you aware of any analyses showing the relation between bidding zones sizes and market liquidity (considering current and future market design)? Are you aware of an approach to show the relation based on (public) historic data? (apart from the ones already given to us)**

We refer to our answers to questions 6 and 7 highlighting the loss of liquidity in forward energy markets and hedging instruments following the bidding zones split of 2011 in Sweden.

We are not aware of specific studies proving the relation between bidding zones size and market liquidity. However, we assume that all EU regulators monitor the market activity in their respective bidding zones with the use of indicators such as those described in our answer to Q1. An idea could be to correlate these indicators with the size of each bidding zone. While this method will never offer full scientific proof, it can be an interesting indicator of the type of bidding zone configuration with which we reach an acceptable level of liquidity and competition.

14. **How important is the bidding zone configuration with regard to the liquidity on forward/future markets? In which way is hedging impacted by a lower liquidity, also taking account cross-zonal LTRs and CfDs relating to a common trading hub?**

We recall that if a market participant is to supply customers across borders, it is *vital* to ensure they can **hedge their (primarily) long-term positions**. A market participant will generally not be able to bear the price risk of congestion on the grid while trying to offer competitive long-term prices to customers within another Member State, especially if the regional wholesale market is not sufficiently liquid and competitive. In the absence of appropriate hedging opportunities for these risks, new entry into a market will be discouraged, especially for market participants without (temporarily or not) sufficient physical hedges such as power plants.

TSOs, as managers of cross-border capacity, have the ability to manage the associated risks and are the *only* players in the electricity sector that can do so. Hence **TSOs are also the only asset owners and/or operators with an in-built capability to offer primary, physical hedges** against future congestion rents through the prior creation of firm cross-border transmission capacity rights. TSOs in this sense are *natural* sellers of firm transmission capacity rights, and should make it available to the market.

The fundamental role of TSOs in calculating, publishing and allocating all available capacities in all directions and on all borders on a forward basis is **an essential part of their "public service" activities**, as regulated entities.

The issuance of forward transmission rights at all borders in all directions allows to:

- guarantee that a certain minimum volume of products will always be available and offered on a transparent and non-discriminatory manner through organised auctions;
- provide substantial congestion income to TSOs by allowing them to extract the maximum value out of the network infrastructure they manage;
- provide better and more reliable visibility for market participants as to the total volumes of hedging products;
- ensure that the capacity that is offered to the market is maximised at all points in time and that any variations of these volumes is published in a timely and effective manner;
- provide valuable signals as to the structural value of cross border capacity, from a "congestion" point of view. This is useful for all market players and for TSOs and regulators, whereas the daily price signals are much more volatile. For example, forward allocation provides clear market-based price signals as to the need for additional infrastructure investments.

Hence, we believe that they should make 100% of the calculated capacity available to the market as far in advance of real time as possible – at least a year ahead. Periodic buy-back auctions can then be used by TSOs to manage capacity availability uncertainty.

The delineation of bidding zones has a significant impact on the liquidity on forward/future markets. The cost of hedging increases sharply with liquidity going down and by consequence, capital expenditures for new investments will also increase. As a result, proxy hedging in more liquid markets becomes more attractive, which in turn accelerates the downward spiral in illiquid zones.

15. How important is the bidding zone configuration with regard to the liquidity on intraday markets (current model and target XBID model)? What are the differences to the day-ahead market?

Liquidity attracts liquidity, in all timeframes. In the day-ahead market, the exchange-based auction mechanism is the dominant market. In such a market, the main indicator for liquidity is market-depth. Churn rate and bid-ask spread play a smaller role. The intraday market is mainly a continuous trading market, like the forward markets. In such markets churn rate and bid-ask spread are relevant indicators.

There is however no fundamental difference as to the effect of bidding zones reconfiguration in either of these timeframes, which are connected through the price signal. EFET believes that splitting large liquid zones into smaller zones will affect the liquidity of day-ahead and intraday markets just like it reduces forward liquidity.

16. Is there a market behaviour of self-reinforcing, as a high liquidity is attractive for traders leading to an increase in liquidity and the other way round? Where have you observed related effects in the past?

This is the case, indeed. For instance, many market participants in CWE and CEE proxy hedge their positions on the Austrian/German/Luxembourg market, thereby reinforcing the liquidity in this market and reducing the liquidity in their own market. At the same time a proxy hedge does not offer the same security as a real hedge.

17. What effects (quantitative or qualitative) result from a lower or higher liquidity? How important is the liquidity for investments?

Low liquidity results in higher cost for hedging for consumers and generators. It also comes with higher uncertainty when it comes to new investments, as it is not possible to lock in a margin early on. This results in higher capital expenditures for new investments, possibly resulting in lower installed capacity levels, but without doubt in higher overall costs.

18. a. Do you consider an incremental percentual (e.g. 1%) or absolute (e.g. 1 MW) change of demand as more appropriate and which steps (1%, 5% or 100 MW, 200 MW) for which market sizes?

No comment.

18. b. The consideration of cross-border exchanges is not defined yet and it may be difficult due to its computational complexity in the available modelling framework. How important do you consider them in such an analysis and how should they be taken into account?

Cross-border exchanges are a vital element of the European zonal system. Not considering them in the analysis of market efficiency for the possible redelineation of bidding zones would be a serious mistake.

See our response to question 5 to 7 and 12 to 14 for further considerations on the subject of forward markets and transmission rights.

19. In general: do you have any other observations/remarks you would like to place with respect to market liquidity within the framework of a bidding zone reconfiguration?

See our answers to questions 1 to 18.

Market power and concentration

20. **Which concrete methodology would you recommend to the BZ TF in order to pre-assess market concentration evolution under a BZ reconfiguration process?**

There is no general answer to this question. Different market assessments need different methodologies. Generally, regardless of the methodology, the smaller the geographically area, the lower competition, and the higher the possibility of completion problems and low liquidity.

For wholesale energy markets, one can say that the Herfindahl–Hirschman Index and "Market Shares" are a bit simplistic to measure market power. This is also the reason why ACER left out the concept of market power in REMIT legislation. Market participants with small market shares are sometimes able to act anti-competitively; also the other way around, sometimes large players with high markets shares are not able to use the market power at all.
For retail markets, HHI and market shares combined with switching levels are more common.

21. **Why would you recommend the above-mentioned methodology and which are its strengths and weaknesses in comparison to other possible ones?**

See our answer to question 20.

22. **Would you have a preferred market concentration indicator (or a combination of several) that you consider essential to follow-up and why would this one be more adequate than the other ones commonly used?**

Generally, regardless of the methodology, the smaller the geographically area, the lower the competition and the higher the risk of market power – whether abusively exercised or not. Also, low liquidity is a traditional corollary of smaller bidding zones as indicated in our responses to previous questions.

23. **Is all the data needed for the above-indicated methodologies and indicators readily available somewhere in order to render feasible the completion of both from a project perspective?**

We believe that the Transparency Platform EMFIP and the REMIT database will be useful sources of data.

24. Are you in condition to help the BZ TF TSOs to obtain this data?

In principle EFET is willing to help, but firm specific data (market shares) is often confidential. Provided that it does not lead us in breach of our anti-trust policy, we are ready to help the BZ TF, especially as far as reaching out to market participants is concerned.

25. In case increased market power is detected as a feasible consequence of some particular BZ reconfiguration, how would you recommend the BZ TF to assess this situation further in order to comply with the CACM specific requirements in the subject?

The BZ TF should perform – ideally ex-ante – sensitivity analyses on the impact of larger and smaller zones and see whether competition reduces or not. Note that market concentration is often exponentially related to market efficiency.

26. Can the qualitative assessment of the presence of a feasible possibility to exercise increased market power as a result of a BZ reconfiguration constitute a result by itself? If the reply to this question is affirmative, should it constitute a cautionary warning against the BZ reconfiguration indicating that some mitigation measures are needed? Or should this fact simply stop the BZ reconfiguration on the basis of the perceived risk?

As mentioned in our answer to question 20, market power is a tricky concept to handle. Market participants with small market shares are sometimes able to act anti-competitively; and the other way around, sometimes large players with high markets shares are not able to use market power at all. Hence, the proposed qualitative assessment of the possibility to exercise market power should be used as a warning flag rather than a showstopper.

27. Are there any market design mitigation measures for market power that you would like to illustrate at this point?

Cross-zonal hedging instruments, preferably transmission rights, issued by TSOs are a powerful instrument to combat market power in the wholesale market. But that would not solve the problem for retail markets.

28. How could a qualitative method well-establish the limits of what is a significant increase in the capability to exercise market power as a result of a reconfiguration and whether this can truly affect market functioning? Do you have some specific suggestions on this matter?

No comment.

29. Do you agree with the view that quantitative methods to perform assessment on market power are nowadays still rather experimental and prone to a possibly rather subjective assumptions? In case the reply to this question is negative can you illustrate your affirmations with a fully developed example?

A reason for assessing market power is to see if a subject can profitably increase prices, reduce output or otherwise influence parameters of competition. There are available quantitative methods to assess market power and their results do not depend on subjective assumptions.

As an example, in the CEE region, one company usually has a market share of more than 60 % on conventional wholesale electricity generation, but its market power is not proportionate to its market share. Sophisticated software, such as Plexos, which are used by market participants to forecast the development of future electricity prices, could also be used to assessing market power.

It can be observed that under the assumption that all solar and wind energy capacity is closed down in Germany, it leads to a significant increase of the year-ahead base load prices in neighbouring markets. That implies that the German renewables place significant constraints on the behaviour of the regional conventional energy producers. It can also be observed that under the assumption that the price of coal (lignite) is set to zero – and despite the fact that lignite production accounts for a significant share of the regional fuel mix – base load prices in the region remain virtually the same. These examples demonstrate market share is not the best available indicator of market power.

30. Is there any quantitative/qualitative analysis method you would like to recommend to the BZ TF for the evaluation of market power? Kindly describe this latter, also indicating what would be its advantages and drawbacks.

No comment.

31. In general: do you have any other observations/remarks you would like to place with respect to market concentration and market power evolution within the framework of a bidding zone reconfiguration?

No comment.

Effective competition (including retail markets)

32. **Between liquidity, market power/concentration and price signals, what do you deem as most important parameter of effective competition (also with regard to incentives for investments)?**

Liquidity is certainly the most relevant indicator of effective competition among the three. If market power does not lead to less liquidity, it is of lesser importance. And liquidity influences price signals, not the other way around.

33. **Do you see any link between the bidding zone configuration and demand response (smart metering, electricity saving devices, etc.)?**

Demand-side response would likely be affected by bidding zones sizes as retail markets. Larger zones with more liquid markets would give more opportunity for direct participation of demand in the wholesale market. Higher levels of competition in retail markets would incentivise retailers to propose attractive demand-response products to their customers. Finally, suppliers involved in demand-response management and third-party aggregators of demand response capacity would be able to pull more resources in larger bidding zones.

See our response to question 9 for further considerations on the subject of demand-side response.

34. **Do you see any link between the bidding zone configuration and how wholesale price changes are transferred to the end consumer? Is the ability of suppliers to offer competitive tariffs to end customers affected?**

Yes. Retail markets compete at a national level. If a country has split wholesale prices, tariffs are less transparent and retail-pricing structures are more complex – harming competition and increasing entry barriers. In particular, it becomes more difficult to offer nationwide retail prices.

35. **Does a split/merge have an effect on the scheduling and remuneration of renewables and their integration in the market? May different bidding zone configuration have influence on renewable development and on national and European energy targets (from a regulation point of view)?**

This depends on the specific remuneration structure of renewables and thus it might have an impact on the further development.

See our response to question 9 for further considerations on the subject of RES-E generation.

36. **Could the REMIT/transparency data be helpful for quantitative analyses on the criteria above? Which data exactly is available for the relevant analyses here? Do you have experience about accessing the data?**

No. REMIT data should not be very helpful in this case.

Transition costs

37. **How much time do you expect to be necessary for the adaption of the current bidding zone configuration (including the time for market participants for achieving sufficient knowledge with regard to the new configuration)? (based on experiences or related to a specific configuration change)**

A new bidding zones delineation should be decided with a lead time of at least five years in order to allow market participants reasonably to fulfil their long-term commitments (forward trades are concluded up to three years in advance on exchanges, up to ten years on the OTC market).

38. **Is there a concrete methodology that you can recommend to the BZ TF in order to assess these costs (until the configuration change has come into force)?**

No comment.

39. **In case of forward markets, LTRs (PTRs and FTRs) are one way of assisting market participants in hedging their risks. In case of a bidding zone configuration change, how much time and costs do you expect for the introduction of new LTRs and the adaption of the old ones? In the same way, what challenges do you see for the adaption of existing futures and contracts in general?**

Forward markets and cross-zonal products are indeed key to assisting market participants in hedging their risks. The idea that these tools would be able to mitigate the negative effects of a change in bidding zones configuration – especially in the case of a bidding zone split – seems rather popular in regulatory circles. However, the proposal to implement Nordic-style system price schemes in other regions – beyond the observations we already made on their shortcomings in our answers to questions 6 and 7 – to cope with the decreasing liquidity following a bidding zone split fails to recognise that this market design feature is not desired by market participants in other regions, is not suited to the geographical market characteristics or to the mix of generation sources on the continent, implies the abolition of bidding zone-to-bidding zone hedging opportunities currently available to market participants and, in any case, cannot be unilaterally imposed at the behest of regulators, TSOs or PXs - nor even by all three acting together – in the absence of new primary EU legislation.

See our response to question 6, 7 and 13 for further considerations on the subject of forward markets and transmission rights.

40. How important do you consider the stability of the configuration of bidding zones? Do you see any 'minimum' time period for a bidding zone configuration to be in place (e.g. monthly basis, 1 year, 5 years)? (this may also be depend on the regional scope of a reconfiguration)

As mentioned in our introduction to this consultation response, EFET favours stability in the configuration of bidding zones along the lines of long-standing structural congestions. This certainty and continuity are essential to underpin cross-border competition, liquidity in the forward and day-ahead wholesale power markets, and investments in generation, storage and demand response. A stable configuration of bidding zones should produce reliable price signals, and, especially in the case of larger zones where many generators and suppliers are active, underpin competition between market participants across all timeframes of the market.

We struggle to fully understand the question, as we believe that a bidding zone configuration should remain stable for far longer than even the longest period proposed in the question. Indeed, as mentioned in our response to Q37, we think that the *lead time for a bidding zone change* should be five years. We expect bidding zones to remain stable after that for a longer time – i.e. no shorter than five years – otherwise the market will be in a constant state of change.

The Norwegian bidding zones design illustrates how constant changes negatively affect the market: in Norway, the bidding zones are flexible and there is almost no liquidity at all.

41. Do you see a risk related to non-recoverable costs i.e. stranded assets or investments in the case of bidding zone configuration changes? (please explain and provide examples)

Yes, a change of bidding zones price structures will change the initial investment fundamentals and thus the business case of concerned assets.

As an example, part of the pumped-hydro capacity built in Austria was designed to offer services in the common Austrian-German-Luxembourg market. Should a split of this bidding zone be considered, then the business plan of these assets would drastically change compared the premise under which these investments were made

42. **Furthermore, the reconfiguration of national bidding zones might make the adjustment of the current RES support scheme necessary. What kind of transition costs do you see here?**

We believe that grid privileges enjoyed by all RES-E producers should be removed immediately, where they still exist. Financial privileges should also be removed, starting with a market-based allocation of subsidies, with the objective of a complete suppression of subsidies for mature technologies.

See our response to question 9 for further considerations on the subject of RES-E generation.

43. **Do you see an impact of bidding zone configuration changes on existing grid development plans and do you see costs arising from changes?**

EFET believes that TSOs should be able to evaluate the costs and benefits of transmission infrastructure projects irrespective of the bidding zone configuration and that a different bidding zone configuration should not result in different grid development plans. At the same time, such an impact could not be fully excluded in practice.

44. **Could you provide ENTSO-E with any estimation of transition costs, either in general or only related to a specific configuration change? What kind of transition cost types do you consider relevant?**

No comment.

Transaction costs

45. **What are the transaction costs of market actors that are positively or negatively impacted by a bidding zone configuration change? Do you for example see a difference between border overlapping configurations and pure national ones?**

The cost of hedging increases sharply with liquidity going down, which we fear would be the case in the event of bidding zone split(s). As a result, proxy hedging in more liquid markets becomes more attractive, which in turn accelerates the downward spiral in illiquid zones.

Low liquidity results in higher cost for hedging for consumers and generators. It also comes with higher uncertainty and thus higher capital expenditures when it comes to new investments, as it is not possible to lock in a margin early on.

46. **What kind of transaction cost categories do you consider as relevant? How could these cost categories be monetized?**

No comment.