

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

A EURELECTRIC Response paper

August 2016

EURELECTRIC is the voice of the electricity industry in Europe.

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

We Stand For:

Carbon-neutral electricity by 2050

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

Competitive electricity for our customers

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

Continent-wide electricity through a coherent European approach

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

EURELECTRIC. Electricity for Europe.

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1 Introduction

This paper is the EURELECTRIC response to the ENTSO-E survey on market efficiency with regards to bidding zone configuration. The introductions of the questions have been copied from the ENTSO-E consultation paper. Copied text is in italic in contrast to our responses.

According to the CACM, the bidding zone review should encompass criteria related to price signals, market liquidity, market power, effective competition, transition costs and transactions costs. The following questions intend to gather related views, arguments, positions and assessment proposals. Both very open and relatively specific questions are formulated. Some questions are attributed only to certain market actors. We are therefore grateful for any response. Partial answers are also welcome.

EURELECTRIC emphasises the importance of a thorough multi-criteria assessment including a cost-benefit analysis to ascertain the actual effect of market efficiency with regard to bidding zone configuration.

The basis for our input is a market approach for an integrated European electricity system. This fundamental choice for market mechanisms to provide an efficient means for achieving a cost-effective, reliable and carbon-free electricity market is built upon the following main principles:

- Freedom of connection

Demand and supply can connect everywhere into the grid based on non-discriminatory conditions for the connection and use of the grid.

- Freedom of dispatch

Within the limits of the connection, a market player is free to feed into or take from the grid at all times. Any limitation of this right should be compensated for at a value to be negotiated with the respective market player.

- Freedom of contract

Market parties can enter into any form of contract with regard to their demand and supply.

- Freedom of choice in resource

Within the limits of the carbon reduction goals and environmental restrictions, market parties can choose any form of resource to fulfil their electricity needs.

Market efficiency is about getting demand covered with overall lowest costs within this context. This includes the costs mentioned in the survey and the questions around market power. An important component that is not directly addressed here is the ability for all market participants and network operators to jointly anticipate the future situation of the market taking into account the physical constraints. EURELECTRIC believes that giving the market as much freedom as possible until constraints occur with a higher degree of certainty is the best way to deal with this.

2 Survey

Accuracy and Robustness of Price Signals

Introduction

An optimal bidding zones configuration should promote accurate and robust price signals for efficient short-term utilisation and long-term development of the power system. Accurate short run price signals reflecting demand, supply and power system condition (including technical as well as financial constraints) and, consequently, price differences between bidding zones encourage efficient use of cross-zonal capacity, generation dispatch, generation flexibility and activation of demand side response. On the other hand, accurate and robust long run price signals may affect generation and load investment decisions and indicate required cross-zonal network development.

Robustness of price signals may be assessed by volatility of prices. This may be the volatility of prices within one model run (hourly basis). This can also be the price changes between different model years (2020, 2025) or framework scenarios (e.g. green development, conservative path, best estimate, slow speed of grid development, planned speed of grid development). Both types can, to some extent, be analysed by the given modelling framework of the study.

Questions

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

In EURELECTRIC's view, any price that is agreed between counterparties is accurate for the involved parties. Hence, price accuracy and robustness can be misleading concepts, and for evaluating market efficiency.

Prices and the markets where they are derived are an important part of the analysis, but as a stand-alone analysis it will not give a meaningful message.

In EURELECTRIC's view short run price signals correspond to electricity wholesale prices in the liquid trading time frame, usually 3 years from decision-making.

Long run price signals would be projections of wholesale electricity prices for longer horizons, i.e. 3 to 40 years, which corresponds to the investment horizon.

In both cases, any simulated wholesale price depends on modelling assumptions, and such results cannot be used as indicators to describe market functioning.

As for the multidimensional approach, the measures can be modelled based on the relevant price references from the various organised markets.

In EURELECTRIC's view, it is also paramount to have an established stable political and regulatory environment. The less regulatory risk (including the likelihood of a bidding zone reconfiguration), the more stable the investment climate.

Indicators of regulatory risk could be for instance, a measure of potential transition costs (see section on transition costs) towards a set of pre-defined scenarios, e.g. bidding zone reconfiguration, CO2 price floor, increase of RES targets.

2. *Market simulations based on fundamental model 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?*

We believe that it would be very hard to capture/evaluate market efficiency with a market simulation based on a fundamental model. However, it is not necessarily the case that fundamental models provide lower volatility compared to the real market results. Models usually work with perfect foresight, which is not the case in reality.

Volatility can be used as part of a multi-dimensional assessment on market depth. But it can only be used together with other indicators such as trading volumes and turnover ratios. And even then, volatility must be treated with care.

A volatile market can mean that market participants react very quickly to solve market shortages and surpluses. At the same time a flat market can mean that it is very inflexible and does not react at all.

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?*

This concept is misleading and should not be used further as price volatility is only a minor indicator to assess depth and resilience of prices in the first place. There is no good “acceptable” level of volatility, as every investor must deal with the volatility inherent to wholesale markets anyway.

Nevertheless, volatility may indeed be an issue for investment decisions and operation of units with limited reserves, as the more volatility there is, the riskier the revenues of peaking generation/demand response units will be.

Volatility could be assessed considering a large set of scenarios for operational conditions (e.g. RES infeed, demand) and generation and demand portfolio evolutions and monitoring a value at risk of peaking unit revenues and only as part of a multi-dimensional assessment.

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)?*

Generally, it is important to state that price movements should not be mixed up with price volatility.

Electricity price sensitivity with regard to different scenarios is important for traders (scenarios of significant unpredicted evolution within the next 3 years) and investors (scenarios with significant evolutions over the next 40 years).

As regards price volatility, it reflects that there are different traders with different market views. For investors (in demand-side, storage and generation), it is more important to have a

long-term expectation. As volatility is usually a short run phenomenon, it does not affect investment decisions.

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?*

The forward market is one of the main instruments for trading. It is thus obviously important that this specific market is efficient. Hence the liquidity and therewith the trust in the market is essential.

However, from an investment perspective, the forward market may be relevant for investment decisions with rapid implementation (e.g. buying an existing asset), but is generally not relevant for investment decisions in new assets. Investors will look at a longer time horizon (the lifetime of an asset) and will make an assessment of the physical as well as regulatory risks. Therefore, there needs to be a strong and robust process for the bidding zone review.

For all market-based investments (demand, storage and generation) a split/merge decision can have direct consequence on the revenues. The possibility to revise bidding zone configuration periodically introduces thus a significant risk for investors that is likely to justify higher risk premium.

EURELECTRIC favours stability in the configuration of bidding zones along the lines of long-standing structural congestions. Certainty and continuity are essential to underpin liquidity, investments in generation and demand-response on the basis of stable price signals stemming from fair competition between market participants in all segments of the market as well as to signal the need for transmission infrastructure developments.

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)?*

Generally, a system price will always generate a basis risk which cannot or only partly be hedged. We have observed the position in the Nordic market and consider that contracts for difference on spreads between zonal prices and the average price are a potential tool, among others, for trading forward products.

So far, the experience of contracts for difference (CfDs) has not been fully convincing that a system price can be compared with the liquidity in a set market.

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?*

Undistorted wholesale prices reflect the perceived scarcity in any trading time frame. Market price signals, if resulting from a free/undistorted formation, (and expectations of their future development) are the appropriate benchmark for short-term dispatch decisions, and one of the signals for long-term investment and divestment decisions.

Today, there are various interventions leading to a lack of trust in the market prices. For instance:

- Implicit price caps
- Strategic reserve dispatch
- Remedial actions usage
- Regulated prices

As an example, EURELECTRIC would like to refer to the day-ahead price observed in Belgium on 22-23 September 2015. The price cleared around 450 €/MWh on the 22nd and around 50 €/MWh on the 23rd. Around 1000 MW additional import capacity was available for Belgium on the 23rd. CWE TSOs explained during the Flow Based Consultative group of March 30th that extra remedial actions were taken on the 23rd and that this kind of remedial action can be taken in case of extreme market prices. EURELECTRIC thinks that no price information should be taken into account when doing capacity calculation. This kind of intervention is preventing the market to trust the prices and hence, to rely on it to make decisions (being dispatch or investments).

A second example, which is detailed in our paper “Optimal use of the transmission network: a regional approach” (June 2016), is the capacity allocation on the Danish-German border. Cross-border capacity limitations/restrictions are often used as a non-costly way to deal preventively with potential congestions. This will generate inefficient use of the grid and hence, incorrect price signal.

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

Price distortion may happen if regulated activity (= an element of the market) replaces a function of the market, which affects the price discovery (confer question 7).

A possible source of distortion can be:

- Political and/or TSO intervention;
- Undue limitations of (cross border) network capacity;
- Inefficient dispatching and/or limitation of intraday re-nominations by producers without market-based compensation;
- Integrating redispatching actions in imbalance prices;
- Differences in taxes/levies/injections tariffs in the different zones, creating merit-order distortion between similar assets.

Overall, greater transparency can help to prevent price distortion.

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?*

This depends on the definition of “correct price signals”. It is unclear what this question is referring to. In the energy only market, the price signal reflects the perceived scarcity in the market at the moment it is defined. Any price agreed between two counterparties is therefore at that point correct. Signals for congestion patterns can be revealed via

congestion rents on bidding zone borders or via redispatch values, which in theory are both equally efficient to provide a correct price signal.

As mentioned in the introduction the basis for our input is a market approach for an integrated European electricity system. This fundamental choice for market mechanisms to provide an efficient means for achieving a cost-effective, reliable and carbon-free electricity market is built upon the following main principles: freedom of connection, freedom of dispatch, freedom of contract and freedom of choice in resource.

As recognized in the conclusions of the 31th European Electricity Regulatory Forum of 13-14 June: "it stresses the importance of considering wholesale and retail markets holistically and that price formation is key; efficient prices will address many of the obstacles that exist to a flexible market, including the incentivisation of demand response." It therefore believes that a fundamental question concerns the health of the price formation process and calls for this to be at the heart of the debate on the future market design.

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?*

Sound investment decisions, be it on grid or generation assets, require cost reflectiveness of observed price signals hence an artificial merging of zone is unwarranted cost socialisation. Arbitrary rules including splitting and merging decisions impose undue risk premiums on all grid users: predictability is key. On the contrary, the fact that the underlying physical reality is getting more volatile with renewable expansion forms the core of the risk valuation conducted by investors. Finally, policy developments are similar factors that investors have to take into consideration.

In case any redispatch costs and actions should be very transparent. If not, this leads to inefficiencies in the market and possibly the inefficient use of the network. Furthermore, the capacity calculation and actions of the TSOs should be very transparent. The current amount of recalculation of available capacity is insufficient in our view. Using D-2 figures in the intra-day timeframe is inefficient. Regarding this, there is no indicator to measure the efficient use of the grid in order to learn and improve.

Market Liquidity

Introduction

By Market Liquidity, we understand the degree to which any Market Party can quickly (within the time frame the market participant needs) source/sell any volume of energy (implicit) or capacity (explicit) without greatly affecting the involved market price. Market Liquidity is generally viewed as a multi-dimensional, not directly observable construct.

Possible indicators for Market Liquidity would normally be:

- *Bid/offer spreads – The bid-offer spread is defined by the amount by which the ask price exceeds the bid. This is essentially the difference in price between the highest price that a buyer is willing to pay for a product and the lowest price for which a seller is willing to sell it;*
- *Market depth – Size of an order needed to move the market price by a certain level;*
- *Trading volume and number of trades per day – Actually measure trading activity rather than market liquidity, but are commonly used as liquidity indicators as well;*
- *Churn rate – A variant of the trading volume measure is the churn rate. It describes the trading volume in comparison to the physical consumption in the underlying market;*
- *Lot sizes – Size of the minimum trading volume usually provided by the local dominant trading platform;*
- *Number of players – number of available counterparts within one bidding zone on one or more trading platforms.*

In the Bidding zone study, it is envisaged to analyse the market depth in detail. Market depth, called also market resilience, is a basic indicator often used by Power Exchanges to show the price sensitivity due to an increase by xMW in offer or demand on the market.

Source: Market resilience analysis 2013 by Belpex

Considering that the demand in the Bidding Zone Study is assumed to be inelastic, the market resilience might be measured by increase of demand by xMW and decrease of demand by xMW.

For the different bidding zone configurations and model years (2020 and 2025) under investigation, zonal market coupling simulation models are available. For the market depth analyses, artificial incremental changes of the demand (percentual or absolute) will be induced and the resulting price change will be used as indicators of market depth.

Questions

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

Bid/offer spreads constitute a useful measure of liquidity also in the context of cost-benefit analysis – A number of different indicators are used to operationalise and measure the liquidity of a market.

Bid/offer spreads – The bid-offer spread is defined by the amount by which the ask price exceeds the bid. This is essentially the difference in price between the highest price that a buyer is willing to pay for a product and the lowest price for which a seller is willing to sell it. The bid/offer spread represents the transaction cost for participating in a market and is a key measure of liquidity, where more liquid markets are characterised by lower bid/offer spreads. It also provides a monetary valuation of transaction cost in a less liquid market (compared to a more liquid market). If the typical bid-offer spread in a less liquid market was

twice as high than in a more liquid market, then the difference in the spreads indicate how much market participants need to sacrifice to close a transaction.

Market depth – This indicates the size of specific orders at which the market would move by a given amount. Market depth is very challenging to measure. Absent publication on existing trading platforms, some energy commodity market participants actually maintain proprietary empirical databases, which allow calibration of bid/offer matrices, where the spread is modelled as a function of order size.

Trading volume and number of trades per day actually measure trading activity rather than market liquidity, but are commonly used as liquidity indicators as well – based on the assumption that high volume and a large number of trades per day (or so) would coincide with low bid/offer spreads and a deep market. Particularly in energy markets, trading volume is additionally observed relative to the underlying physical commodity produced and consumed (so-called market churn) with high multiples suggesting high liquidity.

Churn rate – A variant of the trading volume measure is the churn rate. It describes the trading volume in comparison to the physical consumption in the underlying market. A high churn rate indicates a more liquid market. A churn rate of 1 would imply that a megawatt hour of electricity is traded once in the wholesale market before being physically delivered. Liquid markets would have churn rates (well) above one, indicating that power is not only traded once, but several times as market players adjust their market expectations and positions over time.

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?*

This question needs to be explained better to give an accurate answer. Bidding zones do affect the liquidity of one another. The size of the bidding zone is clearly superior to the cross-zonal capacity. It provides a level playing field for all market participants and is therefore preferred. Obviously also cross zonal trade is important, but cross zonal hedging instruments (PTRs and FTRs) are not always perfectly designed (ie they do not offer a firm hedging possibility).

Generally, we could expect that liquidity is likely to decrease in case markets are split into different price zones. Indeed, a split of one zone into two zones, will double the number of products while the number of participants, demand and generation remains the same. Bearing in mind that the relation is non-linear, only a small drop in liquidity could trigger a “downwards 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)*

“Bidding zone configuration”

A REPORT PREPARED FOR THE MARKET PARTIES PLATFORM
November 2013

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?*

Stability of bidding zones is the most important. Only when the market trusts in a configuration, is it going to use it for forward decisions. Cost of hedging increases sharply with liquidity going down. And by consequence risk premiums, and thus investment costs, for new projects are increasing. Thus, proxy hedging in more liquid markets becomes more attractive, which in turn again accelerates the downward spiral.

EURELECTRIC does not see that system prices can be compared with the liquidity of a single market.

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 over all timeframes. The speed of cross zonal capacity calculation is still an issue in the day ahead and intra-day market. Current practices are based on D-2 assumptions without any real updates of the situation. This decreases liquidity and opportunities for trade.

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. The negative liquidity development in the Nordic market – especially in Sweden – is a good example how a market split can negatively impact liquidity. Contrary, the German market attracts a lot of activity in the futures market from traders with no physical intention (“liquidity attracts liquidity”).

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

Liquidity matters and supports investment decisions and efficiency of dispatch. Liquidity concerns the ability of market players to constantly have available trading partners with which they can enter into contractual positions and also reverse out of them through further trades with the same and other parties and to do so without their individual trades significantly upsetting the level of market prices. Liquidity is essential to the European model of electricity trading, which hinges on a decentralised organisation and bilateral trading between market players. The depth of the market and availability of derivative and/or forward products is particularly important. It is these products that allow market players to hedge risk and obtain market information that is commercially reliable. Downsides of less liquidity could include, among others:

- Increased transaction cost and thereby “frictional” welfare losses (even if trading volumes and price signals were unaffected);
- Fewer or less reliable indications of the future value of power from wholesale markets. Again this increases risk and cost of risks and can adversely affect investment and lead to ill-informed decisions and inefficient investments;
- Increase in risk and cost due to lack of trading partners and subsequently fewer investments e.g. in to power stations or higher retail prices.

18. Questions related to the market depth analyses

A market is deep when there is a large flow of trading orders on both the buy and sell side on a frequent basis and there needs to be a constant interest and willingness to trade. With large orders in both directions, trading volumes should be high and the price impact of larger trades should be lower, creating lower volatility and resiliency. Depth measures can also distinguish between aggregate trading volumes, and turnover based measures, which capture the volume traded per security.

- 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.

- 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?

No comment.

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?

Large markets with highly diverse participants tend to be more liquid and therefore incur measurably lower transaction costs. The size of the bid/offer spread from one asset or product to another will differ mainly because of the difference in liquidity of each asset. The bid/offer spread should decline ceteris paribus with the amount of market participants (and the size of the market), because the more market participants, the more potential counterparties with different risk preferences are available for a trade.

In general, creating more zones in a market reduces trading opportunities as the upfront network capacity limitations are always defined on assumptions in the future that may or may not occur.

Market Power and Concentration

Introduction

Market Concentration describes the number of players with a relevant market share at the demand and the supply side, in our case supply side concentration may be more relevant. Market Power is a different concept and it relates to the capability of certain parties to manipulate market prices by:

- either reducing their offer, or just by increasing their offering prices directly in an individual way (monopoly) or in an implicitly coordinated one (collusion),*
- lack or reduced offer from resources that are critical for the reliable operation of the system (dependence on the location of resources and, thus, locational market power).*

Market Concentration can be measured via several indicators (all present advantages and disadvantages). Some of the most popular ones of these are:

1 For example: A demand increase of 1 MW in BZ A leads to a price change in BZ C. A demand increase of 1 MW in BZ B also leads to a price change in BZ C. Should the demand increases in A and B be considered simultaneously, simultaneously but only with 0.5 MW each or separately?

- Herfindahl–Hirschman Index, or HHI (normalised or not)*
- Pivotal Supplier Index, or PSI (to perform a count since this is binary)*
- Market Share of the largest producers (in terms of installed capacity)*
- Residual Supply Index, or RSI, etc.*

Cross-zonal exchange is also to be taken into account when measuring Market Concentration.

Market Power is more difficult to measure since it requires competition modules to be incorporated into the modelling (agent-based models, portfolio behaviour, oligopolistic equilibriums -like Cournot or Stackelberg- are just some few illustrations of some of the existing techniques). These modules, however, entail the definition of many assumptions (in the form of parameters) and such a modelling approach is not within the scope of the BZ study.

The recommendation from the TF would be to choose some of the above indicators on Market Concentration to evaluate each respective sub-scenario and leave the Market Power as a more qualitative assessment (sensitivity approach). If we can demonstrate that, by dividing some BZ, Market Concentration will not increase significantly, we would not need to assess Market Power (except its local topological version). If we cannot do so, it should be accepted that there could be a risk for Market Power.

As for the data needs, these depend on the indicator(s) eventually selected. Most frequent inputs are market share for supplier companies (HHI) and installed capacity for the supplier companies (PSI, RSI) present in the market. The company affiliation to make the aggregates will not be an easy task due to shareholding composition and ownership structure of certain companies. Company affiliation will need to be checked via external databases. The TF will probably assess Market Power by proxy (risk) via the Market Concentration evolution after the BZs reconfiguration (due to complexity and subject to further discussions with the Consultant and the stakeholders). ACER/CEER may also help with market shares information (to be confirmed).

Questions

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

EURELECTRIC's general feedback for questions 20-32.

EURELECTRIC would advise ENTSO-E to rely on the work of competition authorities on this question and does not really see how ENTSO-E would have a role in investigating market power.

In any case, these analyses are based on the definition of the relevant market. For EURELECTRIC, this is a more relevant question to be studied. Is each bidding zone defined as a separate relevant market, or are several zones together a relevant market?

Small bidding zones probably lead to more concentration in the energy market. Large bidding zones will lead to more redispatching. Market power is depending on the physics. It will not disappear if bidding zones are modified: smaller bidding zones are in that sense "shifting" market power from the energy market to the redispatching.

Therefore, in order to correctly answer the question, one would need to have more visibility/transparency on the future methodologies for cross-border redispatching. Both questions are linked.

Overall, market power seems a very weak metrics of the market efficiency of a move in bidding zone configuration. As stated above, it is not possible to answer the question without considering the way redispatching will be organised.

21. *Why would you recommend the above-mentioned methodology and which are its strengths and weaknesses in comparison to other possible ones?*
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?*
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 assume that at least regulators have access to all relevant information.

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

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?*

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?*

Market concentration and market power are more questions of regulatory oversight rather than BZ configuration. In the end market power as such is not directly a problem. Abuse of market power is. This is more a question of transparency and regulatory oversight and for that there are already regulations in place (i.e. REMIT and MAR) overall transparency of the whole electricity system is a key precondition to mitigate effects of market power.

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

Transparency, also of the grid and TSO actions, is probably the most effective mitigation measure. Furthermore, congestions management should be done taking the physical congestions into account where they are.

Given a certain BZ configuration based on the physics cross zonal hedging instruments are important to mitigate market power effects. However, that does 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?*

See question 26.

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?*

We agree with this statement. In any case, in our view, assessment of market power should not be done within the framework of the Bidding Zone Review Study. This should rather be done based on existing information/reports from the relevant competition authorities.

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.*

The set of indicators mentioned in this section should provide a qualitative picture.

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?

See question 26.

Effective competition (including retail markets)

Introduction

Effective competition is one of the criteria listed in the GL CACM that should be applied in the BZ study. In our understanding, it is mainly a wrap-up of the other criteria discussed above. However, there may be some other aspects that also require consideration. This especially applies to effects on retail markets and for end consumers.

Questions

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: If market power does not lead to less liquidity, it is of less importance. And price signals are measured by liquidity and 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.)?*

In our view, there is no direct link. However, generally speaking, a liquid and simple market reduces thresholds and increases opportunities for new entrants and demand response.

EURELECTRIC's general response to questions 33-35

A change in bidding zone configuration can have a significant impact on wholesale market prices, which would in turn impact demand response, renewables (including the amount to be funded through levies, see question 42) and end consumers. The impact that bidding zone configuration can have on redispatching costs will also be transferred to end consumers through use-of-network charges, which can evolve with a reconfiguration of bidding zones.

Some countries (e.g. Italy, France etc) impose non geographically differentiated prices for end consumers which creates specific challenges.

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 currently compete on a national level. If a country has split wholesale prices, tariffs are less transparent and structures are more complex – harming competition and increasing entry barriers.

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

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?*

REMIT data has not been designed for the purposes required here. It covers “only” the traded time horizons. Only long-term markets designed to commit companies to an investment/retirement plan can deliver relevant information for contracts that go beyond the currently narrow liquidity horizons (up to 3 years).

Transition Costs

Introduction

The adaption of the current bidding zone configuration would result in several changes to the current design of electricity markets (future markets, spot markets, balancing markets, end consumer markets) and need to be considered in the current contracts of market participants. Costs which are affected by a configuration change can be categorized as transition costs. They are “one-time” costs directly related to a configuration change (e.g. required IT investments due to market changes or maybe also stranded investments or assets due to price changes).

Questions

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)?*

EURELECTRIC's response to questions 37-42

Lead time for reconfiguration of bidding zones should be aligned with term structure of forward markets. The leading principle governing the reconfiguration of bidding zones should be that the impact on the existing market institutions and contracts in wholesale and retail markets are as small as possible. A good indicator for the minimum lead time is the term structure of the forward market, i.e. how many years out forward contracts are traded. The alignment of the lead time of a redesign to the term structure of the market reduces uncertainties of all market participants to a minimum. Additionally, it allows market participants to progressively adapt to the new market design and settle their existing power contracts. In the retail market it allows retailers to adapt their contracts with customers, as well as, dampening the negative effect from annual fixed price contracts.

EURELECTRIC has always maintained that any change in the configuration should take at least the time frame of the liquid forward market. Hence, the configuration should not be changed before 3 years after the announcement. It should be put in place only for time periods following the traded time period (i.e. announced today for the years 2020ff).

It is important to recognise that the market will react immediately with the actual announcement (and not only when the actual BZs are technically put in place).

To minimize transition costs for trading activities, lead time for reconfiguration of bidding zones should be aligned with term structure of forward markets. The leading principle governing the reconfiguration of bidding zones should be that the impact on the existing market institutions and contracts in wholesale and retail markets are as small as possible. A good indicator for the minimum lead time is the term structure of the forward market, i.e. how many years out forward contracts are traded. As of now, the longer forward products are traded in opening auctions of exempted private interconnectors and may cover (with limited market depth) up to 10 years.

The alignment of the lead time of a redesign to the term structure of the market reduces uncertainties of all market participants to a minimum. Additionally, it allows market participants to progressively adapt to the new market design and settle their existing power

contracts. In the retail market, it allows retailers to adapt their contracts with customers, as well, dampening the negative effect from annual fixed price contracts

In any case, the multi-criteria assessment of a change of bidding zone configuration should consider:

- Costs of renegotiating contracts;
- Costs of IT developments to adapt tools for market price forecasting, cross-border capacity calculation, and market coupling;
- Learning costs (temporary loss of efficiency) for all trading and valuation tools .

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)?

The assessment should consider transition costs in the form of windfall profits and stranded costs triggered by the potential change of bidding zone configuration. Indeed, stranded costs are likely to lead some investors (for example investors in private interconnectors or in non-subsidised renewable energy generation) to bankruptcy, and the stranded costs are then likely to be indirectly socialised.

EURELECTRIC considers that the cost benefit analysis framework should monitor, with a small granularity, the shift in energy market revenues resulting from the targeted change in bidding zone configuration. An index of transition costs could then be the cumulated stranded costs/year (decrease in energy market revenues) and the cumulated windfall profits/year (increase in energy market revenues).

This indicator is critical, as EURELECTRIC expects orders of magnitude of multiple billions €/year.

This indicator should not only be considered for transition costs of actually changing the configuration of bidding zones, it reveals also part of the regulatory risk faced by investors, when BZ configuration is likely to be revised periodically (see section of robustness of long-term signals).

Reconfiguration of bidding zones comes at a cost (the list is non-exhaustive):

- Allocation of new transmission capacities between bidding areas (day-ahead, month-ahead, year-ahead);
- IT costs for market participants (e.g. power-exchange, traders, suppliers, etc.);
- Contract re/negotiation among power exchanges and TSOs;
- New definition of balancing zones resulting in necessary adjustments in IT systems and interfaces between market participants in the new control areas;
- New valuation of contracts/positions;
- Costs for renegotiation of power contracts if the reference location of price changes or is not accepted by contract parties any more.

The costs for renegotiation of power contracts can constitute a significant burden on smaller market participants. Moreover, these costs are not only restricted to market participants in the affected bidding areas, if market participants outside the bidding area used the market price as their respective reference price. In addition, reputational effect has to be taken into account – Besides the monetary transactions costs, there are qualitative transaction costs, as well, e.g.:

- Market participants might lose confidence in the market, if they do not understand why a functioning market design is changed;
- Market participants in countries with less-developed markets will lose confidence in the reference price of the market that changes its design. This might hamper the slowly growing wholesale markets in these countries, with a negative effect on European electricity markets as a whole.

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?*

Any existing contract based on the original setup needs to be reassessed and consequently be renegotiated. This is relevant for all active market participants in market. Assuming a market with roughly 1000 market participants and assuming that each one has to renegotiate 50 contracts, requiring 5 men-days valued at 1000 Euro/ man day would hence cost 250 Million Euros.

Additionally, for some market participants it could mean that the new price diverges from the original one. The price difference also contributes to the costs.

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).*

The configuration of bidding zones should be as robust as possible and capture as large as possible regions. Any readjustment should give at least 3 years notice to avoid any arbitrary modification of existing forward contracts.

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)*

In contrast to the implementation cost, a new configuration could decide the profitability of multi-billion Euro investments. Especially in the countries that do not have government guarantees or CRMs for conventional power plants in place, this could easily be a multi-billion Euro figure in losses and stranded assets.

In addition, EURELECTRIC would like to reiterate that the need for level playing field (i.e. injection tariffs etc.) is critical within one bidding zone (although of course relevant across bidding zones given market integration). Therefore, one should make sure that necessary harmonisation is made within possible new bidding zone configuration.

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?*

This will be part of the legal costs, but the BZR should not force member states to review national policies. In fact, EURELECTRIC would assume that RES support schemes will be set to neutral. The additional costs would then be shifted on the consumer.

Feed-in premium schemes are related to market prices and will be affected, especially if the amount of support is limited to a budget.

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

In theory, it should not matter. TSOs should be able to assess the socio-economic costs and benefits of transmission infrastructure projects. And the result should not depend on the bidding zone configuration. However, in practice it could have an impact. It depends on the incentives for TSOs, especially around the use of congestion rents. Furthermore, we fear that with smaller zones, we will see TSOs even more focused on their own control area.

There is an exception for exempted private interconnectors which are paid based on wholesale market spreads only, and whose profitability depend thus highly on the configuration of bidding zones.

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?*

EURELECTRIC considers that the order of magnitude of transition costs can be of several Billions Euros per year. The proper evaluation of the impact of a reconfiguration of bidding zones is thus critical. This is especially true for larger zones like the German one, where assets are regionally distributed, which could harm especially those investors who find themselves in new low price bidding zone.

The experiences of splitting so far cannot be used as reference as they were always based on homogenous generator structures. In any heterogeneous market environment, the new configuration may pick winners and losers.

Transaction costs

Introduction

Transaction costs are generally referring to the costs of participating in a market. They are permanent costs for search & information, bargaining, policing and enforcement. Transaction costs are to some extent specific to a given bidding zone configuration. For our purposes, only the difference of transactions costs between bidding zone configurations (e.g. transaction costs in terms of adaption of LTRs renewal for the affected borders, etc.) is relevant.

Questions

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?*

EURELECTRIC's response to question 45-46.

Transaction costs, as it is defined here, apply year by year as long as the bidding zone configuration is in place (compared to an alternative configuration). Main transaction costs could be related to fees/registration costs for participating in organised markets in each bidding zone, and adapting to regulation/risks that can be specific to each bidding zone.

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

3 References

MPP/Frontier Economics report, Bidding zone configuration, November 2013

EURELECTRIC, Optimal use of the transmission network: a regional approach, June 2016

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

Economic Development

▶ Growth, added-value, efficiency

Environmental Leadership

▶ Commitment, innovation, pro-activeness

Social Responsibility

▶ Transparency, ethics, accountability



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