

EPEX SPOT SE  
European Power Exchange  
5 Boulevard Montmartre  
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## **ACER Consultation**

# **The influence of existing bidding zones on electricity markets**

Paris, Sep 30<sup>th</sup> 2013

## A. INTRODUCTION

EPEX SPOT SE operates the power spot markets for France, Germany, Austria and Switzerland (Day-Ahead and Intraday). Together these countries account for more than one third of the European electricity consumption. EPEX SPOT SE is a European company (Societas Europaea) based in Paris with a branch in Leipzig. 229 TWh were traded on EPEX SPOT's power markets in the first eight months of 2013.

As a key player in the energy sector, EPEX SPOT is closely cooperating with actors from all over Europe – such as Transmission System Operators, National Regulators, European Institutions and other power exchanges – to foster the integration of power markets. EPEX SPOT is one of the drivers of this process by developing cross-border trading systems, Market Coupling solutions and services for other power exchanges, covering day-ahead as well as intraday markets.

The head offices of EPEX SPOT are located at 5 Boulevard Montmartre, F-75002 Paris.

For any further information, please visit the company's website: <http://www.epexspot.com>

## B. GENERAL REMARKS

### Context

As part of the early implementation of the Network Code on Capacity Allocation and Congestion Management, ACER mandated ENTSO-E on August 30<sup>th</sup> 2012 to initiate a pilot project testing the review process of bidding zones in Europe:

- **Activity 1:** Technical report currently under preparation by ENTSO-E;
- **Activity 2:** ACER consultation on the influence of existing bidding zones on electricity markets;
- **Activity 3:** Decision to launch – *or not to launch* – a review of bidding zones;
- **Activity 4:** Full review process of bidding zones.

**EPEX SPOT welcomes the possibility to engage early on in this pilot project.** The present document summarizes our key observations regarding the proposed review process and details our answers to the consultation questions.

### Background of discussions

Discussions on a potential bidding zone re-definition root in recent evolutions of energy policies – including the rapid expansion of renewable generation. As a consequence, some Transmission System Operators (TSOs) affirm facing increasing challenges, which are primarily related to unpredictable physical flows (so-called loop flows). Occasionally, these loop flows seem to generate critical grid situations, also in neighboring countries. TSOs consequently resort to palliative actions to relieve the grid.

Per se, management of grid congestion and loop flows is not a new subject for TSOs. Quite the contrary, multiple solutions have been developed over the last years and can still be further improved:

- **Short term:** re-dispatch & countertrading, cooperation between TSOs, regulation of renewable feed-in, optimized capacity allocation (flow-based);
- **Mid term:** implementation of Phase Shifting Transformers (PSTs), construction of production capacities in strategic locations, review of the inter-TSO compensation mechanism;
- **Long term:** expansion of high-voltage grids, re-definition of large & coherent price zones.

Given this fact, it is of utmost importance to put the review process of bidding zones into an appropriate perspective. **Re-defining bidding zones is not the solution to address grid challenges, but only one theoretical approach which has to be weighed against many other, already proven, solutions.**

### Expected results of the pilot review process

It is EPEX SPOT's opinion that a potential revision of bidding zones represents a **structural intervention in the existing market design**, with potentially major impacts on liquidity, competition, price formation, risk

hedging and capacity optimization. EPEX SPOT would thus welcome a **holistic and transparent review process** by ACER / ENTSO-E, which actively involves all concerned parties. This process should not solely focus on technical grid aspects, but also include **thorough cost-benefit and risk analyses**:

- To what extent re-defining bidding zones represents an efficient solution to handle technical challenges such as congestion or loop flows – especially compared to other, already proven, solutions?
- Should the technical benefits of a re-definition of bidding zones prove indisputable, which direct and indirect costs will it imply – especially compared to other, already proven, solutions?
- To which extent can risks be acceptably ruled out when considering such a structural change of market design – especially strategic, economical, technical and operational risks?

The **key output** of the pilot project should be **whether the proposed review process is robust or not**.

### EPEX SPOT's key observations

At the current state of discussions, EPEX SPOT has reached some first convictions, which are summarized below and further developed in the answers to the consultation questions:

1. EPEX SPOT recognizes the usefulness of a technical assessment of congestion patterns in order to optimize re-dispatch or countertrading measures. However, it is EPEX SPOT's opinion that **splitting existing bidding zones does not represent an efficient approach to congestion and loop flow challenges**. EPEX SPOT thus advises to **prioritize proven and efficient solutions**, such as:
  - Coordinated network expansion;
  - Further development of re-dispatch – also cross-border;
  - Improvement of cooperation between European TSOs;
  - Implementation of PSTs – where appropriate;
  - Implementation of flow-based capacity calculation;
  - Adjustment of renewable mechanisms – to improve feed-in behavior.
  
2. It is essential that the **Network Codes preserve the benefits already achieved by Day-Ahead Market Coupling**<sup>1</sup> – especially by **ensuring the stability of large and consistent bidding zones**. Otherwise, EPEX SPOT projects several major impacts on the markets, such as:
  - Decreasing liquidity / competition – and thus increasing concentration of market power;
  - Deterioration of the reference price signal – with negative impacts on futures & investments;
  - Increased basis risk for future contracts – thus decreasing hedging opportunities;
  - Deterioration of investment conditions in an already fragile economical context.
  
3. Rather than splitting day-ahead bidding zones, EPEX SPOT suggests **expanding the flexibility of intraday and balancing markets**. It is our conviction that liquid and flexible intraday markets provide a more efficient solution to grid congestion/loop flow issues, than splitting day-ahead bidding zones.

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<sup>1</sup> A recent study by the European Commission showed that annual benefits of an EU-wide market coupling could reach €2.5 billion.

## C. QUESTIONS

**1. How appropriate do you consider the measure of redefining zones compared to other measures, such as, continued or possibly increased application of redispatching actions or increased investment in transmission infrastructure to deal with congestion management and/or loop flows related issues? What is the tradeoff between these choices and how should the costs attached to each (e.g. redispatching costs) be distributed and recovered?**

Multiple studies have been performed on bidding zone re-definition<sup>2</sup>, however to EPEX SPOTs knowledge its technical and cost efficiency still remain to be proven – on the contrary, several studies seem to indicate that splitting large bidding zones:

- may **prove inefficient** to solve congestion or loop flow issues;
- may **bear significant risks** for existing electricity wholesale markets.

In the current market design based on the zonal model, physical power flows differ from commercial flows. While splitting large bidding zones may potentially have an impact on commercial flows, this is not transcribed into a physical reality – **power plant dispatch and thus physical flows remain mostly unaffected if bidding zones are split.**

Moreover, a multitude of influencing factors render accurate mid- or long-term flow forecasts virtually impossible (i.e. renewable production with priority feed-in, network expansion, flow-based allocation, changes in the generation mix, etc.). Based on this fact, **it remains questionable to which extent structural congestions or loop flows could be forecasted accurately for the next couple of years** for an efficient re-definition of bidding zones.

Also, the **location of occurring congestions and loop flows varies over time.** A bi-annual review process would not be sufficient; bidding zones would have to be reconfigured with a potentially high frequency.

In addition to the very questionable benefits and the severely limited feasibility of bidding zone re-definition, **major negative impacts on the markets have been identified:**

- Drying up of market liquidity;
- Decreasing competition, retirement of pivotal market participants;
- Increasing market concentration;
- Deterioration of the reference price signal;

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<sup>2</sup> **Frontier Economics / Consentec:** Relevance of established national bidding areas for European power market integration

**THEMA Consulting:** The Benefits of Investing in Electricity Transmission

**IAEW RWTH Aachen:** Impact of a German/Austrian market splitting on the electricity markets and the transmission grid in CEE

**Consentec:** Auswirkungen von Netzengpässen auf den deutschen Energiemarkt

**Bundesnetzagentur:** Bericht zum Zustand der leitungsgebundenen Energieversorgung im Winter 2012/13

- Increased basis risk for future contracts, hedging with illiquid CfDs being an insufficient option;
- Decreased incentives for investments in necessary transmission infrastructures;
- Deterioration of investment conditions in an already fragile economic context;
- Creation of direct and indirect costs (i.e. contract re-negotiations, impact on balancing and reserve mechanisms, impact on national legislation such as EEG, IT system evolution, etc.)

To conclude:

1. It seems **highly unlikely that forecasts of congestions/loop flows over several years prove accurate enough to guarantee an efficient re-definition of bidding zones.**
2. Even if this was feasible, **a positive impact on physical flows seems very questionable.**
3. Finally, multiple drawbacks could **severely prejudice existing electricity wholesale markets.**

Re-defining bidding zones on such shaky assumptions and with such an uncertain outcome seems precipitous. As a result, EPEX SPOT recommends that a **re-assessment of bidding zones should be regarded as last resort measure.** Instead, **other approaches which have proven efficient should be prioritized:**

- In priority, investment in transmission infrastructure are necessary for a coordinated network expansion in Europe;
- Wherever grid expansion is not possible, further development of re-dispatch and counter trading (cross-border)<sup>3</sup> measures are an adequate solution for structural bottlenecks;
- Costs of remedial actions can be lowered by enhancing cooperation between European TSOs, especially regarding countertrading or the reform of inter-TSO compensation mechanisms;
- Where appropriate, the implementation of (virtual or physical) phase shifting transformers can be an alternative solution;
- Existing and well-functioning electricity wholesale markets should be further strengthened in accordance with the European Target Model;
- The implementation of flow-based capacity calculation will further help optimizing cross-border capacities;
- Integration of renewables should be further improved, i.e. through direct marketing schemes and evolution of balancing responsibilities;
- Where appropriate, concerns of market power should be addressed through adequate regulatory measures.

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<sup>3</sup> Costs for remedial actions seem limited compared to potential direct & indirect costs resulting of bidding zone re-configuration. They could be covered by TSOs as incentive for grid investment or via grid tariffs, under the supervision of regulators.

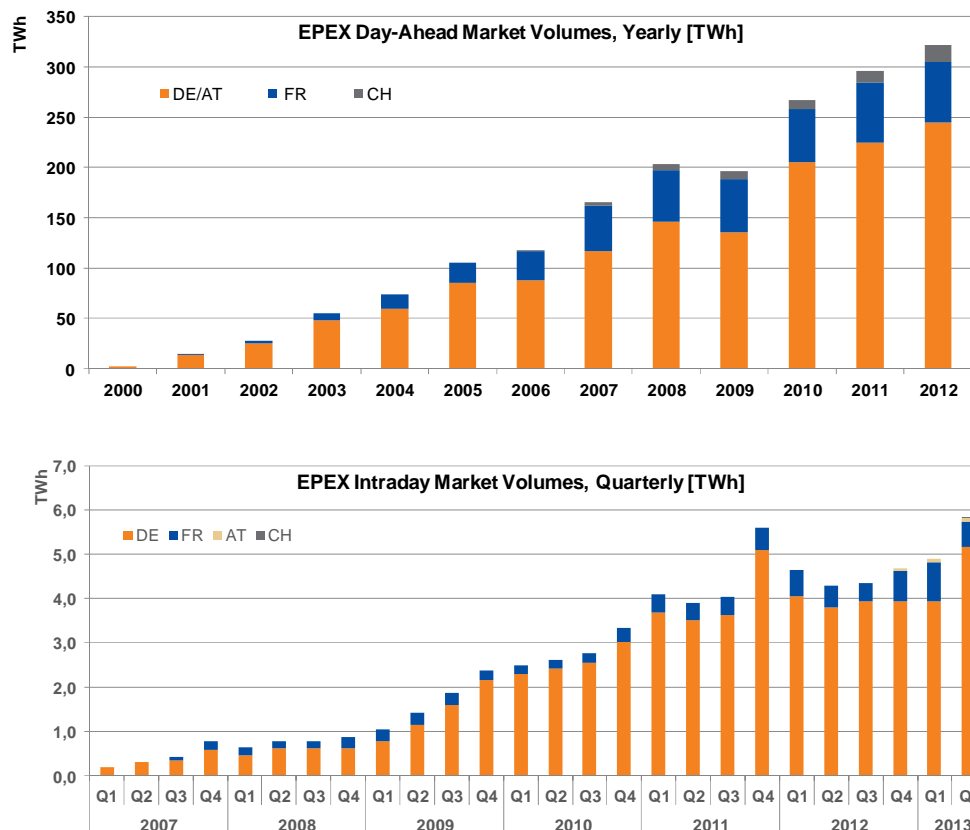
**2. Do you perceive the existing bidding zone configuration to be efficient with respect to overall market efficiency (efficient dispatch of generation and load, liquidity, market power, redispatching costs, etc.) or do you consider that the bidding zone configuration can be improved? Which advantages or disadvantages do you see in having bidding zones of similar size or different size?**

The results of the past years have proven the **efficiency of large and consistent bidding zones in Day-Ahead Market Coupling as well as Intraday Cross-Border Trading**, and merit to be considered when discussing a potential review process of bidding zones.

EPEX SPOT is involved in a wide range of Day-Ahead Market Coupling initiatives, including Central Western Europe (CWE), North Western Europe (NWE), South Western Europe (SWE) and Central Eastern Europe (CEE). Furthermore, EPEX SPOTs intraday markets in Germany, France, Switzerland & Austria allow for integrated cross-border trading since June 2013. **These projects pave the way towards the Internal Energy Market** and are based on shared systems, algorithms, governance and operational procedures.

Indeed, one can acknowledge the favorable **increase in liquidity on both the day-ahead and intraday markets** (cf. Fig. 1), especially within large and consistent bidding zones.

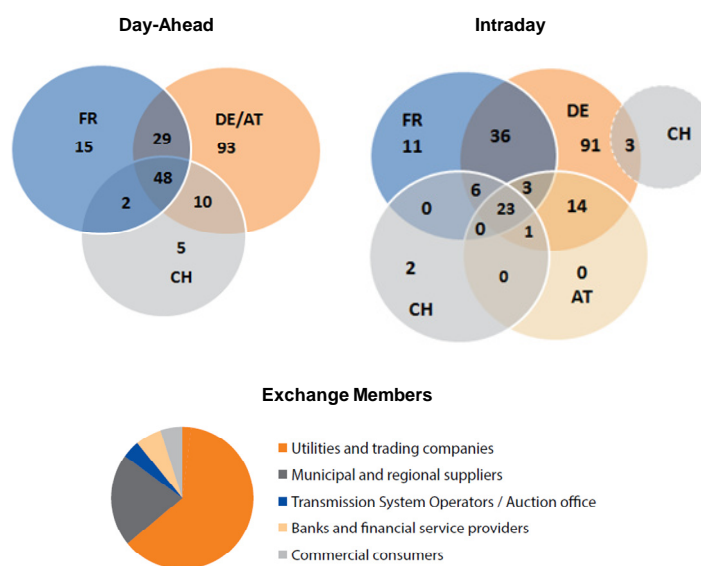
**Fig. 1: EPEX SPOT Day-Ahead (top) and Intraday (bottom) market volumes**



Moreover, EPEX SPOTs coupled markets **broaden offer/demand competition** by extending to a vaster territory and connecting national electricity markets. EPEX SPOTs growing membership underlines this increase in competition (cf. Fig. 2), once again especially visible in large and consistent liquidity pools.

Through daily published price indices such as the **Physical Electricity Index Phelix**, EPEX SPOT provides a **stable and recognized reference price for European electricity markets**, including OTC transactions, future contracts or balancing markets. This underlines the necessity of liquid and deep spot markets, which today mainly exists in large and consistent bidding zones.

**Fig. 2: EPEX SPOT Membership (207 Exchange Members as of Aug. 2013)**



In its evaluation report 2012, the German Regulator Bundesnetzagentur stated that **the spot exchange has proven to be a suitable instrument for the market integration of renewable energy**. While leading to increased liquidity and enhanced transparency, this market integration has not led to a significant break in price trends or increase of volatility. Thus, EPEX SPOTs coupled markets reflect the ability of large bidding zones with sufficient liquidity to absorb fluctuating volumes of renewable energy.

Finally, Market Coupling leads to a **significant increase of Social Welfare**, i.e. the overall sum of producers/suppliers gains and losses compared to isolated markets. In 2012, additional social welfare that could be gained with no network constraints amounted to around 100M€<sup>4</sup>, and a recent study by the European Commission showed that annual benefits of a EU-wide Market Coupling could reach 2.5 to 4.0 bn€<sup>5</sup>. Once again, large and consistent bidding zones play a central role in the optimization of social welfare.

In conclusion, EPEX SPOT supports a sustainable market design in adequacy with the European Internal Market, which has to be strengthened through market integration, not through fragmentation of the mar-

<sup>4</sup> CWE Social Welfare Report 2012

<sup>5</sup> Booz & Allen: Benefits of an integrated European Energy Market



kets. It is EPEX SPOT's opinion that a biannual review of bidding zones in Europe would **endanger the acquired benefits of market integration**, calling into question the coupling solutions currently under implementation. It therefore seems essential that the **Network Codes guarantee the stability of large and consistent bidding zones** to preserve the economic benefits of Day-Ahead Market Coupling and the Intraday Target Model.

In a more general sense, **the entire debate on reassessment of bidding zones should be led under the angle of enlarging them wherever possible**, in order to enhance the benefits accumulated hitherto (as the German-Austrian price zone testifies), instead of downsizing them, as it is implicitly suggested in the consultation.

**3. Do you deem that the current bidding zones configuration allows for an optimal use of existing transmission infrastructure or do you think that existing transmission infrastructure could be used more efficiently and how? Additionally, do you think that the configuration of bidding zones influences the effectiveness of flowbased capacity calculation and allocation?**

To our knowledge, a direct link between the size of bidding zones and the optimal use of cross-border transmission capacities seems difficult to establish. However, we assume that the **bidding zone configuration might actually be of secondary order when assessing optimal use of transmission capacity**.

In our view, rather than by the actual size of bidding zones, the optimal use of cross-border capacity is determined by the **accuracy of capacity calculation** and by the **efficiency of capacity allocation mechanisms**. For example:

- Quality of D2CF Base Case estimation (i.e. accurate forecasts of network topology, consumption, production and cross-border flows);
- Quality of Common Grid Model (i.e. level of cooperation between TSOs);
- Capacity calculation methods (i.e. remaining margins, generation shift keys, etc.);
- Choice of capacity split per border.

As such, the successful **implementation of the European Target Model through Day-Ahead Market Coupling and Intraday Target Model** can help to further optimize cross-border exchanges by implicitly allocating available capacities to exchange members. Furthermore, a **harmonization of existing balancing and/or reserve markets** could improve the use of interconnectors. Finally, **improving cross-border re-dispatch / countertrading** should contribute to optimize transmission infrastructures.

With the implementation of flow-based capacity calculation, the use of transmission capacity will *per se* be optimized. Indeed, flow-based is grounded in the network topology and takes into account grid constraints in order to determine the Security Domain, which is entirely made available for capacity allocation. Thus, **independently of the size of bidding zones, flow-based capacity calculation is supposed to increase trading opportunities with the same level of security**.

**4. How are you impacted by the current structure of bidding zones, especially in terms of potential discrimination (e.g. between internal and cross-zonal exchanges, among different categories of market participants, among market participants in different member states, etc.)? In particular, does the bidding zones configuration limit cross-border capacity to be offered for allocation? Does this have an impact on you?**

*EPEX SPOT does not comment on this question, as it solely applies to market participants.*

**5. Would a reconfiguration of bidding zones in the presence of EU-wide market coupling significantly influence the liquidity within the day-ahead and intraday market and in which way? What would be the impact on forward market liquidity and what are the available options to ensure or achieve liquidity in the forward market?**

*Please also refer to question 2.*

EPEX SPOT supports a sustainable market design in adequacy with the European Internal Market, which has to be strengthened through market integration, not through fragmentation of the markets.

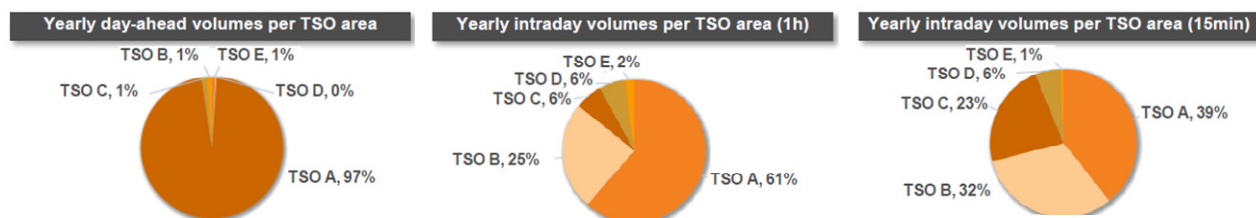
It is EPEX SPOTs opinion that **a biannual review of bidding zones in Europe would endanger already acquired benefits of Market Coupling. Indeed, a frequent re-assessment of bidding zones would undermine the aim of a European Internal Market by possibly leading to a patchwork of regional power prices.** If large and consistent bidding zones are split into smaller ones, exchange members will have to participate in small, local market areas during the hours where congestion occurs. As a consequence, they will face:

- less liquidity;
- decreased competition and thus potential abuse of dominant positions;
- no access to a representative reference price;
- threats of local market distortions through renewable feed-in;
- decrease of social welfare.

Thus, a fragmentation of large and consistent bidding zones would **call into question the Day-Ahead and Intraday coupling solutions currently under implementation.** It therefore seems essential that the Network Codes guarantee the stability of large and consistent bidding zones to preserve the economic benefits of Day-Ahead Market Coupling and the Intraday Target Model.

Furthermore, it is EPEX SPOTs opinion that enhanced flexibility on intraday markets might have a potential impact on grid congestion, as intraday trading activity better reflects physical constraints than day-ahead markets (cf. Fig. 3). In EPEX SPOTs view, **to help relieve grid congestions, enhancing flexibility of intraday markets will prove more effective and less costly than splitting day-ahead bidding zones.**

**Fig. 3: Distribution of Day-ahead & Intraday volumes per TSO area**



*Regarding forward markets, ACER may refer to the detailed response by EEX AG.*

In the view of EPEX SPOT, a bi-annual institutionalized re-assessment of bidding zones and the chance of a review create a basis risk for both sellers and buyers of electricity<sup>6</sup>. This basis risk cannot be hedged, as derivatives referencing on prices of price zones to be defined cannot be traded today. Also, hedging with illiquid Contracts for Differences (CfDs) might prove a largely insufficient option.

**6. Are there sufficient possibilities to hedge electricity prices in the long term in the bidding zones you are active in? If not, what changes would be needed to ensure sufficient hedging opportunities? Are the transaction costs related to hedging significant or too high and how could they be reduced?**

*Regarding forward markets, ACER may refer to the detailed response by EEX AG.*

In EPEX SPOTs view, the stability of the regulatory framework should be guaranteed in order to promote long term hedging opportunities. Introduction of additional uncertainties due to frequent bidding zone re-definitions should be avoided. Indeed, **stability of large and consistent bidding areas can help establishing liquid and deep forward markets** both on baseload and peak products, stretching 3 or more years into the future.

<sup>6</sup> **EEX/EPEX SPOT Position Paper:** Further Development of the Internal Market Undermined: Critical Aspects of the CACM Network Code, 9.9.2013

**7. Do you think that the current bidding zones configuration provides adequate price signals for investment in transmission and generation/consumption? Can you provide any concrete example or experience where price signals were/ are inappropriate/ appropriate for investment?**

The role of the European Power Exchange is to promote a transparent price formation without discrimination of market participants. European market participants testify that the **daily publication of hourly electricity prices has a reference character for the European wholesale market** (cf. Fig. 4).

The spot market price at EPEX SPOT is therefore both a direct reflection of:

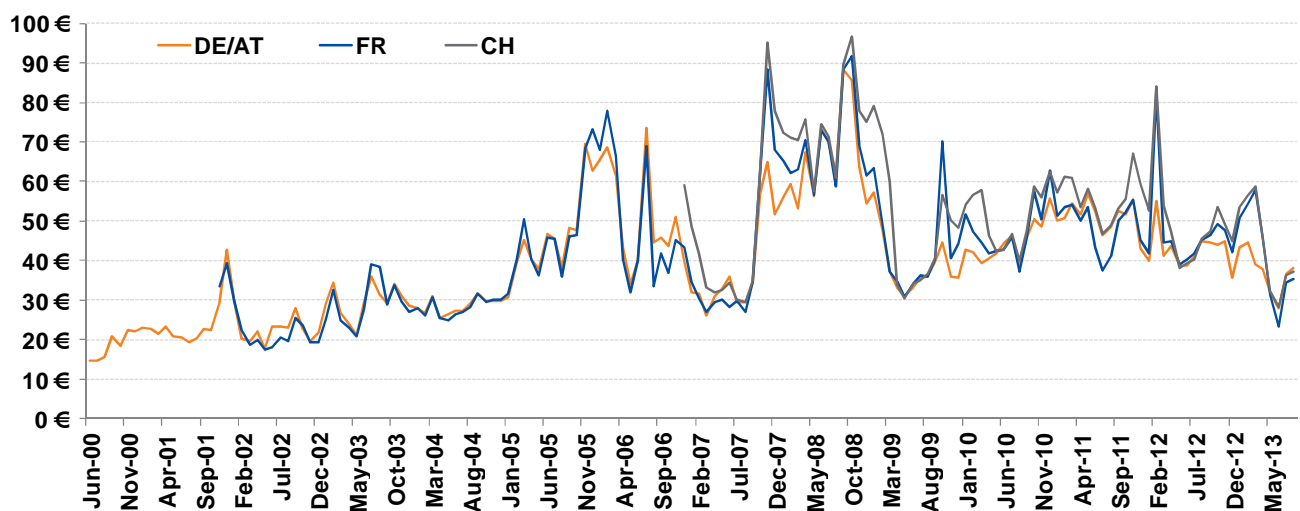
- **market fundamentals**, i.e. offer/demand, generation mix, cross-border capacities, etc.;
- **regulatory & political energy policies**, with possibly existing market distortions.

Thus, **EPEX SPOT provides a transparent price signal for efficient short-term dispatch, but also an underlying for forward prices and long-term investments**. Amongst others, the reference character of EPEX SPOTs price signal is guaranteed by large, liquid and stable bidding zones.

In addition, it is important to note that long-term investment decisions not solely rely on price signals, but to a large extent **on stable regulatory frameworks, national legislation and economical criteria**, such as:

- tariffs or support schemes (i.e. renewable subsidies, capacity mechanisms);
- network development plans (i.e. TYNDP, NEP in Germany, Schéma Décennal in France);
- cost signals (i.e. congestion rent, re-dispatch costs);
- forward prices (i.e. from liquid markets relying on large and stable bidding zones);
- strategic considerations (i.e. technology innovation);
- planning security (i.e. delivery of construction permits).

**Fig. 4: EPEX SPOT Day-Ahead prices for Germany/Austria, France and Switzerland**



**8. Is market power an important issue in the bidding zones you are active in? If so, how is it reflected and what are the consequences? What would need to be done to mitigate the market power in these zones? Which indicator would you suggest to measure market power taking into account that markets are interconnected? (This information would be primarily useful for ENTSO-E when performing the bidding zone review process (Activity 4))**

*EPEX SPOT does not comment on this question, as it solely applies to market participants.*

**9. As the reporting process (Activity 1 and Activity 2) will be followed by a review of bidding zones (Activity 4), stakeholders are also invited to provide some expectations about this process. Specifically, which parameters and assumptions should ENTSO-E consider in the review of bidding zones when defining scenarios (e.g. generation pattern, electricity prices) or alternative bidding zone configurations? Are there other aspects not explicitly considered in the draft CACM network code that should be taken into account and if so how to quantify their influence in terms of costs and benefits?**

*Please also refer to B. General Remarks.*

EPEX SPOT welcomes the possibility to engage early on in this pilot project.

Regarding the review process, EPEX SPOT would like to underline the need for a **holistic and transparent approach by ACER**. Beyond technical discussions in expert groups, **all concerned parties should actively be included in the review process** – not only through formal consultations, but through dedicated discussion platforms:

- Generators and suppliers;
- Trading companies;
- Transmission system operators;
- Power exchanges;
- Financial service providers and investors.

Also, **EPEX SPOT would like to stress the importance of Activity 3, whose output should be the decision to launch – or not to launch – a review of bidding zones**. Indeed, rather than automatically proceeding to a full bidding zone review which might prove intensive and possibly inconclusive, a phased approach should be preferred.

In order to decide on proceeding with a full and intensive bidding zone review in Activity 4, ACER should therefore first complete Activity 3 by:

- Clearly formulating the problem;
- Identifying all potential solutions at hand (and not only bidding zone re-definition);
- Completing comparative cost-benefit & risk analyses (including strategic, economical, technical and operational aspects).

It seems that proceeding with a bidding zone review in Activity 4 is appropriate only once the **following key questions have been answered in a satisfactory and generally approved fashion during Activity 3:**

- To what extent re-defining bidding zones represents an efficient solution to handle technical challenges such as congestion or loop flows – especially compared to other, already proven, solutions?
- Should the technical benefits of a re-definition of bidding zones prove indisputable, which direct and indirect costs will it imply – especially compared to other, already proven, solutions?
- Finally, to what extent can risks be acceptably ruled out when considering such a structural change of market design – especially strategic, economical, technical and operational risks?

Finally, the **key output of the pilot project** should be an **assessment of whether the proposed bidding zone review process is robust or not.**

**10. In the process for redefining bidding zones configuration, what do you think are the most important factors that NRAs should consider? Do you have any other comments related to the questions raised or considerations provided in this consultation document?**

**i. Proven and robust solutions should be prioritized to manage congestion and loop flow issues, a fragmentation of existing bidding zones does not represent an efficient approach.**

EPEX SPOT recognizes the usefulness of a technical assessment of congestion patterns in order to optimize re-dispatch or countertrading measures. However, given the inefficiency and associated risks of bidding zone fragmentation, EPEX SPOT advises to prioritize proven and efficient solutions:

- Coordinated network expansion;
- Further development of re-dispatch – also cross-border;
- Improvement of cooperation between European TSOs;
- Implementation of PSTs – where appropriate;
- Implementation of flow-based capacity calculation;
- Adjustment of renewable mechanisms – to improve feed-in behavior.

**ii. The Network Codes must preserve the benefits already achieved by Day-Ahead Market Coupling & Intraday Target Model, by ensuring the stability of large and consistent bidding zones.**

Otherwise, EPEX SPOT projects several major impacts on the markets, such as:

- Decreasing liquidity / competition – and thus increasing concentration of market power;
- Deterioration of the reference price signal – with negative impacts on futures & investments;
- Increased basis risk for future contracts – thus decreasing hedging opportunities;
- Deterioration of investment conditions in an already fragile economical context.

**iii. It is EPEX SPOTs conviction that liquid and flexible intraday markets provide a more efficient solution to grid congestion/loop flow issues, than splitting day-ahead bidding zones.**

Rather than splitting day-ahead bidding zones, EPEX SPOT suggests expanding the flexibility of intraday and balancing markets.

**iv. EPEX SPOT would like to underline the need for a holistic and transparent approach by ACER, whose output should be the decision to launch – or not to launch – a review of bidding zones.**

Beyond technical discussions in expert groups and formal consultations, all concerned parties should actively be included in a transparent review process. The process should not solely focus on technical grid aspects, but also include thorough cost-benefit and risk analyses. Key output of the pilot project should be an assessment of whether the proposed bidding zone review process is robust or not.

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