

## Response to the Swedish TSO survey on the market liquidity and transaction costs impacts of alternative bidding zones

Brussels, 11 February 2026

### General remarks

On a general level, we favour stability in the configuration of bidding zones along the lines of longstanding structural congestions. This certainty and continuity are essential to underpin cross-border competition, as well as liquidity in the forward, day-ahead, and intraday wholesale power markets. Liquid wholesale markets are key to managing and reducing risks for market participants, and in turn, reducing the cost of trading electricity for the benefit of consumers.

Stable, liquid markets also contribute to a positive climate for investments in generation, storage and demand response that are necessary to secure our electricity supply. And they help foster innovation and the development of new contracts, such as PPAs, that are essential for the energy transition.

Decision makers should consider:

- Preserving the liquidity and the functioning of our internal electricity market to match production and demand at the least cost for consumers, including across borders
- Ensuring stability and predictability in the delineation of bidding zone with at least five years implementation lead-time, to reduce transition costs
- Promoting optimal grid usage and, where needed, expansion to make the most of the investments needed for the energy transition and European industrial competitiveness.

# CONSULTATION RESPONSE



We support Svenska Kraftnät's efforts in looking at the market liquidity and transaction costs impacts of alternative bidding zones in their upcoming study. We stress the importance of having quantified results on these key indicators, in addition to qualitative market survey input.

Additional elements to be considered in bidding zones studies are costs related to changes to asset value, uncertainty, regulatory risk for investment decisions, and opportunity costs.

In an interconnected energy system, assessing the cross-border effects from proxy-hedging in the Nordic and with Core CCR, market participant behaviour, and the impact on future renewable energy projects contributes to having a more holistic picture.

Market efficiency does not stop at liquidity. We expect impacts on competition, both at the wholesale and retail levels. A better metric on entry/exit activity and competition would be one that measures how easily market participants can make the decision to enter or exit a market based on commercial consideration, and if regulatory and administrative barriers are reasonably low, which could give a better picture of bidding zone modelling liquidity and transaction costs.

Overall, the move toward one – or fewer – bidding zones in Sweden is encouraging, as it would naturally strengthen liquidity and create a more resilient market. It remains important, however, that any consolidation is supported by adequate grid measures to avoid internal bottlenecks and redispatch situations.

## Detailed comments

### Question 3. What type of financial instrument(s) do you trade?

- Short-term bilateral contracts
- Long-term bilateral contracts (incl PPAs)
- Exchange-traded contracts
- Other: as an association, we don't trade, but members use all the above

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**Question 4.** If Sweden were to become a bidding area, **Alternative 1**, what consequences do you see for the market in terms of **market liquidity**, compared to today's division?

(1 = very negative influence, 4 = very positive influence)

*With justification of the answer*

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Generally, we suggest the following indicators to investigate the impacts on liquidity: bid-offer spreads, trading volumes, churn rate, open interests, market depth, risk premiums and time to maturity.

If Sweden were to have the physical capacity to become one bidding area, we could observe more market participants that can find counterparties, which could increase traded volumes and have a positive impact on market liquidity. However, as the status of structural congestions in the Swedish transmission system is today, the benefit of any change is therefore limited and must be weighed against the cost to the electricity market that always arises when bidding zone borders are altered. Strengthening the physical connection between today's bidding zones, on the other hand, would reinforce both the robustness of the power system and, consequently, liquidity in the financial market.

Additionally, market design changes being implemented in the near future will also have an impact on market functioning and the state of market liquidity. One example that will be hard to forecast its effects is the implementation of flow-based on the intraday timeframe, as well as any flow-based improvements to be provided in the day-ahead timeframe.

So, overall, it is positive that electricity trading would become concentrated in fewer and larger bidding zones, enabling deeper order books and a more robust matching process. From this perspective, a consolidation of price areas in Sweden is likely to generate the

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much-needed increase in intraday market liquidity, as transactions would no longer be fragmented across several smaller zones.

That said, the potential drawbacks should not be underestimated. Reducing the number of bidding zones does not eliminate the physical bottlenecks within the transmission grid. These underlying structural constraints remain, regardless of how bidding zones are defined. If internal congestion continues to necessitate significant redispatch or other costly remedial actions, the resulting intraday prices risk drifting away from the true, underlying local scarcity conditions. Instead, prices may begin to resemble a "system-price-like" equilibrium smoother, less granular, and less reflective of the actual physical state of the network.

Such an outcome could weaken the credibility of intraday price signals. Market participants rely on locational prices not only for efficient dispatch and portfolio optimisation, but also for long-term investment decisions in flexibility, generation, and grid-supporting technologies. If prices cease to convey actionable information about where the grid is strained or where capacity is actually valuable, the market's ability to guide behaviour diminishes. In the long run, this may undermine both operational efficiency and incentives for investments that align with the system's physical needs.

In short, the liquidity benefits of merging Swedish bidding zones are clear. This said, it is key that this reform is accompanied by credible plans to address internal constraints, improve grid capacity, and minimise reliance on redispatch. Without such complementary measures, the consolidation could unintentionally weaken the very market signals that are intended to support a well-functioning and efficient power system.

On another note, concerning merging scenarios, we raise the attention of future forecasted consumption in the current SE1 and SE2, where several data centres are planned and not yet operational. This trend to move consumption further North may impact the outcome of a bidding zone merger with changes in pricing. There may also be cross-border interactions with Sweden's neighbours, with impacts on interconnector value.

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**Question 5.** If Sweden were to become a bidding area, **Alternative 1**, what consequences do you see for the market in terms of **transaction costs**, compared to today's division?

(1 = very negative influence, 4 = very positive influence)

*With justification of the answer*

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There are costs to consider between the announcement of a bidding zone reconfiguration and its implementation. Costs include renegotiating contracts, especially very long-term ones like PPAs, as well as a forward contract multiplied by the operations in each area. The timing of a bidding zone configuration change is driving the impact on existing contract arrangements, which is why we usually ask for 5 years' lead time to adapt long-term contracts. In the configuration of a bidding zone merger, like in option 1, renegotiating contracts may be less time-consuming than with a reconfiguration of borders or a split of bidding zones.

Many of the effects affecting external transactions also affect intra-company transactions: the delivery point of the commodity may need to be redefined, and operational procedures put in place to deal with the transportation.

If there is an unexpectedly negative impact on liquidity, the impact of lower liquidity on long-term markets would lead to significant basis risks when hedging between illiquid and moderately liquid zones. Ultimately, it would lead to increased transaction costs and higher prices for end-consumers.

Be that as it may, the expectation is that a consolidation of price zones will lead to lower transaction costs, just as the market in general will become more liquid and more robust.

**Question 6.** If current bidding zones were to be merged into one bidding zone, how does this affect the need for EPADs and/or zonal contracts? Would you prefer to continue

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trading SYS as a proxy for a "Sweden price", or do you see any reason to introduce a "Sweden contract" instead?

Generally, the Nordic market with SYS and EPADs works relatively well, supported by Svenska kraftnät's EPAD auctions, although with lower forward liquidity than in other bidding zones. We encourage the introduction of LTTRs (Long Term Transmission Rights) alongside EPADs in Nordic forward power markets to provide further hedging opportunities to cover cross-border risks. We suggest having FTR (Financial Transmission Rights) options or PTR (Physical Transmission Rights) with Use It or Sell It for LTTRs at all bidding zone borders and in all directions with longer maturities and maximum capacity. Market participants can utilise proxy hedging in more liquid bidding zones in combination with LTTRs. These tools are preferred by market participants in the EU as they enable them to cover their cross-border risks, decrease hedging costs, and ultimately stabilise costs to consumers.

LTTRs can co-exist with other hedging instruments based on price spreads, such as EPADs, and complement each other, notably in two ways:

- EPADs can complement forward transmission rights to hedge non-standard volumes (MW);
- EPADs can give market participants flexibility concerning when and for which period hedging takes place when forward transmission rights are auctioned at fixed dates for fixed delivery periods. Secondary markets for forward transmission rights, however, largely mitigate this lack of flexibility, but they take time to develop, especially given the absence of LTTR auctions in the Nordic area.

On the one hand, LTTRs offer open and non-discriminatory access to hedging solutions against cross-border transmission price risks without additional transaction costs, such as registering with a power exchange. LTTRs contribute via competitive auctions to developing the wholesale trading and retail activities of non-local participants in all bidding zones.

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On the other hand, EPADs can complement forward transmission rights to hedge non-standard volumes (MW) and give market participants flexibility regarding when and for which period hedging takes place when forward transmission rights are auctioned at fixed dates for fixed delivery periods. Providing increased EPAD auction volumes on all borders and increased trading horizons (e.g. Y+2) would contribute to more cross-border hedging opportunities.

Moreover, to further develop hedging opportunities, PPAs are market-efficient tools to develop liquidity and foster investment in new low-carbon energy sources. PPAs are issued on a multi-annual basis and require LTTRs to cover their cross-border risks. The introduction of LTTRs would provide increased opportunities between one or two price areas for cross-border PPAs. To further incentivise the uptake of PPAs, we suggest the use of public credit guarantee schemes, like the Norwegian Eksfin power purchase guarantee.

**Question 7.** If new limits according to **Option 2** are introduced, what consequences do you see for the market in terms of **market liquidity**, compared to the current division? (1 = very negative influence, 4 = very positive influence)

*With justification of the answer*

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Generally, we suggest the following indicators for investigating impacts on liquidity: bid-offer spreads, trading volumes, churn rate, open interests, market depth, risk premiums and time to maturity.

Additionally, market design changes being implemented in the near future will also have an impact on market functioning and the state of market liquidity. One example that will be hard to forecast its effects is the implementation of flow-based on the intraday timeframe, as well as any flow-based improvements to be provided in the day-ahead timeframe.

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The costs associated with changing bidding zones are known and significant, while the benefits remain unclear. Greater stability and more predictable price differences following reduced structural congestion in the grid, however, could reduce costs in the long run.

If Option 2 or Option 3 were to be introduced, the full potential of a large and highly liquid market would not be realised. These intermediate solutions inherently limit the scale effects and depth of liquidity that a fully consolidated market design could deliver. Therefore, there should be compelling and well-substantiated technical reasons before such compromise models are considered. In other words, only if demonstrable system-technical constraints justify it, should these 'in-between' approaches be pursued, as they risk diluting the efficiency gains, transparency, and robustness that a fully unified market structure is intended to achieve.

On another note, concerning merging scenarios, we raise the attention of future forecasted consumption in the current SE1 and SE2, where several data centres are planned and not yet operational. This trend to move consumption further North may impact the outcome of a bidding zone merger with changes in pricing. There may also be cross-border interactions with Sweden's neighbours.

We also might observe significantly more impact from merging SE3 and SE4, compared to SE1 and SE2. SE3 and SE4 are the two zones with higher consumption needs.

**Question 8.** If new limits according to **Option 2** are introduced, what consequences do you see for the market in terms of **transaction costs**, compared to the current division? (1 = very negative influence, 4 = very positive influence)

*With justification of the answer*

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There are costs to consider between the announcement of a bidding zone reconfiguration and its implementation. Costs include renegotiating contracts, especially very long -term ones like PPAs, as well as a forward contract multiplied by the operations in each area. In

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a configuration of option 2 with 2 bidding zones, which includes the merger of zones together, the renegotiation of contracts should not be as complicated as in a border reconfiguration or splitting scenario. Many of the effects affecting external transactions also affect intra-company transactions: the delivery point of the commodity may need to be redefined, and operational procedures put in place to deal with the transportation.

If there is an unexpectedly negative impact on liquidity that emerges from a thorough assessment study, the impact of lower liquidity on long-term markets would lead to significant basis risks when hedging between illiquid and moderately liquid zones. Ultimately, it would lead to increased transaction costs and higher prices for end-consumers.

**Question 9.** If new limits according to **Option 3** are introduced, what consequences do you see for the market in terms of **market liquidity**, compared to the current division? (1 = very negative influence, 4 = very positive influence)

*With justification of the answer*

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As a general remark, if Option 2 or Option 3 were to be introduced, the full potential of a large and highly liquid market would not be realised. These intermediate solutions inherently limit the scale effects and depth of liquidity that a fully consolidated market design could deliver. Therefore, there should be compelling and well-substantiated technical reasons before such compromise models are considered. In other words, only if demonstrable system-technical constraints justify it, should these 'in-between' approaches be pursued, as they risk diluting the efficiency gains, transparency, and robustness that a fully unified market structure is intended to achieve.

In more detail:

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For day-ahead liquidity: Liquidity is expected to rise if existing congestions in SE3 are alleviated, with increased cross-zonal capacities to be made available to the market (ie, more imports from Finland and increased exports to Norway/Denmark).

For intraday liquidity: Liquidity is expected to rise if more cross-border capacities are available due to improved network management. However, the introduction of flow-based market coupling in the Nordic region in Q4 2024 has raised concerns about reduced intraday capacity. This should be analysed once more data is available.

**Question 10.** If new limits according to **Option 3** are introduced, what consequences do you see for the market in terms of **transaction costs**, compared to the current division? (1 = very negative influence, 4 = very positive influence)

*With justification of the answer*

- 2

There are costs to consider between the announcement of a bidding zone reconfiguration and its implementation. Costs include renegotiating contracts, especially very long-term ones like PPAs, as well as a forward contract multiplied by the operations in each area. The scenario of reconfiguring borders will lead to the renegotiation of existing contracts, which will need time. The timing of a bidding zone configuration change is driving the impact on existing contract arrangements, which is why we usually ask for 5 years' lead time to adapt long-term contracts.

Many of the effects affecting external transactions also affect intra-company transactions: the delivery point of the commodity may need to be redefined, and operational procedures put in place to deal with the transportation. The transportation risk has to be allocated commercially and may change the economics of the transaction. In the case of renewable power production, previously "green" electricity may then become "grey", which would undermine the fundamental economics of the original transaction.

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If there is an unexpectedly negative impact on liquidity that emerges from a thorough assessment study, the impact of lower liquidity on long-term markets would lead to significant basis risks when hedging between illiquid and moderately liquid zones. Ultimately, it would lead to increased transaction costs, with higher risk premiums and higher prices for end-consumers.

That said, the expectation is that a consolidation of price zones will lead to lower transaction costs, just as the market in general will become more liquid and more robust.

**Question 11.** What changes in market liquidity do you expect as a result of a potential change in bidding zone division, and how do you assess that the effect will be distributed between different actors in different bidding zones?

*Please provide examples of products (e.g. bilateral agreements, EPAD, system contracts), maturities or types of actors that you consider to be most affected.*

A reduction in the number of bidding zones would, all else being equal, enhance market liquidity and contribute to a more robust trading environment. Hence, larger price zones typically allow for deeper order books and more efficient matching of supply and demand. Naturally, this positive effect presupposes that Svenska Kraftnät provides sufficient grid support to enable such consolidation without triggering (frequent) redispatch situations, which would reintroduce uncertainty and undermine price formation.

It is difficult to assess ex ante whether different categories of market participants would be affected differently by such a reform. However, it can reasonably be expected that the beneficial impact of merging bidding zones would materialise first in the short-term markets, where liquidity is most sensitive to fragmentation. By contrast, forward markets may initially be less affected, as much of the longer-term trading already reflects expectations about near-term fundamentals and is therefore less dependent on the geographical granularity of bidding zones.

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**Question 12.** How well equipped is the financial electricity market today for potential changes in bidding zone divisions, do you think your organization is prepared?

(1 = not at all equipped, 4 = very well equipped)

*With justification of the answer*

- n/a

We recommend sufficient lead time to change processes and adapt hedging behaviour. For example, in contracts, the SDAC delivery point is agreed upon; if bidding zones are merged, the delivery point remains the same, but a potential risk emerges on contracts where the bidding zone border has changed. Therefore, there will be a need to have mitigation clauses in place in contracts.

**Question 13.** How much consideration does your organisation currently take into account the risk of changes in the bidding zone division when entering into long-term contracts?

(1 = no consideration, 4 = very high consideration)

*Please describe how this affects your valuation or strategy, and if possible, what type of contract:*

- n/a

Generally, contracts are made by assessing different risk components to make an effective hedge. If a bidding zone configuration is discussed, it will likely be considered in the overall trading strategy. An increased perception of risk by traders will likely result in a higher "risk premium" and thus higher costs of investments related to energy transition, which could also be reflected in certain contracts.

**Question 14.** What measures to reduce risk or negative impact on liquidity and transaction costs in the financial electricity market does your organization consider reasonable and feasible?

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For example, parallel contracts are listed and made available for trading well in advance of deployment. Feel free to reason based on the various alternative bidding zone divisions:

On short-term markets, better use of existing infrastructure, including through improved flow-based capacity calculation and allocation in short-term markets, could decrease the risk. NEMOs and TSOs are assessing the effects of the implementation of flow-based on the intraday timeframe, as well as any flow-based improvements to be provided in the day-ahead timeframe. Depending on how long the study is, if a decision is made and implemented, these market changes and their exact effects are difficult to foresee.

On long-term markets, to further support the forward market and best enable cross-zonal PPAs, the introduction of long-term transmission rights (LTTRs) that cover the tenure of PPAs (5-10 years+) is fundamental. Increasing the frequency of LTTRs and EPAD auctions (including capacity re-calculation) to meet the needs of market participants based on the liquidity of each bidding zone border is another low-hanging fruit mitigation measure. Priority must also be given to solutions with a positive or limited negative impact on the market:

- Ensuring that all technologies contribute to system flexibility and that the bidding zone delineation is conducive to fast storage roll-out and more demand response, alongside the development of power generation
- Enhancing grid usage through improved TSO-TSO and TSO-DSO cooperation, cross-border redispatch and cost-sharing arrangements, and advanced cross-capacity calculation processes.

**Question 15.** What measures, both in general and against changes in risk exposure, does your organization not consider reasonable or feasible?

As far as forward market enhancement is concerned, we are critical of experiments that could damage trading conditions within and across bidding borders.

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**Question 16.** How long do you estimate that your organisation needs to adapt to the new bidding zone division? For example, with regard to IT adaptations, management of open positions and analysis of price impact as well as legal consequences for bilateral agreements.

- Less than 12 months
- 12-24 months
- **More than 24 months**

*Please explain the factors that make you consider this time frame necessary.*

We commend SvK's decision to study options for the years 2030, 2035 and 2040. There is a balance to strike for implementation timing. On the one hand, we advocate at the European level for a minimum 5-year lead time, as experience for a reconfiguration between Germany, Luxembourg and Austria, with a 2-year lead time demonstrated significant impacts on market liquidity, mostly for Austria. Sufficient should be provided for adequate preparation in IT processes, contract negotiation and renegotiations, and lessen major impacts on market functioning. In the Swedish case, one needs to differentiate the different impacts from the different configurations. Merging bidding zones should be less disruptive in contract negotiations, and we would hope to see a swifter implementation time, while a reconfiguration of the existing bidding zone borders would lead to contract modifications. On the other hand, we would appreciate that once a decision for a bidding zone option is made, the implementation timing is respected, as too long an implementation would impact longer-term contracts like PPAs, notably on investment decisions.

Most forward contracts have a maturity of a maximum of three to five years in the current context of electricity markets. It should be noted that the change will nonetheless affect (positively or negatively) existing investments (generation plants, storage assets, demand-response providers), which have a longer amortisation period. Also, the development of long-term power purchase agreements (PPAs) for renewable electricity, usually concluded for a period of five to fifteen years, will be particularly affected by changes in bidding zones delineation, impacting investment decisions.

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Technical amendments to local legislation and methodologies may take a long time after a decision on a bidding zone reconfiguration. This will impact market participants' ability to hedge until all secondary regulation is completed. Furthermore, time should be allotted to thoroughly test and implement IT systems. New products, price curves, analysis tools, etc., will need to be programmed, tested, and implemented by all market participants, TSOs and trading venues. Also, all the transparency needed (including Flow Based domain) for a bidding zone reconfiguration would be required and published on time. Furthermore, a parallel run should be mandatory before any effective bidding zone reconfiguration.

**Question 17.** Do you have any other thoughts, comments or suggestions that you would like to share with Svenska kraftnät related to the analysis of the impact of bidding zones on the functioning of the financial electricity market?

Overall, the move toward one – or fewer – bidding zones in Sweden is encouraging, as it would naturally strengthen liquidity and create a more resilient market. It remains important, however, that any consolidation is supported by adequate grid measures to avoid internal bottlenecks and redispatch situations. With the right network conditions in place, the benefits of a larger, more liquid price area can be fully realised to the advantage of all market participants.

In practice, Options 2 and 3 risk creating instability, fragment liquidity, and replacing a configuration with a similar but less stable one in Sweden.

On a general level, we favour stability in the configuration of bidding zones along the lines of longstanding 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 key to managing and reducing risks for market participants, and in turn, reducing the cost of trading electricity for the benefit of consumers.

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Stable, liquid markets also contribute to a positive climate for investments in generation, storage and demand response that are necessary to secure our electricity supply. And they help foster innovation and the development of new contracts, such as PPAs, that are essential for the energy transition.

Decision makers should consider:

- Preserving the liquidity and the functioning of our internal electricity market to match production and demand at the least cost for consumers, including across borders
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We support Svenska Kraftnät's efforts in looking at the market liquidity and transaction costs impacts of alternative bidding zones in their upcoming study. We stress the importance of having quantified results on these key indicators, in addition to qualitative market survey input.

Additional elements to be considered in bidding zones studies are costs related to changes to asset value, uncertainty, regulatory risk for investment decisions, and opportunity costs.

In an interconnected energy system, assessing the cross-border effects from proxy-hedging in the Nordic and with Core CCR, market participant behaviour, and the impact on future renewable energy projects contributes to having a more holistic picture.

Market efficiency does not stop at liquidity. We expect impacts on competition, both at the wholesale and retail levels. A better metric on entry/exit activity and competition would be one that measures how easily market participants can make the decision to enter or exit a market based on commercial consideration, and if regulatory and administrative barriers are reasonably low, which could give a better picture of bidding zone modelling liquidity and transaction costs.

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It would be good to have even more EPAD and LTTRs auctions that could stretch out to 3 years or more, as this is a common hedging timeline for large utilities.

Lastly, we recommend holding information and survey debriefing webinars on the study in English to facilitate access to all market participants in the consultative process. In our interconnected energy system, significant market design changes like bidding zone configurations have cross-border implications, both within the Nordics and with the rest of Europe.

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