Implementation of 2nd auction in the Nord Pool Spot market area – paper for stakeholder consultation

Date 21 January 2015

Table of content

1 Introduction and executive summary

The Nordic TSOs and Nord Pool Spot (NPS) are considering the possibility of introducing 2nd auction at NPS day ahead spot market. 2ndauction is proposed as a new procedure in situations where the 1st round of price calculation is unable to match demand and supply. Currently, such situations leads to either the minimum price of -500€/MWh, or the maximum price of +3.000€/MWh and application of non-matching procedures as described in NPS Market Regulation.

2nd auction is to be understood as a situation where a submission of orders is re-opened and market participants are allowed to provide new bids and update existing bids within a timeframe of approximately 10 minutes. The assumption is that this will allow for more orders entering into the market, thus replacing a curtailment situation, with an equilibrium market price.

Following the consideration by the TSOs and NPS, the next step is to consult with the Nordic market participants and other relevant stakeholders. This paper therefore aims at

(1) outlining the proposed design of 2nd auction, and
(2) outlining the consequences for managing of peak load capacity in Finland and Sweden.

In the consultation, two major questions are presented to the stakeholders:

(a) Could implementation of 2nd auction enhance the market function further, and
(b) is a change in order price for peak load capacity from currently " the last commercial order +0.1 €/MWh" to "the maximum price at 3,000 €/MWh" acceptable

Possible implementation of 2nd auction is considered for both a min and max price situation, however, the consultation focuses on the maximum price situations, as the procedure of 2nd auction will interfere with current procedures for such situations. The sequential performance of current high price non-matching procedures has to be shifted to a simultaneous approach as current price calculation procedure for Multi-Regional Coupling does not allow the time delay introduced by 2nd auction and current sequential approach. Amongst others, this would require a re-design for the activation of the peak load capacity in Sweden and Finland.

For the minimum price situations, implementation of 2nd auction could be done without similar considerations as there are no other procedures in the event of non-matching at minimum price.

2 The proposed design and motivation

The idea of implementing 2nd auction at NPS was launched following some situations of minimum price and curtailment of sales orders in Denmark at December 25th 2012. The subsequent market analysis by the Danish TSO revealed, that approximately 150 MW electrical heat boilers were not participating the price formation at NPS, even though prices for 7 hours were on or close to -200 €/MWh (former minimum price) at the same time district heating was produced by fossil fuels at combined heat and power generation facilities (CHPs).

Additionally a high price non-matching situation occurred in DK1 as of June 7th 2013. In this situation some generation was left outside the market. Inclusion of this generation to the market price formulation could potentially have avoided the situation of curtailment.

The basic functioning of a 2nd auction is to allow for new submissions of purchase and sales bids from the market participants in case the minimum price of -500 €/MWh or maximum price 3.000 €/MWh is reached and the need for curtailment of market participants' bids emerge. In such situations, NPS could launch a 2nd bidding round in order to obtain more orders to have the balance created by an equilibrium price rather than through curtailment.

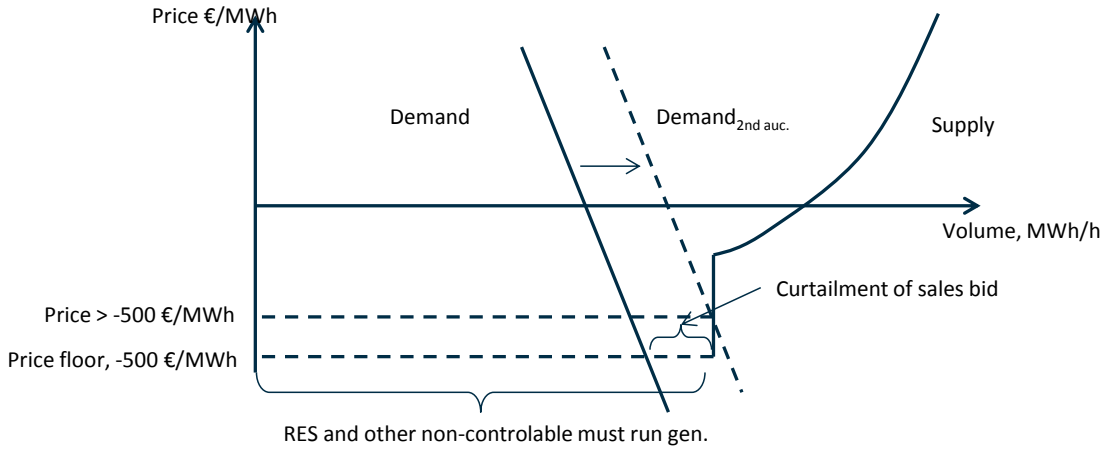
The hypothesis is that a 2nd auction will provide for a more efficient market functioning as it potentially would include more resources in price formation to avoid such non-matching situations. Basically it could be expected that it is in the interest of all market participants to submit proper orders already in the first round of order submission at the PX. However, situations as described for Denmark (see above) have revealed that this may not always be the case.

More efficient market function

An efficient market is designed to provide for power generation according to a least cost merit order dispatch and power consumption according to willingness to pay (WTP). However, for the economic efficiency gain to materialize in reality a complete representation of resources (generators and consumers) needs to be active in the market. For this assumption, some requirements have to be fulfilled. The market participants should be fully informed about market prices and their own marginal costs, and be able to enter the daily processes unhindered. In reality, the awareness about markets and prices may low for some possible market participants. The situations of spot prices at minimum level in December 2012 and at maximum level in June 2013 in Denmark West, indicate such lack of awareness by market participants, as some relevant resources were left outside the market. When some resources are left outside, the generation dispatch and/or demand curve cannot be complete, hence the dispatch of generation and demand may be less efficient.

A 2nd auction provides a possibility of including resources, left outside in the first round due to lack of awareness. An economic gain may then be obtained by including consumers with a WTP higher than the minimum price of -500 €/MWh in the 2nd auction. This is indicated in Figure 1. In the figure the 2nd auction provide new bids, and hence a new demand curve (dashed line, $Demand_{2nd\ auc.}$). This replaces a curtailment of sales bids with a price as the mean to secure market equilibrium.

Figure 1:



A parallel situation may be described for the high price situation. In this case, a 2nd auction allow for more sales orders or flexibility (decrease) on demand to be included. Hence the concrete economic gain originates mainly from the fact that generators with marginal costs lower than the maximum price of 3,000 €/MWh get access to the market, as the price of 3,000 €/MWh reflects the marginal value of electricity in this particular hour.

3 Existing procedures in the event of non-matching in day-ahead at maximum price

The purpose of non-matching procedures at the NPS is to managa curtailment situations. If the 1st round price calculation is unable to match of demand and supply, NPS has access to a set of measures that may be triggered before curtailment is declared. Current measures in Nord Pool Spot's Elspot Market Regulations to avoid non-matching are:

(1) conversion of supply block orders into hourly orders if available in the area,
(2) activation of orders from peak load capacity[1] in applicable bidding zones. (peak load capacity are currently available in Sweden (during winter period from 16th of November to 15th of March), Finland and Lithuania – will probably become available also in DK2 from 2016).
(3) If possible, increased transmission capacity on relevant interconnectors (possible for instance when ATC has been reduced to facilitate for maintenance work in grid)

Activation of each measure will depend on the situation and area. The situation might be that neither of the measures are available in the curtailed area or it could be that there are convertible sales blocks and peak load capacity as well as the possibility to ask for increased ATC into the area. NPS will activate one or more of the measures in accordance with applicable procedure for each measure in the order mapped above.

4 Application of existing procedures with 2nd auction

2nd auction and Peak Load Capacity

The activation price of peak load capacity orders in Sweden and Finland is currently set at 0.1 €/MWh above the highest accepted commercial order in the applicable bidding zones. Thus, the current pricing rule for activation of peak load capacity in Sweden and Finland would require a sequential handling of 2nd auction first and activation of peak load capacity afterwards since the price of new orders coming in in the 2nd auction may be at a higher price than the previous highest sales order. However, a sequential handling of these procedures is time consuming. In the European day-ahead market coupling only a limited time frame is allowed for managing non-matching procedures. NPS has to comply with the timelines that are given. If deadlines for completing non-matching procedures are not met, NPS may have to cancel the completion of non-matching procedures or in worst case the situation may lead to a full decoupling of the European day-ahead market coupling for the following day.

The timeline for managing situation of maximum price with 2nd auction:

Time	Activity
~12:30	Maximum prices are detected
12:30 – 12:40	Incident committee PXs initiated, analysis of situation, identification of procedure to trigger and communication to market about reopening of PX order books
12:40 – 12:50	10 minute warning period to market about reopening of order books at 12:50
12:50 – 13:00	**Second auction** – Market Participants can update existing bids and submit new ones, simultaneously entering of peak load capacity into price calculation and possible additional ATC on

[1] Peak load capacity is sometimes also denoted strategic reserves

	relevant interconnectors.
13:00	Gate closure time after 10 minute reopening for 2nd auction
13:00 – 13:10	Check of order book and sending of new order book and new transmission capacities to market coupling.
13:10 – 13:25	Start re-calculation of prices and eventually distribution of results to PXs Re-calculation and related result file transmission normally 15 minutes
13:25 – 13:35	10 minute post coupling process, PX validation of results and portfolio allocation
13:35 – 13:45	10 minute TSO validation process and final confirmation of prices
13:45 – 13:50	5 minutes contingency – needed for possible delay in for instance process for communication to market about 2nd auction, finalization of maximum price procedures prolonged calculation time technical hiccups etc.
13:50	Latest time for declaration of full decoupling. Full decoupling **will be declared** if final confirmation process is not completed by 13:50.

The Nordic TSOs and NPS sees it as a prerequisite for a 2nd auction to be implemented that all non-matching procedures are designed so that they can be activated simultaneously – in order for the activation of one measure not to be dependent of the outcome of another measure. This implies e.g. that all commercial orders from 2nd auction is activated before peak load capacity bids. So for that reason a prerequisite for implementing a 2nd auction is to have an explicit bid price for peak load capacity, making this price independent of other supply bids.

In order to implement 2nd auctions (as seen from table above), non-matching procedures must be performed simultaneously, i.e. at the same time. For that reason peak load capacity must be included in bidding process at an explicit order price in order to avoid these orders to interfere with commercial orders of 2nd auction. The TSO's and NPS have identified two possible solutions:

1. Use the highest commercial bid from the 1. Round price calculation + 0.1 €/MWh as the explicit bid in the 2nd round price calculation
2. Use an explicit bid price for peak load capacity at 3.000 €/MWh in the 2nd round price calculation

Option 1 is currently not feasible as it cannot be ensured that commercial bids from 2nd auction in all will be activated before peak load capacity is activated. This leaves only one option to be considered in the context with 2nd auction, namely application of +3000 €/MWh price for peal load capacity bids.

2nd auction and convertible block orders

Conversion of block orders is the conversion of non-activated sales block orders into single hourly orders in a second round of calculation. Convertible sales block orders are block orders that in advance are marked as convertible and given a conversion price by the participant in the auction. These blocks – if not activated in the initial price calculation, may be converted by NPS and entered as single hourly orders before a new calculation.

With implementation of 2nd auction, convertible block orders will be removed as a non-matching procedure. When market is reopened for a 2nd auction all orders that were entered before the initial price calculation, may be altered by the participants.

2nd auction and increase of available transmission capacity

Increase of available transmission capacity has at certain occasions been given by TSOs when a maximum price situation has occurred. The procedure is to ask for amount of transmission capacity equal to the curtailed volume in the area.

In combination with 2nd auction the relevant TSOs will be asked to review the capacity that is given and evaluate if it is possible to increase transmission capacity. The TSOs will evaluate if the transmission capacity can be increased or not.

5 Submission of new orders from market participants in all affected zones

The overall idea is to launch a 2nd auction – that is to allow for submission of new orders – if a non-matching situation occurs in the 1st round price calculation in one or more bidding zone. First approach could be to reopen bidding in affected bidding zones only (that is only the zones with a non-matching situation). However, to be in line with Central West Europe (CWE), the second approach would be to launch the 2nd auction in all bidding zones covered by NPS and not only the zones with a non-matching situation. The background for this second approach is two-fold; partly to allow for an equal treatment of all market participants in the NPS region by having reopening in all bidding zones, partly to have the NPS procedures running as smooth as possible, where the re-opening of order books in all bidding zones is easier to manage.

Some restrictions on bidding have to be imposed

Some restrictions have to be imposed on the submission of orders of the market participants in the 2nd auction. For these restrictions one has to distinguish between restriction imposed on bidding in the non-matching affected bidding zone(s) and the other zones which are not affected by non-matching.

For the non-matching zones, the restriction will be that in case of a low price curtailment situation, market participants located in this bidding zone are only allowed to submit new purchase orders or reduce existing sales orders only. In high price curtailment situations, market participants located in this bidding zone are only allowed to reduce their purchase orders or submit new sales orders.

For bidding zones that are adjacent to the non-matching zones and other bidding zones, the market participants are allowed to change their bids, but only in a way that improve the situation. In case an adjacent zones experience a high price non-matching situation improvement of situation means “not reducing supply” or “reducing demand”. Vice versa in a low price non-matching situation.

However, the word “improve” will not be defined in a very specific way, because in a situation of simultaneously non-matching situation of high price in one bidding zone and low price in another, it is may not be clear how to understand “improve”, if matched zone at first round of calculation is located in between the non-matching zones.

6 Questions on 2nd auction implementation to the stakeholders

The Nordic TSO's and NPS would like to have input from the Nordic stakeholders on the questions raised below.

1. Do you find it would improve the functioning of the Nordic power market to implement 2nd auctions?

2. Do you support the implementation of 2nd auction as part of the Nord Pool Spot product portfolio?

3. If 2nd auction is to be implemented in Nord Pool Spot market area , do you see any drawbacks / benefits of re-opening order books
    a. in all bidding zones or
    b. only non-matching bidding zones

4. Do you think that it is necessary to have restrictions on orders entered in the 2nd auction as described in section 5, or should the market be reopened for participants to freely enter new orders only with some advice from NPS on what type of orders that will remedy the non-matching situation?

5. Specifically for market participants active in a bidding zone with peak load capacity arrangements:
    a. Do you agree that if 2nd auction is implemented in the Nord Pool Spot market area that peak load capacity is activated at maximum price of 3 000 €/MWh?
    b. Do you have any other views related to 2nd auction and peak load capacity

6. Any other views or comments related to implementation of 2nd auction in Nord Pool Spot market area?