

Background

Need for a study

The issue of congestion management methods in the Nord Pool area is continuously being discussed. The recently finished study ordered by the Nordic Council of Ministers (NCM) has made the subject especially current. The study suggests using 11 price areas instead of the current 7 price areas. In Sweden, Svensk Energi (SE) has announced that the decisions concerning the number of areas should not be made before the investments of the Nordel 2004 plan are completed. Earlier SE was strictly against dividing Sweden in two or more price areas.

This is the background for the Finnish Energy Industries (ET) setting up a work group to evaluate suggestions of the study mentioned above.

Earlier studies and the positions of ET

POMPE-report (Prisområden på elmarknaden) prepared by Swedish actors was published in May 2007. In the comments concerning the report ET emphasized that the best way to handle occasional bottlenecks is the counter trade. With respect to price areas ET emphasized the general competitive benefits of large markets and thus price areas. In addition, ET was sceptical about the idea of dividing Sweden in so called snit 2. Particularly ET opposed dividing Finland in two areas on grounds that no structural bottlenecks exist that would warrant such an action.

The draft document of the NCM study was made available for comments in the spring 2008. In its comments ET emphasized the importance of large price areas and asked to look into the option where Finland, Sweden and East-Denmark would constitute one common price area.

Future studies

NCM asked the Nordic national TSOs to investigate the possibilities of introducing new price/bidding areas year 2010 as the target. In the communiqué this was formulated in the following way: "*De nationella systemansvariga myndigheterna ombeds att starta processen med att dela in det gemensamma nordiska börsområdet i ytterligare potentiella anbuds- och/eller prisområden med sikte på 2010.*" In Finland this study will be done by Fingrid.

Congestion Management in the Nordic Market - evaluation of different market models

The content and the proposals of the report

In the study the effects of different congestion management methods were examined with the help of "Balmorel-model". The report has two main parts. In the first part are the results of the calculations made to estimate the socioeconomic benefits with different number of price areas. The main assumption in calculations is that there are 11 price areas and the prices are determined after the counter trade.

In the second part are the results of the calculations concerning market power. Market concentration and potential market power are modelled with Herfindahl Hirschman (HHI) and Pivotal Supplier (PSI) indices.

Essential conclusions and recommendations of the writers are:

- 11 price or bidding areas introduced in report should be formed.
- When counter trade is used to form price areas from the bidding areas a two-phase calculation should be used. In the first Elspot calculation, all bid areas are treated as

Elspot areas. Second calculation is performed for a certain Elspot area if the first calculation has resulted in different prices for bid areas that are within that Elspot area. The purpose of the second calculation is to establish a common spot price for the Elspot area and to perform the most cost-effective counter trade to relieve the congestion. Second calculation does not change the power flows with adjacent Elspot areas.

- All bid areas and Elspot areas are treated as separate areas in the intra-day market (Elbas) and the regulation market.
- The writers don't recommend that the TSOs were obliged to guarantee a specific (percentual) transmission capacity between the Elspot areas.

On the whole the writers consider it very negative to move the congestion on the borders of certain price areas. Another emphasized conclusion is the concern regarding market concentration.

The work group

The members of the work group were Kimmo Dahl (kymppivoima Oy), Harri Laaksonen (PVO-Pool Oy), Karl-Henrik Nordblad (Fortum Portfolio Management and Trading) and Petteri Haveri (ET). The work group met twice, September 10th and October 24th.

Overview of the report

According to the report the annual socioeconomic benefits of introducing new price areas (up to 11) would be about 30 million euro. The changes would have substantially higher effects on income distribution between various market actors. According to the report the changes would induce an income transfer to Central-European end users and Norwegian and Swedish producers from the Norwegian and Swedish end users.

Another relevant point is that the suggested 30 MEUR benefit is very small when compared to the size of the market – only about 0,1–0,15 %. This kind of improvement can be attributed to modelling, rounding or calculation errors and provide no significant support for introducing the change.

The third point is that most part of the benefits suggested in the report occur due to increased electricity transfer from South-Sweden to Denmark and Germany. The computational benefits that would be attained by dividing Finland into two are negligible compared to the total benefit not to mention the comparison to the size of the market.

The fourth point is the rather technical method used to estimate market concentration. The report seems to suggest that by fragmenting the market, the market concentration would decrease. This could happen only if some rather big actor operates in some specific area and separating this area from the rest of market would give better parameters for the rest of the areas.

The following table is from the report.

Table 5: Distribution of costs and benefits – 11 areas compared to baseline (mEUR)

	Denmark	Finland	Norway	Sweden	Continent	Sum
Generator profits:	33	1	72	74	-152	28
Consumer surplus:	-26	-2	-74	-117	144	-75
Public proceeds:	1	0	-1	0	1	1
<i>Sub total</i>	7	0	-3	-43	-7	-46
Congestion rents	-7	4	0	49	21	67
Counter trade (gen.)	0	0	0	4	0	4
Counter trade (DR)	0	0	0	4	0	4
Socio economic benefit:	0	3	-3	15	14	30

Views about dividing Finland into two price areas

There are no reasons to divide Finland into two price areas. The transmission grid in Finland is strong and it ensures the functioning of the market. Splitting Finland into two areas would cause a number of problems:

- Competition in both retail and wholesale market would weaken, the effect being more severe on retail market.
- Regional competition in wholesale market weakens.
- Two price areas would weaken the liquidity of CfD-contracts.
- Price area risk would be handled with bilateral contracts which would reduce the liquidity in Nord Pool Spot.
- In long term this may lead to a stronger vertical integration and the transparency between electricity production and sale would weaken.
- In short term the retailers' and industrial end-users' ability to hedge against the area price risk would be reduced. This will result in higher prices to customers in both Northern and Southern Finland.
- Generally the change would put customers in Northern and Southern Finland in different positions.
- Comparing retail prices and the understanding over electricity pricing would become complicated.
- Formation of price areas is a heavy operation and the current arrangement (Finland as a one area) works fine.
- The internal bottlenecks in Finland aren't significant. True problems in the Nordic market area are elsewhere. Finland is not to be divided into two price areas due to problems that are elsewhere in the market area.

Many of the above mentioned factors would raise retail prices. This raise of prices should be compared to the estimated socioeconomic benefit introduced in the report "Congestion Management in the Nordic Market - evaluation of different market models". It is probable that the total benefit would be very low if not negative.

Views about dividing the market area into more price areas

In the transmission networks some locations occasionally become bottlenecks. Building a network with no congestion is not economic. The issue is what is to be encouraged. The use of price areas and resulting price differences may encourage building electricity production in the deficit areas and consumption in the surplus areas. However, choice of location involves a number of issues to which small price differences hardly make significant contribution. Reduction of TSO's counter trade costs encourages investment into bottlenecks. This incentive disappears when the market is split into smaller areas.

Introducing new price areas contradicts with several principles. First, decreased transparency and complex pricing makes developing market customer friendly more difficult. Second, it conflicts with the efforts to harmonise the retail market.

Dividing Sweden into more price areas would ease the situation in Finland. Then Sweden would have to be divided at minimum into three areas. Dividing Sweden only at snit 2 would not help. Nonetheless it has to be remembered that Finland's' P1 is controllable and doesn't require division of Sweden.

Even the bottlenecks in South-Sweden are not as severe as has been indicated. There is a clear need for network investments, but also enhanced use of counter-trade would ease the situation considerable. The true question is more about who should bear the costs caused by the bottlenecks in South-Sweden. At the moment there is no answer, or rather the answer depends on the respondent. Svenska Kraftnät (SvK) has no interest to bear the costs of necessary counter-trade alone. The need for counter-trade is partly caused by through-transmission from Norway to Denmark. Thereupon SvK restricts the transmission.

Views about dividing Finland into two bid areas

On the background of the bid area -idea (are at least) three motives:

- All parties giving spot offers could take part in counter-trade, instead of the present system based on bilateral contracts.
- TSOs could not hide bottlenecks that are located in the border of new bid areas and the severity of the bottleneck would emerge better.
- The costs caused by counter-trade would give the TSOs an incentive to invest to remove the bottlenecks.

Introducing new bid areas may however cause a number of problems. The market structure proposed in the report is two-phased. In the first phase the calculation is done based on the bids, which gives the needed transmission between the price areas. In the second phase TSO combines the bid areas into one price area. This results:

- The bid area mechanism proposed in the report of Hagman and COWI may lead to a situation where electricity flows from high price area to low price area after two or more bid areas have been combined.
- The price formation on the market becomes more obscure. This might reduce the trust on the functioning of the market.

On the whole the use of spot-bids in counter-trade includes the risk that the actors will start giving so called strategic bids.

It is unclear whether the spot-bids are suitable to be used in counter-trade:

- The nature of counter-trade is more occasional than that of the spot-trade, because of which it is probable that this will cause a change in bidding behaviour. Occasional and volatile electricity production is priced differently than base production.
- Nord Pool Spot (NPS) is critical about the bid-area model due to the possible side-effects.
- The bid-areas were tried in Spain – and the trial was ended. The trial led to a situation where producers gave strategic bids to the power exchange. Currently the spot-bids are no longer used in counter-trade, but the bids for counter-trade are given separately.

If the new counter-trade system would incur large costs to the TSO, the TSO might consider changing bid-areas into price-areas:

- TSOs' counter-trade costs may be high. An absolute counter-trade requirement may lead to excessive outcome.
- Dividing Finland into two bid-areas can create pressure combining bid-area North-Finland with bid-/price-area North Sweden. These kinds of thoughts have been expressed also earlier. If Sweden was to be divided into more price-areas, combining North-Sweden to Finland would of course be better than maintaining North-Sweden as a separate area.

In the earlier chapter the effects related to dividing Finland into two price-areas were handled. All these negative effects would realize if bid-areas were later changed into price-areas.

Only dividing Finland into two bid-areas would cause heavy costs, for example due to the changes needed to be made into the IT-systems. Implementation costs could be as high as 20 MEUR and the annual effect as much as 15 MEUR. In addition hedge costs would raise.

Views about dividing the market area into more bid-areas

With regard to bid-areas, experiences elsewhere are mainly negative. The bid-area alternative has also been criticized by Nord Pool Spot, whose worry is the functioning of physical day-ahead-market.

In Spain the use of spot-bids in counter-trade has been tried. The model used is not exactly the same as the one proposed, so conclusions must be drawn with care. In Spain, the mechanism led to a situation, where producers gave strategic bids which affected the price formation. The system has now been abandoned in favour of a system where TSO asks

separately for counter-trade bids. The Spanish experience is none the less a warning example of possible difficulties.

A question recognized also by Fingrid is whether in general it is possible to use spot-bids in counter-trade. If new bid-areas are introduced, a separate market may well function better.

It is worth to be remembered that if a TSO is reluctant to use counter-trade to facilitate transmission and to keep price-areas undivided, the bid-areas are of no help. This is to be remembered especially when considering South-Sweden.

Concluding remarks

TSO operations

The absolutely best way to handle bottlenecks is sufficient investments in transmission network. The Nordic TSOs shall fulfil Nordel's five prioritized investments. These investments are to be finalized by the year 2013. However, in Sweden finalizing the investments may take till 2015 or even till 2016. The need for price areas is forecasted almost to disappear and price is expected to become uniform.

Nordel's new investment proposal was published in early 2008. When this plan is realized the bottlenecks will become even fewer. The investments must be encouraged and promoted by political actions, among others by requiring that all bottleneck incomes will be used in investments that aim to eliminate bottle necks from the Nordic transmission grid, and to counter trade. In 2008 only the bottleneck incomes were about 240 MEUR in Nordic countries.

Furthermore TSOs should be given new incentives to:

- reduce congestion with new grid investments
- improve reliability of transmission connections.

The congestion management methods are not primary tools to handle congestion, but tools to be used when the market suffers from temporary bottlenecks. Eventually, sufficient grid investments are the only way to remove bottlenecks and to make the Nordic electricity market to work. Primary method to handle congestion is the investments, and secondary method is the counter-trade.