

***Case No COMP/M.3867 -  
VATTENFALL / ELSAM  
AND E2 ASSETS***

Only the English text is available and authentic.

**REGULATION (EC) No 139/2004  
MERGER PROCEDURE**

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Article 6(1)(b) NON-OPPOSITION  
Date: 22/12/2005

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COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 22.12.2005

SG-Greffe(2005) D/207694

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PUBLIC VERSION

MERGER PROCEDURE  
ARTICLE 6(1)(b) DECISION

To the notifying parties:

Dear Sir/Madam,

**Subject: Case No COMP/M.3867-Vattenfall/Elsam and Energi E2 assets  
Notification of 18 October 2005 pursuant to Article 4 of Council  
Regulation No 139/2004<sup>1</sup>**

1. On 18/10/2005, the Commission received a notification of a proposed concentration pursuant to Article 4 of Council Regulation (EC) No 139/2004 by which the undertaking Vattenfall AB ("Vattenfall", Sweden) acquires within the meaning of Article 3(1)(b) of the Council Regulation control of parts of the undertakings Elsam A/S ("Elsam", Denmark) and Energi E2 ("E2", Denmark), by way of a swap agreement with DONG A/S ("DONG", Denmark).
2. After examination of the notification, the Commission has concluded that the operation falls within the scope of the Merger Regulation and does not raise serious doubts as to its compatibility with the common market and the EEA agreement.

**I. THE PARTIES AND THE OPERATION**

3. Vattenfall is the state-owned Swedish incumbent. It has considerable business operations also in Germany, Finland and Poland. It is active in generation, distribution and supply of

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<sup>1</sup> OJ L 24, 29.1.2004 p. 1.

electricity and, to a lesser extent, in the sale of natural gas, heat and other energy products and services.

4. The acquired business<sup>2</sup> (“the Business”) consists of generation capacity predominantly in Eastern and Western Denmark. These assets are currently owned by Elsam (“Elsam”) and Energi E2 (“E2”), the respective electricity generation incumbents in West and East Denmark. The Business has an electricity generation capacity of [2000-3000] MW<sup>3</sup>. Most acquired power plants are co-generation plants, producing both electricity and heat, and are fuelled by coal, biomass or natural gas. The remainder is wind power (including a wind farm at Horns Rev) in West Denmark.
5. DONG is the Danish state-owned gas incumbent active in exploration, production, off-shore transport and sale of oil and natural gas, storage and distribution of natural gas. It also has some limited facilities using renewable energy for electricity and heat production and has expanded its activities into electricity retail operations.
6. Vattenfall has entered into purchase agreements for 35.3% of Elsam’s shares whereas DONG holds shares and has entered into purchase agreements for the remaining 64.7%. Elsam’s subsidiary Nesa A/S (“Nesa”) currently holds approximately 36% of E2 whilst DONG holds shares and has entered into purchase agreements for the remaining 64%. Vattenfall also has a 40% share in E2’s Avedøreværket 2 power plant unit.
7. In order to resolve this situation, DONG and Vattenfall concluded a Main Asset Swap Agreement (“MASA”) on 31 May 2005. Under the terms of the MASA, Vattenfall will receive [20-25]% of the entire assets of Elsam and E2, corresponding to Vattenfall’s prospective shareholding in Elsam (including the indirect shareholding in E2). In turn, DONG will receive the 35.3% of Elsam shares for which Vattenfall has entered into purchase agreements, as well as Vattenfall’s 40% share in Avedøreværket 2.<sup>4</sup> Following the proposed transaction, Vattenfall will hold [50-70]% and DONG [30-50]% in a wind farm in West Denmark, Horn’s Rev, with a generation capacity of [150-170] MW<sup>5</sup>. Vattenfall will also acquire joint ownership in certain supporting assets such as harbours used for servicing the power plants.

## II. CONCENTRATION

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- 2 The assets acquired by Vattenfall in Denmark are the following: West Denmark: Nordjyllands central CHP [650-680] MW, Fyns central CHP [670-700] MW, 60% of Horns Rev wind farm [90-100] MW plus Elsam’s onshore wind activities consisting of wind mills spread across Western Denmark [200-220] MW. East Denmark: Amager central CHP [460-480] MW and Hillerød and Helsingør decentral CHPs (together [130-140] MW).
- 3 Only a very small amount of this, all wind power, is situated outside Denmark: Sweden [20-30]MW, Germany [30-40]MW, UK [80-90] MW, Poland [25-35] MW.
- 4 Vattenfall currently holds a 40% share in Avedøreværket 2. According to the MASA this stake will be transferred to DONG and is thus currently being examined within the framework of the concentration COMP/M.3868-DONG/Elsam/Energi E2.
- 5 According to Vattenfall, the wind farm will be operated by only one company. . They will both also hold minority shareholdings in a wind farm in Germany, Borkum Riffgrund 1.

8. The proposed transaction brings about a permanent change of control over the assets transferred from Elsam and E2 to Vattenfall. The transferred assets are mainly power plants and thus constitute a business to which a market turnover can be attributed. Therefore the proposed transaction constitutes a concentration within the meaning of Article 3(1) b of the Merger Regulation.

### III. COMMUNITY DIMENSION

9. The undertakings concerned have a combined aggregate world-wide turnover of more than EUR 5 billion<sup>6</sup> (Vattenfall: EUR 12.425 billion). Each of Vattenfall and the Business have a Community-wide turnover in excess of EUR 250 million (Vattenfall: EUR [...]; the Business: EUR 300.2 million), and Vattenfall does not achieve more than two-thirds of its aggregate Community-wide turnover within one Member State. The notified operation therefore has a Community dimension.

### IV. RELEVANT MARKETS

#### **Relevant product markets**

##### *Electricity wholesale*

10. Vattenfall submits that the only affected product market is the market for generation/wholesale of electricity. The existence of a market for generation/wholesale of physical electricity has previously been established by the Commission<sup>7</sup>. This market encompasses the generation of electricity at power stations as well as electricity physically imported through interconnectors for the purpose of resale to retailers.
11. According to Vattenfall the electricity wholesale market encompasses the generation and sale of electricity to wholesalers both on the basis of bilateral contracts and through organised markets (power exchanges or pools, such as the Nordic power exchange Nord Pool).
12. In the Nordic area, an important part of sales and purchases of wholesale electricity is conducted via the Nordic electricity power exchange Nord Pool Spot ASA (“Nord Pool”), which covers wholesale transactions of physical electricity in Finland, Sweden, Norway and Denmark<sup>8</sup>. Nord Pool is a joint venture between the Nordic electricity TSOs and operates a day-ahead market matching supply and demand of wholesale electricity in the entire Nordic area 12 to 36 hours before delivery. Nord Pool complements this day-ahead spot exchange called ‘Elspot’ by a trading option termed ‘Elbas’ which permits trading of electricity even closer to its physical delivery and consumption.

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<sup>6</sup> Turnover calculated in accordance with Article 5(1) of the Merger Regulation and the Commission Notice on the calculation of turnover (OJ C66, 2.3.1998, p25).

<sup>7</sup> See e.g. Commission decisions in cases IV/M.2890 EDF/SEEBOARD, IV/M.3007 E.On/TXU, IV/M.3268 Sydkraft/Grønting, COMP/M. 3440 EDP/ENI/GDP, IV/M.2684 EnBW/EDP/CAJASTUR/HIDROCANTABRICO

<sup>8</sup> In autumn 2005 also Vattenfall’s grid area in Eastern Germany has – to some extent - been joined as a separate Nord Pool bidding area, called KONTEK.

13. In addition to these Nord Pool-based forms of trading physical electricity at wholesale level, producers/traders and customers also engage in bilateral contracts of physical wholesale electricity<sup>9</sup>. While Nord Pool trades standard products (e.g. delivery/purchase of 1 GWh<sup>10</sup> of electricity in flat supply/consumption profile during a certain hour of the following day), bilateral contracts can be more individualised<sup>11</sup>. The Commission has sought to clarify whether this form of bilateral trading is sufficiently substitutable with Nord Pool trading and vice versa. It appears that prices of bilateral contracts are usually tied to Nord Pool prices which points to a very close link between both forms of wholesale electricity trading. However, there are also indications that for a certain group of wholesale customers (usually small retail suppliers), direct access to Nord Pool seems to be difficult. For the purpose of this decision, the question whether the supply of electricity to retailers that are not active on Nord Pool<sup>12</sup> could constitute a separate market can be left open as the proposed operation does not raise serious doubts as to its compatibility with the common market irrespective of whether wholesale contracts via Nord Pool and through bilateral agreements are considered as part of the same product market or as separate product markets. It has to be noted that bilateral contracts are only possible within a given price area but not cross-border. Since the transaction will not lead to any overlaps in any price area (see below), it will have no negative competitive impact on bilateral contracts.

#### Financial electricity trading

14. In Vattenfall's view the wholesale market for electricity also includes financial electricity trading, and not only physical trading of electricity. Financial electricity trading consists in the trading of financial products suitable for providing insurance against the risk of unforeseen future price developments in physical electricity wholesale markets ("financial hedging"). In previous Commission decisions, the market definition for financial electricity trading has generally been left open.<sup>13</sup>
15. There are, however, a number of functional differences between financial electricity trading and physical electricity trading which make it doubtful whether they can be regarded as belonging to the same product market. One difference is that all financial electricity trading terminates in a mere financial settling of contracts without any physical delivery of electricity whereas physical electricity trading obliges the supplier to physical delivery of electricity. Even if prices (and price expectations) in both areas mutually influence each other it is thus clear that physical electricity trading cannot be

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<sup>9</sup> Nord Pool accounts for more than 40% of the physical electricity consumed and produced in the Nordic region. For Denmark this percentage is even higher (51 % in East Denmark, 65 % in West Denmark, in 2005).

<sup>10</sup> GWh = Gigawatt hour.

<sup>11</sup> This is irrespective of Nord Pool's attempts to make its trading offer more flexible which is unlikely to reach the required flexibility due to the inherent constraints of an electricity exchange to offer sufficiently standardised products in order to achieve the necessary level of liquidity.

<sup>12</sup> Cf. COMP/M. 2947 - Verbund/EnergieAllianz where the possibility of such a separate market for (wholesale) supplies to small electricity retailers was discussed but left open.

<sup>13</sup> E.g. in Verbund/Energie Allianz.

substituted by financial electricity trading.<sup>14</sup> The market investigation also indicates that financial electricity is distinct from the market (or markets) for physical contracts.<sup>15</sup>

16. Within financial electricity products, a special role is played by CfDs. Companies using the CfDs – other than for pure trading purposes – can “lock” the area prices to the system price by buying (or selling) CfDs in addition to the financial forward and the physical spot positions they have. This means that the different CfD products managed by Eltermin<sup>16</sup> have their relevance when hedging the respective area prices to the system price, i.e. when those particular markets form separate price areas for certain periods. As the various area CFDs are not substitutable with each other or with the other financial insurance products (except for purely speculative financial players), and since CfDs appear to be mainly supplied from market participants within the relevant price area, the CfDs for each area could be regarded as separate markets. For the purpose of the present decision, this question can, however, remain open.
17. Vattenfall submits that financial electricity, even if it were a separate product market, would not constitute an affected market as the acquired business is not active in financial electricity trading. It is true that the current owners of the acquired business, namely Elsam and E2, have been active on the financial electricity market. However, these financial activities are not necessarily linked to underlying generation capacity, as is shown by the important role played by investment banks in financial electricity markets.<sup>17</sup> On an overall financial electricity market which would most likely be at least pan-Nordic, the increment to Vattenfall’s market share brought about by the acquisition of the Business would be de minimis. With respect to CfDs, Vattenfall’s market shares in Denmark are very small, namely [1-5]% in East Denmark and [1-5]% in West Denmark. On a larger geographical scale, the Business has only very small market shares (if at all). Therefore, the proposed concentration is unlikely to have any

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<sup>14</sup> At present, the contract types traded on Nord Pool’s Financial Market, called Eltermin, comprise electricity derivatives, CO<sub>2</sub> quotas, and certificates for renewable electricity. The latter only relates to Sweden and is thus not influenced by the proposed concentration. CO<sub>2</sub> quotas constitute a market which is separate from the market for electricity derivatives. The electricity derivatives traded on Eltermin are base load futures, forwards, options, and contracts for differences (CfDs, hedging against the risk of Nord Pool area price differentials). There is no physical delivery of financial market electricity contracts. In addition to Nord Pool, there exist also bilateral financial contracts (i.e. contracts concluded between two operators directly or through a trading platform but without the activity of Nord Pool as a counterparty guaranteeing financial settlement), which however, seems to be closely linked to Eltermin. The market share of Eltermin in all financial contracts in the Nordic area has increased from 25% in 2000 to 38% in 2005. As regards the CfDs the market share of Eltermin is significantly larger as about 83% of all trades conducted since 2004 for the price areas Denmark East and West, have been conducted there. The volume of sales on Eltermin is 3.5 – 5 times the volume on Elspot.

<sup>15</sup> Physical and financial electricity are not completely interchangeable as regards settlement and time horizon. Financial electricity always has a cash settlement and is not sold on a spot (day-ahead) basis, whereas physical electricity from Elspot or bilateral contracts is delivered physically and is contracted on a spot basis.

<sup>16</sup> Currently there are CfDs for the following areas: Norway, Sweden, Finland, Denmark West, Denmark East and Syger (hedging the Phelix price Germany to the system price Nord Pool).

<sup>17</sup> E.g., London-based financial institutions play an important role on these markets. According to the notification, over 300 companies from eleven countries participate in the Nordic financial market.

significant impact on competition on any hypothetical financial electricity markets and/or markets for CfDs.

*Balancing power/ancillary services*

18. Vattenfall has submitted that as the acquired business is not active in ancillary services/system services (reserve capacity and regulating power) there are no horizontal overlaps on such a potential product market or on such potential product markets. The Commission has on several occasions considered the provision of regulating/balancing power and reserve capacity, together also named “ancillary services”<sup>18</sup>, to constitute one (or more) separate market(s)<sup>19</sup>.
19. On the basis of the market investigation, Vattenfall’s argument is only partly correct as the assets which Vattenfall will acquire have been used, in combination with the other plants in the respective portfolio of generation assets, for the provision of such services by their current owners, Elsam and E2.<sup>20</sup> However, for the purpose of the present decision a precise market definition is not necessary as the proposed concentration would not result in any affected market in that respect. Vattenfall is currently not active in the provision of these services in Denmark and as these services are only to a very limited extent tradable across borders (making any significant effect on Sweden highly unlikely), the operation would not result in competition problems on these market(s).

*Other markets*

20. With respect to electricity retail markets, the proposed transaction does not lead to any horizontal overlap as Vattenfall does not acquire any retail activities and has currently no retail activities in Denmark. Since they are also unlikely to constitute vertically affected markets, it is not necessary to define these markets. The same applies to the markets for district heating and fly ash production.
21. As regards CO2 certificates trading and assuming a geographic market comprising the entire EEA (or even wider), there is currently no indication that the operation would have any negative impact on competition.

**Relevant geographic markets**

*Electricity wholesale*

22. Vattenfall considers the market for generation/wholesale of electricity to be at least pan-Nordic in scope, i.e. encompassing all Nordic areas participating in the trading of electricity via the Nordic electricity exchange Nord Pool, which is located in Oslo.

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<sup>18</sup> See case COMP/M. 3440 EDP/ENI/GDP. It can be noted that also the Danish Competition Authority defined separate markets in this area. In its decision on the Elsam/Nesa merger in 2004, it defined separate markets for wholesale supplies, regulating power and reserve capacity respectively (The Danish Competition Authority: The merger between Elsam and Nesa, March 2004).

<sup>19</sup> See e.g. case COMP/M. 3268 Sydkraft/Grønting or case COMP/M. 3440 EDP/ENI/GDP.

<sup>20</sup> However, as Elsam and Energi E2 have operated their portfolio of plants as a “pool” drawing upon the required services in a very flexible way switching frequently between one or the other plant, it is difficult to associate a specific turnover and thereby market share with the divested business.

These areas are Finland (1 area), Norway (two or more areas<sup>21</sup>), Sweden (1 area), East Denmark (1 area) and West Denmark (1 area).<sup>22</sup> Vattenfall bases this view on the following observations: (i) the full liberalisation of electricity markets in these countries since 1 January 2003; (ii) the existence of the Nordic power exchange, Nord Pool; (iii) the fact that 100 % of the interconnector capacity between the different areas is at the disposal of Nord Pool.

23. Vattenfall admits that there are at certain times congestion problems within the Nordic region and that Nord Pool therefore at times splits the prices between two or more areas to handle these problems. However, Vattenfall also holds that during a normal year no price area is isolated from all other areas within the Nordic area other than at a 'relatively small amount of time' (Vattenfall states 20%) and that the annual average price difference between the highest and the lowest price area were no more than 5.9% in 2004 and 8.7% in 2003.
24. In spite of a certain integration of wholesale markets in the Nordic countries it appears, in the light of the results of the market investigation, that the finding of a pan-Nordic market would be pre-mature. The Commission found three major reasons why an assessment based on a pan-Nordic market would be inappropriate.
25. First, the mere fact that there is congestion of interconnections means that there is a certain number of hours during which the behaviour of a dominant firm within a certain Nord Pool area is insufficiently constrained by the competitive dynamics of neighbouring areas.
26. Second, the percentage of congested hours, and consequently the level of price differences, varies significantly between any two pairs of areas and over time.

(i) The percentage of congested hours varies significantly between any two pairs of areas. With 6% in 2004 this congestion level is relatively low between Sweden and Denmark East. By contrast it is fairly high between Sweden and Denmark West and between Norway and Denmark West (both equalled 41% in 2004).

(ii) The level of congestion varies significantly over time. On the one hand it is very dependent on the full availability of the interconnection capacity which depends both on repair and maintenance work at the interconnection itself and on internal network problems within the individual areas. Such internal network problems are not infrequently 'exported' by the individual TSOs (who are responsible for defining the available interconnection capacity) to the interconnection capacity with adjacent areas in order to relieve the stress on the internal networks. On the other hand, meteorological conditions strongly influence the availability of hydro-power and thereby have an important impact on congestion levels and congestion directions, as well as Nordic price levels.<sup>23</sup>

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<sup>21</sup> In certain situations one of the Norwegian areas, Norway North is split into further sub-areas

<sup>22</sup> In October 2005, Nord Pool introduced a "virtual" price area for the German region adjacent to the KONTEK cable between East Denmark and East Germany. However, this "virtual" price area is not yet comparable to the price areas in the Nordic countries.

<sup>23</sup> While abundance of hydro-power in (mainly northern) Norway and Sweden will lead to strong flows southwards to Denmark and Germany and eastwards to Finland, and by consequence, more elevated



Table 1 Congestion levels between Danish areas<sup>24</sup> and neighbouring Nord Pool areas 2003-2005:

Congestion in % of time between:	2003	2004	2005 (Jan–Sep)
Dk West and Norway and Sweden	48.9%	30.5 %	51.3 %
Dk East and Sweden	2.0%	6.0 %	12.0%

Source: Nord Pool, reply of 4 October 2005

Furthermore, the congestion levels and directions over time vary during the day. At night the flow of electricity tends to be from South East to North-West as (North-Western) hydropower plants hold back their generation capacity for the more lucrative daytime hours. At the same time, less flexible south-eastern coal and nuclear power plants keep producing, even at lower night-time prices.

(iii) By consequence, the level of price differences varies considerably between individual areas and over time. Whilst the average *annual* price difference in 2004 between Sweden and Denmark West<sup>25</sup> was 2.5%, average *monthly* price differences were above 7 % in no less than 4 individual months and between 4 and 5% in two further months (deviating in both directions), the maximum monthly difference being as high as 16%. The fluctuations would be evidently exacerbated if weekly, daily or even hourly prices were compared.

Table 2 Monthly average price differences between Denmark West and Sweden, in 2004 (West Danish price in % of Swedish price)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
92.1%	95.2%	97.8%	103.0%	108.2%	103.1%	115.9%	104.5%	108.2%	102.7%	100.4%	100.0%

Source: Commission calculation based on data provided by Vattenfall

The level of price divergence is considerably higher between West Denmark and Sweden than it is between East Denmark and Sweden. Between East Denmark and Sweden the average annual difference in 2004 was 1% with a maximum difference of 2-3.3% in only 2 months, cf. table 3.

Table 3 Monthly average price differences between Denmark East and Sweden, in 2004 (East Danish price in % of Swedish price)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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congestion levels in these directions, a dry-year scenario leads to higher congestion in the opposite direction, namely towards Sweden and Norway.

<sup>24</sup> It is a particularity of the Danish transmission grid that that there is no interconnector between East Denmark and West Denmark.

<sup>25</sup> In the figures in table 2, Swedish prices are taken as the benchmark (i.e. 100%), and the deviation of the Danish prices is measured.

101. 7%	101. 2%	100. 1%	99. 8%	100. 0%	101. 5%	100. 7%	103. 3%	100. 0%	100. 0%	100. 1%	102. 7%
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Source: Commission calculation based on data provided by Vattenfall

Even the comparatively narrow yearly and monthly average price differences between East Denmark and Sweden in 2004 may be considered as significant because of relatively high intra-day congestions<sup>26</sup> and considerable price differences in congested hours<sup>27</sup>.

27. Third, the results of the market investigation indicate that congestion can be foreseen (and might even be influenced) by market participants, and that congested periods between two areas are not a transitory but rather a recurrent phenomenon.
28. It is also clear from the Commission's investigation that Sweden, the part of the Nordic area in which the main part of Vattenfall's generation assets are located, is relatively well connected to other regions. Since 2001, there were only 60 hours (0.1% of the time) in which Sweden was completely isolated from the rest of Nord Pool. While table 4 below shows how often Sweden is connected to the other price area, table 5 below shows the frequency with which Sweden is well and poorly connected to the rest of Nord Pool.

*Table 4: Share of hours where Sweden is connected to other price areas since 2001*

<b>Sweden connected to</b>	<b>Hours</b>	<b>Share of time</b>
<b>East Denmark</b>	40.061	92,4%
Finland	37.361	86,2%
Norway North (Trondheim)	34.470	79,5%
Norway North (Tromsø)	34.211	78,9%
Norway South	32.253	74,4%
<b>West Denmark</b>	24.570	56,7%

Source: Nord Pool

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<sup>26</sup> E.g. in 2004, congestion situations and directions between Denmark East and Sweden were almost exactly opposite between (a) midnight and 6.am (off-peak hours) and (b) 7 a.m and 7 p.m (peak hours).<sup>26</sup> During period (a) the only congestion direction was DK East => Sweden with congestion levels of 2-4%. During period (b) the only congestion direction was Sweden => DK East and congestion levels were as high as 7-10% for each individual hour.

<sup>27</sup> E.g. price differences between Sweden and Denmark East were above 10% in 55-60% of congested hours.

Table 5: Number of areas connected with Sweden since 2001

Number of areas <sup>28</sup>	Hours	Share of time
0	60	0,1%
1	685	1,6%
2	3.063	7,1%
3	3.782	8,7%
4	8.937	20,6%
5	11.851	27,3%
6	14.961	34,5%
Total	43.339	100,0%

Source: Nord Pool

29. As can be seen, the West and East Danish areas in which the acquired businesses are located are the areas that are best and least connected to Sweden respectively.
30. Pursuant to the Commission Notice on the definition of the relevant market<sup>29</sup> the delineation of the geographic market is regularly based on the SSNIP-test whereby the question is asked whether a customer would switch to an alternative supplier if confronted with a Small but Significant Non-transitory Increase in Prices.
31. The structure of the electricity market allows for a very precise answer to this question. If the producers in, say, Denmark West were to increase prices above the system price on Nord Pool by submitting higher bids, then customers in Denmark West would automatically and seamlessly - due to the allocation process at Nord Pool - be assigned electricity originating from another region provided that sufficient free interconnector capacity is available. On the other hand, if the interconnectors were to be congested, the customers would not be able to switch and would have no choice but to pay the higher price. In other words: the SSNIP test will give different answers in different hours. It would point to a narrow market in hours where there is congestion and to a wider market in hours in which there is no congestion<sup>30</sup>.
32. One potential conclusion from this logic could be to define several separate markets, one for each configuration of congestion pattern between the countries. Each of these different geographic markets would then represent a certain fraction of the hours of the year. Another potential conclusion could be to define the markets narrowly so that each price area constitutes its own market. Producers in other regions would then be treated as sources of immediate supply side substitution and their potential market share calculated on the basis of the inter-connector capacity.

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<sup>28</sup> The calculations are based on three price areas in Norway, two in Denmark and one in Finland.

<sup>29</sup> 97/C 372/03 par.16-17 and 29

<sup>30</sup> This line of reasoning presupposes that price increases during such recurring, but possibly disconnected, congested hours qualify as 'permanent' or 'lasting' price increases within the meaning of the Commission's Notice on Market Definition.

33. As the proposed concentration would not lead to any significant impediment to effective competition, regardless of which geographic dimension would be retained, the exact scope of the relevant geographic market for wholesale electricity can be left open.

## V COMPETITIVE ASSESSMENT

### Generation/wholesale of electricity

#### Horizontal overlap

34. In this particular case, and in the context of analysing the likely effect of the concentration on the market for electricity, the Commission has also applied other types of analysis than calculation of market shares, which in its view in this case arguably provide for a better way of assessing the likely effect of the transaction on consumers. Inter alia, through the means of simulations of the behaviour of the electricity producers before and after the merger, it is possible to assess the likely final effect on electricity prices.
35. In electricity, E2 is the generation incumbent in East Denmark and Elsam is the generation incumbent in West Denmark. In 2004, E2 generated 76.3% of all electricity generated in East Denmark whereas Elsam generated 60.6% of all electricity generated in West Denmark. The remainder of the production is generated by wind power generators and mostly small scale thermal or biomass cogeneration plants, producing both heat and electricity (decentral CHPs). Whilst these competitors are small and can only produce electricity together with heat (back pressure), Elsam and E2's large central CHPs are able to produce electricity also without heat production (condensing mode) and are thus considerably more flexible.
36. As mentioned above, the operation consists of the acquisition of certain parts of Elsam's and E2's generation capacity by Vattenfall [20-25]% while the remainder of this capacity is to remain with the acquirer of Elsam and E2, DONG [75-80]%.
37. Currently, Vattenfall has a 40% stake in the most modern East Danish power unit Avedøreværket 2. Its capacity rights (which it has never exercised) amounted to [900-950] GWh in 2004. As a part of the present operation, these rights are to be sold to DONG. The capacity represented by Vattenfall's acquired business<sup>31</sup> therefore does not lead to any horizontal overlap of generation activities for Vattenfall in Eastern or Western Denmark.
38. In terms of electricity generated the shares of the acquired business are estimated by Vattenfall as follows<sup>32</sup>.

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<sup>31</sup> [2000-3000] MW of which [1900-2800] MW is situated in the Nordic countries. [1880-2630] MW of this capacity is situated in Denmark.

<sup>32</sup> The shares stated by DONG deviate somewhat from Vattenfall's estimate, narrowing the post merger gap between DONG and Vattenfall. This, however, is not of relevance for the assessment of Vattenfall's acquisition of assets.

*Table 6: Shares of generation in East and West Denmark*

In % (2004)	East Denmark generation	West Denmark generation
The acquired business	[15-20]	[15-20]
DONG (E2,Elsam)	[60-65]	[35-40]
Others	[20-25]	[40-45]

39. With regards to electricity wholesaling, Vattenfall is already pre-merger active in Denmark. Table 7 indicates the volumes of physical electricity sold by Vattenfall in Denmark East and West respectively in 2004, as well as the generation of the acquired business and that of Vattenfalls competitors<sup>33</sup>.

*Table 7: Market shares on East and West Danish electricity wholesale markets*

In TWh (%) (2004)	East Denmark TWh	%	West Denmark TWh	%
Vattenfall	[0-1]	[1-5]	[0-1]	[1-5]
The acquired business	[0-5]	[15-20]	[4-9]	[15-20]
Others	[10-15]	[80-85]	[15-20]	[75-80]
Total	14.58	100	25.04	100

Source: Form CO and Vattenfall's reply of 12 December 2005 to questionnaire.

40. The increase in Vattenfall's market share on the Danish generation/wholesale markets should be compared to Vattenfall's relatively small electricity sales portfolio on these markets pre-merger. As the acquisition does not entail any overlap in generation capacity, but actually leads to the entry of a second electricity generator in both East and West Denmark, the operation raises no serious doubts on Danish electricity generation and wholesale markets.

**Non co-ordinated effects:**

41. The Commission has considered to what extent the acquisition by Vattenfall of power plants using fossil fuels would provide an additional incentive to either withhold capacity or to submit higher bidding prices to the daily auctions at Nord Pool.
42. Different types of power plants allow for different types of flexibility in their production. Hydro-power is in principle very flexible in the short run, whereas the total production in the long run is dictated by the overall water inflow to the system. Wind is both difficult to predict and only downward flexible, while nuclear power is very inflexible in the short run (so-called base load). The flexibility available to owners of combined heat and power plants varies significantly from plant to plant. For some plants, in particular decentralised CHPs, electricity can essentially be seen as a by-product of heat production<sup>34</sup>, while others – mainly large central CHPs - have more

<sup>33</sup> It should be mentioned, that to the extent that Vattenfall's wholesale supplies have been sourced via electricity produced in one of the two Danish price areas, these volumes of electricity is counted twice in the table (both in Vattenfalls wholesale supplies and in the production figures of the acquired business and/or the competitors). Vattenfall's premerger market share may therefore to a limited extent be underestimated, whereas the market shares of the acquired business and the competitors are overestimated.

<sup>34</sup> Some facilities can produce heat without power while others cannot switch off electricity production.

flexibility to increase or decrease the power generation for any given level of heat production.

43. If the owner of a generation facility instead of submitting competitive bids, only produce if prices are significant above marginal cost, the owner would likely face both an expected cost and an expected gain.
44. The loss would equal the revenue foregone, while the benefit would occur when the bid behaviour would result in price increases, which would increase the revenue on the rest of the owner's production. While the loss is the same regardless of who owns the plant in question, the benefit of withholding capacity is higher, the higher is the market share of the owner on the market in question<sup>35</sup>.
45. Vattenfall does not have generation assets or any substantial wholesale activities in Norway and only some minor assets in Finland. Withholding Danish capacity will only benefit the margins on the rest of Vattenfall's production when Denmark is connected to those areas in which Vattenfall is producing, most notably Sweden and Germany.
46. Furthermore, the strategy is only going to be successful if the Danish capacity plays an important role for the final prices on Nord Pool. If alternative capacity is readily available and likely to replace the Danish capacity without resulting in significant price rises, the strategy of withholding capacity is unlikely to be profitable<sup>36</sup>.
47. Table 8 indicates generation shares of Vattenfall and the acquired business in some of the price area configurations where Sweden and at least some of the acquired business is connected. In addition the table shows the number of hours since 2001<sup>37</sup> in which the configuration in question was unconstrained by the rest of the Nord Pool area. Based on the generation shares a tentative calculation of the change in HHI concentration ratios brought about by the transaction is presented<sup>38</sup>.

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<sup>35</sup> Par. 32 of the Horizontal Merger Guidelines

<sup>36</sup> Par. 33 of the Horizontal Merger Guidelines

<sup>37</sup> The period analysed spans from 1/1- 2001 until 11/12 - 2005

<sup>38</sup> The tentative calculation of the change in HHI in this context represents an upper bound on the effect of Vattenfall acquiring the business in that it ignores the deconcentrative effect of separating the business from DONG.

Table 8: Generation shares (2004) on different Nordic price area configurations

Area configuration/company	Vattenfall pre-merger	Acquired business	Change in HHI	Hours since 2001 <sup>39</sup>	Share of hours
Swe + East&West Dk	[35-40]	[2-7]	[280-290]	131	0,3%
Swe + West Dk	[40-45]	[2-7]	[230-240]	7	0,0%
Swe + East&West Dk + Fin	[25-30]	[2-7]	[130-140]	1472	3,4%
Swe + East Dk	[40-45]	[1-5]	[120-130]	221	0,5%
Swe + East & West Dk + Nor	[20-25]	[2-7]	[110-120]	2613	6,0%
Swe + West Dk + Fin	[25-30]	[1-5]	[100-110]	187	0,4%
Swe + West Dk + Nor	[20-25]	[1-5]	[80-90]	80	0,2%
Nord Pool	[15-20]	[1-5]	[60-70]	14961	34,5%
Swe + East Dk + Fin	[25-30]	[0-5]	[50-60]	2380	5,5%
Swe + East Dk + Nor	[25-30]	[0-5]	[40-50]	2607	6,0%
Swe disconnected from both East & West Dk				2083	4,8%

Source: Notification and Nord Pool

48. First, it should be noted that Vattenfall has significant shares of the Nordic generation. With the inclusion of either Finland or Norway the market share is between [19-30]%. In these situations, Vattenfall is followed by three competitors with shares in the area of 10-15% (E.On, Fortum, plus, with Finland: PVO/TVO, with Norway: Statkraft). If Finland and Norway are excluded, Vattenfall's market share is [37-43]%, and Vattenfall is followed by two competitors with generation shares between 15% and 23% (E.On and Fortum). On an integrated pan-Nordic price area Vattenfall would have [16-21]% followed by Fortum with 14% and three further competitors with close to 10%.
49. Second, the increment in market share due to the acquired business is in general relatively small, namely in the size of 1-4%. In this context it should be noted that if one were to interpret the generation shares as market shares in a relevant market corresponding to the price area configuration, the increase in the HHI due to this transaction is inferior to 150 as soon as the relevant market includes any areas other than Sweden and Denmark (cf. table above).
50. Thirdly, these configurations in which the addition of generation capacity appears to be the most important, are not very important in terms of the share of hours they occur. The hours in which Sweden is linked to at least one Danish price area and simultaneously isolated from the rest of Nord Pool represents less than 1% of the hours. In view of the minor increment and the very small number of hours during which the price area configurations Sweden-West Denmark, Sweden-East Denmark or

<sup>39</sup> Since Norway includes several price areas, the number of hours include those where at least a part of Norway was constraining Sweden.

Sweden-West and East Denmark are joint but isolated from the other price areas, it is concluded that the proposed concentration will not have a significant impact on Vattenfall's market position in any area.

51. It therefore follows that the incentive to increase prices is unlikely to be affected by the transaction in the hours where Denmark is not connected to Sweden, and that the ability is likely to be very small when other countries are connected to Denmark and Sweden. Svenska Kraftnät, the Swedish grid operator, has stated that it does not expect the transaction to have any appreciable effect on electricity prices in Sweden. Furthermore, in those hours in which Denmark is isolated from Sweden the transaction is likely to reduce the degree of concentration in Denmark (east and west respectively) with a potentially positive effect on electricity prices.
52. Based on its market simulation model of the Nordic electricity market (MARS), Energinet.dk has performed a number of simulations for the Commission in order to assess the potential effects of the merger on prices in Denmark and the rest of the Nord Pool area. The above assessment is confirmed by the results of the simulation.
53. MARS is a model developed by the grid operator for Western Denmark, Elkraft, now a part of Energinet.dk. The model seeks to emulate the market conditions under which each electricity producer is operating on Nord Pool and on the basis of these conditions tries to predict what would be their optimal bidding strategy for each hour of a hypothetical year. The strategies of the producers are calculated on the basis of a number of exogenous factors, which describe the hypothetical year, including electricity prices in the Kontek area,<sup>40</sup> the prices of production inputs as well as the amount of rain and thus the water levels in the reservoirs. Based on this information, as well as information about the transmission capacity between the different price areas and the production facilities available for each producer, the model “predicts” the bid that each bidder will submit to Nord Pool. The model then calculates on the basis of the bids and assumed consumption patterns as well as transmission capacity the resulting prices in each price area for each hour of the year<sup>41</sup>.
54. The model has previously been used by the Commission when assessing the likely consequences of Sydkraft's acquisition of Graninge.<sup>42</sup>
55. For the purpose of this assessment Energinet.dk has undertaken a number of simulations for a hypothetical normal hydrological year (i.e. one in which the level of rain is at its average). It should be noted that the simulations are done on the basis of

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<sup>40</sup> Kontek is the virtual Nord Pool price area in northeastern Germany.

<sup>41</sup> A more detailed description of the model can be found at [http://www.el-vest.energinet.dk/media\(16371,1030\)/Beskrivelse\\_af\\_Eltra's\\_MARSmodel-9.feb05.pdf](http://www.el-vest.energinet.dk/media(16371,1030)/Beskrivelse_af_Eltra's_MARSmodel-9.feb05.pdf)

<sup>42</sup> M.3268 Sydkraft/Graninge



the expected future infrastructure including a 600MW Great Belt interconnector<sup>43</sup> and a 700MW NorNed interconnector<sup>44</sup>.

56. By comparing the simulation results in two scenarios (one in which all the previous Elsam and E2 facilities are operated jointly by DONG and one in which the assets of the present notification are transferred to Vattenfall), it is possible to get an estimate of the likely effect of the transactions on the market.
57. The transfer of assets to Vattenfall is predicted by MARS to lead to a small fall in average prices in Denmark of less than 1%<sup>45</sup> while the effect in other price areas would be de minimis.
58. Energinet.dk also undertook to simulate the likely effect of the transactions in a hydrologically dry year, in which the thermal production becomes relatively more important due to high water values. The effect of the transaction was broadly similar to those found in a normal hydrological year.

#### *Internal congestion*

59. The Commission has also investigated whether Vattenfalls incentives to raise prices would be affected by the possibility of internal congestion problems in Sweden which is occasionally “moved” (by means of reduced capacity nominations) by the Swedish TSO to the Swedish-East Danish interconnector.
60. Due inter alia to internal congestion within Sweden (Snit 4)<sup>46</sup> there are certain hours in which the Swedish TSO does not make all the capacity in the cable connecting Sweden to Denmark East available to Nord Pool. According to Svenska Kraftnät<sup>47</sup>, the Swedish grid operator, congestion may occur when there is high hydro production in Northern Sweden and Norway, and simultaneously high consumption in Southern Sweden and/or high export to the continent.
61. The cable connecting Sweden with Denmark East has a capacity of 1300 MW. According to information provided by Nord Pool, in the period from 1/1-2001 till

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<sup>43</sup> A positive decision by the Danish Energy Agency to build this interconnector is expected for the end of 2005 or early 2006.

<sup>44</sup> Therefore, the simulations do not fully reflect the current competitive situation, since it is assuming inter alia that the Great Belt interconnector is built. The simulation further assumes that each producer is optimizing its behaviours for each period in isolation. In this respect the model assumes that production of hydropower is carried out solely on the basis of the calculated water value. A thermal electricity producer could in principle withhold production in one period, thereby inducing increased hydropower production. This in turn would deplete water reservoirs and lead to higher future prices for electricity. Even though such a strategy in principle could be profitable, it would not be captured by the model simulation.

<sup>45</sup> This reduction is relatively small in light of the fact that the transfer of assets will alter the competitive landscape from a monopoly to a duopoly in hours where Denmark (or a part of Denmark) is not subject to external competitive constraints. Additional simulations have shown that the reduction of market power in Denmark in unconstrained hours could have resulted in three times a big reduction in prices had the assets been sold to an independent operator instead of Vattenfall.

<sup>46</sup> Snit 4 is the name of the high voltage cable connecting North and South Sweden.

<sup>47</sup> Submission by Svenska Kraftnät received 22/11-2005

23/11-2005 the capacity available to Nord Pool has been less than to the full capacity in 9332 hours corresponding roughly to 20% of the time. On average taken over the whole period the capacity available has been 1207MW. It should be noted that there may be other reasons<sup>48</sup> for less than full capacity being available. For comparison, the connection in the other direction, which has a capacity of 1700MW, was not fully available in 16% of the hours.

62. According to Svenska Kraftnät, a decision to invest in an additional cable to alleviate the congestion on Snit 4 is pending.
63. The effect of likely internal congestion at snit 4 is that Denmark East and Sweden are more likely to become separate price areas and, in the context of high hydro production and export flow towards the continent, this would result in higher prices in East Denmark and lower prices in Sweden compared to a situation without any congestion. To the extent that Vattenfall's production portfolio would allow it to increase the congestion problems (for instance by switching production from south of snit 4 to north of snit 4), they would in principle be able to induce such a separation of prices.
64. According to Vattenfall<sup>49</sup>, its generation in Sweden is approximately 10 times higher than the generation assets now acquired in Denmark. The created congestion would thus have to provoke an increase in prices in Denmark which is tenfold the price decrease in Sweden. While not excluding such a scenario, Vattenfall argues that this event would be very exceptional and impossible for Vattenfall to predict.
65. In light of the above finding that in many hours the transaction is on balance likely to be positive for the competitive pressure in Denmark, the Commission conclude that this effect, even if it were to occur on rare occasions, would be insufficient to justify a finding of serious doubts as to the compatibility of the transaction with the Common market.

### **Coordinated effects**

66. Vattenfall and Elsam will, according to the information submitted to the Commission, establish a joint venture ownership for the wind farm at Horns Rev (capacity [120-180] MW). Vattenfall will have a 60% ownership interest in Horns Rev and Elsam will account for the remaining 40%
67. In light of the very stable nature of electricity markets, the high degree of transparency with daily public price formation largely decided by a relatively limited number of significant producers, it is the Commission's general opinion that the potential risk of lack of competition due to collective dominance is higher for the Nordic electricity market than for most other types of markets. Currently, the Commission has not encountered evidence in support of a finding of parallel behaviour in the current market.
68. The Commission has investigated whether joint ownership as the one envisaged for Horns Rev could potentially contribute to accentuate the risk of an impediment to

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<sup>48</sup> E.g. maintenance works, cable breakdowns.

<sup>49</sup> Submission received from Vattenfall on 18/11-2005

competition through the creation of collective dominance. Though the final terms of the operation have not been finally agreed, both parties have confirmed to the Commission that the daily operation of Horns Rev as well as production decisions will not be exercised jointly but that there will be only one operator.

69. In light of the indications provided by the parties and the fact that the proposed transactions simultaneously will remove the joint ownership of Avedøreværket (capacity [750-850] MW), the Commission has found that the joint ownership does not justify a finding of serious doubts regarding the creation of a position of collective dominance.

#### Conclusion on electricity wholesale

70. In view of the above, the proposed concentration does not raise, with respect to electricity wholesale, serious doubts as to its compatibility with the common market, regardless of the precise delineation of the relevant market.

## **VI. CONCLUSION**

71. For the above reasons, the Commission has decided not to oppose the notified operation and to declare it compatible with the common market and with the EEA Agreement. This decision is adopted in application of Article 6(1)(b) of Council Regulation (EC) No 139/2004.

For the Commission  
signed  
Andris PIEBALGS  
Member of the Commission