AGREEMENT (Translation)
regarding operation of the interconnected Nordic power system
(System Operation Agreement)

§ 1 The Parties etc

- Energinet.dk (Energinet.dk) corporate registration no. 28 98 06 71
- Fingrid Oyj (Fingrid) corporate registration no. 1072894-3
- Statnett SF (Statnett) corporate registration no. 962 986 633
- Affärsverket svenska kraftnät (Svenska Kraftnät) corporate registration no. 202100-4284

The terms and concepts occurring in this System Operation Agreement (the Agreement) and its appendices are defined in Appendix 1.

§ 2 Background

The subsystems of Norway, Sweden, Finland and Eastern Denmark are synchronously interconnected, forming the so-called synchronous system. The subsystem of Western Denmark is connected to Norway and Sweden using DC interconnectors. The synchronous system and the subsystem of Western Denmark jointly constitute the interconnected Nordic power system.

The supervisory authorities of Denmark, Finland, Norway and Sweden have appointed special system operators who are comprehensively responsible for the satisfactory operation of each subsystem. These system operators are Energinet.dk for the Danish subsystem, including Bornholm, Fingrid for the Finnish subsystem, Statnett for the Norwegian subsystem and Svenska Kraftnät for the Swedish subsystem. Åland is not covered by this Agreement.

The background to entering into this Agreement is that operation of the interconnected Nordic power system entails operational collaboration and co-ordination taking place between the system operators. Effective collaboration between these will provide the technical prerequisites for trading in power on an open electricity market.

The Agreement and its Appendices regulate the operational collaboration between the Parties. Several of the Agreement’s provisions are based upon recommendations issued by Nordel.
§ 3 Objective

The objective of the Agreement is to make use of the advantages arising from the interconnected operation of the Nordic power system. The Parties shall thus jointly uphold the interconnected operation of the Nordic power system on a satisfactory level of reliability and quality.

The Parties shall jointly uphold a supply quality that is appropriate to joint system operation, e.g. frequency, time deviation, system oscillations etc.

The Parties shall jointly operate the interconnected Nordic power system in a manner which promotes the efficient utilization of existing resources and power trading on the Nordic electricity market, as well as on an additional potential international market. The Agreement specifies in detail the commitments that the Parties undertake to honour during their operational collaboration.

The Parties are agreed that agreements regarding the operation of the interconnected Nordic power system shall only be entered into between the system operators concerned.

It is the Parties’ intention that, as long as transmission facilities between the subsystems are in operation, there shall exist an agreement between the Parties regulating their operational collaboration, rights and commitments vis-à-vis system operation issues.
§ 4  Appendices

The following Appendices are attached to this Agreement.

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Definitions</td>
</tr>
<tr>
<td>2</td>
<td>Operational security standards</td>
</tr>
<tr>
<td>3</td>
<td>Balance regulation standards</td>
</tr>
<tr>
<td>4</td>
<td>Exchanging information</td>
</tr>
<tr>
<td>5</td>
<td>System protection</td>
</tr>
<tr>
<td>6</td>
<td>System services</td>
</tr>
<tr>
<td>7.1</td>
<td>Joint operation between Norway - Sweden</td>
</tr>
<tr>
<td>7.2</td>
<td>Joint operation between Sweden - Finland</td>
</tr>
<tr>
<td>7.3</td>
<td>Joint operation between Norway - Finland - Sweden (Arctic Scandinavia)</td>
</tr>
<tr>
<td>7.4</td>
<td>Joint operation between Norway - Western Denmark</td>
</tr>
<tr>
<td>7.5</td>
<td>Joint operation between Sweden - Western Denmark</td>
</tr>
<tr>
<td>7.6</td>
<td>Joint operation between Sweden - Eastern Denmark</td>
</tr>
<tr>
<td>7.7</td>
<td>Joint triangular operation between the Norwegian, Swedish and Western Danish subsystems.</td>
</tr>
<tr>
<td>8</td>
<td>Management of transmission limitations between subsystems.</td>
</tr>
<tr>
<td>9</td>
<td>Power shortages</td>
</tr>
<tr>
<td>10</td>
<td>The Nordel system's joint operation with other systems</td>
</tr>
</tbody>
</table>

The Appendices constitute an integral part of the Agreement.

In the event of any variance between the contents of the Appendices and what is set forth in this, the main part of the Agreement, what is set forth in the main part shall take precedence.

§ 5  Decisions etc concerning own subsystems

The Parties will make their own decisions regarding the principles applicable to the system security of their own subsystems.

The Parties agree, however, when taking such decisions, to comply with the intentions and principles of the Agreement as far as is possible and appropriate.
The *Parties* are individually responsible for formulating their own agreements concerning system operation collaboration between their own subsystems and subsystems outside of the interconnected Nordic power system, with which there are physical transmission links, in such a way that these do not contravene the intentions of, or prevent compliance with, the Agreement.

It is the intention of the *Parties*, as far as is possible within the legal framework provided (terms and conditions of concessions etc) to co-ordinate the terms and conditions of such agreements with the provisions of this Agreement.

Each respective *Party* shall enter into such agreements with companies within its own subsystem as are necessary to comply with the Agreement.

Unless otherwise agreed, the *Parties* shall be responsible for ensuring that measures taken within their own subsystems, which impact upon the operation of the system, shall not burden the other subsystems.

**§ 6 Operational security standards**

The *Parties* shall, in the day-to-day operation of the system and in their operational collaboration with other *Parties*, comply with the standards set forth in Appendices 2 and 3.

**§ 7 Operational terms and conditions for the links between the subsystems**

7.1 Transmission facilities

The transmission facilities linking the subsystems are accounted for in the following Appendices.

Appendix 7.1 Norway - Sweden  
Appendix 7.2 Sweden - Finland  
Appendix 7.3 Norway - Finland - Sweden (Arctic Scandinavia)  
Appendix 7.4 Norway - Western Denmark  
Appendix 7.5 Sweden - Western Denmark  
Appendix 7.6 Sweden - Eastern Denmark  
Appendix 7.7 Norway - Sweden - Western Denmark  
(subsystems in triangular operation)

The *Parties* are responsible, as and when required, for detailed operating instructions being drawn up for the links listed in the
mentioned Appendices within their own subsystems. In parts where such operating instructions have a bearing upon the joint system operation, they are to be co-ordinated with the companies and Parties concerned.

7.2 Transmission capacity

The transmission capacity of the links between the subsystems shall be bilaterally determined on a routine basis by the Parties concerned. Decisions shall normally be based on the operational security standards set out in Appendix 2 and on such current technical and operative factors as are of significance to the transmission capacity. The Parties are individually responsible for assessing these circumstances within their own subsystems and will decide on the necessary measures.

The Parties agree to reserve a regulating margin between the transmission and trading capacities of the links. The regulating margin shall normally have the values specified in Appendices 7.1-7.7.

7.3 Special operational terms and conditions

In certain cases, special rules are applied as regards using the transmission capacity of the links. Detailed terms and conditions, together with the companies concerned, are specified in the respective Appendices 7.1-7.7.

7.4 Transmission losses

Issues concerning transmission losses are governed by separate agreements – settlement agreements.

A Party shall not be responsible for transmission losses arising within another Party’s subsystem in any operational situation, unless otherwise agreed.

The settlement points are specified in Appendices 7.1-7.6.

7.5 Voltage regulation

Voltage regulation in the subsystems shall be conducted in such a way that the operational security standards specified in 6 § are upheld and in such a way that the reactive flow of power between the subsystems does not entail operational problems. The Parties’ rights and liabilities regarding reactive
power flows on the AC interconnectors are limited to what corresponds, calculation-wise, to zero exchange at the national border, based on values measured at the terminals of the links.

7.6 System protection

System protection can be used to increase the transmission capacity and/or system security between and within the subsystems. The settings and operational status of system protection shall be decided upon and monitored by the respective Party. In cases when system protection has a bearing on two or more subsystems, co-ordination and communication of the operating status shall take place between the Parties concerned. The requirements relating to system protection are set out in Appendix 2. The forms of system protection used are set out in Appendix 5.

7.7 Relay protection and fault analysis

The Parties shall co-ordinate supportive data and plans for setting functional values for the relay protection of such transmission facilities. Following operational disturbances, information from registration equipment shall be exchanged between the Parties concerned to the extent necessary to enable investigation of the course of events.

§ 8 Operational planning

The Parties shall, as far as is possible, bilaterally co-ordinate operational outages and other measures which each and everyone of them has control over and which impact upon the joint system operation. In the event that operational disturbances and other measures occur during the operational phase and which have to be carried out at short notice, with no time for co-ordination, the Parties concerned shall be informed as quickly as possible.

Appendices 7.1-7.6 contain certain rules regarding the co-ordination of operational outages on the respective links between the subsystems.

§ 9 System services

The Parties shall comply with the operational security standards specified in § 6 by ensuring the availability of system services within their own subsystems. When this is possible, the Parties can co-ordinate and exchange system services with
each other. During the exchange of such system services, the pricing shall be based on the costs incurred by the respective Party when obtaining access to and utilizing the system services within its own subsystem.

The Parties shall work towards harmonisation of the terms and conditions in order to gain access to system services from companies within the respective subsystem.

System services are described in Appendix 6.

§ 10 Managing transmission limitations between the subsystems

The Parties shall be bilaterally responsible for transmissions on the respective links between the subsystems not exceeding the set transmission capacity. If a limit is exceeded, this shall be rectified within 15 minutes.

The Parties shall bilaterally co-ordinate terms and conditions and management routines in order to be able, as and when required, to restrict the commercial players’ utilization of the links in cases when transmission capacities need to be reduced. The separate terms and conditions that apply, as and when appropriate, to each respective link are set out in Appendices 7.1 - 7.7. The Parties shall uphold the commercial players’ planned trading, by means of counter trading, to the extent set out in Appendix 8.

It is incumbent upon the Parties to manage, within their own subsystems, such transmission problems that cannot be solved by restricting the commercial players’ utilization of the links. The Parties are further responsible for implementing the necessary regulation on their own sides of the links, and for the costs thus arising, unless otherwise agreed between the Parties concerned.

§ 11 Managing operational disturbances

In the case of all operational disturbances, normal state shall be resumed without undue delay. The Parties shall assist one another in minimising the consequences of any disturbances that arise.

In the case of disturbances arising within its own subsystem, the affected Party will be responsible, at its own expense, for remedial measures. Whenever it is appropriate to carry out
remedial measures in another *subsystem*, the affected *Party* shall be responsible for the costs of the agreed measures. For disturbances on a link between the *subsystems*, the *Parties* concerned shall, at their own expense, be responsible for the necessary measures on their own side of the link, unless otherwise agreed.

In the case of activation of the joint *frequency controlled disturbance reserve*, compensation shall normally be rendered via the settlement of *balance power*.

The *Parties* shall promptly inform one another of *system security* risks or disturbances arising.

**§ 12 Balance regulation**

Each *subsystem* is responsible for planning itself into balance hour by hour, as well as for upholding its own balance during the hour of operation.

The *Parties* shall collaborate towards minimising the cost of *balance regulation* by utilizing, to the greatest extent possible, one another’s regulation resources when this is technically and financially appropriate.

The *balance regulation* of the Nordic system is divided up into two *balance areas*. One of these *balance areas* is the *synchronous system* while the other *balance area* is Western Denmark.

Energinet.dk manages the *balance regulation* of the Western Danish area, within its sphere of responsibility for the *UCTE* system, and in accordance with an agreement with EON Netz. Consequently, Energinet.dk has agreements with two *balance areas*; the *UCTE system* and the *synchronous system*.

The *balance regulation* of each *subsystem* within the *interconnected Nordic synchronous power system* shall be carried out in accordance with the principles set out in Appendix 3.

The basis of the *interconnected Nordic synchronous power system’s balance regulation* is that regulation is carried out in respect of frequency. Regulation work is apportioned in accordance with the requirement for *frequency response* and a joint Nordic merit order *regulation list*. The entire Nordic power
system shall constitute a single market for regulation power. In the event of bottlenecks, the regulation market can be split up.

The Parties shall pay attention to regulation problems within the hour of operation and especially at hour changes. Major changes to exchange plans should be managed via agreements concerning transitions.

§ 13  Power exchanges

13.1 Hourly exchange plans

*Parties* with adjacent subsystems shall jointly set routines for notifying hourly exchange plans and trading plans among the subsystems. Whenever transmission capacity is made available for other purposes than power trading, the relevant plans shall be bilaterally reported to each *player* individually. Trading must be reportable as a net trade between each subsystem.

13.2 Supportive power

Exchanges of supportive power between *Parties* with adjacent subsystems may be carried out in order to achieve efficient operation of the system. Such exchanges can come about as and when required during normal state, during counter trading or during operational disturbances. Supportive power can be agreed upon in advance, as well as commenced and terminated during the current hour of operation.

The principles for pricing supportive power are set out in Appendix 3.

13.3 Balance power

*Balance power* between the subsystems is calculated during settlement as the difference between the measured exchange of power and the sum of all forms of agreed exchange, including such exchanges as have been agreed between the *Parties*.

More detailed rules for managing and pricing balance power are set out in Appendix 3.

§ 14  Settlement

Settlement shall be based on the principles set out in § 12 - 13 for balance regulation and exchanges of power.
All settlement of exchanges of power between the subsystems shall take place at the settlement points specified in Appendices 7.1 - 7.6.

The settlement procedure is regulated bilaterally in separate agreements, settlement agreements, between the Parties concerned.

§ 15  Power shortages

When there is a risk of power shortages, the power trade within the power exchange area shall be given the opportunity, through price formation, to distribute risks and costs between the electricity market players. The Parties shall, as far as is possible and reasonable, work towards upholding such power trading and allocations of production capacity, which they do not contractually have the right to discontinue.

In the event of anticipated power shortages in one or more subsystems, the Parties shall collaborate in such a way that the resources available within the interconnected Nordic power system are utilized in order to minimise the extent of compulsory load shedding.

Acute situations such as general power shortages or power shortages resulting from operational disturbances on networks, or bottleneck situations when compulsory load shedding has to be carried out, are to be managed in accordance with Appendix 9.

System security shall be maintained on the level specified in Appendices 2 and 3 so that dimensioning faults do not lead to extensive follow-on disturbances in the interconnected Nordic power system.

§ 16  Exchanging information

Appendix 4 specifies the information that shall be exchanged between the Parties for system operation requirements.

If the information that the Parties are mutually exchanging has not been made public in the country the information relates to, the Parties pledge to keep this information confidential, as far as possible, in accordance with the legislation in force in the respective country.
§ 17 Liability

The Parties will only be liable to one another for damage resulting from gross negligence or malice aforethought.

None of the Parties will be able to hold any of the other Parties liable for lost revenues, consequential losses or other indirect losses, unless such damage has been caused by gross negligence or malice aforethought.

§ 18 Disputes

Should a dispute arise in connection with this Agreement, the Parties shall initially attempt to resolve their conflict through negotiation. If this does not succeed, the dispute shall, under Swedish law, conclusively be settled by arbitration in accordance with the Rules of the Arbitration Institute of the Stockholm Chamber of Commerce. The arbitration procedure shall take place in Stockholm.

§ 19 Alterations and supplements

Alterations and supplements to this Agreement shall, in order to be legally valid, be drawn up in writing and signed by all the Parties.

Appendices to this Agreement can be added to on a rolling basis. In doing so, Appendices which relate to all the Parties shall be updated jointly and approved by all the Parties. Appendices which deal with individual links shall be updated by the Parties that are affected by the Appendix in question. Any and all changes to Appendices shall be documented in writing and communicated to the Parties.

In the event of alterations to Appendices, the Appendices in question shall, by at the latest one month after the alteration has been made, be revised and sent out to all the Parties. An annual review of the Agreement shall be carried out in order to deal with any contractual revisions.

§ 20 Transfer

This Agreement may be transferred to another company which has been appointed as the system operator of a subsystem by the authorities of a country. Other transfers may not, wholly or
in part, take place without the written consent of the other Parties.

In the event of the transfer of the system responsibility to another company, the Parties will be responsible for transferring their contractual commitments under this Agreement to the new system operator.

§ 21 Validity etc

This Agreement will come into force once it has been signed by all the Parties and will remain in force until further notice. The Agreement, which will apply from 1 July 2006, is conditional upon each respective Party receiving the necessary Board/Authority approvals.

If a Party deems the terms and conditions of this Agreement to entail unreasonable or inappropriate consequences, then this Party will be able to request, in writing, from the other Parties that negotiations be entered into as soon as possible with the aim of bringing about appropriate changes to the Agreement. Equivalent negotiations can also be entered into if the pre-conditions for the Agreement change significantly due to altered legislation or a decision made by an authority, or due to physical changes being made to the interconnected Nordic power system.

If a Party requests renegotiation, the other Parties will be obligated to actively take part in such negotiations within one month of receiving such a request.

If renegotiations do not, within six months of the request for renegotiation being made, lead to agreement being reached as regards such changes to the Agreement that the Party deems satisfactory, the Party shall have the right to terminate the Agreement. Termination, which must be in writing, shall occur by at the latest two weeks from the expiration of the renegotiation deadline. If such termination occurs, the Agreement shall be deemed to have ceased to be valid in respect of the terminating Party, once a period of six months has elapsed from the time when the notice of termination was communicated to all the other Parties.
This Agreement replaces the previous agreement dated 1 April 2004.
This Agreement has been drawn up and signed in four (4) identical copies, of which the Parties have received one copy each.

Fredericia 2006- - Helsinki 2006- -
Energinet.dk - Fingrid Oyj

Peder Ø. Andreasen - Timo Toivonen

Oslo 2006- - Stockholm 2006- -
Statnett SF - Affärsverket Svenska Kraftnät

Odd Håkon Hoelsæter - Jan Magnusson