

**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.

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

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- -
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Helsinki 2006- -
Fingrid Oyj

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