

Transmission capacity allocation and congestion management policy

Approved by the executive management group on 13 June 2016 (replaces the previous guidelines approved on 10 May 2012).

1 General

This document sets out Fingrid's Transmission capacity allocation and congestion management practices. The policy is based on electricity market promotion and system security management principles approved by Fingrid's Board of Directors.

A limited volume of electricity conforming to the system security criteria can be transmitted in a power grid. This is referred to as the grid's transmission capacity. Transmission capacity allocation and congestion management ensures that the power flows remain within the transmission capacity.

2 Principles of Transmission capacity allocation and congestion management

2.1 General principles

Fingrid provides the electricity market with as much transmission capacity as is possible without compromising the system security of the main grid.

Fingrid's Transmission capacity allocation and congestion management is based on systematic planning and predictability.

Transmissions planned for cross-border connections are determined on the day-ahead and intraday markets. In the day-ahead market auction, cross-border transmissions and the price of electrical energy in different bidding areas are simultaneously determined within the transmission capacity limits between the bidding areas. Any capacity which is left unused in the day-ahead market is offered to the intraday market.

Transmission outages which affect transmission capacity are planned cost-efficiently while bearing the system as a whole in mind. Transmission outages are scheduled for times during which they cause minimal disruption to the electricity markets and customers, taking technical boundary terms into account.

EC regulation 714/2009 and regulation-compliant guidelines and network codes specify the framework for transmission capacity allocation and congestion management on connections within European Union and Norway.

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Confirmed electricity exchanges are secured in accordance with commission regulation (EU) 2015/1222 by adjusting the network's operational situation to correspond to the power system's technical transmission capacity through countertrading if necessary. For countertrading, Fingrid uses available resources in order of cost-efficiency and suitability.

The transmission capacity available to markets is confirmed and published in advance within schedules agreed with power exchanges and other transmission system operators in compliance with the statutes set out in Commission regulation (EU) 2015/1222.

Transmission capacity that changes as a result of disturbances or other factors is published simultaneously to all market parties no later than one hour from the decision in accordance with the statutes in the transparency regulation (EU) 543/2013.

Fingrid continuously monitors the transmission situation in the Main Grid Control Centre and undertakes procedures as necessary if transmissions threaten to exceed the transmission capacity. In the event of force majeure, Fingrid has the right to restrict or interrupt the transmission service with immediate effect.

2.2 Principles of transmission outages which affect cross-border transmission capacity

Transmission outages on the Finnish main grid and cross-border connections which affect cross-border transmission capacity are planned and implemented cost-efficiently and taking the overall economy into consideration. This means taking into account factors such as the impact on the electricity markets, Fingrid's and other transmission system operators' costs and the power system's reserve costs.

The target is to minimise the duration of transmission outages which affect cross-border transmission capacity without compromising occupational safety or system security.

Weekends, public holidays and shift work are utilised when implementing transmission outages to minimise the impact on the electricity markets.

3 Transmission capacity allocation and congestion management on the Finnish main grid

Fingrid agrees with a customer connected to the main grid on the customer's right to transmit electricity and the possible restriction of transmission rights in a connection agreement and main grid contract.

Preparations are made to manage an N-1 criterion fault when using the looped 400 kV network and 400 kV transformers. At the 400 kV voltage level, no individual fault in the looped network or at a power plant may lead to restrictions on transmission service customers. There are, however, some exceptional situations (for example, during planned transmission outages and when grid protection is in operation), in which

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restrictions to the transmission service are unavoidable. In such cases, in accordance with contingency rules, only local consequences are permitted: the power system must remain stable and load on network components after the disturbance may not lead to protection tripping which would escalate the fault.

Local consequences are not itemised in the contingency rules, but the following cases, for example, are deemed to be more extensive than local consequences:

- The disturbance extends to an area which is, in practice, supplied by more than one 400 kV substation.
- The disturbance affects an area containing a significant number of customers and consumers, or the disconnected power is several hundred megawatts in the looped 400 kV network.
- The disturbance causes significant economic losses to electricity users.

Local faults in the 110 kV and 220 kV networks are permitted, and it is often impossible to prevent them during e.g. transmission outages. The aim of careful planning and scheduling of transmission outages is to minimise subsequent risk and disruption. If a fault in the 110 kV or 220 kV network can lead to a consequence which cannot be considered local (examples above), procedures are the same as for dealing with the 400 kV network.

3.1 Normal circumstances

In normal circumstances, transmission restrictions are removed via countertrading, if countertrading resources are available.

The transmission capacity between southern and northern Finland is occasionally insufficient for the electricity markets' transmission needs. The restricting part of the grid is situated at the intersection south of the river Oulujoki, and it is referred to as P1. In normal network operation circumstances, countertrading is used to manage transmission on the P1 intersection as follows:

- If the transmission predicted on the preceding day for the intersection is a maximum of 100 MW higher than the transmission capacity, preparations are made for countertrading and the capacity given to the day-ahead market is not restricted.
- If the need for countertrading is 100–300 MW, countertrading is carried out if there are countertrading resources available at a reasonable price; otherwise, foreign trade between Finland and northern Sweden is restricted. When assessing whether resources are reasonably priced, the costs of countertrading are compared with additional costs caused by the restriction on foreign trade in the market area from a national economic perspective.
- If the need for countertrading exceeds 300 MW, foreign trade between Finland and northern Sweden will be restricted for the share in excess of 300 MW.

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3.2 Planned transmission outages

Fingrid has the right to restrict or interrupt its main grid service due to grid maintenance, repair, modification work, inspection, accident or other equivalent procedures having negotiated (where possible) the transmission outage or restriction together with the customer which is connected to the main grid. If the transmission of electricity at the customer's connection point must be restricted or interrupted under these circumstances, no reimbursement will be paid to the customer for energy which is not produced or consumed as a result.

The transmission outage time must be agreed in advance with the customer with regard to maintenance, repair, modification work, inspection and other equivalent procedures. When agreeing on the time of the transmission outage, the customer's needs should be taken into consideration where possible, minimising disruption to the customer. If necessary, it is possible to e.g. schedule the transmission outage for a weekend or during the night if this clearly benefits the customer and if work can be carried out at reasonable additional costs and without compromising occupational safety.

Fingrid plans arrangements relating to transmission outages together with the customer and takes care of the execution of procedures in cooperation with the customer so that the transmission outage is as brief as possible. Each party is responsible for the operation of its own devices and for its own transmission outage costs.

Fingrid coordinates and maintains a main grid transmission outage plan.

During planned transmission interruptions on the 400 kV network, system security is ensured via countertrading as necessary if countertrading resources are available at a reasonable price; otherwise, system security is ensured through restricting cross-border connection transmission capacity or transmissions within the country.

The adequacy of transmission capacity on the 220 kV and 110 kV network is ensured through transmission outage scheduling or by agreeing with the customer connected to the network in question on a restriction or outage in transmission. If the transmission outage is on the main grid at some other point than the customer's connection point or a line connected to it, the customer's possibility to transmit electricity on the main grid will be ensured via countertrading if necessary, provided that countertrading resources are available at a reasonable price.

When assessing whether countertrading resources are reasonably priced in transmission interruption situations, the cost of countertrading can be compared with the disruption caused to the customer as the result of a transmission restriction or interruption caused by the outage in question.

3.3 Disturbances and faults

System security on the main grid is ensured as necessary through countertrading until the end of the next 24 hour period of use, if countertrading resources are available and if the matter does not concern a force majeure situation. If the transmission service must be

restricted due to a disturbance, accident or fault, customers will not be reimbursed for the restriction.

4 Transmission capacity allocation and congestion management on connections within the EU and with Norway

The transmission capacity of Finland's and EU countries' (Sweden, Estonia) cross-border connections is given to the electricity markets for use via the day-ahead market and intraday market.

Any capacity not used in day-ahead market is offered to the intraday market.

The Norwegian cross-border connection is used to ensure the local transmission of electricity in the northern Norway area. The inter-TSO transmission caused by the Norwegian connection along alternating current connections between Sweden and Finland is taken into account when providing transmission capacity to the electricity markets.

The physical transmissions between Finland and Sweden are determined in accordance with the minimum loss on Finland's and Sweden's main grids, if the transmission situation so permits.

4.1 Normal circumstances

In normal circumstances not involving outages, the technical capacity of the cross-border connection minus the transmission reliability margin is offered to the day-ahead market. The transmission reliability margin is only used on alternating current connections between Finland and the Swedish bidding area SE1.

Transmission capacities are agreed together with Sweden's and Estonia's transmission system operators before the capacity is submitted to the power exchange for publication.

Transmission capacity to be offered to the intraday market is determined in accordance with the technical transmission capacity, taking the transmission reliability margin into account after day-ahead market trades have been approved.

During the hour of operation, any excess in transmission capacity caused by market parties' imbalances will be balanced using the balancing power market. Balancing is carried out in advance so that the technical transmission capacity is not exceeded.

4.2 Planned transmission outages

During planned transmission outages, the markets are offered a technical transmission capacity corresponding to the transmission outage situation, minus the corresponding transmission reliability margin.

Countertrading is not used to maintain capacity offered to the markets during planned outages.

Transmission capacity following a planned outage which ends earlier than expected is offered to the markets for use.

4.3 Disturbances and faults

Trade which is confirmed on the day-ahead and intraday markets will be secured until the end of the next 24 hour period of use through countertrading as necessary in accordance with article 69 of commission regulation (EU) 2015/1222, unless the matter concerns a force majeure situation. Transmission capacity to be given to the markets will be restricted by an amount corresponding to the impact of the disturbance or fault. Capacity to be given to intraday markets can be restricted for system security reasons.

5 **Transmission capacity allocation and congestion management on Russian connections**

Electricity trading on the 400 kV connections between Finland and Russia is possible for customers who have made an agreement on transmission services with Fingrid in order to engage either in bilateral trade or power exchange trading and which have agreed on trading with an equivalent Russian organisation.

Electricity trading on the 400 kV connections between Finland and Russia takes place via the power exchange. The amount of bilateral trade is agreed in the morning preceding the exchange day and it is published before trading on the exchange closes. Direct power exchange trading is carried out via Finland's and Russia's power exchanges within normal schedules. Capacity which is allocated for direct power exchange trade cannot be reserved.

The two 110 kV lines connected to Fingrid's grid from Russia are not owned by Fingrid, and the owners of the said connections are responsible for electricity transmission and transmission capacity allocation and congestion management on them.

5.1 Normal circumstances

Fingrid allows for a transmission service on Russia's 400 kV cross-border connections corresponding at maximum to the amount of electricity it is possible to transmit continuously under normal circumstances, excluding transmission capacity reserved for system management purposes.

A customer engaging in bilateral trade announces its transmission programme and changes to the programme in accordance with the schedule set out in the transmission service agreement. The Russian system operator will announce a transmission programme for direct trade and changes to the programme in accordance with the schedule set out in the transmission service agreement based on customers' trading.

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5.2 Planned transmission outages

Fingrid restricts the cross-border transmission capacity on Russia's 400 kV connection or on the local network on the Finnish side of the border (the Yllikkälä and Kymi substations and the main grid lines that run from them, including the fields in the direction of Yllikkälä and Kymi from the opposite substations) during transmission outages.

During a planned transmission outage, the transmission programmes of all customers of the transmission service are restricted in proportion to the programmes, with restrictions focusing primarily on bilateral trade.

Fingrid agrees with the Russian party on situations which affect the Russian 400 kV transmission connections and can be planned in advance, such as the timing of annual maintenance. Fingrid will notify customers and the markets of transmission restrictions relating to such situations in good time.

The target is to carry out grid maintenance on the Finnish side of the border in connection with maintenance carried out on the Vyborg link and Luoteislaitos.

5.3 Disturbances and faults

Fingrid restricts the cross-border transmission capacity on Russia's 400 kV connection or on the local network on the Finnish side of the border (the Yllikkälä and Kymi substations and the main grid lines that run from them, including the fields in the direction of Yllikkälä and Kymi from the opposite substations) during disturbances, accidents and faults. During an hour of operation subject to transmission restrictions, the transmission programmes of all importers are restricted in proportion to the programmes, with restrictions focusing primarily on bilateral trade.

If a disturbance, accident or fault occurs elsewhere on the main grid, procedures concerning customers connected to the grid will be undertaken in accordance with the transmission agreement. Transmission along Russian 400 kV connections can be restricted to ensure system security.