

REAL-TIME INFORMATION EXCHANGE

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1 Introduction

These guidelines apply to the real-time exchange of information related to maintaining system responsibility and reliability and the information exchanged after a disturbance.

The Customer's responsibilities are as follows:

- The compliance monitoring process and fulfilment of the real-time information exchange requirements and the associated costs.
- Maintaining operations that comply with these application guidelines throughout the service life of the Customer's connection.
- Obligating a third party connected to their network to provide Fingrid with the necessary information.
- Obligating its service providers to provide Fingrid with the necessary information.

The information exchange agreement includes reviewing the information to be exchanged, agreeing on information that is missing or must be corrected or added, and configuring and testing systems belonging to the Customer and Fingrid. The agreement must be made at least one month before a new connection is commissioned or a system is modified.

The details about which information is exchanged are agreed upon for each customer individually. The scope of the information depends on Fingrid's needs in maintaining the reliability of the main grid and managing disturbances.

Real-time information exchange must be implemented, acceptably tested, and operational before the Customer's new installation or connection can be used.

These principles of the application guideline are in effect until further notice and will be updated as circumstances change.

The scope of real-time information exchange in accordance with the Network Code for Emergency and Restoration (NC ER) is presented separately in the guideline.

2 Information that the Customer must submit to Fingrid

2.1 Distribution networks directly or indirectly connected to the main grid, high-voltage distribution networks, closed distribution networks, and electricity consumers

- Measurements and status information of the switching devices closest to the main grid connection point shall be submitted for transmission line connections to the main grid equipped with remote operation.
- If the Customer's electricity network can be connected to operate in parallel with the main grid, the status information of the electricity network switching devices that establish the parallel connection shall be submitted. Relevant status information of the switching devices at the division limits of electricity network reserve supplies of at

least 110 kV shall also be submitted in the scope agreed upon with the connecting party.

- For an electricity network with a nominal voltage of at least 110 kV, measurements of active power, reactive power, and voltage and status information on switching devices shall be submitted in the scope agreed upon with the connecting party.
- For an electricity network with a nominal voltage of at least 110 kV, reactive power measurements and status information shall be submitted for the compensation devices at the scope agreed upon with the connecting party.
- Active power measurements of electric boilers and heat pumps with a rated power of more than 1 MW and switching device status information at the scope agreed upon with the connecting party.
- Circuit breaker status information and voltage measurements of the busbars on the substation's route to the main grid shall be submitted for substations that are significant for the restoration plan in accordance with the Network Code for Emergency and Restoration (NC ER).

2.2 Power plants and grid energy storage facilities

- Active and reactive power measurements shall be submitted for power plants and grid energy storage facilities over 1 MW. In addition, status information shall be submitted for the switching devices in the high-voltage bay towards the Customer's network or the main grid.
- Real-time information shall be submitted for power plants and grid energy storage facilities over 1 MW. If a power plant or grid energy storage facility consists of several independent subsystems physically distanced from each other, Fingrid shall decide which real-time information must be exchanged on a case-by-case basis.
- Subject to a separate agreement, measurement data from power plants and grid energy storage facilities can be submitted as a producer-specific sum.
- If a power plant or grid energy storage facility uses multiple forms of production, active power measurements shall be submitted for each form of production.
- Voltage control is required for power plants and grid energy storage facilities of over 10 MW or connected to the 110 kV grid. Power plants and grid energy storage facilities operating with voltage control must submit voltage measurement information on the voltage at which the plant adjusts the voltage when operating with constant voltage control. In addition, information on the control mode in use (constant voltage control/reactive power control/power factor control) shall be submitted.
- Power plants and grid energy storage facilities over 10 MW must be capable of receiving power orders from Fingrid for the entire power plant. For such orders, the customer must send a confirmation that the information has been received and the order has been implemented (return the set value).

- In addition to the above requirements, for power plants that are significant for the restoration plan in accordance with the Network Code for Emergency and Restoration (NC ER), status information shall be submitted on generator circuit breakers and 110 kV circuit breakers on the power plant's route to the main grid, as well as any frequency measurements taken at places agreed upon with Fingrid on the power plant's route to the main grid.
- The accuracy of the real-time information shall be verified. For example, the power layout and voltage control status of the power plant's park controller must match the current layout of the controller.

3 Information that Fingrid must submit to the Customer

Fingrid shall provide the Customer with the following information, at the scope agreed upon separately, that is necessary to maintain the reliability of the electrical installations for which the Customer is responsible and to manage disturbances:

- Real-time active and reactive power measurements of the Customer's connection bay, as well as status information of the switching devices.
- Status information on the switching devices in Fingrid's transmission line bays, busbar voltages, and status information on the circuit breakers for compensation devices from the Fingrid substation to which the Client has a connecting bay.
- Real-time information subject to separate agreement, such as information related to restrictions (e.g., electricity shortages or balancing areas) or other information related to the maintenance of reliability (e.g., power limitation on/off, the limit power, voltage control status, or restoration status).
- If the Customer is connected to Fingrid's electricity network by a transmission line connection, the status information of the switching devices in the transmission line bays of the trunk line in question shall be submitted from the substations at the ends of the trunk line, as well as the busbar voltages of the substations.
- If the measurements requested by the Customer include third-party data, either directly or indirectly, the Customer must obtain and present the third party's permission to Fingrid before the information exchange is implemented.
- The alerts related to reliability management in the scope agreed upon separately.

Main grid substations use automation technology of different ages. Consequently, the alert information varies in both content and quality.

Fingrid shall not be liable for the quality and accuracy of the information provided to the Customer. If the submission of alerts has been agreed upon with the Customer, Fingrid shall provide information to the connecting party, but the connecting party shall be responsible for the use of the information.

4 Exchange of information on operational activities

In addition to the real-time information exchange described above, operational activities in the electricity network require the Customer and Fingrid to exchange information as described in this chapter to resolve electricity network disturbances and manage abnormal operating situations.

4.1 Disturbance records

According to Fingrid's grid code specifications (VJV/SJV), power plants and grid energy storage facilities over 10 MW must have a disturbance recorder system that makes recordings automatically in the event of a disturbance. If Fingrid requests the recordings, the connecting party must make the recordings available to Fingrid within 24 hours.

In the event of a disturbance in Fingrid's network or the customer network where the power plant/grid energy storage facility is found to disconnect, the connecting party must automatically provide Fingrid with disturbance recordings about the incident from the power plant/grid energy storage facility.

- The connecting party/power plant shall submit a disturbance recording to **voimalaitostiedot@fingrid.fi** within at least one week of the disturbance.
- If it is possible to choose the length of the recording to be delivered (extracted from a measurement device that records continuously), the measurements shall be submitted from the recording for two minutes before and after the disturbance.
- Fingrid regularly reviews disturbance reports and investigates more closely if plants are disconnected in violation of the grid code specifications or if anything else significant is detected.

4.2 Information exchange required in an electricity shortage

In the event of an electrical shortage, Fingrid has a tool that uses real-time information exchange to manage the disconnection of loads between the power control systems. The tool clarifies the situational overview and disconnection of loads in collaboration with customers. For customers with no information exchange possibility, power limit requests will be communicated by telephone, as before.

4.3 Information exchange required following a major disturbance in the main grid

In the event of a major disturbance in the main grid, the network operators connected to the main grid and demand facilities of over 30 MW connected to the main grid will receive a load restoration permit from Fingrid via real-time information exchange. The parties who have not implemented information exchange will be granted additional load permits by phone as before.

4.4 Information exchange required for under-frequency protection

The NC ER requires the coverage of under-frequency protection to be reported to the Energy Authority each year. Reporting is possible via My Fingrid. Reports shall be

submitted by the end of February each year. Reporting shall include the following measurement data:

- Average hourly power [MW] of consumption at each step in under-frequency protection for the following hours:
 - 1 February, 8 am to 9 am and
 - 1 July, 8 am to 9 am.
- Average hourly power [MW] of the party's total electricity consumption connected to the grid in the hours mentioned above.
- Average calendar year power [MW] of consumption at each frequency step in under-frequency protection.
- The party's total electricity consumption [MW] in the calendar year.

When real-time information exchange is used for under-frequency protection, network operators connected to the main grid and demand facilities of over 30 MW connected to the main grid will receive a restoration permit from Fingrid via real-time information exchange when under-frequency protection is in operation.

Electricity demand facilities of 30 MW or less connected to the main grid will continue to receive restoration permits from Fingrid by phone. If a party provides Fingrid with real-time measurements of total consumption and consumption within the scope of under-frequency protection, separate annual reporting is not necessary.

5 Information exchange related to the maintenance of reserves

The reserve market agreement describes real-time information exchange on reserves and is available on Fingrid's website.

6 Data transfer interfaces

The technologies used to transfer data between Fingrid and the connecting party are described below.

The FEN or KoVa-FEN network between the parties' systems is used for real-time information exchange. Power plants with a rated capacity of over 30 MW and significant sites with respect to the restoration plan must use the KoVa-FEN network.

The ICCP or Elcom protocol is used for two-way real-time information exchange. In addition, Fingrid can receive, but not send, real-time information using the IEC 60870-5-104 protocol.

Measurement data for power plants below 10 MW and real-time reporting in the reserve market (excluding aFRR) can be realised with a lightweight solution for real-time information exchange over the internet. A separate document describes the implementation of a lightweight solution and the associated information exchange process.

7 Quality of information exchange

Real-time information should be submitted within 60 seconds of the time of measurement or change in the status.

In the event of a fault, the Contracting Party who detects a fault in the information exchange shall notify the other Party of the situation. The Contracting Party responsible for submitting the information shall handle fault rectification without delay in cooperation with the other party.

Upon Fingrid's request, the Customer must promptly unwind the real-time exchange of information at the scope requested by Fingrid.

8 Contact and communication

Contact and fault reports related to the exchange of information should be emailed to Fingrid at reaaliaikatiedonvaihto@fingrid.fi.