

## TERMS OF CONNECTION FOR HIGH-VOLTAGE DISTRIBUTION NETWORKS

recommended by Finnish Energy

### SJLE 2019

The Energy Authority has confirmed the following terms of connection for use by the distribution system operator on 17.5.2019.

#### 1. Application and definitions of the terms of connection

- 1.1. In these terms, a *high-voltage distribution network* is a local or regional electricity network or line with a nominal voltage of 110 kilovolts, which is not a connection cable, does not cross the national border and is not part of the transmission grid.
- 1.2. A *distribution system operator of a high-voltage distribution network (DSO)* is a body or establishment in possession of a high-voltage distribution network and engaged in licensed operations thereof.
- 1.3. These terms of connection of a high-voltage distribution network (SJLE) are appended to connection contracts concerning the connection of a place of electricity use or electricity generation to a high-voltage distribution network.
- 1.4. The DSO may also apply these terms to a connection contract concerning the connection of a place of electricity use or generation to an electricity distribution network with a nominal voltage exceeding 36 kV if agreed upon in the connection contract.
- 1.5. The DSO and the connecting party may agree otherwise on these terms.
- 1.6. The connecting party is obliged to ensure with those connecting to their electricity network either directly or indirectly that their electricity networks and their connecting electrical installations also meet the requirements of these terms of connection and other possible instructions and requirements related to the implementation of the connection.
- 1.7. With the *connection contract*, the connecting party and the DSO agree on the electricity distribution connection between the connecting party's network, the place of electricity use or electricity generation and the DSO's electricity network.
- 1.8. A *connection cable* referred to in these terms means a power line built for one place of electricity use, property or group of properties or one or several sets of electricity generation installations, through which the connecting party is connected to the electricity network.
- 1.9. A *connection* means the right of the connecting party to become connected to the high-voltage distribution network in the place specified in the connection contract, as well as the interface between the electrical installations of the contracting parties. The size of the connection is specified according to the agreed contracted capacity.
- 1.10. *The system responsible party* means the transmission system operator that the electricity market authority has appointed for having system responsibility.
- 1.11. *An electrical equipment* means the following items that require electricity for functioning or that are intended for the generation, transmission or measurement of electricity: finished equipment, installation materials, a combination of equipment made available on the market as a single functional unit and components or sub-assemblies that are intended for incorporation into equipment by the end user.

- 1.12. *Electrical* installation means a fixed installation or other similar functional unit consisting of electrical equipment and any other equipment, materials and structures, including *electricity generation installations* that can be used for generating electricity and that operates in parallel with the distribution network.
- 1.13. These terms shall also be applied in stand-by supply connections that are only used temporarily in disturbance or distribution outage situations.
- 1.14. The central provisions on the electricity market and the network service have been laid down in the Electricity Market Act, the Act on the Surveillance of the Electricity and Gas market as well as in the decrees issued by virtue of these Acts.

## **2. Connecting to the electricity network**

- 2.1. *The point of connection* means a point (boundary of property) between the electrical installations of the high-voltage distribution network and the connecting party, unless otherwise agreed. The point of connection is specified in the connection contract.
- 2.2. The DSO connects the connecting party's electrical installations to its network once the connection contract is valid and the connecting party assures that the connection and their electrical installations meet the individually agreed requirements referred to in these terms. Any changes to be made to the time of connection (e.g. due to changes to the connecting party's construction schedule) shall be agreed with the other party in good time.
- 2.3. If before the time of connection the contracting party becomes aware of a fact that prevents the connection at the agreed time, the other contracting party must be notified of this with immediate effect so that the parties can together change date of connection.
- 2.4. The prerequisite for using the connection is that the electricity transmission at the connection point and the management of reactive power balance have been agreed between the connecting party and the DSO.
- 2.5. It must be possible to disconnect the connection cable from the high-voltage distribution network in the way agreed in the connection contract. When the connected line is connected to a double circuit line, the disconnecting switches at the connection must be equipped with earthing switches on the side of the high-voltage distribution network in order to maintain safety.
- 2.6. Connection of electricity consumption
  - 2.6.1. A demand facility to be connected to the Finnish electricity system must meet the Grid Code and Operational Performance specifications for consumption valid at any given time, set by the system responsible party.
- 2.7. Connection of electricity generation
  - 2.7.1. A production facility to be connected to the Finnish electricity system must meet the Grid Code and Operational Performance specifications for power generating facilities valid at any given time, set by the system responsible party.
  - 2.7.2. The point of reference where the Grid Code and Operational Performance specifications must be met is defined according to the system responsible party's Grid Code and Operational Performance specifications valid at any given time.
  - 2.7.3. If necessary, the occupant of the production plant, the connecting party and the DSO shall agree separately on the voltage regulation and the production of reactive power in a normal situation.
  - 2.7.4. A production plant connecting along a 110-kV line must be equipped with disconnecting relays that separate the production plant from the electricity network during the de-energised intermediate period of a high-speed autoreclosure. The protective relays in the core line must be equipped with synchrocheck.
  - 2.7.5. The connecting party is responsible for verifying the Grid Code and Operational Performance specifications and the implementation of protection.



2.7.6. If the connecting party's electricity network or the connecting party's electricity network together with other electricity networks forms an electricity network of parallel operation with a high-voltage distribution network, the connecting party shall agree on the parallel operation of the networks and on any measures and costs arising from it with the DSO before starting parallel operation. The parallel operation of networks or the terms of island operation shall always be agreed separately.

2.8. Changing the electricity network

2.8.1. If the connecting party intends to make additions or changes to their own network or to the electrical installations either directly or indirectly connected to the connecting party's network, the connecting party shall contact the DSO in advance in order to find out the network impacts and possibly to implement any changes or additions to the high-voltage distribution network. The network changes must meet the terms of connection valid at any given time.

**3. Operating requirements of electrical equipment**

3.1. Main principles

3.1.1. The contracting parties are responsible for ensuring that the electrical installations under their control meet the valid legislation and the regulations and provisions issued by virtue of them.

3.1.2. In order to guarantee the quality of electricity and its security of supply, the contracting parties' electrical installations must meet the applicable standards, the generally accepted recommendations, the technical requirements concerning connection published by the DSO and the requirements of the system responsible party. This also applies to the electrical installations of other parties connected either directly or indirectly to the electrical installations and networks of the connecting party and the DSO.

3.1.3. The contracting parties are responsible for the electrical safety, functioning, condition and operation of the electrical installations under their control.

3.1.4. The contracting parties shall maintain and operate their electrical installations so that the electricity distribution or the operation of the electricity system will not be disturbed unnecessarily and there are no adverse effects or disturbances exceeding the limits of generally agreed standards or recommendations to other parties connecting to the network.

3.1.5. Standby supply required by fault and maintenance situations shall be agreed separately.

3.1.6. Power lines with a nominal voltage of 110 kV must be equipped with shielding wires. The power lines must be built and maintained with tree safety in accordance with the Electricity Market Act. The phases of overhead lines shall be transposed according to the system responsible party's instructions. The connecting party shall ensure the compatibility of the technical implementation of the transposition together with the DSO and the system responsible party.

3.2. Planning and provision of information

3.2.1. The connecting party must provide the implementation plans for the connection to the DSO for review well in advance of starting the implementation, hence the technical compatibility and electrical safety of the connection can be verified. The connecting party is responsible for the safe and compliant implementation of its electrical installations.

3.2.2. The DSO shall provide the connecting party with the necessary information for the planning of the connection.

3.2.3. The connecting party shall provide the DSO with the necessary information about the electrical equipment and systems to be connected and the mode of operation of the electricity network. Before connection, the connecting party shall provide the DSO with a network diagram and the main circuit diagram or a similar account showing the electrical

installations with its nominal values and information about relay protection arrangement. In addition, the connecting party shall provide the information required by the system responsible party.

- 3.2.4. In the planning stage of the connection or when changing an existing connection, the connecting party and the DSO shall agree in advance on the control, monitoring and metering solutions for delivering and metering the electricity transmitted at the point of connection.
  - 3.2.5. If the metering equipment is located elsewhere than in the DSO's facility, the connecting party shall reserve sufficient space for the metering equipment for the necessary metering, the necessary auxiliary power supply and the instrument transformers with wirings and connections for communication purposes.
  - 3.2.6. The DSO is entitled to have access to the metering equipment located in the connecting party's premises and to the electrical installations of the connecting party, by means of which the switch position of the high-voltage distribution network can be changed. If the electrical installation possessed by the DSO is located in the connecting party's premises or area, the connecting party is required to ensure that the DSO can immediately, free of charge, and in the manner agreed by the contracting parties, enter the space where the electrical equipment installation is located, in order to carry out, e.g., maintenance, inspection, fault diagnosis or repair work, regardless of the time of day.
  - 3.2.7. The connecting party must reserve sufficient premises for the necessary remote operation and control devices.
  - 3.2.8. When connecting to a high-voltage distribution network, the connecting party shall be responsible for the safe connection of their electrical installations, the compliance with the laws and regulations concerning the building of the installations, the necessary touch and dangerous voltage clarifications and the actions required by them.
  - 3.2.9. The contracting parties shall agree on the location and building of electrical installations and power lines required for electricity distribution in the premises and land and water areas owned or occupied by the connecting party.
  - 3.2.10. The connection cable must have project authorisation granted by the authorities.
- 3.3. Protection of electricity networks and electrical installations
- 3.3.1. The protection of the connecting party's electrical installations and any electrical installations connected to it either directly or indirectly and the high-voltage distribution network must operate uniformly and selectively. Both parties are responsible for the operating condition of the protective equipment and for the appropriate nature of protection and for specifying the settings. If necessary, the DSO will provide technical information and instructions for coordinating the protection for the connection and the high-voltage distribution network. If cable sections are connected to the electricity network or connection takes place to a resonant earthed 110-kV electricity network, the protection of the electrical equipment shall be agreed on separately.
  - 3.3.2. The protection of the connecting party's electrical installations must be compatible with the protection of the system responsible party's electricity network. If necessary, the system responsible party shall provide technical information about coordinating the protection for the connection and the transmission grid. In terms of the protection, factors having an impact on the protection described in the system responsible party's relay protection application instructions must be taken into account in the planning of the electrical installations.
  - 3.3.3. The connecting party must ensure that exceptional voltage or frequency or the loss of voltage will not damage the equipment of the connecting party or a third party. The connecting party must equip their electrical installations with over- and undervoltage protection and, when the electrical installation so requires, also with frequency protection.

When setting the protection, any Grid Code and Operational Performance specifications set by the system responsible party shall be taken into account.

- 3.4. Disturbances and faults in the electricity network
  - 3.4.1. When planning and operating their installations, the connecting party shall take into account the short-term voltage dips, loss of voltage and the impacts of reconnections caused by faults in the electricity network. The connecting party shall take into account the impacts of disturbances on the electrical installations of other parties connecting to their network.
- 3.5. Monitoring the fulfilment of the terms of connection
  - 3.5.1. The DSO is entitled to inspect the connecting party's electrical installations and any changes to be made to it at a later date before the commissioning and, for justified reasons, also at a later date. Correspondingly, the connecting party is entitled to inspect the electrical installations of the high-voltage distribution network in terms of the connection.
  - 3.5.2. If it turns out that the connecting party's electrical installations do not meet the terms of connection, the connecting party must provide the DSO with an account of the impact of the deficiencies on the connection's operation and a plan of the measures to correct the deficiencies, and a timetable for carrying out the corrections.
  - 3.5.3. After the modification work has been completed, the connecting party and the DSO together shall verify that the connection meets the terms of connection.
  - 3.5.4. The connecting party is responsible for the verification and the related and possibly subsequent measures in both the technical and financial sense.
  - 3.5.5. If the deficiencies in the connection have an impact on the operation of the electrical system, the DSO is entitled to interrupt the use of the connection, limit the operation of the connection or impose obligations on the operation of the connection until the deficiencies have been corrected.

#### **4. Agreement and responsibilities**

- 4.1. Drawing up the connection contract and the connection fee
  - 4.1.1. The connection contract shall be drawn up between the contracting parties to be valid until further notice.
  - 4.1.2. The connection contract and any amendments to it shall be made in writing.
  - 4.1.3. The connection contract consists of the individual terms of contract and the general terms of contract. In the interpretation of the contract, the documents shall be taken into account in the following order:
    - 1) the connection contract with its appendices, and
    - 2) the general terms of connection (SJLE) valid at the time of drawing up the contract.
  - 4.1.4. The connecting party shall pay the DSO a connection fee in accordance with the effective connection fee principles. The amount of connection fee is determined in the connection contract. It must be stated in the connection contract whether the connection fee or a part thereof will be refunded when the contract is terminated.
  - 4.1.5. The connection fee is specific to the connection in question.
  - 4.1.6. The costs of any modification work carried out on the connection shall be agreed in accordance with the grounds for payment agreed in the connection contract.
  - 4.1.7. The parallel operation of networks or the terms of island operation shall always be agreed separately.
  - 4.1.8. The practical implementation and terms of reactive power supply shall be agreed separately.
- 4.2. Delay in making the connection
  - 4.2.1. If the connection is delayed for reasons attributable to the DSO, the connecting party is entitled to a penalty for delay if it has been agreed separately. There is no right to the penalty for delay if the DSO shows that the delay is caused by an obstacle beyond their control and





that they cannot reasonably be expected to have taken it into account when concluding the contract and that has consequences which they could not have reasonably avoided or overcome.

- 4.2.2. The connecting party is entitled to compensation for damage that they suffer due to a delay attributable to the DSO unless the DSO shows that the delay is caused by an obstacle beyond their control and that they cannot reasonably be expected to have taken it into account when concluding the contract and the consequences of which they could not have reasonably avoided or overcome. Any penalty for delay that will be or has been paid shall be taken into account as a reducing factor in the compensation for damage. However, the maximum amount of compensation for damages shall be the amount of the connection fee unless the DSO has been guilty of deliberateness or gross negligence.
  - 4.2.3. If the delay is attributable to a person whose help the DSO has relied on in fulfilling the contractual obligations, the DSO is exempted from the obligation to pay compensation for damage only if the person mentioned above is exempt from responsibility in accordance with the previous section.
  - 4.2.4. The connecting party is entitled to receive compensation for indirect damage only if the delay is attributable to the DSO's gross negligence or deliberateness.
  - 4.2.5. Indirect damage means:
    - 1) loss of earnings incurred by the connecting party because of the delay or the consequent actions;
    - 2) damage caused by an obligation, which is based on some other agreement;
    - 3) major loss of utility when this loss does not result in direct financial damage or other comparable substantial impairment; and
    - 4) other damage of similar nature that is difficult to foresee.
  - 4.2.6. If the connecting party notifies the DSO of a delay attributable to itself at such a late date that the DSO has already started the work related to the connection, the connecting party shall pay to the DSO the costs caused by the measures that were necessary due to the delay and for the measures that had to be taken but have now become useless, based on an account given by the distribution system operator.
- 4.3. Maintaining the connection
    - 4.3.1. If the connecting party wishes to keep the connection contract valid even when there is no valid contract concerning the network service, they must compensate the DSO for the costs of maintaining the connection on the basis of a separate contract.
    - 4.3.2. Refusal to draw up a contract for maintaining a connection is regarded as breach of a material contractual obligation. This also applies to the material negligence to pay the fees pertaining to the above-mentioned contract.
  - 4.4. Amending the contract and providing information
    - 4.4.1. The contracting parties may jointly agree to make changes to an individual connection contract.
    - 4.4.2. When the electricity use or production changes, the connection size (contracted capacity) or structure of the connection defined in the connection contract may be changed. A new connection contract or a separate contract that is subject to these terms of connection shall be drawn up on the changing of the connection size. The connecting party shall pay the DSO the costs arising from the impacts of changing the connection.
    - 4.4.3. The connecting party shall provide information about the changes at a sufficiently early stage in order to establish the network impacts and to implement any changes needed in the high-voltage distribution network, and agree with the DSO on the measures and compensation for the costs incurred.
    - 4.4.4. The DSO is entitled to amend the contract terms if the change is based on legislative changes, a decision by the authorities or a change in the terms set by the system

responsible party which the DSO has been unable to take into account when drawing up the connection contract.

4.4.5. The DSO shall send to the connecting party a notification of how and from which date the terms of contract will change and the reason for the change.

4.5. Transfer and termination of contract

4.5.1. The contracting parties may transfer their mutual connection contract to a third party with the other contracting party's written consent.

4.5.2. The connecting party may terminate the contract only if the electricity sale contracts and the separate contracts on electricity network service are not valid.

4.5.3. The DSO may revoke the connection contract with immediate effect if:

1) the connecting party has materially breached its obligations based on the connection contract and the breach of contract has not been corrected within the reasonable time notified by the other party in writing; or

2) the connecting party is declared bankrupt and the bankruptcy estate does not commit at least to the maintenance contract.

4.5.4. The DSO shall repay the refundable connection fee back to the connecting party.

4.5.4.1. In accordance with the general provisions on set-off, the DSO has the right to set off its overdue receivables from the connecting party with the refundable connection fee and to deduct from the amount of the connection fee to be refunded the costs of the connection cable, as well as the costs caused by the possible dismantling of the electrical equipment that is unnecessary from the point of view of other connecting parties and by the disconnection of the connecting party from the network.

4.6. Settlement of disputes

4.6.1. Any disputes arising from the connection contract shall be settled primarily in the district court where the connection is located unless otherwise agreed.