# ELECTRICITY CONNECTION PRICING CRITERIA AND CONSTRUCTION INSTRUCTIONS AS OF 22 JUNE 2020

OULUN ENERGIA
SÄHKÖVERKKO

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# 1. General

## 1.1 Conditions for connection

General connection conditions (LE2019) apply to the connection of an electricity use or generation site to Oulun Energia Sähköverkko Oy's (hereinafter referred to as the network operator) electricity network. The general connection conditions shall be supplemented by the following network operator pricing criteria and construction instructions adopted by the management of the network operator.

## 1.2 Connection contract

The connection contract shall be made in writing. The connection contract cannot be transferred to another electricity use or generation site. The customer may transfer the connection contract to a new owner or holder in accordance with the applicable general terms and conditions of the connection, provided that the network operator is reliably informed of the transfer.

## 1.3 Connection

A connection can be made to a 400V low-voltage network, a 10 kV or 20 kV medium-voltage network or a 110 kV high-voltage network. The connection voltage is determined according to the power needs of the customer, taking into account that the connection can not interfere with the electricity use of other customers.

The electricity network is often built in connection with the construction of other municipal technology in the zoning area. In the plots of the zoning area, the electricity network and the reservations for low-voltage connections have usually been dimensioned so that the connection ordered by the customer under the connection contract can be created without the construction of an electricity network. For medium and high-voltage connections, an electricity network shall be built per connection at the connection point.

For low and medium-voltage connections in the zoning area, if the connection requires the construction of an electricity network, the delivery time to the connection point is usually one to three months. Where a low-voltage connection requires the construction of a medium-voltage network and/or a distribution substation, the delivery time may be six months, and if the network operator can not obtain the necessary permissions from the landowners or the public authority to build the electricity network, the delivery time may be even longer. With high-powered medium-voltage connections that are connected to a substation, the delivery time is typically one to two years. With high-voltage connections, the delivery time is typically one to three years.

The planning of the electricity network and its construction at the connection point shall commence after the customer has submitted the connection contract to the network operator.

One medium or high-voltage connection shall be built for each property, plot or similar site.

For low-voltage connections, the network operator has no limitations. Electrification must take into account the Electrical Safety Act, the SFS-6000 standard and the authorities' requirements for the connection and electrical equipment. In principle, the regulations and requirements are met when a building is served by one connection.

## 1.4 Connection point in a low-voltage connection

The connection point shall be specified by the network operator in the connection contract.

The connection point shall be determined by examining the operation and efficiency of the electricity system in such a way as to avoid the construction of parallel or otherwise inefficient electricity networks and so that it does not lead to the construction of a connection cable outside the area under the control of the customer. Considering, however, that the network operator will not build an electricity network that meets the characteristics of a connection cable.

The connection point is usually the boundary of the plot or property. In the case of a large property or area, the connection point will be determined in the immediate vicinity of the site that is to be electrified.

In public areas, street areas and traffic areas referred to in the Land Use and Building Act, the connection point is to be placed at the border of the area managed by the customer or the border or vicinity of an area the customer has the right to use or rent.

The customer has the right, if he or she so chooses, to agree on a connection point farther from the electricity use or generation site and, if he or she so chooses, to build a connection cable to the specified connection point.

In an underground cable network, the connection between the electricity network and the connection cable will be in an extension of the underground cable or at the connections of the network operator's low-voltage switchgear’s fuse switch disconnector in the distribution cabinet or at the substation.

In an overhead line network, the connection between the electricity network and the connection cable is at the underground cable terminal of the connection cable, if the pole is located on the customer's property. The customer will bring the underground cable to the pole and the network operator will attach the underground cable to the pole and connect the underground cable to the overhead line network.

### 1.4.1 Relocation of the connection point and changing the connection cable in a low-voltage connection

It is only possible to relocate the connection point within the same property, plot or similar site. The electrical contractor of the customer shall agree on the change in advance with the network operator and carry out the change of the connection cable. The costs of modifications to the connection point or connection cable shall be charged to the customer.

With a change where a customer renews part of the connection cable owned by the current network operator, the connection point will be at the underground cable extension. When a customer completely renews a connection cable owned by the network operator, the new connection point shall be at the underground cable extension at the property boundary or at the fuse switch disconnector, if the new connection point is at the network operator’s low-voltage switchgear’s fuse switch disconnector (distribution cabinet or substation) or at the underground cable terminal pole of the connection cable in the overhead line network.

Any changes of the connection point done at the initiative of the customer shall be recorded by the network operator in the connection's data.

### 1.5 Connection point in a medium or high-voltage connection

The connection point shall be specified by the network operator in the connection contract.

In a medium-voltage connection, the connection point shall be the network operator's underground cables' connections at the customer's medium-voltage switchgear.
For high-power medium-voltage connections above 3 MVA, it may be necessary to place the connection point directly in the field of the network operator's switchgear or substation.

With a medium-voltage connection, the customer has the right, if he or she so chooses, to agree on a connection point farther from the electricity use or generation site and, if he or she so chooses, to build a connection cable to the specified connection point.

In high-voltage connections, the connection point is surveyed and investigated on a case-by-case basis, taking into account, for example, the requirements set by the Electricity Market Act and the supervisory authority for high-voltage lines.

#### 1.5.1 Relocation of connection point or change of connection cable in medium or high-voltage connection

It is only possible to relocate the connection point within the same property, plot or construction site. The customer shall be charged for the change of the location of the connection point or any other modification of the electricity network done at the request of the customer. The connection point will remain unchanged either in the customer's medium-voltage switchgear or in the customer's or network operator's switchgear or substation field. In high-voltage connections, the connection point shall remain unchanged in the network operator's high-voltage line or at the substation.

### 1.6 High-voltage connection hardware or switchyard.

In a high-voltage connection, the connection point, and therefore the connection's location in the high-voltage network of the network operator as well as the requirements from the national network operator, determine the requirements for the high-voltage hardware or switchyard of the customer. These are examined case by case.

### 1.7 Structure and equipment of a medium-voltage connection

A medium-voltage connection's switchgear and substation shall be designed and constructed taking into account current standards and the network operator's instructions contained in this document.

The switchgear and substation are built in accordance with ST card no. 53.11 and the current fire safety regulations and instructions in the buildings. For medium-voltage substations, technical support from the network operator shall be provided.

The medium-voltage switchgear/substation shall be located on the ground level and on the external wall of the building in such a way that the door opens directly outside. The customer shall reserve two cells equipped with switch disconnectors for the network operator's cables free of charge from their equipment. These cells are owned by the customer, who is also responsible for their maintenance, but only the network operator has the right to use the switching devices in the cells.

Distribution network disconnectors must be mechanically controlled to open/close. The disconnector preceding the network operator's electricity metering must be reliably lockable in the open position by the network operator.

The structure of medium-voltage switchgear shall be such that the connection cells of the network operator can be energised in all switching situations.

The disconnectors of a medium-voltage switchgear’s distribution network must be equipped with motor controls. The switchgear must be equipped with remote/local/0-switches and the zero position must be lockable. Controls must be wired to the terminal strips at the expense of the customer. The control voltage must be 24 VDC. The disconnectors must be lockable and locally equipped with warning signs and locks. The design must take into account the reservation of space for a substation 700 (H) x 500 (W) x 300 (D), the heating that may be required for remote use and the possibility of cabling and placement of the antenna required for the communication solution.

The possibility of antenna placement and wiring must be taken into account in the design in such a way that it is possible to get out from inside the property (cable route or piping for antenna wiring). The customer commits to supply the necessary energy for the use of the substation free of charge and to take into account the space reservation in the low-voltage switchgear for the substation's electricity supply (circuit breaker 1×10 A, without the residual current circuit breaker) and to wire a feeder cable into the substation’s reserved space. Other costs associated with remote use, such as substation, data transfer and other usage costs, are borne by the network operator.

The medium-voltage switchgear and auxiliary equipment of the substation must be approved for use at a temperature of -40 °C.

In areas where the connection voltage is 10 kV at the time of connection, the substation’s medium-voltage switchgear shall be dimensioned for a voltage of 20 kV (taking into account load and short-circuit currents of 10 kV). The transformer must be switchable for a voltage of 10 kV and 20 kV. The 10/20 kV switching capability also applies to substations, medium-voltage cables and other components of the customer's electrical installation. The protective relay must be changed to operate at a new voltage level.

The medium-voltage metering must be located in the immediate vicinity of the connection point.

When more than one transformer is added to the connection and the connection capacity agreed in the connection contract is less than the sum of the transformer power, the medium-voltage switchgear shall be equipped with a main circuit breaker and an overcurrent relay. The overcurrent relay is configured to trip the main circuit breaker according to the values of the connection capacity agreed in the connection agreement. The overcurrent relay must be sealable by the network operator.

If the medium-voltage connection is such that more than one of the network operator's medium voltage meters (location of use) can be added, all electricity meters shall be placed in the immediate vicinity of the connection point. The outputs (disconnectors) of the various electricity meters (locations of use) must be lockable in the open position by the network operator, so that the use of electricity can be prevented when the site is in a non-contractual state or due to a breach of contract. When planning such a connection or equipment, the technical support of the network operator should be contacted in good time.

### 1.7.1 Medium-voltage connection main switching device

In substations with one transformer, the fuse-switch disconnector acting as short-circuit protection can be used as the main switching device, provided the transformer's capacity is ≤ 1600 kVA. The maximum fuse rating is 63 A (20 kV) or 125 A (10 kV).

When the connection capacity is > 1600 kVA, the connections of several transformers or several medium-voltage outputs must have a separate main circuit breaker. A circuit breaker must be used as the main switching device. There must be a disconnector between the circuit breaker and the network operator's connection cells.

The main circuit breaker must have a lock that prevents the moving of the circuit breaker trolley or opening the disconnector when the circuit breaker is closed. The main circuit breaker must be equipped with a three-phase overcurrent relay with an adjustable quick release. If the connection cables are not fireproof, the outputs must be equipped with overload protection.

The relays of the main circuit breaker must be equipped with a signal flap or a light indicator to indicate that the relay has been tripped. Relays that get their operating energy from the load current are recommended by the network operator.

The customer's operator is responsible for ensuring that the relay configuration is suitable for the protection of the equipment and that the layout meets the requirements of the network operator. The values of the relay configuration of the main circuit breaker and their changes must always be communicated to the network operator before the relay is configured.

The auxiliary power system that takes its operating from the supply voltage must be such that the protection is operational within 0.1 s of when the voltage is applied to the de-energised equipment.

When a separate auxiliary power system is used to produce auxiliary power, special attention must be paid to its reliability and condition monitoring. Batteries that do not have regular condition monitoring must be replaced at regular intervals, for example during the relay test of the circuit breaker.

### 1.7.2 Medium-voltage connection main circuit breaker relay configuration requirement

The maximum values to which the main circuit breaker relay can be configured. The protection must operate with the short-circuit current indicated in Table 1 during the operating time of the table or faster.

Table 1. Maximum relay configuration requirements for main circuit breaker.

| **Rated voltage kV** | **20 kV** | **10 kV** |
|---|---|---|
| Slow release | 400 A | 1000 A |
| Quick release | 1000 A | 2000 A |
| Protection operating time | 0.4 seconds slow release<br>0.1 seconds quick release | |

The requirements of Table 1 shall be taken into account when selecting the relay and transformers and designing the main diagram of the medium-voltage network. An inverse time relay may be used as a main circuit breaker relay if the electrician can demonstrate that the relay is capable of fulfilling the requirement set out in Table 1. The relay configuration of the main circuit breaker may be negotiated with the person in charge of the network operator's protections (for example, if there are other circuit breakers for substations on the connection). The implementation protocol of the relay configuration of the main circuit breaker must be submitted to the network operator at the time of commissioning.

### 1.7.3 Medium-voltage connection main circuit breaker relay instructions

The relay voltage adjustment ranges of the main circuit breaker should be set to values lower than the maximum values of Table 1 if the connection is at the end of a long overhead wire network, where the minimum short-circuit current of the network is lower than the recommended layout of Table 1. The slow release voltage adjustment range shall be greater than the total rated current of the transformers, taking into account the overload capacity. The quick release current must be greater than the switching current induced by the transformers ($\rangle\rangle 10 \cdot I_N$), where $I_N$ = the total rated current of the transformers.

It is recommended that the main circuit breaker, other medium-voltage circuit breakers and medium-voltage fuses operate selectively. The selectivity can be checked from the operating curves of the short-circuit protection.

### 1.7.4 Medium-voltage connection ground fault protection

If, after the connection point, there is a medium-voltage ground cable network, the equipment must include a main circuit breaker, overcurrent protection and directional ground fault protection. The need for ground fault protection shall be determined by the network operator on a case-by-case basis and shall depend on the amount of medium-voltage underground cable network there is downstream of the connection point.

In the case of a connection with medium-voltage cabling after the connection point, the main circuit breaker must be equipped with ground fault protection, which can be achieved by an overcurrent release used to measure residual current. In a medium-voltage network, the ground fault protection should be triggered.

The sum current required for the ground fault relay is generated by the sum connection of the protection cores or by cable current transformers. The most sensitive and the surest directional ground fault protection is obtained when a residual voltage is brought to the ground fault relay from the residual voltage winding of the voltage meter.

Configuration: Io = greater than the ground fault current produced by the customer's network, but less than the ground fault current supplied by the network operator's network, e.g. 10 A, t = 0.2 seconds.

The configuration must be communicated to the person in charge of the network operator's protections before commissioning the connection. If a medium-voltage underground cable network which is relevant to ground fault protection is to be built on the connection after it has been connected, the network operator must be notified.

### 1.7.5 Medium-voltage connection operation manager

Information about the connection operation manager, including contact details, must be marked in a visible place in the switchgear/substation and the operation manager must inform the network operator of his or her contact details. If the operation manager changes, the customer shall ensure that the new operation manager informs the network operator of his or her contact details.

### 1.7.6 Compensation of the reactive power of a medium-voltage connection when there is remote metering on the connection

Reactive power compensation must be constructed in such a way that the compensation equipment compensates for all the reactive power consumed or produced in the connection. The compensation equipment must be placed before any remote metering and the main meter's switchboard. For further details, see the separate instruction "Energy metering".

### 1.7.7 Determining the billing of locations of use in a medium-voltage connection with remote metering

The billing for medium-voltage metering locations of use is determined as follows:

- The active energy to be invoiced (medium-voltage metering usage) is the active energy measured by the main meter minus the total active energy measured by remote metering.
- The active power fee under the terms of the electricity distribution shall be calculated from the active power measured by the main meter minus the total active power measured by remote metering.
- The reactive power fee shall be determined according to the (connection's) reactive power measured by the medium-voltage meter.
    - The free share of peak reactive power according to the electricity distribution conditions shall be calculated from the peak reactive power to be invoiced from the medium-voltage meter.
- The electricity distribution price, the active power fee, the reactive power fee and the fixed fee shall be determined according to the medium-voltage power distribution.

Remote metering locations of use are on the low-voltage side, after the medium-voltage meter of the medium-voltage connection. Billing of the location of use is determined by remote metering as follows:

- In the case of a general, time or seasonal electricity tariff, there shall be no change in the electricity distribution price and fixed fees.

- No fee is charged for reactive power in low-voltage power distribution. The electricity distribution price, active power fee and fixed fee shall be determined according to the low-voltage power distribution.

A separate remote metering service agreement shall be made with the customer for remote metering.

## 1.8 Connection cable, low voltage

For a connection fee, an electricity network will be built at the connection point of the connection. The customer is responsible for the construction of the connection cable from the connection point to the main distribution board.

The type of connection cable is recommended to be AXMK and the recommended minimum cross-sectional area according to the main fuses is provided in Table 2.

Table 2

| **Main fuse A** | **Connection cable type** |
|---|---|
| ≤ 3 x 63 | AXMK 4 x 25 S |
| 3 x 80 – 160 | AXMK 4 x 95 S |
| 3 x 200 – 250 | AXMK 4 x 185 S |
| 3 x 315 – 500<br>2 x (3 x 160 – 250) | 2 x (AXMK 4 x 185 S) |
| 3 x 630<br>2 x (3 x 315) | 2 x (AXMK 4 x 300 S) |

The connection cable shall be dimensioned by the connection's electrician and if it differs significantly from the minimum cross-sectional areas – for example, if the connection requires three parallel cables due to the electrotechnical dimensioning – this must be communicated to the network operator when the connection contract is being made.

Interconnection between the connection cable built by the customer and the part of the electricity network owned by the network operator is included in the connection fee and is carried out by the network operator at the request of an electrical contractor.

The customer is responsible for the maintenance of the connection cable and any disturbances caused by it.

## 1.9 Connection cable, medium voltage

The network operator is only responsible for excavating and covering the cable trench in public areas. The customer will build a cable route on the plot, property or other similar construction site.

The cable trench and its covering, as well as any cable route inside the building, must be made in accordance with the instructions of the network operator. In the cable routes inside buildings, the customer must take into account the fire safety requirements of the buildings and the preservation of the cable’s load value.

The cable route must be constructed in such a way that the cables can be replaced at the connection point according to normal installation practices.

## 1.10 Fire classification requirement for cables

The network operator must be informed if, according to the EU Construction Products Regulation, the building regulations of the Ministry of the Environment or other similar requirements, the fire classification requirement for electrical cables in the building has been defined so that the types of cables normally used by the network operator cannot be used.

## 1.11 Low-voltage connection main distribution board and metering board

The main fuses are located at the connection's main distribution board and are included in the customer's purchase. It must be possible to seal the main fuses. Circuit breakers are not accepted as main fuses. Fuse links up to 63 A are not recommended as main fuses.

In the area of the former Yli-Iin Sähkö, the main fuses are located in the overhead network area, on a pole at the beginning of the connection cable, in a fuse box. While the main fuses are in the fuse box, the main distribution board must have a reserved space for the main fuses. In new connections and changes, the main fuses are generally placed in the main distribution board. This must be verified with the network operator before implementation.

Semi-detached houses have must use their own distribution board where the connection cable terminates. The semi-detached house distribution board has a main fuse and a main switch, and is equipped with the residences' meters and front fuses for the residences' metering.

When there are several locations of use on the property, the electricity meters of the locations of use (residences, business premises, etc.) and metering front fuses should be placed in the main distribution board as possible (combined main distribution and metering board). Separate metering boards for locations of use may be installed elsewhere in the building or in other buildings, if the need arises, in agreement with the network operator.

For connections where the main fuses are also the front fuses for metering, the main switch must not cut off the electricity from the meter.

The metering front fuses must be Gg-type plug fuses or fuse links. It must be possible to shut down power reliably when the location of use is in a non-contractual state or due to a breach of contract, even without a remote cut off done at the site's meter.

Locks on metering boards in detached and semi-detached houses used for purposes other than normal residential use shall be arranged in accordance with a separate instruction "Locks" unless there is free access to the meter (e.g. an outdoor metering board in a leisure residence).

The above-mentioned boards, fuse boxes and their equipment are purchased by the customer.

## 1.12 Low-voltage connection overvoltage protection

The customer shall ensure that the connection's main distribution board has at least Class II overvoltage protection if the part of the network that supplies the connection includes any overhead line network. Overvoltage protection is recommended to be installed on all connections.

## 1.13 Metering

If the location of the metering board is such that the mobile network signal of telecommunications operators is poor, a route for an antenna to the ground level must be piped (JM20) to an area where the mobile network signal is good or an internal antenna network must be added to the building, so that mobile network signals can reach the electricity meters. This is to ensure metering data distribution.

The “Principles of Hourly Measurement” of Finnish Energy and the SFS Standard 3381 are applied in both metering and setting requirements for instrument transformers installed by the customer.

In exceptional cases, if agreed separately with the network operator, it is possible to obtain remote metering (low-voltage metering) for a medium-voltage connection after medium-voltage metering.

The prices pertaining to metering can be determined from the current service price list.

The technical requirements and instructions for metering can be found in a separate manual: Energy metering.

### 1.13.1 Electricity metering in a safety system

This applies to low-voltage connections. A medium-voltage connection has medium-voltage metering and all electrical installations of safety systems are connected after the medium-voltage meter.

Safety systems (including smoke extraction and sprinkler systems) must be powered by a different power supply than normal. In one method, the power supply to the safety system is connected before the connection’s main switch, directly to the supply side of the main distribution board’s main switch.

When the power supply to the safety system is taken before the connection's main switch, the system must be equipped with electricity metering from the supply side of the main switch. For electricity metering, the safety system must have its own metering front fuses and metering platform. The size of the metering front fuse determines the method of metering at the location of use (direct or indirect metering). The electricity metering of a safety system shall be subject to the same requirements as other electricity metering. The main distribution board must be equipped with markings in accordance with SFS 6000 – 537.2.1.3.

## 1.14 Ordering a connection/metering

Both the construction of a new connection and the upgrading of an old connection shall be carried out only on the basis of a connection contract submitted by the customer to the network operator.

The necessary electrical schematics must be provided with the connection contract or the electrical contractor's request for connection/metering. The electrical schematics required for a low-voltage connection are the substation schematic, the main distribution board diagram, the metering board diagrams and the rising mains diagram. For a medium-voltage connection, equipment schematics as well as the circuit diagram drawings and wiring tables related to electricity metering and remote control equipment are needed.

In addition to the electrical schematics mentioned above, other electrical schematics, commissioning inspection protocols, and route information documentation (double cylinder locking, route key/pipe lock and route information inside the building) may be required.

The customer’s electrical contractor must order connection/metering using the general information form. The order must be placed two weeks before it is needed, but not more than eight weeks in advance. The delivery time of the connection/metering is about 7–14 working days after the order date.

The ordering date of the connection/metering request shall be the date on which all necessary documents (general information form, connection contract and electrical schematics) have been submitted to the network operator and the electricity user to be located at the electricity use site has entered into an electricity contract with the electricity vendor of his or her choice for the place of electricity use.

A more detailed timing (e.g. time) for the execution of the work can be agreed with the connection/metering installer if the nature of the work so requires. For example, changing the main distribution/metering board in a detached house that is currently in use.

If, at the request of the customer, the connection/metering time has been chosen outside the normal working hours, the customer will be billed for the resulting additional costs.

A fee is charged for unnecessary visits due to the customer or their electrical contractor in accordance with the service price list.

## 1.15 Commissioning inspection of electrical installations

The electrical contractor must perform a commissioning inspection of electrical installations before connecting to the electricity network. The commissioning inspection protocol does not need to be submitted, but the builder of the electrical installation fills in a general information form which declares that he or she has carried out or will carry out a commissioning inspection of the to-be-connected electrical installations before connection/metering.

## 1.16 Verification and periodic inspections of electrical installations

In addition to the commissioning inspection, electrical installations must be subject to a verification check for some categories of electrical installations. The builder of the electrical installations must take care of the verification inspection.

For electrical installations that must be periodically inspected, the owner or user is responsible for ensuring these periodic inspections. Inspections shall be carried out by authorised inspectors and authorised bodies. More specific requirements for inspections are provided in the Electrical Safety Act and in the instructions of the authority (TUKES).

1.17 Network operator’s network components located on the property, e.g. substation

When located on a plot or property, the network operator's substation, street cabinet or other network component must have unrestricted access regardless of time. Items or snow must not be stored on the route or in its immediate vicinity in such a way that access to the site is slowed down or prevented. If the area is fenced, the gate must be equipped with a locking system that allows the network operator to access the gate with their own key. Alternatively, the gate key shall be placed in a key container that can be opened with the network operator’s key. An electric locking system must be unlockable even in the event of a power failure. The builder of the locking system is responsible for the construction and costs of the locking system.

2. Connection fee

2.1 General

The connection fee is determined by the nominal current of the main fuse at low voltage, and at medium and high voltage, by the transformer power or the agreed connection capacity. The determination of the connection fee's capacity booking fee (€/kVA) has been calculated according to the network operator's electricity network indicators with the calculation parameters of the calculation table prepared by the Energy Authority for network companies.

Zone-priced connection fees are VAT exempt and refundable. Per-case and area-priced connection fees are subject to VAT and are non-refundable.

2.2 Low-voltage connection

2.2.2 Determination of connection fee

The connection fee is determined according to the main fuse size of the connection. New connections will be implemented as three-phase according to the connection contract. Upon upgrading an old single-phase connection, half of the connection fee of a 3x25A connection according to zone will be compensated. The maximum low-voltage connection is 3x630A by main fuse size.

Zone (1–3) pricing does not apply when joining a network where there is area pricing or a late connection clause for case-by-case pricing and a refund clause applies.

Zone 1

For Zone 1, the connection fees are valid in the zoning areas and where the connection point is located no more than 50 metres outside the zoning area. This excludes public areas, street areas, and traffic areas, as recorded in the land register in accordance with the Land-use and Building Act.

Zone 2

For Zone 2, the connection fees are valid outside the zoning area insofar as they are located no more than 600 metres from the existing substation, as measured from the connection point, and the main fuse size of the connection is no more than 3 x 250 A.

Zone 3

For Zone 3, the connection fees are valid in the verified zoning areas when the connection is located in a public area, street area, or traffic area, recorded in the land register in accordance with the Land-use and Building Act, and the connection point is other than the existing substation, distribution cabinet, or an overhead cable/pole of the network operator, and the main fuse size of the connection is no more than 3 x 250 A.

Area pricing

For the purposes of electrification in a uniform area which is not subject to zone pricing, a uniform connection fee shall be set under the following conditions:

1. An existing property or building site to be electrified, other planned construction site, or potential connection site is considered a potential connection.
2. The area for which a uniform area price is calculated shall be determined on a case-by-case basis when designing the electricity network.
3. At least 60% of potential connection customers (rounded to the nearest higher integer) have entered a connection contract.
4. If there are not enough willing customers in the area, it is possible to connect at an increased area price, in which case the electrification costs of the area to be paid equally between the customers will be the share of the construction threshold, i.e. 60% of the total electrification costs of the area.
5. The project will be launched if even one of the region's customers alone pays the increased area price of 60% of the total electrification costs.
6. The electricity network will be built in accordance with the overall plan drawn up in the area.
7. For potential 3x35 A or larger connections, the connection fee is determined by the connection’s fuse size in relation to a 3x25 A connection’s connection fee.

The defined area price will remain constant for twenty years for late connections or until a 100% implementation rate has been reached or the region begins to use zone pricing. Zone pricing will start to be applied, for example, if a zoning plan is made for the area. Where an increased area price is applied, a late connection clause shall be inserted in the connection contract. The late connection clause is in effect as long as area pricing is in effect.

The late connection clause and compensation clause in increased area price

The late connection clause and compensation clause are added to all connection contracts referred to in sections four and five of the area pricing.

The late connection clause on increased area price is in effect as long as the region's area pricing is in effect. However, no repayment shall be made if the construction threshold set by the network operator for the area is met.

Whenever a new customer joins the network in an area-priced region, the connection fee for the increased area price will be refunded to previous customers so that their connection fee in relation to the connection capacity (main fuse size) is equal to the connection fee for the newest customer, in accordance with the principles of area pricing.

In the end, each customer will have paid the area price for their connection according to the construction threshold, regardless of when the customer joined the network.

Case-by-case pricing

In cases other than those mentioned above, the pricing of the connections shall be based on the direct extension costs of the distribution network for the construction of the connection in question and on the capacity booking fee.

Case-by-case pricing is used instead of area pricing if it results in a solution that is more favourable to the customer. In such cases, there are usually no other willing customers to join the network in the area.

Pricing follows the format: a + b * P where

- a is the cost, including immediate electricity network connection extension costs.
- b is the capacity booking fee.
- P is the connection capacity kVA of the customer (main fuse size).

The late connection clause and compensation clause in case-by-case pricing.

The late connection clause and the compensation clause shall be included in all case-by-case pricing-based connection contracts and shall remain in force for a period of ten years from the date of signing the connection contract.

If new customers join a customer-funded network section before the expiry of the late connection clause, their previous connection fees will be refunded when new customers join the funded network section in accordance with the compensation clause.

### 2.2.3 Connection changes

An additional connection fee is charged for increasing the main fuse size of the connection, with the fee being the difference between the connection fees corresponding to the new and old main fuse sizes. This applies to connections where Zone Pricing 1, 2 or 3 apply. In Zones 2 and 3 for main fuse sizes above 3x250A as well as in cases where the connection is located outside the zone pricing area, the price of the increase of the connection is determined according to case-by-case pricing.

When the connection is enlarged in case-by-case pricing, P is the difference between the connection capacities corresponding to the new and old main fuse sizes. In case-by-case pricing, when increasing a single-phase connection, the single-phase connection capacity is counted as half of a 3x25A connection's connection capacity.

When the main fuse of the connection is reduced, the connection fee is not refunded, but the right to join under the connection contract remains in force and the connection can later be increased up to the main fuse size given by the connection contract.

When the main fuses of the connection are located in a part of the network owned by the network operator, e.g. in a distribution cabinet or pole, a fee is charged for the reduction of the main fuses of the connection according to the service price list.

While the main fuses of the connection are located in the connection's main distribution board, the main fuse size reduction is done by the customer's electrical contractor, who must inform the network operator of the change using the general information form.

When the old single-phase connection of a semi-detached house is changed to a three-phase connection, a separate distribution board for semi-detached houses must be installed. The distribution board will include the main fuses of the connection, the rise fuses of the locations of use and the meters. If agreed upon separately with the network operator, a fuse box may be used on a case-by-case basis.

2.2.4 Special cases

In other special cases concerning changes to the connection, for example, when an old, unmetered mini-connection becomes a normal connection, the current connection contract is terminated in accordance with the dissolution terms and a new connection contract is made for the replacement connection.

2.2.5 If a low-voltage connection requires the construction of a distribution substation

If the new connection or upgrade ordered by the customer requires the construction of the network operator's distribution substation on the customer's property, the customer shall, free of charge, provide the network operator with a space to accommodate the distribution substation in accordance with the network operator's instructions.

2.3 Medium-voltage connection

2.3.1 Connection fee

Case-by-case pricing is used for medium-voltage connections.

Case-by-case pricing follows the form: a + b * P where

- a is the cost, including immediate electricity network connection extension costs.
- b is the capacity booking fee.
- P is the connection capacity kVA of the customer.

The late connection clause in case-by-case pricing.

If the extended part of the medium-voltage network to be built for the customer outside the zoning area may also serve other customers in the future, a late connection clause will be added to the connection contract. The late connection clause is valid for 10 years and will expire earlier if a zoning plan is made of the area of the medium-voltage network.

2.3.2 Connection changes

An additional connection fee will be charged for upgrading a connection, with the fee being difference in connection fees corresponding to the new and old connection capacity. In pricing, P is the difference between the connection capacities corresponding to the new and old connection capacities.

If the customer changes or renews the medium-voltage switchgear, transformer, etc., the costs of the change will be charged to the customer.

When the connection is reduced, the connection fee is not refunded, but the right to join under the connection contract remains in force.

2.4 High-voltage connection

2.4.1 Connection fee

Case-by-case pricing is used for high-voltage connections.

Case-by-case pricing follows the form: a + b * P where

- a is the cost, including immediate electricity network connection extension costs.
- b is the capacity booking fee.
- P is the connection capacity kVA of the customer.

The late connection clause in case-by-case pricing.

If the extended part of the high-voltage network to be built for the customer may also serve other customers in the future, a late connection clause will be added to the connection contract. The late connection clause is valid for 10 years.

2.4.2 Connection changes

An additional connection fee will be charged for upgrading a connection, with the fee being difference in connection fees corresponding to the new and old connection capacity. In pricing, P is the difference between the connection capacities corresponding to the new and old connection capacities.

If the customer changes or renews the high-voltage switchgear, switchyard, transformer, etc., the costs of the change will be charged to the customer.

When the connection is reduced, the connection fee is not refunded, but the right to join under the connection contract remains in force.

2.5 Termination of the connection contract and refund of the connection fee

The termination of the connection contract regarding a permanent connection must be done in writing and the termination of an electricity connection takes place by making a connection contract on the termination of the electricity connection. Upon termination of the connection contract, the connection is disconnected from the electricity network at the agreed time and the electricity meters at the locations of use are dismantled.

Only the VAT-exempt connection fee paid on or after 1 June 1995 can be refunded. The euro amount of the repayable connection fee is the original connection fee, excluding interest, index, and other such increases. The connection fee for a connection contract signed before 1 June 1995 is not reimbursed at all, since, in addition to the costs of the termination of the connection, the costs of constructing and metering the connection cable correspond, on average, to the connection fee.

In the case of connection contracts signed on or after 1 June 1995, the costs of termination and removal of the customer from the network, including VAT, shall be deducted from the amount of the connection fee to be refunded.

Concerning the former Yli-Iin Sähkö area, the connection contracts signed before 1 January 2013 with the former Yli-Iin Sähkö Oy are applicable.

2.6 Conversion of low voltage to medium voltage and vice versa

The customer and the network operator may agree to convert a low-voltage connection into a medium-voltage connection or vice versa. In this case, the customer must terminate the current connection contract, the connection will be terminated in accordance with the dissolution terms and a new connection contract corresponding to the new connection voltage, connection capacity and connection point will be made.

2.7 Connection maintenance

In accordance with the general terms and conditions, the connection contract may be maintained if the customer so wishes, even if there is no contract for network service of the electricity use or generation site of the connection.

If the customer so wishes, the connection can be disconnected from the electricity network, in which case the electricity supply to the connection is cut off and the electricity meters are removed. Fees will be charged for disconnection and reconnection of the connection from the electricity network in accordance with the service price list.

3. Temporary connection

If the need for electricity use is known to be short-term, such as construction sites, entertainment events, etc., there is no connection fee, but a fee in accordance with the service price list when

connecting to an existing part of the network, such as a distribution cabinet or a substation, taking into account the electricity network's possibility of connection to the needed power capacity.

The maximum duration of a temporary connection contract is two years from the date of signature by the network operator. The connection contract shall expire after this period without further action.

## 4. Connection fees for the connection of production

These criteria for determining the connection fees for electricity generation shall apply to the connection of the customer's production equipment. The connection fee for electricity generation is set according to the same principles as consumption, except for the capacity booking fee. The connection fee for a production connection is subject to VAT and is non-refundable.

A connection where the nominal production capacity is greater than the maximum possible power consumption of that connection shall be treated a production connection. The connection fee is determined separately for the production of more than 2 MVA and for the production of up to 2 MVA.

The connection fee for a production connection of up to 2 MVA or the additional connection fee for expanding the production connection up to 2 MVA is determined by the immediate network expansion costs from connecting to the network and the capacity booking fee for consumption in terms of power.

The connection fee for a production connection of more than 2 MVA or the additional connection fee for expanding a production connection of more than 2 MVA is determined on the basis of a case-by-case pricing approach from the immediate network expansion costs and the production capacity booking fee.

When a production connection of up to 2 MVA is increased to more than 2 MVA, the additional connection fee is determined in accordance with the connection fee for a production connection of more than 2 MVA.

The connection point of a production connection of more than 2 MVA is in the network operator's substation cell, where the connection cable is built by the customer. At the substation, the network operator's electricity metering and any protection equipment will be located at the upstream end of the connection cable.

When connecting production equipment with a capacity of 0.05 – 2 MVA, the possibility of connecting to the current (consumption) connection or the connection point of a new production connection is examined on a case-by-case basis. Micro-production equipment (up to 50 kVA) is usually always connected to the customer's current consumption connection.

### 4.2 Production capacity booking fee for production connections of more than 2 MVA.

The capacity booking fee for production is determined taking into account the average distribution capacity of the production facility, which it reserves from the electricity network and, accordingly, frees up the distribution capacity for the use of others, taking into account the structure of the electricity network of the network operator.

4.3 Connection of production equipment and notification procedure

If the output of the production equipment is less than or equal to 50 kVA, the electrical contractor who constructs the production equipment may notify the network operator about it by means of a general information form before the production equipment is commissioned.

The connection of production equipment with a capacity of more than 50 kVA must be communicated to the network operator in good time and the notification procedure is agreed on a case-by-case basis, taking into account the requirements set by the national network operator (Fingrid).

Oulun Energia Sähköverkko Oy

Anna Pasma Acting Managing Director

Appendices Appendix 1. Connection fees as of 1 December 2020