Transmission grid tariffs for 2021

Model description and rates

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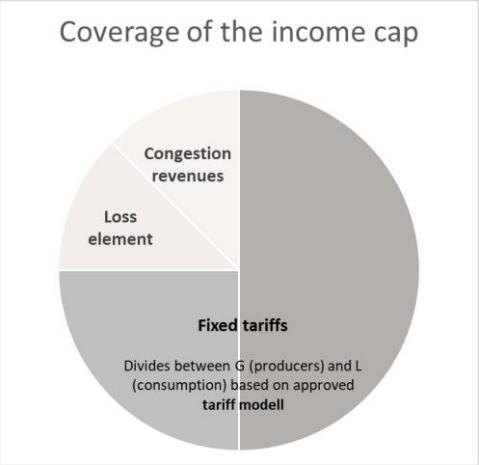
Tariffs 2021

Tariff rates for 2021 apply from 1 January 2021 until 31 December 2021.

Basic principles for determining tariff rates

Tariffs shall be structured in accordance with regulations set out in the Norwegian Water Resources and Energy Directorate (NVE) FOR 1999-03-11 no. 302 Regulations governing financial and technical reporting, income caps for network operations and transmission tariffs.

Network activities are regulated as a natural monopoly, with the NVE setting an annual cap on how much revenue each network operator can collect. The annual income cap is called "permitted income". The permitted income for the transmission network for 2021 is estimated at approx. NOK 10 billion.



Permitted income is collected through customer tariffs, broken down as an energy component (cost of loss) and a fixed component, as well as congestion revenues (bottleneck income). Congestion revenues are revenues that occur when power is transferred between priceareas with different prices (bottlenecks) in the power marked. (TSOs) that charge different prices. The revenues are divided 50/50 between the Transmission System Operators (TSO) “on each side of the bottleneck”.

The structure of the tariff is intended contribute to the efficient development and utilisation of the network. Based on current regulations, a model has been developed to calculate the size of the payment from each customer and customer group. The structure and changes in the tariff model are discussed with consumer organisations and adopted by Statnett’s Board of Directors.

Annual tariffs must be published no later than 30 September of the year before. At that time, no allowable income, bottleneck income or income from the energy component is known. These figures are not available until the end of the year. Annual tariffs are thus set on the basis of forecasts.
Forecast deviations mean that the sum of tariff revenues and bottleneck revenues will deviate from the transmission network's permitted income for each year. This discrepancy is called income surplus/shortfall. Surpluses and shortfalls are repaid to customers by adjusting tariffs in subsequent years. To avoid major fluctuations in tariff rates from one year to the next, surpluses and shortfalls are distributed over several years.

As a result of Covid 19, the consumption tariff for 2021 is set lower than the calculated permitted income for 2021 indicates. The transmission network will therefore have an extraordinary income shortfall by the end of 2021 which must be incorporated into the tariff in later years.

Description of the tariff model

The tariff model calculates how permitted income in the transmission network is to be distributed between the customers connected to it. The model is designed in accordance with the Norwegian regulations for tariffing.

The regulations set a number of requirements for the structure of tariffs, including:

- Tariffs should signal effective utilisation and development of the network
- Any differentiation of the tariff between customer groups shall take place on the basis of objective and verifiable network conditions
- Total tariff revenues shall not exceed the permitted income of the TSO.

The transmission network tariff consists of a variable component (cost of loss) and a fixed component.

The energy component (cost of loss)

The energy component is a consumption-dependent component, which reflects the load each customer puts on the network system when drawing power from it or feeding power into it. The energy component is calculated on the basis of the actual energy fed into the network or the amount of energy drawn from it hour by hour.

System load is reflected through unique margin loss rates calculated for each connection point in the central network. Separate marginal loss rates are calculated for daytime, night time and weekends. Daytime is defined as workdays between 6 a.m. and10 p.m.
The calculations are based on projected load flows in the Nordic network The marginal loss rate is symmetric around zero for feeding and drawing power at each individual connection point. The marginal loss rates are administratively restricted to ±15 per cent.

The marginal loss rates are published on Statnett's website and distributed to our customers on Fridays before the start of a new week. The rates are available on http://www.statnett.no.
When calculating the energy component, the price for the relevant price area is used. Area prices are available on Nord Pool Spot's website: http://www.nordpoolspot.com.

Fixed components

The tariff's fixed components are intended to ensure that the TSO can generate its total permitted income. Cost allocation and differentiation between customer groups must take place in accordance with network-based, objective and non-discriminatory criteria.

When determining the fixed tariff component, a distinction is made between feed in (generation/production) and drawing (load/consumption).

The fixed component for producers (feed in) is based on how much *energy (MWh)* they have fed into the transmission- and regional networks. The feed-in tariff rate for 2021 is set at NOK 13.5/MWh, of which NOK 1.5/MWh comprises related system operating costs. The rate has been increased by NOK 1.4/MWh from 2020.

The fixed component for consumers is based on the customer's power consumption (MW) during the system's peak hour. The tariff for consumption is set at NOK 300/kW for 2021. The rate has been reduced by NOK 93 / kW from 2020. The reduction is extraordinary and justified by covid 19.

Production tariffs

Basis for calculation

The production tariff is calculated on the basis of average annual production for the last 10 years. (GWh). Tariffs for 2021 are based on data for the period 2010–2019.

The basis for calculating the production tariff is referred to as “ex-power station”, i.e. produced volume less the power station’s consumption and step-up transformation. For pumped-storage hydropower plants, gross production will be included in the basis for calculation.

The data set has been established on the basis of reported annual values from the individual producer or customer in the transmission network. The data is automatically retrieved from submitted values.
Customers have the ability to control and approve the values at NettWeb.

The customer’s calculated production tariff and cost per year are displayed on the login page at NettWeb.

New production units

New production units that will feed transmission or regional networks will lack historical data. For such units, the *expected* annual production stated in their operating licence is used as the basis for calculating the production tariff for the start-up year and the following two calendar years. Subsequently, actual production data will be used to calculate the production tariff.

New production units will be charged from the month in which they start up. Information about new units must be submitted to Statnett as early as possible before start-up.
Wind farms are usually constructed in stages. The basis for calculating the production tariff in the first few years must therefore be agreed separately for each wind farm.

Surcharge for coverage of system operating costs

The feed-in tariff includes a surcharge for system operating costs from 2014 onwards.
The surcharge for 2021 will be NOK 1.5/MWh. The rate is NOK 1.0/MWh higher than in 2020. The tariff rate was unnaturally low in 2020 as a result of the reversal of overcharged in the years 2017-2019.

Network-based phase-in tariff for production

Statnett currently has no areas where there are network-related grounds for a reduced feed-in tariff. For production that has a phase-in tariff from previous years, the rate in 2020 is still NOK 1.0/MWh.

Consistent feed-in tariff

The transmission network's feed tariff shall be used at all grid levels. This means that the producer must pay the same feed-in tariff regardless of whether the power is fed directly into the transmission network or whether it is fed via high voltage (HV) and low voltage (LV) distribution networks.
Revenue from feed-in tariff to the high voltage distribution network shall be transferred to overlying networks (ie the transmission network), while revenues feed-in tariff to the low voltage distribution network shall be used to cover costs in the low voltage distribution network.

Consumption tariffs

Basis for calculation

The consumption tariff is calculated on the basis of the customer's power consumption (MW) during the system's peak hour. A description of "peak hour" is available at NettWeb.

Power consumption is calculated for each connection point in the transmission network. The calculation is made by taking measured net power exchange during the peak load hour corrected for production during the peak load hour (Pp). All exchange data (net MW in/out) is automatically retrieved from meters connected to the system, while all production facilities must report production during peak load (Pp) behind each connection point.

The charge for plus customers is based on net power consumption during peak load. Thus, no peak load data is reported for plus customers' production facilities.

The consumption tariff is calculated on the basis of average consumption (MW) during the peak load hour over the last 5 years. The years 2016–20 form the basis of the tariff for 2021.

Establishment of new consumption or significant change in existing consumption

In the event of the establishment of a new large single consumption or in the event of significant and permanent changes in consumption within the five-year period, Statnett shall be notified well in advance. Statnett will, in consultation with the customer, find a representative settlement basis for consumption. The settlement basis will be corrected from the month new / changed business is established. Corrected settlement basis will be set as a peak load for the last 5 years.

If the measured power output in peak load for a large individual consumer in a single year deviates significantly from the "normal" within the 5-year period, Statnett may, in consultation with the customer, correct the value for the individual year.

Consumption co-localised with power production (k-factor adjustment)

The consumption tariff is reduced for connection points where power is also *fed in* into the network. The adjustment is made using a correction factor (k-factor). The size of the correction factor depends on the ratio between feed-in and consumption at the connection point. In 2014, a limit was set for how low the k-factor at one connection point may be. The limit was set to 0.5. In 2019 the limit is raised to 0,6. The maximum reduction resulting from co-localisation is thus 40 per cent.

A k-factor is calculated for each connection point in the transmission network. The calculated k-factor for a connection point is used to adjust the amount charged for all consumption at that connection point, regardless of whether it is defined as high consumption, other consumption or flexible consumption.

The k-factor is calculated using the following formula:

$$\mathrm{k} = \frac{F_s^{tot}}{P_t + F_s^{tot}}, \qquad if\ the\ formula\ gives\ k < 0{,}6, k\ is\ set\ to\ 0{,}6$$

F_s^{tot}: Total of all customers' average consumption at the connection point in MWh/h during the peak load hour over the previous 5 years.

P_t: Total available winter output at the point.

Available winter output (P_t)

- Hydropower plants: The highest output that can be produced during a continuous 6-hour period under highest winter consumption. Normal water flows for run-of-river power stations and normal reservoir levels for reservoir-based power stations are assumed, both in reference to the third week of the year.
- Wind farms: 25 per cent of installed capacity
- Thermal power stations: 100 per cent of installed capacity

Tariff groups – consumption

When tariffing consumption, a distinction is made between large consumption, flexible consumption and other consumption.
Large consumption is individual companies with power consumption over 15 MW and annual energy consumption over 100 GWh. Fleksible consumption is consumption that can be disconnected from the network by agreement

From 2021, the reduction rates for everyone with agreements on reduced tariffs for flexible (disconnectable) have been halved. All agreements on reduced tariffs for flexible consumption will be terminated with effect from 2022.

The structure and calculation of tariffs for the individual groups are described in more detail below.

Tariffs for other consumption

Other consumption includes all consumption from the network that is not included in the categories high consumption or flexible consumption.

The tariff basis for other consumption is the average power consumption during the peak load hour per connection point over the last 5 years, multiplied by the k-factor of that point.

Annual cost is calculated using the following formula:

Average consumption during peak load (MW) * k-factor
for the connection point * tariff rate for consumption

The customer's basis for calculation and cost per year are displayed on the login page at NettWeb.

Tariffs for large consumption

Large single consumption pays a lower tariff rate to the transmission network than other consumption. Differentiation of tariffs between network customers is accepted according to the legal regulations. The differentiation must be based on "objective, non-discriminatory criteria".

As of 2021 the design of the model and the level of differentiation for large consumers is introduces. All individual companies that fall within the scheme will with the new model achieve equal tariff reduction (%) in relation to other consumption. The tariff reduction is set at 50%.

Definition of large consumption

Individual customers with power consumption larger than 15 MW/h and with an annual consumption of more than 100 GWh qualify for a reduced tariff.
In this context, *individual customer* means a company that has the same registration number and is located at the same site. The facility may draw power from several connection points in the central network, but it must be at one site or one “production line”. Industrial parks, etc., are therefore not included in the definition of large consumption.

Registration of facilities that qualify for a reduced tariff

In order to qualify for the large consumption tariff, the customer must ensure that all relevant facilities are always registered in Statnett’s billing system. In this context, customer means large individual consumers directly connected to the transmission network or regional networks with large single consumers connected to their networks.

Information about new facilities, along with the required documentation, must be sent to Statnett by e-mail.

Establishment of new consumption or significant change in existing consumption

New plants with expected consumption above 15 MW / 100 GWh will be tariffed from the month they start up. New large consumption will be settled in the start-up year on the basis of an agreed forecast for energy consumption and the customer's maximum power consumption. Then the top load data from the last available year is used. For each year thereafter, one and one year is added to the average until there is an average based on 5 years of peak load data.

Change in existing consumption (above 15 MW)

In the event of a significant and permanent change in consumption for existing facilities, Statnett must be notified well in advance. Statnett will, in consultation with the customer, clarify a new and representative settlement basis. The settlement basis will be corrected from the month the change in the business is established.

Change in existing consumption (below 15 MW)

In the event of changes that indicate that expected consumption will be below 15 MW / 100 GWh over a longer period, the right to a reduced tariff will lapse with immediate effect.
The customer must notify Statnett of significant changes in energy / power consumption. Statnett will, in consultation with the customer, clarify and adjust the settlement basis with effect from the relevant time.

Basis for calculating fixed tariff for large consumption connected to transmission network

The basis for the fixed tariff for large single consumers is calculated in the same way as for other consumption, ie based on the customer's power output in the system's peak load. Settlement basis 2021 is calculated on the basis of peak load data for the years 2016-2020.

Basis for calculating fixed tariff for large consumption connected to distribution network

Network companies that have large individual consumers connected to their network must report on special codes to Statnett or ensure that Statnett has access to the hourly values via Elhub.

Customers that have electric boilers or recycling plants

The basis for calculating the fixed tariff components for 2021 is the customer's power consumption during the system's peak load for the years 2016–2020.

- For customers with **electric boilers**, measured power consumption (MW) will include consumption for electric boilers.
- For customers with **recycling plants**, measured power consumption (MW) will be deducted from own production.

The owner of a recycling plant is not considered a producer and consequently does not pay a feed-in tariff.

Calculation of annual tariff costs for large consumers

Annual tariff costs are calculated using the customer's tariff basis (MW) multiplied by the tariff rate for large consumerts.

The tariff basis for large consumption is the average power consumption during the peak load hour per connection point over the last 5 years, multiplied by the k-factor of that point.
The tariff rate for large consumers will be 50 per cent of the fixed tariff for consumption for the actual year.

Annual cost is calculated using the following formula:

Average consumption during peak load (MW) *k-factor for the connection point * (tariff rate for consumption*0,5)

The basis for calculating the customer's consumption, individual reduction and total cost per year are displayed on the login page at NettWeb.

Tariffs for flexible consumption

By agreement, Statnett offers special tariffs for flexible consumption. These are divided into four categories with notification periods of:

- 15 minutes without limitation on the duration of the disconnection
- 2 hours without limitation on the duration of the disconnection
- 12 hours without limitation on the duration of the disconnection
- 15 minutes with the duration of the disconnection limited upwards to a maximum of 2 hours .

For all categories, it is necessary to allow re-connection as soon as the basis for disconnection no longer exists. There must be a specific reason if consumption cannot be reconnected at night and weekends. This must be specified in the disconnection notice issued by the National Control Centre.

Statnett has decided to phase reduced tariffs for flexible consumption.

As a transitional arrangement, in 2021 we will halve the tariff reductions within the various categories in relation to the levels in 2020. All agreements will be terminated with effect from 1.1.2022

Obtaining measurement values for flexible consumption

The customer must report (to NetWeb) on annuall basis, the sum of flexible consumption in the peak load hour for each category and point in the transmission network

Basis and calculating of tariffs for flexible consumption

The tariff basis for flexible consumption is the average available power during the peak load hour per connection point over the last 5 years, multiplied by the k-factor of that point.

A separate tariff basis will be established for each category of flexible consumption.

Annual cost is calculated for each category based on the following formula:

Average available power during peak load (MW) * k-factor of the connection point * tariff rate

The customer’s basis for calculation and cost per year are displayed on the login page at NettWeb.

Tariffs for reactive power

Both the consumption and feed-in of reactive power can be a problem for the operation of the central network. Tariffs for reactive power should contribute to the installation of compensation systems where this is needed. Reactive power is subject to tariffs in cases where it is a drawback for the system.

The methodology for calculating and invoicing reactive power has changed from 2021 onwards.

Basis for the calculation of reactive power

For each quarter, the 90th percentile of the reactive exchange is calculated. The settlement basis is set at the highest quarterly 90th percentile. By using this methodology, it is ensured that the customer is made responsible for the level of reactive withdrawal for which they are responsible. In the case of long-term connection images where Statnett, as system administrator, imposes a higher reactive withdrawal on customers than 10 MVAr (15 MVAr for continuous networks), the customer is asked to contact Statnett for a revised settlement basis.

Other guidelines for reactive power:

- It shall be measured at all exchange points towards the transmission network.
- Where customers operate a coherent network, we will look at the customer's net exchange.
- Pure production points are not tariffed.
- A deduction of 10 MVAr is made on the invoice basis which will be included in the general tariffs. For continuous networks, 15 MVAr has been deducted.

Invoicing of reactive power

Based on hourly values, the 90th percentile is calculated from the quarter's measured reactive exchange. This will form the basis for quarterly invoicing. Invoicing in the previous quarter will be taken into account if the later quarter shows higher withdrawals. This means that only excess withdrawals from previous invoice bases will be tariffed. See example below:

Quarter	90-persentil	Basis	Basis for quarterly invoice	Comments
Q1	20	**20**	20-10 = **10**	10 MVAr is included in general tariffs
Q2	50	50-20 = **30**	**30**	Excess withdrawals ir. Q1
Q3	45	**0**	**0**	Withdrawals lower than Q2
Q4	30	**0**	**0**	Withdrawals lower than Q2

The rate is set at NOK 40 / kVAr The rate is unchanged from 2020.

Miscellaneous

Billing

- The energy component is invoiced weekly
- Fixed tariff components are invoiced monthly
- Flexible consumption is invoiced monthly
- Reactive power is invoiced quarterly

Deadline for reporting and controlling billing data

The fixed tariff components are based on a number of data (annual production, power consumption during peak load, annual power consumption etc.). The data is retrieved automatically where possible and through separate reporting from customers.

Billing data for each customer will at all times appear on the login page at NettWeb.

Transmission network customers must ensure that the billing data is correct. The deadline for checking billing data for tariff 2021 is **1 November 2020**

Tariff rates for 2021

The energy component

The energy component is the product of the applicable margin loss rate, area price and net consumption/feed-in at the relevant exchange point hour by hour.

Energy component (NOK) = area price (NOK/MWh) * margin loss rate (%) * energy consumption/feed-in (MWh)

Margin loss rates are calculated weekly. These are distributed and posted on Statnett's website by Friday at 12 noon of the week before the new rates are applicable.

Fixed components

The 2021 tariff rates for fixed components are as follows:

	Tariffs 2021
Feed-in tariff (production)	NOK 12,0/MWh
Surcharge for system services (production)	NOK 1,5/MWh
Production with agreement on phase-in tariff	NOK 1,0/MWh
Consumption	NOK 300/kW
Flexible consumption with 15 min. notice	NOK 158/kW
Flexible consumption with 2 hours notice	NOK 188/kW
Flexible consumption with 12 hours notice	NOK 225/kW
Flexible consumption with 15 min. notice, max 2 hours duration	NOK 263/kW
Reactive power > 10 MVAr (15 MVAr for continuous networks)	NOK 40/kVAr
Tariff reduction for large consumption	50%

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