



## **The main grid tariff 2011**

# Tariff brochure 2011

The main grid tariff applies from 1 January 2011 until 31 December 2011<sup>1</sup>.

The basis for the tariffs in the main grid is the “Reg. No. 302 of 11 March 1999: Regulations governing financial and technical reporting, income caps for network operations and transmission tariffs”, prepared by NVE (Norwegian Water Resources and Energy Directorate, [www.nve.no/en/](http://www.nve.no/en/)).

The tariffs in 2011 are in accordance with prevailing agreements discussed with the user organisations for the main grid customers, Energi Norge, Federation of Norwegian Industries (Norsk Industri) and Distriktenes energiforening, Defo.

## Main causes behind the 2011 tariff level

Statnett’s price strategy is adopted for a period of three years at the time. The current price strategy applies for the period 2010-2012. On the basis of the main principles, Statnett establishes an annual main grid tariff. When establishing the annual tariff the main principle is that the sum of income shall equal the sum of costs. This is done on the basis of budgeted costs and a budgeted income cap. This sum is then adjusted by additional or reduced income accrued in the preceding year. Before calculation of the fixed components of the tariff, a deduction is made for budgeted variable income (energy components, bottle neck incomes from within the Nordic countries, and congestion income from NorNed (an interconnector between Norway and the Netherlands)).

In Norway Statnett (and all the DSOs) are regulated with an income cap regime. The income cap plus congestion income are the total income that Statnett invoice its customers. Congestion income depends on flow and price differences between the markets, and this is difficult to estimate. If there is excess income one year, we have invoiced too much and must return this excess income to our customers (and opposite if we have invoiced too little). Up till 2010 this excess income were returned the following year. Starting in 2011 the excess income will be returned to the customers over a period of 3-4 years instead of one year (and opposite if we have invoiced too little one year, we will collect this amount over a period of 3-4 years). The reason is that in the last years our tariffs have changed too much from one year to the next. With this new regime of delayed return/collection, our tariffs will be more stable.

The income cap on TSO activities (losses excluded) is estimated to be 3,7 BNOK in 2011. The income cap is set yearly by the regulator, NVE.

The tariff model may be regarded as a tool for distributing costs per group of customers in the main grid. If the tariff is reduced for one group of customers, this entails a corresponding increase for another group. Within the prevailing tariff model the producers (G) pay a fixed amount per kWh for the volume fed into the main grid. In 2011 this amount is 0,008 NOK/kWh. The consumers tariff (L) is reduced from 341 NOK/kWh in 2010 to 230 NOK/kWh in 2011.

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<sup>1</sup> This edition of the main grid tariff brochure replaces former tariff brochures in its entirety.

## Tariff structure

The main grid tariff has the following main functions:

- Contribute to an efficient power market.
- Contribute to an efficient use and development of the main grid.
- Cost absorption within the income cap.

In order to achieve this, the tariff is composed of a variable component (the energy component) and a fixed component.

## The energy component

The energy component is a component dependent on power consumption/production, geared to reflect the system load which the individual customer causes. The energy component shall provide short-term signals to the customers on efficient use of the grid. In addition, the marginal loss rates provide long-term signals on localisation that may reduce the need for grid investments.

The marginal loss rate is symmetrical around zero. Calculations are being made for every connection point of the grid. The marginal loss rate is administratively limited to  $\pm 15\%$ . Separate marginal loss rates are calculated for day and night/weekend. Day is defined as the working day between 06:00 AM and 10:00 PM. The calculations are based on a forecasted load-flow in the Nordic grid.

The marginal loss rates are published on Statnett's web page in addition to being distributed to our customers on the Friday prior to the new week. The rates can be found on <http://www.statnett.no>. The system price is found on Nord Pool Spot's web page: <http://www.nordpoolspot.com>.

$\text{Energy component (NOK)} = \text{system price (NOK/MWh)} \cdot \text{marginal loss rate (\%)} \cdot \text{energy consumption/ production (MWh)}$
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## Fixed components

The fixed components of the main grid tariff shall cover the remaining costs within the income cap and cannot be directly linked to the costs which each individual customer causes. The objective is to design the fixed component in such a way as to make the economic loss as small as possible, within the regulatory framework. The customers of the main grid are divided into the following groups: production, power-intensive industry consumption (KII) and other consumption.

## Production, (G) tariffs

Settlement basis: The settlement basis for production in 2011 is the average annual production for the period 2000-2009. This set of data is produced on the basis of auditor-confirmed information from the individual producer.

For new production units (power plants) without a sufficient historic database, expected annual production in accordance with the license is applied as the settlement basis for the start-up year, as well as for the following year. From the third year historical data are used as basis for the settlement.

The production meter is located on the outgoing feeder to the grid. If the meter is located by the generator terminal a deduction of *up to* 1.5% is allowed for step-up transforming and station consumption. If a better target figure for step-up transforming and station consumption is available, this will form the basis for the settlement.

#### *Grid-based phasing-in tariff for production*

Statnett offers a reduced tariff in areas where new production is favourable with regard to the grid. The area sectioning for 2011 will be published on [www.statnett.no](http://www.statnett.no). The tariff will be NOK 0.001/kWh and will apply for 15 years for agreements entered into in 2011

## Consumption, (L) tariffs

The settlement basis for the fixed component for consumption is based on the customer's average total consumption during peak load hour at each individual connection point for the five previous years,  $F_s$ . In this way the variation in the customer's costs, as a result of fluctuations in the peak load hour from one year to another, are reduced.

This average consumption is meant to be representative of the customer's consumption during peak load. In case of substantial changes during the five-year period, which renders this average not very representative, Statnett will, in consultation with the customer, establish a new settlement basis.

Correspondingly *interruptible load*,  $F_u$  is calculated at each individual connection point by calculating the customer's average interruptible load during the peak load for the five previous years, all 3 categories treated simultaneously. More on interruptible load is given below.

The settlement basis for the customer's ordinary consumption is calculated by subtracting average interruptible load for the five previous years from average total consumption. This is then corrected by a factor (the k-factor) where  $0 < k \leq 1$ , according to the distribution between production and consumption in the connection point.

The k-factor is calculated for each connection point in the main grid. This implies that the same k-factor will be employed when calculating the settlement basis for all customers in a connection point. The k-factor is calculated using the following formula:

$$k = \frac{F_s^{tot}}{P_t + F_s^{tot} + c \cdot KII}$$

$F_s^{tot}$ : The sum of  $F_s$  in the point. All consuming customers

$P_t$ : Sum of available winter output in the point

KII: Sum of consumption within power-intensive industry, based on 5 years average peak load

c: Correction factor for KII which regulates level for KII; for 2011 equals 1.5

*Available winter output* ( $P_t$ ) for hydropower plants is defined as the highest output that can be produced in a continuous 6-hour period during highest winter load. In this respect the calculation is based on the normal rate of flow of river power plants and normal reservoir level for reservoir plants, both with reference to week three.

For 2011 the following definitions apply for available winter output for wind and thermal power plants:

- Wind power plants: 50% of installed capacity
- Thermal power plants: 100 % of installed capacity

Previous experience regarding this is limited. Statnett will evaluate whether the chosen definitions of available output are reasonable, when the amount of wind power and thermal power production increases.

The settlement basis for the individual customer is then calculated, using the following formula:

$$A = k(F_s - F_u)$$

A:	The customer's settlement basis for ordinary consumption at a connection point
k:	Correction factor for settlement at a point
$F_u$ :	The customer's average interruptible load in MWh/h during peak load for the previous 5 years

## Power-intensive industry tariffs

Power-intensive industry (KII) is defined as consumption above 15 MW at peak load and utilization time of more than 7 000 hours. In the definition of KII, utilization appears by dividing total energy consumption (MWh) throughout the year for the customer in the connection point, with consumption during peak load hour in MWh/h. Customers that fall below 7 000 hours in a single year, or are close to the defined limits, may still be defined as KII, following an application process.

The settlement basis for KII is calculated using the k-factor model mentioned above. The resulting tariffs are, ceteris paribus lower than for other consumers. Starting in 2010 the oil and gas industry is no longer defined as KII (sites that are subject to the Norwegian offshore tax regime). (This decision is contested by the Oil & Gas Industry and will be settled by OED (ministry of petroleum and energy) in Q1 2011).

## Interruptible load

Statnett will offer the tariff for interruptible load to all existing customers until 1<sup>st</sup> of July 2012<sup>2</sup>. Due to the risk of outage, this product is primarily suitable for consumers with an alternative source of energy. There are three categories of interruptible load:

- 15 minutes warning time without limitation on the duration of the interruption
- 2 hours warning time without limitation on the duration of the interruption
- 15 minutes warning time with a 2 hour limited duration of the interruption.

For all categories reconnection shall be allowed as soon as the causes for the interruption are no longer present.

Interruptible load available during peak load is settled separately. Average interruptible load during peak load over the past five years, for each category are the basis for calculating the settlement basis. Average interruptible load is corrected with the k-factor. The settlement basis per category and customer thus appears as follows:

$$A_{un} = k \cdot F_{un}$$

A<sub>un</sub>: The customer's settlement basis for interruptible load for category n  
F<sub>un</sub>: The customer's average interruptible load for category n

Customers with interruptible load must enter a separate agreement in the form of an amendment to the connection contract. Reference is made to the provisions in the tariff regulation that interruptible load shall be metered at hourly intervals and reported. Reporting to Statnett takes place weekly, hour by hour via MSCONS. It is Statnett's National Control Centre that undertakes the current assessment whether the interruption is to be put into effect. Special guidelines have been prepared.

## Reactive load

At some connection points in the main grid, reactive load is a problem, and causes extra costs to the system. These costs are handled with a separate tariff, to give the right incentives. The tariff is applied only in connection points where reactive load creates a problem on the system. Starting in 2011 reactive load will be metered at every connection point, both in max and min load periods.

Reactive load is settled as follows:

After the max and the min load periods, five control hours will be selected. The settlement basis is the max reactive load during these hours.

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<sup>2</sup> This is due to changes in regulation. Starting at the same date Statnett will offer a new tariff for flexible load, that is almost equal to the existing tariff for interruptible load. More info at [www.statnett.no](http://www.statnett.no).

## Other conditions

### Settlement

- The energy component is invoiced weekly.
- The fixed components are invoiced monthly.
- Interruptible load is invoiced monthly.
- Reactive load is invoiced annually.

## Tariff rates for 2011

### Energy component

The energy component is the product of the system price and the current marginal loss rate and net consumption / production at the relevant connection point, hour by hour:

$$\text{Energy component (NOK)} = \text{system price (NOK/MWh)} \cdot \text{marginal loss rate (\%)} \cdot \text{energy consumption/ production (MWh)}$$

Marginal loss rates are calculated on a weekly basis. These are distributed to the customers and published on Statnett's home page by Friday at 12:00 PM the week prior to the application of the new rates.

### Fixed components

The rates for fixed components for 2011 are as follows:

		Tariff 2010
Production, (G)		0,008 NOK/kWh
New production, phasing in tariff		0,001 NOK/kWh
Consumption, (L)		230 NOK/kW
Correction factor for KII - c		1,5
Interruptible load with 15 min. warning time	5% of L	11 NOK/kW
Interruptible load with 2 hours warning time	25% of L	58 NOK/kW
Interruptible load with 15 min. warning, 2 hours limited duration	75% of L	173 NOK/kW
Reactive load – rounded off to the nearest 20 MVar		25 NOK/kVAr