eurostat

RAPID REPORTS
Energy and industry

1991 □ 22

ISSN 1016-0191

PRICES SYSTEMS
ELECTRICITY

Council Directive No 90/377/EEC of 29 June 1990 lays down a Community procedure to improve the transparency of gas and electricity prices charged to industrial end-users.

In accordance with Article 1.2, this note sets out a summary of the price systems in force as at 1 July 1991. Only those replies received before 22 November 1991 have been taken into consideration.

==========

BELGIUM

There are a large number of tariffs, but we shall restrict ourselves here to summarizing those which are applied to the standard consumers of our study.

Tariffs A, B and C are two-part and are applied to these consumers as follows:
Tariff A: I_a, I_b, I_c, I_d, I_e I_f; Tariff B: I_g; Tariff C: I_h, I_i.

These tariffs are based on tariff parameters N_E, N_C, n and M which are described below.

Tariff A is applied to those customers whose average (arithmetic) consumption over the twelve months of the calendar year is less than 1 000 kW. The most advantageous tariff, A or B, is applied to the customer whose average (arithmetic) demand over the twelve months of the calendar year is between 1 000 and 4 000 kW.

Tariff C is applied to customers with a 15kV secondary connection to a major installation, provided that their demand is not subject to any restrictions and that they do not possess their own means of producing electricity.

Manuscript completed on = 16.12.1991

For further information please contact:
Eurostat, L-2920 Luxembourg, tel. 4301-4919 Fax: 4301 4771

Price (excl. VAT) in Luxembourg: Subscription ECU 160 Catalogue number: CA-NL-91-022-EN-C

Tariff system: the tariff comprises:

a) A power component equal to: 339.4 D Ne F/kW per month (tariff A); 805.8 D Ne F/kW per month (tariff B); 7393.3 n/m M Ne F/kW per month (tariff C).

b) A commodity charge for the energy consumed in peak hours, in F/kWh_P, at: (1.868 D N_E + 0.642 N_C) tariff A; (0.440 N_E + 0.622 N_C) tariff B; (0.440 N_E + 0.622 N_C) tarrif C.

The peak hours cover a period of 15 hours per day, the limits being fixed by the distributor, from Monday to Friday with the exception of national statutory public holidays.

As regards Tariff A, the average price per kWh consumed in peak hours, resulting from the application of components a and b above, is limited by a ceiling price equal to: (4,250 N_E + 0,642 N_C) F/kWh_P

c) A commodity charge for the energy consumed in off-peak hours, in F/kWh_C, equal to: (0.919 D N_E + 0.542 N_C) tariff A; (0.462 N_E + 0.542 N_C) tariff B; (0.519 N_E + 0.536 N_C) tariff C.

The off-peak hours cover the period outside the peak hours.

d) A proportional component for the reactive energy, both inductive and capacitative, which is consumed beyond 50%, 50% and 33% (for tariffs A, B and C respectively) of the total quantity of active energy consumed (kWh). This component, expressed in F/kvarh, is equal to 20% of the average price per kWh determined by applying: either components a (power component), b and power component, c above; or, if appropriate, the ceiling price and component c.

Parameters

N_C: in the "fuel" components of the tariffs, this parameter reflects the development in the cost of fuels consumed to produce electrical energy for the Belgian grid.

N_E: in the "non-fuel" components of the tariffs, this parameter reflects the development of the costs of depreciation and operation.

kW : represents the power taken into consideration for invoicing.

D : as a function of this power: D = 0,74 + 70 /(340+kW)

M : this coefficient, which takes account of the power considered for invoicing purposes, is defined by: M = 0.675 + 8/(40+MW) where MW = kW / 1000, rounded up to the next higher unit.

n : the number of days in the month under consideration.

m : the total of the twelve values of n the calendar year under consideration.

==========

FRANCE

The diversity of tariffs and options is enormous.

	Tariff	Seasonal periods	Hourly periods
Ia Ib Ic	yellow average uses (< 2400 h)	winter : November to March summer : April to October	busy hours : 16 h/day, 7 days per week off-peak hours : 8 h/day, may be non-contiguous, 7 days/week
Id	green A5 average uses	winter : November to March summer : April to October	peak : 4h/day from Monday to Saturday inclusive from December to February off-peak hours : 8h/day from Monday to Saturday and all day Sunday busy hours : all the other hours
Ie If Ig	green A8 long periods of utilization	winter : December, January, February half-season : March November summer : April, May, June, September July, August	peak hours : 4h/day from Monday to Friday excluding public holidays, during the winter period off-peak hours : 6h/day from Monday to Friday, public holiday; July and August busy hours : all other hours.
Ih	green B long periods of utilization		
Ii	green B very long periods of utilization		

Yellow tariff

Subscribed demand is in terms of apparent power, i.e. in kVA, for an average year of 8 760h. This therefore takes account of the power factor of the installation and there is thus no real invoicing of reactive energy. Nevertheless, it is in the customer's interest to keep his power factor within reasonable limits to avoid too high a demand of apparent power on which the calculation of the standing charge is based.

Other tariffs

The level of subscriber demand for determining these tariffs is based on active power (in KW) and not apparent power (in kVA). There are different tariff periods and the tariffs represent the cost of supplying electricity and the conditions of using it. In this way, the same amount of power has a different cost price depending on whether it is consumed in winter or in summer; there is thus a different effect on the enterprise's capital expenditure.

The demand category of a subscriber is defined by the formula $T = P_{HCH} + 0.3 (P_{HPE} - P_{HCH})$ where P_{HCH} is subscribed demand in winter off-peak hours and P_{HPE} that of busy summer hours. The category is thus independent of the tariff version selected.

In general, subscribed demand is the same in all tariff periods. However, the customer may be remunerated for dispensing with power in the most heavily loaded periods, notably in the peak period and the busy winter hours.

The power invoiced is the reduced power. It is calculated from subscribed demand in the peak period (P1) and any supplements of power to which a coefficient is applied.

EDF supplies reactive energy free of charge at the same time as active energy:

- Up to 40% of the active energy consumed ($tg\varphi = 0.4$) during peak hours in December, January, February and the busy hours of November, December, January, February and March.

- Without limitation during off-peak hours in November, December, January, February and March and during the entire months of April, May, June, July, August, September and October.

During the periods subject to a limitation, the reactive energy consumed beyond $tg\varphi = 0.4$ is invoiced monthly at the tariff listed in the price scales in force.

==========

IRELAND

Small Premises

The standard tariff consists of a standing charge and two kWh rates, with reduced price for consumption in excess of 8 000 units per two-months. There is a optional day/night tariff with both a higher standing charge and day kWh rate, but with a substantial reduction for usage at night. Both tariffs contain a surcharge for low power factor.

Medium and Large Premises

These customers are normally on maximum demand tariffs which comprise a two-monthly maximum demand charge, day and night kWh rates and a surcharge for low power factor. In the case of supplies at 10kV and above there is also a service capacity charge, which is intended to recover the cost of distribution assets close to the customer.

Maximum demand charges are not subscribed in advance, although in the medium Voltage (10kV/20kV) and high Voltage (38kV or 110kV) tariffs, there is a service capacity charge which is charged on the greatest of : the actual two-monthly maximum demand; the highest chargeable maximum demand in any of the five immediately preceding two-monthly bills; or 70 % of the total kVa capacity in the customer's supply agreement.

Demand charges in the low voltage tariff are the same throughout the year, but in the medium and high voltage tariffs they are higher in the winter (November-February) than in the rest of the year. Demand charges are normally restricted to demands set up in the period 08.00-21.00 GMT, Monday-Friday inclusive. However, an option is available to customers who notify ESB of their intention to reduce their demand during winter peak hours. In this option customers only pay for demands during peak hours, which are notified to customers during the autumn of each year, and which are at present 17.00-19.00, Monday-Friday.

Maximum demand and service capacity charges are reduced by 25 % for demands between 500 kW and 2 500 kW, and by 50 % for demands in excess of 2 500 kW.

Demand is measured in kW with an "integration" period of 15 minutes. The chargeable demand is the actual two-monthly maximum demand or 70% of the highest chargeable maximum demand in any of the five immediately preceding two-monthly bills. For customers who notify ESB of their intention to reduced demand during winter peak hours the 70% clause does not apply in the November/December or January/February billing periods.

All the maximum demand tariffs have separate day and night kWh rates. The night is 9 hours (23.00-08.00 GMT). In addition the 38kV and 110kV have higher kWh rates in the winter than in the summer. Day kWh are in blocks. A reduced day rate applies after the first 350 kWh/kW of chargeable maximum demand in each two-monthly billing period.

Demand charges are increased by 2.5% for each 0.01 or part thereof by which the average lagging power factor in each billing period is less than 0.95. No rebate is given if the power factor exceeds 0.95.

A rebate is available for interruptible loads in excess of 250 kW.

==========

ITALY

Since 1961 electricity charges in Italy have been standard throughout the country, both in terms of price and of structure. Differences are based on the main features of the particular supply, i.e. delivery voltage, contract demand, duration of use and period of offtake, and charges vary according to the main categories of use, such as street lighting, domestic use, use in non-residential premises, agricultural use, etc.

The tariff system in Italy offers two-part, flat-rate and multiple-hour tariffs with a fixed charge in relation to contract demand expressed in lire per kW and a fluctuating price based on the power used and expressed in lire per kWh.

In 1974 this latter element of the tariff structure was divided into two parts: one relating to costs recovered by means of the fluctuating charge (price of power) and the other to the costs incurred in the thermal production and for related energy (heating surcharge).

This breakdown proved necessary in order to allow undertakings with conventional thermal production systems to recover the costs incurred in the purchase of fuel.

Recovery of costs is effected through the Cassa Conguaglio per il Settore Elettrico (Adjustment Fund for the Electricity Sector), which has the task of redistributing the proceeds of the heating surcharge derived from all electricity companies among the production and distribution undertakings in accordance with the costs incurred by each of them in purchasing imported fuel.

This arrangement makes it possible to calculate the contribution to be given to each of them in line with the actual fuel costs incurred.

A short description of the tariffs applicable to each type of user is given below.

Low- and medium-voltage tariffs for use in non-residential premises

Flat-rate two-part tariffs are used for this type of user. The tariffs depend on the band of contract power, the type of voltage and the duration of the supply.

Special tariffs apply to contract demand above 100 kW used solely at night (between 10 p.m. and 6 a.m. from Monday to Friday, from 1 p.m. to midnight on Saturday and all day Sunday until 6 a.m. on the following Monday).

Since 1 July 1991, on a trial basis, those occupying non-residential premises and taking at least 25 kW of low-voltage power for electric ovens used in preparing foodstuffs or for agricultural use may request, as an alternative to the usual tariffs, a two-rate time-of-day tariff.

This tariff is applied at the following times:

- busy hours: between 7 a.m. and 9.30 p.m. from Monday to Friday;
- off-peak hours: all times other than the busy hours indicated above, plus all public holidays falling on weekdays (1 and 6 January, Easter Monday, 25 April, 1 May, 15 August, 1 November, 8, 25 and 26 December).

The user may fix during off-peak hours a contract demand above that for busy hours. The latter may not be less than 25 kW.

Special tariffs are available to farmers for professional uses: irrigation, farm buildings, seasonal work and supplies to agencies for land reclamation or improvement.

These tariffs take into consideration not only the specific offtake times of agricultural users (seasonal or night work) but also the social requirement of providing, where possible, preferential treatment for agriculture.

There is also a special tariff for short-time (exceptional) supplies, which involves only a charge per kW/day.

Tariffs for non-residential premises using more than 400 kW of medium- and high-voltage power:

Multiple-hour tariffs are applicable to this type of consumption; prices depend on the time and season of offtake.

1. Seasonal bands:

- winter, i.e. from January to April and from October to December (seven months);
- summer, i.e. from May to September (five months).

2. Time bands:

Winter peak hours (600 hours):
Winter busy hours (1 800 hours):
Summer busy hours (1 760 hours):
Winter off-peak hours (2 688 hours):
Summer off-peak hours (1 912 hours):

There are four tariff scales for each level of voltage (up to 50 kV, 50-100 kV and 100-200 kV). These are related to the amount of use: low, average, high and very high.

Special agreements for interruptible supplies

As an alternative to the normal arrangements, a special tariff scale is available in the case of interruptible supplies to industrial consumers using high and medium voltage in excess of 3 000 kW of contract demand. On the basis of these special arrangements, ENEL may ask consumers to reduce offtakes in return for a reduction in the demand charge for the reducible power.

The conditions are as follows:

- The minimum interruptible power may not be less than 1 000 kW.

- The interruption of supply, when requested, may not exceed 30 days (not necessarily consecutive) in any calendar year. The interruption of 100% of the interruptible power may be requested for 15 days, and 50% for the other 15 days. The maximum daily interruption is 8 hours, which may be divided into two periods of 4 hours, with at least 3 hours between the periods.

In return for this concession to the supplier, the annual charge to the user for all interruptible power is reduced by 25%. The reduction is calculated on the basis of the charge fixed for the peak band between 3 and 10 MW. In the event of modulated supply with interruptibility at busy hours, this charge is applied to conventional power equal to the total interruptible power at peak hours plus 40% of the greater interruptible power at other times.

For each day of actual interrupted supply, there is also a reduction of 1/15 of the monthly charge applied to conventional power which is already subject to a net reduction of 25%.

==========

LUXEMBOURG

With the exception of the steel sector, which has its own network managed by SOTEL, the distribution of electrical energy is undertaken by the CEGEDEL company, either directly or via resellers (municipalities or individuals, currently numbering twelve).

The current tariffs, resulting from the agreement between the Government and CEGEDEL of 2 August 1991, are the same throughout the country, apart from a few minor differences affecting the cities of Luxembourg and Esch-sur-Alzette.

In the main, the tariff conditions depend on the voltage at which electricity is supplied. For the medium-voltage sector, the tariffs encourage dispensing with power during peak hours.

The period of integration is 30 minutes.

All the elements of the tariffs vary in proportion to a special index for low, medium and high voltage. These economic indices reflect, to differing degrees, the variations in the main components of the cost price of electricity for the distributing company.

Flat-rate rental charges are made for metering independently of the tariff for the three types of voltage.

Supply exceeding some tens of kW up to levels not justifying, in technical terms, a voltage above 20 kV: bi-hourly two-part tariffs

- Fixed rental as a function of demand in three distinct periods

  peak: hours of heavy loading during winter
  daytime: from 6.00 to 22.00 outside the peak hours
  night-time: from 22.00 to 6.00 every day

- Price P1 per kWh during the peak and daytime period
- Price Pn per kWh during the night-time

with Pn < P1.

Major supplies necessitating a voltage above 20 kV

These supplies to major consumers using 65 or 220 kV are not covered by published contracts.

==========

PORTUGAL

- Four main groups corresponding to a supply in:

Low voltage	LV < 1kV
Medium voltage	1 < MV ≤ 45kV
High voltage	45 < HV ≤ 110kV
Very high voltage	VHV > 110kV

There are three sub-groups for low voltage, corresponding to subscribed demand up to 19.8 kVA, between 19.8 and 39.6 kVA and above 39.6 kVA.

There are several options for each of these tariffs.

For all the tariff options (except public lighting), the tariffs are two-part, one component referring to power and the other to the amount of energy consumed.

In low voltage up to 39.6 kVA, the power for invoicing purposes (Pf) is equal to the subscribed power (Ps). For the other tariffs, the former is obtained from the latter and also from the maximum monthly quarter-hourly power (Pm) in accordance with the following formula: Pf = Ps - 0.8 (Ps - Pm)

The energy price may vary depending on the time of day (peak hours, busy hours and off-peak hours) and on the season (winter or summer).

These hourly tariffs are published but can vary depending on the region and/or voltage.

The consumer has a double option as regards the maximum quarter-hourly power per month.

Reactive energy is invoiced, except for low voltage (up to 39.6 kVA of subscribed demand) wherever the consumption of reactive energy outside off-peak hours is more than 40% of the active energy consumed during the same period.

A surcharge of 8% is laid down in Decreto-Lei No 202/86 of 22 July as amended by Decreto-Lei No 412/90 of 31 December.

Since the tariffs are calculated as a function of average hydrological conditions, unusually long deviations from this average can cause substantial deficits or surpluses, which must be corrected.

==========

UNITED KINGDOM

At the present in England, Wales and Scotland, industrial and commercial customers, whatever the nature of their business, can be placed in one of three categories, which determine the type of supply and hence the pricing mechanism. Customers in Northern Ireland are all charged according to published tariffs.

a) Demands over 10 MW : customers are obliged to enter into contracts; this can be either their local supply company or another licensed supplier.

b) Demands over 1 MW but not over 10 MW : customers can choose either to be supplied according to a pubished tariff by their local supply company, or to be supplied under a contract by any licensed supplier, including their local supply company.

c) Demands below 1 MW : customers are supplied by their local supply company, normally according to a published tariff, but under contract if that is more reasonable.

Where contracts are entered into, the price is determined for each individual customer and usually related to maximum demand, consumption and the seasonal and daily pattern of use. Depending on the supplier, options are sometimes available under which the contract price is related to the "pool" price. In such cases there will be additions to the "pool" price to cover firstly transmission charges over the NGC (National Grid Company) network and secondly "use of system" charges, which are paid to the local supply company for use of their distribution network. Customers of some supply companies can also negotiate Load Management terms whereby the price is lowered in return for an agreement to reduce load peak periods.

Tariffs vary according to the supply companies. The tariffs all include a "use of system" element, which recovers the costs of providing and maintaining the distribution system. They also allow for the costs of purchasing electricity, providing support services such as accounting systems and making a reasonable rate of return. Where appropriate tariffs reflect seasonal, monthly and time-of-day variations in costs. Some costs are fixed and some vary witih consumption. Fixed costs are generally contained in standing charges and availability charges. Under some tariffs the unit cost is adjusted monthly for changes in the cost of fuel for generation.

Generally the following types of tariff are offered to industrial and non-domestic consumers :

a) Quarterly tariffs : these are generally made up of a quartely standing charge, a unit rate for the first block of units consumed each quarter and a different unit rate for subsequent units consumed. There can also be a third, lower, unit rate for units consumed at night (or off-peak), in which case a higher standing charge is applicable. These tariffs apply to most small non-domestic premises taking less than about 50 kVA or 60 MWh a year. They are billed quarterly.

b) Maximum demand tariffs : this is the main type of tariff for larger industrial and commercial customers, who are billed each month. The tariff structure usually comprises four elements : a standing charge, a capacity charge, a demand charge and a unit charge, which can be applied to all consumption or can be at different day and night rates. There are usually different tariffs for low voltage supplies (below 1 000 volts, normally 240 volts or 415 volts) and for high voltage supplies (above 1 000 volts, normally 11 000 volts). The majority of maximum demand tariffs feature demand charges which vary from month to month, are higher in the winter and often zero in the summmer. It is also common for the unit rates to be indexed to the cost of generation fuels.

c) Seasonal time-of-day tariffs : such tariffs are used by consumers who can minimise usage at peak times. These differ from the maximum demand tariffs in that seasonal differentiation is introduced by varying the unit rates rather than through maximum demand charges. The highest unit rates are applicable to the winter week-day consumption and the lowest to units consumed at night.