

// YourPower

1. Calculating the energy consumption

The consumption recorded on the on-board meters is used as the basis for invoicing. The measured consumption is determined on the basis of the energy delivered to the pantograph reduced by the energy which was returned during regenerative braking.

Appendix E.3 contains additional information regarding the Energy Measurement System. This document is based on the European standards as determined in the LOC & PAS TSI and EN 50463: 2017. TSI LOC & PAS makes the addition of such an Energy Measurement System mandatory for every renewed and upgraded traction unit. If the Railway Undertaking itself is not a Vehicle Keeper, it shall ensure that the traction units it uses comply with European regulations. The railway undertaking should be aware that the Infrastructure Manager has no contractual or other relationship with the Vehicle Keeper. If a problem arises with an Energy Measurement System, its readout or data transmission, the Railway Undertaking remains the single point of contact for the Infrastructure Manager. The Railway Undertaking can then turn to the Vehicle Keeper.

For energy meters which do not comply with the accuracy defined in EN 50463 (see annex E.3 of the Network Statement), a surcharge of 1% will be added to measured consumption.

Rolling stock equipped with energy meters can pass through various countries. Following validation (see point 2), the data can be assigned and exchanged with the network on which the consumption took place.

These meter values must be linked to the information on the trains, which means that the railway undertakings shall declare the composition of all trains to Infrabel (European Vehicle Numbers). This applies in particular to the used traction units. This information can be modified in Fill In or Train Traction up to 4 days after the departure of the train (D+4 at 16h). The data regarding the trainpath are also validated (see point 2). Measured consumption for parked trains or shunting will also be assigned.

The consumption for trainpath without metering data or supposed incorrect metering data will be assessed on the basis of average specific consumption per category (passengers, goods, or high speed).

On average, a cargo train consumes far fewer kWh per tonne-km travelled, as its average speed is lower and a cargo train stops less frequently along its route. A high-speed train consumes more kWh on average per tonne-km travelled.

Infrabel uses the following formulae:

Passengers: $(35-33.5 + 0.80 * D1 + 0.63 * D2)$ Wh/tonne-km

High speed: $(43-42 + 0.80 * D1 + 0.63 * D2)$ Wh/tonne-km

Cargo: 4 kWh/km + 12 Wh/tonne-km

The number of degree-days D1 and D2 by day is based on the average temperature measured by the weather stations of Infrabel. For the calculation of D1, each degree below 16.5°C is counted as one degree-day. This means that a day with an average temperature of 6.5°C results in D1 equal to 10. For the calculation of D2, each degree above 20°C is counted as one degree-day.

An energetic reconciliation will take place at the end of each month. The total of metered and estimated consumption is compared with the measurement of the consumption injected in the overhead contact line. We consider 5% of transport losses (purchased by Infrabel). The difference will be distributed (via adjustment of the estimated consumptions). This method allocates an advantage of at least 2% to the metered consumptions and supports thus the installation of on-board meters.

Infrabel has the right to change these estimation formulae during the validity period of this annex if Infrabel discovers large differences between estimated and actual consumption in order to eliminate these differences.

2. Validation rules

The metering data from the energy meters on the rolling stock also contain GPS positions. Positions missing for up to 60 minutes are detected and automatically filled in by interpolation. They are treated as 'estimated' values. If the positions are missing for a longer time, the data are not exchanged and therefore no longer used in the allocation process.

The metering data are not used for allocation and the energy consumption is estimated if:

- more than two consecutive metering periods are missing;
- the consumption is greater than that permitted for the particular type of traction unit;
- the consumption when stationary is greater than that permitted for the particular type of traction unit;
- the GPS positions of the meter change without measuring consumption.

The data relating to the trainpath are also validated. In the event of the following errors, no energy consumption is assigned to the path if:

- the distance between two detection points is greater than 200 km;
- the speed is higher than permitted;
- an unknown traction unit is used.

No energy consumption is assigned to a part of a path with a mass of the train less than 50 tonnes or greater than 5000 tonnes.

For some errors, the metering data cannot be linked to a path, and the energy consumption is always estimated. This is the case if unpermitted combinations of traction units are indicated.

The validated positions of the path are compared with the metered positions from the energy meter. If these positions don't match for a part of the trainpath, the energy consumption of the train for that part of the path is estimated.

If a train has both a traction unit with an energy meter and a traction unit without an energy meter, the metered consumption is extrapolated.

The energy consumption of a metered or partially metered train is always compared with the estimated consumption. The metered consumption should lie between 25% and 250% of the estimated consumption. Otherwise the charge for the path is calculated based on its estimated consumption.

3. Billing periods

Infrabel considers two charging periods for the service *Your Power*:

Normal hours	Working days (excluding public holidays) from 07.00 to 22.00
Off-peak	Public holidays, Saturdays, Sundays Working days from 22.00 to 07.00

4. Rates

4.1 Transport and distribution of the traction energy (minimal services)

The direct cost for the use of overhead contact line was part of the infrastructure charge. The unit cost (cd elect) is 13.700339 EUR/MWh (value 2020). This unit cost is indexed annually on January 1st. The indexing corresponds to a proportional share of the health index (65%) and of the service index (35%) of consumer prices. The reference index is that of November preceding the indexing. This cost will only be invoiced for the period from 13/12/2020 to 31/12/2020.

The charge for the other costs for the transport and distribution of the traction energy (minimal services) is:

- for measured energy consumptions: ~~21~~20 EUR/MWh
- for estimated energy consumptions: ~~23~~22 EUR/MWh

4.2 Supply of traction energy by Infrabel (additional service)

Infrabel will apply the actual unit price that it pays to its energy supplier. 75% of the price is fixed at the end of 2019. The remaining 25% is determined on the basis of the average day-ahead price of the current month.

For 2020 the following price formulas apply:

- for normal hours: 56,64 EUR/MWh + 0,33 * Monthly Belix Base
- for off-peak hours: 38,72 EUR/MWh + 0,2 * Monthly Belix Base

The "Monthly Belix Base" is the average day-ahead price for Belgium during the month of supply as published on EpexSpot.

4.3 Legal or regulating framework

Infrabel has the right to change these rates during the validity period of this annex in case of any change to the legal or regulating framework.

5. Billing arrangements

At the end of October in Year T-1, Infrabel creates a table showing the monthly payments in advance. These are based on utilisation by the railway undertakings for the period from September in Year T-2 to August in Year T-1 and on the unit prices for Year T. They are incorporated into the utilisation contract.

In the case of a new undertaking, the advances are calculated after consultation between the two parties on the basis of the expected consumption of this railway undertaking. Advances are only requested if the expected annual consumption is greater than 3 GWh.



The bill for these advance payments is drawn up on the first day of the month before the utilisation and must be paid within 30 days.

When the bills are made out, account must be taken of the advances already billed and paid. Bills are issued during the month after the use and are payable within 30 days.

Infrabel may charge interest on arrears in line with the legal interest rates on the amounts billed but unpaid within the deadlines set out above. The requisition and collection costs are payable by the user.

