Access charging framework for use of Network Rail infrastructure: user guide

Traction Electricity Charge (EC4T)

What is the purpose of this charge?

The Traction Electricity Charge (also known as electric current for traction or EC4T) recovers the cost of electricity supplied by Network Rail to power trains.

Who is subject to this charge?

The EC4T charge is paid by all operators who use electricity supplied by Network Rail to power their electrified trains i.e. passenger operators on concession-style agreements, freight operators, open access operators and charter operators.

How is the charge structured?

This charge is calculated based on one of the following two approaches:

1. **metered** consumption (based on readings taken from meters on trains)
2. **modelled** consumption (based on estimated consumption, subject to an end of year volume reconciliation exercise)

How is the level of the charge calculated?

Modelled consumption is calculated by multiplying an estimated consumption rate by total electrified mileage in each rail period. Consumption rates are derived from theoretical and empirical relationships between consumption, vehicle characteristics and typical operating characteristics (consumption rates are published in the Traction Electricity Modelled Consumption Rates List and calculated using the methodology detailed in EC4T consumption rates: Methodology for new and re-routed rolling stock.

The EC4T charge is then obtained by multiplying the modelled consumption by the cost per kilowatt-hours (kWh) paid by Network Rail. For more details, see the Traction Electricity Rules.

At the end of each financial year, all parties using the modelled consumption approach (including both operators and Network Rail) participate in a volume reconciliation exercise (also referred to as the volume 'wash-up'), which compares total modelled consumption against total actual consumption (including transmission losses) across given sub-networks known as electricity supply tariff areas (ESTAs). This results in additional payments by Network Rail to operators if actual consumption is below total modelled consumption, or by operators to Network Rail in the opposite case.

Metered consumption is charged on the basis of consumption recorded by on-train meters. Metered regenerated energy (where energy generated through braking is returned to the grid) is netted off the recorded energy consumption. Then a mark-up12 is charged on the metered consumption net of regenerated energy to recover estimated transmission losses. The EC4T charge is then obtained by multiplying the net energy consumption (uplifted by the transmission losses mark-up) by the cost per kWh paid by Network Rail. The mark-up values or Distribution System Loss Factor (DSLF) for each Electricity Supply Traffic Area (ESTA) are in the Traction Electricity Rules.

At the end of each financial year, Network Rail and all operators using electric traction participate in a cost reconciliation exercise (also referred to as the cost 'wash-up') which compares the tariff per unit of consumption charged by Network Rail with the actual tariff per unit paid by Network Rail to electricity suppliers. This also results in additional payments between Network Rail and operators.