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EIM POSITION PAPER ON FLOW AND MANAGEMENT OF DATA REGARDING ENERGY BILLING

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EIM Position Paper
Flow and Management of Data regarding Energy Billing

Introduction

This position paper focuses on the flow and management of data used for energy billing. It follows the last EIM Position Paper on Energy Meters on Electric Trains (2010) which states that:

"*Data from energy meters on trains will be of benefit to European railways, as it can be used for energy reduction management and to enable accurate billing. European regulation is needed for cross acceptance of the metrological verification and the methods to guaranty the metrological performance. If an electric unit is fitted with an energy measuring system, it should comply with the requirements of a European standard. The location function shall be implemented. The Technical Specifications on Interoperability for Locomotives and Passenger Carriages and Energy subsystems should mandate the use of data coming from standard meters for billing where fitted. The data transmission for energy billing should conform to the UIC-leaflet 930.*

EIM supports the approach that the EC should request to all Member States to adjust energy and railway regulations in such a way that it permits the introduction of the principle of TPA in the railway sector without hampering the liberalisation of the railway sector.

Bearing in mind the recent ERA study on Traction Current Settlement System and the future possibility for a new functional TSI, this position paper discusses the following aspects which are described in detail below:

1. Collection of metered data
2. Settlement of consumptions
3. Settlement of costs
4. Access rights to data

This paper does not include:

- the on-board equipment already defined in CR LOC&PAS TSI;
- the final invoicing procedure.

It should be noted that the functions of the IM on a network or part of a network may be allocated to different bodies or firms (2001/12/EC adapted in recast).

EIM Position

1 Collection of metered data

Data stored on-board in Energy Measuring Systems (EMS) must be transmitted to ground and allocated to the appropriate IM on which network the consumption took place.

The different steps are considered to be functional. It is permitted to integrate, for example, the Data Collection Service with the Data Distribution Service. In this case no external data exchange has to be implemented between these integrated services.

It should remain possible to collect data from non TSI compliant on-board EMS.

The next paragraphs describe the regular flow. It should also be possible to detect missing data and request the transfer or distribution of this data. In addition, error handling procedures should be clearly defined.

1.1 Data transmission from on-board to ground

Settlement systems shall be able to use data coming from on-board EMS.

The type of data for transmission has already been described in the CR LOC & PAS TSI. Therefore, the new TSI should start where CR LOC & PAS TSI ends making both TSIs complimentary and continuous.

Data should be collected and handled in a secure manner, while allowing flexibility on the methods, equipment, and choice of the party executing the collection.

Data must be transmitted on a regular basis and at least once a day.

1.2 Data Collection Service (DCS)

This DCS shall manage the communication with the on-board EMS and transfer the data via a pre-defined format towards a Data Distribution Service.

The new TSI should include the minimum requirements for data security, access rights and storage requirements (duration, back up, availability).

The pre-validation rules should be based on UIC leaflet 930.

This service can be offered by IM, RU or other third parties. The IM that distributes the data afterwards, is responsible for the quality of the data collection and can request auditing in order to verify that the requirements are fulfilled.

1.3 Transfer of metered data

Data should be transferred from Data Collection Service towards Data Distribution Service in accordance with the UIC leaflet 930.

Data must be transferred on a regular daily basis and minimum once a day.

1.4 Data Distribution Service (DDS)

This DDS shall allocate the metered data to the correct IM. This is an essential step in the collection of metered data and the IM shall be responsible.

The process how location data is validated and how to handle borders between IMs is defined in UIC leaflet 930.

Polygons of areas and exact positions of border crossings are also defined in UIC leaflet 930.

Also the exchange of information regarding a new consumption point is described in UIC leaflet 930.

1.5 Distribution of metered data

Data should be distributed in accordance with the UIC leaflet 930. A vital precondition for transfer of metered data between IMs and use of this data for settlement is cross acceptance of metrological verification.

The process for distributing data to the appropriate IM should run on a daily basis and distribute the data from the day before.

2 Settlement of consumptions

The IM should be able to validate the metered data, estimate consumption for unmetered trains and attribute the consumption to the correct RU.

As stated in the introduction, the IM may allocate its functions to other bodies.

In order to be able to fulfil these tasks, the IM should have the essential information regarding the train-runs executed on its network, for example, composition of train, identification of RU, mass and distance.

Supporting document 2 of UIC leaflet 930 contains extra information.

The IM shall describe in the Network Statement or other relevant document:

- the methods used for validation and estimation of the energy consumption;
- the method to compensate the RU for regenerated energy;
- the methods used to determine energy consumption during shunting and preconditioning.

2.1 Validation of metered data

The IM shall validate the metered data. It should check for consistency between the metered data and the essential information regarding the train-runs.

It is permitted to add an uncertainty factor to compensate for possible errors in the energy data coming from non-TSI compliant on-board EMS.

2.2 Estimation of consumptions

The IM should be able to estimate consumption on trains without meters or in situations where meters fail to perform. It should be noted that trains also might be composed of some traction units with a meter and other traction units without a meter.

It is likely that on-board EMS will be installed first on the most energy efficient traction units. The specific consumption used for estimations should regard this effect and be higher than the specific consumption for metered trains.

The IM should publish the procedure to estimate the energy consumptions in the Network Statement.

2.3 Attribution of consumptions

The IM should be able to attribute the consumption to the appropriate and correct RU in order to avoid errors in invoicing. This RU should be the RU operating the train.

It should be noted that this operator-RU, the traction unit owner and the keeper of the traction unit may be three different bodies or firms.

3 Settlement of costs

3.1 Third Party Access

RUs having installed on-board EMS on their trains should be able to purchase energy from a supplier of their choice and energy suppliers have the opportunity to provide energy to these RUs.

IMs should be able to facilitate this, and in such cases the IMs should be able to provide consumption data to the appropriate parties involved in the energy market.

Exchange format are likely to be defined by the energy market in each individual Member State. It could be cost beneficial if energy market standardises these data exchanges at a European level.

The energy market will also define the frequency (e.g. every month) and the moment (e.g. 10 days after the end of the previous month) for these exchanges of data.

Settlement Systems should be able to cope with different purchasing methods of electricity by the RUs, such as:

- directly on the electricity market via a supplier of their choice;
- together with other RUs via a joint purchasing party;
- through the IM.

It should be possible to change supplier according to rules in the energy market in each Member State.

On-board EMS is regarded as an essential condition to enable TPA. It is not certain that the energy market will accept end-customers without energy meters. Therefore, applying TPA for trains without on-board EMS, can only be allowed as an exception made possible via national regulations. This exception could facilitate the use of a joint purchasing party which is applied by some Member States.

3.2 Cost Allocation

IMs shall distinguish between grid costs, commodity costs, and track access costs. The applied tariffs as well as the planned timing for invoices shall be published in the Network Statement and checked by the railway regulator.

External grid costs, losses and administration costs for settlement are considered to be part of the grid costs. Extra cost elements can be added in case of poor power factor or too many harmonics in order to compensate for the specific costs these generate. These grid costs shall be invoiced to all RUs using electrical traction.

The purchase of losses by the IM could be handled by a TPA-principle according to national regulations. It could also be possible to buy this energy together with RUs via a joint purchasing party.

IMs should always offer traction current (commodity costs) at the cost of supplying it, only adding a reasonable profit. These costs shall be invoiced only to these RUs that have chosen to receive this additional service from the IM. When a third party purchases the electricity for a group of RU's, this party may add its administration costs onto the invoices of the traction current to the RU's.

Costs for the use of the electrical supply equipment for traction current (substations, overhead contact line) shall be included in the track access charges as part of the compulsory minimum access package to which the RU is entitled.

4 Access rights to data

4.1 Access to raw data

The IM responsible for collecting the data shall have access to this data.

The RU responsible for maintaining the vehicle (keeper), might also have access to data collected from EMS on-board traction units. In this case, the keeper needs to have contracts regarding data security and access to data towards the RU operating the traction unit.

This data shall be consultable by the appropriate RU for auditing purposes.

4.2 Access to validated data

The IM on which network the consumption took place, shall have access to the validated data.

The RU that has operated the train, shall have access to the validated data as well. This enables the RU to check their invoice. This data shall be available to the RU as soon as possible, at the latest at the same time the invoice is sent or the validated consumption data is sent to other market players.

IMs shall not give data from one RU to another RU without explicit agreement from all parties involved.