

To: Metering Steering Group members;  
and all electric train operators

Friday 2 December 2011

Dear colleague,

### **Proposal for changes to the EC4T Metering Rules – Network Rail consultation**

#### 1. *Purpose of this letter*

This letter consults on the changes to be made to the EC4T<sup>1</sup> Metering Rules and Schedule 7<sup>2</sup>, of the model freight track access agreement<sup>3</sup> (TAA), to accommodate the use of on-train metering<sup>4</sup> (OTM) by:

- Freight services;
- loco-hauled passenger services;
- variable lengths of electric multiple units (EMUs); and
- borrowed trains.

As part of the CP4 requirement, Network Rail is committed to “*enable provisions for charging for on-train metering to be added in the track access contract at the start of each year from 1 April 2010*”.

Although no freight operators; users of loco-hauled passenger services; or variable length EMUs have yet opted-in for on-train metering<sup>5</sup> (OTM), the template drafting needs to

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<sup>1</sup> EC4T – Electric Current for Traction

<sup>2</sup> Schedule 7: TRACK CHARGES, this schedule sets out the provisions for track access charges payable by the train operator to Network Rail.

<sup>3</sup> ORR, October 2011, “*Model freight track access contract*”: <http://www.rail-reg.gov.uk/upload/doc/ta-ftgmodcntrct-051011.doc>

<sup>4</sup> On-train metering is where an operator is billed for its use of traction electricity by way of metered data.

<sup>5</sup> On-train metering is where an operator is billed for its use of traction electricity by way of metered data.



prepared, in line with the CP4 commitment stated above. The computer programming for the billing system also needs to be carried out to provide the capability to bill a freight operator; a user of loco-hauled passenger services; or variable length EMUs should one decide to opt-in for OTM. For this reason, we are consulting on the relevant changes to the EC4T metering rules, as set out in paragraph 11 of the current EC4T Metering Rules "*Changes to these EC4T Metering Rules*". We are also consulting on the relevant changes to Schedule 7 of the model freight TAA. However, both would be formally consulted on again prior to any submission to ORR for amendments to a specific TAA to include provisions for OTM.

The latest point at which we will know whether an operator will opt-in is 1 January in any year, which is 90 days before the official opt-in of 1 April<sup>6</sup>. Our preference is to have the relevant provisions for freight, loco-hauled passenger and variable length EMUs ready as early as possible to (a) provide clarity to those who may wish to opt-in for OTM in April 2012; and to (b) begin the relevant computer programming to update Network Rail's billing system.

The proposed changes' to the EC4T Metering Rules and Schedule 7 of the model freight TAA are attached, in track. Network Rail proposes that these changes come into effect from 1 April 2012 onwards.

Under paragraph 11 of the current EC4T Metering Rules "*...any metered operator, Network Rail or ORR shall be entitled to make a proposal to change the EC4T Metering Rules.*" Under this provision, we are required to invite submission to us of written representations in respect of this proposal. The closing date of this consultation is **Friday 6 January 2012**. Please send your responses to:

Gabriela Weigertova  
Regulatory Economist, Network Rail  
Kings Place, 90 York Way  
London N1 9AG  
[Gabriela.Weigertova@networkrail.co.uk](mailto:Gabriela.Weigertova@networkrail.co.uk)

We plan to publish all responses on our website, if you would not like your response to be published, please clearly state this in your written response.

## 2. *Background*

When a train operator opts-in for OTM, that train operator will make changes to Schedule 7 of its TAA and will also be bound by the EC4T Metering Rules.

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<sup>6</sup> ORR, august 2010, "Opting in for on-train metering – our decision". Accessible here: <http://www.rail-reg.gov.uk/upload/pdf/opting-in-for-otm-250610.pdf>



The key things the EC4T Metering Rules address are:

- The arrangements for 'infilling' where metered data is missing.
- The implications for a train operator where too little metered data is submitted for billing.
- The provisions for carrying out system audits.
- Requirements for Network Rail to publish data.
- The transitional risk sharing mechanism.
- The template look-up tables for infill.
- The power factor correction values (term used in charging formulae in schedule 7).
- The distribution system loss factors (term used in charging formulae in schedule 7).
- The meter tolerance factors (term used in charging formulae in schedule 7).

In early 2011, changes were made to Schedule 7 of Virgin Trains', London Midland's and Southern's TAAs and the EC4T Metering Rules were proposed to allow for OTM. These changes were approved by ORR in June 2011. These changes, however, only accommodate passenger operators moving to OTM.

### 3. *Proposed changes to accommodate freight, loco-hauled passenger and variable length EMU services*

While most of the current agreed drafting can also be used for trains operated by freight, loco-hauled passenger and variable length EMUs, some additional drafting is required to reflect key differences between these and standard pattern passenger services. Table 1.1 in Appendix 1, sets out each of the issues; possible options and the drafting changes we are proposing to address them.

### 4. *Changes to the EC4T Metering Rules*

Freight traffic and loco-hauled units are currently billed on a KGTM basis; this causes an issue for the way in which data is infilled when it is missing for OTM. To accommodate this, we are proposing to populate the infill tables with kWh values per 5 minute intervals, per tonne. This will be explicitly stated in paragraph 3 of the EC4T Metering Rules and in the 'Template freight look-up tables'.



Freight services operate at a 'service group' level not 'service code'; this also causes an issue for infilling data when it is missing, therefore we are proposing that the freight infill values will be averaged at service group level for freight services.

Freight operators often borrow/lend trains; we have proposed inserting a paragraph in the EC4T Metering Rules to reflect the arrangements where trains are borrowed. The table below sets out the type of charges (modelled or metered) that we propose generating under different scenarios.



Table 1.1: Charges generated under different borrowing scenarios

Borrower	Lender				
	Not Participating		Participating		
	Vehicle not metered	Vehicle metered	Vehicle not metered	Vehicle metered - readings sent to OTMS	Vehicle metered - readings not sent to OTMS
Not Participating	Modelled	Modelled	Modelled	Modelled (readings not used for billing*)	Modelled
Participating and:					
Vehicle Class not opted-in	Modelled	Modelled	Modelled	modelled (readings not used for billing*)	Modelled
Vehicle Class opted-in & fleet fully metered (Vehicles to be borrowed are listed individually)	In-filled	In-filled - there will be no meter readings	In-filled	Vehicle listed: metered** Vehicle not listed: modelled (readings not used for billing*)	In-filled - there will be no meter readings
Vehicle Class opted-in & fleet part metered (Vehicles to be borrowed are listed individually)	Modelled	Modelled	Modelled	Vehicle listed: metered** Vehicle not listed: modelled (readings not used for billing*)	Modelled - there will be no meter readings

\* Only readings matched to journeys are not used for billing. Non-journey readings are billed to the Lender who may make arrangements to reclaim the charges from Network Rail.

\*\*Non-journey readings are billed to the Lender who may make arrangements to reclaim the charges from the borrower, for any non-journey consumption that can be attributed to the borrower.

Currently, all EMUs in a class are assumed to be the same length (e.g. Pendolinos are 9 cars) therefore any infill is based on previous consumption rates by the class. Changes to the infill process are required to accommodate different length EMUs within a class (e.g. 11 car Pendolinos and 9 car Pendolinos) which would have different electrical power consumptions. We are proposing to implement option (b) and we have added in a new column in the template passenger look-up tables titled “EMU length”.

The issues and options are set out in more detail in Table 1.1 in Appendix 1.

### 5. Consist scenarios

The formation of freight trains and loco-hauled passenger trains can vary from journey to journey; freight services can be subject to last minute change; and there is no concept of standard journey pattern. Therefore we rely on operators providing us with accurate train ‘consist’ information. However, as some information is not passed through to the Track



Access Billing System (TABS) we propose making assumptions about the 'consist' which will be used for billing and infilling. These assumptions are:

- All locos in a freight 'consist' are assumed to be driving.
- All loco-hauled multiple units (MU) are assumed to be dead-in-tow.
- All non-loco-hauled MUs are assumed to be driving.
- The lead loco in a passenger 'consist' is assumed to be driving. Any other locos are assumed to be dead-in-tow.
- Where there are multiple driving locos in a freight 'consist':
  - modelled EC4T (un-metered locos) will be based on a proportion of the train KGTM; and
  - infill (metered locos) will be based on a proportion of the train tonnage.
- Where there are multiple driving MUs in a freight 'consist':
  - modelled EC4T (un-metered MUs) will be based on a proportion of the MU KGTM; and
  - infill (metered MUs) will be based on a proportion of the MU tonnage.

Tables 2.1; 2.2; 2.3; and 2.4 in Appendix 2 set out how we proposed that different formations will be handled.

#### 6. *Schedule 7 of the model freight TAA: Freight electricity prices*

Freight electricity tariffs for modelled EC4T billing are published for CP4 and are in £/KGTM. However, metered data can only be charged based on a £/kWh basis. Perhaps the most significant amendment we are proposing is that if a freight operator wishes to opt-in for OTM, it must move to actual pricing arrangements similar to those that passenger operators use. This means that the published Freight Traction Electricity Rates will no longer be used by freight operators for their metered trains. This would also mean that once that operator has moved to the new arrangements for their metered trains, they cannot move back to the old rates.

The charging arrangements for modelled usage will remain the same. So if, for example, a freight operator chooses to opt-in just a few trains, i.e. some trains remain on modelled consumption rates, then the modelled trains will be charged based on the published Freight



Traction Electricity Rates, and the metered trains will be charged based on the actual pricing arrangements.

By opting to use the new pricing arrangements, freight operators will also be included in the cost wash-up for those metered trains, where the discrepancy between the prices quoted at the beginning of the year are reconciled with the actual prices Network Rail is charged.

These principles are reflected in the attached drafting for schedule 7 of the freight model TAA.

#### 7. *Next steps*

After this consultation period has ended, we will consider all written representations received, and to the extent that we consider it appropriate, we will modify the proposed EC4T metering rules to take account of them. If we do not consider it appropriate to make changes to the proposal, it will be put to a vote as set out in paragraph 11.9 of the EC4T Metering Rules.

If you would like to discuss any aspect of the proposal or this consultation letter, please do not hesitate to contact me.

Yours sincerely,

Ekta Sareen

**Senior Regulatory Economist**



## Appendix 1

Table 1.1: Freight, loco-hauled passenger, variable length EMUs – issues and options for OTM

	Issue	Options	Changes to drafting
1.	Freight traffic and loco-hauled units are billed on a KGTM basis.	This is not an issue for billing, but is an issue for infill. Therefore infill values will need to be kWh per 5 min interval per tonne.	EC4T metering rules: paragraph 3 and the new template freight look-up tables will state the units that the infill values for freight will be in.
2.	Freight services operate at 'Service group' level not 'Service Code'.	This is not an issue for billing, but is an issue for infill. The infill values will need to be averaged across service group instead not service code.	EC4T metering rules: new template look-up tables for freight have been inserted with relevant headings.
3.	Freight operators often borrow / lend trains.	Only where an operator runs a vehicle which has been specifically opted-in for OTM, will it be charged based on metered data.	EC4T Metering Rules: a paragraph will be added in to clarify this. NB. This can also occur with passenger operators too, and so would apply across all operators.
4.	All EMUs in a class are currently assumed to be the same length; therefore any infill is based on previous consumption rates by the class. We are currently unable to accommodate different length EMUs within a class which would have different consumption.	(a) Arrange some designation (similar to "class") that reflects class and length and then base infill process on that. (b) Identify train length from journey consist information and use both "class" and "length" for infill process.	EC4T Metering Rules: add a column for "EMU length" to the Template Passenger look-up tables.
5.	The formation of freight trains can vary from journey to journey.	Infill relies on good consist data being provided by the freight operator.	
6.	Freight services can be subject to last minute change.	Infill relies on good consist data being provided by the freight operator.	
7.	There is no concept of a standard journey pattern.	Infill relies on good consist data being provided by the freight operator.	
8.	Freight electricity tariffs are published for CP4 <sup>7</sup> and are in £/KGTM. However, metered data can only be charged based on a £/kWh rate.	(a) Freight operators move to similar pricing arrangements used by passenger operators. (b) We calculate a £/kWh rate based on the modelled consumption rates which are in kWh/KGTM.	Schedule 7: where a freight operator opts-in for OTM, paragraph 2.4 will be replaced with the new OTM drafting which includes provisions for relevant tariff bands.

<sup>7</sup> Freight Traction Electricity Rates for CP4 are published on Network Rail's website:

<http://www.networkrail.co.uk/browse%20documents/regulatory%20documents/access%20charges%20reviews/cp4%20charges/g-%20freight%20traction%20electricity%20rates%20for%202009-10.pdf>



## Appendix 2

Table 2.1: Freight Consist Contains One or More Locos

Subsequent Loco→ Lead Loco ↓		Electric Loco, Unmetered	Electric Loco, Metered	Diesel Loco
Electric Loco, Unmetered	Lead Loco	KGTM-based modelled	KGTM-based modelled, using proportional KGTM based on driving vehicles.	KGTM-based modelled
	Subsequent Loco	Doesn't matter as charge is KGTM based.	Metered with Proportional infill based on driving vehicles.	An electric loco would only ever be leading a diesel if the diesel was broken down.
Electric Loco, Metered	Lead Loco	Metered with Proportional infill based on driving vehicles.	Metered with Proportional infill based on driving vehicles.	Metered with Proportional infill based on driving vehicles.
	Subsequent Loco	Proportional modelled.	Metered with Proportional infill based on driving vehicles.	Nothing
Diesel Loco (NB: EC4T will not be triggered in this case as Lead Loco is non-electric)	Lead Loco	Nothing	Nothing	Nothing
	Subsequent Loco	Nothing	Since TABS sees the journey as non-EC4T it is not matched to meter readings. If there are meter readings they will be billed as non-journey. Any in-fill will be from the non-journey table.	Nothing

Subsequent locos are assumed to be driving.



Table 2.2: Freight Consist Contains One or More EMUs

Subsequent EMU→ Lead Loco ↓		EMU, Unmetered	EMU, Metered
<b>Electric Loco, Unmetered</b> By default, all MUs are considered to be dead-in-tow.	<b>Lead Loco</b>	KGTM-based modelled	KGTM-based modelled.
	<b>EMU</b>	Nothing	Any meter readings will be treated as non-journey.
<b>Electric Loco, Metered</b> By default, all MUs are considered to be dead-in-tow.	<b>Lead Loco</b>	Metered with full infill.	Metered with full infill.
	<b>EMU</b>	Nothing	Any meter readings will be treated as non-journey.
<b>Diesel Loco</b> (NB: EC4T will not be triggered in this case as Lead Loco is non-electric)	<b>Lead Loco</b>	Nothing	Nothing
	<b>EMU</b>	Nothing	Since TABS sees the journey as non-EC4T it is not matched to meter readings. If there are meter readings they will be billed as non-journey. Any in-fill will be from the non-journey table.
<b>None</b> By default, all MUs are considered to be driving.	<b>EMU (Driving)</b>	KGTM-based modelled, using MU vehicle KGTM.	Metered with infill based on MU tonnage.



Table 2.3: Passenger Consist Contains One or More Locos

Subsequent Loco → Lead Loco ↓		Electric Loco, Unmetered	Electric Loco, Metered	Diesel Loco
Electric Loco, Unmetered	Lead Loco	CP4 modelled	CP4 modelled	CP4 modelled
	Subsequent Loco	Nothing	Metered with full infill. (Zero readings expected).	Nothing
Electric Loco, Metered	Lead Loco	Metered with full infill.	Metered with full infill.	Metered with full infill.
	Subsequent Loco	Nothing	Metered with full infill. (Zero readings expected).	Nothing
Diesel Loco (NB: EC4T will not be triggered in this case as Lead Loco is non-electric)	Lead Loco	Nothing	Nothing	Nothing
	Subsequent Loco	Nothing	Since TABS sees the journey as non-EC4T it is not matched to meter readings. If there are meter readings they will be billed as non-journey. Any in-fill will be from the non-journey table.	Nothing

Subsequent locos are assumed to be dead-in-tow.



Table 2.4: Passenger Consist Contains One or More EMUs

Subsequent EMU→ Lead Loco ↓		EMU, Unmetered	EMU, Metered
Electric Loco, Unmetered By default, all MUs are considered to be dead-in-tow.	Lead Loco	CP4 modelled	CP4 modelled
	EMU	Nothing	Any meter readings will be treated as non-journey.
Electric Loco, Metered By default, all MUs are considered to be dead-in-tow.	Lead Loco	Metered with full infill.	Metered with full infill.
	EMU	Nothing	Any meter readings will be treated as non-journey.
Diesel Loco (NB: EC4T will not be triggered in this case as Lead Loco is non-electric)	Lead Loco	Nothing	Nothing
	EMU	Nothing	Since TABS sees the journey as non-EC4T it is not matched to meter readings. If there are meter readings they will be billed as non-journey. Any in-fill will be from the non-journey table.
None By default, all MUs are considered to be driving.	EMU (Driving)	Metered with full infill.	Metered with full infill.

