

RAILWAYS ACT 1993

2018 PERIODIC REVIEW

REVIEW NOTICE: TRACTION ELECTRICITY RULES

TO:

- (1) the persons whose names are set out in Part 1 of Annex 1 to this Review Notice (the “**Train Operators**”);
 - (2) the persons whose names are set out in Part 2 of Annex 1 to this Review Notice;
 - (3) Network Rail Infrastructure Limited (“**Network Rail**”); and
 - (4) the Secretary of State for Transport, the Scottish Ministers and the Treasury,
- together the “**Addressees**”.

1 General

- 1.1 This review notice (the “**Review Notice**”) is given in accordance with paragraph 4 of Schedule 4A to the Railways Act 1993 (the “**Act**”).
- 1.2 The Office of Rail and Road (“**ORR**”) has undertaken a review of:
 - (a) the amounts payable by Network Rail and each of the Train Operators to each other under each of the track access agreements listed in Part 1 of Annex 1 to this Review Notice (the “**Track Access Agreements**”); and
 - (b) the times at which, and the manner in which, those amounts are payable,(the “**Review**”).
- 1.3 ORR’s conclusions on the Review, and its reasons for those conclusions, are:

- (a) set out in a series of documents referenced in the document entitled “**2018 periodic review final determination: Overview of approach and decisions – October 2018**” and published by ORR on 31 October 2018, and in particular those documents referenced in Chapter 1 of that document¹; and
- (b) hereby incorporated into this Review Notice.

1.4 By publishing this Review Notice and serving it on each of the Addressees, ORR is initiating the implementation of the Review.

2 Proposed Relevant Changes

2.1 For or in connection with giving effect to ORR’s conclusions on the Review, ORR proposes to direct the parties to each of the Track Access Agreements to amend that document known as the Traction Electricity Rules published by Network Rail² (the “**Traction Electricity Rules**”) on the terms specified in Annex 2 to this Review Notice (the “**proposed relevant changes**”).

2.2 ORR proposes that, subject to paragraph 3, the proposed relevant changes will come into operation on and from 1 April 2019.

3 Regulated Amendments

3.1 If, before the proposed relevant changes come into operation in relation to the Traction Electricity Rules, the Traction Electricity Rules are amended in a manner which is in accordance with the amendment procedure set out in paragraph 17 of the Traction Electricity Rules, including being consented to by ORR under paragraph 17.15 (each an “**approved amendment**”), then:

- (i) the proposed relevant changes shall come into operation in relation to that Track Access Agreement subject to the approved amendments; and

¹ This further includes all documents referenced and/or linked to in the document entitled “2018 periodic review final determination: Supplementary document: Overview of charges and incentives decisions – October 2018”.

² Which document is either already incorporated into the Train Operators’ Track Access Agreements or will become so by operation of other review notices published by ORR on 20 December 2018.

- (ii) if there is any conflict between the proposed relevant changes and the approved amendments, the approved amendments shall take precedence.

4 Objections

4.1 Subject to paragraph 4.2, any person specified in paragraph 4(4)(a) or (b) of Schedule 4A to the Act may make objections with respect to:

- (a) any of the proposed relevant changes; or
- (b) the date on which it is proposed that any such proposed relevant changes shall come into operation.

4.2 Any objection made under paragraph 4.1 must be:

- (a) made in writing;
- (b) received by ORR on or before 7 February 2019; and
- (c) addressed to ORR as follows:

Carl Hetherington
Office of Rail and Road
One Kemble Street
London
WC2B 4AN

5 Definitions and Interpretation

5.1 In this Review Notice, unless the context otherwise requires:

- (a) references to “**this Review Notice**” include the Annexes to this Review Notice;
- (b) references to the singular include the plural and *vice versa*;
- (c) words and phrases defined in:
 - (i) the Act;

(ii) the Traction Electricity Rules; or

(iii) each Track Access Agreement,

shall have the same meanings in this Review Notice; and

(d) any general rules of interpretation contained in:

(i) Condition A1 of the Network Code; or

(ii) each Track Access Agreement,

shall also apply to this Review Notice.



John Larkinson
Chief Executive
FOR AND ON BEHALF OF
THE OFFICE OF RAIL AND ROAD
Dated 20 December 2018



ANNEX 1

TRAIN OPERATORS AND TRACK ACCESS AGREEMENTS

Part 1 – Train Operators

Train Operator (collectively, the “Train Operators” and each a “Train Operator”)	Train Operator Company Number	Original Date of Track Access Agreement
Abellio East Anglia Limited	07861414	10 December 2004
Abellio ScotRail Limited	SC450732	3 March 2016
Arriva Rail London Limited	04165861	9 November 2007
Arriva Rail North Limited	04337712	3 March 2016
The Chiltern Railway Company Limited	03007939	5 February 2004
Colas Rail Limited	02995525	11 December 2016
DB Cargo (UK) Limited	02938988	11 December 2016
Devon and Cornwall Railways Limited	04973992	28 July 2016
Direct Rail Services Limited	03020822	8 January 2010
East Coast Trains Limited	08765536	3 October 2016
East Midlands Trains Limited	05340682	2 March 2016
First Greater Western Limited	05113733	4 March 2016
First MTR South Western Trains Limited	07900320	20 May 2004
First Transpennine Express Limited	09111801	3 March 2016
Freightliner Limited	03118392	11 December 2016
Freightliner Heavy Haul Limited	03831229	11 December 2016
GB Railfreight Limited	03707899	11 December 2016
Govia Thameslink Railway Limited	07934306	2 March 2016
Grand Central Railway Company Limited	03979826	1 August 2014
Harsco Rail Limited	00977100	17 April 2015 ³

³ ORR holds a copy of a contract dated 17 April 2015. However, versions of this contract exist on line with different dates. Notwithstanding this ambiguity, it is ORR’s proposal that the track access agreement held by Harsco Rail Limited be amended in line with this Review Notice.

Train Operator (collectively, the “Train Operators” and each a “Train Operator”)	Train Operator Company Number	Original Date of Track Access Agreement
Hull Trains Company Limited	0371540	17 March 2016
Keolis Amey Operations / Gweithrediadau Keolis Amey Limited	11389531	5 February 2004
London North Eastern Railway Limited	04659712	3 March 2017
London & South Eastern Railway Limited	04860660	6 December 2007
Loram UK Limited	06031483	12 January 2017
Merseyrail Electrics 2002 Limited	04356933	17 July 2003
MTR Corporation (Crossrail) Limited	08754715	21 November 2018
Rail Operations (UK) Limited	08556176	21 March 2015
Serco Caledonian Sleepers Limited	SC477821	5 March 2015
South Yorkshire Supertram Limited	02634683	4 May 2018
Trenitalia c2c Limited	07897267	3 March 2017
Victa Railfreight Limited	03017321	17 April 2015
Vintage Trains Limited	10436785	5 September 2018
West Coast Railway Company Ltd	03066109	5 April 2016
West Coast Trains Limited	03007940	1 September 2011
West Midlands Trains Limited	09860466	3 March 2016
XC Trains Limited	04402048	8 August 2017

Part 2 – Other addressees

Rail for London Limited

Merseyside Passenger Transport Executive

Welsh Government

ANNEX 2

STANDARD AMENDMENTS

Explanatory Note:

*In order to give effect to the ORR's conclusions on the Review, this Annex 2 sets out the standard form proposed relevant changes to be made to the Traction Electricity Rules (the "**standard amendments**").*

The following amendments shall be made to the Traction Electricity Rules:

1 Amendments to the Traction Electricity Rules

1.1 In paragraph 1.2 (Definitions and Interpretation) of the Traction Electricity Rules:

(a) delete the definition of “Appendix Amendment Notice”;

(b) insert the following new definition in alphabetical order:

“**Bimodal Electric Multiple Unit**” has the meaning ascribed to it in Schedule 7 of the relevant track access agreement;”

(c) insert the following new definition in alphabetical order:

“**Bimodal Locomotive**” has the meaning ascribed to it in Schedule 7 of the relevant track access agreement;”

(d) in the definition of “Metered Train m”, delete the words “, or Appendix 2 or Appendix 4 to these Traction Electricity Rules”;

(e) delete the definition of “Modelled Train Operator” and replace it with the following definition:

“**Modelled Train Operator**” means a train operator, other than a Charter Train Operator, that is charged by Network Rail for traction electricity based on modelled consumption rates or the Traction Electricity Modelled Default Rate, and which is not a Metered Train Operator;”

(f) insert the following new definition in alphabetical order:

“**New Modelled Train**” has the meaning ascribed to it in Schedule 7 of the relevant track access agreement;”

(g) delete the definition of “Power Factor Correction”;

- (h) delete the definition of “Regenerative Braking Discount” and replace it with the following definition:

“**Regenerative Braking Discount**” means the discount, applied by Network Rail in accordance with paragraph 15.1(B) in calculating the train operator’s Traction Electricity Charges, which is provided in return for the train operator operating a Regenerative Braking System in respect of any vehicle for which the Traction Electricity Charges are payable based on modelled consumption rates or the Traction Electricity Modelled Default Rate;

- (i) delete the definition of “Tolerance Factor”;
- (j) insert the following new definition in alphabetical order:

“**Traction Electricity Modelled Default Rate**” has the meaning ascribed to it in Schedule 7 of the relevant track access contract;”

- (k) insert the following new definition in alphabetical order:

“**Traction-Train Compatible**” has the meaning ascribed to it in Schedule 7 of the relevant track access contract;”

- (l) delete the definition of “Train category” and replace it with the following definition:

“**Train category**” means train category i as identified in the relevant section of the Traction Electricity Modelled Consumption Rates List or PFM Rates List, being either:

- (a) where there is no PFM Rate for a particular passenger vehicle type operating on a particular Train Service Code:
- (i) where there is a modelled consumption rate for a particular passenger vehicle type operating on a particular Train Service Code, the relevant category set out in the table entitled “Passenger Traction Electricity Modelled Consumption Rates for CP6”; or

(ii) where there is a generic consumption rate for a passenger vehicle type not referred to in paragraph (a)(i), the relevant category set out in the table entitled “Generic Traction Electricity Modelled Consumption Rates for CP6”, or

(b) where there is a PFM Rate for a particular passenger vehicle type operating on a particular Train Service Code, the relevant category set out in the PFM Rates List; or

(c) in respect of all electrified freight services, the relevant category set out in the table entitled “Freight Traction Electricity Modelled Consumption Rates for CP6”;

1.2 Delete paragraph 9 (Power Factor Correction), and replace it with the words “(Not used)”.

1.3 Delete paragraph 11 (Tolerance Factors), and replace it with the words “(Not used)”.

1.4 Delete paragraph 12 (Changes to Power Factor Correction or Tolerance Factors), and replace it with the words “(Not used)”.

1.5 Delete paragraph 13 (Changes to Appendix 2 (Power Factor Correction) and Appendix 4 (Tolerance Factors)), and replace it with the words “(Not used)”.

1.6 In paragraph 14.13 (Creation of a kWh ‘per Train Mile’ Derived Rate: PFM Year 1):

(a) delete the formula in the definition of K_{i0} , and replace it with the following:

$$“K_{i0} = \sum [P_{i0} \bullet (1 + \lambda_{gi1}) - RGB_{i0}] \bullet N_{v0}”$$

(b) delete the definition of λ_{gv0} and replace it with the following definition:

“ λ_{gi1} means the Network Rail Distribution System Loss Factor for train category i and in Geographic Area g as set out in Appendix 3 of these Traction Electricity Rules as applicable in PFM Year 1;”

(c) in the definition of N_{v0} :

(1) delete the formula in the definition of T_{v0} , and replace it with the following:

$$“T_{v0} = \sum [(P_{vJ0} \cdot (1+ \lambda_{gv1}) - RGB_{vJ0}) + (P_{vN0} \cdot (1+ \lambda_{gv1}) - RGB_{vN0})]”$$

- (2) delete the definition of λ_{gv0} and replace it with the following definition:

“ λ_{gv1} means the Network Rail Distribution System Loss Factor for vehicle class V and in Geographic Area g as set out in Appendix 3 of these Traction Electricity Rules as applicable in PFM Year 1;”

- (3) delete the formula in the definition of V_{v0} and replace it with the following:

$$“V_{v0} = \sum [(P_{vJ0} \cdot (1+ \lambda_{gv1}) - RGB_{vJ0})]”$$

- (4) delete the definition of λ_{gv0} and replace it with the following definition:

“ λ_{gv1} means the Network Rail Distribution System Loss Factor for vehicle class V and in Geographic Area g as set out in Appendix 3 of these Traction Electricity Rules as applicable in PFM Year 1; and”

1.7 In paragraph 14.14 (PFM Year 2 and subsequent PFM Years):

- (a) in the definition of K_{iy-1} :

- (1) delete the formula and replace it with the following:

$$“K_{iy-1} = \sum [P_{iy-1} \cdot (1+\lambda_{gij}) - RGB_{iy-1}] \cdot N_{vy-1}”$$

- (2) delete the definition of λ_{gij-1} and replace it with the following definition:

“ λ_{gij} means the Network Rail Distribution System Loss Factor for train category i and in Geographic Area g as set out in Appendix 3 of these Traction Electricity Rules as applicable in PFM Year y;”

- (3) in the definition of T_{vy-1} :

- (i) delete the formula and replace it with the following:

$$T_{vy-1} = \sum [(P_{vJy-1} \cdot (1+ \lambda_{gvY}) - RGB_{vJy-1}) + (P_{vNy-1} \cdot (1+ \lambda_{gvY}) - RGB_{vNy-1})]$$

- (ii) delete the definition λ_{gvY-1} , and replace it with the following definition:

“ λ_{gvy} means the Network Rail Distribution System Loss Factor for vehicle class V and in Geographic Area g as set out in Appendix 3 of these Traction Electricity Rules as applicable in PFM Year y;”

(b) in the definition of V_{vy-1} :

(1) delete the formula and replace it with the following:

$$“V_{vy-1} = \sum [(P_{vJy-1} \cdot (1 + \lambda_{gvy}) - RGB_{vJy-1})]”$$

(2) delete the definition of λ_{gvy-1} and replace it with the following definition:

“ λ_{gvy} means the Network Rail Distribution System Loss Factor for vehicle class V and in Geographic Area g as set out in Appendix 3 of these Traction Electricity Rules as applicable in PFM Year y; and”

1.8 In paragraph 15 (Application of Regenerative Braking Discounts to modelled consumption rates):

(a) delete the heading and replace it as follows:

“Application of Regenerative Braking Discounts to modelled (and modelled default) consumption rates”

(b) in sub-paragraph 15.1(B):

(i) delete the second sentence and replace it with the following:

“The levels of Regenerative Braking Discount are applied by reducing the relevant modelled consumption rate and/or Traction Electricity Modelled Default Rate (as the case may be) by the percentage discount specified below:”

- (ii) delete the table showing “Type of infrastructure/service frequency” and replace it with the following table:

Type of infrastructure / service frequency	Discount (%)
AC, Long Distance (more than 10 miles between stations)	16%
AC, Suburban (less than or equal to 10 miles between stations)	22%
DC	15%

- (c) delete sub-paragraph 15.5(B) and replace it with the following:

“(B) where any of the train operator’s Relevant Vehicle Categories cease to be billed on the basis of either of the modelled consumption rates or the Traction Electricity Modelled Default Rate, in which case the discount shall cease to apply in respect of such Relevant Vehicle Categories; or”

1.9 In paragraph 18 (Volume and Cost Reconciliation for all train operators):

- (a) delete the heading “Transitional risk sharing mechanism rebate for the Relevant Year ending on 31 March 2014” and paragraphs 18A.1 and 18A.2;
- (b) delete paragraph 18.2 and replace it with the following:

“Volume Reconciliation

18.2 For each train operator ω , $S1_{t\omega}$ is derived from the following formula:

$$S1_{t\omega} = \sum S1_{tg\omega}, \text{ summed over } g$$

where, for each Geographic Area g , $S1_{tg\omega}$ is derived from the following formula:

$$S1_{tg\omega} = E_{tmog\omega} \bullet (A_{gt} - L_{tmog} - L_{tmeg} - L_{tmug} - L_{tmng}) / (L_{tmog} + L_{tmng} + (\lambda_g / (1 + \lambda_g)) \bullet A_{gt})$$

where:

$E_{tmog\omega}$ means the amount E_{tmog} calculated for each train operator ω in accordance with paragraph 4.1.2 of Part 2 (in the case of passenger operators) and paragraph 2.4.1.2 (in the case of freight operators) of Schedule 7 of the relevant train operator's track access contract;

A_{gt} means the total actual electricity consumption (in kWh), if any, in Geographic Area g in Relevant Year t billed to Network Rail by its electricity suppliers in that Geographic Area for traction electricity consumed in accordance with the terms for the purchase of traction electricity entered into by Network Rail;

L_{tmog} means the total modelled traction electricity consumption (including any consumption calculated using the Traction Electricity Modelled Default Rate) charged to all train operators in Geographic Area g and in Relevant Year t which is derived from the following formula:

$$L_{tmog} = \sum C_i \bullet UE_{igit}$$

where:

Σ means the summation across all train categories i , New Modelled Trains and tariff bands j for Relevant Year t for all train operators, as appropriate;

C_i means, as appropriate:

(a) the consumption rate:

(i) in kWh per electrified Train Mile in relation to passenger electric multiple units (using the rate for the relevant number of units); or

(ii) in kWh per electrified kgm in relation to locomotive-hauled units and all freight traffic,

for train category i shown in the Traction Electricity Modelled Consumption Rates List taking into account any Regenerative Braking Discount applied

in accordance with these Traction Electricity Rules or, if a PFM Rate applies in accordance with these Traction Electricity Rules, the PFM Rates List; or

- (b) for New Modelled Trains, the Traction Electricity Modelled Default Rate shown in the Traction Electricity Modelled Consumption Rates List, taking into account any Regenerative Braking Discount applied in accordance with these Traction Electricity Rules;

UE_{igt} means the actual volume of usage (in electrified Vehicle Miles in relation to passenger electric multiple units or electrified kgm in relation to locomotive-hauled units and all freight traffic), if any, of trains operated by or on behalf of all train operators in train category i and New Modelled Trains operated by or on behalf of all train operators, in Geographic Area g , where relevant, in tariff band j and in Relevant Year t , provided that where train category i or a New Modelled Train is a Bimodal Electric Multiple Unit or Bimodal Locomotive operating in a Traction-Train Compatible situation, it shall be deemed that all mileage (in Vehicle Miles in relation to passenger electric multiple units or kgm in relation to locomotive-hauled units and all freight traffic), if any, of such trains is electrified, in respect of which charges for traction electricity consumption are payable based on modelled consumption rates pursuant to paragraph 4.1 or 4.1.2 (in the case of passenger operators) or paragraph 2.4.1 or 2.4.1.2 (in the case of freight operators) of Schedule 7 of each relevant train operator's track access contract;

L_{tmeq} means the total metered traction electricity consumption charged to all train operators in Geographic Area g and Relevant Year t which is derived from the following formula:

$$L_{tmeg} = \sum [CME_{mgjt} - RGB_{mgjt}]$$

where:

Σ means the summation across all relevant Metered Trains m for Relevant Year t for all train operators, as appropriate;

CME_{mgjt} means the consumption of electricity (in kWh) by Metered Train m, as measured by the On-Train Meters or as otherwise determined in accordance with these Traction Electricity Rules, in Geographic Area g, in tariff band j and in Relevant Year t; and

RGB_{mgjt} means the electricity (in kWh) generated by braking by Metered Train m, as measured by the On-Train Meters or as otherwise determined in accordance with these Traction Electricity Rules, in Geographic Area g, in tariff band j and in Relevant Year t;

L_{tmug} means the total amounts in respect of the Network Rail Distribution System Loss Factor charged to all train operators in Geographic Area g and Relevant Year t which is derived from the following formula:

$$L_{tmug} = L_{tmugAC} + L_{tmugDC}$$

where:

L_{tmugAC} is derived from the following formula:

$$L_{tmugAC} = \sum [CME_{mgjtAC} \bullet EF_{gjt}] \bullet \lambda_{ACg}$$

where:

Σ means the summation across all relevant Metered Trains m for Relevant Year t for all train operators, as appropriate;

CME_{mijtAC} means the consumption of electricity (in kWh) from the AC System by Metered Trains m, as measured by the On-Train Meters or as otherwise determined in accordance with these Traction Electricity Rules, in Geographic Area g, in tariff band j and in Relevant Year t;

EF_{ijt} means an amount for traction current (in pence per kWh) consumed by railway vehicles operated by or on behalf of the train operator in Geographic Area g, in tariff band j and in Relevant Year t as agreed or determined pursuant to paragraph 19 of these Traction Electricity Rules; and

λ_{ACg} means the Network Rail Distribution System Loss Factor for the AC System in Geographic Area g;

L_{tmugDC} is derived from the following formula:

$$L_{tmugDC} = \sum [CME_{mijtDC} \bullet EF_{ijt}] \bullet \lambda_{DCg}$$

where:

Σ means the summation across all relevant Metered Trains m for Relevant Year t for all train operators, as appropriate;

CME_{mijtDC} means the consumption of electricity (in kWh) from the DC System by Metered Trains m, as measured by the On-Train Meters or as otherwise determined in accordance with these Traction Electricity Rules, in Geographic Area g, in tariff band j and in Relevant Year t;

EF_{ijt} means an amount for traction current (in pence per kWh) consumed by railway vehicles operated by or on behalf of the train operator in Geographic Area g,

in tariff band j and in Relevant Year t as agreed or determined pursuant to paragraph 19 of these Traction Electricity Rules; and

λ_{DCg} means the Network Rail Distribution System Loss Factor for the DC System in Geographic Area g;

L_{tmng} means the total traction electricity consumption in Geographic Area g and in Relevant Year t by: (a) Network Rail, and (b) all entities whose consumption is not modelled or metered in a track access contract subject to regulation by ORR in accordance with the Act; and

λ_g means, in any Geographic Area g which only uses the DC System, the Network Rail Distribution System Loss Factor for the DC System in Geographic Area g (λ_{DCg}), and, in any other Geographic Area g, means the Network Rail Distribution System Loss Factor for the AC System in Geographic Area g (λ_{ACg}).

- 1.10 Delete Appendix 2 (Power Factor Correction) and replace it with the words “Appendix 2 (not used)”.
- 1.11 Delete Appendix 3 (Network Rail Distribution System Loss Factors) and replace it with the new Appendix 3 set out in Appendix 1 to this Annex 2.
- 1.12 Delete Appendix 4 (Tolerance Factors) and replace it with the words “Appendix 4 (not used)”.

APPENDIX 1 TO ANNEX 2

Appendix 3: Network Rail Distribution System Loss Factors

The table below sets out the Network Rail Distribution System Loss Factor for each traction electricity Geographic Area (g) for the AC System (λ_{AC}) and the DC System (λ_{DC}) for the purposes of calculating the Traction Electricity Charge.

ESTA	Traction electricity Geographic Area (g)	Network Rail Distribution System Loss Factor for the AC System (λ_{AC})	Network Rail Distribution System Loss Factor for the DC System (λ_{DC})
M	Merseyside	N/A	0.1113
N	Midland Main Line	0.0279	N/A
O	London Tilbury and Southend	0.0264	N/A
P	Great Eastern	0.0272	0.1113
Q	West Anglia	0.0428	N/A
R	East Coast Main Line South	0.0230	0.1113
A	East Coast Main Line Central	0.0303	N/A
B	East Coast Main Line North	0.0548	N/A
C	East Coast Main Line Leeds	0.0409	N/A
S	Scotland Glasgow	0.0424	N/A
D	Scotland East	0.0462	N/A
E	Scotland North and West	0.0311	N/A
F	Scotland WCML	0.0356	N/A
T	West Coast Main Line South	0.0295	0.1113

ESTA	Traction electricity Geographic Area (g)	Network Rail Distribution System Loss Factor for the AC System (λ_{AC})	Network Rail Distribution System Loss Factor for the DC System (λ_{DC})
G	West Coast Main Line Central	0.0362	N/A
H	West Coast Main Line Midlands	0.0299	N/A
J	West Coast Main Line North	0.0361	N/A
U	Southern	N/A	0.1113
V	Great Western (soon to be renamed 'Western East')	0.0119	N/A
I	Western (soon to be renamed 'Western West')	0.0254	N/A
K (soon to be renamed '3')	South Wales	0.0254	N/A