

APPENDIX 6.1.1

CHARGING PRINCIPLES OF MINIMUM SERVICES

CONTENTS

1. CHARGING PRINCIPLES: LEGAL FRAMEWORK	3
1.1. EU LAW: DIRECTIVE 2012/34/EU.....	3
1.2. FRENCH REGULATORY FRAMEWORK.....	4
2. INTERPRETATION AND IMPLEMENTATION OF THE CHARGING PRINCIPLES	5
2.1. CHARGES BASED ON THE CDI: THE RUNNING CHARGE (RC), THE ELECTRIC TRACTION CHARGE (RCE) AND THE RCTE (COMPONENT A).....	6
2.2. SPECIAL CASE FOR FREIGHT	14
2.3. MARKET CHARGE (RM) AND ACCESS CHARGE (RA).....	15
2.4. CONGESTION CHARGE (RS).....	21
2.5. SPECIAL CHARGES.....	21
3. CHANGES IN COSTS AND CHARGES.....	22
3.1. MULTI-YEAR CHANGE DETERMINED BY THE PERFORMANCE CONTRACT	23
3.2. SPECIFIC CASE OF CHANGE TO THE AMOUNT OF THE RUNNING CHARGE FOR FREIGHT ACTIVITIES	23

The information published in Appendix 6.1.1 relating to Chapter 6 of the National Rail Network Statement is intended to explain the process of establishing price scales for minimum services, with regard to the principle and "*the aim(s) of transparency, in particular concerning the description of charging principles, the justification of the links between the costs and charges and the changes in the charges*"¹.

This appendix therefore provides details on the European and national legal framework for establishing charges and the process for compiling the charges imposed by SNCF Réseau.

The appendix explains the charging principles for the minimum services determined by the regulations. It recalls, in particular, the economic principle for the minimum service charges laid down by Directive 2012/34/EU: the usage charges must be equal to the "*cost directly incurred*" (CDI) as a result of operating the train service. Directive 2012/34/EU nevertheless authorises SNCF Réseau to levy mark-ups if the market can bear this.

This appendix will go on to present the implementation of these charging principles by SNCF Réseau and describe the significant changes made for the 2019 timetable.

¹ Item III.18 of ARAF statement No. 2014-001.

1. CHARGING PRINCIPLES: LEGAL FRAMEWORK

En application du cadre législatif et réglementaire français, la tarification de l'usage du réseau ferré national dans son ensemble est décidée par SNCF Réseau², dans le cadre mis en place par l'Etat³, et soumise, pour les prestations minimales, à l'avis conforme de l'Autorité de régulation des activités ferroviaires et routières (ARAFER)⁴. According to the provisions of the transport code, ARAFER gives approval on the fixing of infrastructure charges related to the use of the national rail network with regard to:

- 1° Principles and pricing rules applicable on this network, provided for in Article L. 2111-25;
- 2° Bearability of pricing developments for the rail transport market, and in view of the competitive position of rail transport in the transport market;
- 3° Contract provisions mentioned in Article L. 2111-10, concluded between the State and SNCF Réseau.

Charging must comply with the principles and the general architecture arising from European and French law constituted by the European Directive 2012/34/EU, the French Transport Code, French Decree No. 2003-194 amended and French Decree No. 97-446 of 5 May 1997 amended, and the provisions of the contract concluded between the State and SNCF Réseau.

1.1. EU LAW: DIRECTIVE 2012/34/EU

Directive 2012/34/EU specifies four principal objectives for charging of the infrastructure:

- ensuring the balance of the infrastructure management accounts in a reasonable period, taking public competition into account⁵;
- ensuring the necessary conditions to allow various railway undertakings equitable and non-discriminatory access⁶;
- encouraging infrastructure managers to optimise the use of their infrastructure⁷;
- issuing clear and consistent signals to allow railway undertakings to make rational decisions with regard to use of the network⁸.

These aims define the structure of the articles in Section 2 "*Infrastructure and services charges*" of Chapter IV of Directive 2012/34/EU.

² Transport Code, Decree No. 97-446 as amended and Decree No. 2003-194 as amended.

³ In particular with regard to available public funding as "*the general level of cost recovery through infrastructure pricing has implications for the level of public contributions. Member States may require different levels of cost recovery. However, any infrastructure charging scheme should allow traffic that can cover at least the additional cost it imposes to use the rail network*" (recital 70 of the Directive)

⁴ Article L.2133-5 of the Transport Code.

⁵ Article 8.4: "*Member States shall ensure that, under normal business conditions and over a reasonable period which shall not exceed a period of five years, the profit and loss account of an infrastructure manager shall at least balance income from infrastructure charges, surpluses from other commercial activities, non-refundable incomes from private sources and State funding, on the one hand, including advance payments from the State, where appropriate, and infrastructure expenditure, on the other hand.*"

⁶ "*The charging and capacity-allocation schemes should permit equal and non-discriminatory access for all undertakings and should attempt as far as possible to meet the needs of all users and traffic types in a fair and non-discriminatory manner. Such schemes should allow fair competition in the provision of railway services.*" (Recital 42)

⁷ "*Within the framework set out by Member States, charging and capacity-allocation schemes should encourage railway infrastructure managers to optimise use of their infrastructure.*" (Recital 43)

⁸ "*Railway undertakings should receive clear and consistent economic signals from capacity-allocation schemes which lead them to make rational decisions.*" (Recital 44)

Article 31.3 establishes in particular the principle of charging on the basis of "cost directly incurred":

"[...] the charges for the minimum access package and for access to infrastructure connecting service facilities shall be set at the cost that is directly incurred as a result of operating the train service. Before 16 June 2015, the Commission shall adopt measures setting out the modalities for the calculation of the cost that is directly incurred as a result of operating the train. "

The modalities for the calculation of the cost that is directly incurred as a result of operating the train service are defined by the Implementing Regulation 2015/909 of 12 June 2015. It is interesting to note in particular that recital 12 of this text defines the cost directly incurred as a marginal cost: *"It is a well-established economic principle that user charges based on marginal costs ensure the optimum effective use of available infrastructure capacity. Hence, the infrastructure manager may decide to use the proxy of marginal costs for calculating its cost directly incurred as a result of operating the train service."*

Furthermore, according to Article 31.4 of the aforementioned Directive, the basic charges may recover the costs linked to scarcity of capacity offered by the infrastructure manager. The Directive effectively establishes that *"[they] may include a charge which reflects the scarcity of capacity of the identifiable section of the infrastructure during periods of congestion"*

Exceptions to these charging principles are established by EU law. Article 32.1 states that mark-ups may be applied on the condition that the market can bear these:

"In order to obtain full recovery of the costs incurred by the infrastructure manager a Member State may, if the market can bear this, levy mark-ups on the basis of efficient, transparent and non-discriminatory principles, while guaranteeing optimal competitiveness of rail market segments. The charging system shall respect the productivity increases achieved by railway undertakings. The level of charges shall not, however, exclude the use of infrastructure by market segments which can pay at least the cost that is directly incurred as a result of operating the railway service, plus a rate of return which the market can bear. "

The principle of a two-part charging system is thus in place, comprising:

- **charges aimed at making the network user cover the direct costs paid by SNCF Réseau** (i.e. the marginal cost, i.e. the cost incurred during the operation of an additional unit of traffic on the network)⁹. These charges may include the external costs linked to use of the infrastructure of the national rail network (in particular scarcity);
- mark-ups designed to cover the fixed costs incurred by SNCF Réseau. These mark-ups must be bearable for the railway undertakings operating in the market segment in which they are applied.

These EU charging principles, for the most part derived from former Directives 97/440/EEC and 2001/14/EC (now repealed) have been transposed into French law and more recently in Decree No. 2003-194 and Decree No. 97-446 now in force.

1.2. FRENCH REGULATORY FRAMEWORK

The aforementioned provisions of Directive 2012/34/EU specify Decrees No. 97-446 and No. 2003-194, in particular:

⁹ See *below* (§ 2.1)

- the "**directly chargeable cost**" charging principle, as well as the various charges that are subject to it (traffic charge, electric traction charge, charge to cover losses of electrical systems);
- the possibility of levying mark-ups for specific market segments, in order to recover all costs incurred and on the condition that the market can bear these;
- the possibility of charging for the scarcity of capacities.

2. INTERPRETATION AND IMPLEMENTATION OF THE CHARGING PRINCIPLES

The charges adopted by SNCF Réseau, in accordance with the framework defined by the State and the regulations, are consistent with the economic analysis and respect the capacity of the railway undertakings to bear the charges. As such, the charging complies with the following principles:

- Adapting to existing strategies for market organisation by proposing the most appropriate structure in this regard so as to send good economic signals to different stakeholders (State, transport organising authority and transport operator);
- Enabling SNCF Réseau to recover its marginal cost (CDI);
- Helping to cover all or part of the fixed and capital costs borne by SNCF Réseau (beyond marginal costs);
- Encouraging good use of the network.

There are two strategies for market organisation. There are activities under contract agreed by an AOT (transport organising authority), such as TER, Transilien and territorial equilibrium trains (TET), and activities that are not (TAGV, freight, etc.).

For activities under contract, the State or the regions that are also organising authorities (except in the case of Ile de-France or where Ile-de-France Mobilités has its own status) define the service offer in the framework of contracts signed with transport companies. Charging involving both parties seems the more appropriate. In this way, each of the parties is involved in covering the costs and can therefore obtain a good economic signal. In this context, two-part charging is applied; in broad terms:

- a fixed rate charge (the access charge) is paid by the State (or Ile-de-France Mobilités in Ile-de-France). The charge can be viewed as a right of entry;
- other charges, in particular those based on the CDI or the market charge, are paid by the transport operator according to its use of the network.

For activities not covered by contract, the existence of a flat-rate fee has not been implemented in the absence of a transport organising authority. In addition, such a fee could be likened to an entry barrier, potentially deterring new entrants, for markets currently open to competition (international trains or freight). In this context, "linear" charging is applied: the fixed and variable costs are paid by the transport operators according to their use of the network and their capacity to bear the charges.

The table below presents a summary of the allocation of costs per charge.

Type of charge		Allocation of costs
Running charge (RC)	Unit price according to the transport service and actual use of the network	CDI: marginal cost of maintenance, operation and renewal of the network (excluding electric facility costs)
Electric traction charge (RCE)	Unit price according to the actual use of the electric facilities	CDI: marginal cost of maintenance and renewal of the electric facilities
Covering the losses in electrical systems (RCTE – component A)	Unit price according to the actual use of the electric systems	CDI: marginal cost of providing the electrical energy to compensate for losses in electrical systems from substations up to train detection points
Market charge (RM)	Unit price according to the market segments with possible modulation	All or part of the fixed cost
Access charge (RA)	Fixed flat rate	All or part of the fixed cost
Congestion charge (RS)	Unit price to be defined	Financial incentive for good use of the network

2.1. CHARGES BASED ON THE CDI: THE RUNNING CHARGE (RC), THE ELECTRIC TRACTION CHARGE (RCE) AND THE RCTE (COMPONENT A)

2.1.1. Application of the principles provided by European and national regulations

As indicated in the first section, the basic principle for charging for minimum services, using "cost directly incurred" ("CDI"), is given in Article 31.3 of Directive 2012/34/EU.

The Implementing Regulation 2015/909 of 12 June 2015 defines the modalities for the calculation of the cost directly incurred. In particular, it specifies that the cost directly incurred ("CDI") must be considered to be a marginal cost.

Within this framework, the running charge must be equal to the cost incurred by the infrastructure manager when running a supplementary unit of traffic on the network (in train-km or tonne-km), i.e. the sum of the marginal costs for maintenance, renewal and operation.

Article 6 of the Implementing Regulation also stipulates that econometric methods or engineering cost modelling can be used to estimate the cost directly incurred, if these works are conducted under the control of the regulatory body. The regulation therefore supports SNCF Réseau in the methods implemented to date for calculating the CDI.

Finally, the regulation stipulates that the CDI must be regularly updated to take into account the best international practices. SNCF Réseau plans to update the CDI every three to five years (excluding indexing), which is in line with the recommendations of the regulator¹⁰ and the IRG-Rail association¹¹.

¹⁰ "Updating work will have to be periodically scheduled to ensure the validity of the estimates forming the basis for the charges billed to the users of the network and thus prevent the risk of a disconnection from the actual costs observed. For example, a frequency of three years could be used, in line with the timetable for updating the contract concluded between the State and SNCF Réseau." - (cf. recommendations No. 2016-016 of 10 February 2016 relating to the overhaul of the pricing for the use of the national rail network)

¹¹ "The periodicity of updates should be in line with other relevant periods regarding the general review of the charging system, with a maximum of five years between two calculations" (cf. IRG-Rail (16) 8 - An introduction to the calculation of direct costs in respect of implementing regulation 2015/909)

2.1.2. The marginal cost estimation process

SNCF Réseau's CDI estimation work is one of the most advanced studies in Europe. In fact, over the past ten years, significant progress has been made following several updates of these estimates. This work was done by recognised researchers from the academic community. In addition, SNCF Réseau has always regularly communicated its work (methodology and results) to clients (railway undertakings, AOT, combined transport operators, associations and institutional partners) during consultation meetings on tariff reform. This work and its results are particularly cited by CERRE in its report on tolls¹².

Initial estimation works date back to 2007. They produced an objective assessment of part of the charging system for the 2010 charging reform¹³. Significant resources were mobilised between 2010 and 2012 to update these estimations. The marginal costs of maintenance, operation and renewal were estimated using econometric analyses¹⁴, carried out on the data from 2007 to 2009. The methodological choices were based on the conclusions drawn by academic works, in particular those conducted within the scope of European research programmes¹⁵.

Since 2015, SNCF Réseau has completed the update to the CDI for application in the 2019 timetable. This update concerned the maintenance and renewal costs. The analyses mobilised a panel of high-level international experts¹⁶ and were supervised by a scientific committee (Professors E. Quinet and M. Gaudry) to guarantee the reliability of the methodological choices made. This approach was also carried out in close collaboration with the regulator.

The methodological bases have not been modified since the "cost model" process in 2010-2012. The calculation of the cost directly incurred is based on econometric analyses designed to explain the expenses observed (maintenance) or modelled (renewal) by the technical characteristics of the infrastructure and by the stresses it suffers (traffic). These analyses are used to estimate the cost functions, from which the marginal costs are derived.

The scope of costs used to estimate the CDI is as follows:

- Maintaining the track, switchgear, signalling and catenary system. This is cost data.
- Operational traffic management.
- Track, switches and crossings renewals. These costs are derived from simulated renewal schedules. Indeed, an econometric analysis of the costs of renewal investments could not be carried out by taking data from a single year since the renewal operations are by definition cyclical.

Significant improvements have been made to assess the marginal cost of maintenance and renewal.

¹² "Probably the most reliable evidence on the absolute level of wear and tear costs comes from econometric evidence, given the extensive range of studies conducted through co-ordinated research programmes. This evidence suggests that charges for these costs are generally far too low, except in France" (cf. CERRE, *Track access charges: reconciling conflicting objectives*, may 2018).

¹³ See IGF-CGPC report on rail network charging, July 2007

¹⁴ The econometric analyses conducted for maintenance and operation were the subject of a scientific article presented at the annual conference of the International Transportation Economics Association (ITEA, Toulouse, 2014): *Estimating the marginal cost of operation and maintenance for French railway network*. The article can be accessed using the following link:
https://editorialexpress.com/cgi-bin/conference/download.cgi?db_name=ITEA2014&paper_id=137

¹⁵ The study conducted by SNCF Réseau sought in particular to apply analysis methods that are consistent with the most advanced scientific work in this field. It endeavoured to apply the methods used as part of the CATRIN European research project, which brought together Phill Wheat, Andrew Smith and Chris Nash (from the University of Leeds) or Marc Gaudry and Emile Quinet to look at the case with regard to France. In particular, the functional form initially used to estimate the cost functions was a Box-Cox formula.

¹⁶ The analyses were conducted by a panel of experts formed from the STRATEC design office, the ECOPLAN design office (Mickael Marti and Philip Walker) and the Leeds Institute for Transport Studies (Philip Wheat and Andrew Smith).

Relating to the source of data:

- For maintenance: During its work carried out in 2015 and 2016, SNCF Réseau used more recent (2013) and richer data. These databases created allow for the introduction of many additional variables in the cost functions. In total there are more than a hundred variables that have been collected.
- For the renewal of conventional lines: SNCF Réseau used a new tool, more successful and built by the internal maintenance experts. It allowed them to calculate the cost of future renewal operations, over a long period of time, from the data for recorded unit costs and lifespan assumptions according to the policies in place.

On the analyses carried out:

- Use of econometric models among the most adapted and in line with the best practices.
- Advanced analyses on the choice of explanatory variables to be retained, in agreement with the business experts.
- Tests of robustness and adequacy of the models.

A second assessment of all the work done by SNCF Réseau was carried out under the auspices of the regulator¹⁷ at the end of 2016. This second assessment led to the choice of a functional form different from the one initially proposed. Ultimately, it is a cost function of the Translog form that is used to estimate marginal maintenance and renewal costs. One of the main benefits of the Translog forms over the Box-Cox forms, initially tested, lies in the easier interpretation of the coefficients.

¹⁷ The second assessment was carried out between November and December 2016 by the econometrics firm, Frontier Economics, on behalf of the regulator. These results were made available to the public by the regulator.

<http://www.araf.fr/wp-content/uploads/2017/02/RAP-Frontier-Expertise-cout-marginal-dentretien-stc-vf-pour-public....pd>

<http://www.araf.fr/wp-content/uploads/2017/02/RAP-Frontier-Expertise-cout-marginal-de-renouvellement-vf-pour-pub....pdf>

2.1.3. Estimation of marginal cost per activity

The econometric analyses enable the cost functions to be estimated. These functions were then derived to estimate the average marginal cost of each activity in order to transpose this into the toll price scale. The activities operating on the network have been grouped into 3 main activities:

- “passenger” activities on conventional lines (LC),
- “passenger” activities on high speed lines (LGV),
- and freight and light running freight activities

Given the cost functions estimated, the marginal cost is a local concept which depends on the characteristics of the infrastructure at the point where this cost is measured. As the running charge is unique, a weighted average of marginal costs was implemented for each activity, over the entire national rail network. For each activity, the weighting assigned to each marginal cost at the level of each segment corresponds to the weighting for the segment in the total traffic for the activity.

The figure below illustrates the process for calculating the average marginal costs of maintenance and operation per activity across the whole network.

Example

Marginal cost = $C_{mA} = € 2.9/\text{tr-km}$
 Traffic for passenger services = $T_A = 45\,000 \text{ tr-km}$

Marginal cost = $C_{mB} = € 3.6 /\text{tr-km}$
 Traffic for passenger services = $T_B = 30\,000 \text{ tr-km}$

MARGINAL COST for passenger services = average of marginal costs on the two sections, weighted by traffic for passenger services

$$= \frac{T_A \times C_{mA} + T_B \times C_{mB}}{T_A + T_B} = € 3.18 /\text{tr-km}$$

For the marginal cost of renewal, a distinction is added according to the UIC group:

- For network sections within UIC groups 2 to 6: an average marginal cost of renewal is calculated via a weighted average over the UIC 2 to 6 network. This weighted average is not produced per activity, but for all traffic¹⁸.
- For network sections within UIC groups 7 to 9, the marginal cost of renewal is set at 0. The CDI is therefore the sum of the marginal costs of maintenance and renewal only. In fact, given the investment grants provided by the regions in particular, for the renewal operations of these lines, the renewal costs of these lines are not included in the network pricing.

In addition, depending on the cost item and asset analyses, marginal costs are estimated in euros per tonne-kilometre¹⁹ or in euros per train-km²⁰. Following exchanges with the regulator, and in order to respect the non-discriminatory nature imposed by Article 29 of the Decree of 7 March 2003, it was decided to keep this double unit for the 2019 tariff for the transport of passengers. For freight trains, modulation per class of tonnage was kept (cf. section 0, below).

¹⁸ The local marginal costs of renewal are estimated at particularly in-depth levels, for which the traffic movements per activity are not known.

¹⁹ This concerns marginal costs of maintenance and renewal of the track and switchgear.

²⁰ This concerns the marginal costs of operating and maintaining signalling devices.

2.1.4. Indexation of the results

New marginal cost estimations were introduced in the charges for the 2019 timetable. They must therefore be expressed under the economic conditions of this year, using inflators specific to each of the categories, based as far as possible on the observed changes in these costs.

- **Until 2014: taking into consideration actual changes**

For the period for which SNCF Réseau has data recorded and for a constant scope (RFF scope until 2014) for the costs of maintenance, operation and renewal, the marginal costs are updated using the following annual rates:

Cost categories	Initial economic conditions	Taking into consideration actual changes	Overall change	Average change per year
Maintenance	2013	2013-2014	-0.37%	-0.37%
Operation	2009	2009-2014	8.18%	1.58%
Renewal	2012	2012-2014	1.98%	0.98%

- **2014-2016 period: taking into account the average change over 2009-2014**

For the 2014-2016 period, SNCF Réseau used the average annual growth rate²¹ calculated over the 2009-2014 period. This rate rose to 2.60%. It was therefore decided to use a "older" average change for this period, given the profound change in the company's cost structure (following the August 2014 railway reform).

- **2016-2019 period: taking into consideration the forecast rate of change**

For the 2016-2019 period, SNCF Réseau used the forecast cost change trajectories (OPEX and Gopeq) resulting from the multi-year Performance Contract between the State and SNCF Réseau²². The result of this was an average growth of 1.13 % per year. This change over three years was consistent with the IPC forecast for the same period, which was 1.17% per year²³. Thus, for the 2014-2019 period, the annual rates of change used are the following:

Annual rate of change per cost category	2014-2016	2016-2017	2017-2018	2018-2019
Maintenance				
Operation	2.60%	1.1%	1.3%	1.0%
Renewal				

2.1.5. Results

For 2019, the marginal costs for maintenance, operation and renewal are as follows:

²¹ This overall average annual growth rate was calculated for all maintenance, operations and renewals, taking into account the share of each of these items in the total variable costs.

²² Contract signed on 20 April 2017.

²³ As of August 2017, the IPC forecasts in the report published prior to the public finance policy are 1.1%, 1% and 1.4% respectively for the years mentioned.

	Maintenance mc (Track + Adv) €2019 / kCGT- km	Maintenance mc (Signalling) €2018 / tr-km	Renewal mc (Track + Adv) €2019 / kCGT-km		Operation mc €2018 / tr-km
	RFN	RFN	UIC 2-6	UIC 7-9	RFN
Passenger on LC	1.499	0.223	1.669	0.000	0.204
Passenger on LGV	0.673	0.114	5.088	N/A	0.120
Freight & Light Running Freight	0.677	0.217	1.669	0.000	0.223

Total:

	MC total €2019 / kCGT-km		MC total €2019 / tr-km	
	UIC 2-6	UIC 7-9	UIC 2-6	UIC 7-9
Passenger on LC	3.168	1.499	0.427	0.427
Passenger on LGV	5.761	N/A	0.235	N/A
Freight & Light Running Freight	2.346	0.677	0.439	0.439

The above results, which are reflected in the traffic charge, show as with the previous study, relatively different marginal costs from one activity to the next. This is because activities do not operate in the same places (marginal costs vary from one section of the network to another).

The estimations have estimated the portion of network costs that varies according to the traffic. This analysis shows in particular that the portion of costs that varies according to the traffic is much less than 50%. Therefore for renewal, the marginal portion of the costs (the portion that varies according to the traffic) is 22%. Conversely, this means that 78% of the renewal expenses of SNCF Réseau are not included in the running charge. The same applies for the operating costs and the maintenance costs. Only 18% of maintenance costs and 10% of operating costs vary according to the traffic. Conversely, the fixed portions of the maintenance costs (82%) and operating costs (90%) are not covered by this charge.

Marginal portion of costs (portion of costs that vary according to traffic)	
Maintenance	18%
Operation	10%
Renewal	22%

Concerning the cost items related to fixed electric traction installations (catenaries and EALE), only the marginal maintenance cost of catenaries was updated as part of the work carried out between 2015 and 2016. For the year 2019, SNCF Réseau estimates and the application of the change rates (between 2013 and 2019) resulted, for the maintenance of catenaries, to a value of € 0.103 of the electric train-km, and this for all activities.

2.1.6. Running charge (RC)

For the 2019 timetable, the running charge for passenger trains is directly determined from the marginal costs presented above: marginal operating, maintenance and renewal costs, excluding marginal costs for the maintenance and renewal of electric facilities. This charge simplifies the scale by improving the readability of the directly attributable cost for all actors. For all passenger transport undertakings, this translates into a 50% to 60% reduction in the traffic charge.

One of the main novelties of this scale is the introduction of the Compensated Gross Tonnage work unit which becomes the main cost driver (about 85% of the weight of the traffic charge), the train-kilometre work unit representing 15% of the weight of the traffic charge.

In its calculations, to estimate the 2019 traffic charge revenue forecasts and the associated scale units, SNCF Réseau relied on the traffic structure of the NST 2016.

In order to evaluate the Compensated Gross Tonnage of passenger trains, SNCF Réseau used the composition of the trains operating in 2016 by the total weight of each type of rolling stock, due to the lack of train composition declaration data by the railway undertakings.

In detail, SNCF Réseau calculated the charge scales, for SNCF Mobilités, based on the composition of trains from the ICARIUS IS 2016²⁴. For other railway undertakings operating on the national rail network, with relatively more regular compositions, the data is extracted from the order or customer information. With regard to services that changed significantly between 2016 and 2017, the new tonnage assumptions were communicated and substantiated by the undertakings based on their 2017 transport plan. Thus, these new tonnage assumptions are the full year extrapolation of the transport plan observed since the date of the generating event (commissioning of a service, commissioning of new equipment or new material compositions).

In order to ensure consistency between the 2019 tariff calculation method and the invoicing method as it will be implemented in 2019 on the basis of tonnage declarations (DINAMIC IS or ad hoc computer flows), the railway undertakings will have to declare the empty weight for their non-commercial trains and the total weight of their commercial trains.

For freight, specific provisions are applied, as presented below (see §2.2).

2.1.7. Electric traction charge (RCE)

The RCE is equal to the cost of fixed electric traction installations directly attributable to traffic. This cost corresponds to the sum of these four items:

- (1) the marginal maintenance cost of catenaries
- (2) the marginal maintenance cost of EALE
- (3) the marginal renewal cost of catenaries
- (4) the marginal renewal cost of EALE

As mentioned in 2.1.5, only the marginal maintenance cost of catenaries (1) was estimated using econometric analyses. On the other hand, the other items (2), (3) and (4) could not be treated in the same way, as the data (observed or simulated) was not sufficiently specific to allow econometric analyses to be carried out.

For these items, a simplified approach was used: it was assumed that the traffic marginality of these three cost items was on average that of the maintenance cost of catenaries (20%), which is a reasonable assumption.

²⁴ The rolling stock correspondence table used by SNCF Réseau to determine the tonnage by type of equipment is attached as Appendix 6.8.

The marginality of 20% was applied on the one hand to the observed maintenance expenses of the 2016 EALE inflated in 2019, and on the other hand to the renewal expenses of the IFTE planned in 2019 in the trajectory of the multi-year State - SNCF Réseau contract mentioned above.

The **final outcome** was as follows:

	Total Cost (M€2019)	Marginality	Variable Costs (M€2019)	Marginal costs (€2019/tr-km)
(1) Maintenance of catenaries	/	/	/	0.103
(2) Maintenance of EALE	69.26	20.00%	13.85	0.037
(3 + 4) Renewal of catenaries and of EALE	225.00	20.00%	45.00	0.119
RCE 2019 (€2019)				0.259

2.1.8. Charge for transmission and distribution of electric power (RCTE – component A)

Since the NST 2016, SNCF Réseau has distinguished the RCTE in two components, one covering the expenses related to the losses (component A) and the other the transport and distribution charges (component B), in application of the amended version of Decree No. 2003-194, which states that the part covered by the coverage of electrical losses is included in the minimum services. Thus, the cost of these losses is considered a cost directly attributable to traffic using electric traction.

This change is a mere formality and does not result in any economic change in situations where all other things are equal; this means no income changes for SNCF Réseau, and no changes to charges for the railway undertakings using electric traction. The principles of the pricing of this charge are detailed in Appendix 6.1.3 of the NS.

2.2. SPECIAL CASE FOR FREIGHT

The charging of freight activities takes place within an economic context that differs from that of passenger activities: the charges paid by freight customers are less than the cost directly incurred. Due to the economic difficulties suffered by this sector, the State has formerly committed to compensating for this difference via the "freight compensation" scheme.

For the NST 2019, SNCF Réseau is reviewing its pricing in the light of the invitations formulated by ARAFER, in its recommendations No. 2016-016 dated 10 February 2016.

The 2019 tariff reform maintains the principle of directly attributable cost coverage between the State and freight companies, with the introduction of a modulation of Freight compensation by the State which differs by tonnage class. The introduction of class pricing (undertakings pay according to the tonnage class they belong to and not directly according to their intrinsic tonnages) makes it possible to reduce the impact of the reform on heavy freight trains.

Thus, the latter will benefit from greater compensation, unlike the lightest trains (light running freight especially) who already benefit from their reduced tonnages. In addition, the classes selected are relatively broad in order to allow freight companies to carry out massification within the same category, without price increases.

In this respect, two clarifications of vocabulary are introduced in the 2019 pricing project and explained below:

- net running charge (RC): it represents the part of the CDI paid by the companies after deduction of the State grant; it replaces the sum "traffic charge + reservation charge" of the current tariff; the reservation charge disappears and is not replaced by a market charge; the RC scales of the NS 2019 correspond to this traffic charge minus the State compensation;
- gross running charge (RC): this allows full CDI coverage and corresponds to the sum of net traffic charges plus the State grant.

Categories in tonnes	Average tonnage	% Tkm	"Net Traffic Charge"			"Gross Traffic Charge"			CDI coverage rate
			UIC 2-6	UIC 7-9	Average toll € / Tkm	UIC 2-6	UIC 7-9	CDI € / Tkm	
[0-350]	175	5%	0.85	0.56	1.87	0.85	0.56	3.21	100%
[350-750]	525	12%	1.01	0.48		1.67	0.79		61%
[750-1050]	875	11%	1.51	0.62		2.49	1.03		61%
[1050-1550]	1300	43%	2.10	0.79		3.49	1.32		61%
>=1550	1659	28%	2.32	0.83		4.33	1.56		54%

N.B.:

The coverage rates and average CDI are estimated from the actual 2016 data (Train-km and tonnes-km and distribution of traffic in UIC 2-6).

In 2019, SNCF Réseau will receive the net freight companies' charges, and state compensation equal to the difference between this net charge and the gross charge.

No mark-up (market charge) applies to the freight activity, as the freight rate remains well below the CDI.

2.3. MARKET CHARGE (RM) AND ACCESS CHARGE (RA)

The access charge (RA) and the market charge (RM) are mark-ups defined by market segment, which contribute to the coverage of fixed costs of the network. These charges are only applicable to passenger trains.

N.B.: this part only concerns passenger activities; the specific case of freight is described in § 2.2.

2.3.1. Application of the principles provided by European and national regulations

As stipulated in the first section, Article 32.1 of the Directive 2012/34/EU specifies that "*In order to obtain full recovery of the costs incurred by the infrastructure manager a Member State may, if the market can bear this, levy mark-ups*" on "*rail market segments*". The relevance of the segments is assessed with regard to the element pairs listed in point 1 of the Annex VI thereto²⁵. They shall contain "*at least the three following segments: freight services, passenger services within the framework of a public service contract and other passenger services*".

These principles have been transposed in Article 31 of the amended Decree No. 2003-194 of 7 March 2003. Article 31-2° of the aforementioned Decree further stipulates that the infrastructure manager (IM) may make a more in-depth segmentation of the markets according to the goods or passengers transported. A more in-depth segmentation has been adopted by SNCF Réseau.

2.3.2. Segmentation process for the rail market

In application of Article 31-1° of the amended Decree No. 2003-194 of 7 March 2003, the IM assesses the relevance of the segmentation implemented "*on the basis of data available to it and in accordance with the best practices in this field*". The segmentation is in keeping with the regulatory framework. The segmentation criteria used are mainly related to the nature of the transport service. They are different for contracted services and for non-contracted services.

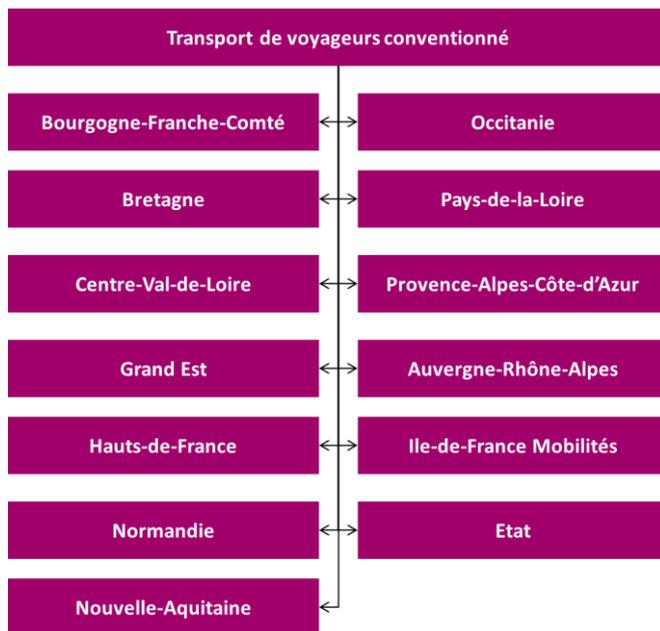
- **Segmentation of passenger transport activities under contract**

The category of "passenger services within the framework of a public service contract" constitutes one of the three minimum market segments explicitly provided for in the aforementioned Article 31.2° of the Decree No. 2003-194 of 7 March 2003. It concerns TER, Transilien and TET transport activities. Article 5 of Decree No. 97-446 specifies that SNCF Réseau distinguishes at least one segment by transport authority for the activities of transport of contracted passengers.

The segmentation of passenger transport activities under contract is described in the diagram below:

²⁵ "1. The pairs to be considered by infrastructure managers when they define a list of market segments with a view to introducing mark-ups in the charging system according to Article 32(1) include at least the following:

- a) passenger versus freight services;
- b) trains carrying dangerous goods versus other freight trains;
- c) domestic versus international services;
- d) combined transport versus direct trains;
- e) urban or regional versus interurban passenger services;
- f) block trains versus single wagon load trains;
- g) regular versus occasional train services".



- **Segmentation of passenger transport activities not under contract**

Article 31.2° of the amended Decree No. 2003-194 of 7 March 2003 mentions the existence of a mandatory minimum segment, referred to as "other passenger services". This essentially concerns long-distance TAGV and conventional Train activities (other non-contracted trains).

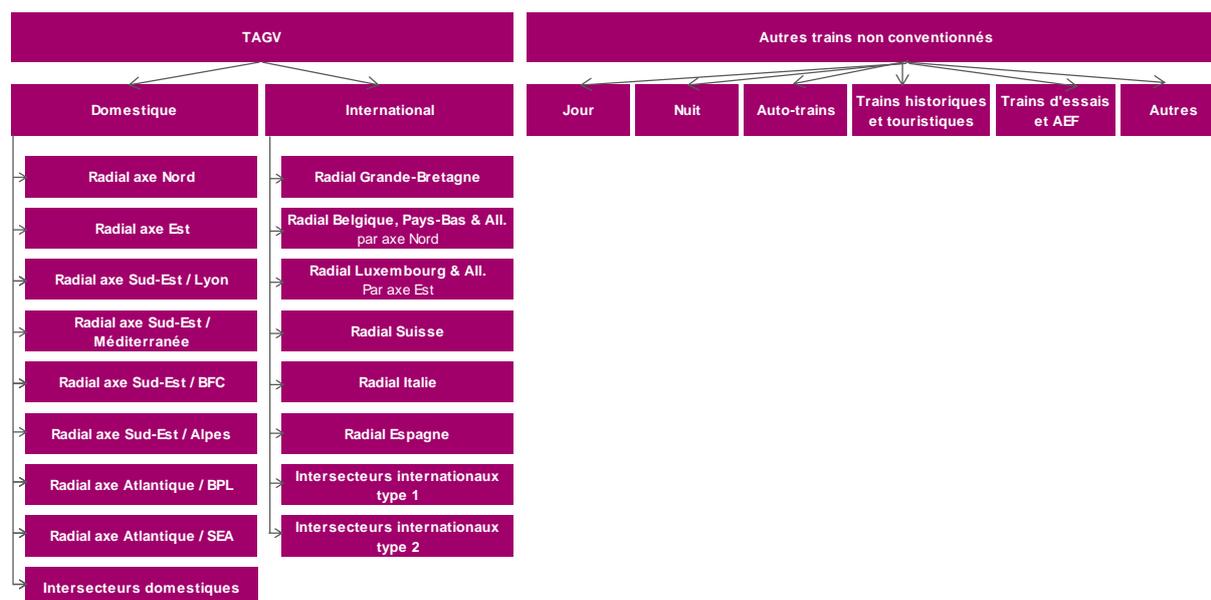
Article 5 of Decree No. 97-446 specifies that SNCF Réseau may carry out a further differentiation taking into account the origin or destination of the transport service.

For the TAGV activity, segmentation differentiates services according to groups of origins / destinations, referring to a division by axes including a distinction between domestic and international connections²⁶.

For the Other non-contracted Trains activity, the segmentation differentiates between the main types of traffic and does not refer to a division by axis used by the TAGV. Six market segments have been defined: day trains on conventional lines, night trains on conventional lines, vehicle transport trains (Auto-trains), historical and tourist trains, test trains and AEF and a residual segment.

²⁶ As suggested in Article 31-1° of the amended Decree No. 2003-194.

The segmentation of "other passenger transport services" can be summarised using the following breakdown:



2.3.3. The level of the mark-ups associated with the market segments

The mark-ups are levied, in principle, in line with the logic described in Article 6 of Decree No. 97-446. The level of mark-ups can be based on:

- Performance offered by the railway infrastructure (speed, power of the electrical system, etc.);
- The quality of the services facilities of SNCF Réseau;
- The density of use of a line or line section;
- Intrinsic characteristics of insured transport services (carry capacity of trains etc.).

- **The level of mark-ups for passenger transport activities not under contract**

For the TAGV, the market charge is defined by axis, with a separate scale for conventional lines (LC) and for high speed lines (LGV).

In order to check the adequacy of the charging system for the different TAGV market segments, SNCF Réseau conducts evaluations based on the economic model of a "normative transport operator", which is deemed to be representative of operators of high speed transport on the national rail network. This model can be used to estimate the transport operators' profitability and therefore to ensure that the level of the charges is bearable by the transport operators (described in the following paragraph).

Following the establishment of the market segments for the 2019 service timetable, the breakdown of the normative transport operator model was revised to match that of the market segments. The model principles have however stayed similar. This model has been used for several years to justify the bearability of the pricing of non-contracted activities and the results used for the 2017 service schedule showed that this pricing was sustainable. Similar results were obtained for the pricing of the 2019 service timetable.

For other trains not under contract:

- Day trains, a reputedly sustainable segment whose mark-up level is set at the same level as conventional line TAGVs;
- Night trains represent a more fragile market than day trains and whose mark-up level is zero;

- Auto-trains are services used to transport, usually at night, a vehicle between two stations in the rail network. This is a declining market for which the CDI is similar to that of freight trains and whose mark-up level is zero;
- Historical and tourist trains, a fragile segment, often run by associations, are at a zero mark-up level;
- Test trains and AEF, a segment deemed sustainable (with AEF invoicing the cost of tolls to its customers), has a mark-up level set to the same level as day trains;
- The other trains, a residual segment consisting mainly of trans-shipments.

- **The level of mark-ups for passenger transport activities under contract**

For contracted activities, a pricing schedule based on bearability cannot apply as highlighted by, for example, ARAFER²⁷, or the European Railway Regulator, IRG Rail, which mentioned that a level of mark-ups based on the market's ability to pay can hardly be applied to contracted transport²⁸.

Another method must apply. The purpose of the mark-ups is to cover the fixed costs that are not covered by the subsidies paid directly to the network operator²⁹.

In this context, in order not to impose an additional burden on the organising transport authorities, the level of the mark-ups has been set so as to maintain the level of tolls that are constant (excluding rail inflation and with a constant transport plan) per contracted market segment, as they could have done in Germany³⁰ for the DB Netz pricing.

2.3.4. Model of a normative transport operator

In order to check the adequacy of the charging system for the different TAGV market segments, SNCF Réseau conducts evaluations based on the economic model of a "normative transport operator", which is deemed to be representative of operators of high speed transport on the national rail network. This model can be used to estimate the transport operators' profitability and therefore to ensure that the level of the charges is bearable by the transport operators.

The normative transport operator model incorporates different sections (model for forecasting revenue, model for estimating operating costs, model that recreates the financial value of the assets from the rolling stock), and makes it possible to test the impact of changes in charges on the profitability of a normative transport operator. This model is declined by axis (Radial South-East, Radial East, Radial North, Radial Atlantic, Intersectors, etc.), then sometimes by sub-axes (for example, between Lyon, CFB, Alps and Mediterranean for the axis South-East) to correspond with the market segments defined for the application of the mark-ups.

A demand forecasting model, using elasticities common to all the axes, makes it possible to calculate revenue by axis (traffic and average income of transport operators) in relation to macroeconomic parameters (GDP, price of oil, inflation on a national scale) combined with hypotheses concerning rail service policy (volume and price per axis).

A model for transport operator costs enables the operating costs and, combined with the demand forecasting model, the gross operating surplus of a transport operator to be estimated. Numerous audits have been carried out into the results of these studies and there have been a number of

²⁷ "We have heard, in particular from exchanges with industry stakeholders, that the contractual nature of these activities justifies adopting an economic approach different from that prevailing for non-contracted activities, in view of the fact that, in particular, the nature of the relationship between charges and the final price on the downstream market is fundamentally different (this difference is due in particular to the fact that downstream pricing is subject to public grants, due to the public service obligations which characterise these services. Activities)" (cf. ARAFER Opinion No. 2017-006 of 1 February 2017 on the setting of infrastructure charges for the use of the national rail network for the 2018 timetable, § 86).

²⁸ "This problem is all the more complex when considering services within the framework of a public service contract. These public services are further subsidised and therefore the determination of a price elasticity for these market segments is more complicated"(cf. IRG-Rail-2016-7, Initial approach to market segment definition and criteria for an assessment of mark-ups in consideration of Directive 2012-34, November 2016)

²⁹ IRG-Rail, Initial approach to market segment definition and criteria for an assessment of mark-ups in consideration of Directive 2012-34, November 2016: "Infrastructure managers are allowed to levy mark-ups if they do not receive a full state compensation of their fixed costs".

³⁰ IRG-Rail, Initial approach to market segment definition and criteria for an assessment of mark-ups in consideration of Directive 2012-34, November 2016: "DB Netz AG has to set the charges for the usage of rail infrastructure [...] per Land. The average charges per federal state have to be calculated such that they equal the average charges paid in the timetable period 2016-17 by the railway undertaking providing regional passenger transport in that federal state."

attempts to ensure consistency with the figures published by the incumbent transport operator and its subsidiaries.

The cost items considered are as follows:

- traction, support and shunting
- energy
- maintenance
- on-board services
- services within stations, distribution and communication
- structure
- infrastructure charges

The scope used to estimate the costs and income only concerns the national rail network. These cost items change over time, taking into account on the one hand the increase in the average cost per employee or the change in the cost of intermediate consumption (e.g. raw materials) and, on the other hand, the gains in productivity achieved by the operator.

Finally, in relation to the operational charges and revenues, it is necessary to consider the capital costs associated with the possession of assets. These charges are assessed using two approaches: an accounting approach with a depreciation charge and financial costs as they might appear in an income statement, and an economic approach. With the economic approach, the depreciations are estimated based on current costs (and not based on the purchase value, as with an accounting approach) in a way that more accurately reflects the need for renewal of the transport operator's assets. In addition, with this approach, the cost of capital tied up by the company is returned.

The normative transport operator model is updated annually according to the most recent data that the infrastructure manager has been able to collect, in particular to take account of developments in the macroeconomic context and inter-modal competition (developments in the air markets, the occurrence of "low cost" competition, etc.). In order to further improve its model, SNCF Réseau accepts all the information that operators can provide (revenue by route, cost model, etc.)

In terms of control, the model of a normative transport operator is transmitted every year to the Regulator to justify the bearability of the charging system for high-speed trains.

2.3.5. Access charge (RA)

For activities under contract, SNCF Réseau levies an access charge (RA) designed to cover the fixed costs of the infrastructure that are directly attributable to activities under contract (TER, Transilien, TET). This charge helps to cover the total cost borne by SNCF Réseau in addition to the other revenues it receives as part of the minimum services. The access charge is owed by the State for TET activity, by the State to account for regions for TER activity and by Ile-de-France Mobilités for Transilien activity.

The amount for the TER access charge was estimated in 2007 at the time of the IGF-CGPC report on national rail network charging in preparation for the 2010 charging reform (see part 2, § 1.2 of the report). The amount for the fixed costs for maintenance, operation and renewal was calculated from the difference between the total cost and their variable costs (product of the traffic and marginal costs of each of the activities) for each line category. The fixed costs are divided between the activities in proportion to the number of trains. For each region, the TER RA was calculated in order to match the sum of fixed costs allocated to TER activity on the corresponding network.

The access charge for TET was estimated in 2011 for the 2012 Network Statement. It was calculated using the same principles as the TER RA and reflects the fixed costs of TET activity.

Since 2010 (for the TER RA) and 2012 (for the TET RA), the amount for the access charges is calculated by increasing the initial values (with reference to previous NSs).

The annual changes to access charges are described in § 3.1.

2.4. CONGESTION CHARGE (RS)

In accordance with Article 33-1 of Decree No. 2003-194 of 7 March 2003, SNCF Réseau proposed in 2016 to introduce a congestion charge in the scale of minimum services in the NST 2018, under the rarity capacities.

The congestion charge suggested by SNCF Réseau corresponds to a price signal intended to encourage train path applicants to reconsider their needs. The fee was flat-rate, separate according to the activities, and had to be clear-cut during the NST 2018, in order to be eventually reviewed for the NST 2019 taking experience feedback into account.

In its opinion No. 2017-006 of 1 February 2017, ARAFER noted that the principle of the congestion charge was consistent but that the level of charges was not justified.

Pending the continuation of joint discussions on an experimental phase, a congestion charge will not be implemented for the NST 2019.

2.5. SPECIAL CHARGES

The additional charges for the use of the infrastructures referred to above are specifically set out to take account of the investment costs incurred by SNCF Réseau on its infrastructure. According to the methods in Article L2111-10-1 of the Transport Code, these charges are calculated to avoid any negative impact on the SNCF Réseau accounts in the depreciation period for this investment. The charges change in line with the indexation of tolls.

2.5.1. Charge for use of freight trains on the section 38080 "Montérolier-Buchy – Motteville"

The Montérolier-Buchy-Motteville charge is part of a corridor policy designed to improve the accessibility of the Port of Le Havre (Port 2000), in particular by modernising the section in question, which forms an alternative route avoiding the dense node of Rouen.

To enable SNCF Réseau to fulfil its financial commitment estimated at a current value of €9.918 M, a specific Montérolier-Buchy-Motteville charge was introduced in 2007 and will cease to apply as of the 2027 timetable.

2.5.2. Charges for use of freight trains and trains on the piggyback corridor through the Alps (AFA) on the line "Saint-Pierre-d'Albigny – Modane Frontière"

These charges were introduced to cover the financing provided by SNCF Réseau for implementation of:

- the facilities on the section "Saint-Pierre-d'Albigny – Modane Frontière" (freight trains and AFA trains): this was introduced in 2008 and will cease to apply as of the 2028 timetable;
- modernisation work on the Mont Cenis (or "Frejus") tunnel and the conversion to gauge GB1 and work to improve security between Ambérieu and the French-Italian border (Modane): this was introduced in 2012 and will cease to apply as of the 2032 timetable.

The aim of this work is to develop cross-border traffic of freight transport.

The financial contribution made by SNCF Réseau in 2004 provided additional financing via a special charge based on the traffic level of the benefiting activities, with a distinction between freight and piggyback corridors.

In 2004, these charges were configured to produce the SNCF Réseau contribution of € 5.409 M current value.

2.5.3. Charge for use of the short link line at Mulhouse

The short link line at Mulhouse is an investment that avoids the need for direct trains capable of high speeds that are travelling from and to northern Alsace to double back in Mulhouse station or to use the Mulhouse-Nord marshalling yard bypass. It allows trains capable of high speeds to gain around 10 minutes and was introduced from the 2012 timetable (at € 300/train path).

This special charge (charge is per train path) covers the SNCF Réseau contribution of € 5.1 M current value within this project and will cease to apply as of the 2032 timetable.

2.5.4. Charge for use of electric trains on the sections 53003 A "Pasilly – Le Creusot" and 53003 B "Le Creusot – Mâcon"

The charge for use of electric trains on the sections 53003 A "Pasilly – Le Creusot" and 53003 B "Le Creusot – Mâcon" (both on the Paris-Lyons HSL) corresponds to the use of facilities distributing traction energy to trains ("catenary systems").

This charge is designed to cover the investment of € 52.333 M excluding VAT and is fixed for a period of 15 years from the end of the work. It was introduced at the time of the 2009 timetable and will cease to apply as of the 2024 timetable.

2.5.5. Summary

For each of the charges defined above, the amount of the investment made by SNCF Réseau and covered by the special charge, and the period of application for the charge are detailed below:

Special charges	Amount of investment borne by SNCF Réseau In million euros, current value	Duration of collection	First year of collection	Last year (last timetable) of collection
Charge for use of freight trains on the section 38080 "Montérolier-Buchy – Motteville"	€9,918 M	20 years	2007	2026
Charges for use of freight trains on the line "Saint-Pierre-d'Albigny – Modane Frontière"	€5,409 M	20 years	2008	2027
Charges for use of trains of the piggyback corridor through the Alps (AFA) on the line "Saint-Pierre-d'Albigny – Modane Frontière"			2012	2031
Charge for use of electric trains on the sections 53003 A "Pasilly – Le Creusot" and 53003 B "Le Creusot – Mâcon"	€52,333 M	15 years	2009	2023
Charge for use of the short link line at Mulhouse	€ 5.1 M	20 years	2012	2031

3. CHANGES IN COSTS AND CHARGES

3.1. MULTI-YEAR CHANGE DETERMINED BY THE PERFORMANCE CONTRACT

The multi-year performance contract, mentioned in Article L.2111-10 of the Transport Code, concluded between the State and SNCF Réseau on 20 April 2017³¹ for a period of 10 years (2017-2027), sets the financial trajectory of SNCF Réseau and in particular the management of global annual variations in pricing, enabling it to reach the goal of full cost coverage by the end of the contract.

This trajectory is determined over the first 3 years and is then only indicative until the end of the ten-year contract. The rates of change used in the contract may be revised on a triennial basis.

The indexation history of passenger tolls for the period 2018-2020 is + 1.1% for the NST 2018, + 1.7% for the NST 2019 and + 2.4% for the NST 2020.

Thus, the increase of 1.7% for passenger activities for the NST 2019 corresponds to the overall increase in minimum services (excluding RCTE A). In detail,

- the indexation of the running charge (RC) follows the indexation of the CDI;
- the indexation of the electric traction charge (RCE) follows the indexation of the CDI specific to this service (the same amount of RCE is applied for the freight activity)
- the indexation rates of the market charge (RM) and the access charge (AR) are calculated so as to guarantee the overall increase of + 1.7%.

3.2. SPECIFIC CASE OF CHANGE TO THE AMOUNT OF THE RUNNING CHARGE FOR FREIGHT ACTIVITIES

For freight activities, in accordance with the objects laid down by the Secretary of State during the 5th "Conference for boosting rail freight" of 06 October 2016, the State decided to adopt a ten-year compensatory period for recovering the infrastructure usage cost, resulting in an average change in tolls of around 4.5% per year beyond rail inflation, applicable from the 2018 timetable onwards.

In order to ensure that the charging system reflects the service quality level proposed, the State has also decided that three quarters of this increase, above rail inflation rates, will be directly dependent on the infrastructure manager achieving the quality improvement objectives on the train paths proposed. The indicators allowing these improvements to be measured through a synoptic indicator (SI) have therefore been defined in conjunction with the freight operators in 2016 and are described below.

The change of prices from one NST to another forms part of a course of evolutions aiming at covering the cost directly incurred by the year 2027. This trajectory of changes comprises several steps:

- firstly, tariffs must change based on rail inflation, which is the indicator of changes in the costs of the network, and a fixed part which makes it possible to reduce by 25% the difference between revenues and costs over the period [2017-2027]
→ for the NST 2019, this inflation is 2.4 %;
- secondly, a variable part linked to the change of the synoptic indicator (SI) of quality of service, which must contribute to 75% of the recovery of the CDI.

This variable portion is calculated³² based on the value of the SI for the NST 2017 (estimated at 60.8%) and the objective of reaching the level of 85% in 2027, a quality threshold deemed satisfactory to reach the CDI.

³¹ The contract is published on the SNCF Réseau website

³² In detail, the variable portion is calculated in proportion to the change of the synoptic indicator calculated for the NST Y, unless the value of the synoptic indicator of the NST Y is lower than that of the NST 2017 (considered as reference value). In the latter case, the 2017 value is applied. In other words, the value selected for the NST Y corresponds to the largest value between the 2017 reference value and that estimated for year Y.

→ The indicator calculated for the NST 2019 rose by 2 points, leading to a mechanical rate increase of +3.4%.

Therefore, for the 2019 timetable, the overall price rise of the running charge for freight activity will be 5.8 %.

Detail on the quality of service synoptic indicator

The indicators used to estimate the quality of service are as follows. They are aggregated by applying the weighting indicated to determine the synoptic indicator (SI).

Indicator	Measurement	Weighting (%)
Quality of response to demand in terms of journey time	(Average speed, excluding requested stops, of the last theoretical schedule known at D-7) / (Average speed, excluding theoretical stops, of the train path requested by mid-April Y-1 at the latest) Perimeter: all train path-days requested	10
Allocation rate of train path-days under study (TPD-S) at D-60	(Number of TPD-S finally allocated less than 60 days prior to operation) / (Number of TPD-S offered in the timetable reduced by the number of TPD-S subject to a cancellation or modification request from customers before D-60) Perimeter: all train path-days studied	20
Allocation rate of pre-built train paths	<ul style="list-style-type: none"> (Number of TPD allocated to the timetable and pre-matched to a pre-built train path) / (Number of TPD requested and pre-matched to a pre-built train path) When the SIPH tool is available, the following indicator will complement the indicator above: (Number of TPD allocated to the timetable and pre-matched to a pre-built train path) / (Number of TPD allocated to the timetable) 	25
Average theoretical commercial speed trend	(Average theoretical commercial speed at D-1 taking into account stops) / 80 Perimeter: all train path-days allocated	20
Allocation rate of train path day Creation or Addition requests during the adaptation phase (DSA)	(Number of unique TPD requested with the Creation or Addition of days in DSA, allocated at D-7 and complying with the tolerances on departure and arrival times) / (Number of unique TPD requested with the Creation or Addition of days in DSA). As soon as the SIPH tool is available, this indicator will be calculated for allocations at D-28	25
Synoptic service quality indicator (SI)	Application of the weighting indicated to the results of each indicator for each timetable, then the average of the 3 results of the SI.	100

In order to smooth out the changes in the synoptic indicator (SI), this indicator is estimated, for each timetable, from the data derived from the last available 9 quarters. For a timetable Y, the indicator is calculated at mid-Y-2 (period during which the charges for the timetable Y are drawn up) on the basis of timetables Y-4, Y-3 and the 1st quarter of timetable Y-2. Therefore, for the 2019 timetable, the data is based on the 2015, 2016 and first quarter of the 2017 timetables.