



*2017*

*NETWORK STATEMENT*

*A publication of the  
Greek Railways Organization*

NETWORK STATEMENT  
2017

ATHENS

## List of amendments NS 2017

**No. / Date**

**Paragraph**



## **INTRODUCTION**

The Greek Railways Organization (OSE S.A.) is publishing the present Network Statement, which refers to the entire OSE network, in conformity with the 1st Railway Package of Community Directives (Directives 2001/12, 2001/13 and 2001/14) of the European Parliament and Council of February 26, 2001 and their transposition in the Greek legislation through the presidential decree PD41/07.03.2005.

The present Network Statement is published with the aim to describe in detail the services offered by OSE to the Railway Undertakings that wish to provide services of passenger and freight transport within its railway network.

The present Network is valid for the timetable period 11.12.2016 – 09.12.2017.

The Network Statement consists of the following chapters:

1. General Information
2. Conditions for access
3. Infrastructure
4. Capacity allocation
5. Services
6. Charges

The contents of the 6 sections of the Network Statement are classified as follows:

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## **CHAPTER 1**

### **GENERAL INFORMATION**

#### **1.1 Introduction**

The present Network Statement (NS) has been drafted by OSE, the Infrastructure Manager of the Hellenic Railway Network, with the aim to describe in detail the services offered by the Organisation to Railway Undertakings that wish to provide services of passenger and freight railway transport within its network.

The primary target of the Network Statement (NS) is to constitute a manual-guide of relevant information, available to this date, regarding the services provided to Railway Undertakings.

Furthermore, it is provided that additional information will be added gradually to future editions of the NS.

#### **1.2 Objective**

The NS will constitute a unified source of information, useful and necessary to every Railway Undertaking that wishes to provide transportation services within the railway network, as this is described in the present NS. A basic concern during drafting of the NS was to ensure easy and unbiased access to information.

#### **1.3 Legal framework**

The NS was constructed in conformity with the stipulations of Directive 2001/14/EC of the European Parliament and Council of February 26, 2001, “concerning the distribution of railway infrastructure capacity and the charges for the usage of rail infrastructure”.

#### **1.4 Legal status**

##### **1.4.1 General remarks**



The NS is to be a source of information for Railway Undertakings and under this form it has no contractual validity. Nonetheless, in the case that a Railway Undertaking and OSE have entered an agreement for access to the railway network in question, contractual validity is immediately applied to all the documents comprising the NS.

#### 1.4.2 Communication of scheduled modifications

The NS includes information regarding a particular time period, namely its validity period, prior to the construction of the next NS. When a modification of the physical network and/or any of its conditions of use is to take place within the validity period of the NS, the modifications in question must be included anew in the NS. Nevertheless, no commitment is incurred towards the Railway Undertakings for the application of the modifications in question, at the dates being presented or referred to.

#### 1.4.3 Appeal procedures

The Railway Undertakings that have applied for access to the railway network being described or have already entered into an agreement for access to the railway network being described, have the right to a recourse with the Railways Regulatory Body (RRB), against decisions by the Infrastructure Manager regarding the NS.

### 1.5 Contents of the Network Statement

The Network Statement includes, in particular, the following information:

- information regarding the infrastructure available and the conditions for access to it,
- information regarding the charging principles and the invoices to be applied to the particular infrastructure, for specific services offered,
- information on the capacity allocation system, as well as the characteristics of the capacity itself,
- application deadlines and procedures,
- applicant requirements,
- capacity allocation timetable,

- principles of the coordination procedure (*for a definition see § 1.11.1*),
- procedures and criteria applied in the event of a congested infrastructure,
- details of possible restrictions on the use of the infrastructure,
- priority conditions regarding the allocation.
- detailed measures to ensure proper handling of freight, international and ad-hoc transports.

## **1.6 Application and alterations**

The present NS is valid for time period 11.12.2016 - 09.12.2017. It has been provided that OSE will also draft the future editions of the NS as well, while it will also be updating the present NS at regular intervals, in order to include potential, additional information or/and alterations of the existing information. Many of the documents that the NS is referring to (as for example, conditions for access to the network) are subject to the existing control and alteration procedures, which include consultations and/or agreements with Railway Undertakings.

## **1.7 Regulations of publication and distribution**

The NS is published in two languages (Greek and English). It is available by OSE in print, free of charge, and on the Internet at the website: [www.ose.gr](http://www.ose.gr).

Regulations for the publication, distribution and charging of related documents, such as conditions for access to the network, have been provided for. Anyone wishing to be included in the distribution list for these documents, should contact the competent executives of the Infrastructure Manager, at the address provided in paragraph 1.8.1 below.

## **1.8 Competent Services**

### **1.8.1 OSE - Generally**

The competent service for Railway Undertakings that wish to enter into an agreement with the Infrastructure Manager for access to the railway network, is

the Traffic Directorate and all communication is possible at the following address:

**OSE Traffic Directorate**

**1-3Karoloust., T.K.104-37, Athens**

**Tel.: +30 210 5297665**

**Fax: +30 210 5297652**

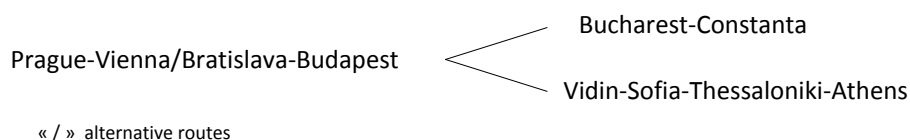
**e-mail: c.chrissagis@osenet.gr**

## 1.8.2 OSE – NS

For issues regarding the content of the NS, the interested parties may write to the address of paragraph 1.8.1.

## 1.9 Freight Corridor 7

According to the regulation 913/2010 (EU) of the European Parliament and of the Council, Freight Corridor 7 passes through the Greek Network. The principal routes of the corridor are the following:



The European Rail Freight Corridor 7 is in operation since November 2013..Further information and documents related to this corridor are available on the web site: [www.rfc7.eu](http://www.rfc7.eu).

## 1.10 [blank for future use]

## 1.11 Definitions, Points to note and Abbreviations/Symbols

### 1.11.1 Definitions

1. *License*: the permission that the Regulatory Authority for Railways (RAS) grants to an undertaking, in order to acknowledge its status as a railway undertaking.
2. *Applicant*: the railway undertaking and/or international group of railway undertakings, as well as freighters, transport order receivers, and undertakings of combined transports, which hold a license for the operation of railway services in the Greek territory.
3. *Network Statement*: the statement which specifies in detail the general rules, deadlines, procedures, and criteria concerning the charging and capacity allocation systems. The statement also includes all the information necessary for the submission of the infrastructure capacity application.
4. *Manager of Infrastructure*: the undertaking responsible mainly for the installation and maintenance of the national railway infrastructure, as well as the infrastructure control and security systems.
5. *Network*: the entire railway infrastructure administered by the Infrastructure Manager.
6. *National Railway Infrastructure*: the Railway Infrastructure existing within the Greek territory, as well as any future expansion thereof.
7. *Allocation*: the allocation of railway infrastructure capacity by the Infrastructure Manager.
8. *Congested infrastructure*: a section of the infrastructure for which the request for capacity cannot be fully satisfied during certain periods, even after the various capacity applications have been coordinated.
9. *Regional services*: transport services aimed to accommodate the transportation needs of an area.
10. *Services timetable*: the data defining all the scheduled circulations of trains and rolling stock, taking place within the infrastructure in question during the validity period of the timetable.
11. *Railway path*: the infrastructure capacity required for the circulation of a train between two places at a given time period.

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12. *Railway Undertaking*: every private or public undertaking, which has been granted a license based on the existing community legislation and whose main activity is the provision of passenger and/or freight railway transport services, with the condition that this undertaking mandatorily provides the traction as well. This definition also includes the undertakings which provide only traction.
  13. *Framework Agreement*: a general agreement, legally binding by virtue of public or private law, which stipulates the rights and responsibilities of an applicant and the Manager of Infrastructure or the competent allocation body, regarding the infrastructure capacity to be allocated and the fees to be paid for a period longer than one period of the services timetable.
  14. *Coordination*: the procedure through which the allocation body and the applicants attempt to resolve the cases of conflicting applications for infrastructure capacity.
  15. *Infrastructure capacity*: the ability to time-programme train paths requested for an element of the infrastructure for a specific period.
  16. *Loading gauge*: the dimensions of the maximum transverse cross-section of the vehicles circulating on the tracks of OSE must not exceed the respective dimensions presented in Figure 1 of Annex III-D, by which the loading gauge of OSE is designated.
  17. *Free cross-section gauge*: the space surrounding the tracks of OSE, that must remain free for the circulation of rolling stock, has the cross-section presented in Figure 2 of Annex III-D, by which the free cross-section perimeter of these tracks is designated.
- 1.11. Points to note, Abbreviations

#### **Points to note**

It is necessary to draw attention to some points regarding the terms that are used in the present NS and are applicable; i.e. either there is no definition for them or their exact definition is not applied, yet they were defined in the present NS, for the purposes of the Statement.

1. *Line Code*: A code number for the identification of the line. The number is given according to AGC coding<sup>1</sup>, once the line has been included in the AGC agreement.
2. *Path*: line or section of the line which comprises a discernible section of the network, when in between main/major transportation nodes of the network.
3. *Network Transportation Node*: a specific geographical position / network station which is used to ensure circulation or/and passenger servicing (passenger or / and freight).
4. *Terminus*: the station where railway lines terminate which is linked with the remaining railway network by only one direction.
5. *Passenger Station*: the station which services passenger traffic, yet without its operation/role being exhausted to the servicing of passengers.
6. *Commercial Station*: the station which services freight traffic, yet without its operation/role being exhausted to the servicing of freight.
7. *Border Station*: the last station to be located before the end of the National Railway Network or the country borders.

### **Abbreviations/ Symbols**

The abbreviations found in the text and the Annexes, are the following:

**NS**: Network Statement

**Y**: Yes

**N**: No

**St**: Stop

**RS**: Railway Station

**K.P.**: Kilometric Position

**SC**: Single Cross-section (in a tunnel)

**DC**: Double Cross-section (in a tunnel)

-Nothing exists

**x**: No information available

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<sup>1</sup>European Agreement for major international railway lines, United Nations, 1985

**NGL:** Narrow Gauge Line (Metric Line)

**CL:** Conventional Line (Standard Line)

**UL:** Upgraded line for express train traffic (Line under upgrade in order to serve express traffic)

**NL:** New Line

**C:** Cog Railway

**C.L.S.:** Color Light Signaling

**ETCS:** European Train Control System

**\***: *Indicates a footnote*

## CHAPTER 2

### CONDITIONS FOR ACCESS

#### 2.1 Legal framework

Access to the railway network, as this is described in the present NS, is regulated by the acts of the Greek Parliament and the relevant legislation and regulations. The NS does provide general directions for the legal conditions for access to the railway network, cited in the previous chapter, yet it is neither conclusive nor exhaustive. OSE recommends that undertakings applying for an access license consult a specialized legal individual or undertaking.

#### 2.2 General conditions

##### 2.2.1 License for access to the network

Any Railway Undertaking wishing to provide transportation services within the railway network described in the present NS, must satisfy the relevant legal requirements. These requirements include:

- Railway Undertaking License
- Safety certificate
- Appropriate personnel and resources
- Full insurance
- Access agreement with OSE for access to the network

#### 2.3 General operational / commercial conditions

##### 2.3.1 Framework agreements

*See paragraph 2.3.2 below.*

##### 2.3.2 Access Agreement

Every Railway Undertaking must enter into an agreement with OSE for access to its network, so that it may be fully covered as far as the planned transportation services are concerned. Separate agreements for access to stations and services facilities are



also necessary. Framework agreements are submitted for approval to the Regulatory Authority for Railways (RAS), in accordance with the Law 3891/2010.

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## **CHAPTER 3 INFRASTRUCTURE**

### **3.1 Definition**

The term Infrastructure in the present NS refers to the National Railway Infrastructure. National Railway Infrastructure is the railway infrastructure which is located within the Greek territory and belongs, per ownership or usage right to OSE, as well as any future expansion thereof. OSE is competent for the maintenance of the infrastructure, namely for the construction and maintenance of the tracks, structures and relevant equipment, and of the installations required for the infrastructure's maintenance.

### **3.2 Network description**

Section 9 of the law 3891/2010 defines the categories in which the National Railway Infrastructure is divided into, as well as the criteria for classifying segments under these categories.

The above segmentation is the following:

## I.Active Network

Active Network	
Network	Segments
<b>Main AXIS</b> (normal gauge)	<b>Piraeus (Old Station SPAP)-AIR-Athens-Oinoi- Leianokladi – Palaiofarsalos – Larisa - Platy-Thessaloniki-Eidomeni (Frontier Station)</b>
<b>Branches</b>	Oinoi-Chalkida
	Leianokladi-Lamia-Stylida
	Palaiofarsalos-Kalampaka
	Larisa-Volos
<b>SUBURBAN (ATHENS)</b>	<b>Airport (El. Venizelos)–Metamorfofi-SKA-Liosia-Korinthos-Kiato</b>
<b>Branches</b>	Neo Ikonio – K.P. 25+286
	Athens-Liosia
	Athens-Metamorfofi
<b>Western Macedonia</b> (normal gauge)	<b>(Thessaloniki)-Platy-Edessa-Amyntaio</b>
<b>Branches</b>	Amyntaio-Florina
	Amyntaio-K.P. 32+500 AmKZ
<b>Eastern Macedonia</b> (normal gauge)	<b>Thessaloniki-Strymonas-Alexandroupolis-Pythio-Dikaia-Ormenio-K.P. 32+900 (borders)</b>
<b>Branches</b>	Strymonas-Promahonas (Frontier Station)
<b>Peloponnesus</b> (metric gauge)	Psathopyrgos-Rio-Patra-Ag.Andreas
<b>Branches</b>	Ag. Andreas-Pyrgos-Kalonero-Zevgolatio-Kalamata (except scheduled passenger trains)
	Corinth (Old Station)-Argos-Tripoli (except scheduled passenger trains)
	Corinth (Old Station)-Corinth (New Station) (except scheduled passenger trains)
	Ag. Anargyroi-Elefsina(combined gauge)
	Diakofto-Kalavryta
<b>Branches</b>	Pyrgos-Olympia
	Pyrgos-Katakolo
	Argos-Nafplio(except scheduled passenger trains)
<b>Pilio Line (600 mm)</b>	<b>AnoLehonia - Milies</b>

## II. Network under construction

Network under construction	
Network	Segments
MAIN AXIS(normal gauge)	
MAINLAND GREECE	Tithorea-Domokos (New Line)
CENTRAL MACEDONIA	Polykastro-Eidomeni (New Line)
PELOPONNESUS (metric gauge)	Tripoli-Lefktro-Zevgolatio
PELOPONNESUS (normal gauge)	Kiato-Rododafni
WESTERN MACEDONIA	K.P. 32+500 AmKZ - Kozani

## III.Active Network under temporary operation suspension

Active Network under temporary operation suspension	
Network	Segments
MAINLAND GREECE (normal gauge)	Piraeus Port (Ag. Dionysios)-Ag.I.Rentis (A.I.R.)
	Pineios Bridge-Rapsani (old segment)
	NeoiPoroi-Platamonas (old segment)
MAINLAND GREECE(metric gauge)	Volos-Velestino-Palaiofarsalo
PELOPONNESUS(metric gauge)	Elefsis –Corinth(Old Station)
	Isthmus –Loutraki
	Diakofto-Psathopyrgos
	Kavasila-Killini
	Kalonero-Kyparissia
	Lefktro-Megalopoli
	Asprohoma-Messini
	Kryoneri-Agrinio
MAINLAND GREECE (600mm)	Volos-Anavros
	Anavros-Agria
	Agria-AnoLehonia
EASTERN MACEDONIA (normal gauge)	Tracing segments between Lahanokipoi-Mouries
WESTERN MACEDONIA (normal gauge)	Mesonisi (Florina)-NeosKafkassos(Frontier Station)

#### IV. Obsolete Network

Obsolete Network	
Network	Τμήματα Γραμμής
MAINLAND GREECE (normal gauge)	Evangelismos - Pineios Bridge (not included) (old segment)
	Rapsani-Neoi Poroi (old segment)
	Platamonas (Old Station)- Exit of existing RS of Lithoro (old segment)
	Korinos-Aiginio(old segment)
PELOPONNESUS(metric gauge)	Ag. Anargyroi-Elefsis
	Corinth (Old Station) -Diakofto
	Vartholomio-LoutraKyllene
EASTERN MACEDONIA (normal gauge)	NeaZihni-AmfipoliLimenas

At the categories listed above, no private sidetrack is included.

The network is depicted on Map 1, below.

The railway network of OSE is geographically divided into three Regions:

- **Athens Region**
- **Peloponnesus Region**
- **Macedonia – Thrace Region**

### 3.2.1 Geographical description

#### Routes

The existing routes (*for a definition see § 1.11*) of the railway network of OSE are presented in **ANNEX I-A: Infrastructure Data / Routes – Piraeus - Athens – Platy Segment**, **ANNEX I-B: Infrastructure Data / Routes – Peloponnesus Metric Line**, **ANNEX I-C: Infrastructure Data / Routes – Florina – Platy – Alexandroupolis – Ormenio Segment**, **ANNEX I-D: Athens Suburban railway**.



**Map 1** OSE's Railway Network

### **Network Transportation Nodes**

The existing transportation Nodes (*for a definition see § 1.11*) of the OSE railway network -whether stations or not – are presented in **ANNEX II-A: Data of Network Nodes / Stations – Athens Region**, **ANNEX II-B: Data of Network Nodes / Stations– Peloponnesus Region**, **ANNEX II-C: Data of Network Nodes / Stations – Macedonia – Thrace Region**.

#### 3.2.2 Characteristics of the railway network

##### **Loading gauge and free cross section gauge**

The loading gauge and free cross-section gauge (*for definitions see § 1.11*) are illustrated in Figures 1 and 2, respectively, of **ANNEX III-D: Loading gauge and free cross-section gauge**.

##### **Axial load**

The maximum acceptable axial load for the network is 22.5 tons. In more detail, the maximum acceptable axial load is presented in **ANNEX III-A: Loading and Speed – Athens Region**, **ANNEX III-B: Loading and Speed – Peloponnesus Region**, **ANNEX III-C: Loading and Speed – Macedonia – Thrace Region**. A special written traffic license is required when the axle load exceeds the allowed values, taking into consideration the defined deviation of 2%. This license is granted after a specific carriage contract has been concluded between the competent organizations.

##### **Load per running meter of track**

The maximum acceptable load per running meter of track is 8 tons/meter of track, along the entire network.

##### **Gradient**

The maximum longitudinal gradient on the tracks of the existing network is 28,08‰ (excluding the DIAKOPTO-KALAVRYTA Cog railway line, where there is gradient of up to 202‰). More specifically, the maximum longitudinal gradients for the network are presented in **ANNEX I-A: Infrastructure Data / Routes – Piraeus – Athens – Platy Segment**, **ANNEX I-B: Infrastructure Data / Routes – Peloponnesus Metric Line**, **ANNEX I-C: Infrastructure Data / Routes – Florina**

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– *Platy – Alexandroupolis – Ormenio Segment*, **ANNEX I-D: Athens Suburban Railway**.

### **Speed**

The maximum allowed speed for passenger trains on the network is 160 km/h, while for freight trains it is 120 km/h. More specifically, the maximum speeds for the network are presented in **ANNEX III-A: Loading and Speed – Athens Region**, **ANNEX III-B: Loading and Speed– Peloponnesus Region**, **ANNEX III-C: Loading and Speed – Macedonia– Thrace Region**.

### **Powered network**

The length of the powered network, is shown in **ANNEX I-A: Infrastructure Data / Routes– Piraeus – Athens – Platy Segment**, **ANNEX I-B: Infrastructure Data / Routes – Peloponnesus Metric Line**, **ANNEX I-C: Infrastructure Data / Routes –Florina – Platy – Alexandroupolis – Ormenion Segment**, **ANNEX I-D: Athens Suburban Railway**.

### **Maximum train length allowed**

The maximum acceptable train length must be such that allows the train to stop at the stations of preference of the Railway Undertaking it belongs to. Therefore, the maximum acceptable train length of a passenger train must be compatible with the length of the station platforms and the maximum acceptable train length of a freight train must be compatible with the length of the open line of the stations. Data of the stations presented in Annexes: **ANNEX II-A: Data of Network Nodes / Stations – Athens Region**, **ANNEX II-B: Data of Network Nodes / Stations –Peloponnesus Region**, **ANNEX II-C: Data of Network Nodes / Stations – Macedonia – Thrace Region**.

## 3.2.3 Traffic management and security

### **Signalling**

Network signalling – where available – appears in a separate column and characterized as C.L.S. (Colour Light Signalling – Luminous signal) in annexes: **I-A, I-B, I-C, I-C and II-A, II-B, II-C**.

The train protection system installed in Greece is of ETCSLevel1 type (European Train Control System, part of ERTMS - European Rail Traffic Management System), and requires the prior existence of signaling along the line.



### **Traffic management system**

The central traffic management (“remote command”) on the national network is performed by the Central Operators (CO) installed at the Traffic Control Centers (TCC). OSE avails Traffic Control Centers in Corinth (under temporary operation suspension), Athens (under temporary operation suspension), SKA (“Aharnais Railway Center”), Lianokladi, Larissa and Thessaloniki (under temporary operation suspension).

The CO of Corinth controls and regulates traffic on segment ANO LIOSIA - KIATO.

The CO of Athens controls and regulates traffic on segment AHARNAI - TITHOREA.

The CO of Lianokladi controls and regulates traffic on segment TITHOREA - DOMOKOS.

The CO of Larissa controls and regulates traffic on segment DOMOKOS - PLATY.

The CO of Thessaloniki controls and regulates traffic on segment THESSALONIKI - EIDOMENI, segment THESSALONIKI – STRYMONAS and segment THESSALONIKI - PLATY.

The CO of SKA controls and regulates traffic on segment AG. ANARGYROI-SKA - Airport El. Venizelos (temporarily METAMORFOSI - Airport EL. VENIZELLOS).

The Traffic Control System is presented in **ANNEX II-A: Data of Network Nodes / Stations – Athens Region**, **ANNEX II-B: Data of Network Nodes / Stations – Peloponnesus Region** and, **ANNEX II-C: Data of Network Nodes / Stations – Macedonia – Thrace Region**.

## **3.3 Circulation restrictions**

### **Dangerous cargo**

There are no restrictions for the transportation of dangerous cargo on the network described in the present NS.

### **Environmental restrictions**

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There are no environmental restrictions on the network described in the present NS.

**Priority in capacity allocation**

*See §4.4 – Capacity allocation.*

**Restrictions on tunnels**

There are no restrictions on tunnels on the network described in the present NS.

**Restrictions on bridges**

There are no restrictions on bridges on the network described in the present NS.

**Other restrictions**

There are no other restrictions for on network described in the present NS.

**Specialized infrastructure**

*See §4.4 – Capacity allocation.*

**3.4 Services Installations****Train formation yards**

The following RS serve as train formation yards:

- Agios Ioannis Rendis (A.I.R.)
- Neo Ikonio
- Thriasio Pedio
- Mezourlos
- Lianokladi
- Thessaloniki – Marshalling
- Thessaloniki – Old Commercial Station
- Thessaloniki – New Passenger Station
- Idomeni
- Strymonas

- 
- Alexandroupoli
  - Dikea
  - Pithio
  - Komanos
  - Veria / Skidra
  - Oinoe
  - Volos
  - Corinth (NGL)
  - AgiosAndreas(NGL)
  - Kalamata(NGL)
  - Tripoli (NGL)

**Stabling grounds**

The following RS serve as stabling grounds:

- Agios Ioannis Rendis (A.I.R.)
- Mezourlos
- Lianokladi
- Thessaloniki – Marshalling
- Thessaloniki – OldCommercialStation
- Thessaloniki – NewPassengerStation
- Idomeni
- Strymonas
- Alexandroupoli
- Dikea
- Pithio
- Komanos
- Veria / Skidra
- Corinth (NGL)

- 
- Agios Andreas(NGL)
  - Kalamata(NGL)
  - Tripoli (NGL)

### **Border stations**

The border stations (*for definitions see §1.11*) of the network are presented respectively in **ANNEX II-C: Data of Network Nodes / Stations - Macedonia – Thrace Region**.

### **Termini**

The termini (*for definitions see §1.11*) of the network are presented in the respective annexes: **ANNEX II-A: Data of Network Nodes / Stations – Athens Region**, **ANNEX II-B: Data of Network Nodes / Stations – Peloponnesus Region**, **ANNEX II-C: Data of Network Nodes / Stations – Macedonia – Thrace Region**.

### **Passenger stations**

The passenger Stations (*for definitions see §1.11*) of the network are presented in the respective annexes: **ANNEX II-A: Data of Network Nodes / Stations – Athens Region**, **ANNEX II-B: Data of Network Nodes / Stations – Peloponnesus Region**, **ANNEX II-C: Data of Network Nodes / Stations – Macedonia – Thrace Region**.

### **Commercial stations**

The Commercial Stations (*for definitions see §1.11*) of the network are presented in the respective annexes: **ANNEX II-A: Data of Network Nodes / Stations – Athens Region**, **ANNEX II-B: Data of Network Nodes / Stations – Peloponnesus Region**, **ANNEX II-C: Data of Network Nodes / Stations – Macedonia – Thrace Region**.

## CHAPTER 4

### CAPACITY ALLOCATION

#### 4.1 Legal framework

The legal framework for the capacity allocation procedure is described in Chapter VII of the Presidential Decree 41/2005<sup>2</sup>“Harmonization of the Greek legislation with directives 91/440/EEC and 95/18/EEC as revised by directives 2001/12/EC and 2001/13/EC, respectively and directive 2001/14/EC for the development of Community railways, the granting of license to railway undertakings, the capacity allocation of railway infrastructures, the charge for the use of railway infrastructure, and safety certification and the cancellation of the Presidential Decrees 324/1996, 76/1998 and 180/1998”, as currently in effect.

#### 4.2 Description of the procedure

OSE establishes capacity allocation regulations which it communicates to the RAS, and applies the relevant allocation procedures,. More specifically, OSE ensures that the infrastructure capacity is allocated on a just and non-discriminatory basis and according to Community law.

Infrastructure capacity is available for use to the applicants (see 1.11.1) that have submitted the relevant application.

Infrastructure capacity is allocated and may be requested solely from OSE, for each period of the services timetable and within the period defined in paragraph 4.3 below.

Infrastructure capacity may not be transferred by the recipient to another undertaking. Any commercial transaction concerning the scope of infrastructure capacity is forbidden and leads to exclusion from any further granting of infrastructure capacity.

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<sup>2</sup>Chapter VII of Presidential Decree 41/2005 covers Sections 13 up to 29 of Directive 2001/14

Submission of exceptional requests is possible for individual railway paths.

### **4.3 Route requests and allocation procedure**

The services timetable is drawn up at least once each calendar year.

The services timetable changes at midnight, on the second Saturday of December or the month set each time as the month for the change of the services. When changes or readjustments are to be made after the winter, particularly so that changes in the timetable of commuter travel at regional level are taken into consideration, these take place at midnight, on the second Saturday of June, as well as, in separate cases, at other time instances between these dates. When changes or readjustments are to be made before or after the summer, these take place at midnight, on the second Saturday of the month for the change of the services.

OSE may agree on different dates. In that case it is obliged to notify the European Commission accordingly.

The exact dates of validity of the services timetable for the year 2017 are 11.12.2016 – 09.12.2017.

Requests for capacity which have to be incorporated in the services timetable must be received at the earliest 12 months and at the latest six (6) months before the beginning of the timetable's validity, i.e. until 13.06.2016.

Applications should include at least:

1. Necessary operational details for a sufficient train path design.
2. Usage period of the requested capacity.
3. Contact info of competent representatives of the applicant.

Form of request for capacity allocation may be found in ANNEX VI.

One (1) month after the application deadline, i.e. on 13.07.2016, OSE compiles a draft timetable taking first of all into account the framework-agreements. Applicants can present their objection within the next month (i.e. until 12.08.2016).

OSE finalizes the timetable three (3) months, at the latest, after the deadline for the submission of offers by the applicants (i.e. until 13.09.2016), taking into account any objections.

Late requests: requests for capacity submitted late, are examined after the compilation of the timetable during the period of the next month (14.09.2016-13.10.2016), taking into account the remaining available capacity.

Subsequently follows the final timetable acceptance by the applicants and the signing of the access agreement, one (1) month at the latest, before the start of the timetable period.

#### **4.4 Capacity allocation**

##### **Specialized infrastructure**

If appropriate alternative routes are available and after consulting the interested Railway Undertakings, OSE may characterize an infrastructure as special for use by specific kinds of circulation. Where such a characterization is made, OSE may give priority to the specific kind of circulation, when allocating infrastructure capacity. Such a characterization does not obstruct the use of the infrastructure by other kinds of circulation, when capacity is available and when the rolling stock has the technical characteristics required for its operation on the specific line.

To this date, OSE has not indicated any section of the network or line in Greece as specialized infrastructure. Nonetheless, according to applied practice, priority is given to passenger trains in relation to freight trains, and among passenger trains to suburban, high-speed trains.

##### **Coordination procedure**

OSE satisfies, as far as possible, all the requests for infrastructure capacity. During the time-programming and coordination procedures, OSE may give priority to certain services, but only under the conditions described above in “Specialised infrastructure” and below in “Congested capacity and priority criteria”.

In the case that conflicting requests arise, during the time-programming of the above article, OSE, by coordinating the requests, tries to guarantee the best possible combination of them all and achieve the reconciliation of any conflicts. In this framework, OSE, during the train path design period, may communicate the applicants an alternative capacity other than the requested.

*More specific coordination principles are yet to be determined.*

##### **Congested capacity and priority criteria**

When, after the coordination of the paths requested and consultation with the applicants, it is not possible to meet the requests for infrastructure capacity, OSE characterizes the section of the infrastructure, for which this occurs, as congested. Also congested is the infrastructure anticipated to exhibit inadequate capacity in the near future.

Upon decision by OSE, which is approved by the Minister of Infrastructure, Transport and Networks, priority criteria for certain services are determined, so that the development of appropriate transport services is ensured and the social significance of a certain service is considered, in relation to any other that might be excluded due to this. The above priority criteria are determined by OSE based on the principle of equal treatment.

In any case, however, priority is given to passenger services, if they are covered by a public service contract, as well as international freight services.

The basic priority criteria are:

<b>Priority</b>	<b>Service</b>
1 <sup>st</sup>	Intercity
2 <sup>nd</sup>	Suburban
3 <sup>rd</sup>	Standard Passenger
4 <sup>th</sup>	Freight

### **Exceptional requests**

OSE responds to exceptional requests for individual railway paths, as soon as possible, and, in any case, within five working days. The information provided in relation to the capacity available must be communicated to all the applicants that may wish to use this capacity.

Ad-hoc capacity is allocated on a first-come first-served basis. In any case, these requests should be submitted no later than 15 days before the date concerned.

If deemed necessary, OSE attempts to evaluate the need to reserve additional capacity within the final, programmed services timetable, so that it may respond swiftly to foreseen, exceptional requests for capacity. The same applies to the cases of congested infrastructure.



#### **4.5 Capacity allocation for maintenance, renewal and upgrade**

The effects of maintenance, renewal and upgrade works on the infrastructure capacity are taken into account by OSE during the construction of the services timetable.

#### **4.6 Regulations concerning the use of railway routes**

OSE demands, particularly in the case of congested infrastructure, the disengagement of a railway path which, for a period of at least one month, has been used less than the marginal quota designated, unless insufficient use is due to non-financial reasons independent of the undertaking.

*OSE has not yet determined the marginal quota in question.*

OSE also stipulates the conditions under which it will take into consideration the former levels of use of railway paths, during the determination of priorities for the allocation procedure.

*OSE has not yet determined these conditions.*

#### **4.7 Special measures in the case of traffic disruption**

In the case of railway circulation disruption, due to technical failure or accident, OSE takes the appropriate measures to reinstate regularity. For this purpose, it draws up an emergency plan which lists all the public bodies that should be notified in the case of serious incidents or serious disruption of railway circulation.

To reinstate regularity in real time, the priority criteria of paragraph 4.4 apply.

The same applies to traffic on the freight corridor 7.

In case of emergency due to failure which temporarily obstructs the use of the infrastructure, it is possible for services to be modified without prior notification until the system has been restored. If deemed necessary, OSE may request

that the Railway Undertakings set to its disposal the means that it considers as absolutely appropriate for the speediest possible reinstating of regularity.

## CHAPTER 5 SERVICES

### 5.1 Legal framework

The legal framework for access to the railway infrastructure and related services, is described in Chapter V of the Presidential Decree 41/2005<sup>3</sup>“Harmonization of the Greek legislation with directives 91/440/EEC and 95/18/EEC, as revised by directives 2001/12/EC and 2001/13/EC, respectively, and directive 2001/14/EC on the development of Community Railways, the granting of license to railway undertakings, allocation of capacity of railway infrastructures, the charges for the use of railway infrastructure and security certification and the cancellation of the PDs 324/1996, 76/1998 and 180/1998”, as currently in effect.

### 5.2 Access to services installations

#### 5.2.1 Minimum access package

The minimum access package, which OSE provides to the Railway Undertakings, includes:

- a) processing of infrastructure capacity applications
- b) the right to use the capacity provided
- c) use of branches and track switches,
- d) train control, including signalling, regulation, dispatching, as well as communication and information provision on train circulation
- e) any other information necessary for the realization or operation of the service for which capacity has been granted.

#### 5.2.2 Rolling access to services installations and service provision

Rolling access to services installations and service provision includes:

- a) the use of power supply equipment for traction power, when necessary
- b) refuelling installations

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<sup>3</sup>Chapter V of Presidential Decree 41/2005 covers Sections: Section 10 of Directive 91/440 as in effect and Sections 3 and 5 of Directive 2001/14.

- c) passenger stations, their buildings and other installations
- d) freight transport termini
- e) marshalling yards
- f) train formation installations
- g) stabling depots
- h) maintenance and other technical installations

### **5.3 Additional services**

Apart from the minimum access package and rolling access to service installations, OSE may offer additional and ancillary services to be used by Railway Undertakings on a commercial basis.

Additional services may include.

- a) traction power
- b) passenger trains' warm-up
- c) fuel supply, train sorting, and other services provided in the aforementioned services installations of access
- d) Individual contracts for:
  - control of the transportation of dangerous cargo,
  - assistance in the operation of exceptional trains.

### **5.4 Ancillary services**

Apart from the minimum access package and the rolling access to services installations, OSE may offer additional and ancillary services to be used by Railway Undertakings on a commercial basis.

Ancillary services may include:

- a) access to the telecommunications network
- b) provision of additional information
- c) technical inspection of rolling stock.

## **CHAPTER 6**

### **CHARGES**

#### **6.1 Legal framework**

The legal framework for the charging of the use of railway infrastructure and related services, is described in Chapter VI of the Presidential Decree 41/2005<sup>4</sup> “Harmonization of the Greek legislation with directives 91/440/EEC and 95/18/EEC, as revised by directives 2001/12/EC and 2001/13/EC, respectively and directive 2001/14/EC on the development of Community Railways, the license to railway undertakings, allocation of railway infrastructure capacity, the charges for the use of railway infrastructure, and safety certification and the cancellation of the PDs 324/1996, 76/1998 and 180/1998”, as currently in effect, and in the Ministerial Decision F4/54510/4872 dated 30.11.2006 “Rules and criteria governing the billing of railway infrastructure usage fees”.

#### **6.2 Charging system**

##### **6.2.1 Services included in the charges**

The minimum access package and rolling access to the services’ installations are described respectively in paragraphs 5.2.1 and 5.2.2, of Chapter 5 to the NS.

The basic fee for the use of railway infrastructure covers the minimum access package and rolling access to the services installations of the railway network, as this is described in the present NS.

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<sup>4</sup>Chapter VI of Presidential Decree 41/2005 covers the following sections: Section 4 and Sections 6 to 12 of Directive 2001/14

## 6.2.2 Charging principles

The charging principles, as mentioned in Article 15 of the Presidential Decree 41 (Section 7 of directive 2001/14), stipulate in general terms and especially for the minimum access package, that the fee is equal to the cost arising as a direct result of the provision of the railway services. At this point, it is of particular importance to denote the provision for the incorporation of a special infrastructure fee in the charge, reflecting the capacity deficiency of a particular segment and concerning the congestion and/or environmental cost from the supply of the service. There is also provision of a case of discount on the fees, in order to encourage the development of new markets or for other, special reasons.

In summary of all the above, the charging system for the use of railway infrastructure must reflect through a “base fee” the minimum access package service provision and with an “additional fee” the provision of additional services such as traction power.

Furthermore, all the parameters of the invoicing system will be differentiated according to the network’s characteristics, e.g. technical characteristics of the line or local peculiarities of the network.

In order to calculate the charge for the use of railway infrastructure, account is taken of the base prices for the cost of track maintenance and traffic management, which derive from the division of the total cost for the respective services by the total number of train - kilometers.

## 6.3 Rules and criteria for the determination of the fees

### 6.3.1 Quality of infrastructure provided

The charging is differentiated according to the quality of the infrastructure provided by the Infrastructure Manager and expressed by coefficient  $k_q$ . The values of the provided quality coefficient for the various network segments is depicted in the following table.

**Table1: Provided quality table for the various network segments**

<b>LINE SEGMENT</b>		<b>k<sub>q</sub></b>
<b>A</b>	<b>Piraeus -Thessaloniki</b>	
A1	Piraeus–Athens (Larissa RS)	<b>0,57</b>
A2	Athens (Larissa R.S.) – Inoi	<b>0,73</b>
A3	Inoi – Tithorea	<b>0,90</b>
A4	Tithorea – Domokos	<b>0,75</b>
A5	Domokos – Thessaloniki	<b>0,88</b>
<b>B</b>	<b>Thessaloniki - Alexandroupoli – Ormenio</b>	
B1	Thessaloniki – Alexandroupoli	<b>0,76</b>
B2	Alexandroupoli – Ormenio	<b>0,65</b>
B3	Thessaloniki – Idomeni	<b>0,67</b>
B4	Strymonas – Promahonas	<b>0,59</b>
<b>C</b>	<b>Thessaloniki - Kozani – Florina</b>	<b>0,73</b>
<b>D</b>	<b>Paleofarsalos – Kalambaka</b>	<b>0,76</b>
<b>E</b>	<b>Larissa - Volos</b>	<b>0,74</b>
<b>F</b>	<b>Inoi – Halkida</b>	<b>0,68</b>
<b>G</b>	<b>Corinth-SKA - Airport</b>	<b>0,88</b>
<b>H</b>	<b>Metrical network</b>	<b>0,53</b>
<b>I</b>	<b>Diakopto – Kalavryta</b>	<b>0,53</b>

### 6.3.2 Traffic management

#### 6.3.2.1 Categorization of routes based on peak periods

For the categorisation of the routes based on peak periods, peak zones are determined and each service is entered in the corresponding zone based on its time of departure.

Peak zones are described in Tables 3 and 4 and concern categories I to IV of the L<sub>2</sub> coefficient of Table 2.

**Table 2: L<sub>2</sub> coefficient**

	<b>Peak</b>	<b>Near peak</b>	<b>Non peak/ regular</b>	<b>Non peak route with fully flexible tracing/ freight train</b>
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
<b>L<sub>2</sub></b>	<b>1,2</b>	<b>1,1</b>	<b>0,9</b>	<b>0,7</b>



Standard line stations**Table 3: Definition of peak zones in standard line stations**

STANDARD LINE STATIONS	PEAK	NEAR PEAK	NON PEAK/ REGULAR
ATHENS	06.00 - 10.00 14.00 - 18.00 20.00 - 23.00	05.00 - 05.59 10.01 - 13.59 18.01 - 19.59 23.01 - 00.00	00.01 - 04.59
CHALKIS	06.00 - 08.00 21.00 - 23.00	08.01 - 10.00 14.00 - 20.59	00.00 - 05.59 10.01 - 13.59 23.01 - 24.00
LIANOKLADI		01.00 - 04.00 08.00 - 14.00 17.00 - 22.00	00.00 - 00.59 04.01 - 07.59 14.01 - 16.59 22.01 - 24.00
PALAIOFARSALOS		04.00 - 08.00 10.00 - 15.00 17.00 - 22.00	00.00 - 03.59 08.01 - 09.59 15.01 - 16.59 22.01 - 24.00
KALAMPAKA		07.00 - 09.00 16.00 - 18.00	00.00 - 06.59 09.01 - 15.59 18.01 - 24.00
LARISSA	07.00 - 10.00 13.30 - 17.30	06.00 - 06.59 10.01 - 13.29 17.31 - 18.30	00.00 - 05.59 18.31 - 24.00
VOLOS		06.00 - 09.00 15.00 - 20.00	00.00 - 05.59 09.01 - 14.59 20.01 - 24.00
THESSALONIKI	06.00 - 09.00 11.00 - 13.00 15.00 - 19.00	05.00 - 05.59 09.01 - 10.59 13.01 - 14.59 19.01 - 20.00	00.00 - 04.59 20.01 - 24.00
SERRES			00.00 - 24.00
DRAMA			00.00 - 24.00
ALEXANDROUPOLIS	08.30 - 13.30 15.30 - 20.30	07.00 - 08.29 13.31 - 15.29 20.31 - 21.30	00.00 - 06.59 21.31 - 24.00
DIKAIA			00.00 - 24.00
EDESSA	17.00 - 22.00	16.00 - 16.59 22.01 - 23.00	00.00 - 15.59 23.01 - 24.00

Metric line stations**Table 4: Definition of peak zones on metric line stations**

<b>METRIC LINE STATIONS</b>	<b>PEAK</b>	<b>NEAR PEAK</b>	<b>NON PEAK / REGULAR</b>
PATRA	09.00 - 13.00 15.00 - 19.30	08.00 - 08.59 13.01 - 14.59 19.31 - 20.30	00.00 - 07.59 20.31 - 24.00
PYRGOS		06.00 - 08.30 13.00 - 16.00	00.00 - 05.59 08.31 - 12.59 16.01 - 24.00
OLYMPIA			00.00 - 24.00
KYPARISSIA		06.00 - 07.00 13.00 - 17.00	00.00 - 05.59 07.01 - 12.59 17.01 - 24.00
KALAMATA	08.00 - 12.00 18.30 - 22.30	07.00 - 07.59 12.01 - 18.29 22.31 - 23.30	00.00 - 06.59 23.31 - 24.00

### 6.3.2.2 Burdening line capacity (degree of infrastructure use)

The burden incurred on the line's capacity derives from the ratio of the service time of the particular train and the time of an ideal train on the same route. The ideal times for the separate segments in question are presented in the following table:

**Table 5: Ideal times on rail network segments**

CATEGORY	Line Segment	Ideal route time (virtual tracing) [h:min]
<b>A</b>	<b>Piraeus - Thessaloniki</b>	
A1	Piraeus - Athens (Larissa R.S.)	0:15
A2	Athens (Larissa R.S.) - Inoi	0:42
A3	Inoi - Tithorea	0:37
A4	Tithorea - Domokos	1:34
A5	Domokos - Thessaloniki	1:34
<b>B</b>	<b>Thessaloniki - Alexandroupoli - Ormenio</b>	
B1	Thessaloniki - Alexandroupoli	4:31
B2	Alexandroupoli - Ormenio	2:28
B3	Thessaloniki - Idomeni	0:56
B4	Strymonas - Promahonas	0:12
<b>C</b>	<b>Thessaloniki - Kozani / Florina</b>	2:15
<b>D</b>	<b>Paleofarsalos - Kalambaka</b>	0:45
<b>E</b>	<b>Larissa - Volos</b>	0:55
<b>F</b>	<b>Inoi - Halkida</b>	0:23
<b>G</b>	<b>SKA - Airport SKA - Corinth</b>	0:28 0:57
<b>H</b>	<b>Metrical network</b>	
H1	Ag. Anargyroi- Loutraki	1:40
H3	Corinth – Patra	1:52
H4	Patra – Pyrgos	1:32
H5	Pyrgos – Kyparissia	1:10
H6	Kyparissia – Kalamata	1:30
<b>I</b>	<b>Diakopto - Kalavryta</b>	1:10

For freight trains, the respective ideal times are as follows:

CATEGORY	Line Segment	Ideal route time (virtual tracing) [h:min]
<b>A</b>	<b>Piraeus - Thessaloniki</b>	
A1	A.I.R. - Thessaloniki Old Freight Station	07:39
<b>B</b>	<b>Thessaloniki - Alexandroupoli - Ormenio</b>	
B1	TX2 (Thessaloniki Marshalling) - Strymonas	2:07
B2	Strymonas - Alexandroupoli	5:10
B3	Alexandroupoli - Ormenio	3:21
B4	Strymonas - Promachonas	0:15
<b>C</b>	<b>Thessaloniki - Kozani / Florina</b>	
C1	TX2 (Thessaloniki Marshalling) - Amyntaio	2:39
C2	Amyntaio - Ptolemaida	0:22
<b>D</b>	<b>Thessaloniki - Idomeni</b>	
D1	Thessaloniki Old Freight Station - Idomeni	1:07
<b>E</b>	<b>Paleofarsalos - Kalambaka</b>	0:54
<b>F</b>	<b>Larissa - Volos</b>	0:59
<b>G</b>	<b>Inoi - Halkida</b>	0:32
<b>H</b>	<b>A.I.R. - Thrasio Container Terminal</b>	0:50
<b>I</b>	<b>A.I.R. - Aspropyrgos Oil Refinery</b>	1:02
<b>J</b>	<b>N. Ikonio - Thrasio Container Terminal</b>	0:44
<b>K</b>	<b>A.I.R. - Corinth</b>	1:22

A coefficient  $L_1$  is set, through which account is taken of every service's effect on the line's capacity. Coefficient  $L_1$  is defined as follows:

$$L_1 = \frac{\text{Route running time}}{\text{Ideal route time}} \geq 1$$

The *route's service time* derives from the path alignment (graphic table). The ideal service time (given in Table 5) derives from the (theoretical) routing of the ideal conventional train<sup>5</sup>, which fully exploits the line with the characteristics given by the competent Track Directorate (e.g. maximum speed, permanent delays, etc). In case of trains not running on an established route ("special free trains"), coefficient  $L_1 = 1$  is assumed.

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### 6.3.3 Line deterioration due to train circulation

In order to determine the line's deterioration, account is taken of criteria such as speed, the train's composition (number of Axial) and the mean axial load.

A train is assumed to be a complete coach or a composition of a tractor engine and non-motorised rolling stock (wagons or passenger coaches).

The line's burdening from each train's running is expressed by coefficient  $k_{\text{train}}$ , which is given in Table 8 and derives from the train's classification in the relevant category (based on Tables 6 and 7) and the number of Axials

#### 6.3.3.1 Trains classification

Trains are classified in categories based on their speed and mean Axial load, which derives from the ratio of the train's total weight to the number of its Axials (see Tables 6 and 7).

**Standard line trains****Table 6: Categories of standard line trains**

<b>TRAIN CATEGORY</b>	<b>SPEED RANGE V [km/h]</b>	<b>AXIAL LOAD RANGE [t]</b>
Σ1	<=120	<14,3
Σ2		14,4-16,3
Σ3		16,4-18,4
Σ4		18,5-20,4
Σ5		20,5-22,9
Σ6	121-140	<14,3
Σ7		14,4-16,3
Σ8		16,4-18,4
Σ9		18,5-20,4
Σ10		20,5-22,9
Σ11	141-160	<14,3
Σ12		14,4-16,3
Σ13		16,4-18,4
Σ14		18,5-20,4
Σ15		20,5-22,9
Σ16	161-200	<14,3
Σ17		14,4-16,3
Σ18		16,4-18,4
Σ19		18,5-20,4
Σ20		20,5-22,9

**Metric line trains****Table 7: Metric line trains' categories**

<b>TRAIN CATEGORY</b>	<b>SPEED RANGE V [km/h]</b>	<b>AXIAL LOAD RANGE [t]</b>
ΣM1	<120	<12,2
ΣM2	120-140	12,3-16,3

**Table 8: Table for the calculation of coefficient  $k_{train}$  for the line's burden by the train**

TRAIN CATE- GORY	NUMBER OF AXLES																																	
	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	
<b>STANDARD LINE TRAINS</b>																																		
Σ1	1,00	1,06	1,10	1,14	1,17	1,20	1,22	1,24	1,26	1,28	1,30	1,31	1,33	1,34	1,35	1,36	1,38	1,39	1,40	1,41	1,42	1,43	1,43	1,44	1,45	1,46	1,47	1,47	1,48	1,49	1,50	1,50	1,51	1,52
Σ2	1,24	1,31	1,37	1,42	1,45	1,49	1,52	1,54	1,57	1,59	1,61	1,63	1,65	1,66	1,68	1,69	1,71	1,72	1,73	1,75	1,76	1,77	1,78	1,79	1,80	1,81	1,82	1,83	1,84	1,85	1,86	1,86	1,87	1,88
Σ3	1,84	1,96	2,04	2,11	2,17	2,21	2,26	2,30	2,33	2,37	2,40	2,42	2,45	2,47	2,50	2,52	2,54	2,56	2,58	2,60	2,62	2,63	2,65	2,67	2,68	2,70	2,71	2,72	2,74	2,75	2,76	2,78	2,79	2,80
Σ4	2,64	2,81	2,93	3,02	3,10	3,18	3,24	3,29	3,34	3,39	3,43	3,48	3,51	3,55	3,58	3,61	3,64	3,67	3,70	3,73	3,75	3,78	3,80	3,82	3,85	3,87	3,89	3,91	3,93	3,95	3,96	3,98	4,00	4,02
Σ5	3,68	3,90	4,07	4,20	4,32	4,41	4,50	4,58	4,65	4,71	4,78	4,83	4,88	4,93	4,98	5,02	5,07	5,11	5,14	5,18	5,22	5,25	5,28	5,31	5,35	5,37	5,40	5,43	5,46	5,48	5,51	5,53	5,56	5,58
Σ6	1,21	1,28	1,33	1,38	1,42	1,45	1,48	1,50	1,53	1,55	1,57	1,59	1,60	1,62	1,63	1,65	1,66	1,68	1,69	1,70	1,71	1,72	1,73	1,74	1,75	1,76	1,77	1,78	1,79	1,80	1,81	1,82	1,82	1,83
Σ7	1,48	1,57	1,64	1,69	1,74	1,78	1,81	1,85	1,87	1,90	1,92	1,95	1,97	1,99	2,01	2,03	2,04	2,06	2,07	2,09	2,10	2,12	2,13	2,14	2,15	2,17	2,18	2,19	2,20	2,21	2,22	2,23	2,24	2,25
Σ8	2,22	2,35	2,45	2,54	2,60	2,66	2,72	2,76	2,81	2,84	2,88	2,91	2,95	2,98	3,00	3,03	3,06	3,08	3,10	3,13	3,15	3,17	3,19	3,21	3,22	3,24	3,26	3,28	3,29	3,31	3,32	3,34	3,35	3,37
Σ9	3,13	3,32	3,46	3,58	3,67	3,76	3,83	3,90	3,96	4,01	4,06	4,11	4,16	4,20	4,24	4,28	4,31	4,35	4,38	4,41	4,44	4,47	4,50	4,52	4,55	4,57	4,60	4,62	4,65	4,67	4,69	4,71	4,73	4,75
Σ10	4,37	4,64	4,84	5,00	5,13	5,25	5,35	5,45	5,53	5,61	5,68	5,75	5,81	5,87	5,92	5,98	6,03	6,07	6,12	6,16	6,21	6,25	6,28	6,32	6,36	6,39	6,43	6,46	6,49	6,52	6,55	6,58	6,61	6,64
Σ11	1,37	1,46	1,52	1,57	1,61	1,65	1,68	1,71	1,74	1,76	1,78	1,81	1,82	1,84	1,86	1,88	1,89	1,91	1,92	1,94	1,95	1,96	1,97	1,99	2,00	2,01	2,02	2,03	2,04	2,05	2,06	2,07	2,08	2,09
Σ12	1,68	1,78	1,85	1,92	1,97	2,01	2,05	2,09	2,12	2,15	2,18	2,20	2,23	2,25	2,27	2,29	2,31	2,33	2,35	2,36	2,38	2,39	2,41	2,42	2,44	2,45	2,46	2,48	2,49	2,50	2,51	2,52	2,53	2,54
Σ13	2,48	2,63	2,74	2,83	2,91	2,98	3,03	3,09	3,13	3,18	3,22	3,26	3,29	3,33	3,36	3,39	3,41	3,44	3,47	3,49	3,52	3,54	3,56	3,58	3,60	3,62	3,64	3,66	3,68	3,70	3,71	3,73	3,75	3,76
Σ14	3,53	3,75	3,91	4,04	4,15	4,24	4,33	4,40	4,47	4,53	4,59	4,64	4,69	4,74	4,79	4,83	4,87	4,91	4,94	4,98	5,01	5,05	5,08	5,11	5,14	5,17	5,19	5,22	5,25	5,27	5,30	5,32	5,34	5,37
Σ15	4,89	5,19	5,41	5,59	5,74	5,87	5,99	6,09	6,18	6,27	6,35	6,43	6,50	6,56	6,62	6,68	6,74	6,79	6,84	6,89	6,94	6,98	7,03	7,07	7,11	7,15	7,19	7,22	7,26	7,29	7,33	7,36	7,39	7,42
Σ16	1,68	1,78	1,85	1,92	1,97	2,01	2,05	2,09	2,12	2,15	2,18	2,20	2,23	2,25	2,27	2,29	2,31	2,33	2,35	2,36	2,38	2,39	2,41	2,42	2,44	2,45	2,46	2,48	2,49	2,50	2,51	2,52	2,53	2,54
Σ17	2,03	2,15	2,24	2,31	2,38	2,43	2,48	2,52	2,56	2,60	2,63	2,66	2,69	2,72	2,74	2,77	2,79	2,81	2,83	2,85	2,87	2,89	2,91	2,93	2,94	2,96	2,98	2,99	3,01	3,02	3,03	3,05	3,06	3,07
Σ18	3,00	3,19	3,32	3,43	3,52	3,60	3,68	3,74	3,80	3,85	3,90	3,95	3,99	4,03	4,07	4,10	4,14	4,17	4,20	4,23	4,26	4,29	4,31	4,34	4,37	4,39	4,41	4,44	4,46	4,48	4,50	4,52	4,54	4,56
Σ19	4,21	4,47	4,66	4,81	4,94	5,06	5,15	5,24	5,33	5,40	5,47	5,53	5,59	5,65	5,70	5,75	5,80	5,85	5,89	5,93	5,97	6,01	6,05	6,09	6,12	6,16	6,19	6,22	6,25	6,28	6,31	6,34	6,37	6,39
Σ20	5,85	6,21	6,47	6,69	6,87	7,02	7,16	7,28	7,40	7,50	7,60	7,69	7,77	7,85	7,92	7,99	8,06	8,12	8,18	8,24	8,30	8,35	8,40	8,45	8,50	8,55	8,60	8,64	8,68	8,72	8,76	8,80	8,84	8,88
<b>METRIC LINE TRAINS</b>																																		
ΣM1	1,00	1,06	1,10	1,14	1,17	1,20	1,22	1,24	1,26	1,28	1,30	1,31	1,33	1,34	1,35	1,36	1,38	1,39	1,40	1,41	1,42	1,43	1,43	1,44	1,45	1,46	1,47	1,47	1,48	1,49	1,50	1,50	1,51	1,52
ΣM2	1,30	1,38	1,44	1,48	1,52	1,56	1,59	1,62	1,64	1,66	1,69	1,71	1,72	1,74	1,76	1,77	1,79	1,80	1,82	1,83	1,84	1,85	1,86	1,88	1,89	1,90	1,91	1,92	1,93	1,94	1,94	1,95	1,96	1,97



TRAIN CATEGORY	NUMBER OF AXLES																								
	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110	112	114	116	118	120	
<b>Σ STANDARD LINE TRAINS</b>																									
Σ1	1,52	1,53	1,53	1,54	1,55	1,55	1,56	1,56	1,57	1,57	1,58	1,58	1,59	1,59	1,60	1,60	1,61	1,61	1,61	1,62	1,62	1,63	1,63	1,64	1,64
Σ2	1,89	1,90	1,90	1,91	1,92	1,92	1,93	1,94	1,94	1,95	1,96	1,96	1,97	1,98	1,98	1,99	1,99	2,00	2,00	2,01	2,01	2,02	2,02	2,03	2,03
Σ3	2,81	2,82	2,83	2,84	2,86	2,87	2,88	2,89	2,90	2,90	2,91	2,92	2,93	2,94	2,95	2,96	2,97	2,98	2,98	2,99	3,00	3,01	3,01	3,02	3,03
Σ4	4,03	4,05	4,06	4,08	4,09	4,11	4,12	4,14	4,15	4,17	4,18	4,19	4,20	4,22	4,23	4,24	4,25	4,27	4,28	4,29	4,30	4,31	4,32	4,33	4,34
Σ5	5,61	5,63	5,65	5,67	5,69	5,71	5,73	5,75	5,77	5,79	5,81	5,83	5,85	5,86	5,88	5,90	5,91	5,93	5,95	5,96	5,98	5,99	6,01	6,02	6,04
Σ6	1,84	1,85	1,85	1,86	1,87	1,87	1,88	1,89	1,89	1,90	1,91	1,91	1,92	1,92	1,93	1,94	1,94	1,95	1,95	1,96	1,96	1,97	1,97	1,98	1,98
Σ7	2,26	2,27	2,28	2,29	2,29	2,30	2,31	2,32	2,33	2,33	2,34	2,35	2,36	2,36	2,37	2,38	2,38	2,39	2,40	2,40	2,41	2,42	2,42	2,43	2,43
Σ8	3,38	3,40	3,41	3,42	3,43	3,45	3,46	3,47	3,48	3,49	3,50	3,52	3,53	3,54	3,55	3,56	3,57	3,58	3,59	3,60	3,61	3,62	3,63	3,63	3,64
Σ9	4,77	4,79	4,81	4,83	4,84	4,86	4,88	4,90	4,91	4,93	4,94	4,96	4,98	4,99	5,00	5,02	5,03	5,05	5,06	5,07	5,09	5,10	5,11	5,13	5,14
Σ10	6,67	6,69	6,72	6,75	6,77	6,80	6,82	6,84	6,87	6,89	6,91	6,93	6,95	6,97	6,99	7,02	7,04	7,05	7,07	7,09	7,11	7,13	7,15	7,17	7,18
Σ11	2,09	2,10	2,11	2,12	2,13	2,13	2,14	2,15	2,16	2,16	2,17	2,18	2,18	2,19	2,20	2,20	2,21	2,22	2,22	2,23	2,23	2,24	2,25	2,25	2,26
Σ12	2,56	2,57	2,58	2,59	2,59	2,60	2,61	2,62	2,63	2,64	2,65	2,66	2,66	2,67	2,68	2,69	2,70	2,70	2,71	2,72	2,73	2,73	2,74	2,75	2,75
Σ13	3,78	3,79	3,81	3,82	3,84	3,85	3,86	3,88	3,89	3,90	3,92	3,93	3,94	3,95	3,96	3,98	3,99	4,00	4,01	4,02	4,03	4,04	4,05	4,06	4,07
Σ14	5,39	5,41	5,43	5,45	5,47	5,49	5,51	5,53	5,55	5,57	5,58	5,60	5,62	5,63	5,65	5,67	5,68	5,70	5,72	5,73	5,75	5,76	5,78	5,79	5,80
Σ15	7,45	7,48	7,51	7,54	7,57	7,60	7,62	7,65	7,68	7,70	7,73	7,75	7,77	7,80	7,82	7,84	7,87	7,89	7,91	7,93	7,95	7,97	7,99	8,01	8,03
Σ16	2,56	2,57	2,58	2,59	2,59	2,60	2,61	2,62	2,63	2,64	2,65	2,66	2,66	2,67	2,68	2,69	2,70	2,70	2,71	2,72	2,73	2,73	2,74	2,75	2,75
Σ17	3,09	3,10	3,11	3,12	3,13	3,15	3,16	3,17	3,18	3,19	3,20	3,21	3,22	3,23	3,24	3,25	3,26	3,27	3,28	3,28	3,29	3,30	3,31	3,32	3,33
Σ18	4,58	4,60	4,61	4,63	4,65	4,67	4,68	4,70	4,71	4,73	4,74	4,76	4,77	4,79	4,80	4,82	4,83	4,84	4,86	4,87	4,88	4,89	4,91	4,92	4,93
Σ19	6,42	6,45	6,47	6,50	6,52	6,54	6,57	6,59	6,61	6,63	6,65	6,67	6,69	6,71	6,73	6,75	6,77	6,79	6,81	6,83	6,85	6,86	6,88	6,90	6,92
Σ20	8,92	8,95	8,99	9,02	9,05	9,09	9,12	9,15	9,18	9,21	9,24	9,27	9,30	9,33	9,35	9,38	9,41	9,43	9,46	9,48	9,51	9,53	9,56	9,58	9,61

#### 6.3.4 Distance covered

The distance covered is defined as the total, actual kilometers covered by a train on the availed infrastructure.

### 6.4 Methodology for the calculation of the basic fee for use of the infrastructure

In order to determine the charges for the use of railway infrastructure, we take into account the base prices for the cost of track maintenance and traffic management services. The base prices derive from the division of the total cost for the corresponding services by the total number of train-kilometers. From base prices arise the marginal base prices for the line maintenance and traffic management services.

Applying the coefficients defined in chapter 6.3, that is  $L_1$ ,  $L_2$  for traffic management and  $k_q, k_{train}$  for line maintenance, to the marginal base values, the charges for the respective traffic management and line maintenance services are provided per route. The sum of the above charges constitutes the basic fee:

*The Basic Fee  $P$  arises from the summation of fee  $P_{TM}$  which corresponds to the traffic management and fee  $P_{LM}$  which corresponds to line maintenance:*

$$P = P_{TM} + P_{LM}$$

Applies:

$$P_{TM} = BV_{TM} \cdot L_1 \cdot L_2$$

and

$$P_{LM} = BV_{LM} \cdot k_q \cdot k_{train}$$

where

$BV_{TM}$  the marginal base value for traffic management = 0,65€/km

$L_1$  capacity occupancy coefficient

$L_2$  peak period coefficient

$BV_{LM}$  the marginal base value for line maintenance = 0,40 €/ km

$k_q$  provided line quality coefficient

$k_{train}$  line burden coefficient attributed to train

## 6.5 Special Charges

### 6.5.1 Traction power consumption

In order to charge electric power supply (electric trains) we take into account the total ton kilometers (tkm) covered by the electric trains of all the Railway Undertakings and the total cost of electric power for the electrification.

The consumption of power according to the kind of train is taken into account through the train's weight (and thus through the ton kilometers covered).

For the charging of electric power supply  $K_{power}$  (€/tkm) the following formula applies:

$$K_{power} \text{ [€/tkm]} = \frac{X_{power} \text{ [€/month]}}{T.TKM \text{ [tkm/month]}}$$

where

T.TKM Total tkm/month covered (by Railway undertakings)

$X_{power}$  Monthly charges by the power supply company (€/month)

The total cost of  $K_{power}$  is assumed to be the one corresponding to the previous year and settlement shall be performed on the basis of the respective costs for the current year, when the latter becomes available.

The charging cost for every Railway Undertaking will be the product of the power cost ( $K_{power}$  [€/tkm]) times the number of ton kilometers covered by the undertaking.

### 6.5.2 Special – dangerous consignments

The criteria of Chapter 3 apply to special and dangerous consignments, yet beyond those a special agreement will be signed between the Infrastructure Manager and the railway carrier executing such consignments, depending on their kind and characteristics.

## 6.6 Route charges

For each route, the total charge  $X$  is derived from the following relation:

$$C = P \cdot D + K_{power} \cdot T + K_{SDT}$$

where

$C$	the total charges per route (€)
$P$	the basic fee for infrastructure usage (€/km)
$D$	the distance covered (km)
$K_{power}$	the charges for traction power (€/tkm)
$T$	the ton kilometers covered (tkm)
$K_{SDT}$	the fee for special / dangerous consignments

## 6.7 Performance scheme

According to the article 19 of the Presidential Decree 41/2005, infrastructure charging scheme shall through a performance scheme encourage railway undertakings and the infrastructure manager to minimise disruption and improve the performance of the railway network.

As “disruption” for the above mentioned system is defined any delay caused during train running which leads to lateness of arrival at the final destination.

During a train journey, delays of various origins occur. These are known from the information provided by the dispatch center at stations (Athens, Lianokladi, Larissa, Platy, Thessaloniki, Alexandroupolis).

Then an analysis of delays is made, using the codification described in UIC leaflet 450-2, tailored to the needs of OSE

A passenger train is considered to have a significant delay (in terms of system performance) when it reaches the destination station with a delay of more than 7 minutes and a freight train with a delay of more than 15 minutes.

The performance incentive system provides compensation, if the percentage of trains with delay time less than 7 minutes ( or 15 minutes respectively) is

less than 80%, which is the "accuracy target " for the reporting period. Compensation per minute of delay is set to 1 €

The system takes into account the following assumptions:

1. Delays from external causes are not charged.
2. Delays of undetermined origin are charged against the infrastructure manager.
3. Route cancellations are not taken into account. If a route is canceled, it is out of the the system calculations.
4. The recovery time is not taken into account in calculating
5. the maximum time delay compensation is set to 240 min. In the event that the total delay is greater, the component delays are reduced proportionally so that the final delay (and therefore costs) be limited to 240 min.

In summary, the parameters for the 2016 timetable period have the following values:

#### Delay limits

Passenger trains: 7min

Freight Trains: 15 min

Reference period: 1 month

Accuracy target: 80%

Maximum delay in compensation (per train): 240min

Compensation: 1 €/ minute delay.

After the end of the journey and the completion of registration, delays are summed and categorized as follows:

(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
[route number]	[date]	[TK]	[IM]	[RU]	[E]	[SD]	[AP]	€	€

[TK] = Delay at final destination

[IM] = Delay fault of Infrastructure Manager (IM).

[RU] = Delay fault of railway Undertaking (RU).

[E] = Delay of exogenous origin causes

[CI] = Secondary causes Delay

[AP] = Delay of undetermined origin

When the final delay is greater than the threshold delay and the target accuracy has not been achieved, the compensation due is derived from the delay in the final destination, subtracting the delay from external causes.

The total delay is derived as the sum [IM]+[CI]+[AP].

The share of IM is:

$$PHP = \frac{[IM] + [AP]}{[IM] + [CI] + [AP]}$$

The share of RU is:

$$WCC = \frac{[IM] + [AP]}{[IM] + [RU] + [AP]}$$

The IM shall pay compensation:  $PHP \cdot ([TC] - [C]) \cdot 1 \text{ € / min}$

The RU shall pay compensation:  $WCC \cdot ([TC] - [C]) \cdot 1 \text{ € / min}$

These amounts are recorded in columns (8) and (9) in the above table.

Then offsetting compensation and invoicing follows .

In case of disagreement between the infrastructure manager and the railway undertakings, negotiations between the two sides take place in a predetermined framework.

In the performance scheme, following an agreement between the IM and the RU, a minimum of 10 selected trains are being monitored.