

NETWORK AND NETWORK MANAGEMENT DESCRIPTION

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2.1 GENERAL DESCRIPTION OF THE TRANSMISSION SYSTEM

This Network Code describes the Transmission Service provided by the Transmission System Operator on the network that includes pipelines, compression stations as well as regulation, pressure reduction, gas blending and measurement facilities, in addition to auxiliary facilities required for Gas transmission and dispatching.

The Transmission Network can be accessed via the Entry Points that belong to the Transmission System Operator (also, *PCT*).

The entire Transmission Network is part of the National Gas Pipeline (*RN*). Given the "Entry-Exit" flow model and the coexistence of several Transmission System Operators, some commercial/administrative activities are performed by the Leading Company in line with the Agreement between the Transmission System Operator and the Leading Company itself. These activities are: Capacity booking and trading, booking allocation and re-allocation, invoicing and payment and administrative balancing.

With respect to the above, Shippers who intend to access the Transmission Network shall have to sign a contract with the Transmission System Operator and the Leading Company.

, Before the commissioning of the Transmission Network, the following information is available on the Transmission System Operator's website:

- Transmission System's geographical and topological location;
- plans to a scale of 1:250.000 with the position of key equipment;
- drawings showing the technical characteristics of pipelines and the key facilities;
- details of network tranches (year of entry into operation, length, cross-section, pressure, CPI, type of pipeline, location, network type);
- interconnections with other Transmission Networks.

Such information may be subject to amendments due to:

- changes to the definition of National Network by the Ministry of Economic Development;
- the commissioning of new pipelines being or the decommissioning of existing ones;
- changes to the definition of Entry and Exit Points of the RN and Off-take Areas.

2.2 GAS PIPELINES

Each pipeline that belongs to a Natural Gas Transmission System is functional to a specific service to be provided within the Network: the specific nature of such service defines the procedures with which the pipeline is initially sized and then checked during the course of its working life.

The pipelines used for Natural Gas transmission were built and are managed in compliance with the requirements of the Ministerial Decree of 24 November 1984, "Norme di sicurezza antincendio per il trasporto, la distribuzione, l'accumulo e l'utilizzazione del gas naturale con densità non superiore a 0,8" ("Fire safety standards for the transmission, dispatching, storage and use of Natural Gas with a density of over 0.8 and subsequent amendments"), together with currently prevailing national and international technical standards and requirements.

The main technical characteristics of each types of Gas pipeline are described hereafter:

2.2.1 Primary transmission Gas pipelines

This group covers the pipelines of type 1 and 2 (for "type" definition, see Paragraph 2.3) that are mainly dedicated to the transmission of large quantities of gas from availability areas (for instance, from interconnection points with other transmission backbones, and from the main national production and storage areas) towards the Entry Points of the secondary local Transmission Network, which are described below.

2.2.2 Secondary transmission Gas pipelines

Secondary transmission pipelines connect primary pipelines to local Gas pipelines that supply the various markets serviced. These pipelines are characterised by "meshed" structures - i.e. are supplied from several points - derived from primary gas pipelines. The structure of these pipelines underpins as much as possible the continuity of supply for the market, by providing alternative routes in the event of failure of individual Gas pipelines or local pressure drops.

2.2.3 Connections

Connections are transmission structures catering for the supply of specific and clearly defined areas, such as industrial premises, districts formed by neighbouring municipalities and other transmission networks: therefore, they are the terminals of the Transmission System Operator's Gas pipeline system and the direct interface with the connected Redelivery Point, whose delivery conditions (flow rate and pressure) they are fully subjected to and designed to cater for.

The Transmission Network consists only of primary transmission Gas pipelines.

2.3 OPERATING PRESSURE

The Ministerial Decree of 24 November 1984 classifies transmission and dispatching pipelines into 7 categories, depending on their different maximum operating pressure.

Specifically:

type	1	2	3	4	5	6	7
<i>Max. operating pressure (rel. bar.)</i>	$P > 24$	$24 \geq P > 12$	$12 \geq P > 5$	$5 \geq P > 1.5$	$1.5 \geq P > 0.5$	$0.5 \geq P > 0.04$	$P \leq 0.04$

For pipelines of type 1, 2 and 3, the relevant competent authority (District Fire Brigade, in line with current legislation) grants the authorisation to operate up to a value determined by the CPI (Fire Prevention Certificate).

The pipelines operated by the Transmission System Operator are only of type 1.

Unless there are specific technical/operational constraints that may limit the pressure to slightly lower values, the operation of each line shall be limited to values that are slightly lower than CPI ones or the design pressure.

2.4 LINE EQUIPMENT

Different types of equipment for pipeline interconnection and Gas flow management and control are installed along the pipelines, in compliance with regulatory operational and safety needs. In particular, such equipment includes:

- pressure and/or capacity regulation facilities;
- pressure reduction stations;
- line points (for instance, PIG launch and delivery points);
- shunt, detection and/or sectioning devices (manual, remote-controlled, monitored).

2.5 COMPRESSION STATIONS

Currently the Transmission Network is not fitted with any Gas relaunching compression stations.

The Compression stations are designed to push Gas through long pipelines (usually at 150-200 km intervals) to ensure adequate pressure levels for Gas transmission.

In light of the above, the Network's operating pressure and, in part, the flow dynamic, depend on the pressure at the system's Entry Points. The Transmission System Operator shall provide its service by ensuring that Redelivery Point pressures match those at the Entry Points, minus any pressure drops that usually occur during transmission.

2.6 DISPATCHING

The dispatching service is tasked with managing gas flows along the entire Transmission Network in line with the programmes requested by Shippers and in full compliance with the pipeline's high efficiency, reliability and safety standards.

Specifically, the service is responsible for "physically balancing" the Transmission Network. This task includes all the measures through which the Transmission System Operator controls - in real time - the main flow parameters (flow rates and pressure) and the quantity of Gas flowing through the network (line-pack variations) in order to ensure Gas transmission from the input to the

off-take points of the Network at any time, both during ordinary and extraordinary operating conditions (such as maintenance works or emergencies).

The Transmission System Operator is equipped with adequate technological tools and the right organisational structure in order to manage the dispatching service.

For the description of the organisational structure and the dispatching-specific technological tools, see the Transmission System Operator's website.

2.6.1 Physical balancing

Over the course of the Gas-day, the Transmission System Operator handles the Shippers' Gas in line with the transmission programmes submitted by the aforementioned Shippers, subject to prior verification that such programmes are compatible with transmissible quantities and whilst guaranteeing the Transmission Network's real-time control, management and balancing activities in an efficient, reliable and safe manner.

Under normal operating conditions, and with the objective of guaranteeing the servicing of the Shipper's transmission programmes through the Network, the Transmission System Operator manages Gas flows and ensures the physical balancing of the system by monitoring parameters (flow rates and pressures) at relevant Network points and coordinating with upstream and downstream Operators.

Should any deviation between actual input Gas quantities and the quantities booked by the Shippers arise during such activity, the Transmission System Operator shall promptly liaise with downstream and upstream Operators to take the necessary measures needed to plug any deficit. Moreover, within the framework of a daily balancing regime, the Transmission System Operator provides Shippers with an hourly modulation service as an integral part of the transmission service. This is needed to manage hourly fluctuations of Network Gas off-take, normally occurring during the Gas-day. In order to manage network line-pack variation and provide the hourly modulation service, the Transmission System Operator purchases adequate storage capacity - in terms of both space and peak deliverability - from Storage Companies.

A posteriori, it is possible to reconstruct each Shipper's Network usage and allocate costs to each of them depending on actual usage, by applying relevant accounting formulas for transmitted Gas, as well as specific methods for acknowledging deviations described in the following. To this end, it should be noted that the Leading Company manages the administrative balancing of the

entire national transmission system (both the part that belongs to the Leading Company itself and that belonging to the Transmission System Operator) also on the basis of the Gas accounting performed by the Transmission System Operator on its system.

2.7 THE NATIONAL GAS PIPELINE NETWORK ("RN")

In this document, the term "National Gas Pipeline Network" ("RN") means the transmission system as defined in the Decree of the Ministry of Industry, Commerce and Crafts of 22 December 2000 and subsequent annual updates.

The description of the National Network tranches that belong to the Transmission System Operator is provided on its website.

2.8 RN FLOW MODEL

An "Entry-Exit" flow model is used for the purposes of tariffs and Capacity booking for the National Gas Pipeline Network. Tariffs and Capacity bookings are applied to Entry Points to the RN and Exit Points from the RN, independently from the actual route of the Gas along the Network.

RN's Entry and Exit Points are therefore set out by the Leading Company independently from the Transmission System Operators that manage and/or own the RN tranches affected.

The Entry Points defined by the RN flow model include:

- a. Entry Points connected to foreign import gas pipelines;
- b. Entry Points at Regasification Terminals;
- c. Virtual Entry Points from the main national production fields or from the relevant storage or treatment hubs; smaller national production fields are aggregated with them. Such aggregation is used both for the purpose of Capacity booking and transmission programmes. For all other operational and control purposes, see individual Delivery Points;
- d. Virtual Entry Points from storage fields, resulting from the aggregation of the Delivery Points from each storage field. For operating and monitoring purposes, see individual Delivery Points.

Exit Points from the RN include:

- e. Off-take Area subsets, defined as territorial clusters of Redelivery Points and arranged so as to minimise significant Gas exchanges through Gas pipelines belonging to the RR.
- f. Redelivery Points at the Storage Company near the fields managed by the latter.
- g. Interconnection Points with export pipelines.

The complete set of RN's Entry and Exit Points is described in the Leading Company's Network Code. With respect to the Transmission Network, there is a single RN Entry Point at the Regasification Terminal, whilst there are no RN Exit Points.

From an operational perspective and for the purposes of liability allocation, the interconnection points between the Transmission Network and the Leading Company's Network are key. The sum of such interconnections represents the Redelivery/Delivery Point to/from the Leading Company through which the gas flows, physically and virtually, between the Transmission System Operator's National Transmission Network and that of the Leading Company.

2.9 THE REGIONAL TRANSMISSION NETWORK ("RR")

The "Regional Network" or "RR" consists of the pipelines that are not included in the RN and associated facilities.

The RR's main function is that of transporting and dispatching Natural Gas to clearly defined territory areas, particularly on a regional scale.

The Transmission Network does not include Regional Network's tranches.

2.10 ACCESS FORMALISATION

In order to access the transmission service provided by the Transmission System Operator, the Shipper shall have to sign a three-way Contract with the Transmission System Operator and the Leading Company.

The access request should be submitted to the Leading Company, copying in the Transmission System Operator, in compliance with the time lines and the procedures defined by the Leading Company's Network Code and current regulations.