

**Framework Guidelines
on Interoperability Rules for European
Gas Transmission Networks**

Scoping Document

Draft

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Document history

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INFORMATION PAGE

Related Documents

- Framework Guideline on Capacity Allocation Mechanisms for the European Gas Transmission Network; Draft for Consultation; DFGC-2011-G-001; 3 March 2011, published by ACER
- Framework Guideline on Gas Balancing in Transmission Systems; Draft for Consultation; DFGC-2011-G-002; 12 April 2011, published by ACER
- EC draft guidelines on congestion management procedures; Commission proposal for guidelines to be adopted via a comitology procedure; 18th Madrid Forum of 27 & 28 September 2010.
- Commission Decision of 10 November 2010 amending Chapter 3 of Annex I to Regulation (EC) No 715/2009 of the European Parliament and of the Council on conditions for access to the natural gas transmission networks.
- European Commission Mandate to CEN for standards for biomethane for the use in transport and injection in natural gas pipelines. (M/475), 8 November 2010.
- European Commission Mandate to CEN for standardisation in the field of gas qualities (M/400), 16 January 2007.
- ENTSOG Interoperability WA - Harmonisation of Maintenance Publication (INT047-11_rev0)
- ENTSOG Technical paper on the injection of biogas into the natural gas networks (INT010-10_Rev FINAL)
- EASEE-gas CBP 2005-002/02 Interconnection Agreement
- EASEE-gas CBP 2005-001/02 Gas Quality Harmonisation
- EASEE-gas CBP 2003-002/02 Harmonisation of Nominating and Matching Process
- EASEE-gas CBP 2007-006/01 Harmonisation of the Allocation Information Exchange
- EASEE-gas CBP 2003-003/02 EDIG@S Protocol
- EASEE-gas CBP 2005-003-01 Constraints
- EASEE-gas CBP 2003-001-01: Harmonisation of units.

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1 Introduction

1.1 Background

Framework Guidelines aim at setting clear and objective principles for the development of network codes, pursuant to Article 6(2) of Regulation (EC) No 715/2009 (the “Gas Regulation”)¹.

The network code(s) developed by the European Network of Transmission System Operators for Gas (ENTSOG) and adopted according to the Framework Guidelines will be applied by Transmission System Operators taking into account possible public service obligations. The provisions contained in the network code(s) are without prejudice to the regulatory regime for cross-border issues pursuant to Article 42 of Directive 2009/73/EC² (the “Gas Directive”) and of the responsibilities and powers of regulatory authorities established according to Article 41(6) of the Gas Directive insofar the network code does not provide for full harmonisation.

Once drafted the network code(s) are submitted to the Agency for the Cooperation of Energy Regulators (ACER) for a reasoned opinion. Taking into account their degree of compliance with the Framework Guidelines and the fulfilment of the overarching objectives; maintaining security of supply, supporting the completion and functioning of the internal market in gas and cross-border trade including delivering benefits to the customers, ACER submits the network code(s) to the European Commission and may recommend that it be adopted within a reasonable time period via comitology.

1.2 The Scoping of the Interoperability Framework Guidelines

The Framework Guidelines on Interoperability Rules for the European Gas Transmission Networks will be the first operational/technical framework, with a less commercial/economic scope to be developed. The Framework Guidelines developed so far by ACER were of a general policy nature, leaving detailed rules and specifications to be developed in the Network Codes by ENTSOG. The purpose of the scoping exercise is to determine what approach should be followed for operational/technical Framework Guidelines and in particular what issues should be part of the Framework Guideline on Interoperability Rules for the European Gas Transmission Networks and at what level of detail these issues should be covered.

¹ Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005.

² Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC.

Another aim of the scoping exercise is to clearly locate interoperability as to the other topics that are subject for Framework Guidelines and Network Codes development. Interactions have to be clarified at an early stage to ensure a focused discussion during the development phase of these Framework Guidelines.

1.3 Structure of the document

Apart from this Introduction, the present document consists of three parts. The first part provides for the definition of interoperability. The second part explains the potential field of application, while the third part looks in detail at the issues that should be included in the Framework Guidelines.

The following Framework Guidelines developed so far by ACER and the European Commission's draft guidelines on congestion management procedures are relevant for scoping the Framework Guidelines on Interoperability Rules for the European Gas Transmission Networks:

- a) The Framework Guidelines on Capacity Allocation Mechanisms for the European Gas Transmission Network; Draft for Consultation; DFGC-2011-G-001; 3 March 2011, published by ACER³, hereafter referred to as "FG CAM";
- b) The Framework Guidelines on Gas Balancing in Transmission Systems; Draft for Consultation; DFGC-2011-G-002; 12 April 2011, published by ACER⁴, hereafter referred to as "FG Balancing";
- c) The EC draft guidelines on congestion management procedures; Commission proposal for guidelines to be adopted via a comitology procedure; 18th Madrid Forum of 27 & 28 September 2010, hereafter referred to as "EC CMP"⁵;
- d) The Commission Decision of 10 November 2010 amending Chapter 3 of Annex I to Regulation (EC) No 715/2009 of the European Parliament and of the Council on conditions for access to the natural gas transmission networks⁶, hereafter referred to as the "transparency guidelines".

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http://www.acer.europa.eu/portal/page/portal/ACER_HOME/Stakeholder_involvement/Public_consultatations/Closed_Public_Consultations/PC-02_FG_Gas_CAM/Consultation_document.

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http://www.acer.europa.eu/portal/page/portal/ACER_HOME/Stakeholder_involvement/Public_consultatations/Closed_Public_Consultations/PC-04%20FG%20Gas%20Balancing%20in%20Transmission%20Systems/Consultation_document.

⁵ http://ec.europa.eu/energy/gas_electricity/forum_gas_madrid_en.htm.

⁶ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:293:0067:0071:EN:PDF>.

To scope interoperability in relation to gas transmission systems, one should define the group of items, on which coordinated regulatory action is needed to allow for the smooth inter-operation of systems. While preparing this document, ACER has taken into account the standardisation mandates on gas quality and biomethane given by the European Commission to CEN (mandates M/400 and M/475)⁷, (2) interoperability papers already developed by ENTSOG⁸ and (3) the Common Business Practices (CBPs) developed by EASEE-gas⁹.

- (1) The European Commission has made clear steps to harmonise the gas quality in the European Union¹⁰ and has invited the European Committee for Standardisation (CEN) by the mandates M/400 and M/475 to develop a standard on gas quality parameters and on biomethane. In ACER's view, this work by CEN is of importance for the future Framework Guidelines on Interoperability Rules. In parallel, the Commission has contracted GL Noble Denton, in cooperation with Pöyry Energy Consulting, to carry out a cost-benefit analysis concerning the harmonisation process relating to interoperability in the EU, with a view on the implications on appliances.
- (2) Besides the development of network codes, ENTSOG has the obligation¹¹ to adopt common network operation tools to ensure coordination of network operation in normal and emergency conditions, including a common incidents classification scale, and research plans, as well as recommendations relating to the coordination of technical cooperation between Community and third-country transmission system operators. ENTSOG has already developed documents on the harmonisation of maintenance publication, IT&C roadmap and injection of biogas into the natural gas grid.¹²
- (3) In 2002, EASEE-gas was set up as a voluntary project to develop and promote the simplification and streamlining of both the physical transfer and the trading of gas across Europe. EASEE-gas is open to members coming from all parts of the gas value chain.

⁷ http://ec.europa.eu/energy/gas_electricity/doc/gas_quality/2007_01_16_mandate_gas_quality_en.pdf.

⁸ http://www.entsog.eu/publications/index_g_interoperability.html

⁹ <http://www.easee-gas.org/home.aspx>.

¹⁰ http://ec.europa.eu/energy/gas_electricity/gas_quality_harmonisation_en.htm.

¹¹ Article 7 of Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005.

¹² http://www.entsog.eu/publications/index_g_interoperability.html

2 Definition of the term “Interoperability”

At first, it is necessary to find a common definition for the term “Interoperability”, which ACER is going to use for the purpose of the Framework Guidelines on Interoperability Rules for the European Gas Transmission Networks.

A first attempt for a definition is:

“Interoperability refers to the ability of diverse transmission systems to work together (inter-operate) in a technical system operational sense in order to facilitate the exchange of gas across networks, taking into account organisational factors that impact system to system performance and realising simple and reliable exchange of information between system operators as well as between system operators and system users.

One overall aim of interoperability is to ensure that users of transmission systems in Europe do not face any additional technical, commercial or operational barriers compared with if the relevant networks were efficiently operated by a single entity.”

Interoperability should result in cooperation between system operators as well as between system operators and system users, agreeing on technical parameters, writing down operational procedures and agreeing on the protocol on how to inform each other.

The procedures of the operational and technical domain can strongly influence and even hamper the development of markets. To ensure and maintain system integrity and the continuity of supply, system operators do not only have to invest in infrastructure, but also have to focus on operational and interconnection agreements.

Interoperability is a key towards the creation of an integrated and competitive European gas market. For example, Article 8 of the Gas Directive states that *“the regulatory authorities where Member States have so provided or Member States shall ensure that technical safety criteria are defined and that technical rules establishing the minimum technical design and operational requirements for the connection to the system of LNG facilities, storage facilities, other transmission or distribution systems, and direct lines, are developed and made public. Those technical rules shall ensure the interoperability of systems and shall be objective and non-discriminatory.”*

Underlying principles for technical rules coming from scientific discoveries or from technological experience will further emerge in the future. They are generally considered to be correct and expedient to be put in practice. Therefore the Framework Guidelines will keep at setting overall requirements and will not attempt to cover details reflecting on the natural development of the technical rules.

3 Application of the Framework Guidelines

What shall be the area of application of the future Framework Guideline on Interoperability Rules? ACER's preliminary view is the following:

“The Framework Guideline should apply on the interconnection points between adjacent entry/exit systems (so not only on cross-border points) and on all other entry and exit points of those entry/exit systems (e.g. linked to storage, LNG, production facilities and end consumers including these exit points which are connected to distribution systems) where gas can enter or exit the system.”

The application is an important topic for each Framework Guideline, and this issue will be pursued further during the development of the Framework Guideline (following the confirmation of its scope).

4 Issues to be addressed in the Framework Guidelines

4.1 Nomination Process

Transportation nominations have been developed to support the gas transactions across Interconnection Points (hereafter "IPs") and other entry and exit points. Nominations involve shippers on the one hand and system operators on the other hand, whereby relevant processes for all parties involved in the gas chain should be consistent with the nomination principles.

Existing nomination processes may contribute to operational issues that hamper the emergence of an efficient (internal EU) gas market. The following non-exhaustive list should give examples on issues that may turn into barriers to trade and entry, and thus call for the harmonisation of nomination processes:

- a) alignment of the nomination processes at both sides of an IP, supports the implementation of bundled entry/exit capacity products, as defined in the FG CAM;
- b) a shipper active in different countries needs to receive the confirmation of scheduled flows along the whole transmission chain at the same time, in order to secure supplies for end-customers;
- c) nomination deadlines not in line with those of gas trading and gas production, create obstacles along the gas chain;
- d) unnecessary messages (corrections) may be exchanged between Transmission System Operators and shippers if a sequential nomination scheme (from end-user towards producer, through the whole supply chain) is to be applied;

- e) without a predefined nomination process, mismatches may be detected only late in the afternoon, when confirmation messages are issued;
- f) different gas day definitions may constitute an obstacle along the gas chain.

4.1.1 Gas day

Although the gas day might be an interoperability issue, a definition of a gas day is at the moment published and laid down for consultation in the draft Network Code for Capacity Allocation Mechanism prepared by ENTSOG¹³. The same approach seems to be proposed for the draft Balancing Network Code, in line with the draft ACER Framework Guidelines on Capacity Allocation Mechanisms and on Balancing.

4.1.2 Re-Nomination Regime

The re-nomination regime will be the timeline over a certain period (e.g. the gas day), indicating (re-)nomination lead-times and also the steps and rules necessary to guarantee smooth operation for cross-border gas flows.

4.1.3 Operational Constraints

An operational constraint is defined as an unplanned event that, for a certain period, causes available transport capacity to be less than the sum of the confirmed nominated quantities. A constraint could be either related to an unforeseen problem in the transmission system (e.g. compressor trip) or it can be the consequence of a gas quality problem.

In the event of a constraint occurrence there must be a set of procedures and principles in place to make sure all necessary information is provided in time, to be applied between “adjacent” operators and between operators and shippers. It is not to address how to solve a constraint but rather how to communicate a constraint and how to achieve a new set of confirmed and matched quantities at IPs.

¹³ http://www.entsog.eu/publications/index_g_cam.html: 5.00 to 5.00 UTC/GMT means 6.00 to 6.00 CET - Central European Time.

4.2 Interconnection Agreements

An Interconnection Agreement is defined as the agreement established between two Transmission System Operators (TSOs), whose transmission systems are connected at a particular IP. This agreement should describe the agreed rules and principles applied at the IP as well as the required information exchange between the adjacent operators.

EASEE-gas¹⁴ has identified in its CBP 2005-002/02 of 18 February 2009 a few operational issues where rules, procedures and/or information exchange between adjacent TSOs are at least needed to guarantee cross-border flows and consistency. These are the following:

- a) Matching: if not communicated properly, operators at each side of the border might have different confirmed quantities to flow gas.
- b) Rules for flow control: at each IP, operators have to agree on direction and time, how and when the gas has to flow.
- c) Measurement principles of gas quantities and quality: As the gas does not change at an IP, agreement on the method and procedure for the measurement, overruling steering differences and measurement corrections, is needed.
- d) Rules for allocating measured gas quantities: once there is agreement on the measured quantities, an amount of gas has to be allocated to each shipper. As an example, an Operational Balancing Agreement (OBA) could help to ensure that minor deviations are not unduly attributed to the system users but taken care of between system operators.
- e) Exceptional events: in case of an exceptional event, operators need to contact each other and coordinate the necessary actions.
- f) Changes to the Interconnection Agreement: shall be agreed upon for clarity and to safeguard the whole agreement.

4.3 Units Harmonisation

The lack of harmonisation of units in the gas industry might be a barrier to move from one entry/exit zone to another and may be a source of some technical and operational interoperability issues as follows:

¹⁴ <http://www.easee-gas.org/media/4114/cbp%202005-002-02%20.pdf>

a) Trading:

- Use of different conversion factors leads to mismatches between counterparties and invoicing discrepancies.

b) Shipping:

- In the nomination process, shippers have to nominate to TSOs using different units, which leads to difficult interfaces/interactions between portfolio handling and nomination systems.

c) Transmission:

- TSOs have to build conversion tools in their nomination handling systems in order to exchange messages with their adjacent operators (matching and confirmation);
- Assistance provided to market participants in order to sort out frequent mismatches.

Related issues are being tackled within other guidelines:

- a) in follow up of the Framework Guidelines on Capacity Allocation Mechanisms, the draft Network Code on Capacity Allocation Mechanisms published by ENTSOG on 21 June 2011 for consultation (Article 4.3 of the Draft Network Code) specifies kWh/h or kWh/d as booking unit for capacity;
- b) a harmonised unit of energy is a prerequisite for the Framework Guidelines on Balancing (Section 1.4. Definitions);
- c) the use of consistent units for publication of relevant data is imposed in the transparency guidelines annexed to Regulation 715/2009 (Point 3.1.1.(1) f) as kWh (with a combustion reference temperature of 298,15 K) for the unit of energy content and m³ (at 273,15 K and 1,01325 bar) for volume.

However, all the above mentioned units are not the ones used in existing International and European standards (ISO and CEN), where usually combustion reference and volume temperatures is at 15°C.

Note: the standard ISO 14532, used worldwide by many countries and by the Gas Industry, defines units and reference conditions at international level.

4.4 Gas Quality

The European Commission requested CEN by Mandate M/400 to harmonise the gas quality parameters (H-gas) in Europe. The mandate foresees two phases¹⁵:

- a) Evaluation of the impact of combustion parameters on the functioning of CE marked gas appliances. This is carried out by CEN/BT WG 197 "Gas quality" which presents a final report in autumn 2011.
- b) Standardisation of all relevant parameters, taking into account the results of phase 1, especially the testing program, and the EASEE-gas CBP 2005-001/01. The standards drafting is dedicated to CEN/TC 234 "Gas infrastructure", which put in place a working group (WG 11) which will start its activity on 15th September 2011. A draft standard is expected by January 2013.

The future CEN standard is expected to apply to the whole gas system (from cross-border points to the gas consumer), but will inherently be a non-binding standard as long as it is not being requested by EU legislation.

EASEE-gas has developed and approved a CBP¹⁶ recommending gas quality specifications in order to streamline interoperability at cross-border points in Europe and describing the recommended gas quality parameters, parameter ranges and the implementation plan. Their CBP is limited to cross-border and EU entry points for high calorific gas without added odorants, including LNG import terminals and excluding areas of production and isolated systems (where production, transportation and utilisation are combined).

The recent publication of the preliminary report on gas quality harmonisation by the Commission's consultants GL Noble Denton and Pöyry concludes at high level that "[...] a net benefit would not materialise from harmonisation of Europe's gas quality specifications" and that "[...] a significant burden of proof should be placed on any impact assessment that seeks to justify harmonisation". The report is for consultation until 16th September and does not feature recommendations yet.

¹⁵ http://ec.europa.eu/energy/gas_electricity/doc/gas_quality/2007_01_16_mandate_gas_quality_en.pdf

¹⁶ CBP 2005-001/01 has been approved by the EASEE-gas Executive Committee on 3 February 2005 and published on 7 February 2005.

4.5 Data Exchange

Data exchange and settlement rules are mentioned under Article 8(6) Regulation (EC) No 715/2009. A principle for promoting the exchange of information is already mentioned in the FG CAM under Sections 1.4 and 1.5:

“to define standard communication procedures, based on coordinated information systems and compatible electronic on-line communications, for capacity booking and transfers of capacity rights between network users.”

Consequently, a chapter on the standardisation of communication (about capacity) is written in the draft Network Code on Capacity Allocation Mechanisms published for consultation by ENTSOG on 21 June 2011 (Section 3.2).

EASEE-gas has developed and approved several CBPs concerning the use of technical standards and messaging protocols in order to assure an appropriate, reliable and secure data exchange between the parties involved. In order to reduce the number of different messages currently used and achieve a more efficient and more flexible way of handling the dispatching activities EASEE-gas approved a CBP¹⁷ recommending the use of the EDIG@S¹⁸ protocol for exchange of business information.

4.6 Capacity Calculation

Article 16 of Regulation (EC) No 715/2009 obliges TSOs to offer maximum capacity. The design of the capacity market, and the allocation of capacity products, was until recently treated on a standalone system basis. This issue is addressed in the FG CAM under Section 2 Capacity services (both firm and interruptible), bundled products and harmonised capacity allocation procedures. The European Commission's proposal for a comitology guideline on CMP calls for:

- a) the calculation of technical capacity through transparent methodologies, identifying all capacity that can be physically used;
- b) the forecast of system use for the purposes of identifying technical constraints, where transmission system operators may also consider market trends, historical flow data and data on results of allocation processes.

¹⁷ CBP 2003-003/01 was approved by the EASEE-gas Executive Committee on 18 February 2004.

¹⁸ www.edigas.org.

The calculation exercise in an entry/exit system has become dynamic, taking into account at all IPs information such as daily forecast entry and exit flows and the availability of network components or potential congestion, not only from inside the system but also from adjacent systems. Specifically how the maximum technical capacity is being set may influence the way how the adjacent system is operated.

4.7 Supplementary Issues

The six issues outlined above can be grouped into three categories:

a) Technical interface:

- Gas Quality
- Harmonisation of Units
- Capacity Calculation

b) Organisational interface:

- Nomination Process
- Interconnection Agreements

c) Communication interface:

- Data Exchange

Other areas, from Article 8(6) of Regulation (EC) No 715/2009, may also be considered for inclusion in the scope of the Framework Guidelines on Interoperability Rules for the European Gas Transmission Networks in order to use resources more efficiently:

- a) network security and reliability rules;
- b) network connection rules;
- c) third-party access rules;
- d) data exchange and settlement rules; and
- e) operational procedures in an emergency.