

## JRC SCIENCE FOR POLICY REPORT

# State of implementation of the Third Energy Package in the gas sector (Part 2)

*Interoperability and  
data exchange rules,  
and congestion  
management  
procedures*

Costescu A., Manitsas E., Szikszai A.

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#### Contact information

Name: Anca COSTESCU  
Address: European Commission, Joint Research Centre, P.O. box 2, 1755 ZG, Petten, the Netherlands  
Email: [Anca.COSTESCU@ec.europa.eu](mailto:Anca.COSTESCU@ec.europa.eu)  
Tel.: +31 22456-5173

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## **Abstract**

In the context of the Third Energy Package, we complement the regulatory elements provided in our previous report on the State of implementation of the Third Energy Package in the gas sector by reviewing two other network codes. This allows the full understanding of the rules which are at the core of the gas market in the European Union.

## **Authors**

Anca Costescu (PhD), Scientific officer at European Commission, Joint Research Centre, Directorate C: Energy, Transport and Climate, Energy Security, Distribution and Markets Unit.

Efthymios Manitsas (PhD), Scientific officer at European Commission, Joint Research Centre, Directorate C: Energy, Transport and Climate, Energy Security, Distribution and Markets Unit.

Andras Szikszai, Scientific officer at European Commission, Joint Research Centre, Directorate C: Energy, Transport and Climate, Energy Security, Distribution and Markets Unit.

## Executive summary

The key objective of this report is to complement a previous report <sup>(1)</sup> by introducing the Network Code on Interoperability and Data exchange rules, and the Congestion Management Procedures.

### Policy context

An integrated EU energy market is the most cost-effective way to ensure secure and affordable supplies to EU citizens. Through common energy market rules and cross-border infrastructure, energy can be produced in one EU country and delivered to consumers in another. This keeps prices in check by creating competition and allowing consumers to choose energy suppliers.

The Third Energy Package has been enacted to improve the functioning of the internal energy market and resolve structural problems. It covers five main areas:

- unbundling energy suppliers from network operators
- strengthening the independence of regulators
- establishment of the Agency for the Cooperation of Energy Regulators (ACER)
- cross-border cooperation between transmission system operators (TSO) and the creation of European Networks for Transmission System Operators for Gas (ENTSOG)
- increased transparency in retail markets to benefit consumers.

Energy is often bought and sold on wholesale markets before reaching the final consumer. To ensure the smooth functioning of these markets and prevent price manipulation, the EU has enacted regulations which prohibit the use of insider information or the spreading of incorrect information concerning supply, demand, and prices.

The EU also establishes rules on the use of cross-border energy networks. Known as network codes, these rules regulate who can use cross-border infrastructure and under what conditions.

In this policy context, the report gives a short overview of two Network Codes.

### Key conclusions

As the market integration is a process resulting from the EU legislation, and is based, among others, on cross-border cooperation and infrastructure use and development, we study in more details two of the Network Codes on gas.

### Main findings

The adoption of the Network Codes increases transparency, fair access to cross-border trade and flexibility for the supply leading to a more attractive environment for the markets participants. If they are in place in all the member states it is likely for the related hubs to develop. It is hence very important to understand their implementation.

### Related and future JRC work

This is the second report in a series related to the gas market(s) in EU. In the future, the work will be continued by selecting data sources regarding gas demand and gas prices in

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<sup>(1)</sup> Costescu A, Manitsas E., Szikszai A., State of implementation of the Third Energy Package in the gas sector, EUR 29102 EN, Publications Office of the European Union, Luxembourg, 2018, ISBN 978-92-79-79365-3, doi:10.2760/533990, JRC110507 (<https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/state-implementation-third-energy-package-gas-sector>).

the EU, and available models to analyse them, with possible description of links to other markets (electricity, oil or other regions).

The monitoring of the state of implementation of the Third Energy Package will also be continued.

#### Quick guide

This report is structured as follows. Section 1 introduces the analysis. Section 2 gives an overview of the Network Code on Interoperability and Data Exchange Rules and Section 3 presents the Congestion Management Procedures in Gas Transmission Systems.



# 1 Introduction

The purpose of this report is to complement the report "State of implementation of the Third Energy Package in the gas sector" of 2017 <sup>(1)</sup> by presenting the Network Code (NC) on Interoperability and Data exchange rules <sup>(2)</sup> (INT NC), and the Congestion Management Procedures <sup>(3)</sup> (CMP). Report <sup>(1)</sup> gave an overview of the gas related EU legislation, and presented the EU gas markets, including the Gas Target Model (GTM), the metrics used by different actors to define a well-functioning market, the existing EU gas hubs, and their scoring using these different metrics. Furthermore, it gave a description of three NCs: Gas Balancing, Capacity Allocation Mechanisms, and Harmonized Transmission Tariffs.

An NC is a set of common EU-wide rules in the form of an EU regulation established in accordance with the process in Article 6 of the Gas Regulation <sup>(4)</sup> for a given subject matter. NCs supplement the Gas Regulation and "amend... [its] non-essential elements".

All NCs constitute and form integral parts of the Gas Regulation; its consistent and coherent implementation requires due consideration of the interactions between the Gas Regulation and any given NC, and between NCs.

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<sup>(2)</sup> Commission Regulation (EU) No 2015 / 703 of 30 April 2015 establishing a network code on interoperability and data exchange rules ([https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:JOL\\_2015\\_113\\_R\\_0003](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:JOL_2015_113_R_0003)).

<sup>(3)</sup> Annex I, point 2.2 (Congestion management procedures in the event of contractual congestion) of Regulation EC No 715/2009 <sup>(4)</sup>.

<sup>(4)</sup> 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 (<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009R0715>).

## 2 Network Code on Interoperability and Data Exchange Rules

### 2.1 Principles

In order to create the common market for natural gas, the management of (sometimes unjustified) technical constraints is just as important as dealing with all other, mostly commercial, issues. This is the aim of INT NC, the most technical Network Code.

Market liberalisation has fundamentally changed the set-up of natural gas supply system.

*"Before the opening of the electricity and gas sectors, a single party could be responsible for:*

- operating the infrastructures (transmission, distribution, liquefied natural gas (LNG), storage);*
- inputting gas in the system, either from national sources of production or through contracts with other countries;*
- off-taking gas from the system in order to supply consumers or distribution systems;*
- the local commercialising of natural gas.*

*Necessary technical and operational rules and procedures were then internal to the integrated company." (5)*

A more tangible interpretation of the purpose of this particular network code is to have market participants perceive the several transmission systems as it was one single system run by a sole operator.

*"Ideally, in a fully integrated system, the interoperability level is such that users of two or more transmission systems operated by separate entities in Europe do not face technical, operational, communications or business-related barriers higher than those that would have been reasonably expected, if the relevant networks had been efficiently operated by a single entity" (5)*

In order to reach the goal above, varied terms and conditions of bilateral agreements between system operators need to be harmonised to the highest reasonable level. This is the purpose of INT NC.

Another peculiarity of this NC is that while the more commercial ones can more easily impose certain rules on market participants, it is not necessarily the case for technical standards. Due to the fact the INT NC deals primarily with the technical aspects of facilitating a liquid market, meeting certain requirements (e.g. gas quality, odourisation, data exchange) could incur significant costs. As a result the NC requires CBAs in order to ensure that costs do not outweigh benefits.

Besides the utilitarian aspect there is another challenge that INT NC faces. The NC needs to find the balance between certainty and flexibility. Network users naturally want to see set standards for the natural gas that they intend to transport through an interconnection point (IP) and for the systems they use for their long term business purposes. On the other hand precise standards can make the system rigid and can be an obstacle to the use of new sources and management of supply crises.

In order to meet the legislative principles, INT NC intends to enable high level interoperability for a common energy market and – at the same time – set certain rules

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(5) Initial Impact Assessment accompanying the document Framework Guidelines on Interoperability and Data Exchange Rules for European Gas Transmission Networks (ACER 2012) ([https://www.acer.europa.eu/Official\\_documents/Acts\\_of\\_the\\_Agency/Framework\\_Guidelines/Related%20documents/Initial%20Impact%20Assessment%20\(IIA\)\\_ENTSOG.pdf](https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Framework_Guidelines/Related%20documents/Initial%20Impact%20Assessment%20(IIA)_ENTSOG.pdf)).

for data exchange which is an integral part of harmonising technical conditions. Consequently the network code is focusing on the following areas:

*"Interconnection agreements, units, gas quality and odourisation, capacity calculation and data exchange are the areas where barriers to the efficient functioning of the Internal Gas Market have been identified by the Agency and for which a common approach based on harmonised rules could smooth the interoperation of systems, including communication."* <sup>(6)</sup>

## 2.2 Preparation

The extent to which regulatory involvement is necessary has been studied in details by ACER in the Initial Impact Assessment accompanying the Framework Guidelines on Interoperability and Data Exchange Rules for European Gas Transmission Networks of 2012 ("Impact Assessment"). Possible involvement was ranging between "no action" and "full harmonisation" in all areas.

The table below shows the range of options by areas and the final decision:

**Table 1.** Regulated areas, options and decisions

AREAS	OPTIONS	DECISION
Interconnection Agreement	<ul style="list-style-type: none"> <li>• No further EU action</li> <li>• Setting of minimum requirements</li> <li>• Setting of default rules</li> <li>• Fully detailed IA in INT NC (full harmonisation)</li> </ul>	Setting of default rules
Units	<ul style="list-style-type: none"> <li>• No further EU action</li> <li>• Full harmonisation</li> </ul>	Full harmonisation
Gas Quality	<ul style="list-style-type: none"> <li>• No further EU action</li> <li>• Reinforced requirements in terms of monitoring and cooperation</li> <li>• Full harmonisation</li> </ul>	Reinforced requirements in terms of monitoring and cooperation
Odourisation	<ul style="list-style-type: none"> <li>• No further EU action</li> <li>• Increased transparency and TSO cooperation</li> <li>• Full harmonisation</li> </ul>	Full harmonisation
Data Exchange	<ul style="list-style-type: none"> <li>• No further EU action</li> <li>• Format harmonisation</li> <li>• Format and content harmonisation</li> </ul>	Format harmonisation

<sup>(6)</sup> Framework Guidelines on Interoperability and Data Exchange Rules for European Gas Transmission Networks (ACER 2012)  
[https://www.acer.europa.eu/Official\\_documents/Acts\\_of\\_the\\_Agency/Framework\\_Guidelines/Related%20documents/FG%20on%20Interoperability%20and%20Data%20Exchange%20Rules%20for%20European%20Gas%20Transmission%20Networks.pdf](https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Framework_Guidelines/Related%20documents/FG%20on%20Interoperability%20and%20Data%20Exchange%20Rules%20for%20European%20Gas%20Transmission%20Networks.pdf).

## 2.3 Monitoring

*"1. The Agency shall monitor the execution of the tasks referred to in Article 8 (1), (2) and (3) of the ENTSG for Gas and report to the Commission."* [Gas Regulation Article 9]

In most areas INT NC has adopted a kind of "permissive" guidance. Therefore – besides the compliance with mandatory rules – the evaluations took into account the fulfilment of goals that brought the network code into existence.

*"The Report assesses the effectiveness of the Code implementation and is not limited to checking the mere legal compliance."* <sup>(7)</sup>

Both ACER and ENTSG have carried out an implementation monitoring, according to the Gas Regulation. Both entities sent out a survey to MSs to monitor the status of INT NC implementation. The ENTSG survey ("quantitative analysis") targeted TSOs and received information on 90 IPs, while ACER sent out another survey – based on the survey of ENTSG – to be filled out jointly by TSOs and National Regulatory Authorities (NRAs). The reason for the second survey is that – according to ACER – the first survey was based on self-evaluation and the answers were not supported by evidence. Both survey templates are attached to this document.

Besides the surveys ACER conducted another assessment ("qualitative analysis") by reviewing the implementation of INT NC at particular IPs on 8 borders in the following areas:

*"We assess the following features:*

- a. Interconnection Agreements;*
- b. Data Exchange, and*
- c. Gas Quality and Odourisation."* <sup>(7)</sup>

The results of the assessment of the above features will be introduced in details in the relevant sections. Before coming to the details of the analysis it is worth to mark that no major issues have emerged in the implementation of INT NC.

*"Neither stakeholders nor NRAs reported any systemic problems in relation to the implementation of the Code. Overall, the implementation is progressing as expected."* <sup>(7)</sup>

## 2.4 Legal Background

The title of the INT NC itself is very broad and generic so numerous stipulations could be quoted from the Directive and Regulations of the Third Energy Package that are related one way or the other to the operation of the natural gas supply system or the flow of information. As a result all technical issues that can hinder the evolution of a common market and need to be sorted out mainly between system operators can fit under the umbrella of INT NC. So the most relevant rules are:

DIRECTIVE 2009/73/EC concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC (Directive)

As part of the 3<sup>rd</sup> Energy Package Directive *"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."* [Directive Article 8]

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<sup>(7)</sup> First ACER Implementation Monitoring Report of the Network Code on Interoperability and Data Exchange ([https://www.acer.europa.eu/Official\\_documents/Acts\\_of\\_the\\_Agency/Publication/First%20ACER%20Implementation%20Monitoring%20Report%20of%20the%20Network%20Code%20on%20Interoperability%20and%20Data%20Exchange.pdf](https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/First%20ACER%20Implementation%20Monitoring%20Report%20of%20the%20Network%20Code%20on%20Interoperability%20and%20Data%20Exchange.pdf)).

Furthermore *"...Member States shall ensure that the roles and responsibilities of transmission system operators, distribution system operators, supply undertakings and customers and if necessary other market parties are defined with respect to contractual arrangements, commitment to customers, data exchange and settlement rules, data ownership and metering responsibility.*

*Those rules shall be made public, be designed with the aim to facilitate customers' and suppliers' access to networks and they shall be subject to review by the regulatory authorities or other relevant national authorities."* [Directive Article 45]

REGULATION (EC) No 715/2009 on conditions for access to the natural gas transmission networks

The Gas Regulation gives a concrete statement on the necessity of the establishment of a NC on interoperability and data exchange:

*"The network codes referred to in paragraphs 1 and 2 shall cover the following areas, taking into account, if appropriate, regional special characteristics:*

*...*

*(d) data exchange and settlement rules;*

*(e) interoperability rules;*

*..."*

[Gas Regulation Article 8(6)]

REGULATION (EU) No 2015/703 establishing a network code on interoperability and data exchange rules

INT NC sets the detailed rules and will be analysed in this section.

## 2.5 Scope

Generally the scope of INT NC is the interconnection points (IPs), if the stipulations refer differently, it is indicated. As ACER pointed out <sup>(5)</sup> the interpretation of scope can be wider than transmission system operators [certain distribution system, storage and LNG operators], but INT NC clearly states that it primarily focuses on "interoperability and data exchange as well as harmonised rules for the operation of gas transmission systems"

## 2.6 Deadlines

By default the requirements set out in the INT NC were to be fulfilled by May 2016. The only exception is the Interconnection Agreement (IA) template that was to be published by ENTSOG by 31 December 2015.

## 2.7 Definitions

**'exceptional event'** means any unplanned event that is not reasonably controllable or preventable and that may cause, for a limited period, capacity reductions, affecting thereby the quantity or quality of gas at a given interconnection point, with possible consequences on interactions between transmission system operators as well as between transmission system operator and network users; [INT NC Article 2(a)]

**'initiating transmission system operator'** means the transmission system operator initiating the matching process by sending the necessary data to the matching transmission system operator; [INT NC Article 2(b)]

**'lesser rule'** means that, in case of different processed quantities at either side of an interconnection point, the confirmed quantity will be equal to the lower of the two processed quantities. [INT NC Article 2(c)]

**'matching process'** is the process of comparing and aligning processed quantities of gas for network users at both sides of a specific interconnection point, which results in confirmed quantities for the network users; [INT NC Article 2(d)]

**'matching transmission system operator'** means the transmission system operator performing the matching process and sending the result of the matching process to the initiating transmission system operator; [INT NC Article 2(e)]

**'measured quantity'** means the quantity of gas that, according to the measurement equipment from the transmission system operator, has physically flowed across an interconnection point per time period; [INT NC Article 2(f)]

**'operational balancing account'** means an account between adjacent transmission system operators, to be used to manage steering differences at an interconnection point in order to simplify gas accounting for network users involved at the interconnection point; [INT NC Article 2(g)]

**'processed quantity'** means the quantity of gas determined by the initiating transmission system operator and by the matching transmission system operator, which takes into account the network user's nomination or re-nomination and contractual provisions as defined under the relevant transport contract and which is used as the basis for the matching process; [INT NC Article 2(h)]

**'steering difference'** means the difference between the quantity of gas that the transmission system operators had scheduled to flow and the measured quantity for an interconnection point. [INT NC Article 2(i)]

**'interconnection agreement'** means an agreement entered into by adjacent transmission system operators, whose systems are connected at a particular interconnection point, which specifies terms and conditions, operating procedures and provisions, in respect of delivery and/or withdrawal of gas at the interconnection point with the purpose of facilitating efficient interoperability of the interconnected transmission networks. [COMMISSION REGULATION (EU) 2017/459 Article 3(9) <sup>(8)</sup>]

## **2.8 Regulated areas**

### **2.8.1 Interconnection Agreement (IA)**

#### **2.8.1.1 Overview of network use and operation**

In order to help understand the IA related rules of INT NC, it is useful to locate its scope in the sequence of acts concerning network use and operation.

The two main market participants – network users and system operators – follow generally the sequence of acts as outlined below:

1. Capacity made available for purchase (booking) - by system operator
2. Capacity booking – by network user
3. (Re) Nomination – by network user
4. Processing, matching, confirming and scheduling – by system operator
5. Steering (including operational balancing) – by system operator
6. Measurement – by system operator
7. Allocation (including commercial balancing) – by system operator

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<sup>(8)</sup> COMMISSION REGULATION (EU) 2017/459 of 16 March 2017 establishing a network code on capacity allocation mechanisms in gas transmission systems and repealing Regulation (EU) No 984/2013

The above points are naturally not as distinct in time as they look. Some steps can overlap, e.g. the operational activities during the gas day can occur simultaneously with a renomination cycle. This section of the network code gives guidance on points 3-7, shaping the frames of the Interconnection Agreement which is mandatory between TSOs.

*"Individual Interconnection Agreements shall be established on a mandatory basis by all concerned TSOs at all interconnection points." (6)*

These agreements are concluded between the operators of adjacent transmission systems with a view to set terms and conditions in the following areas:

*"Adjacent transmission system operators shall ensure that at least the following terms and conditions detailed in Articles 6 to 12 are covered by an interconnection agreement in respect of each interconnection point:*

- (a) rules for flow control;*
- (b) measurement principles for gas quantities and quality;*
- (c) rules for the matching process;*
- (d) rules for the allocation of gas quantities;*
- (e) communication procedures in case of exceptional events;*
- (f) settlement of disputes arising from interconnection agreements;*
- (g) amendment process for the interconnection agreement."* [INT NC Article 3]

For transparency and proper representation of network users' interest INT NC gives guidance on the process of conclusion and amendment of an IA.

*"1. The transmission system operators shall identify the information contained in interconnection agreements that directly affects network users and shall inform them thereof.*

*2. Before concluding or amending an interconnection agreement ... transmission system operators shall invite network users to comment on the proposed text of those ... The transmission system operators shall take the network users' comments into account when concluding or amending their interconnection agreement.*

*3. The mandatory terms of interconnection agreements listed in Article 3 or any amendments thereof concluded after the entry into force of this Regulation shall be communicated by the transmission system operators to their national regulatory authority and to ENTSOG ... Transmission system operators shall also communicate interconnection agreements upon request of competent national authorities of the Member State ..."*

ENTSOG has published a template for an IA, so in case the parties concerned are not able to come to an agreement on a certain issue it is available to fall back on. Furthermore, since this section of the INT NC deals with the requirement of an agreement also default contents have been identified that are compulsory elements of the agreement in case the parties concerned cannot reach a consensus in a certain area.

### **2.8.1.2 Flow control**

With regards to flow control the main guiding principles are that flows are

- 1. "(a) ... controllable, accurate, predictable and efficient ...;"* [INT NC Article 6(1)]
- 2. steered "(b) ... for minimising the deviations from the flow pursuant to the matching process";* (steering difference) [INT NC Article 6(1)]

The above rules serve two main purposes. On the one hand the system operator needs to act in accordance with the needs and requirements of network users, on the other hand they need to maintain safe operation and system integrity.

*"The transmission system operator designated ... shall be responsible for steering the gas flow across the interconnection point ...:*

- (a) at a level of accuracy sufficient to minimise the steering difference; and*
- (b) at a level of stability in line with the efficient use of the gas transmission networks."* [INT NC Article 6(2)]

With regards to flow control the IA has to contain the rules for

1. The system operator that is responsible for steering the gas across the IP;
2. The decision on the direction and quantity of gas flowing through the IP in an hourly breakdown according to the matching process and the settlement of steering difference;
3. Arrangements for managing quality and odourisation practice differences;

*"(c) designate the transmission system operator who is responsible for steering the gas flow across the interconnection point."* [INT NC Article 6(2)]

*"3. The quantity and direction of the gas flow decided by the adjacent transmission system operators shall reflect:*

- (a) the result of the matching process;*
- (b) the operational balancing account correction;*
- ...*
- (d) any arrangement managing cross-border trade restrictions due to gas quality differences ... and/or odourisation practices ..."* [INT NC Article 6]

Furthermore INT NC ensures the opportunity for efficient management of a crisis/exceptional event:

*"4. A transmission system operator may decide to alter the quantity of gas or the gas flow direction or both, if this is needed, in order to:*

- (a) comply with provisions laid down in national or Union safety legislation applicable to the interconnection point;*
- (b) comply with requirements laid down in Emergency Plans and Preventive Action Plans developed in accordance with Regulation (EU) No 994/2010 of the European Parliament and of the Council (1);*
- (c) react in case the operator's system is affected by an exceptional event."* [INT NC Article 6]

#### **Default rule:**

The rule determines the responsibility of steering the gas flow.

*"If the adjacent transmission system operators fail to agree on this designation, the transmission system operator that operates the flow control equipment shall, in cooperation with the other transmission system operator(s), be responsible for steering the gas flow across the interconnection point."* [INT NC Article 6(2)]

#### **2.8.1.3 Measurement**

Measurement rules cover the volume, energy and quality of gas. The IA has to identify the party responsible for the installation, operation and maintenance of the measurement equipment and supply of necessary data to the adjacent system operator. The two operators shall agree on the measurement principles.



*"3. The adjacent transmission system operators shall agree on measurement principles which shall at least include:*

- (a) a description of the metering station including measurement and analysis equipment to be used and details of any secondary equipment that may be used in case of failure;*
- (b) the gas quality parameters and volume and energy that shall be measured, as well as the range and the maximum permissible error or uncertainty margin within which the measurement equipment shall operate, the frequency of measurements, in what units and according to what standards the measurement shall be made as well as any conversion factors used;*
- (c) the procedures and methods that shall be used to calculate those parameters which are not directly measured;*
- (d) a description of the method of calculation in respect of the maximum permissible error or uncertainty in the determination of energy transported;*
- (e) a description of the data validation process in use for the measured parameters;*
- (f) the measurement validation and quality assurance arrangements, including verification and adjustment procedures to be agreed between the adjacent transmission system operators;*
- (g) the way data, including frequency and content, is provided among the adjacent transmission system operators in respect of the measured parameters;*
- (h) the specific list of signals and alarms to be provided by the adjacent transmission system operator(s) who operate(s) the measurement equipment to the other adjacent transmission system operator(s);*
- (i) the method of determining a correction to a measurement and any subsequent procedures that may be necessary in a temporary situation where the measurement equipment is found to be or have been in error (either under-reading or over-reading outside of its defined uncertainty range). This transmission system operator shall take appropriate action to end this situation.*
- (j) rules that shall apply between adjacent transmission system operators in the event of failure of the measurement equipment;*
- (k) rules that shall apply between the adjacent transmission system operators for:*
  - (i) access to the measurement facility;*
  - (ii) additional verifications of measurement facility;*
  - (iii) modification of the measurement facility;*
  - (iv) attendance during calibration and maintenance work at the measurement facility." [INT NC Article 7]*

**Default rules:**

If there is no agreement between TSOs the one in control of the measuring equipment is responsible and European standard EN1176 is applicable for the functional requirement.

*"4. If the adjacent transmission system operators fail to comply with their obligations provided for in paragraphs 1 and 3:*

- (a) the transmission system operator in control of the measurement equipment shall be responsible for the installation, operation and maintenance of such equipment and for providing the other transmission system operator with the data regarding the measurement of gas flows at the interconnection point in a timely manner;*

*(b) the European standard EN1776 'Gas Supply Natural Gas Measuring Stations Functional Requirements' in the version applicable at the time shall apply."* [INT NC Article 7]

#### **2.8.1.4 Matching**

Based on (re-)nominations the system operators need to establish a matching process so the same quantity can be scheduled for the two sides of the IP. By default the lesser rule applies, meaning that the lower quantity prevails if the quantities on the two sides differ. TSOs can agree on a different matching process as well. The system operators have to agree on the process including their roles, timing, data exchange.

*"2. Nominations and re-nominations shall be managed in accordance with the following:*

*(a) the application of a matching rule shall lead to identical confirmed quantities for each pair of network users at both sides of the interconnection point when processed quantities are not aligned;*

*(b) the adjacent transmission system operators may agree to maintain or implement a matching rule other than the lesser rule, ...;*

*(c) the adjacent transmission system operators shall specify ... whether they are the initiating or the matching transmission system operator;*

*(d) the adjacent transmission system operators shall specify the applicable time schedule for the matching process within the nomination or re-nomination cycle, ... and shall take into account:*

*(i) the data that needs to be exchanged between the adjacent transmission system operators ...;*

*(ii) the data exchange process ... shall enable the adjacent transmission system operators to perform all calculation and communication steps in an accurate and timely manner."* [INT NC Article 8]

INT NC sets a minimum data content for the matching process.

*"4. Each interconnection agreement shall specify in its provisions on data exchange for the matching process:*

*...*

*(b) the harmonised information contained within the data exchange for the matching process which shall contain at least the following:*

*(i) interconnection point identification;*

*(ii) network user identification or if applicable its portfolio identification;*

*(iii) identification of the party delivering to or receiving gas from the network user or if applicable its portfolio identification;*

*(iv) start and end time of the gas flow for which the matching is made;*

*(v) gas day;*

*(vi) processed and confirmed quantities;*

*(vii) direction of gas flow."* [INT NC Article 8]

#### **Default rules:**

For the lack of agreement, INT NC sets the rules for the applicable quantity, the steps of matching process and determines the "matching system operator".

*"5. Unless otherwise agreed by the adjacent transmission system operators in their interconnection agreement, the following shall apply:*

- (a) the transmission system operators shall use the lesser rule. ...*
- (b) the transmission system operator in control of the flow control equipment shall be the matching transmission system operator;*
- (c) the transmission system operators shall perform the matching process in the following sequential steps:*
  - (i) calculating and sending of processed quantities of gas by the initiating transmission system operator within 45 minutes of the start of the nomination or re-nomination cycle;*
  - (ii) calculating and sending of confirmed quantities of gas by the matching transmission system operator within 90 minutes from the start of the nomination or re-nomination cycle;*
  - (iii) sending confirmed quantities of gas to network users and scheduling the gas flow across the interconnection point by the adjacent transmission system operators within two hours from the start of the nomination or re-nomination cycle. ..."* [INT NC Article 8]

### **2.8.1.5 Allocation**

The quantity allocated to the network users has to be equal on both sides of the IP. In case steering difference is managed through an operational balancing account, system operators need to agree on the limit of the operational balancing account and its possible extension.

*"1. In respect of the allocation of gas quantities, the adjacent transmission system operators shall establish rules ensuring consistency between the allocated quantities at both sides of the interconnection point.*

*...*

*4. The adjacent transmission system operators may agree to maintain or implement an allocation rule other than the operational balancing account, provided that this rule is published and network users are invited to comment on the proposed allocation rule within at least two months after publication of the allocation rule."* [INT NC Article 9]

### **Default rules:**

The rules delegate the task of (re)calculating the operational balancing account, declare that allocations shall be equal to confirmed quantities, the necessity of taking specific characteristics of IPs into account for the operational balancing account limits and the aim to maintain the operational balancing account at zero balance.

*"2. ... the transmission system operators shall use an operational balancing account. The transmission system operator in control of the measurement equipment shall recalculate the operational balancing account with validated quantities and communicate it to the adjacent transmission system operator(s).*

*3. Where an operational balancing account applies:*

- (a) the steering difference shall be allocated to an operational balancing account of the adjacent transmission system operators and the allocations to be provided by each adjacent transmission system operator to their respective network users shall be equal to the confirmed quantities;*
- (b) the adjacent transmission system operators shall maintain an operational balancing account balance that is as close to zero as possible;*
- (c) the operational balancing account limits shall take into account specific characteristics of each interconnection point and/or the interconnected transmission networks..."* [INT NC Article 9]

#### **2.8.1.6 Communication procedure in case of exceptional event**

INT NC defines the minimum information content for TSOs that has to be communicated to network users and adjacent TSOs in case of an exceptional event.

*"1. The adjacent transmission system operators shall ensure that communication procedures ... in cases of exceptional events are established..."*

*2. The transmission system operator affected by an exceptional event shall be required, as a minimum, to inform its network users with respect to point (b) and (c) of this paragraph if there is a potential impact on their confirmed quantities and the adjacent transmission system operator(s) with respect to point (a) and (c) of this paragraph of the occurrence of such exceptional event and to provide all necessary information about:*

*(a) the possible impact on the quantities and quality of gas that can be transported through the interconnection point;*

*(b) the possible impact on the confirmed quantities for network users active at the concerned interconnection point(s);*

*(c) the expected and actual end of the exceptional event."* [INT NC Article 10]

#### **Default rule:**

*"...Unless otherwise agreed, the communication between the involved transmission system operators shall be performed by oral communication in English for information, followed by an electronic written confirmation."* [INT NC Article 10(1)]

#### **2.8.1.7 Dispute settlement**

*"1. The adjacent transmission system operators shall endeavour to solve amicably any disputes ... The dispute settlement mechanism shall at least specify:*

*(a) the applicable law; and*

*(b) the court of jurisdiction or the terms and conditions of the appointment of experts ..." [INT NC Article 11]*

#### **Default rule:**

*"2. In the absence of agreement on the dispute settlement mechanism, Council Regulation (EC) No 44/2001 and Regulation (EC) No 593/2008 of the European Parliament and of the Council shall apply."* [INT NC Article 11]

#### **2.8.1.8 IA amendment**

*"1. The adjacent transmission system operators shall establish a transparent and detailed amendment process of their interconnection agreement ..." [INT NC Article 12]*

#### **Default rules:**

*"2. If the adjacent transmission system operators fail to reach an agreement on the amendment process, they may use the dispute settlement mechanisms developed in accordance with Article 11."* [INT NC Article 12]

#### **2.8.1.9 Monitoring results**

The quantitative analysis revealed that 6 IPs have no IA and another 7 IPs have incomplete IAs.

**Table 2.** IPs with no IA

IP code	TSOs	Member State
21Z000000000160X	Bulgartransgaz	BG
21Z000000000154S	FGSZ	HU
21Z000000000011D	Fluxys Belgium, GRTgaz	BE, FR
37Z000000001442N	GASCADE Gastransport, terranets bw	DE
21Z0000000003022	Transgaz	RO
21Z0000000003030	Transgaz	RO

Source: ACER (7)

**Table 3.** IPs with incomplete IA

IP NAME/ LOCATION	EIC or identifier for IP	TSO1	TSO2	3. b. Measurement principles for gas quantities	3.b Measurement principles for gas quality	3.f. Settlement of disputes	3.g. Amendment process
Bocholtz	21Z000000000071W	Open Grid Europe				In progress	In progress
Oude Statenzijl	21Z000000000075O	Open Grid Europe				In progress	In progress
Tegelen	21Z000000000117Y	Open Grid Europe				In progress	In progress
Bocholtz	21Z0000000002042	Fluxys TENP				In progress	In progress
Steinitz	21Z000000000237O	ONTRAS	Open Grid Europe	Not applicable	Not applicable		
Lamperthheim I	37Z0000000007905	GASCADE Gastransport	Open Grid Europe			Not applicable	Not applicable
Reckrod I	37Z000000004923T	Open Grid Europe	GASCADE Gastransport			Not applicable	Not applicable

Source: ACER (7)

According to the qualitative analysis the examined IAs – with one exception – were in compliance with INT NC at 85%.

## 2.9 Units

The use of different units by adjacent system operators brings a significant amount of uncertainty into the everyday operation of the system, ranging from nomination to allocation including the development of a technical background to handle different units.

Therefore INT NC makes explicit definitive statements for the most common units.

*"1. Each transmission system operator shall use the common set of units defined in this Article for any data exchange and data publication related to Regulation (EC) No 715/2009.*

*2. For the parameters of pressure, temperature, volume, gross calorific value, energy, and Wobbe-index the transmission system operators shall use:*

*(a) pressure: bar*

*(b) temperature: °C (degree Celsius)*

*(c) volume: m<sup>3</sup>*

*(d) gross calorific value (GCV): kWh/m<sup>3</sup>*

*(e) energy: kWh (based on GCV)*

*(f) Wobbe-index: kWh/m<sup>3</sup> (based on GCV)" [INT NC Article 13]*

As indicated previously the rules are meant to be minimising the burden imposed on TSOs, so as long as units obviously do not hinder the creation of common market there is no need to change them.

*"3. In cases where one Member State is connected to only one other Member State, the adjacent transmission system operators and the parties they communicate with may agree to continue to use other reference conditions for data exchange ..." [INT NC Article 13]*

## **2.10 Gas quality and Odourisation**

### **2.10.1 Gas quality**

With regards to gas quality the task was to find the balance between

- a) letting natural gas into the transmission system from a wide variety of sources that would be beneficial from both an increased competition and security of supply point of view and
- b) constraining the acceptable gas composition for system integrity and safety.

According to the Impact Assessment "no direct EU-wide technical barrier to trade has been observed" however the future change in "flow patterns" necessitates common actions in the area of gas quality. Also the phasing-out of low calorific value gas (L-gas) and the spread of biogas will need additional efforts in harmonisation.

*"The following local issues related to Gas Quality will deserve continuous regulatory oversight in the coming years:*

*a. Countries where L-gas is used may face temporary problems in the context of the phasing out of L-gas;*

*b. While biogas is currently used locally, its increase in the domestic production may trigger cross-border impacts;*

*c. Issues regarding the Wobbe index are likely to re-enter the EU debate and will require consumers and producers better to coordinate and agree on a common position in the future." (7)*

Dealing with different gas qualities is one of the most cost sensitive issue in the area of interoperability, so INT NC offers both a time period and several options to tackle with any barrier to a common market:

*"2. Where a restriction to cross-border trade due to gas quality differences cannot be avoided by the concerned transmission system operators and is recognised by the national regulatory authorities, those authorities may require the transmission system*

operators to perform, within 12 months, the actions referred to in points (a) to (e) in sequence:

- (a) cooperate and develop technically feasible options, without changing the gas quality specifications, which may include flow commitments and gas treatment, in order to remove the recognised restriction;
- (b) jointly carry out a cost benefit analysis on the technically feasible options to define economically efficient solutions which shall specify the breakdown of costs and benefits among the categories of affected parties;
- (c) produce an estimate of the implementation time for each potential option;
- (d) conduct a public consultation on identified feasible solutions and take into consideration the results of the consultation;
- (e) submit a joint proposal for removing the recognised restriction, including the timeframe for implementation, based on the cost benefit analysis and results of the public consultation to their respective national regulatory authorities for approval and to the other competent national authorities of each involved Member State for information." [INT NC Article 15]

INT NC deals with variations in gas quality in two different time periods. Short-term quality fluctuations call for appropriate information supply for the parties that can be "adversely affected by gas quality changes".

Long-term changes serve more the purpose of being prepared for new sources of natural gas. The task of forecasting gas quality on a long term is delegated to ENTSOG.

*"1. ENTSOG shall publish every two years a long-term gas quality monitoring outlook for transmission systems in order to identify the potential trends of gas quality parameters and respective potential variability within the next 10 years. The first long-term gas quality monitoring outlook shall be published along with the Ten-Year Network Development Plan of 2017.*

...

*3. The long-term gas quality monitoring outlook shall cover at least the Wobbe-index and gross calorific value. Additional gas quality parameters may be included ...*

*4. The long-term gas quality monitoring outlook shall identify potential new supply sources from a gas quality perspective.*

*5. In order to define the reference values of gas quality parameters for the respective supply sources to be used in the outlook, an analysis of the previous years shall be carried out. ...*

*6. For every gas quality parameter considered and every region, the analysis shall result in a range within which the parameter is likely to evolve.*

*7. The long-term gas quality monitoring outlook shall be consistent and aligned with the ENTSOG Union-wide Ten-Year Network Development Plan under preparation at the same time. ..." [INT NC Article 18]*

With regards to short term fluctuations in gas quality the publication of Wobbe Index and Gross Calorific Value has been examined:

**Table 4.** Wobbe Index

Are Wobbe Index and Gross Calorific Value published for each entry point and once per hour?	
Yes	AT, BE, ES, IT, NL, PL, PT, SI, SK, UK
No	AT, BG, EL, HR, HU, IE, SE
N.A.	CZ, DE*, DK*, FR*, RO

Source: ACER <sup>(7)</sup>

### 2.10.2 Odourisation

Natural gas is an odourless and colourless gas which becomes explosive at a certain concentration. For safety reasons an odour needs to be added that has to be distinctive and easily detectable on the one hand and shall not change the main properties of gas on the other hand. From a compatibility point of view, receiving odourised gas is usually the problem that system operators and system users need to tackle.

Just as in case of gas quality, INT NC offers both a time period and several options to tackle with any issues.

*"1. Where a restriction to cross-border trade due to differences in odourisation practices cannot be avoided ... the authorities may require the concerned transmission system operators to reach an agreement within six months, which may include swapping and flow commitments, to solve any restriction recognised. ...*

*2. Where no agreement can be reached ... or where the national authorities agree that the proposed agreement by the concerned adjacent transmission system operators is not sufficiently effective to remove the restriction, the concerned transmission system operators, in cooperation with national authorities, shall, within the following 12 months, define a detailed plan ... to remove a recognised restriction ...*

*3. For the purpose of fulfilling the obligations under paragraph 2, the concerned transmission system operators shall in sequence:*

*(a) develop options to remove the restriction by identifying and assessing:*

*(i) a conversion towards cross-border physical flow of non-odourised gas;*

*(ii) the potential physical flow of odourised gas into the non-odourised transmission network or part thereof and interconnected downstream systems;*

*(iii) an acceptable level of odourant for cross-border physical gas flow.*

*(b) jointly carry out a cost-benefit analysis on the technically feasible options to define economically efficient solutions. That analysis shall:*

*(i) take into account the level of safety;*

*(ii) include information on projected volumes of gas to be transported and details of costs of necessary infrastructure investments;*

*(iii) specify the breakdown of costs and benefits between the categories of affected parties;*

*(c) produce an estimate of the implementation time for each potential option;*

*(d) conduct a public consultation and take into consideration the results of such consultation;*

*(e) submit the feasible solutions including the cost recovery mechanism and implementation timing to the national authorities for approval." [INT NC Article 19]*

#### **Default rule:**

*"4. If the national authorities do not approve any solution ... or if the concerned transmission system operators fail to propose a solution ..., a shift towards the cross-border physical flow of non-odourised gas shall be implemented ..." [INT NC Article 19]*

### 2.11 Data Exchange

As ACER points out the followings are necessary to be dealt with for an efficient data exchange.



*"In order to possibly communicate, two parties must agree on a common standard, including:*

- a format, supporting the information;*
- a communication channel, via which information will be exchanged;*
- a communication protocol, codifying possible interactions between the two parties."* <sup>(6)</sup>

According to the cornerstones above, INT NC sets the types of data exchange and the solutions for that (protocol, format and network).

*"1. Depending on the data exchange requirements ..., one or more of the following types of data exchange may be implemented and used:*

- (a) document-based data exchange: the data is wrapped into a file and automatically exchanged between the respective IT systems;*
- (b) integrated data exchange: the data is exchanged between two applications directly on the respective IT systems;*
- (c) interactive data exchange: the data is exchanged interactively through a web application via a browser.*

*2. The common data exchange solutions shall comprise the protocol, the data format and the network. The following common data exchange solutions shall be used for each of the types of data exchange listed in paragraph 1..."* [INT NC Article 21]

Naturally, in order to avoid unjustifiable costs the requirement of a CBA also appears in INT NC.

*"3. Where a potential need to change the common data exchange solution is identified, ENTSG, on its own initiative or on the request of ACER, should evaluate relevant technical solutions and produce a cost-benefit analysis of the potential change(s) that would be needed including the analysis of the reasons that make a technological evolutionary step necessary."* [INT NC Article 21]

INT NC delegates the responsibility for the security and availability of the data exchange system to the TSO and its counterparty.

*"1. Each transmission system operator and each counterparty shall be responsible for ensuring that the appropriate security measures are undertaken. In particular, they shall:*

- (a) secure the communication chain ...;*
- (b) implement appropriate security measures in order to prevent unauthorised access of their IT infrastructure;*
- (c) notify the other parties it communicates with, without delay, in regard to any unauthorised access which has or may have occurred on his own system.*

*2. Each transmission system operator shall be responsible for ensuring the availability of its own system and shall:*

- (a) take appropriate measures to prevent that a single point of failure causes an unavailability of the data exchange system...;*

*...*

- (c) keep the downtime ... to a minimum and shall inform its counterparties in a timely manner, prior to the planned unavailability."* [INT NC Article 22]

Besides a set of rules concerning data security and availability INT NC requires ENTSG to develop a common network operation tool (CNOT) for further harmonisation of data exchange.

*"... ENTSOG shall develop a common network operation tool ... A common network operation tool shall specify the common data exchange solution relevant for the respective data exchange requirement. A common network operation tool may also include business requirement specifications, release management and implementation guidelines. ..." [INT NC Article 24]*

ENTSOG has published the Common Network Operational Tools (CNOT) in order to set the standards for data exchange. The results of the ACER survey are as follows:

**Table 5.** CNOT implementation status

Implementation Status	Member States
<b>CNOT in the process of being implemented</b>	AT, BE, BG, DE,DK, IT,NL, PL, PT, SI, SK
<b>CNOT is not implemented</b>	EL, ES, FR, HR, HU, IE, SE, UK
<b>No response</b>	CZ, RO

Source: ACER (7)

## 3 Congestion Management Procedures in Gas Transmission Systems

### 3.1 Legislation

The Congestion Management Procedures are included in Annex I, point 2.2 (Congestion management procedures in the event of contractual congestion) of Regulation EC No 715/2009 <sup>(9)</sup> which was approved on 13 July 2009 and is applicable since 3 September 2009. Two amendments relevant to the CMP were decided afterwards, one in 2012 <sup>(10)</sup> with which the entire point 2.2 of Annex I was replaced, and one in 2015 <sup>(11)</sup> with which point 2.2.1(2) was replaced. A consolidated version of Regulation EC No 715/2009 was issued in 2015 <sup>(12)</sup>.

The following deadlines are specified in the Regulation:

- 1 October 2013: as of when measures provided for in points 2.2.2, 2.2.4 and 2.2.5 shall be implemented.
- 1 July 2016: as of when points 2.2.3(1) and 2.2.3(5) shall apply.

Four schemes are specified:

- Oversubscription and buy-back (OSBB)
- Firm day-ahead use-it-or-lose-it (FDA UIOLI)
- Surrender of contracted capacity
- Long-term use-it-or-lose-it (LT UIOLI)

In addition to the Regulation, the European Commission issued in 2014 a working document that provides guidance on best practices for CMP <sup>(13)</sup>. The guidance is summarised in paragraph 3.4.

### 3.2 Principles

TSOs shall implement non-discriminatory transparent congestion management procedures at IPs, based on the following principles:

- In the event of contractual congestion, TSOs shall offer unused capacity on the primary market at least on a day-ahead basis or interruptible basis
- Users can resell or sublet their unused capacity on the secondary market

In the event of physical congestion, non-discriminatory and transparent capacity allocation mechanisms shall be applied by the TSOs.

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<sup>(9)</sup> 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 (<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009R0715>).

<sup>(10)</sup> 2012/490/EU: Commission Decision of 24 August 2012 on amending 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 (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32012D0490>).

<sup>(11)</sup> Commission Decision (EU) 2015/715 of 30 April 2015 amending 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 (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32015D0715>).

<sup>(12)</sup> 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 (<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:02009R0715-20150525>).

<sup>(13)</sup> COMMISSION STAFF WORKING DOCUMENT, Guidance on best practices for congestion management procedures in natural gas transmission networks, Brussels, 11.7.2014, SWD(2014) 250 final ([http://ec.europa.eu/energy/sites/ener/files/documents/20140711\\_guidance\\_congestion\\_management\\_ngtn.pdf](http://ec.europa.eu/energy/sites/ener/files/documents/20140711_guidance_congestion_management_ngtn.pdf)).

For LNG and storage facilities:

- Unused LNG and storage capacity shall be offered to the primary market without delay
- For storage facilities, unused capacity shall be offered to the primary market at least on a day-ahead and interruptible basis
- LNG and storage facility users can resell or sublet their unused capacity on secondary market

### **3.3 Overview of CMP**

#### **3.3.1 General provisions**

The CMP applies to IPs, physical or virtual, subject to booking procedures by users. It may also apply to IPs with third countries, if the NRA decides to do so.

CMP does not apply exit/entry points to end consumers, distribution networks, LNG terminals, production facilities and storage facilities.

ACER publishes a monitoring report by 1 June each year, starting from 2015, covering firm capacity in the preceding year, taking into consideration secondary markets and interruptible capacity.

Additional capacity from the application of CMP is offered during regular allocation.

#### **3.3.2 Capacity increase through oversubscription and buy-back scheme**

The OSBB scheme is proposed by TSOs to NRAs, and ultimately approved by the relevant NRAs. It envisages that additional capacity, capacity offered in addition to the technical capacity, offered on firm basis.

The OSBB is incentive based, shall take into consideration technical conditions, and shall reflect the risk of offering additional capacity. A dynamic approach to recalculation of technical and additional capacity is to be used, with revenues/costs shared between TSOs and users.

Capacity from FDA UIOLI and LT UIOLI, and surrendered capacity, are allocated before any additional capacity.

The TSO shall use statistical scenarios for the likely amount of physically unused capacity and take into account a risk profile for offering additional capacity so that there is no excessive buy-back obligation.

A market-based buy-back procedure to maintain system integrity shall be used. Before initiating the buy-back procedure, the TSO shall check whether alternative technical and commercial measures are more cost-efficient.

Relevant data, estimates and models for the scheme are submitted to the NRA for assessment.

#### **3.3.3 Firm day-ahead use-it-or-lose-it mechanism**

The FDA UIOLI applies if, based on the annual ACER report, demand exceeds offer, at the reserve price when auctions are used, during the capacity allocation process in the year covered by the report for products for use in either that year or in one of the subsequent two years:

- For at least three firm capacity products with duration of one month, or
- For at least two firm capacity products with duration of one quarter, or
- For at least one firm capacity product with duration of one year or more, or
- No firm capacity product with duration of one month or more has been offered

If the situation is unlikely to reoccur in the following three years, the NRA may terminate the FDA UIOLI mechanism.

For users that hold more than 10% of the average technical capacity in the preceding year:

- Firm renomination is permitted up to 90% and down to 10% of the contracted capacity
- If the nomination is over 80%, half the non-nominated volume may be renominated upwards
- If the nomination is less than 20%, half the nominated volume may be renominated downwards

The original holder can renominate the restricted part of its contracted firm capacity on an interruptible basis.

Where FDA UIOLI is applied, and after an evaluation of the relation between the OSBB scheme and the FDA UIOLI mechanism is performed by the NRA, the NRA may decide not to apply the OSBB.

The NRAs of adjacent member states are to be consulted before the FDA UIOLI is adopted.

### **3.3.4 Surrender of contracted capacity**

TSOs shall accept any surrender of firm capacity. However, capacity products with duration of one day or shorter are excluded.

User retains rights and obligations until capacity is reallocated. The TSO notifies user immediately for the reallocation.

NRA approves terms and conditions when several users surrender their capacity.

### **3.3.5 Long-term use-it-or-lose-it mechanism**

According to the LT UIOLI mechanism, TSOs are required to partially or fully withdraw systematically underutilised contracted capacity when a user has not sold or offered under reasonable conditions unused capacity and when users request firm capacity.

Contracted capacity is considered systematically underutilised when:

- User uses less than 80% on average both from 01/04 until 30/09 and from 01/10 until 31/03 with a contract of more than one year, without justification, or
- User nominates close to 100% and renominates downwards to circumvent FDA UIOLI rules

The application of FDA UIOLI shall not be regarded as justification to prevent LT UIOLI.

User loses all or partial capacity for a given period or the remained of contract but retains rights and obligations until capacity is reallocated.

The TSO provides to NRA data to monitor the extent to which contracted capacities with duration of more than one year, or recurring quarters covering at least two years, are used.

## **3.4 Guidance on best practices for CMP**

### **3.4.1 Oversubscription and buy-back scheme**

The OSBB scheme can be regarded as the basic instrument for congestion management. The TSO determines the amount of capacity likely to remain unused by the capacity contract holders. Naturally, the OSBB cannot be applied in the case of physical congestion.

The OSBB shall be applied by all TSOs unless the relevant NRA decides not to apply the OSBB, and, thus, applies the FDA UIOLI.

It is a simple mechanism in case of low booking levels, and can be used as a preventative system, fulfilling the objectives of CMP. More sophisticated analysis required for meshed and complex networks and high booking levels. A cost-benefit analysis will be required for risk and reward. If the offer of additional capacity is too complex, the NRA should apply the FDA UIOLI instead.

There are no rules or recommendations on the type of products the TSO can offer, but there should be a balance between additional capacity and the obligation to maximise capacity. Naturally, shorter term products will be offered first while longer term products will be offered as the system becomes more sophisticated.

NRA should ensure that the TSO is incentivised so that the TSO offers additional capacity. Additional capacity shall always be of firm nature

Balance has to be achieved between over-remuneration and heavy losses in case nominated flows cannot be realised. As such, appropriate baseline capacity needs to be defined to achieve balance. The relevant methodology should be reviewed regularly.

There should be no distinction between technical firm capacity and oversubscribed firm capacity.

The users shall decide whether or not they want to sell their rights back to the TSO. In the opposite case, if the TSO actually decided, capacity would become in effect interruptible. The users shall receive either financial compensation or gas at destination.

The TSO should check for the most cost-efficient measure to solve congestion (e.g. agreements with adjacent TSOs, buy gas at market hub and sell upstream) to avoid situations where users are not willing to sell capacity or they want to sell at a very high price.

If an IP is connecting liquid markets, the buy-back price is unlikely to be higher than the price differential. This implicit cap may be made explicit by the NRA, so that the TSO risk is managed.

Pro rata curtailment to maintain system integrity is only acceptable as a last resort measure, when no alternatives exist or when a cap is applied.

If the risk for additional capacity is too high, or the number of users is limited and market is not liquid, the OSBB may not be appropriate. In this case, the FDA UIOLI may be more appropriate.

NRAs may set up an overall maximum "pot" capping TSO incentive revenue and losses. Clear boundaries for profit and loss sharing between TSO and users should be defined.

Users should not be able to renominate upwards if buy-back is initiated. If this is too restrictive, buy-back could run after the renomination cycle. Buy-back should be initiated closer to delivery (not on the day-ahead) to minimise opportunities for gaming by users.

### **3.4.2 Firm day-ahead use-it-or-lose-it mechanism**

The FDA UIOLI is restrictive in the way capacity rights can be used. It was meant to be a fall-back measure to the OSBB if the OSBB deemed not to be effective by 1 July 2016.

The OSBB and the FDA UIOLI are alternatives.

It is important that the both sides of IPs use the same measures. The lesser rule shall apply otherwise: in case of different processed quantities at either side of an IP, the confirmed quantity will be equal to the lower of the two processed quantities. The problem is more pronounced with bundled capacity. Compatibility between schemes can be achieved with either the FDA UIOLI without downward 10% restriction or the OSBB with 10% restriction.

For compatibility, the following could be applied:

- The FDA UIOLI has precedence if conditions of 2.2.3.1 are fulfilled, if not fulfilled the OSBB has precedence
- If the FDA UIOLI is applied after 01/07/2016 according to 2.2.3.1, the FDA UIOLI has precedence over the OSBB

### **3.4.3 Capacity surrender**

This is an alternative to user's right to offer capacity on the secondary market. It is successful when part or all of the capacity offered is reallocated. There is no incentive for users so that they don't book capacity only to hand it back to the TSO. No benefit for users from sale of their capacity (e.g. share of auction premium).

Surrendered capacity is allocated after available capacity. Surrendered bundled capacity is reallocated in bundled form, if there is demand.

The main difference with secondary markets is the fact that surrendered capacity gives the TSO the possibility to use the capacity as it wants, and the capacity can be rolled-over.

The user can withdraw the surrendered capacity, taking into consideration the timeframe of the roll-over and CAM NC auction calendar.

Surrendered capacity is offered in the order it has been offered to the TSO (timestamp approach).

### **3.4.4 Long-term use-it-or-lose-it mechanism**

This mechanism is used to deter long term capacity hoarding. Either NRAs or TSOs may decide ultimately on the withdrawal of capacity. TSOs provide information to NRAs on capacity usage. A monitoring framework is essential.

To avoid withdrawal of capacity, network users should offer the unused capacity under reasonable conditions, i.e. secondary markets for reasonable price or surrendered to the TSO.

The LT UIOLI takes effect only if other users demand capacity. The TSO remains cost-neutral throughout.

Underutilisation is defined as less than average 80%. The LT UIOLI refers to contracts with explicit duration of more than a year or series of one year contracts.

The NRA is best placed to determine whether full or partial withdrawal is required.

## **3.5 Status of Implementation**

### **3.5.1 ACER**

ACER has a legal obligation to publish a yearly report on contractual congestion at IPs. The latest report was published on 31 May 2018 <sup>(14)</sup>. It covers 2017.

17 (or about 7%) of the 262 IP sides in the scope of the CMP were contractually congested. For other 72 IP sides Gas Year 2018/19 products were not offered in 2017 (not considered congested but formally congested). There was no conclusive evidence on whether contractual congestion increased or decreased in 2017. Figure 1 provides the distribution of IP sides based on the status of contractual congestion.

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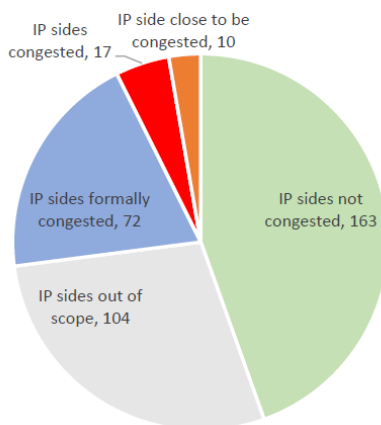
<sup>(14)</sup> ACER Annual Report on Contractual Congestion at Interconnection Points - 2017 ([https://acer.europa.eu/Official\\_documents/Acts\\_of\\_the\\_Agency/Publication/Congestion%20Report%205th%20ed.pdf](https://acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/Congestion%20Report%205th%20ed.pdf)).

The FDA UIOLI was already applied at 8 out of the 17 IP sides that were contractually congested. For the remaining 9 IP sides, FDA UIOLI is to be implemented, unless congestion is unlikely to occur in the next three years.

**Figure 1: Contractual congestion**

Distribution of IP sides based on status of congestion

100% = 366 CAM Relevant IP sides



Source: ACER <sup>(14)</sup>

Overall, contractual congestion was found in the following locations (Figure 2 and Figure 3):

- German borders (with Belgium, Switzerland, Austria) + inside Germany
- Bulgaria-Greece
- Romania-Bulgaria
- Italy-Austria (due to construction works)
- Inside France (zone merger in 2018)

**Figure 2: List of contractually congested IPs**

No	Operator	Point	Direction	Booking Platform	Connected Operator	eruptible offered?	eruptible booked?	number of interruptions?	Rep. unsuccessful requests?	IP application?	Secondary capacity trading PRISMA / RBP?	Has this IP side been (indicatively) contractually congested in Q4/13?	congested in 2014?	congested in 2015?	congested in 2016?	FDA UIOLI already implemented?
1	bayernets	Überackern SUDAL (AT) exit		PRISMA	GCA	yes	yes	11	yes	yes		yes	no	yes	yes	yes
2	BTG	Kulata (BG) / Sidirokast exit		RBP	DESFA S.A.	yes	no		no	no		yes	yes	yes	yes	yes
3	DESFA S.A.	Kulata (BG) / Sidirokast entry		RBP	BTG	no			no	no				no	yes (no GY17/18)	
4	Fluxys TENP GmbH	Eynatten 2 (BE) // Licht entry		PRISMA	Fluxys Belgium	yes	yes		no	yes	PRISMA				no	yes
5	Fluxys TENP GmbH	Wallbach exit		PRISMA	Swissgas	yes	yes		yes	yes	PRISMA	yes	close	yes	yes	yes
6	GASCADE	Kienbaum exit		PRISMA	OGE	yes	yes		no	no		no	yes	yes	yes	yes
7	GCA	Oberkappel entry		PRISMA	OGE	yes	yes		no	no	PRISMA			no	close	yes
8	GCA	Überackern ABG (AT) / entry		PRISMA	bayernets	yes	yes		no	no					close	yes*
9	GCA	Überackern SUDAL (AT) entry		PRISMA	bayernets	yes	yes		no	no		yes	yes	yes	yes (no GY17/18)	yes
10	GRTD	Oberkappel exit		PRISMA	GCA	yes	yes	28	no	yes		yes	no	yes	close	yes
11	GRTgaz	Liaison Nord Sud exit		PRISMA		yes	yes	74	yes	no	PRISMA	yes	yes	yes	yes (bundle)	yes
12	OGE	Kienbaum entry		PRISMA	GASCADE	yes	yes		no	yes		no	yes	yes	yes	yes
13	OGE	Oberkappel exit		PRISMA	GCA	yes	yes	29	yes	yes	PRISMA	no	yes	yes	yes	yes
14	OGE	Steinitz entry		PRISMA	ONTRAS Gastransport	yes	yes	2	no	yes		yes	no	yes	yes	yes
15	SNAM RETE GAS	Tarvisio (IT) / Arnoldst exit		PRISMA	TAG GmbH	yes	yes		no	no				no	yes	yes
16	TNBW	RC Thayngen-Fallentor exit		PRISMA	Erdgas Ostschweiz	yes			no	yes					no	yes
17	Transgaz	Negru Voda 1 (RO) / Kar entry		RBP	BTG	no			no	no						

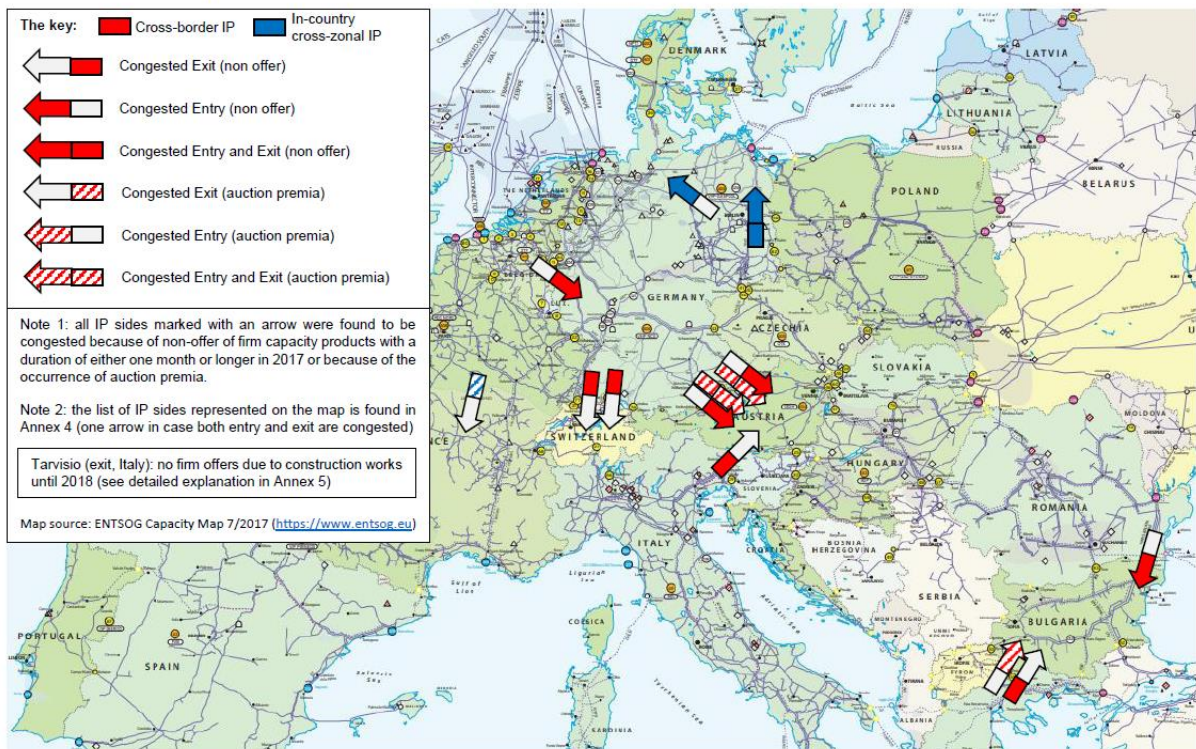
\* GCA applies FDA UIOLI at this IP side since 1 October 2013. Due to technical reasons, the data on CMP capacities made available through FDA UIOLI was not uploaded to ENTSOE TP by GCA.

Source: ACER <sup>(14)</sup>



**Figure 3:** Map of contractually congested IPs

## ANNEX 6: Map of 17 contractually congested IP sides in Europe in 2017

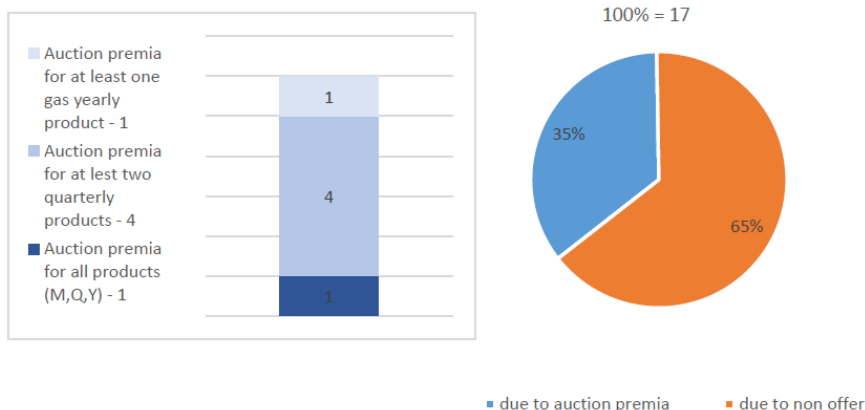


Source: ACER <sup>(14)</sup>

As shown in Figure 4, 11 out of the 17 contractually congested IP sides were due to non-offer of firm products with duration of at least one month for use in 2017/2018. 6 out of the 17 contractually congested IP sides were signalled by auction premia.

**Figure 4:** Reason for contractual congestion

Majority of congested IP sides are congested due to "non offer", majority of auction premia occurred on quarterly products



Source: ACER <sup>(14)</sup>

9 out of 17 IP sides were contractually congested in the 2017 report, 10 of those were contractually congested in the 2016 report.

Physical congestion, indicated by interruption of interruptible capacity, was found at 5 contractually congested IP sides. CMP brought additional capacity offers at the borders of 11 member states (were 7 in the previous report).

No application of the LT UIOLI.

The OSBB was used in 6 member states (were 3 in the previous report). Almost all additional capacity was on the Dutch and the UK IP sides.

Capacity surrender was used in 6 member states. The majority of additional capacity was in the Czech IP sides.

### 3.5.2 ENTSOG

ENTSOG monitors and analyses the implementation of the CMP. The latest report was approved in April 2018 and published on 7 June 2018 <sup>(15)</sup>. It covers 2017.

The conclusions are:

- 38 of 49 EU TSOs (45 ENTSOG members, 2 associated partners and 2 TSOs that are not ENTSOG members) have implemented Capacity Surrender, LT UIOLI, and OSBB or FDA UIOLI.
- 1 TSO of which the NRA has not approved the proposed scheme yet (OSBB - Hungary)
- 1 TSO is expected to finish with implementation within 2018 (Romania)
- 9 TSOs have derogations or have no IPs (1 TSO has implemented CMP measures anyway)

Overall, 47 of 49 TSOs are fully compliant with the CMP.

ENTSOG captures the effect of CMP using two indicators:

- CMP.1: Additional capacity volumes made available through each CMP
- CMP.2: Share of capacity reallocated through CMP among total capacity reallocated

The specifics of the two indicators are shown in Figure 5 and Figure 6.

**Figure 5: Indicator 1 (CMP.1)**

**Indicator 1 (CMP.1): Additional capacity volumes made available through each CMP**

**Note:** If the amount of unused capacity reallocated by TSOs to the market at network points measures the effectiveness of CMP, an analysis and overview of congested IPs will be also needed to gain a deeper understanding of the situation at each IP.

Premise 1: gas year to be used is from 1 Oct 2016 to 30 Sep 2017

Premise 2: MWh/h/y is used as the unit for every product to monitor the evolution of the below mentioned ratio by gas year for every of the 4 CMP tools.

**Calculation formula:**

$$CMP1 = \frac{ACMPx}{CMPx} \times 100$$

<sup>(15)</sup> ENTSOG Congestion Management Procedures Guidelines Implementation and Effect Monitoring Report - 2017

([https://www.entsog.eu/public/uploads/files/publications/Implementation%20Monitoring/2018/cmp/entsog\\_CMP\\_guidelines\\_I+EMR\\_2017\\_web.pdf](https://www.entsog.eu/public/uploads/files/publications/Implementation%20Monitoring/2018/cmp/entsog_CMP_guidelines_I+EMR_2017_web.pdf)).

Where:

**CMPx:** Return ratio of additional capacity allocated through a given CMP measure, relative to the total additional capacity offered through the given CMP measure.

**ACMP:** Sum of additional capacity allocated through a given CMP measure.

**CMP:** Sum of additional capacity offered through a given CMP measure.

Source: ENTSOG <sup>(15)</sup>

## Figure 6: Indicator 2 (CMP.2)

**Indicator 2 (CMP.2): Share of capacity reallocated through CMP among total capacity reallocated**

Calculation formula:

$$CMP2 = \frac{ACMP}{(ACMP + ASM)} \times 100$$

Where:

**CMPx:** Return ratio of additional capacity allocated through a given CMP relative to the total allocation of additional capacity within a definite period of time.

**ACMP:** Sum of allocated additional capacity offered through CMP measures within a definite period of time.

**ASM:** Sum of allocated capacity acquired from organized secondary markets within the same period.

Source: ENTSOG <sup>(15)</sup>

The TSOs included in the survey are those with one or more IPs rated as congested in last year's contractual congestion report from ACER <sup>(16)</sup>. Results of CMP.1 are shown in Figure 7 (BG/FR/DE/HU/ES/RO).

## Figure 7: Results for CMP.1

	OS + BB	FDA UIOLI	SURRENDER	LT UIOLI
ADDITIONAL CAPACITY OFFERED	–	999,687,98 MWh/h/y	–	–
(RE)ALLOCATED CAPACITY	–	94,565,44 MWh/h/y	–	–
RATIO	–	9,46 %	–	–

OS+BB: Oversubscription and Buy-Back      FDA UIOLI: Firm Day-Ahead Use-It-Or-Lose-It  
SURRENDER: Surrender of Capacity      LT UIOLI: Long-Term Use-It-Or-Lose-It

Table 2: Additional capacity volumes made available through each CMP

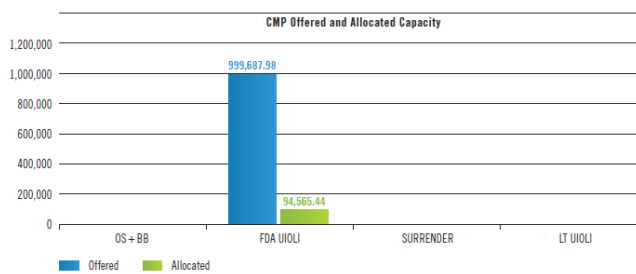


Figure 1: Results of CMP indicator 1

Source: ENTSOG <sup>(15)</sup>

<sup>(16)</sup> ACER Annual Report on Contractual Congestion at Interconnection Points – 2016 ([https://acer.europa.eu/Official\\_documents/Acts\\_of\\_the\\_Agency/Publication/ACER%202017%20Implementation%20Monitoring%20Report%20on%20Contractual%20Congestion%20at%20Interconnection%20Points.pdf](https://acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%202017%20Implementation%20Monitoring%20Report%20on%20Contractual%20Congestion%20at%20Interconnection%20Points.pdf)).

The FDA UIOLI is the only mechanism that released capacity. It is used by Germany and most TSOs with congested IPs. However, the amount actually allocated via the FDA UIOLI is very low either because capacity surrender and the secondary market provided the necessary capacity or there is no actual congestion.

Results of CMP.2 are shown in Figure 8.

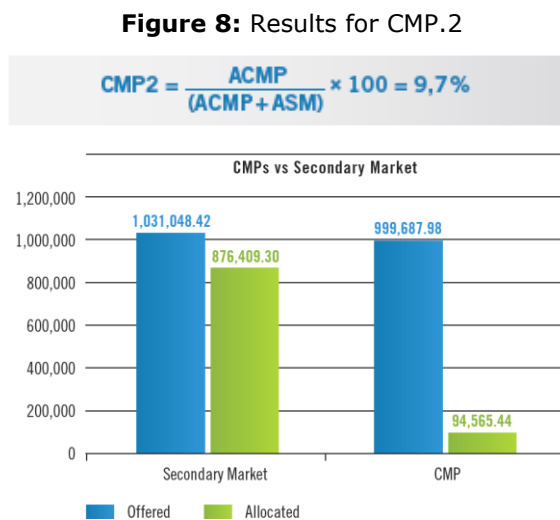


Figure 2: Results of CMP indicator 2

Source: ENTSOG (<sup>15</sup>)

Both CMP mechanisms and secondary markets are well established. However, only 10% of the capacity reallocated is reallocated via CMP mechanisms. The secondary markets are an important alternative to CMP mechanisms for network users.

## References

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 (<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009R0715>)

2012/490/EU: Commission Decision of 24 August 2012 on amending 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 (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32012D0490>)

Commission Decision (EU) 2015/715 of 30 April 2015 amending 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 (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32015D0715>)

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 (<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:02009R0715-20150525>)

COMMISSION STAFF WORKING DOCUMENT, Guidance on best practices for congestion management procedures in natural gas transmission networks, Brussels, 11.7.2014, SWD(2014) 250 final ([http://ec.europa.eu/energy/sites/ener/files/documents/20140711\\_guidance\\_congestion\\_management\\_ngtn.pdf](http://ec.europa.eu/energy/sites/ener/files/documents/20140711_guidance_congestion_management_ngtn.pdf))

ACER Annual Report on Contractual Congestion at Interconnection Points – 2017 ([https://acer.europa.eu/Official\\_documents/Acts\\_of\\_the\\_Agency/Publication/Congestion%20Report%205th%20ed.pdf](https://acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/Congestion%20Report%205th%20ed.pdf))

ENTSOG Congestion Management Procedures Guidelines Implementation and Effect Monitoring Report – 2017 ([https://www.entsog.eu/public/uploads/files/publications/Implementation%20Monitoring/2018/cmp/entsog\\_CMP\\_guidelines\\_I+EMR\\_2017\\_web.pdf](https://www.entsog.eu/public/uploads/files/publications/Implementation%20Monitoring/2018/cmp/entsog_CMP_guidelines_I+EMR_2017_web.pdf))

ACER Annual Report on Contractual Congestion at Interconnection Points – 2016 ([https://acer.europa.eu/Official\\_documents/Acts\\_of\\_the\\_Agency/Publication/ACER%202017%20Implementation%20Monitoring%20Report%20on%20Contractual%20Congestion%20at%20Interconnection%20Points.pdf](https://acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%202017%20Implementation%20Monitoring%20Report%20on%20Contractual%20Congestion%20at%20Interconnection%20Points.pdf)).

Commission Regulation (EU) No 2015 / 703 of 30 April 2015 establishing a network code on interoperability and data exchange rules ([https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:JOL\\_2015\\_113\\_R\\_0003](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:JOL_2015_113_R_0003))

COMMISSION REGULATION (EU) 2017/459 of 16 March 2017 establishing a network code on capacity allocation mechanisms in gas transmission systems and repealing Regulation (EU) No 984/2013 (Text with EEA relevance. ) (<https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32017R0459>)

Initial Impact Assessment accompanying the document Framework Guidelines on Interoperability and Data Exchange Rules for European Gas Transmission Networks (ACER 2012) ([https://acer.europa.eu/Official\\_documents/Acts\\_of\\_the\\_Agency/Framework\\_Guidelines/Related%20documents/Initial%20Impact%20Assessment%20\(IIA\)\\_ENTSOG.pdf](https://acer.europa.eu/Official_documents/Acts_of_the_Agency/Framework_Guidelines/Related%20documents/Initial%20Impact%20Assessment%20(IIA)_ENTSOG.pdf))

Framework Guidelines on Interoperability and Data Exchange Rules for European Gas Transmission Networks (ACER 2012) ([https://acer.europa.eu/Official\\_documents/Acts\\_of\\_the\\_Agency/Framework\\_Guidelines/Related%20documents/FG%20on%20Interoperability%20and%20Data%20Exchange%20Rules%20for%20European%20Gas%20Transmission%20Networks.pdf](https://acer.europa.eu/Official_documents/Acts_of_the_Agency/Framework_Guidelines/Related%20documents/FG%20on%20Interoperability%20and%20Data%20Exchange%20Rules%20for%20European%20Gas%20Transmission%20Networks.pdf))

First ACER Implementation Monitoring Report of the Network Code on Interoperability and Data Exchange

([https://acer.europa.eu/Official\\_documents/Acts\\_of\\_the\\_Agency/Publication/First%20ACER%20Implementation%20Monitoring%20Report%20of%20the%20Network%20Code%20on%20Interoperability%20and%20Data%20Exchange.pdf](https://acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/First%20ACER%20Implementation%20Monitoring%20Report%20of%20the%20Network%20Code%20on%20Interoperability%20and%20Data%20Exchange.pdf))

## **List of abbreviations and definitions**

ACER	Agency for the Cooperation of Energy Regulators
CAM	Capacity Allocation Mechanisms
CBA	Cost/Benefit Analysis
CMP	Congestion Management Procedures
CNOT	Common Network Operation Tool
EC	European Commission
ENTSO-G	European Network of Transmission System Operators for Gas
EU	European Union
FDA UIOLI	Firm day-ahead use-it-or-lose-it
GCV	Gross Calorific Value
GTM	Gas Target Model
IA	Interconnection Agreement
IP	Interconnection Point
LNG	Liquefied Natural Gas
LT UIOLI	Long-term use-it-or-lose-it
MS	Member State
NC	Network Code
NRA	National Regulatory Authority
OSBB	Oversubscription and buy-back
TSO	Transmission System Operator
TYNDP	Ten Year Network Development Plan

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## Annexes

### ANNEX I. – ENTSGO IA Template



Interconnection Agreement Template  
INT0647  
16 December 2015  
Final

#### **1 Rules for flow control** *(in accordance with Article 6 of INT NC)*

- ☐ 1.1. The Party operating the flow control equipment shall, in cooperation with the other transmission system operator(s), be responsible for steering the gas flow across the interconnection point.

#### **2 Measurement principles for gas quantity and quality** *(in accordance with Article 7 of INT NC)*

- ☐ 2.1. The measurement equipment shall be installed, operated and maintained by the transmission system operator in control of the measurement equipment.
- ☐ 2.2. Regarding the obligations set out in Article 7, paragraph 3, of the INT NC, EN1776 "Gas Supply. Natural Gas Measuring Stations. Functional Requirements" in the version applicable at the time shall apply.

#### **3 Rules for the matching process** *(in accordance with Article 8 of INT NC)*

- ☐ 3.1. The matching rule shall be the lesser rule<sup>1</sup>.
- ☐ 3.2. The Party in control of the flow control equipment shall be the matching transmission system operator.
- ☐ 3.3. The Parties agree the following time schedule<sup>2</sup> in order to complete the matching process. The duration of each process is specified from the starting point of the nomination or re-nomination cycle:
- (a) Calculating and sending of processed quantities of gas by the initiating transmission system operator: within 45 minutes.
  - (b) Calculating and sending of confirmed quantities of gas by the matching transmission system operator: within 90 minutes.
  - (c) Sending confirmed quantities of gas to network users and scheduling the gas flow across the interconnection point: within 2 hours.

#### **4 Rules for the allocation of gas quantities** *(in accordance with Article 9 of INT NC)*

- ☐ 4.1. The Parties agree to implement an operational balancing account as allocation rule for steering differences.

<sup>1</sup> The application of the lesser rule may only be restricted in case the conditions of point 2.2.3.1 of Annex I of Regulation (EC) No 715/2009 are fulfilled and its application would prevent the offer of firm capacity from the congestion management procedures.

<sup>2</sup> These sequential steps shall be without prejudice to the rule for minimum interruption lead times referred to in Article 22 of Regulation (EU) No 984/2013 and paragraph 2 (d) of this Article

- ☐ 4.2. The transmission system operator in control of the measurement equipment shall recalculate the operational balancing account with validated quantities and communicate it to the other Party.

**5 Communication procedures in case of exceptional events** (*in accordance with Article 10 of INT NC*)

- ☐ 5.1. In pursue of a communication procedure which facilitates fast and simultaneous communication in cases of exceptional events, the Parties shall at least perform: an oral communication in English for information, followed by an electronic written confirmation.



## **2 Common Data Exchange Solutions**

The INT&DE NC was published in April 2015 as Commission Regulation 2015/703 ((CR2015/703) and entered into force in 1 May 2016. Article 21 of the regulation defines three types of data exchange:

- (a) document-based data exchange: the data is wrapped into a file and automatically exchanged between the respective IT systems;
- (b) integrated data exchange: the data is exchanged between two applications directly on the respective IT systems;
- (c) interactive data exchange: the data is exchanged interactively through a web application via a browser

For each of these three types of data exchange, the Article specifies a “common specified data exchange solution”.

For each of the three common data exchange solutions the Article specifies three aspects:

- (i) the protocol
- (ii) the data format and
- (iii) the network

For the three types of data exchange, for the first two of these three aspects, the Article specifies the following solutions:

- (a) For the document-based data exchange:
  - (i) protocol: AS4;
  - (ii) data format: Edig@s-XML, or an equivalent data format ensuring identical degree of interoperability. ENTSOG shall publish such an equivalent data format.
- (b) For the integrated data exchange:
  - (i) protocol: HTTP/S-SOAP;
  - (ii) data format: Edig@s-XML, or an equivalent data format ensuring identical degree of interoperability. ENTSOG shall publish such an equivalent data format.
- (c) For the interactive data exchange, the protocol shall be HTTP/S.

For all data exchange types set out in points (a) to (c), the network shall be the internet.

It should be noted that the choice of protocol and data format is tied to the type of document exchange. It is not the case that any of the three protocols can be used for any of the three types of data exchange. The regulation therefore does not, for example, allow the use of HTTP/S-SOAP as the protocol to be used for data exchanges that the common data exchange solution is defined as document-based. Furthermore, Article 23 of the regulation allows existing data exchange solutions to continue to apply after consultation with network users and subject to the approval of the national regulatory authority. A Common Data

Exchange Solution has been defined for each relevant data exchange and that is the solution that has to be offered by TSOs in respect of their interconnection points (see section 3.5 of this document explains this further).

The third aspect of a data exchange solution is the network to be used. For all common data exchange solutions, this is specified to be the Internet.

### ANNEX III. – ACER IA Survey

Type of feature	Topic	Relevant Code article	Feature	ENTSOG Answer	NRA confirmation	Evidence (link...)
General			TSO			
General			EIC/Identifier for TSO			
Operational	Interconnection Agreement	3	At each interconnection point an interconnection agreement is in place which covers at least the terms and conditions defined in articles 6 - 12 NC INT (Y/N).	(Y/N)		(1) In any case, please list the IP points and the date at which the agreement was concluded; (2) Additionally, if the answer is no, in addition to the previous list, please list the interconnection point(s) where currently no such interconnection agreement is in place. In addition, please indicate when this will be the case.
Operational	Interconnection Agreement	4.1	In each interconnection agreement the information that directly affects network users has been identified and network users were informed thereof.	(Y/N)		(1) If the answer is yes please give a link to the information contained in the IA that directly affects the network users; (2) If the answer is no please provide rationale
Operational	Interconnection Agreement	4.2	In case one or more interconnection agreements have been concluded or amended after application date of NC INT: network users have been provided the opportunity to comment on proposed content of aspects covered in article 3 (c, d, e) NC INT.	(Y/N)		If the answer is yes, please explain how this was done + evidence (link to e.g. TSO website where information is published); If the answer is no, please provide rationale
Technical	Gas Quality	15	Is there any cross-border trade restriction due to gas quality that cannot be avoided by the standard operations of the TSOs and that has been recognised by NRAs?	(Y/N)		(1) In any case: Please explain the process followed to determine whether any restrictions due to gas quality that restrict cross border trade exist + evidence (link to e.g. TSO website where information is published). (2) Additionally, if the answer is Yes (In case restrictions have been identified): at what border is the restriction occurring and what solution is envisioned or already in place. If no solution is found yet: please describe next steps.
Technical	Gas Quality	16	Are Wobbe Index and Gross Calorific Value published on your website for each IP that acts as an entry point and once per hour?	(Y/N)		(1) If the answer yes, Please provide evidence (link to e.g. TSO website where information is published). (2) If the answer is no please provide rationale
Technical	Gas Quality	19	Is there any cross-border trade restriction due to differences in odourisation practices that cannot be avoided by the concerned TSOs and that has been recognised by NRAs?	(Y/N)		(1) In any case: Please explain the process followed to determine whether any restrictions due to gas odourisation practices that restrict cross border trade exist + evidence (link to e.g. TSO website where information is published). (2) Additionally, if the answer is Yes (In case restrictions have been identified): at what border is the restriction occurring and what solution is envisioned or already in place. If no solution is found yet: please describe next steps.
Communication	Data Exchange	21	Do you use other common data exchange solutions than defined in article 21 for data exchange requirements foreseen by point 2.2 of Annex I to Regulation (EC) No 715/2009, NC CAM, NC BAL, NC, REMIT and NC INT. (Y/N)	(Y/N)		(1) In any case: Please provide evidence (link to e.g. TSO website where information is published). (2) Additionally, if the answer is yes: please clarify if the regulatory authority approve the use of other data exchange solutions and provide a link to the regulatory decision
Communication	Data Exchange	24	The CNOT as developed by ENTSOG is applied (Y/N)	(Y/N)		(1) If the answer is yes, please provide evidence (link to e.g. TSO website where information is published). (2) If the answer is no, is there a reason other than that CNOT being voluntary? Please provide a problem analysis.

## ANNEX IV. – ENTSOG IA Survey

### a) General questions

Article 17 (3) a): Has the list of parties entitled to receive indicative gas quality information been defined?
Article 17 (3) b): Has a process of cooperation been started to assess what information might be provided to the relevant parties?
Article 17 (3) b) What information has been regarded relevant?
Article 17 (3) b) What is the frequency for information provision?
Article 17 (3) b) How long is the lead time?
Article 17 (3) b) What is the method of communication?
Document based DE using AS4 protocol and Edig@s XML data format
Integrated DE using HTTP/S-SOAP protocol and Edig@s XML data format
Interactive DE using HTTP/S
Article 22. Are the Data Exchange system security and availability requirements met?
Related to the previous question: If not, why and by when?
a) Nomination and Matching Process
b) CAM/CMP
Article 23 (2) Are other existing data exchange solutions staying in place? (please comment)
Are the other solutions staying in place approved by the NRA?

### b) Questions related to specific IPs

General topics	IP NAME/ LOCATION
General topics	EIC or identifier for IP
General topics	TSO
General topics	Country
General topics	2.1: Please add any missing or strike-through any superfluous IPs or indicate any other amendments and justify the changes.
General topics	3. Is there a signed IA in place?
3. Terms covered in IA	3.a. Rules for flow control
3. Terms covered in IA	3. b. Measurement principles for gas quantities
3. Terms covered in IA	3.b Measurement principles for gas quality
3. Terms covered in IA	3.c. Matching process
3. Terms covered in IA	3.d. Allocation rules
3. Terms covered in IA	3.e Communication procedures in case of exceptional events
3. Terms covered in IA	3.f. Settlement of disputes
3. Terms covered in IA	3.g. Amendment process
3. Terms covered in IA	4.1 Have you identified information contained in IA that directly affects NUs and informed them?
4.2 Since application date of the INT NC and before concluding or amending an agreement, have you invited network users to comment on the proposed text for	Matching?



4.2 ... have you invited network users to comment on the proposed text for	Allocation?
4.2 ... have you invited network users to comment on the proposed text for	Communication procedure in the case of exceptional events?
4.2 ... have you invited network users to comment on the proposed text for	4.3. Have you ensured internally that if an agreement is concluded or amended the relevant terms are sent to ENTSG within 10 days?
4.2 ... have you invited network users to comment on the proposed text for	Have the NRAs asked for a submission?
6. Regarding flow control rules, for how many of each of the following topics have been taken into consideration	6.1.c Designation of TSO responsible for steering
6. Regarding flow control rules, for how many of each of the following topics have been taken into consideration	6.3.a Matching rule
6. Regarding flow control rules, for how many of each of the following topics have been taken into consideration	6.3.b Allocation rule
6. Regarding flow control rules, for how many of each of the following topics have been taken into consideration	6.3.c Flow control arrangements
6. Regarding flow control rules, for how many of each of the following topics have been taken into consideration	6.3.d Gas Quality including any arrangement pursuant to Article 15
6. Regarding flow control rules, for how many of each of the following topics have been taken into consideration	6.3.d Odourisation including any arrangement pursuant to Article 19
6. Regarding flow control rules, for how many of each of the following topics have been taken into consideration	6.4.a Safety legislation
6. Regarding flow control rules, for how many of each of the following topics have been taken into consideration	6.4.b Emergency plans
6. Regarding flow control rules, for how many of each of the following topics have been taken into consideration	6.4.b Preventive action plans
6. Regarding flow control rules, for how many of each of the following topics have been taken into consideration	6.4.c Exceptional events
7. Regarding measurement principles on the IA, are the following topics or principle addressed	7.1. a details of the measurement standards applicable established?
7. Regarding measurement principles on the IA, are the following topics or principle addressed	7.1. b Designation of the TSO responsible for Installation, Operation & Maintenance?
7. Regarding measurement principles on the IA, are the following topics or principle addressed	7.2 national regulations?
7. Regarding measurement principles on the IA, are the following topics or principle addressed	7.3. a Description of the station and its equipment.
7. Regarding measurement principles on the IA, are the following topics or principle addressed	7.3. b Parameters and details: units, range, uncertainty and frequency of measurement.
7. Regarding measurement principles on the IA, are the following topics or principle addressed	7.3. c Calculations procedures.
7. Regarding measurement principles on the IA, are the following topics or principle addressed	7.3.D Maximum permissible error in energy.
7. Regarding measurement principles on the IA, are the following topics or principle addressed	7.3.e Data validation
7. Regarding measurement principles on the IA, are the following topics or principle addressed	7.3.f Verification and adjustment
7. Regarding measurement principles on the IA, are the following topics or principle addressed	7.3.g Data provision content and frequency
7. Regarding measurement principles on the IA, are the following topics or principle addressed	7.3.h List of signal and alarms
7. Regarding measurement principles on the IA, are the following topics or principle addressed	7.3.i Corrections to measurements



7. Regarding measurement principles on the IA, are the following topics or principle addressed	7.3.j Equipment failure management
7. Regarding measurement principles on the IA, are the following topics or principle addressed	7.3. k Rules for facility access, additional verification, modification and attendance during calibration.
8. Rules for matching process	8.1. a Have rules detailing the matching process been established?
8. Rules for matching process	8.1. b Have rules detailing communication and processing of data been established?
8. Rules for matching process	8.2; 8.5.a What is matching rule in place?
8. Rules for matching process	Description of the "other" rule
8. Rules for matching process	8.2. a Does the "other rule" lead to confirmation of identical quantities to each pair of Nus at both sides of the IP?
8. Rules for matching process	8.2. b In case "Other Rule" than the "Lesser Rule" is applied, have been network users invited to comment on it?
8. Rules for matching process	8.2. c; 8.5.b Which is the TSO responsible for the matching process?
8. Rules for matching process	8.2. d. Has a time schedule taking no longer than two hours been defined?
8. Rules for matching process	Comments on other time schedule
8. Rules for matching process	8.3 Are temporary reduction of capacities taken into account?
8. Rules for matching process	8.4 Are data exchange use and the harmonised information specified?
9. Rules for allocation of gas quantities	9.2 What is the allocation rule in place?
9. Rules for allocation of gas quantities	9.2 If the rule is OBA, is it recalculated by the TSO in control of the measurement equipment?
9. Rules for allocation of gas quantities	9.3 If the rule is OBA, have been the principles laid out in 9.3 been considered in the agreement?
9. Rules for allocation of gas quantities	9.4 If the rule is not OBA, what is it?
9. Rules for allocation of gas quantities	9.4 If the rule is not an OBA, have been NUs invited to comment on it?
9. Rules for allocation of gas quantities	10. In case of "exceptional event" is there a procedure to inform adjacent TSOs and potentially affected network users?
11. Settlement of disputes	11.1.a Does the dispute settlement mechanism specify the applicable law?
11. Settlement of disputes	11.1. b Does the dispute settlement mechanism specify the court of jurisdiction or the terms and conditions of appointment of experts?
11. Settlement of disputes	12. Have you established a transparent and detailed amendment process?
13. Common set of units	13. Is the set of units and referenced conditions defined used for every data exchange and publication?
13. Common set of units	13. If not, why?
13. Common set of units	14. Has an additional set of units been defined?
15. Managing cross-border trade restrictions due to gas quality differences	15. Is there any cross-border trade restriction due to gas quality that cannot be avoided by the standard operations of the TSOs and that has been recognised by NRAs?
15. Managing cross-border trade restrictions due to gas quality differences	15. Only if previous answer is affirmative, when was the restriction identified?
15. Managing cross-border trade restrictions due to gas quality differences	15. Only if one but previous answer is affirmative, what is the status of the process to remove the restriction?
16 Transparency obligations	16. Are WI and GCV published on your website for each IP that acts as an entry point and once per hour?
19 Odourisation	19 Is there any cross-border trade restriction due to differences in odourisation practices that cannot be avoided by the concerned TSOs and that has been recognised by NRAs?
20 Odourisation	19. Only if previous answer is affirmative, what is the status of the process to remove the restriction?
Survey Conclusion	Comments to any of the previous questions

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