

# **Draft Vision for a European Gas Target Model**

## **A CEER Public Consultation Paper**

**Ref: C11-GWG-77-03**  
**5 July 2011**

## INFORMATION PAGE

### Abstract

On 11 July 2011, CEER launched a public consultation on a “Draft vision for a European Gas Target Model (C11-GWG-77-03) which outlines key elements to help achieve an internal market in gas.

Following a request from the Madrid Forum, European regulators committed to produce a vision paper on a conceptual model for European gas markets (the “gas target model”). Building on regulators’ work to date (including on framework guidelines in specific areas), this paper considers the size of functioning wholesale markets (including the concept of “trading regions”), how to connect wholesale markets (looking at areas such as capacity allocation, congestion management, market coupling, long-term versus short-term capacity) and the provision and allocation of new capacity (touching on investment).

### Target Audience

Energy suppliers, traders, gas/electricity customers, gas/electricity industry, consumer representative groups, network operators, Member States, academics and other interested parties.

### How to respond to this consultation

Deadline: **20 September 2011**

This public consultation is carried out through a dedicated online questionnaire on the European energy regulators’ website. To participate in the consultation please go to

[http://www.energy-regulators.eu/portal/page/portal/EER\\_HOME/EER\\_CONSULT/OPEN%20PUBLIC%20CONSULTATIONS/Gas\\_Target\\_Model/BG](http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_CONSULT/OPEN%20PUBLIC%20CONSULTATIONS/Gas_Target_Model/BG)

and fill in the login request form. You will be provided with a login and technical instructions for the questionnaire.

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All responses except confidential material will be published on the website [www.energy-regulator.eu](http://www.energy-regulator.eu).

## Treatment of confidential responses

In the interest of transparency, CEER

- i) will list the names of all respondents (whether confidential or not) or, alternatively, make public the number (but not the names) of confidential responses received;
- ii) requests that any respondent requesting confidentiality submit those confidential aspects of their response in a “confidential appendix”. CEER will publish all parts of responses that are not marked confidential.

For further information on CEER’s rules, see CEER Guidelines on Consultation Practices<sup>1</sup>.

## Related Documents

CEER documents

- “CEER vision paper for a conceptual model for the European gas market. Call for evidence, 3 November 2010, Ref. C10-GWG-70-03, [http://www.energy-regulators.eu/portal/page/portal/EER\\_HOME/EER\\_CONSULT/CLOSED%20PUBLIC%20CONSULTATIONS/GAS/Gas%20target%20model/CD/C10-GWG-70-03\\_GasTargetModel\\_CfE\\_clean.pdf](http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_CONSULT/CLOSED%20PUBLIC%20CONSULTATIONS/GAS/Gas%20target%20model/CD/C10-GWG-70-03_GasTargetModel_CfE_clean.pdf)
- “CEER vision paper for a conceptual model for the European gas market. Evaluation of comments to the call for evidence, 2 March 2011, Ref. C11-GWG-74-03, [http://www.energy-regulators.eu/portal/page/portal/EER\\_HOME/EER\\_CONSULT/CLOSED%20PUBLIC%20CONSULTATIONS/GAS/Gas%20target%20model/CD/C11-GWG-74-03\\_GTM\\_EoC\\_2%20March%202011.pdf](http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_CONSULT/CLOSED%20PUBLIC%20CONSULTATIONS/GAS/Gas%20target%20model/CD/C11-GWG-74-03_GTM_EoC_2%20March%202011.pdf)

External documents

- “A vision for the EU target model: the MECO-S Model “, Glachant, Jean-Michel, Florence School of Regulation, EUI Working Papers, RSCAS 2011/38, June 2011, [http://www.florence-school.eu/portal/page/portal/FSR\\_HOME/ENERGY/Publications/Working\\_Papers/2011/RSCAS\\_2011\\_38.pdf](http://www.florence-school.eu/portal/page/portal/FSR_HOME/ENERGY/Publications/Working_Papers/2011/RSCAS_2011_38.pdf)
- “Market design for natural gas: the target model for the internal market”, LECG study, March 2011, [http://www.energy-regulators.eu/portal/page/portal/EER\\_HOME/EER\\_CONSULT/CLOSED%20PUBLIC%20CONSULTATIONS/GAS/Gas%20target%20model/Tab1/LECG%20Gas\\_Target\\_Model\\_0700311.pdf](http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_CONSULT/CLOSED%20PUBLIC%20CONSULTATIONS/GAS/Gas%20target%20model/Tab1/LECG%20Gas_Target_Model_0700311.pdf)
- European Council – Conclusions – 4 February 2011, [http://www.consilium.europa.eu/uedocs/cms\\_data/docs/pressdata/en/ec/119175.pdf](http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/119175.pdf)
- Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13

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<sup>1</sup> [http://www.energy-regulators.eu/portal/page/portal/EER\\_HOME/EER\\_PUBLICATIONS/CEER\\_PAPERS/Founding%20Documents%20and%20Rules/Founding%20Documents/E07-EP-16-03\\_PC-Guidelines\\_CEER.pdf](http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_PAPERS/Founding%20Documents%20and%20Rules/Founding%20Documents/E07-EP-16-03_PC-Guidelines_CEER.pdf)

July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:211:0036:0054:EN:PDF>

- Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:211:0094:0136:EN:PDF>
- Congestion management procedures / Commission proposal for guidelines to be adopted via a comitology procedure, [http://ec.europa.eu/energy/gas\\_electricity/doc/forum\\_madrid\\_gas/meeting\\_018\\_08\\_congestion\\_management\\_procedures.zip](http://ec.europa.eu/energy/gas_electricity/doc/forum_madrid_gas/meeting_018_08_congestion_management_procedures.zip)

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## EXECUTIVE SUMMARY

In order to facilitate the emergence of an integrated and competitive European gas market, regulators and the European Commission were invited at the 18th Madrid Forum (September 2010) to “explore, in close cooperation with system operators and other stakeholders, the interaction and interdependence of all relevant areas for network codes and to initiate a process establishing a Gas Target Model (GTM)”.

The present paper outlines the European energy regulators’ high-level vision for the regulatory design of a single European gas market capable of securing supplies, providing incentives for investments, facilitating the emergence and connection of functioning wholesale markets, allowing the integration of renewable sources of energy and providing a sound basis for tackling future challenges.

The process leading to the current public consultation involved a continuous exchange with stakeholders, including four public workshops and two informal stakeholder roundtables organised by European energy regulators. Input for the architecture of the GTM was also provided by two studies, a working paper elaborated by the Florence School of Regulation<sup>2</sup> and a study carried out by LECG.

The Gas Target Model is to be understood as a longer term vision facilitating the efficient implementation of the 3<sup>rd</sup> Package<sup>3</sup>, with its related Framework Guidelines and network codes. Where work in a specific area has already taken place (e.g. framework guidelines on capacity allocation and on congestion management), the GTM integrates these into its vision. In order to promote a truly competitive and integrated gas market, the GTM however pushes beyond this work, be it by proposing the creation of (cross-border) market areas or trading regions, measures to foster liquidity by enhanced cross-border gas trading potentially to be realised through coupling mechanisms or the introduction of “market tests” to ensure that economic investments in infrastructure effectively take place.

Regulators welcome feedback on the vision outlined in the present document, with the aim of further developing a target model which will enable the achievement of an internal market for gas, complementing and building from the provisions in the 3<sup>rd</sup> Package and corresponding framework guidelines and network codes.

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<sup>2</sup> FSR: [http://www.florence-school.eu/portal/page/portal/FSR\\_HOME/ENERGY/Publications/Working\\_Papers/2011/RSCAS\\_2011\\_38.pdf](http://www.florence-school.eu/portal/page/portal/FSR_HOME/ENERGY/Publications/Working_Papers/2011/RSCAS_2011_38.pdf) ,  
LECG: [http://www.energy-regulators.eu/portal/page/portal/EER\\_HOME/EER\\_CONSULT/CLOSED%20PUBLIC%20CONSULTATIONS/GAS/Gas%20target%20model/Tab1/LECG%20Gas\\_Target\\_Model\\_0700311.pdf](http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_CONSULT/CLOSED%20PUBLIC%20CONSULTATIONS/GAS/Gas%20target%20model/Tab1/LECG%20Gas_Target_Model_0700311.pdf)

<sup>3</sup> The 3<sup>rd</sup> Energy Package is a set of five legislative texts comprising the following two Directives and three Regulations of 13 July 2009: Directive 2009/73/EC concerning common rules for the internal market in natural gas; Regulation (EC) No 715/2009 on conditions for access to the natural gas transmission networks; Directive 2009/72/EC concerning common rules for the internal market in electricity; Regulation (EC) No 714/2009 on conditions for access to the network for cross-border exchanges in electricity; and Regulation (EC) No 713/2009 establishing an Agency for the Cooperation of Energy Regulators. <http://eur-lex.europa.eu/JOHtml.do?uri=OJ:L:2009:211:SOM:EN:HTML>

## 1. Introduction

### 1.1. Objective and purpose of this paper

The purpose of this paper is to set out the European energy regulators' vision for the regulatory design of the single European gas market. The objective of an integrated and competitive European gas market that is sustainable, offers choice to customers and promotes security of supply is enshrined in the 3<sup>rd</sup> Package. The February 2011 European Council confirmed its commitment to this objective and set 2014 as the deadline for the completion of the internal market. This paper considers both what can be put in place by 2014 and issues for a longer term vision until 2020.

One of the key challenges in creating an integrated market is to put in place effective rules for facilitating cross-border trading and market integration between Member States. As such, the 3<sup>rd</sup> Package establishes a new regulatory framework for cross-border trade with the creation of an Agency for the Cooperation of Energy Regulators (ACER) and provisions for legally-binding European network codes to regulate cross-border aspects. The basis for the development of this paper is the full implementation of the 3<sup>rd</sup> Package. However, as of 1 June 2011, no Member State had notified the European Commission (the Commission) of full implementation of the 3<sup>rd</sup> Package. With work progressing on the framework guidelines setting the objectives and principles for European network codes, it became clear that there were important interactions between the different topics to which a high-level vision would add value. At the 18<sup>th</sup> Madrid Forum (September 2010) European regulators agreed to bring forward proposals for the design of such a single European gas market, which is known as the European 'Gas Target Model'. The framework guidelines/network codes and comitology guidelines currently envisaged (capacity allocation, congestion management, balancing, tariffs, interoperability) as well as the transparency guidelines in force since 3 March 2011 will lead to significant improvements towards the 2014 goal.

### 1.2. Context

The European Union is highly dependent on gas produced from outside its borders – some 64% of demand in 2009<sup>4</sup> – and transported either via long-distance pipelines or as LNG. Energy dependence is going to grow in the future – based on the ENTSOG Ten Year Network Development Plan 2011 demand scenario – to more than 70%<sup>5</sup>. While there are also early developments in exploring shale gas in Europe, it is likely that Europe's import dependence will remain a key feature over the period until 2020. With an obligation for 20% of Europe's energy to come from renewable sources in 2020, many Member States are seeing a significant increase in intermittent sources of generation such as wind. As such, we expect much greater short term fluctuations in gas demand than previously, as we see more gas-fired power stations coming online.

In many European countries, security of supply has been met historically through long-term contractual arrangements (typically 25 years) between gas producers and buyers, which give

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<sup>4</sup> Eurostat energy dependence EU-27.

<sup>5</sup> Own calculations based on ENTSOG TYNDP 2011; Shale gas not considered.  
[http://www.entsog.eu/publications/index\\_g\\_investment.html](http://www.entsog.eu/publications/index_g_investment.html)

gas buyers flexibility above an agreed minimum in the volumes of gas that will be delivered within a contract year. These contracts usually include ‘take or pay’ obligations, meaning that European buyers must ‘take or pay’ for the minimum agreed volumes of gas. The long-term gas contracts have also been seen as a key mechanism for underpinning investments in the long-distance pipelines and in gas production by sharing risks between gas producers and importers. They remain important not only in underpinning these investments, but also in guaranteeing security of supply. The import dependence also means that Member States require additional sources of flexibility to cover fluctuations in demand. In many Member States, storage provides an important source of seasonal and short term flexibility, with gas being imported in summer to inject into storage to supply peak winter demand.

Any gas target model will need to provide a regulatory framework that secures supplies in the long, medium and short term; which means making Europe, also in future, attractive for gas imports and taking account of seasonal and short term fluctuations in gas demand. The idea of the integrated energy market is to promote competition in the European wholesale markets and to facilitate new entry to compete against the incumbents in supplying gas. A competitive wholesale market will need to be efficient, thereby delivering gas to where it is valued most whilst providing shippers with the right incentives to secure supplies for European consumers. An efficient market must also provide the signals for investment in both gas production and in gas network infrastructure, including transmission and storage, in order to meet the demands of European gas consumers. There is also a strong need for non-discriminatory and fair arrangements for shippers to access the gas infrastructure in order for competition to develop and for the network to be used efficiently while guaranteeing adequate remuneration for investments.

The European regulatory framework aims to improve efficiency in the use of cross-border capacity and to support the development of gas trading at hubs. The 3<sup>rd</sup> Package, i.e. the Gas Regulation<sup>6</sup>, makes TSO-wide entry-exit systems, in which entry capacity can be booked independently from exit capacity, obligatory by September 2011 and abolishes tariffs set on the basis of contract paths<sup>7</sup>. Measures are being pursued to open up network access to new entrants in a bid to foster greater competition. Meanwhile, the Gas Directive<sup>8</sup> requires increased unbundling of the ownership and operation of gas networks from gas supply in order to remove the potential for discrimination when granting network access. Upon a request by the Commission, and in line with the 3-year plan (for framework guidelines and network codes), ACER will develop framework guidelines<sup>9</sup> on e.g. harmonised tariff structures, interoperability and trading rules contributing to non-discrimination, effective competition and the efficient functioning of the market. Inter-linkages and overlaps between the different topics need to be addressed in the course of the development of the framework guidelines in order to meet the overall objectives. ACER recently consulted on framework guidelines on capacity allocation mechanisms (calling for cross-border network capacity to be auctioned and for cross-border capacity to be ‘bundled’ to facilitate trading between hubs)<sup>10</sup>. In addition, the Commission is considering proposals (on congestion management)

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<sup>6</sup> Regulation (EC) 715/2009.

<sup>7</sup> Recital 19 Gas Regulation.

<sup>8</sup> Directive 2009/73/EC.

<sup>9</sup> Article 8(6) Gas Regulation sets out a full list of areas for framework guidelines; the Commission will publish shortly the priorities for network codes.

<sup>10</sup> Framework guidelines on capacity allocation mechanisms for the European gas transmission network. Draft for consultation, DFGC-2011-G-001, 3 March 2011,



to maximise cross-border capacity and to free-up unused capacity and offer it back to the market. Other measures are designed to promote liquidity in gas traded at hubs. ACER has also consulted on framework guidelines on gas balancing, to require Transmission System Operators (TSOs) to trade at gas hubs in order to balance their systems or where these are insufficiently liquid to create 'balancing platforms'<sup>11</sup> as a first step towards creating a functioning wholesale gas market<sup>12</sup>. However, in some Member States further steps beyond the implementation of the corresponding network codes might be necessary to enable a well-functioning market.

Trading on Europe's gas wholesale markets or hubs has made progress over the last decade, particularly in North-West Europe. However, progress has not been the same in all parts of Europe and also where gas hubs have emerged, liquidity is still regarded by many as insufficient. The British National Balancing Point (NBP) is the most liquid hub with churn ratios of 15 in 2010. However, churn ratios at hubs on continental Europe are, although increasing, much lower. With the reduction in gas demand due to the economic downturn in 2009 and the increase in LNG imports available for Europe, we have seen a renegotiation of the oil-indexed prices in the long-term gas contracts in favour of a more 'gas-on-gas pricing'. However, more needs to be done for European gas wholesale markets to be sufficiently liquid to send reliable price signals.

### 1.3. Target model: key principles

The European gas market will consist of interconnected entry-exit zones with virtual hubs. Entry-exit zones should allow shippers to trade gas freely within each entry-exit zone, such that internal physical congestion does not unduly restrict gas trading. Achieving the single gas market requires sufficient interconnection between markets; therefore the regulatory regime should signal where investment is needed and provide TSOs with a predictable framework for recovering sufficient revenues to cover costs. Once built, interconnection capacity needs to be easily accessible to shippers on a non-discriminatory basis and at a transparent and fair price. The capacity offered to the market needs to be maximised and contractual congestion should be mitigated, in order to deter capacity hoarding. Shippers need both long-term and short term capacity as gas may be traded both long and short term. Sufficient and accessible interconnection will promote liquidity in hub-based trading, which in turn will assist with the development of market-based balancing. The purpose of the next chapters is to investigate options to foster hub liquidity where necessary.

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[http://www.acer.europa.eu/portal/page/portal/ACER\\_HOME/Stakeholder\\_involvement/Public\\_consultations/Closed\\_Public\\_Consultations/PC-02\\_FG\\_Gas\\_CAM/Consultation\\_document](http://www.acer.europa.eu/portal/page/portal/ACER_HOME/Stakeholder_involvement/Public_consultations/Closed_Public_Consultations/PC-02_FG_Gas_CAM/Consultation_document)

<sup>11</sup> Balancing platforms are essentially one-sided markets where all trades are with the TSO.

<sup>12</sup> Framework guidelines on gas balancing in transmission systems. Draft for consultation, DFGC-2011-G-002, 12 April 2011, [http://www.acer.europa.eu/portal/page/portal/ACER\\_HOME/Stakeholder\\_involvement/Public\\_consultations/Closed\\_Public\\_Consultations/PC-04%20FG%20Gas%20Balancing%20in%20Transmission%20Systems/Consultation\\_document](http://www.acer.europa.eu/portal/page/portal/ACER_HOME/Stakeholder_involvement/Public_consultations/Closed_Public_Consultations/PC-04%20FG%20Gas%20Balancing%20in%20Transmission%20Systems/Consultation_document)

## 1.4. Questions for public consultation

In addition to inviting relevant stakeholders and market participants to respond generally to this consultation and to participate in the discussions on this document, CEER seeks the opinion of respondents on a number of specific issues.

Respondents are therefore invited to reply to and provide comments on the following questions:

### Enabling functioning wholesale markets

**Question 1:** What are stakeholders' views on the definition of a "functioning wholesale market"?

**Question 2:** What are stakeholders' views on the three options identified to enable functioning wholesale markets, i.e. (i) creating market areas at national level for Member States able to meet the criteria of a functioning wholesale market; (ii) creating a trading region covering more than one country; or (iii) creating cross-border market areas?

**Question 3:** What are stakeholders' views on the proposed steps until 2014 for enabling functioning wholesale markets?

### Connecting functioning wholesale markets

**Question 4:** What are stakeholders' views on the full implementation of the CAM network code and the CMP guideline at all interconnection points by 2014 at the latest?

**Question 5:** What are stakeholders' views on the proposed pilot projects to design and trial an implicit capacity allocation mechanism between at least two entry-exit zones in different Member States by 2014?

### Ensuring secure supply and economic investment

**Question 6:** What are stakeholders' views on the need for explicit long-term capacity allocation?

**Question 7:** How should economically-viable projects for cross-border capacity investments be determined?

**Question 8:** What are stakeholders' views on the proposed development of an economic test to trigger new capacity, based on market demand established through coordinated long-term auctions? If in favour, by whom and how often should such a test be conducted?

### **Pricing of transmission capacity**

**Question 9:** What are stakeholders' views on the pricing of cross-border transmission capacity?

### **Renewable Integration and future challenges**

**Question 10:** Do you think that the elements of the gas target model provide a good framework for the integration of renewable energy?

**Question 11:** Are there elements missing in the target model that are necessary for the integration of renewable energy at a European level, possibly with a view beyond 2014?

**Answers to these questions should be submitted via the online questionnaire, available at:**

[http://www.energy-regulators.eu/portal/page/portal/EER\\_HOME/EER\\_CONSULT/OPEN%20PUBLIC%20CONSULTATIONS/Gas\\_Target\\_Model/Online\\_Questionnaire](http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_CONSULT/OPEN%20PUBLIC%20CONSULTATIONS/Gas_Target_Model/Online_Questionnaire)

## 2. Enabling functioning wholesale markets<sup>13</sup>

Some of the requirements in Gas Regulation (EC) 715/2009, such as removing contractual paths for transporting gas and creating entry-exit zones, will require changes to the current contractual arrangements for network access in Europe. This raises the question of the number of entry-exit zones and gas hubs envisaged in a single European gas market and whether each Member State creating its own entry-exit zone and gas trading hub will lead to sufficient liquidity in these markets and whether a large number of entry-exit zones will facilitate cross-border trade and market integration. However, there is also a question about how gas will be traded between the hubs within the entry-exit zones. The Gas Target Model considers both of these aspects and this paper consults on options both to 'enable' and to 'connect' the entry-exit zones as approaches to market integration.

A key reason for considering options to establish enlarged market areas or trading regions is that for some Member States it may be an integral step to creating a functioning wholesale gas market. A functioning wholesale market requires a sufficient presence and low concentration of gas traders active in the wholesale market, availability of gas from diverse sources, multitude of customers (i.e. sufficient demand for gas) as well as a certain level of trade both in terms of the total volume of gas traded compared to the volume of gas consumed (i.e. churn ratios). Despite the complexity in defining define potential quantitative parameters, a 'functioning wholesale market, could be characterised, as a reference, by a Hirschmann-Herfindahl Index below 2000, gas available from at least 3 different sources, as well as gas demand within the zone of at least 20 bcm, which provides a range of gas products meeting market demand and resulting in efficient and transparent prices.

**Question 1:** What are stakeholders' views on the definition of a "functioning wholesale market"?

The European regulators consider that Member States with low volumes of gas demand and a high level of dependence on a particular source of gas may find it difficult to create a functioning and liquid wholesale market at a national level. However, also Member States with sufficient volumes of gas demand and a low level of dependence on a particular source of gas need to create a framework that enables the emergence of functioning wholesale markets. The establishment of sufficient interconnection capacity and the abolishment of physical congestion are integral steps when creating a functioning wholesale market for these countries. The regulators have identified three broad options for achieving this: (i) creating market areas at national level, which may be appropriate in Member States that are able to meet the criteria of a functioning wholesale market; (ii) creating a trading region; or (iii) creating cross-border market areas.

Creating national market areas by creating true entry-exit systems, as foreseen by the 3<sup>rd</sup> Package, is the first option to be promoted. Allowing gas trading freely within countries by reducing the number of balancing zones and eliminating physical congestions is a first step towards creating virtual hubs and developing liquidity. This option is especially relevant for

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<sup>13</sup> Proposals in this paper are based on discussions at a series of public workshops, stakeholder roundtables, bilateral discussions and input from two external studies, produced by LECG and by the Florence School of Regulation; see 'Related External Documents'.

countries which are able to cater for a functioning market within the country itself.

The trading region model also creates a common entry-exit zone for transmission and a single virtual point for trading gas between at least two Member States (or parts thereof) but maintains 'national end-user zones' in different Member States for distribution and balancing of forecasting errors. In any case, the balancing arrangements as set out in the balancing framework guidelines apply also to trading regions so as to ensure market-based balancing. Where relevant, these arrangements also apply to the 'national end-user zones', especially regarding the balancing period, the gas day and the treatment of forecasting errors. The trading region model could also be applied by Member States which are not able to establish a functioning wholesale market within their borders.

The cross-border market areas option is essentially as the name suggests; a single entry-exit zone for transmission and distribution with a single virtual point (i.e. virtual gas hub) where the gas is traded freely, encompassing at least two Member States (or parts thereof). It would comprise a single balancing area and there would be a single set of 'market rules', including for balancing relating to the trading and supply of gas in the market area. This approach could be applied by Member States not able to establish a functioning wholesale market within their borders.

The main advantage of these options is that creating a single virtual point for gas trading in a large region should increase the number of gas traders active in the market and thereby enhance liquidity. It would also reduce the number of entry-exit points and cross-border points within Europe at which shippers would need to book capacity, which may facilitate cross-border trade. However, allowing for gas to be traded freely in a trading zone would mean that TSOs would have to manage any network constraints within the zone, which is likely to increase the balancing actions undertaken and impose costs ultimately to be borne by European consumers. It would be important to ensure that TSOs are incentivised to maximise cross-border capacity and that balancing actions do not lead to a reduction in the network capacity offered to market participants. As this approach would reduce the total number of interconnection points which shippers have to book, this may lead to a need to set some kind of inter-TSO payment mechanism. As such, these options may be preferable between countries where sufficient interconnection exists and physical congestion is not likely to become an issue. The creation of a cross-border market area will require a significant degree of harmonisation of market rules at TSO and distributions system operator (DSO) levels and close cooperation of TSOs to operate them. The trading region model may require less harmonisation since it envisages the balancing and distribution of gas to take place within the 'national end-user' zones and as such, is seen as a first step towards the full merging of market areas. However, the trading region is not a model for individual Member States to adopt.

**Draft recommendation:** As a first step, entry-exit systems need to be implemented in all countries as required by Article 13 of the Gas Regulation. As a second step, European regulators and TSOs shall cooperate to identify the zones (market areas and trading regions and their respective geographical scope) into which network access to the European gas market shall be structured so that every final consumer is accessible from a functioning wholesale market. A cost-benefit analysis shall be carried out to assess the economic viability, where necessary. The respective Member States and TSOs shall implement the identified cross-border market areas or trading regions by 2013. We recommend that the initial conclusions of pilot projects on these approaches are presented by 2014.

**Question 2:** What are stakeholders' views on the three options identified to enable functioning wholesale markets, i.e. (i) creating market areas at national level for Member States able to meet the criteria of a functioning wholesale market; (ii) creating a trading region covering more than one country; or (iii) creating cross-border market areas?

**Question 3:** What are stakeholders' views on the proposed steps until 2014 for enabling functioning wholesale markets?

### 3. Connecting functioning wholesale markets

The single European gas market will consist of several entry-exit zones and gas hubs, i.e. functioning wholesale markets. The issue is how best to 'connect' or to manage the gas trade between them. The key aspects are how shippers access capacity, how the capacity is used efficiently and how the regulatory framework provides signals for investment in cross-border network infrastructure and for long-term trading of gas, which is likely to remain a key feature. Currently, cross-border capacity is not being used efficiently. There is a problem with 'contractual congestion' at many interconnection points whereby cross-border capacity is fully booked but often goes unused. This unused capacity is not being made available to other market participants, who may wish to use it to trade between neighbouring markets.

European energy regulators developed the framework guideline on capacity allocation mechanisms, including the key elements of auctions as standard capacity allocation mechanism and a small set of standardised bundled products (instead of selling entry-exit capacity products per interconnection point separately) which aim at facilitating cross-border trade. ENTSOG is developing proposals for a network code based on this framework guideline. The main issue that remains to be solved is ensuring that the volume of capacity made available at cross-border points is maximised and that unused capacity is not 'hoarded' but is released back to the market and therefore used efficiently. The Commission has consulted on options for congestion management (CMP) with the aim of freeing up capacity by:

- providing for regulators to implement 'overbooking' arrangements, which incentivise TSOs to offer additional capacity on a financially firm basis; and
- requiring TSOs to operate a 'firm use-it-or-lose (UIOLI) arrangement, whereby after shippers have nominated their gas flows day-ahead, a volume of their unused capacity is removed and put into the day-ahead auction for others in the market to access. A long-term firm UIOLI mechanism, whereby shippers 'lose' unused capacity over a longer period of time is also proposed.

The regulators consider that it is important that the network codes are adopted and implemented as soon as possible but at the latest by 2014. These measures are an important step in providing new entrants with non-discriminatory and fair access to network capacity, which is a pre-requisite for increasing liquidity in gas trading.

#### 3.1. Short term capacity allocation

Assuming arrangements to free-up unused capacity and to set aside a proportion of capacity for short term trading (the framework guidelines envisage 10%), the question arises as to how this capacity should be allocated. European energy regulators recommend in the framework guidelines on capacity allocation that cross-border capacity is auctioned explicitly but the European network codes should not preclude implicit capacity allocation. Explicit auctions are more efficient than current first-come-first-served arrangements but require shippers to coordinate buying network capacity with gas in order to trade across borders, which may be challenging in short timescales. Therefore, a platform may be a more efficient alternative, where shippers can submit bids and offers for cross-border gas traded and cross-border capacity which is implicitly allocated (whether it is operated by TSOs or third parties such as exchanges or hub operators).

Under implicit allocation, market participants submit bids and offers to a 'market coupling' platform to buy and sell gas between two (or more) entry-exit zones. The platform collates all bids and offers into a single "bid-offer ladder" and the TSOs provide details on the available interconnection capacity between the entry-exit zones. The platforms submit this information into a "coupling algorithm" that accepts the bids, which have the greatest price spread between the price that buyers are willing to pay and that sellers are willing to accept. This results in the most efficient programme of gas flow for the available capacity between the two entry-exit zones.

There have been concerns raised as to whether this approach is suitable for gas given the possibility to fully change nominations during the gas day; and which will become more significant if gas is a substitute to intermittent sources of renewable generation. Also, as gas is traded on a continuous basis, it is important that there is an approach to implicit allocation which is appropriate for the gas market. As such, it may be preferable for the 'implicit capacity allocations' to be repeated several times during the gas day to facilitate 'within-day' gas trading by shippers and traders rather than on a purely 'day-ahead' basis. The procedure can also encompass two or more entry-exit zones so the 'coupling' could be operated between several entry-exit zones. Technical work will be required to establish a platform, which may build on existing hubs, balancing platforms or exchanges, and to develop an algorithm matching capacity against gas trades.

The main benefits of an implicit capacity allocation are that it optimises flows and capacity usage on cross-border connections and increases liquidity in gas trading. By matching capacity against the trades with the greatest value, the platform ensures that the gas flows to where it is valued most whilst taking into account network constraints. Essentially, it allows for the cross-border trades between the two markets to be optimised, such that there is greater price convergence when there is sufficient physical interconnection capacity between the two markets but for prices to diverge when the interconnection is insufficient. It is a 'dynamic' approach, integrating gas markets and ensuring the efficient use of available capacity. As parties will be trading via a platform for cross-border trades, implicit capacity allocation concentrates gas trades, which has a positive impact on market liquidity. The Commission concluded that 'market coupling initiatives (e.g. Trilateral Market Coupling Initiative) [have] increased liquidity and price signals in the European power market'<sup>14</sup>. European energy regulators consider that there are benefits in exploring a gas 'coupling mechanism', particularly where congestion (either contractual or physical) exists.

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<sup>14</sup> K. Rademaekers et al. 'Review and analysis of EU wholesale energy markets: historical and current data analysis of EU wholesale electricity, gas and CO<sub>2</sub> markets; 9 December 2008, page 7.



**Draft recommendation:** The Commission, Member States, ACER, regulators and TSOs cooperate to ensure that the capacity allocation mechanisms (CAM) network code (including all its elements) and the Commission's congestion management proposals (CMP guideline) are adopted and implemented on all interconnection points as soon as possible but in any case by 2014 at the latest.

Keeping in mind that the ultimate goal of the internal gas market is to achieve functioning markets, regulators, Member States, TSOs and market participants should cooperate to conduct pilot projects that design and trial an implicit capacity allocation mechanism between at least two entry-exit zones in different Member States by 2014. We recommend that the initial conclusions of pilot projects on these approaches are presented by 2013.

**Question 4:** What are stakeholders' views on the full implementation of the CAM network code and CMP guideline at all interconnection points by 2014 at the latest?

**Question 5:** What are stakeholders' views on the proposed pilot projects to design and trial an implicit capacity allocation mechanism between at least two entry-exit zones in different Member States by 2014?

#### 4. Ensuring secure supply and economic investment

The question arises of whether the approach described above suffices as the longer term vision beyond 2014 for a single European gas market or whether further efficiencies can be achieved. European energy regulators consider that removing (implicit) destination clauses and contractual paths, introducing auctions and standardised capacity products, which are appropriately coordinated at interconnection points, will provide a solid basis for long-term bookings. These arrangements should promote the development of competitive wholesale gas markets. While there has been a suggestion for a longer term vision whereby there is no booking of long-term capacity to transport gas between hubs in Europe, we do not consider that a substantive case for such a reform has been made. The main outstanding question is the regulatory framework for the provision of new capacity. The draft Framework Guidelines on Capacity Allocation Mechanisms for the European gas transmission network (CAM framework guideline)<sup>15</sup> does not directly apply to new capacity (apart from capacity which remains unsold after it has been initially offered via an open season procedure). Therefore it is recommended that the processes for determining any 'incremental' or (new) capacity are consistent with the provisions of the framework guidelines.

The arrangements for the provision of new network capacity are of crucial importance as it is possible that in a well-functioning - hub-based - future European market physical congestion may arise in locations that are currently not congested. Furthermore, the Security of Supply Regulation<sup>16</sup> sets the requirement to enable reverse flows at all interconnections. This may in some cases be an investment supported by market demand so it is important to provide the correct regulatory framework<sup>17</sup>. One approach which has been proposed by market participants is a regular 'bidding' process to test shippers' commitment to book new interconnection capacity. TSOs would define the relevant costs of a potential investment at a cross-border point. Shippers would submit bids to the TSOs to buy 'new capacity' on a firm basis<sup>18</sup> at this cross-border point before the investment was made. If the bids received by the TSOs to pre-book the new capacity cover a pre-determined percentage of the overall investment costs, the investment would be approved. The rules for this process need to be known upfront by all market participants.

This proposal would require close cooperation between the relevant regulators at the cross-border point to agree on the design of this 'market test'. Regulators would need to agree (on a case-by-case basis) on the 'percentage' of investment costs to be covered by shipper commitment. If the percentage is 100%, shippers will have to 'pre-book' all available capacity before the investment is approved. Equally, if the percentage is set very low (i.e. very little pre-booking) the investment will be approved increasing the risk that once built the capacity is unused (or stranded) and therefore, inefficient. Regulators would need to agree on the frequency of carrying out this 'market test' taking into account the resources devoted to such procedures and the feedback received from stakeholders. Some market participants are in favour of an annual process, whereas others suggest that every two years may suffice. The

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<sup>15</sup> See footnote 10.

<sup>16</sup> Regulation (EC) 994/2010 concerning measures to safeguard security of gas supply.

<sup>17</sup> In this respect, it is also worth noting that the Commission is currently working on a legislative proposal for the so called Energy Infrastructure Package.

<sup>18</sup> In other words, they would commit to buy the capacity before the investment is made. If the investment is made, they would be liable to pay the price for the capacity. Equally, if the investment is not subsequently made, they would not pay and would be reimbursed if they had.

market demand tests could be organised by the current regulated TSOs but also by other investors, who may attract additional finance for cross-border capacity investments. Other investors could be selected on the basis of a tender if a TSO declares that it can/will not invest in an otherwise economically-viable investment project. The scope of the tender would be to build and finance the pipeline (or other asset). However, the 'market test' may not suffice for investments deemed necessary by Competent Authorities under the Security of Supply Regulation but for which there is insufficient shipper commitment. In such cases, additional funding will have to be paid by the beneficiaries of the investment.

**Draft recommendation:** Auctions for long-term capacity products shall be conducted in parallel at different interconnection points.

**Question 6:** What are stakeholders' views on the need for explicit long-term capacity allocation?

**Question 7:** How should economically-viable projects for cross-border capacity investments be determined?

**Draft recommendation:** ACER, in consultation with stakeholders, will develop proposals for an economic test to trigger new capacity, based on market demand established through coordinated long-term auctions. The process will also support investments proposed for other reasons, such as security of supply.

**Questions 8:** What are stakeholders' views on the proposed development of an economic test to trigger new capacity, based on market demand established through coordinated long-term auctions? If in favour, by whom and how often should such a test be conducted?

## 5. Pricing of transmission capacity

The regulatory framework for tariffs is important in sending signals for a sound regulatory regime promoting investment in cross-border interconnection capacity. To invest in cross-border capacity TSOs need a predictable regulatory framework for determining allowed revenues and setting out how those revenues can be recovered. TSOs' revenues are recovered via tariffs imposed on transmission network users. The introduction of auctions (whether implicit or explicit) may alter the way in which tariffs are set but does not need to put TSO revenues at risk. The key question for cross-border investment is how much of the revenues from these investments is recovered nationally and how much from cross-border revenues.

One regulatory approach at cross-border points is to set a reserve price based on the same cost allocation method, which would set a minimum charge that would be paid to underpin the recovery of the costs associated with providing the capacity. The level at which a reserve price is set is not only important for recovering costs but can impact on cross-border trade if not cost-reflective, as it could lead to the pancaking of charges for gas crossing several entry-exit zones (i.e. where costs pile up). European energy regulators consider that a reserve price would be an appropriate approach for long-term capacity. In their work on tariffs, the regulators are considering the options for setting reserve prices that are transparent, cost-reflective, non-discriminatory and promote investments.

The main debate is whether a reserve price should be charged on day-ahead or intraday capacity. Some argue that if a reserve price is not charged on short term capacity, shippers will seek to book more of their capacity short term, which will further exacerbate the potential for TSOs to under-recover revenues and in turn damage longer term investment signals. Furthermore, they feel that charging a 'reserve price' on short term (day-ahead or intraday capacity bookings) is important in not discriminating between shippers booking on a long-term and short term basis. If TSOs anticipate that they cannot recover parts of an investment via short term bookings, the tariffs for longer term bookings will be set to recover the whole investment cost, which makes long-term bookings more expensive. However, others argue that the operational costs associated with short term bookings are much lower or even negative (as the pipeline is operating anyway and there are certain efficiencies in using additional capacity that would otherwise go unused). A reserve price on short term capacity would create a barrier to cross-border trade. The pricing of cross-border transmission capacity along with the issues on how TSOs recover their investments in transmission capacity and promoting cross-border investment will be considered as part of ACER's work on tariffs and in the Commission's proposals on the Energy Infrastructure Package.

<p><b>Question 9:</b> What are stakeholders' views on the pricing of cross-border transmission capacity?</p>
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## 6. Renewable integration and future challenges

There are several developments and trends with the potential to have a significant impact on the European gas market beyond 2014. The EU's environmental policy goals as defined by the 20-20-20 targets, for instance, impact on the role of gas in the energy mix. Although natural gas is a fossil fuel producing carbon emissions, combined cycle gas turbine power plants are projected to play an increasing role in power generation (up to 48 % of thermal production<sup>19</sup>). The role of nuclear power as an alternative non-carbon emitting power source is uncertain, at least in several European countries.

Three other developments are also worth mentioning. First, due to more renewable power, which is highly volatile and unpredictable in terms of power production, the need for a method to store power is increased. As part of the Commission's task force for smart grids, the concept of converting power produced by renewables into hydrogen or even further into synthetically-produced methane is described as a "highly promising possibility of storing power". Secondly, the boom in shale gas production in the United States has triggered exploration in Europe as well. The potential role of unconventional, and in particular shale gas, in Europe is yet to be explored. Thirdly, with the promotion of renewable energy sources the role of biogas is also expected to increase in Europe in the next years.

European energy regulators take account of current developments alongside their duty to promote a competitive, secure and environmentally sustainable internal market<sup>20</sup>. European regulators expect in the coming years an increasing interrelation between electricity and gas markets. New technological developments are expected to enable further integration of electricity and gas networks into a whole European energy system. This might lead to a need for a more integrated network planning model. Integration of renewables in the electricity markets may create different demand patterns of natural gas due to more flexible usage of gas-fired power plants. With renewables on the rise, the main challenge is to balance fluctuating electricity supply with the demand patterns. This may be - next to demand side measures - efficiently approached by using the largest "buffer"/storage potential of the gas infrastructure. Furthermore, it is necessary to ensure efficient access and connection of gas-fired power plants to the gas grid. With respect to market rules, this includes efficient access to capacity through congestion management measures and the establishment of a functioning short term capacity and liquid trading market. Under this perspective, it is also crucial to bring capacity allocation mechanism and congestion management procedure proposals forward.

**Question 10:** Do you think that the elements of the gas target model provide a good framework for the integration of renewable energy?

**Question 11:** Are there elements missing in the target model that are necessary for the integration of renewable energy at a European level, possibly with a view beyond 2014?

<sup>19</sup> Eurelectric, Power Statistics 2010.

<sup>20</sup> Article 40 (1) Gas Directive.

## **Annex 1 – CEER**

The Council of European Energy Regulators (CEER) is the voice of Europe's national regulators of electricity and gas at EU and international level. Through CEER, a not-for-profit association, the national regulators cooperate and exchange best practice. A key objective of CEER is to facilitate the creation of a single, competitive, efficient and sustainable EU internal energy market that works in the public interest.

CEER works closely with (and supports) the Agency for the Cooperation of Energy Regulators (ACER). ACER, which has its seat in Ljubljana, is an EU Agency with its own staff and resources. CEER, based in Brussels, deals with many complementary (and not overlapping) issues to ACER's work such as international issues, smart grids, sustainability and customer issues.

The work of CEER is structured according to a number of working groups and task forces, composed of staff members of the national energy regulatory authorities, and supported by the CEER Secretariat.

This report was prepared by the Gas Working Group.

## Annex 2 – List of abbreviations

Term	Definition
ACER	Agency for the Cooperation of Energy Regulators
CAM	Capacity Allocation Mechanisms
CAM Framework Guideline	The draft Framework Guidelines on Capacity Allocation Mechanisms for the European gas transmission network
CEER	Council of European Energy Regulators
CMP	Congestion Management Procedure
DSO	Distribution System Operator
EC	European Commission
ENTSOG	European Network of Transmission System Operators for Gas
EU	European Union
EUI	European University Institute
GGP	Guidelines of Good Practice
GTM	Gas Target Model
GWG	Gas Working Group
LNG	Liquefied natural gas
MECO-S Model	Market Enabling, Connecting and Securing Model
NBP	British National Balancing Point
RSCAS	The Robert Schuman Centre for Advanced Studies
TSO	Transmission System Operator
TYNDP	Ten-Year Network Development Plan
UIOLI	Use-It-Or-Loose-It

*Table 1 – List of Abbreviations*