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**Energy Regulation: A Bridge to 2025**  
**The Overarching Paper**  
**6 November 2013**

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**1. Context**

***Delivering  
now...***

Delivering real choice for European energy consumers – in terms of efficiency gains, competitive prices for energy and related services and higher service standards – is the ultimate aim of the internal energy market. The European Commission, with Council and Parliamentary agreement, has already spelt out its broad policy objectives and specific priorities for the immediate future, including the main challenge of the completion of the internal energy market. The successful integration of the European gas and electricity markets into a single internal market remains the fundamental ambition for Europe’s energy regulators. As we are still some distance away from this objective, the short term commitment of regulators at national and EU level will remain entirely focused on the continued development and implementation of the current legislative framework, and in particular the Third Package, its associated framework guidelines and network codes and related legislation, such as REMIT and the Infrastructure Package.

Nevertheless, the approaching 2014 deadline for completing the internal energy market also requires the careful consideration of the future beyond that deadline. However, the inherent uncertainty of energy markets means that predicting beyond a few years is notoriously difficult. There are uncertainties which include political factors and “unknown unknowns” (as have been witnessed in recent years with the emergence of shale gas or the Fukushima disaster in Japan). Thus we have limited our speculation too far into the future. At the same time, we witness profound changes to the electricity and gas markets which we must take into account including, inter alia, the increasing penetration of RES-based generation and its impact on network operation, as well as the development of non-conventional gas (primarily in the US) and its impact on the energy market globally (with cheap coal pricing gas out of the power generation market). Therefore, that time horizon must span far enough into the future to ensure that the challenges facing the European energy sector beyond the immediate market integration goal are addressed. With these considerations in mind, we have chosen 2025 as our time horizon, with 2020 being a mid-term reference in line with other relevant energy and environmental policy goals. A timeframe of this length provides a suitable balance between short-term certainty and less certain developments. We will take account of the European Commission’s Communication (and its staff working

documents) of 5 November “Delivering the internal electricity market and making the most of public intervention” which focuses on RES integration and subsidies.

***The present  
agreed  
policies....***

The implementation of the agreed legislative packages and of the target models represents an important foundation for the bridge to 2025, and therefore will remain our immediate priority together with the development and implementation of the detailed network codes that will underpin a future single energy market. We should ensure consistency between the different network codes and, more generally, in the way in which the different components of the target models and a shared vision for the future of the wholesale market in these sectors, are defined and implemented. However, we should also recognise that the network codes represent a “dynamic framework” which may be subject to changes and that the electricity and gas “target models” may need to be enhanced in order to address the future challenges.

***Whilst  
preparing  
for the  
future...***

In addition to a number of regionally disruptive developments in the gas and electricity markets, where we are witnessing closure of sometimes relatively new gas plants and certain significant regional imbalances between electricity generation and demand, we must work towards ensuring that, wherever possible, the European market design is sufficiently robust to accommodate further predictable and unpredictable developments. These may require short-term refinements through network code modifications or new initiatives designed to enhance further the integration of the European market, but, more importantly, it will require a stronger EU wide coordination of national energy policies. Although responsibility for such a coordinated policy broadly rests with national governments and parliaments and the European Commission, the Council and the European Parliament, National Regulatory Authorities and ACER will continue to play their full part in contributing to the debate, notably in identifying and suggesting how best to overcome current and future challenges and meet policy objectives. ACER and regulators, as NRAs and as members of the Agency, will use their powers, within their respective competence, to formulate, monitor and enforce market rules, including the relevant provisions on customers’ rights, in a coordinated way within the legal framework set by national and European policy makers. These efforts are further facilitated by our work on demand-side response and flexibility and CEER’s work on a range of regulatory issues including renewables; smartness; distribution networks; LNG and gas storage; and consumer protection and empowerment.

**Question 1: Do you agree with this overall approach? Would your emphasis be any different?**

## 2. The Foundations of the policy to Bridge to 2025

### **Limits to our ambition...**

Given the levels of uncertainty that energy markets face, our emerging thinking is intended to be robust and flexible enough to accommodate shifting trends and unforeseen events. The policy is not intended to second guess the future, nor is it designed to be a detailed scenarios analysis seeking comprehensively to identify future development paths. Instead, within the evolving policies now in preparation by the European Commission, it seeks to recognise in a technology-neutral way the uncertainties, to identify robust regulatory policies and to reflect the uncertainties in the design of these policies and actions so that they are adaptable in the face of change. In essence we are seeking to ensure that the system can “breathe” and instruments are “fit for purpose”. In this way the future role played by different technologies should develop in the most efficient way.

A number of substantial changes to the market dynamics are already taking place and need to be considered in the on-going process of the framework guidelines and the implementation of network codes. These include, *inter alia*:

- A regionally uneven rollout of RES-based generation which already has massive price effects in several markets and raise challenges for the electricity network at regional level, such as loop flows and more generally the uncertainty about the amount of RES generation overall;
- a reduction of competitiveness of gas-fired power generation in most of Europe, which is resulting in closure of – sometimes quite new – gas generation plants in a number of European countries, causing concerns about system stability;
- a subsequent push for the establishment of capacity remuneration mechanisms for electricity generation in many EU Member States;
- a price driven, unexpected and significant shift from gas to coal as a fuel of choice for power generation, with negative effects on greenhouse gas emissions in several EU Member States.

### **Assumptions**

Our present thinking is based upon a considered and reasoned view of what may lie ahead. Whilst the policies and actions we consider are not intended to be scenario-specific, they are based on a number of major assumptions, and drivers that have shaped that thinking. For example, we have assumed that the low carbon/green agenda (with or without present targets) will remain a key focus over the forthcoming years. We have also taken account of the changing gas market characteristics (e.g. decline in gas demand, growing dependence on imported gas). There are also growing interrelations between electricity and gas markets: greater flexibility are needed in the electricity sector to back-up intermittent RES-based generation, but also in the gas sector to enable the gas infrastructure and market design to service and support flexible gas-fired generation plants. There is a changing role for gas storage and LNG.

We have also assumed the continuation of European energy market integration (albeit with some recognition of national specificities), the predominance of market-based approaches in the design of energy regulation, and the challenge of balancing the energy 'trilemma' (affordability, sustainability and security of supply) alongside building the confidence and trust of consumers in market arrangements through greater consumer participation, their integrity and transparency, and regulators' actions. In particular, wholesale market arrangements must translate into more choice and benefits for consumers through a competitive retail market. As the 2020 Vision for Europe's energy customers<sup>1</sup> underlined, we must seek to develop a market that allows engagement with, and an understanding of, the diverse needs of customers; that delivers services that meet those needs; that anticipates future needs and takes steps to protect the interests of current and future customers (especially also vulnerable consumers affected by energy poverty); that uses resources efficiently, and one that ensures that the activities of market players translate into societal benefits and offer all customers a fair and affordable deal for their services.

## **Drivers**

Similarly there is a variety of drivers and market developments that have fed into the development of our thinking within the key foundations and goals of the internal energy market (competition, security of supply and sustainability). Of particular importance is the expected major growth and consequential impact of the share of Renewable Energy Sources (RES) electricity generation and Distributed Energy Resources (DER). Although it remains uncertain which RES and DER technologies will experience most growth and how this may impact in the long run on the development of different sources of fossil fuels, this driver already has major consequences for the gas and electricity wholesale market arrangements in a number of countries.

EU gas and electricity markets will need to become more flexible, and a new approach towards EU networks to manage RES integration more effectively will need to be developed. It may also impact other factors such as the development of new storage technologies and the increasingly proactive role of energy consumers. And we have already seen the development of different capacity remuneration mechanisms for electricity generation in several Member States.

Other drivers behind our thinking include the expected growth in technology that will certainly drive new consumer behaviour; greater energy efficiency measures that are likely to impact on energy consumption; and the growing role of consumers as producers and in proactive demand-side participation as well as a removal of barriers to retail market competition. We need to recognise that consumers, through demand-side

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<sup>1</sup> 2020 Vision for Europe's energy customers Joint Statement, 13 November 2012 updated on 30 May 2013

response, can efficiently provide some of the flexibility which the energy sector needs in the future. This requires innovative consumer technology, new business models (e.g. for aggregators) and the redefinition of the role of DSOs or energy service providers that can help especially small consumers to become more energy efficient and benefit from new technologies.

***Demand***

Factors such as future patterns of demand are considerably less certain. Energy efficiency measures should reduce demand overall, but there remains significant uncertainty about changes in electricity and gas demand. Many developments will have an impact on demand, including technology developments (e.g., electric vehicles); changes in customer behaviour (e.g. take up of automated demand response); and the size of the shift towards electrifying heating load. Such uncertainty about demand development in electricity impacts both network policy, wholesale market design and consumer protection considerations. In the gas sector it seems safe to assume that energy efficiency improvements through the application of new building standards and the emergence of new technologies, like heat pumps will in the medium term reduce gas demand in the heat sector.

***Markets***

Other issues that have influenced our thinking include the future developments of the EU Emissions Trading System (a subject likely to be addressed in the European Commission's 2030 thinking); the on-going development of, non-coordinated, national capacity remuneration schemes, the potential for 'disruptive entry' of new firms into the energy markets; and how the long-term future of the gas market (and gas investments) could be impacted by issues such as the shifting global demands for gas and the potential of gas to be used in transportation.

**Question 2: Do you agree with this broad analysis and/or do you have further suggestions?**

**3. A bridge to 2025**

The underlying foundation of the EU's framework is the creation of an open, integrated and competitive single market for energy which promotes the security of energy supplies and sustainability, to the benefit of consumers in terms of more choice and best value of the energy deal. While these three objectives are clear, the emphasis on each may vary as markets develop. An internal energy market that is competitive, integrated and liquid is needed. It has been the highest priority not only to secure energy supplies, but also to play our full role in tackling the climate challenges and to ensure benefits to households and businesses. In parallel, in order to achieve the

***Flexible  
Response  
Mechanisms  
will be  
crucial***

sustainability targets and ensure security of supply more easily, the internal European energy market must operate competitively and efficiently to exploit the full potential of a larger market. At the same time it needs to be flexible enough to adapt to significant fluctuations of supply and demand and by growing price volatility.

***Flexibility  
is key...***

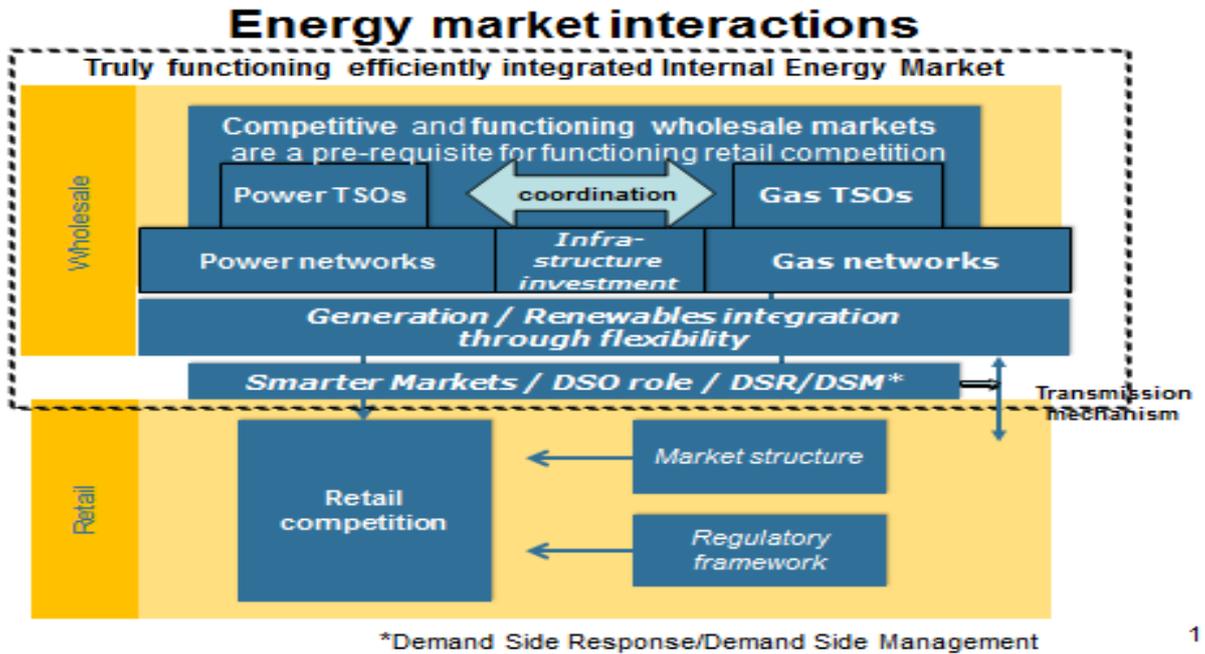
Beyond the sound foundations provided by the Third Package, the network codes and other recent pieces of legislation (such as the Infrastructure package and REMIT), there may be a need for further European harmonisation and integration to remove all the remaining obstacles to **competition** in national wholesale and retail energy markets and to take account of such interactions as those between gas and electricity markets. National and European RES targets are already driving significant changes in the energy systems. As the share of RES grows, so too does the essential requirement for additional flexible response to accommodate the less-predictable, and thus non-programmable, and more intermittent nature of RES technologies whilst also maintaining system security. The impact of this requirement for **flexibility** will fall on both the electricity and gas markets and the way they operate to ensure security of supply and undistorted competition. At the same time the currently high level of gas prices compared to regionally low electricity wholesale prices makes coal fired power generation financially much more attractive than gas. Thus the future role of gas-fired generation in providing the flexibility needed in a high RES electricity system is uncertain.

***... further  
integration  
of the  
internal  
energy  
market***

To meet these challenges we must ensure that the necessary investment in network infrastructure takes place in a cost reflective way and takes into account that cross-border energy exchanges may reduce the overall requirement for additional capacity. The infrastructure requirements must be carefully assessed in the light of forecasted demand to avoid the risk of stranded assets. Adequate infrastructure should support the development of cross-border trade, whilst also allowing for the integration of the more volatile RES. Similarly the functioning of national markets in line with the internal energy market must be further improved to address the challenge of ensuring adequate flexibility in the future.

In order to address the growing challenge of ensuring **adequate flexibility**, the target models will include greater participation from the demand side; the definition of new ancillary services; greater interconnection between Member States; improved storage technologies, improved co-operation between TSOs - including coordination between electricity and gas TSOs -, and more flexible gas generation as well as a greater role of short-term gas markets. In turn, there will be fresh thinking about the role of consumers, retailers and the fully unbundled distribution networks in a **smarter demand side and smarter grids**.

The diagram below summarises the different elements and challenges for the future energy system that need to be taken into account. It also shows the complex interactions between the different levels and market players.



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As markets become more integrated and operate at a scale demanding far more cross-border activity, we also need to see whether the present governance arrangements are fit for purpose.

The sections below summarise the core aspects of the bridge to 2025. They provide further details for each of the three core aspects which address the common objectives of competition, security of supply and sustainability.

### 3.1 Efficient RES Integration with flexibility

With the increased penetration of less-predictable and more intermittent RES-based generation a more flexible generation capacity and demand response is required in order to ensure network security. This brings the important link between the gas and electricity markets into sharper relief, as the flexibility that is required to accommodate a growing share of RES-based electricity generation is currently often provided by gas-fired generators, although this role is under attack by low price coal generation. The

**Regulators must focus on these...**

demand for flexibility in electricity markets similarly drives demand for some more flexible arrangements in the gas market, as long as gas remains the fuel of choice for flexible short term power generation. In the medium term, the regulatory focus should therefore be towards **designing market arrangements that accommodate the growing share of RES-based generation**, at least cost, and in a manner that ensures that the need for flexibility is appropriately signalled and valued in the market. Arrangements also must be designed in a **coordinated way** to minimise the creation of new barriers to market integration and internalising interactions between the two markets. To support this, our focus, as regulators, is to:

- ensure that price signals – in both electricity and gas markets – fully reflect and encourage the value of flexibility to market participants;
- remove regulatory barriers and provide market-based routes for flexible plants, demand-side, interconnectors and storage so that they are sufficiently remunerated for the flexibility and adequacy that they provide;
- encourage better forecasting of non-programmable RES generation, including consideration of the appropriate institutional and market framework so that the system impacts are properly considered;
- encourage liquid intraday and balancing markets – in both electricity and gas – with availability of short term flexible products (e.g. gas storage, energy options markets) and ancillary services;
- invite policy makers to limit the use of subsidies (particularly for renewable energy sources) to the extent to which they are necessary to facilitate market entry of innovative/immature technologies and to ensure that any use of subsidies does not hamper cross-border competition;
- ensure that other market interventions, including capacity market mechanisms are compatible with state-aid rules and do not distort disproportionately cross border trade and are compatible with market conditions.

### **3.2 Encouraging competition**

Competitive and well-functioning wholesale energy markets are a prerequisite for effective retail competition bringing benefits to final consumers. While recognising the value of current framework guidelines and network codes, there is still scope to improve the functioning and efficiency of European wholesale and retail energy markets. However, encouraging competition in the future must also take full account of a new market reality driven by the sustainability goals mentioned above, in particular RES

integration and the need for flexibility, together with the subsequent requirements of capacity, i.e. investment needs. These also raise the key challenge of how to operate the network in a secure way.

On-going developments in European energy markets have been based upon a sequential process of integration. The first step was the design of appropriate frameworks to optimise cross-border trade between different national markets. The next step was the promotion of sufficient cross-border capacity to reduce the physical limitations that inhibit efficient trade. Further integration will require a further step to improve the functioning of national markets and remove unintended cross-border distortions through stronger harmonisation of market arrangements within national markets, to achieve sustainability and security of supply.

To encourage competition, we should focus on:

- designing technology-neutral market arrangements where all generation and demand technologies compete in a non-discriminatory way;
- considering the appropriateness of wholesale gas market arrangements to ensure sufficient short-term liquidity and flexibility (e.g., the need for European gas market coupling), as well as providing for efficient long-run investment signals;
- removing barriers to entry for new gas sources and for producers from new production regions (e.g., shale gas, biogas, pipelines from new areas, new LNG suppliers, new RES technologies) and barriers to greater cross-border competition;
- facilitating competition between different sources of adequacy (e.g., local generation, interconnection capacity, demand, storage and sufficient infrastructure to support diverse sources of supply);
- designing transmission charging arrangements that reflect new network usage arrangements;
- promoting the development and availability of products that facilitate the use of reverse flow gas;
- removing barriers to retail market competition such as regulated end-user prices;
- encouraging greater consumer awareness and responsiveness (e.g., switching);
- ensuring that other interventions such as capacity remuneration mechanisms, and price regulation do not, disproportionately distort cross-border trade and are compatible with market conditions.

***Regulatory  
actions...***

### 3.3 *A smarter demand side: Smarter grids and smarter markets*

A more active, smarter demand side and smarter grids have a great potential to provide solutions to the challenges posed by the growth of RES-based generation and distributed energy resources. There needs to be a considerable evolution of the roles of consumers, retailers and distribution systems to meet these challenges. With sufficient information, incentives and the tools to react, electricity and to a lesser degree gas consumers could provide a useful service to support network operators in managing scarcity and the greater demand for system flexibility. In the case of electricity markets, far-reaching changes may be required to gear the electricity system towards well-functioning **smarter markets**. This may require a greater focus at distribution level to facilitate active demand management and to accommodate a larger volume of distributed generation. The key areas on which we will focus include:

**Regulatory  
actions...**

- removing barriers to the emergence of business models that support the market development of demand side response;
- creating and enabling a framework for time-of-use and dynamic demand-side response that carefully considers consumer protection issues and ensure that consumers are able to respond to price signals and are encouraged to adapt their behaviour towards being ‘prosumers’;
- incentivising the use of smart technology such as smart metering where this is efficient;
- facilitating technology innovation to assist sector-wide learning;
- providing the appropriate regulatory framework to allow for more active distribution networks which will incorporate demand side flexibility, distributed generation and smart technologies.

These challenges must be complemented by the need to ensure vigorous protection and full empowerment of customers rights, in particular by the effective implementation of the Third Package, by the exchange of best practices on key consumer-related issues, by reinforcing, where appropriate, consumer rights, and by the integration of retail markets as well as the implementation and evolution of the Customer Vision<sup>2</sup> and its key principles of reliability, affordability, simplicity, protection and empowerment to ensure that it reflects and responds to the future challenges.

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<sup>2</sup> 2020 Vision for Europe’s energy customers Joint Statement, 13 November 2012 updated on 30 May 2013

**Question 3: Do you think the list of suggested measures is complete or do you have further suggestions?**

- **Do you think that the requirements for infrastructure investment in gas are the same as in electricity?**
- **What further ideas do you have on the future role of consumers?**

#### **4. Concluding remarks**

***How and  
when to  
respond***

We seek to involve all stakeholders at the earliest stage in the development of this strategic vision for the period 2014 to 2025 and, in particular, the response to the many new developments we face and to ensure that the regulatory system is robust and flexible enough to adjust to these developments in the most efficient way based on the fundamental principles of the Third Package that is in the process of being implemented.

We seek stakeholders' feedback on the overarching paper and the three sectoral papers **by 17 December 2013 at the following address:**

**[consultation2013E05@acer.europa.eu](mailto:consultation2013E05@acer.europa.eu)**

After this pre-consultative phase (which also includes the 6 November workshop and the next Florence and London fora in November and December 2013) we will develop more specific proposals for action, taking full account of ACER 2014 WP and our assessment of whether and how the electricity and gas "target models", would need to be enhanced, in the form of a Green Paper in early 2014. That more formal consultation will last some 8 weeks to be followed by our proposals in mid-2014.



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