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To the European Commission

Consultation on generation adequacy, capacity mechanisms and the internal market in electricity

EDF response

Executive summary

EDF welcomes the European Commission's initiative to carry out a consultation on generation adequacy. The European Commission states *"The EU objective in the field of the energy policy is to deliver sustainable and secure energy and a competitive internal market for energy"*. Indeed, EDF supports EC's ambitions and believe that security of supply is a fundamental and urgent issue that should be addressed by sustainably reinforcing European power market's design.

- The European Commission's initiatives to extend market coupling, along with intraday and balancing markets, will generate a more flexible and adaptive energy system that has proven its ability to deliver energy at the lowest cost. Furthermore, it contributes to the integration of variable energy supply from renewables.
- However, flexibility is only one aspect of generation adequacy: we also need to ensure a market which, both now and on a permanent basis, is capable of triggering investment in enough capacities to guarantee balance between supply and peak demand at a controlled risk level.
- An "energy-only" market alone cannot guarantee capacity adequacy complying with this controlled risk criteria, even with greater interconnection capacity, no price caps and more efficient wholesale markets.
- Several European countries are likely to face difficulties ensuring security of power supply at peak times – in the short, medium and long term – resulting in potential shortfalls and hence the possibility of load shedding.
- It is legitimate for Member States to make sure capacity adequacy issue is addressed creating an obligation the energy industry will have to comply with.
- Solutions should be promoted to ensure this obligation is satisfied at the lowest cost by revealing with a market-based mechanism the scarcity value of the capacity.

Such well-designed capacity mechanisms are to:

- Create a level playing field for all actors, all different technologies, and all capacities (be it demand-response, storage, new or existing peak, mid-merit or baseload generation).
- Be market-wide. Any capacity providing the system with the same contribution to security of supply should play an equal role into the mechanism.
- Be pragmatically implemented at national level, the most appropriate one from a legal, political and technical standpoint. The EC has an important role to play in ensuring transparency and fostering good practices among Member States.

Introduction

“The internal energy market is not an end in itself. It is a key instrument in delivering what EU citizens aspire to most: economic growth, jobs, secure coverage of their basic needs at an affordable and competitive price, and sustainable use of limited resources”, the European Commission stated in its last Communication on the Internal Energy Market.

EDF supports the European Commission’s ambitions for the internal electricity market: EDF believes that a well-functioning, competitive market is the most efficient response to Europe’s energy challenges. With a clear and stable framework backed up by a long-term vision and a suitable market design, the European power market can deliver Europe’s energy goals: decarbonisation, security of supply and competitiveness.

EDF recognises the achievements that have been made in the last decade: **among the successful achievements of EU policy are energy wholesale markets, which are now more efficient in delivering energy to customers at lowest possible cost.** They benefit from greater liquidity and are more effective at dealing with constraints, such as limitations in the use of interconnections. Furthermore, the European Commission underlines that there are still some possible improvements and EDF supports this diagnosis. EDF particularly supports the European Commission’s willingness to extend day-ahead market coupling, along with intraday and balancing markets, to create a more flexible and adaptive energy system and deliver electricity at the lowest cost to meet demand while contributing to the integration of renewables. Other improvements are also possible, e.g. coordinated interconnection capacity calculation to ensure that existing and future infrastructures are used at their full potential. **All these improvements in energy market functioning, allowing getting the best of the European generation fleet, networks, and demand flexibility should be promoted.** The development of interconnections and Demand Side Management techniques promoting short-term demand elasticity should be also promoted, as soon as they are economically efficient.

Yet there are real concerns about generation adequacy in several Member States over Europe. In some of them they arise in the short and medium term (as soon as 2015):

- The UK should lose 7GW of reliable available capacity between 2012 and 2016 and 13GW between 2012 and 2020¹ due to environmental constraints and age of plants, while the UK government plan is to shift towards a low-carbon mix at the lowest cost, without jeopardising the current standard of security of supply. On the long-term, EDF Energy analysis suggests that a total of between 30-40GW of reliable new generating capacity is needed in the UK by 2030.
- France will lose around 7GW of reliable available capacity between 2012 and 2016.
- In Belgium, due to possible planned closure of two nuclear reactors (2x433MW) and planned closure of three thermal power plants (1277MW) and the current unavailability

¹ ENTSO-E Scenario Outlook and Adequacy forecast 2012-2030, scenario “A” considering firm build & closure of generation capacities.

of two other nuclear power plants (2000MW), security of supply is not guaranteed between 2015 and 2017. In the period until 2025, Belgium will close another 5 nuclear power plants (5000 MW).

- Poland should decommission 5GW of reliable available capacity between 2012 and 2017 due to environmental constraints and age of plants, while projects of new production capacities are cancelled or delayed: the TSO anticipate a lack of 2.5GW of production capacity in 2016.
- The risk of energy shortage for the current winter (2012-13) is considered as non-negligible for several countries in Europe by ENTSO-E, especially in Belgium due to unavailability of two nuclear plants, while building new capacities into the market will take at least 3 years, building new interconnection lines would be much longer, and Demand Side Response is slow to develop and unable to fill the gap.

It is legitimate for Member States to make sure that generation adequacy issues are addressed, considering the political and economic impacts of power shortages on their citizens and companies.

- **It is their duty:** The cost of the 2003 black-out in the US and Canada has been estimated from 4 to 8 bn\$, and the average cost per un-served MWh for one hour has been estimated between 2600US\$/MWh for households, 25000US\$ for medium and large companies, and much higher for small companies².
- **It is their right:** Security of energy supply has been recognized several times as a legitimate general interest by the European Court of Justice³, and Directive 2005/89/EC explicitly allows Member States to take “additional measures” to ensure the adequate amount of investments required to ensure security of supply issue⁴.

Besides, any interruption of supply due to lack of investment would also jeopardise the European economy, as security of supply is an important requirement of most customers.

Generation Adequacy is mainly twofold: sufficient capacity and flexibility are two different issues that are both necessary for a well functioning market and should be treated separately.

- **Sufficient flexibility is needed to match shifts in both supply and demand:** flexibility is the ability of power plants and demand-response to ramp up and down, to frequently compensate variation into the system generated by load or generation. All existing capacities are flexible but to a different extent, with different constraints and a different level of control.

²CRO Briefing on Power Blackout Risks, Allianz 2011; *Estimated Value of Service Reliability for Electric Utility Customers in the United States*, Lawrence Berkeley National Laboratory 2009

³See CJEU Judgments C-483/99, 4 June 2002, § 47; C-274/06, 14 February 2008, § 38; C-207/07, 17 July 2008, § 46

⁴Directive 2005/89/EC “concerning measures to safeguard security of electricity supply and infrastructure investment”, Recital 10 and article 5(2)

- **Sufficient overall capacity is needed to meet peak demand with low enough risk.** Each generation plant, or demand-response, has a maximum generation capacity and an expected performance at peak load (e.g. due to planned and unplanned availability for power plants). Sufficient capacity is needed into a system to control the risk of failure the supply-demand balance. However, unlike flexibility, total capacity is usually used only a few hours each year, even though it contributes to lowering the risk every day.

Existing market-based mechanisms like intraday markets and reserve management relying on balancing mechanisms (including ancillary services) can ensure that the adequate level of flexibility is provided, at the lowest cost. These mechanisms may be improved (e.g. extending market coupling) in order to maximize the mobilization, the use and investments in all available flexible resources, including non-stable RES for which priority of dispatch should cease on the long-term.

Nevertheless, if capacity adequacy is needed for a secure market functioning, Energy-only markets do not guarantee it, neither explicitly nor implicitly. The European market, as it is currently designed, assumes that capacity adequacy is implicitly ensured through sufficiently high energy prices to trigger new investments when needed. However, there will be investments in new capacities only when their profitability is anticipated to be secure enough. But capacities do not have sustainable business plans in an energy-only market:

- Peak prices are necessary to secure investment's profitability in the existing energy-only market. Nevertheless, peak prices are rare, hardly predictable and do not provide sufficiently secure revenues.
- High energy prices are usually not well accepted by consumers (even when not directly exposed to them), and by regulators and public authorities who tend to suspect market abuse. In many countries, energy prices are limited by price caps in the wholesale market or by other measures such as strategic reserves activated at predetermined price levels.
- Forward energy markets are not designed and structured to provide the adequate (and robust enough) price signals to inform investment decisions in new generation or demand side response capacity.
- Capacities profitability is therefore really uncertain in energy-only markets; and going forward, the substantial development of subsidised intermittent generation will make capacity profitability even more unpredictable as it increases volatility and uncertainty of peak energy prices.

As soon as there is no over-capacity, it seems that no system, be it in the USA or in Europe, has ever succeeded in ensuring generation adequacy with an energy-only market.

It is often argued that **Europe should increase interconnection capacity, better integrate demand response and correct remaining flaws in energy markets to ensure demand is met. EDF supports the Commission's strong advocacy of these measures.** They can reduce the total amount of capacity required. **However this does not eliminate the need for ensuring that sufficient capacity is available to meet demand.** These measures could reduce the urgency of the issue but would not resolve it. Besides, these measures, especially

interconnections, are slow to develop and cannot be considered as a solution to short and medium-term issues.

EDF strongly believes that Capacity Adequacy should be explicitly addressed and guaranteed by a dedicated mechanism, which will ensure that energy customers are securely supplied by the power system: the question is not “should it be addressed ?” but “how should it be addressed to ensure that this objective is reached at the lowest cost ?”

To make sure that the need to ensure capacity adequacy issue is explicitly addressed in their countries, several European governments have or intend to introduce capacity mechanisms. This need refers to an obligation which may imply additional constraints and consequently additional costs. Capacity mechanisms complement the energy market to ensure this obligation is satisfied at the lowest cost by providing a price signal reflecting the scarcity of capacity (MW) on the investment horizon (typically four years).

EDF believes that a well-designed capacity mechanism is the lowest-cost and most-efficient method of guaranteeing sufficient capacity for the present and the future. To this purpose, EDF strongly believes the five following essential requirements will lead to an efficient capacity mechanism:

- **It should be based on a market revealing the cost of a capacity obligation:** it is the best way to cover the obligation and correctly reflect the scarcity of capacity, ensuring that, the lower is the risk on capacity adequacy, the lower is the price signal of the capacity mechanism.
- **It should create a level playing field for all actors, all different technologies, and all capacities** (be it demand-response, new or existing peak, mid-merit or baseload generation capacities)
- **It should be non-discriminatory and market-wide:** any capacity offering the same guaranty to security of supply in a given country should play an equal role into the mechanism and be considered as the same level of contribution to the obligation. Selective approaches, e.g. strategic reserves, might appear to be less expensive in the very short-term but are more expensive because they are inefficient in the long-run.
- **It should appropriately take into account the ability to import through interconnections energy from neighbouring countries and adjust consequently national capacity needs.**
- **And it should avoid windfall remuneration for regulated generation:** Combination with revenues from regulated/non-market based schemes should not provide any windfall profit and unusual return on invested capital.

Moreover, regarding functioning of the European Market, **EDF recognises that the European Commission has an important role to play considering generation adequacy:**

- **First, in promoting transparency and good practices between Member States while assessing generation adequacy needs.** Considering different methods and criteria

applied different Member States, such initiatives will ensure that the issue is coherently addressed in each country, and therefore at European Level. Furthermore, cross-border exchanges may contribute to reduce each national capacity needs and should be consequently assessed on a consistent and transparent way between all Member States.

- Secondly, **the issuance by the European Commission of the list of appropriate essential requirements which national schemes should comply with will ensure no impact on cross-border trading. These essential requirements should be the ones mentioned in this paper.** Capacity mechanisms are a valuable tool exclusively aimed to achieve this issue, while not directly interfering with short-term energy markets functioning. As such, they can be gradually introduced in any European countries to guarantee generation adequacy is achieved at the lowest cost.

The issue of generation adequacy can best be addressed through market-based, market-wide and non-discriminatory mechanisms, defined at Member State level and backed with guidelines issued by the European Commission: that will ensure that Capacity Adequacy is guaranteed at the lowest cost, while preventing impacts on energy markets.

Last, **EDF strongly believes that Generation Adequacy should not be considered as a temporary problem to be addressed by a temporary mechanism or a mechanism unsustainable on the long-term**

Particularly, mechanisms that would discriminate players and/or technologies providing the same service are very likely to introduce unnecessary competition distortions and are not a sustainable way to deal with a long-term issue. In such a perspective, strategic reserves should only be used as very short-term transition tools to delay plant decommissioning but can't be considered as a sustainable response to generation adequacy since it focus on a fraction of the generation fleet while all capacities contribute to the security of supply.

On the contrary, universal, market based and non-discriminatory mechanisms are the best way to ensure security of supply at the lowest possible costs for the society, with no competition distortions and no issues of State aid or Services of General Economic Interest.

Generation adequacy is a permanent issue that should be addressed through sustainable instruments. Discriminatory or temporary measures cannot be consistent solutions, and may only be considered in case of crucial short-term risks on security of supply and as a transition towards long-term solutions.

Answers to the questionnaire

1. Do you consider that the current market prices prevent investments in needed generation capacity?

Investment decisions are long-term choices that are not directly based on current market prices, but rather on future price expectations. The question is rather to know whether the level and structure of future energy price and the capacity of market players to anticipate them will lead to adequate investment in generation and demand response capacities in order to ensure security of supply at a controlled risk.

Nevertheless, current prices can provide some insight into future price trends. In particular, they reveal the strong impact of energy policies on prices. Indeed, sudden and massive development of renewable sources in some member states led to unanticipated decline in average wholesale prices and increased volatility (in 2011, installed photovoltaic capacity increased by 8 GW in Germany and 9 GW in Italy where this represented an increase by +270%). Current market prices therefore not only make the present economical situation of generators difficult but, more importantly, stress out how national energy policies will make capacity profitability even more unpredictable.

Energy-only markets, driven by short run marginal costs, do not guarantee generation adequacy, neither explicitly nor implicitly.

2. Do you consider that support (e.g. direct financial support, priority dispatch or special network fees) for specific energy sources (renewables, coal, nuclear) undermines investments needed to ensure generation adequacy? If yes, how and to what extent?

Considering that there are only three de-carbonisation wedges, RES, energy efficiency and nuclear, RES will play a significant part on the affordable de-carbonisation path Europe must and will go in the next decades: A cost-efficient combination of the three is needed to de-carbonise at an affordable cost.

During the last ten years, the **RES directive and national initiatives have successfully triggered a rapid growth of renewables**: The 2020 targets are likely to be met.

But **this growth now challenges sustainability**:

- Some issues may be transitional: in the short run, in combination with a decreased of electricity consumption due to the financial crisis, the business plans of conventional generation are threatened. EDF believes that these short-term issues reveal possible long-term impacts of the current policy framework.
- But some issues will last for years and will challenge the reliability of the network, the possible anticipation of generation profitability, and the ability of consumers to pay.

- The integration of RES in the European grids is becoming problematic: as an example, loop flows and internal congestions induced by RES in Germany are increasingly difficult to accommodate and to anticipate.
- The integration of RES in the European markets is also problematic: wholesale energy prices will be increasingly difficult to anticipate. It is now possible to find in some countries peak hour cheaper than off-peak, and it is even possible to find negative prices.
- RES is a subsidized business the overcost of which strongly impacts power bills and consumers' ability to pay: in Germany, the EEG surcharge is above 50€/MWh and strongly impacts retail prices.

All these challenges may effectively threaten generation adequacy if generation adequacy is not correctly and explicitly guaranteed by the functioning of power markets: **generation adequacy needs good investor's anticipation and willingness to pay of consumers. If both are endangered, generation adequacy may be endangered. Therefore, EDF strongly believes that along with cost-effective and sustainable decarbonisation policies, a strong and cost-effective generation adequacy policy is needed.**

Besides, in order to guarantee the sustainability of RES development and of the decarbonisation process, the current support and integration schemes will have to evolve:

- i) In the long run, the carbon price should drive investment and ensure cost-efficiency. Besides, if an adequate carbon price signal is sent, in the long run binding volume targets should not be necessary. To do so, a structural ETS reform is urgent and should set long term targets so as to induce low carbon investment, control the volatility of carbon prices, and include an adjustment mechanism taking automatically into account the effects of other policies.
- ii) Support should focus on R&D and innovation in order to trigger the necessary breakthroughs: It makes sense to subsidize renewable technologies which have not yet reached competitiveness but are expected to do so, but subsidies have to be phased out when they have gone down their learning curve.
- iii) Mature technologies will be integrated in the market: as RES market share grows and they become competitive, priority dispatch should gradually cease. The impact of intermittent generation on distribution networks should be controlled and they should gradually be more and more subject to the same ancillary services obligations as conventional generation.
- iv) Support mechanisms must be cost-efficient and market-oriented, minimizing the impact on energy bills. Besides, there is no need for harmonisation of electricity support mechanisms (its cost-efficiency is not proven and because resources/generation fleets are diverse, the most efficient decarbonisation path is different from one member state to another).

3. Do you consider that work on the establishment of cross-border day ahead, intraday and balancing markets will contribute to ensuring security of supply? Within what timeframe do you see this happening?

Security of supply can never be absolute. It has to be understood as a trade-off between an accepted level of risk and the willingness to invest money to mitigate that risk. It is mainly twofold. It both requires enough capacity in the system to cope with extreme situations where the risk of outage is highest as well as enough flexibility to withstand variations in intermittent sources generation. Due to the different demand patterns and generation fleets across Europe one or the other issue will be locally of greater importance.

The electricity wholesale markets are a really successful instrument which, given the infrastructure constraints, ensure optimal use of available capacities and thus deliver energy to the customers at the lowest possible cost. Indeed, market coupling is a pragmatic and efficient solution to make the most of existing interconnection capacities. **EDF therefore fully supports the Commission's approach of extending market coupling geographically and to intraday and balancing markets.** This will contribute to a cost-effective balancing of variable energies in the system. However, any interruption of supply due to lack of investment would jeopardise the European energy market and the issue of security of supply is therefore to be considered with the utmost attention.

The Capacity Adequacy issue is a matter of ensuring that all capacity in the system is available during the peak period. These situations can be forecasted in D-1 and the Capacity part of the security of supply issue is essentially related to day-ahead markets. Flexibility, on the other hand, is a matter of being able to cope with sudden variations in the system and thus will have an important part of its value revealed in Intraday and Balancing markets. **The future development of cross-border Intraday and Balancing markets will therefore contribute to the Flexibility side of security of supply.**

Regarding the Capacity Adequacy side of security of supply, the development of cross-border day-ahead markets will have a positive but limited impact and will certainly not solve the issue of capacity adequacy. The integration of day-ahead markets has already yielded major achievements: the Interim Tight Volume Coupling ensures efficient dispatch of capacities and optimal use of interconnectors on the whole of the CWE and Nordic region. The completion of the Internal Energy Market in 2014 will expand it to the whole of Europe. Less total capacity will therefore be required to ensure a given level of security of supply. However it will not solve the issue that energy prices might not induce the needed investments to meet the required standard of security of supply: forecasts of future price trends show that in spite of Market

integration the massive development of intermittent sources will increase price volatility and make investment in power plants even more risky than before. Furthermore, the level of investments and hence the level of security of supply will be driven by an economically sustainable balance between supply and demand but there is no reason that this economical equilibrium satisfies the level of security of supply required by member states.

4. What additional steps, if any, should be taken at European level to ensure that internal market rules fully contribute to ensuring generation adequacy and security of supply?

5. What additional steps could Member States take to support the effectiveness of the internal market in delivering generation adequacy?

EDF underlines the importance to take into account ability to import energy through interconnections while assessing generation adequacy needs but insists on the fact that those needs are still to be assessed and tackled at a national level.

- The development of cross-border capacity favours the day-ahead market integration and should **lead to a more efficient dispatch of all available generation capacities**, through all Europe.
- Cross-border capacity allows to aggregate sources of uncertainty that potentially counterbalance one another as long as situations on both sides of borders are not correlated. Consequently, cross-border capacity **allows reducing the uncertainties to cope with**. Considering such benefits, cross-border capacities may lead to reduce total generation capacity and ensure a given level of generation adequacy.
- Cost-benefit analyses are required to assess the adequate level of capacities at each cross-border to target in the long-term perspective. It is important to understand that such a global optimisation process will not fully prevent from cross-border short-term congestion risk in the future. Considering such physical congestion risk, capacities located abroad cannot be considered as an equivalent to national capacities: **actually in period of tension only national capacities have a real scarcity value** as all interconnections are congested (see question 20.4).

Market-coupling efficiency should be promoted to enhance the use of interconnections, and get all possible energy import in period of tension.

- This refers to the expectation for each state member to benefit from cross-borders ability to import out-of-borders energy at peak load. Market-coupling efficiency can contribute to improve the level of this expectation.

- EDF supports initiatives from ENTSOE to promote such an orientation: transparency between TSO, market-coupling perimeters extension, long-term capacity allocation process preventing from freezing in advance available but suboptimal capacity transits.
- Besides, the transparency between state-members regarding their own generation adequacy standards should be promoted to allow each state-member to accurately and safely estimate the contribution which he can rely on.

6. How should public authorities reflect the preferences of consumers in relation to security of supply? How can they reflect preferences for lower standards on the part of some consumers?

Security and availability of supply is by far the most important requirement for the majority of customers, although this only becomes apparent on the infrequent occasions when supplies are interrupted.

However, **security of supply has the characteristics of a public good:**

- **Responsibility is diluted:** electricity is supplied over a jointly used network and follows the laws of physics rather than those of contractual arrangements. It is not possible to assign output from a specific plant to a particular customer unless there is a direct connection (which is quite rare).
- In particular, **capacity adequacy is a non-rival and non-exclusive good:** any expansion in generation capacity designed to meet growth in demand not only reduces the risk of shortage for those being supplied in energy from the new plant but also reduces everyone else's risk.

Public goods are known to be quite difficult to be fully financed by competitive markets. However, **it is legitimate for Member States to make sure that these issues are addressed, considering the political and economic impacts of power shortages on their citizens and companies, and they do have the right to do so.**

Security of energy supply in the Union is enshrined in article 194 of the Treaty on the Functioning of the European Union as one of the four objectives of the European energy policy. Further, it has been recognized both by the European Court of Justice⁵ and Directive 2005/89/EC as a legitimate general interest in view of which Member States are allowed to take “additional measures” to ensure that investments needed to secure coverage of needs⁶.

It is therefore a general interest objective to be pursued by public authorities regardless of consumer preferences as it seems highly unlikely that the sum of individual behaviours of electricity customers driven by their own interests will in any way achieve a collective security of

⁵ See CJEU Judgments C-483/99, 4 June 2002, § 47 ; C-274/06, 14 February 2008, § 38 ; C-207/07, 17 July 2008, § 46.

⁶ Directive 2005/89/EC “concerning measures to safeguard security of electricity supply and infrastructure investment”, Recital 10 and article 5(2).

electricity supply. That's why **public authorities determine the degree of security of electricity supply by setting reliability criteria**, e.g. Loss of Load Expectation (LoLE), which reflects the expected duration (in hours per year) for which available generating capacity is insufficient to serve the peak load, or Loss of Load Frequency (LoLF), which reflects the expected frequency (in number of years per decade) for which available generating capacity is insufficient to serve the peak load.

Yet, all individual customers may have different needs and the market should be able to answer these needs through individual market offers. These specific needs will be priced into the market by difference with the standards through a specific demand-response service or a specific back-up service.

7. Do you consider that there is a need for review of how generation adequacy assessments are carried out in the internal market? In particular, is there a need for more in depth generation adequacy reviews at:

- a) **National level**
- b) **Regional Level**
- c) **European Level**

It is essential that players can anticipate future trends in the load-supply equilibrium in order to take the best investment decisions. Accurate, transparent and stable information related to all regulatory aspects of security of supply must therefore be made publically available. This is true in particular for all generation adequacy assessments in Europe.

Detailed national generation adequacy assessments provide valuable sources of information to be used in investment decisions by all players. However, there still exist various levels of precision among the different national adequacy assessments. In-depth reviews should be promoted everywhere.

TSOs should coordinate on a regional or European level in order to improve their national reviews. Indeed, the level of generation/demand-response capacity required in a country in order to ensure a given security of supply standard is influenced by the neighbouring zones. The national assessments would therefore gain in accuracy if TSOs developed joint sets of scenarios for intermittent sources generation, network availability and all other data necessary to national generation adequacy reviews.

8. Looking forward, is the generation adequacy outlook produced by ENTSO-E sufficiently detailed? In particular,

a) Is there a need for a regional or European assessment of the availability of flexible capacity?

The massive development of intermittent sources across Europe has dramatically increased the need for flexibility in the electric system. Yet, **the definition and the assessment of this need for flexibility is a complex issue that has yet to be done and that cannot be separated from the specific needs of the different electric systems in Europe.** It can be the ability to cope with strong variations over a timespan of a few hours and that can be forecasted but it can also be the ability to cope with unpredictable variations of smaller amplitude but that will occur over the next hour.

Due to the varying characteristics of demand and intermittent generation patterns across Europe there can be no single criteria to assess the need for flexibility. Wind and solar generation indeed have highly contrasted dynamic characteristics for instance. We therefore believe that having ENTSO-E publish a single European assessment of the need for flexibility and the availability of flexible capacity is not the proper way to improve its Generation Adequacy Outlook for it would miss the local technical aspects of the matter. Rather, we believe that ENTSO-E could improve its survey by designing detailed European sets of scenarios (for intermittent sources generation patterns, for network incidents, for demand...). These European scenarios would allow TSOs to perform properly coordinated reviews of security of supply in each region.

b) Are there other areas where this generation adequacy assessment should be made more detailed?

The report published by ENTSO-E is a valuable source of information that can be used by all players, all information available to TSOs regarding generation adequacy should therefore be made transparently available.

9. Do you consider the Electricity Security of Supply Directive to be adequate? If it should be revised, on which points?

EDF supports that the Electricity Security of Supply Directive 2005/89/EC constitute the adequate vehicle and a sound basis for the implementation of national security of supply policies.

As described above, EDF is of the firm conviction that under the current technical conditions (i.e. scarcity of interconnections) **the security of supply issues can be adequately and**

pragmatically dealt with at a national level taking into account local specificities in application of the subsidiary principle.

Moreover, European Commission could play an important role in promoting transparency and good practices between Member States while assessing generation adequacy needs, and implementing capacity mechanisms:

- There are different methods and criteria between all different Member States to assess generation adequacy needs: transparency and sharing of good practices will ensure that the issue is coherently addressed in each country.
- At each national level, cross-border exchanges may contribute to reduce or increase national capacity needs: expected cross-border contribution should be assessed on a consistent and transparent way between all Members States.
- Capacity mechanisms must be implemented with a complete transparency among Member States, to ensure generation adequacy throughout the EU. The issuance by the European Commission of the list of appropriate essential requirements which national schemes should comply with will ensure no cross-border impact. These essential requirements should be the ones mentioned in this paper (see questions 16 and 20).

10. Would you support the introduction of mandatory risk assessments or generation adequacy plans at national and regional level similar to those required under the Gas Security of Supply Regulation?

11. Should generation adequacy standards be harmonised across the EU? What should be that standard or how could it be developed taking into account potentially diverging preference regarding security of supply?

The potentially diverging preferences regarding security of supply, in addition to the stark contrasts in demand pattern and generation fleets across Europe, make it impossible to design harmonised standards. **There is no European “One size fits all” for security of supply.**

It is a prerogative of each member state to tackle the issue of generation adequacy and therefore to set its desired level of security of supply. This level can be set independently by each member state and has to be understood as the trade-off between an accepted level of risk and the willingness to invest money to mitigate that risk. Pragmatic approaches allowing for the best local compromises between specificities in load/supply and potentially different preferences should not be hampered by too stringent harmonisation. However, as expressed earlier, once a given target for security of supply has been set by a member state strong coordination between TSOs is a key to assess the exact ability to import energy through interconnections in period of tension, and therefore to ensure that the target is reached accurately.

12. Do you consider that capacity mechanisms should be introduced only if and when steps to improve market functioning are clearly insufficient?

Both approaches are complementary and necessary.

The energy wholesale markets are a really successful instrument which, given the infrastructure constraints, delivers energy to the customers at the lowest possible cost. Much has been done over the last ten years for the good functioning of wholesale markets. But several improvements are still possible:

- Market coupling is a pragmatic and efficient solution to make the most of existing interconnection capacities. EDF supports the Commission's approach of extending market coupling geographically and to intraday and balancing markets. This will contribute to a cost-effective balancing of variable energies in the system.
- Coordinated forward interconnection capacity calculation and allocation on all borders will also allow to hedge cross border positions on a forward basis ("forward coupling").

All measures improving the functioning of the energy market should be done, in order to get the most of the generation fleet and deliver energy at the lowest cost.

Moreover, we often hear that Europe should build more interconnection capacity, integrate more efficiently demand response and storage. The Commission advocates those measures in its last communication on the Internal Energy Market and EDF supports them, as soon as they are cost efficient.

But, an energy-only market alone will not be able to guarantee capacity adequacy, even with more interconnection capacity, no price caps and more efficient wholesale markets. EDF is convinced that a capacity mechanism is required to complement the energy-only market and strengthen it on the long-run.

13. Under what circumstances would you consider market functioning to be insufficient:

a) to ensure that new flexible resources are delivered?

Considering the dimensioning of flexibility needs, Intraday, Balancing markets will play a key role in revealing the value of flexible resources. These do not exist yet on a European scale, their development is therefore essential to ensure that enough flexible sources are delivered. In particular, in markets where the remuneration for balancing resources is fixed through regulated tariffs, the true price of balancing is not revealed and this might undermine investment in required balancing resources. In this respect, EDF is fully supportive of and has strong ambitions for the ongoing development of the Network Code on balancing that will create a genuinely integrated market for balancing services, and thus produce the proper incentives to the development of flexible resources.

All generation technologies have the technical capacity to provide some form of flexibility. An appropriate regulatory framework should ensure that all available sources of flexibility are offered to the market. It should in particular make it possible to use the potential for flexibility and ancillary services offered by intermittent sources. When efficient intraday and balancing markets will allow revealing the true value of flexibility this will not be an obligation for intermittent generators but rather an opportunity for everyone.

b) to ensure sufficient capacity is available to meet demand on the system at times of highest system stress?

As long as demand is not fully responsive to prices in real-time, market functioning will be insufficient to ensure sufficient capacity is available to meet demand on the system at times of highest system stress. The rolling-out of smart meters throughout Europe will go well beyond 2020 and might even never be complete since some countries like Germany still have not committed to their introduction. **Even with smart meters installed, some vital components of electricity demand will not be price responsive; there will consequently always remain an inflexible demand that will have to be supplied.**

Energy only markets do not guarantee, neither explicitly nor implicitly that this demand is met with the level of security of supply required by Member States. The balance between demand and supply resulting from energy only markets will be the market equilibrium which is fully endogenous and bears no link, be it direct or indirect, with national regulatory criteria. For instance, if a country decides to increase its target for generation adequacy, without any dedicated mechanism it cannot have any impact on the Energy market order to foster the desired investments.

Because they do not want to risk the possibility that the market will not meet demand peaks, several European governments have or intend to introduce capacity mechanisms in order to explicitly ensure capacity adequacy in their countries. This is their right, since they are in charge of economic and social problems citizens and companies face. It is also their duty: some of them have specific legislation and furthermore the European directive on security of electricity supply provides that member states should deliver a sufficient level of security. And finally this will strengthen on the long-term functioning of the European energy market.

14. In relation to strategic reserves:

- a) Do you consider that the introduction of a strategic reserve can support the transition from a fossil fuel based electricity system or during a nuclear phase out?
- b) What risks, if any, to effective competition and the functioning of the internal market do you consider being associated with the introduction of strategic reserves?

EDF insists on the importance to consider energy transition issues as specific challenges to distinguish from generation adequacy concerns.

- Transitions issues call inherently for an adaptation of existing framework within a limited period.
- Generation Adequacy is not a temporary issue and should be addressed with sustainable and dedicated instruments.

But due to effects from environmental constraints on fossil fuel plants, nuclear exit programs and massive development of RES, certain regions experience already today an acute issue regarding system adequacy. Considering above effects, a strategic reserve can be considered as a short-term pragmatic instrument needed to limit the negative impacts related to constraints that could not have been anticipated in the past.

However, **EDF underlines the risk to consider such an instrument as a sustainable way** to deal with the “Generation Adequacy” long-term issue.

- **A strategic reserve may not lead to the most efficient solutions to be considered.**
 - **It discriminates players and/or technologies** by selecting a fraction of the generation fleet while all capacities contribute to the security of supply. Such a limitation introduces unnecessary competition distortions which may prevent from identifying available solutions at the lowest cost and alter economical signals that drive investments in the long-term perspective.
 - **A high strike price is a necessary precondition** for the stability of a market design with a strategic reserve. Indeed, possible regulatory risk can occur if the strike price of the strategic reserve is set too low. Price spikes would decrease and market functioning would be negatively affected.
- **If considered as a sustainable instrument, a strategic reserve can lead regulate an increasing share of the generation fleet, and finally cause extra-costs.** Indeed, such an instrument focuses on consequences without addressing their cause. It would provide additional remuneration to delay plant decommissioning or trigger investments and ensure in a short or medium term generation adequacy but it will not address the long-term economic signal required to anticipate adequate actions into the future. Consequently, a strategic reserve will gradually have to cover a larger and larger share of the generation fleet, which will lead to increasing extra-cost for consumers.

As a conclusion, a strategic reserve might be used only as short-term transition instrument to solve acute issues regarding system adequacy, but should not be considered a sustainable solution to address the “generation adequacy” issue on the long-term. Universal, market based and non-discriminatory mechanisms are the best way to ensure security of supply at the lowest costs, with no competition distortions and no issues of State aid or Services of General Economic Interest.

15. In relation to capacity markets and/or payments:

a) Which models of capacity market and /or payments do you consider to be most and least distortionary and most compatible with the effective competition and the functioning of the internal market, and why?

b) Which models of capacity market and /or payments do you consider to be most compatible with ensuring flexibility in a low carbon electricity system?

Capacity mechanisms complement the energy market by providing a price signal reflecting the scarcity of capacity (MW) on the investment horizon (typically four years). Such mechanisms rely first on a capacity obligation, centralized or decentralized: the country, or each supplier, will finally have to prove that enough capacity will be available in the system to meet peak demand with a controlled risk. On the other hand, capacity sellers (typically investments in new power plants, demand response,...), selling a four year ahead engagement of availability at peak load are remunerated for this engagement, in proportion to their contribution to over-all capacity adequacy.

There is a fundamental difference between capacity markets and capacity payments. The former relies on a precise assessment of system needs in terms of installed capacities (GW) and ensures through market-based mechanisms that this precise level of capacity is available. Being market-based, they will reveal the scarcity value of capacity and avoid under/over capacities. On the other hand, **capacity payments provide a regulated remuneration to generators which will inevitably be uncorrelated from the true scarcity value of capacity.**

EDF believes that a well-designed capacity mechanism is the lowest-cost and most-efficient method of guaranteeing sufficient capacity for the present and the future: non-discriminatory, market-based capacity mechanisms allow full competition between all actors and all technologies while ensuring security of supply. Such systems could and should take pragmatically into account the ability to import energy at peak load by reducing capacity needs. They should also be open to Demand Side Response and storage solutions which should compete with generation on a level playing field.

The mechanisms should be forward looking. They should rely on an analysis of future system needs in order to ensure that enough capacity is build on time to ensure security of supply while avoiding at the same time to induce overcapacities. They should not impact the way capacity is offered on the energy markets.

Capacity mechanisms should only be introduced in order to tackle the specific need of ensuring security of supply. This creates an obligation the energy industry will have to comply with and

which may imply additional constraints and consequently additional costs. If well designed, meaning the mechanism is market based and non-discriminating (see the requirements in the response to question 16), capacity mechanisms can ensure this obligation is satisfied at the lowest cost by revealing the scarcity value of the capacity to all capacity contributing to the security of supply. Therefore it cannot be expected that capacity mechanism provide unjust revenues to the most inefficient plant's or prevent decommissioning at a national level suffering from over-capacity.

Capacity mechanism should not be solely assessed based on their impact on the internal market but rather on the combination of their efficiency at achieving the target they were set-up for and their compatibility with efficient competition and functioning of the internal market.

c) Are there any models of capacity mechanism the introduction of which would be irreversible, or reversible only with great difficulty?

Capacity mechanisms should be complementary to the Energy Only Market. If implemented, it should be a long term fix of the current market design ensuring enough capacity is built to meet demand, enabling high RES penetration and market functioning for all generation.

Generation adequacy is not a temporary problem to be addressed by a temporary mechanism: **market based and non-discriminatory mechanisms are the best way to ensure security of supply at the lowest possible costs**, with no competition distortions and no issues of State aid or Services of General Economic Interest.

If the mechanisms are market-based the scarcity value will increase with the tension in the system. Market-based mechanism might therefore remain active without impact on the market and no overall costs and therefore remain ready when needs appear again.

16. Which models of capacity mechanisms do you consider to have the least impact on costs for final consumers?

In assessing the total costs for end consumers, not only the very short-term but also the long-term effects should be taken into account.

To this purpose, EDF strongly believes the five following essential requirements will lead to an efficient capacity mechanism:

- **It should be based on a market revealing the lowest possible price of a capacity obligation:** it is the best way to cover the obligation at the lowest cost and correctly reflect the scarcity of capacity, ensuring that, the lower the risk on capacity adequacy, the lower is the price signal of the capacity mechanism.
- **It should create a level playing field for all actors and all different technologies** (including demand-side management and storage solutions) so that all can compete and finally set the capacity value at the lowest.

- **It should be non-discriminatory and market-wide:** any capacity offering the same guaranty to security of supply in a given country should play an equal role into the mechanism and be considered as the same level of contribution to the obligation. Selective approaches, e.g. strategic reserves, might appear to be less expensive in the very short-term but are more expensive because they are inefficient in the long-run.
- **It should appropriately take into account the contribution of possible importation from neighbouring countries and adjust consequently national capacity needs:** considering the diversity of situations of Member States, durably limited interconnection capacities with short-term interconnection congestion risks and no long-term access right, a pragmatic and efficient approach is to consider capacity offers at Member State level and to take into the ability to import energy at peak load by reducing each Member State capacity needs.
- **And it should avoid windfall remuneration:** Combination with revenues from regulated/non-market based schemes should not provide any windfall profit and unusual return on invested capital.

17. To what extent do you consider capacity mechanisms could build on balancing market regimes to encourage flexibility in all its forms?

As stated before, flexibility and capacity adequacy are two fully different issues, which are both necessary for a well functioning market. Flexibility can be dealt with using existing market-oriented mechanisms like intraday markets, balancing mechanisms and reserve management: flexibility of the generation fleet exists and is used and remunerated every day into the market.

Capacity mechanisms should only aim at ensuring that enough capacity is in place and available. Using capacity mechanisms to encourage flexibility would imply some type of technology discrimination that should not exist or will lead to a non optimal solution. Moreover, mixing the objectives may result in discriminatory, complex and less transparent mechanisms.

Besides, **in order to maximize the mobilization of and investments in flexible resources, the functioning of the intraday markets, balancing mechanisms and reserve management should be further improved.** Improvements could be:

- Avoiding or abolishing regulatory constraints, like price regulation upon the supply of ancillary services.
- Increasing liquidity by ensuring that all countries enforce the target model for intraday : many European intraday markets are still far from allowing continuous trading as close as possible to real time.
- Extending market coupling to them.

Finally, power generated from mature RES technologies should gradually be more and more subject to the same ancillary services obligations as conventional generation. **Power from RES sources should participate in balancing mechanisms** so as to reward accurate anticipation of intermittent generation and correctly allocate the flexibility cost.

18. Should the Commission set out to provide the blueprint for an EU-wide capacity mechanism?

EDF supports that generation adequacy mechanisms should be pragmatically and efficiently implemented at the national level. However, it is important that such mechanisms rely on consistent assumptions regarding cross-border aspects and contribute to ensure economical efficiency at European level.

In such a perspective, **EDF invites the EU Commission to focus its actions on general guidelines promoting important high-level principles:**

- Insurance of a guidelines on essential design requirements (see question 16)
- Coordination between GRT to assess capacity required to ensure generation adequacy at the minimum cost and in a consistent way through national mechanisms.

19. Do you consider that the European Commission should develop detailed criteria to assess the compatibility of capacity mechanisms with the internal energy market?

The issuance by the European Commission of the **list of appropriate essential requirements** which national schemes should comply with will ensure no impact on cross-border and energy markets. These essential requirements should be the ones mentioned in this paper (see question 16).

Besides, European Commission should promote transparency and good practices between Member States while assessing generation adequacy needs.

- There are different methods and criteria between all different Member States to assess generation adequacy needs: transparency and sharing of good practices will ensure that the issue is coherently addressed in each country.
- At each national level, cross-border exchanges may contribute to reduce or increase national capacity needs: expected cross-border contribution should be assessed on a consistent and transparent way between all States Members.

20. Do you consider the detailed criteria set out above to be appropriate?

- a) Should any criteria be added to this list?
- b) Which, if any, criteria should be given most weight?

Several criteria developed by the European Commission seem appropriate. However, several others, which considered that implementation of capacity mechanism should be temporary and limited in time, should be adjusted. **EDF would like to stress that a Capacity Market should be complementary to the Energy Only Market: generation adequacy is not a temporary problem to be addressed by a temporary mechanism.**

- (1) The necessity for a capacity mechanisms should be clearly established in the context of:
 - a. The potential of the identified needs being met in the normal operation of the internal energy market, in particular :
 - increased interconnection and in particular the completion of identified projects of Common interest.
 - steps to encourage effective competition by addressing the position of dominant undertakings.
 - b. Alternative, less distortionary measures which could be taken, for example steps to improve energy efficiency or reduce electricity demand.
 - c. Removing barriers to the effective participation of demand in the electricity market.

EDF supports all the efficient improvements or cost-effective investments lowering the need for capacity and energy. However, if less capacity is needed, some capacity is still needed.

And, as stated before, **an energy-only market will not be able to guarantee capacity adequacy, even after all possible improvements have been done. EDF strongly believes that Generation Adequacy should be explicitly addressed and guaranteed by a dedicated mechanism**, which will ensure that energy customers are securely supplied.

- (2) The effectiveness of the capacity mechanism addressing the identified market failure should be demonstrated and that it is additional to what would have occurred under normal market rules.

We agree that a capacity mechanism should be a complement to the current energy markets. Effectiveness of the mechanism should be assessed by answering to the question: **is capacity adequacy guaranteed at the lowest possible cost?**

- (3) The duration of the application of the capacity mechanism should be clearly limited and clearly specified,
 - a. the impact on the market of the introduction of capacity mechanisms should not make it

difficult to reverse that decision in the future.

b. the necessity of retaining reinstating a capacity mechanism should be subject to review.

EDF does not support this criterion. Generation Adequacy should not be considered as a temporary problem to be addressed by a temporary mechanism or a mechanism unsustainable on the long-term.

A capacity mechanism is not a subsidy, but rather an instrument to separately value capacity (i.e. as a valuable product) in a complement with the energy value. Therefore, public authorities should not apply the same rules for subsidies and capacity mechanisms.

EDF would support the following criteria instead: a capacity mechanism should reflect the scarcity of capacity and ensure that, the lower the risk on capacity adequacy, the lower is the price signal of the capacity mechanism.

(4) Any capacity mechanism should be open to electricity undertakings operating in other Member States, to the extent they are able to make the electricity available in markets to which the capacity mechanism is established.

EDF does not support this criterion. Capacity is a commitment to contribute to supply demand at peak load. Given two countries A and B, linked by an interconnection, there are two possible situations when A is close to failure on its demand-supply balance:

- There is congestion on the interconnection between the two countries. This is the usually the case: there is no reason why two countries should face a supply/demand tension exactly at the same moment. At this moment, energy prices in A are very high, B has used all its available capacity to produce energy and cross the interconnection, but the interconnection is limited. What is scarce here is the size of the interconnection and not the capacity available in country B. Why the capacity in country B should benefit from value of scarcity revealed in country A? In other terms, why, what is not possible for energy should be possible for capacity? In energy markets, when there is a congestion, energy prices in the two countries are different and the generator in country B cannot benefit from the energy price in the country A.
- There is no congestion on the interconnection: that means that the two countries are at the same time in situation of failure (which is quite rare). If a generator located in country B has a commitment to deliver power to country A at this moment, there will be more shortages in country B where the generator is, which is, at least politically unacceptable and possibly contrary to the Directive 2005/89/EC, stating that Member States are responsible for their security of supply.

(5) Any capacity mechanism should not act as a barrier to cross border trade or competition in the internal market by

- a. artificially altering trade flows or the location of production, in particular by:
 - restricting the ability of electricity undertakings in the Member State to sell their electricity to customers elsewhere in the internal market, (i.e. capacity physically located in a Member State should not be reserved for that Member State).
 - distorting the commercial behaviour of generators in the day ahead and intraday markets.
 - distorting investment signals in the internal market leading to inefficient locational choices.
 - distorting investment signals in the internal market leading to the displacement of new investment from one Member State to another.

EDF partially supports this criterion: “*distortion*” should be precisely defined.

EDF wishes to highlight that capacity and energy are two different products:

- Energy is what is produced by generators to supply a customer in real time.
- Capacity is a commitment to be available at peak load to reduce risks of shortages.

A capacity mechanism shouldn’t interfere with energy markets functioning; it should only foster investment by providing long-term signal where and when investments are needed:

- It should not restrict the ability of electricity undertakings to sell their energy elsewhere in the internal market, as far as it is technically possible (ie regarding network congestions). Particularly, in case of tension in a given country, all generators located abroad should contribute to reduce the tension by producing maximum energy transportable through interconnections. However, as explained in question 4, capacity is not transportable, and its value is strictly delimited by possible congestions and legal and political responsibility of Member States.
- We agree with the European Commission that a capacity mechanism should be active on the investment horizon, typically 4 year ahead, and should not interfere with functioning of energy markets, especially day-ahead and intraday markets.
- We agree with the European Commission that, finally, capacity mechanisms should lead to new investments where and when they are needed. Nevertheless, considering that energy-only markets can’t efficiently secure investment when needed, every Member State may implement a national policy guaranteeing security of supply, and capacity mechanisms could be introduced in all European countries to guarantee generation adequacy at lowest cost. As far as those mechanisms comply with a list of essential requirements that could be issued by the European Commission, there are no reasons why such mechanisms would bias trade or investments between member states.

b. distorting dynamic incentives/crowding out;

- The incentive on consumers or generators to respond to high prices at periods of

- scarce capacity should not be diminished.
- The mechanism should not undermine incentives on the electricity market to deploy new techniques for demand reduction or electricity storage and generation.

EDF supports this criterion. As stated before, a **wide & level playing field** should ensure that all actors and all technologies can compete and be remunerated for their contribution to capacity adequacy.

- c. Creating market power or exclusionary practices;
 - The mechanism should not strengthen or maintain the market power of incumbent firms.
 - The mechanism should not act to maintain inefficient market structures or undertakings, acting to deter new entry.

EDF does not support this criterion: a combination of a wide & level playing field and control of market abuse will ensure that generation adequacy will be guaranteed at lowest cost through a competitive process.

The mechanism of CRM shall be designed independently of market power. Competitions issues shall be addressed by usual regulatory frameworks and agencies: with one instrument only one target should be achieved. By putting too many different targets into one instrument the instrument becomes less efficient. Effective competition and market integrity should be ensured by national cartel authorities and the European Commission.

However as mentioned before EDF fully agrees that the mechanism should not deter entry of any generation or demand side technology.

- (6) To be non-discriminatory a capacity mechanisms should
 - a. be allocated after an open competitive bidding process.
 - b. allow demand response and energy efficiency solutions to bid into capacity markets on an equal basis to generation.

EDF globally supports this criterion: the capacity price should be determined in a competitive way (e.g. auction, traded certificates), regardless to the technical solutions, as far as they have a measurable contribution to lowering the risk of capacity shortage at peak load.

Therefore it's important to make a careful distinction between "energy efficiency" and "demand side response". Energy efficiency should be a "permanent" elimination of energy need, while demand side response is a "dispatchable" instrument that provides capacity when needed. While demand response should clearly compete on an equal basis to generation to offer capacity

mechanisms, energy efficiency should only be considered on the demand side (lowering total capacity needs to meet demand).

(7) Not be confined to any particular generation technology, i.e. being tech. neutral (insofar as the mechanism is directed towards security of supply concerns – this may not apply if other objectives are also being pursued).

EDF supports this criterion. Actually, the capacity mechanisms should only address one problem: capacity adequacy. Flexibility, decarbonisation, low energy costs should be and are already addressed by other existing mechanisms (detailed in this paper).

(8) Capacity mechanism should be at least cost:

- a. The direct costs imposed on suppliers or others electricity undertakings must be kept to the minimum necessary.
- b. Persons providing capacity under the obligation must not be overcompensated.
- c. Any selection process in the mechanism should be conducted in a transparent, open and non-discriminatory way which is market based.
- d. The duration of any compensation to generators under the mechanism should be clearly justified.

EDF globally supports this criterion: a market-based mechanism ensuring a market-wide and level playing field will ensure that capacity adequacy will be met at lowest possible cost.

However, in assessing the total costs for end consumers, not only the very short-term but also the long-term effects should be taken into account, taking into account total costs for consumers (energy + capacity).

Particularly, strategic reserves may appear as low-cost transitional fixes to energy markets. But on the long-term, as they introduce discrimination between players contributing to capacity adequacy, they will lead to non-optimal costly solutions.

(9) Costs associated with capacity mechanisms should be allocated to the beneficiaries of secure energy supply with different classes of consumers being treated in a non-discriminatory way.

EDF partially supports this criterion. There should be no doubt that every consumer in a given country benefit from capacity adequacy.

It is therefore quite consistent that costs associated with capacity mechanisms are allocated to the consumers, and that the consumers are treated in a non-discriminatory way.