A capacity market in France – status of discussions and future steps

WEC European Energy Forum
24 April 2014

Thomas Veyrenc
Director Markets Department
### Where are we?

<table>
<thead>
<tr>
<th>Year</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **NOME Law**: sets the principle of a capacity mechanism
- **Decree**: choice of a decentralized market, implicit XB participation, technology neutral, forward looking, DSM oriented ...
  - + specific provisions in case of extreme capacity shortage
- **RTE Report**: proposes main design principles
- **ACER report**: Market Rules Consultation
  - **Stakeholders Consultation** (design of technical parameters)
- **EC SWD**: Submission of market rules and a supporting report to the Regulator and the Minister for Energy

April 9th

2016-2017 First delivery year

French capacity market starts
RTE proposal to the Minister and regulator

1. Market Rules
   To be approved by Minister and Regulator as provided for by existing decree

2. Supporting report
   The reports presents capacity mechanisms rationale from a technical and economical perspective,
   It support the proposal of market rules by providing explanations about the impact of the different provisions of the rules following the debates during the consultation phase

3. Answers to all questions and observations from stakeholders during the public consultation held in Autumn 2013
1. Capacity mechanism rationale
2. Which market design matches for France issues?
3. French capacity market: main principles
4. Suppliers’ obligation
5. Capacity certification
6. Financial incentives
7. Trading aspects, monitoring, transparency and competition
8. Impact analysis
9. XB capacity participation
10. European compliance analysis
Where are we going? Next steps

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
<td>Q4</td>
<td>S1</td>
<td>S2</td>
<td></td>
</tr>
</tbody>
</table>

- **Market rules proposition**
- **09/04/2014**
- **Market rules approval**
- **RTE publishes detailed economic studies**
- **Stakeholders consultation on XB participation**
- **Report on XB participation**
- **2016-2017 First delivery year**
- **2018 Second delivery year**
- **2019 3rd delivery year**
Contents

1. Rationale for the French Capacity Market
2. The French Capacity Market
   focus on demand response participation
   focus on European integration
3. A step into the future
1 RATIONALE
A textbooks market failure – worries about SoS during peakload events

- Peak load growth of 30% in 10y.
- Thermosensitivity of consumption is the main cause of peak load growth

→ Capacity mechanism is designed to reveal a signal to ensure SoS (in order to respect the SoS criterion defined by the Minister of Energy - Loss of Load Expectation = 3h) and to reduce peak load growth

Peak load growth in France since 2001

source: Capacity mechanism report – RTE
A textbooks market failure – worries about SoS during peakload events

- Adequacy studies are based on stochastic approach, modeling France and neighboring countries
- The “reference scenario” of RTE adequacy studies shows a zero margin from 2017
- The worst case scenario shows a lack SoS from 2016
- Some additional closure/mothballing may occur, but also

Source: Bilan prévisionnel 2013- RTE
Like other capital-intensive industries, the electricity sector is likely to experience boom & bust cycles. This may affect security of supply.

→ The Capacity market is supposed to smooth this phenomenon
Capacity mechanism is a tool for regulation of capacity closing and investment cycles

The massive investment in CCGT during the past decade is typical of an investment phase

→ A strange situation: overcapacities in Europe but would could result in undercapacity if several CCGT capacities are mothballed at the same moment

A decentralized capacity market with a dynamic adequacy signals and fully DR ready

→ The Capacity market will contribute to the adaptation of the generation mix and ensure security of supply
Changes in generation mix may provide additional rationale for capacity market

Energy Mix Evolution necessary to reach 20/20/20 objectives

French RES target:
- Wind: 19 + 6 GW
- PV: > 5.4 GW

Intermittency is a growing concern in Europe and in France for SoS and economic efficiency

- Increasing value of available and flexible capacity in a context of growing intermittency
Capacity Mechanisms in Europe is already a reality

Global trend towards capacity mechanisms XB component remains to be designed
THE FRENCH CAPACITY MARKET
The main design principles

- **COMPLETE MARKET COVERAGE**
- **MARKET BASED WITHOUT ANY PUBLIC FUNDING**
- **EQUAL TREATMENT OF NEW & EXISTING PLANTS**
- **TECHNOLOGY NEUTRAL (GENERATION, STORAGE, DEMAND RESPONSE ...)**
- **NO INTERFERENCE ON THE FUNCTIONNING OF THE IEM (e.g. no change in market coupling, no export restriction)**
- **FORWARD LOOKING**
**Security of supply criterion**
defined by the Minister of Energy
(loss of load expectation = 3h)

**Obligation** carried by suppliers
to acquire enough capacity certificates
to meet the peak consumption of their clients

**Capacity operators’ commitment**
to make their capacities available
during consumption peaks. In compensation, they are granted certificates that they will be able to sell to suppliers

The price of capacity reveals the value of Security of Supply.
The price drops to zero if there is no risk on Security of Supply.
The core elements of the market

**Obligation principles**
Suppliers’ Obligation corresponds to their customers’ consumption during a **standard** winter cold spell
→ *Realized winter peak load is corrected using a thermosensitivity gradient*

**Certification principles**
Certification is based on the ability to reduce Loss of Load during winter cold spells
→ *Certified capacity corresponds to winter peak load availability, corrected to take technical constraints and flexibility issues into account*

**Market operations**
- Continuous trading, beginning 4 years ahead of delivery
- 2 imbalances settlement processes, based on realized data
  - Suppliers to cover their obligation
  - Capacities to respect their (aggregated) availability commitments
DR participation in the capacity mechanism (1/2)

Suppliers’ obligation
- DR exclusive methodology
- Demand for certificates
  - Obligation based on peak consumption

Security of Supply criterion

Capacities
- Certification process
  - Availiability commitment
- DR compatible
- Offer of certificates
  - Controls reliability

Demand for certificates

Capacity market

Obligation based on peak consumption

DR implicit participation through obligation reduction

Explicit participation through certification
DR participation in the capacity mechanism (2/2)

- **Explicit participation through certification**
  - Well adapted to « easily certified » DR

- **Implicit participation through obligation reduction**
  - Useful for energy savings or difficult to quantify DR

Every layer of the capacity mechanism has been carefully designed for DR to be taken into account according to its contribution to SoS.
DR in the obligation process to tackle the peak load issue

Complementary participation possibilities of DSM is essential to induce a virtuous evolution of load patterns to tackle the peak load issue

Obligation peak period is **limited in size** and **targets** in priority **the more consuming hours** (consistent with an extreme cold event and stimulation of DSM)

**Individualized process** and parameters as a golden rule to induce evolution of load patterns (gradient determination, realized consumption...)

---

**Capacity Obligation**

- **Targeted peak period**
- **All hours**

### Supplier 1

- **French consumption**
- **Supplier 1**

### Supplier 2

- **French consumption**
- **Supplier 2**

---

1. **French consumption (MW)**
2. **Supplier consumption (MW)**
DR in the certification process: right contribution to SoS

Availability during the targeted period when the risk for the system is maximum reveals the real contribution of DR to Security of Supply

Reliability commitment consistent with loss of load events reveals the real contribution to Security of Supply

→ The technical criteria proposed by RTE fully recognize DR participation
Certification process adaptation to promote DR participation

Certification deadlines that give **forward adequacy signals** and allow short lead time capacities especially DR to fully participate

- **Phase 1** Parameters determination
- **Phase 2** Y-4 à Y-1
- **Phase 3** Delivery year
- **Phase 4** Post notification

Certification deadlines:
- Certification deadline for existing generation capacities (01/11/DY-4)
- Certification deadline for new capacities and DR capacities (01/11/DY-1)

Proposed certification choice **remove any technical barriers for DR participation**

Aggregation of capacities is facilitated with a low threshold of aggregation (1MW) and the possibility to be connected to multiple distribution and transport grids
2014: achievement of the 3-years program to open all markets in France to explicit DR participation

2014 - a milestone for DR participation

1. 01/01/14 - NEBEF direct valuation of DR in energy markets
2. 01/07/14 - Ancillary Services opening to DR participation
3. 01/11/14 - French capacity mechanism starts fully opened to DR

The French capacity mechanism is embedded in a policy aiming at promoting demand response (see last SEDC report)
EUROPEAN INTEGRATION: ROADMAP FOR EXPLICIT XB PARTICIPATION
Explicit XB participation in the Capacity Market is the target

However, transitory solutions can be considered for fast implementation, with lower expectations

Regional approach is a pragmatic way forward
The integration of the energy market has required a decade of efforts, and delivers huge benefits. It must be preserved.

Harmonization of SoS levels would make things easier, but it is not a realistic prerequisite. Different SoS levels must be possible.

XB participation makes sense economically only if the contribution of a foreign capacity is equivalent to the contribution of a French capacity.
Roadmap (to be discussed): key principles for the solution

1. Compatible with different levels of SoS
2. Without reserving interconnection capacity
3. Limited by physical import capacities, allocated with a market based process

**Target model**

4. Conditional to the existence of a XB certification & control process
5. Conditional to the existence of a cooperation framework on SoS

**Transition phase**

6. Conditional to the participation of foreign capacities to the French Balancing Market

Second best but more reasonable at medium term and compatible with regional approach
Thank you for your attention