Réseau de transport d'électricité

A capacity market in France

Status of discussions and future steps
May 26th, 2014

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Security of Supply: new challenges ahead

The IEM is increasing the SoS at the European level:

- Geographical mitigation of risks
- Shared resources across Europe
- Diversification of the energy mix
- Optimization of existing infrastructures (e.g. interconnections)

→ **The energy market remains the main tool to deliver SoS**

The existing tools are not sufficient to :

- Tackle the peak load issue (= well-identified risk on SoS in France)
- Boost DSM (massive decrease of DSM in France - -60% in 10y.)
- Provide market answers to ensure the availability of capacities and to cover the physical needs of the system

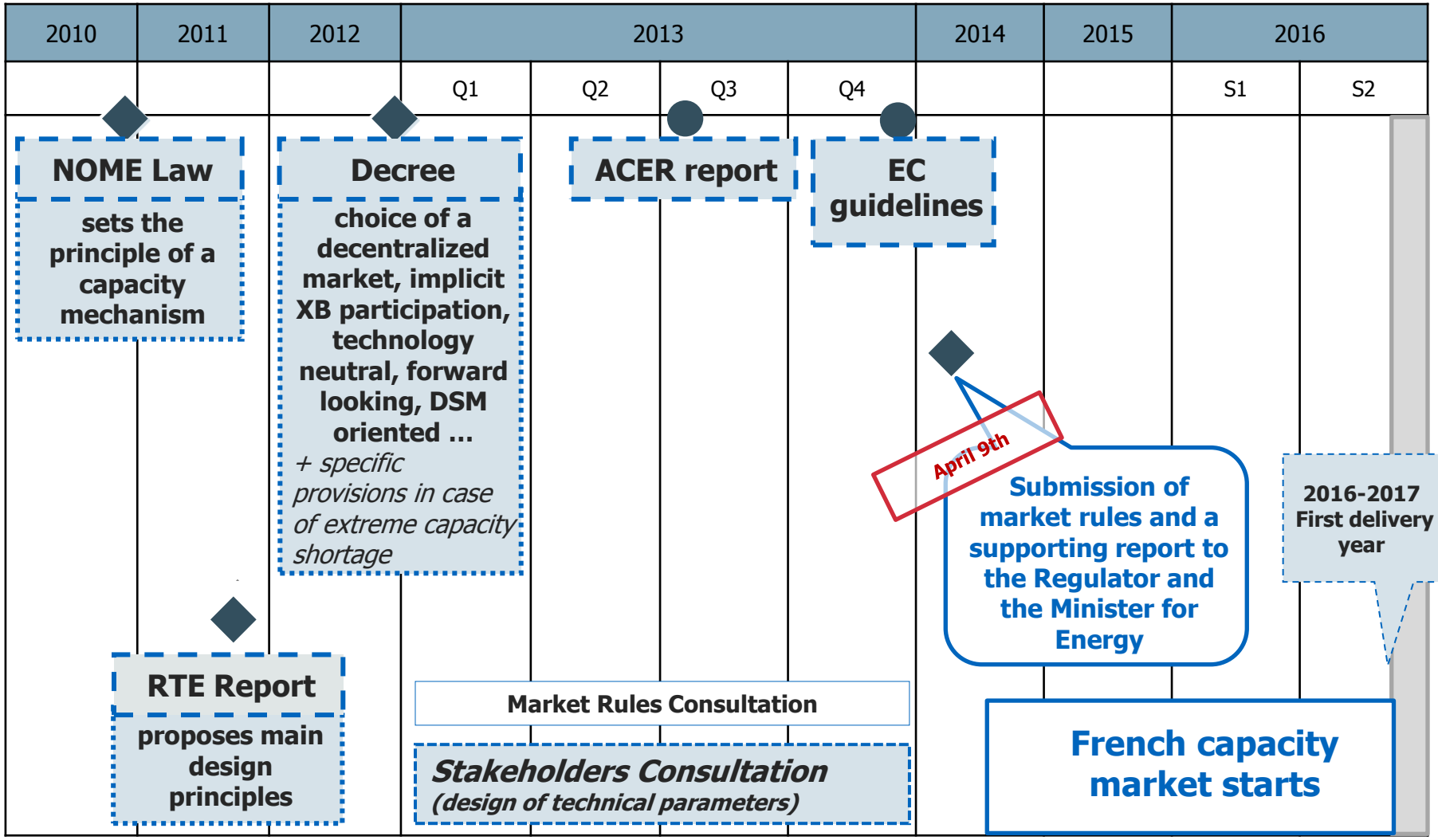
→Suggestion of a capacity market by a workgroup led by MEPs

→**A market-based capacity mechanism can complement the energy market efficiently**

The energy transition poses new technical and economical challenges:

- Energy mix evolution necessary to reach 20/20/20 objectives
- Growing intermittency
- Volatility of power flows and exchanges

Where are we in France?



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DESIGN PRINCIPLES

The French capacity market design

The Security of Supply criterion

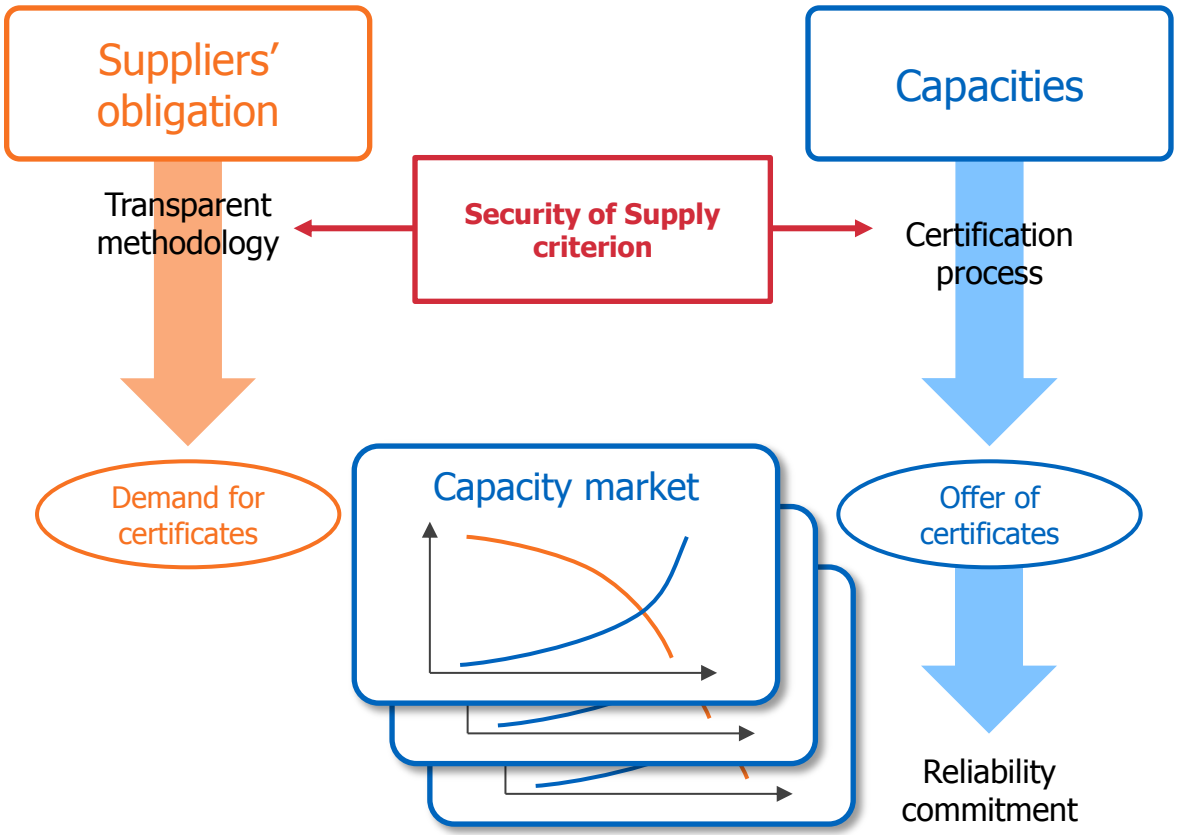
is defined by the Minister of Energy
(Loss of Load Expectation = 3h)

Suppliers' obligation

to hedge the consumption of their customers by buying certificates.

Capacities' certification

reflects the ability of capacities to meet the system needs.
Producers sell their certificates.

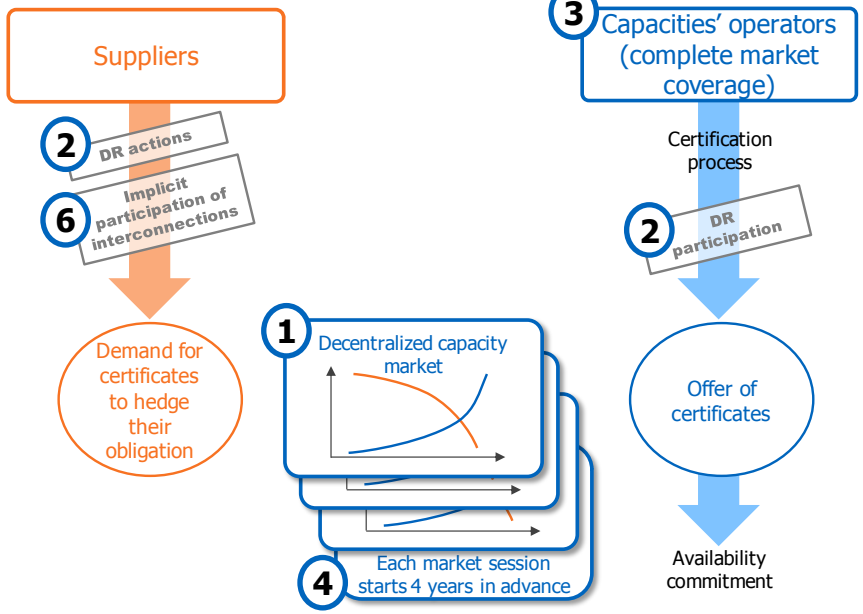


The price of capacity reveals the value of Security of Supply.
The price drops to zero if there is no risk on Security of Supply.

The Commission's main design recommendations

1. **MARKET BASED**
2. **TECHNOLOGY NEUTRAL (INCL. DEMAND-SIDE RESPONSE)** — +Focus
3. **EQUAL TREATMENT OF NEW & EXISTING PLANTS** — +Focus
4. **FORWARD LOOKING**
5. **TRANSPARENCY**
6. **XB PARTICIPATION** — +Proposition of roadmap for explicit XB participation

How does it translate in the French market design and RTE's proposition of rules?



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- Public transparency registers held by RTE
- Transparency on prices and volumes by the National Regulator
- Adequacy forecast at the national level published by RTE
- Annual report from the National Regulator

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Focus

EQUAL TREATMENT OF NEW & EXISTING PLANTS

Every capacity contributes to SoS and need to be valued in the market

Equal participation to the market

No specific treatment by RTE for certification methods

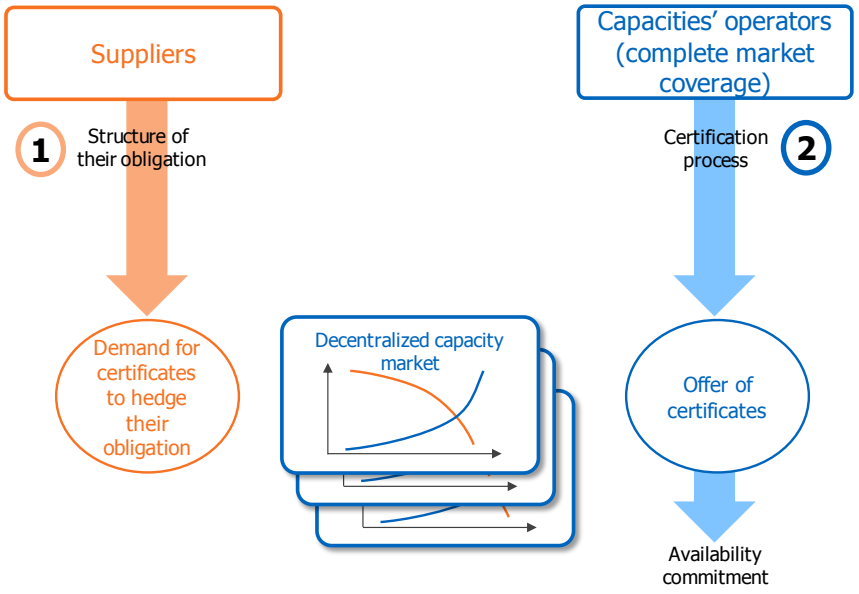
Flexible process to enable most strategic decisions

Focus

The French capacity market enables Demand Response to play a key role

RTE's proposition of rules:

- **Integrates demand response in the whole value chain through two different methods of participation (within the structure of the supplier's obligation or the certification process)**
- **Allows the demand-side management to choose its method of participation**



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Implicit participation through obligation reduction

→**Suppliers can hedge with DSM**

2

Explicit participation through certification

→ **Certification process** similar to generation

Capacity markets can provide a complementary framework to develop demand response

In France, the capacity mechanism is embedded in a 3-year policy program aiming at promoting demand response in each segment of the market

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2

XB PARTICIPATION

Different stages of XB integration in Capacity Mechanisms

1. Autarchy *(no XB)*

SoS target must be met with domestic capacities

No consideration for the benefit of interconnections in terms of SoS

→ May result in overcapacities : high costs to build stranded assets

2. XB consideration *(implicit)*

XB contribution to SoS is considered in order to lower the need for domestic capacities (lower capacity obligation, smaller strategic reserve,…)

→ No overcapacities, but remedial actions restricted to domestic ones

3. XB participation *(explicit)*

Direct involvement of foreign capacities

→ No overcapacities, XB & domestic remedial actions

→ Market design still to be defined !

A practical way forward for explicit XB participation

Step 1:
Implicit

- The French capacity mechanism will start with an implicit participation of XB capacities

Listed by the EC as a possible interim step

First thinking on the path towards the target shows that **the target will be challenging to reach** (EC, ACER, ENTSO-E, RTE).

It requires to discuss the link between market and power system operation during stress events under different Member States' requirements over SoS

The solution regarding the XB participation of capacities in capacity mechanisms **needs to be adapted to the European context** (e.g. priority access to XB interconnections flows, market coupling rules…).

Carefulness is required in order to design an consistent solution.

Target:
Explicit

- RTE has proposed in its report to consider the explicit participation of XB capacities to the French capacity mechanism as a target (with a preference for the regional level)

Explicit participation has been strongly supported by the EC and ACER

Eurelectric has made a 1st proposition of design

A practical way forward for explicit XB participation

RTE's proposition

Step 1: Implicit

- The French capacity mechanism will start with an implicit participation of XB capacities

Listed by the EC as a possible interim step

Step 2: Public consultation

- A practical calendar: a 10-month public consultation with stakeholders on the way forward regarding explicit XB participation

Step 3: Proposition

- A report to the French Energy Minister and Regulator on possible evolutions of the market design

Step 4: *Hybrid model*

- Transitory solutions can be considered to allow XB participation for capacities participating to the French balancing mechanism

Target: Explicit

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Explicit participation has been strongly supported by the EC and ACER

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Key principles to design a solution for explicit participation

To be discussed

RTE considers that 3 main principles need to be carefully considered while designing the explicit participation of XB capacities:

Compatibility with Member States' competences

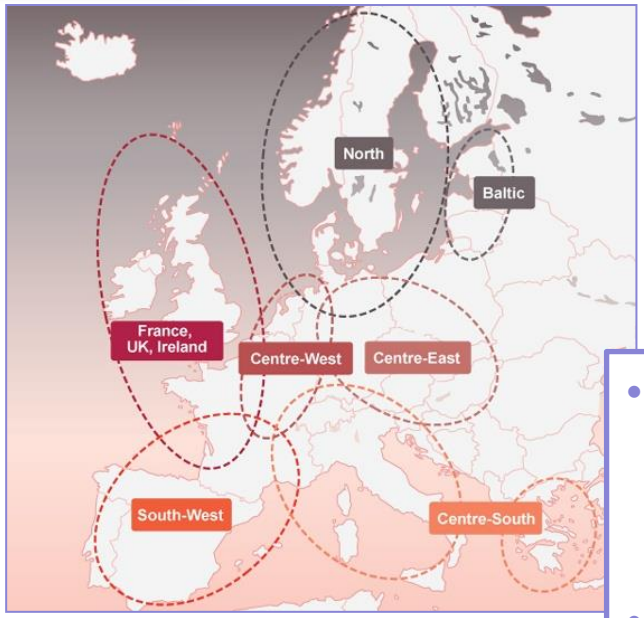
Preservation of the IEM

Real value for the SoS in concerned countries

How does it impact the design of regional capacity mechanisms?

1. **Be respectful of Member States' choices regarding SoS**
2. **No reservation of interconnection capacities**
3. **Limited to the effective physical import capacity + based on market rules**
4. **Definition of a dedicated cooperation framework on SoS between Member States and TSOs**
5. **Definition of XB certification and control process (e.g. no double counting)**

An overarching challenge ahead!



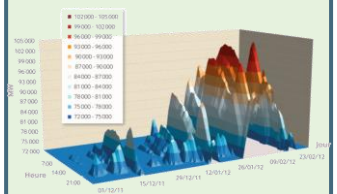
- Designing coordinated capacity mechanisms is one of the main discussions on market design at the EU level.
- From RTE's perspective, explicit XB participation can be considered as a target especially at the regional level.
- Designing a consistent solution for explicit XB participation requires a robust cooperation framework between Member States, Regulators, TSOs on SoS.

APPENDIX

The core elements of the market

Main risk on SoS

Winter peak load



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

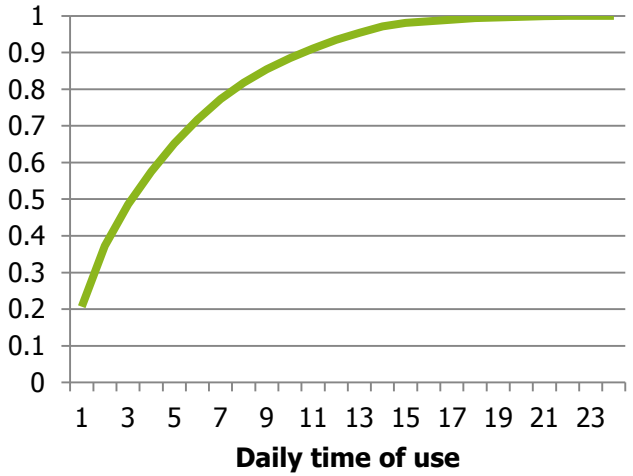
- Continuous trading, beginning 4 years ahead of delivery
- 2 imbalances settlement processes, based on realized data
  - Suppliers to cover their obligation
  - Capacities to respect their (aggregated) availability commitments

Technical constraint & Flexibility

The number of certificates for capacity with **technical constraints** (stock, etc…) will be reduced

Coefficient K

Example: Limited time of use



Depending on the **flexibility** needs of the system, the number of certificates for unflexible capacities will be reduced

Coefficient F

Example: Certification of a windmill

= 20%

In France

= 10%

In Germany

Illustrative

Transparent certification methodology for predictable results

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Transparency

Transparency principles have been set up in order to preserve market efficiency

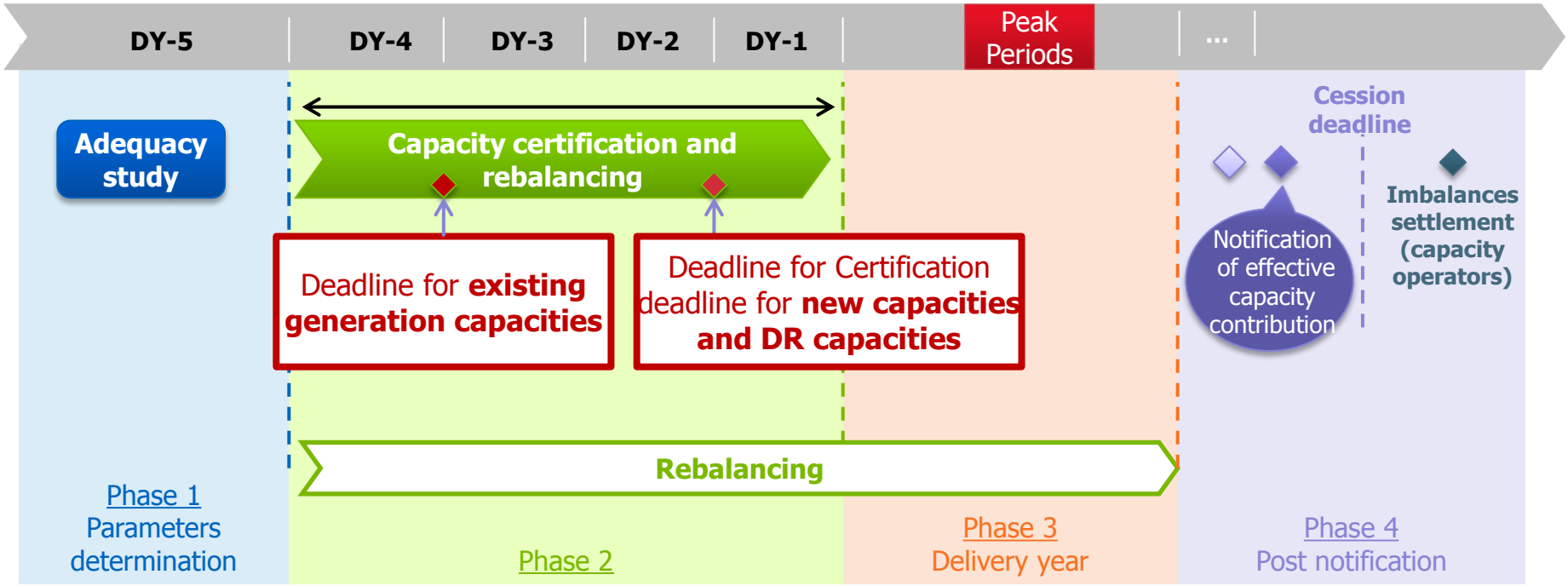
- **Public registers hold by RTE**

Demand Management Register	Capacity Register

- **RTE will provide a global vision on Security of Supply**
  - Long term adequacy study
  - Annual obligation forecast
  - Short term forecasts
- **Transparency on prices and volumes:** publication of data regarding exchanges of capacities by the regulator
- **All generation capacities must be certified**
- **Consultation process involving stakeholders on market rules**

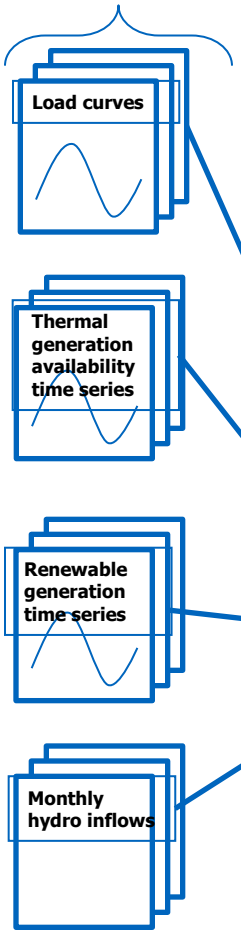
Certification timeline

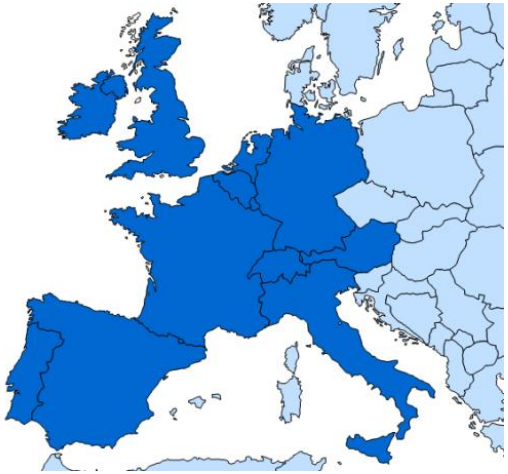
Certification deadlines that give **forward adequacy signals** and **allow short lead time capacities especially DR to fully participate**



Probabilistic Adequacy Study by RTE

x 12 countries

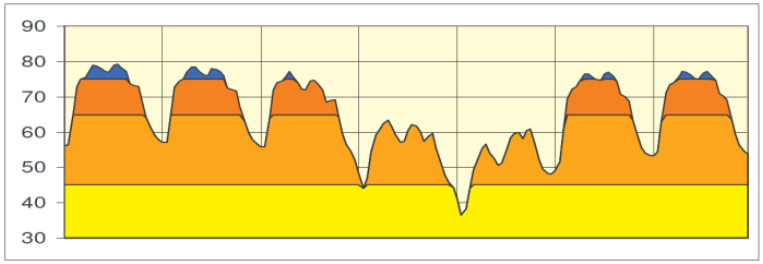




Probabilistic adequacy study
1000 Monte Carlo years
Hydro storage optimization
Hourly thermal plant dispatch
Demand Response
Network model
...

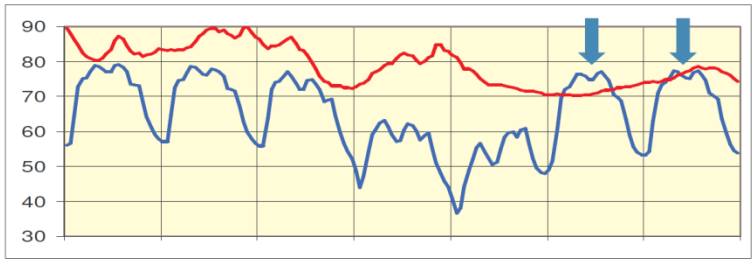
Many outputs:

- Energy balances



- Adequacy

$$LOLE = \frac{\text{Total number of unsupplied hours}}{\text{Number of MC years}}$$



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Cross Border contribution to SoS

Cross border Contribution to SoS in France is limited by

Network Import Capacity

Simulated in Adequacy Study

Available margins in other countries
(available capacity – consumption)

Simulated in Adequacy Study

Interconnections are taken into account in the Adequacy Study

Explicit modeling in generation adequacy studies

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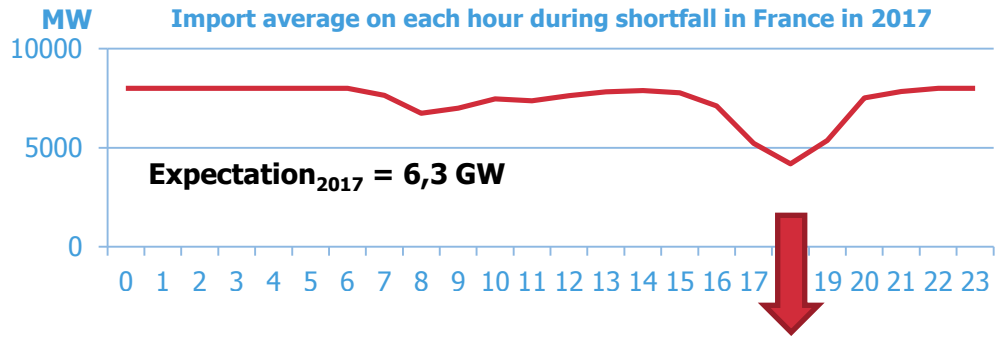
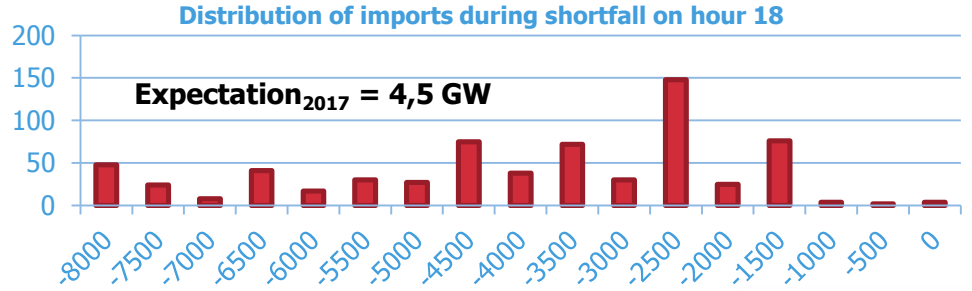
Implicit contribution in the Capacity Market

Detailed analysis is possible ⇨





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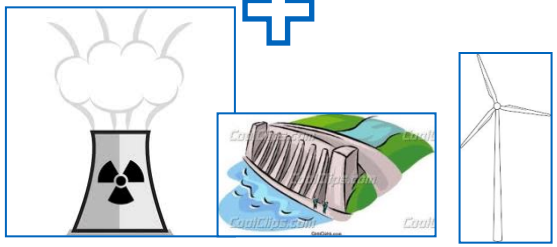
Capacity Shortfall

Adequacy Study

Cross Border Contribution



Existing capacities

Capacities in construction

Capacity Shortfall

(only if LOLE > SoS criterion)

LOLE
X h /year

LOLE
3 h /year

Required Level of Capacity for SoS