



Réseau de transport d'électricité

A Capacity Market in France

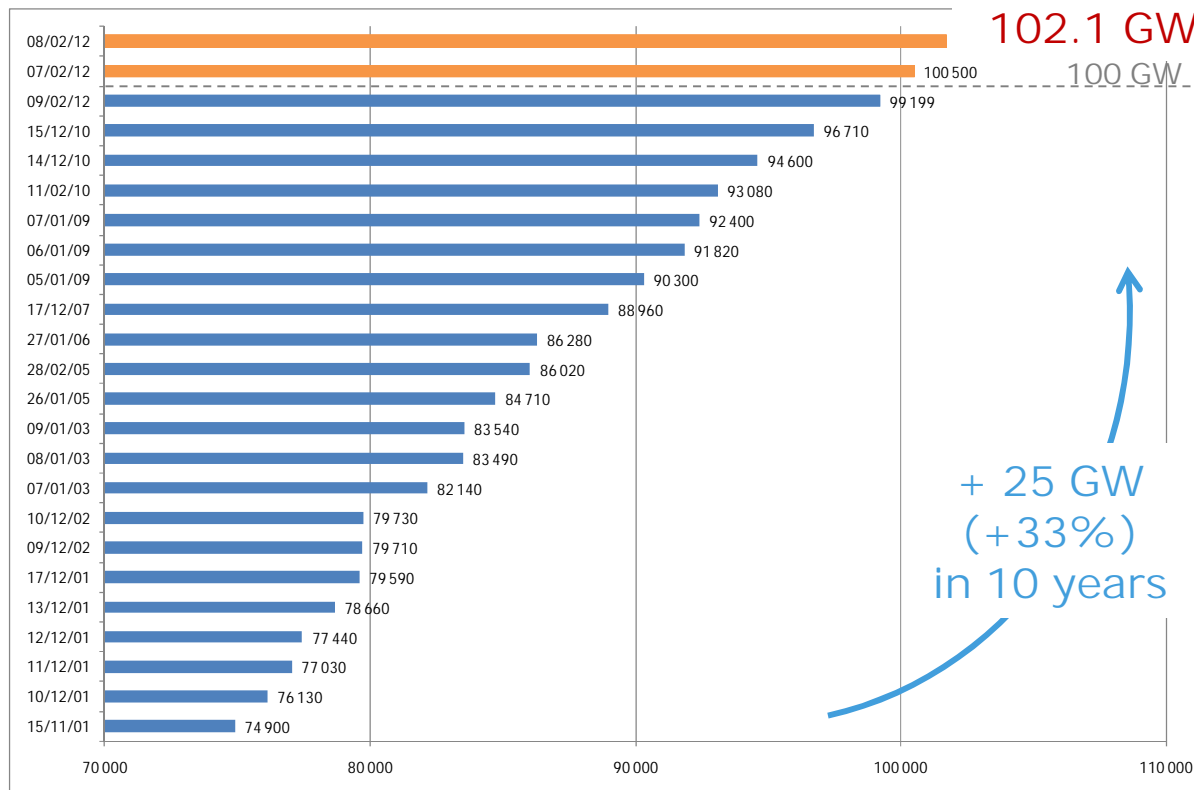
01



Overview of the Power Sector in France

Peak Load is the number one issue in France

In 2012, Peak Load hit 100GW for the first time

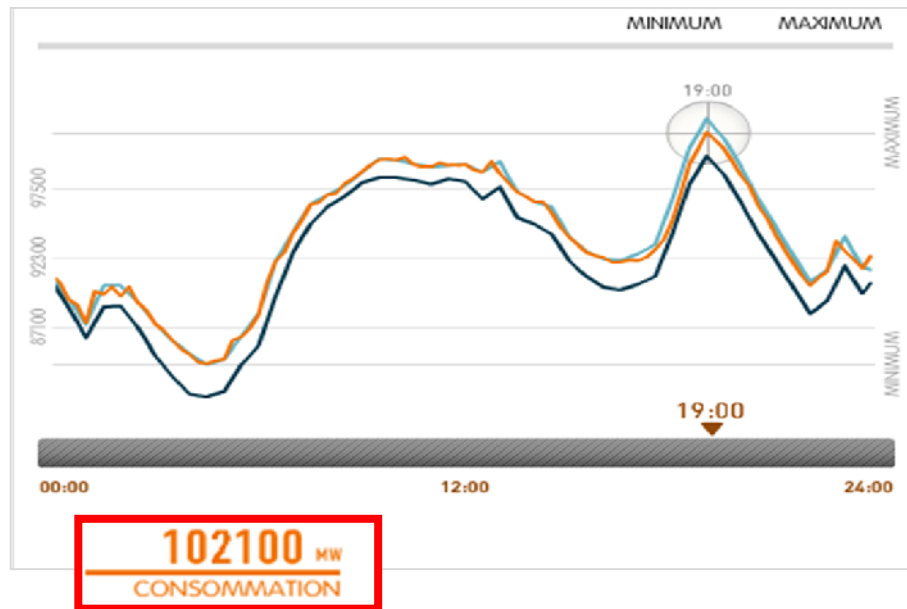


- Peak load increases faster than total consumption:
 - +33% peak load increase in a decade
 - +15% consumption increase in a decade
- Peak load in France is driven by:
 - Population growth
 - Massive use of electric heating
 - Increasing number of electronic devices in French households

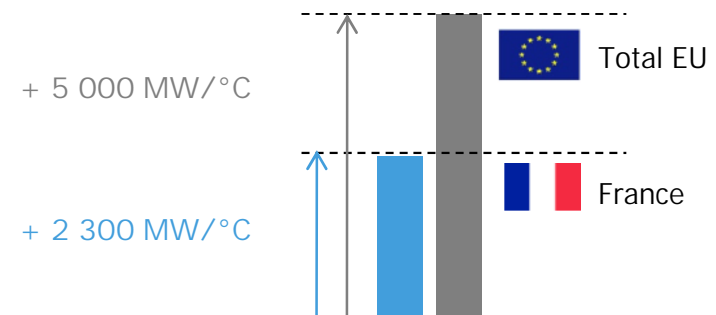
Unprecedented level of peak load was mostly due to record-low temperatures in France during more than a week

Peak Load drives attention to temperature sensitivity of electricity consumption in France

In 2012, Peak Load reached an unprecedented 102.1 GW



- Use of electric heating makes power consumption very temperature sensitive in France
- Temperature sensitivity of power demand in France accounts for nearly 50% of total temperature sensitivity in the EU:



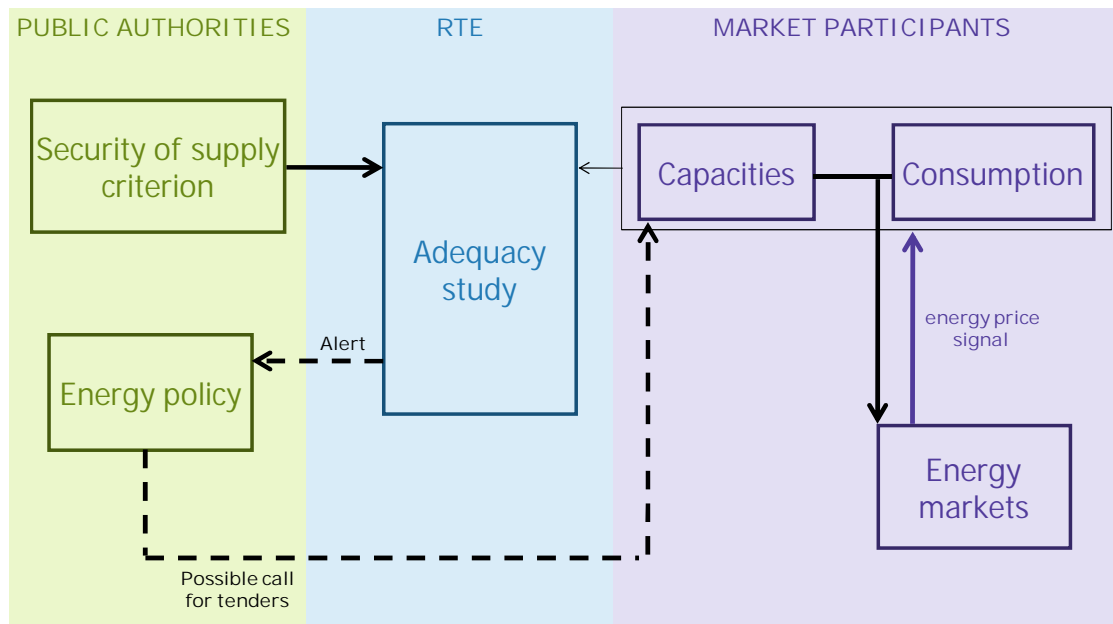
- Sensitivity of Load to temperature is a major driver of extreme peak loads

Ever growing peak loads raised concerns security of supply

In the past decade, adequacy of capacity was achieved in an energy-only environment

Ensuring Adequacy of Capacity (2001-2012)

Key Features



- Energy-only market
- No economic signal for capacity
- Government may trigger calls for tenders in case of emergency

Fast growing peak load enhanced the need for a complementary signal to ensure adequacy of supply

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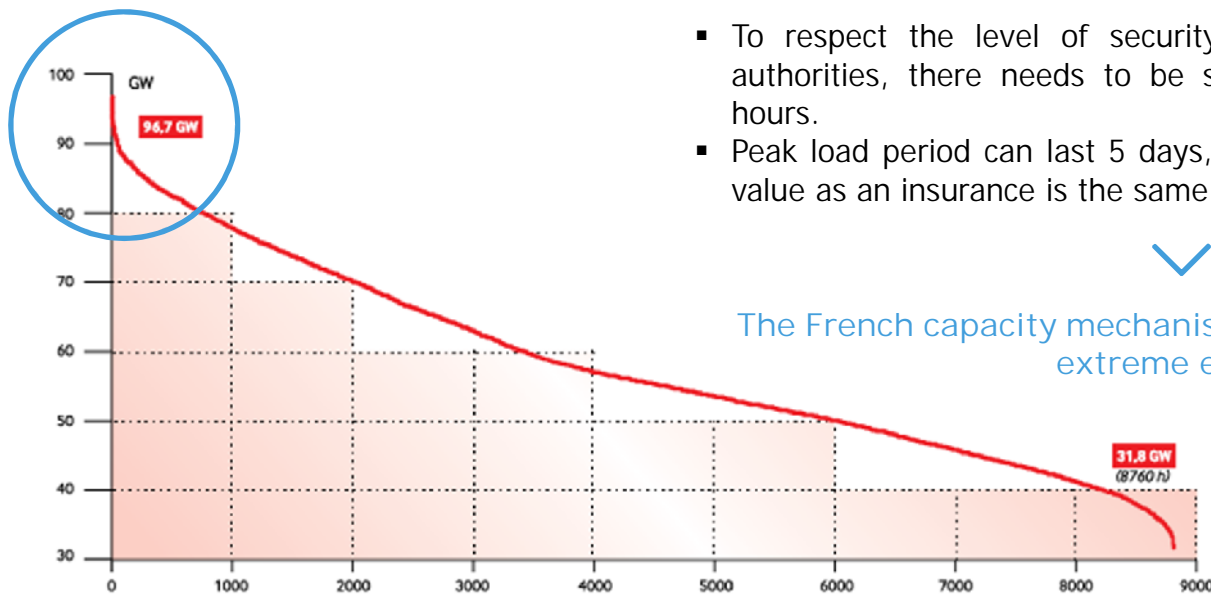


The Case for a Capacity Market in France

Implementing a Capacity Mechanism Provides additional tools to ensure Adequacy of Supply

Peak load in France is an issue for a limited number of hours per year

Power Duration Curve of Domestic Consumption in France in 2010



- To respect the level of security of supply decided by public authorities, there needs to be sufficient capacity during those hours.
- Peak load period can last 5 days, or not happen at all : capacity value as an insurance is the same

The French capacity mechanism is an insurance against extreme events

The Capacity Mechanism creates new signals for security of supply and reveals the equivalent value of generation and demand-side management during peak hours

Basic Options towards implementing a Capacity Mechanism

Steering with Quantities – CAPACITY MARKET

Principle

Adequacy target is determined and a market is put in place to reach the target efficiently

Key Features

Design Options may vary considerably from a single auction to a dynamic exchange between market participants

Examples in other sectors

Comparable to Cap-and-Trade Markets for CO2 Emissions

Examples in other sectors

Comparable to Fee-in Tariffs for Renewable Energy Sources

Key Features

Price should be well-tuned to provide the right incentive. Requires administrative assessment of generation costs that may lead to regulation of revenues on energy markets

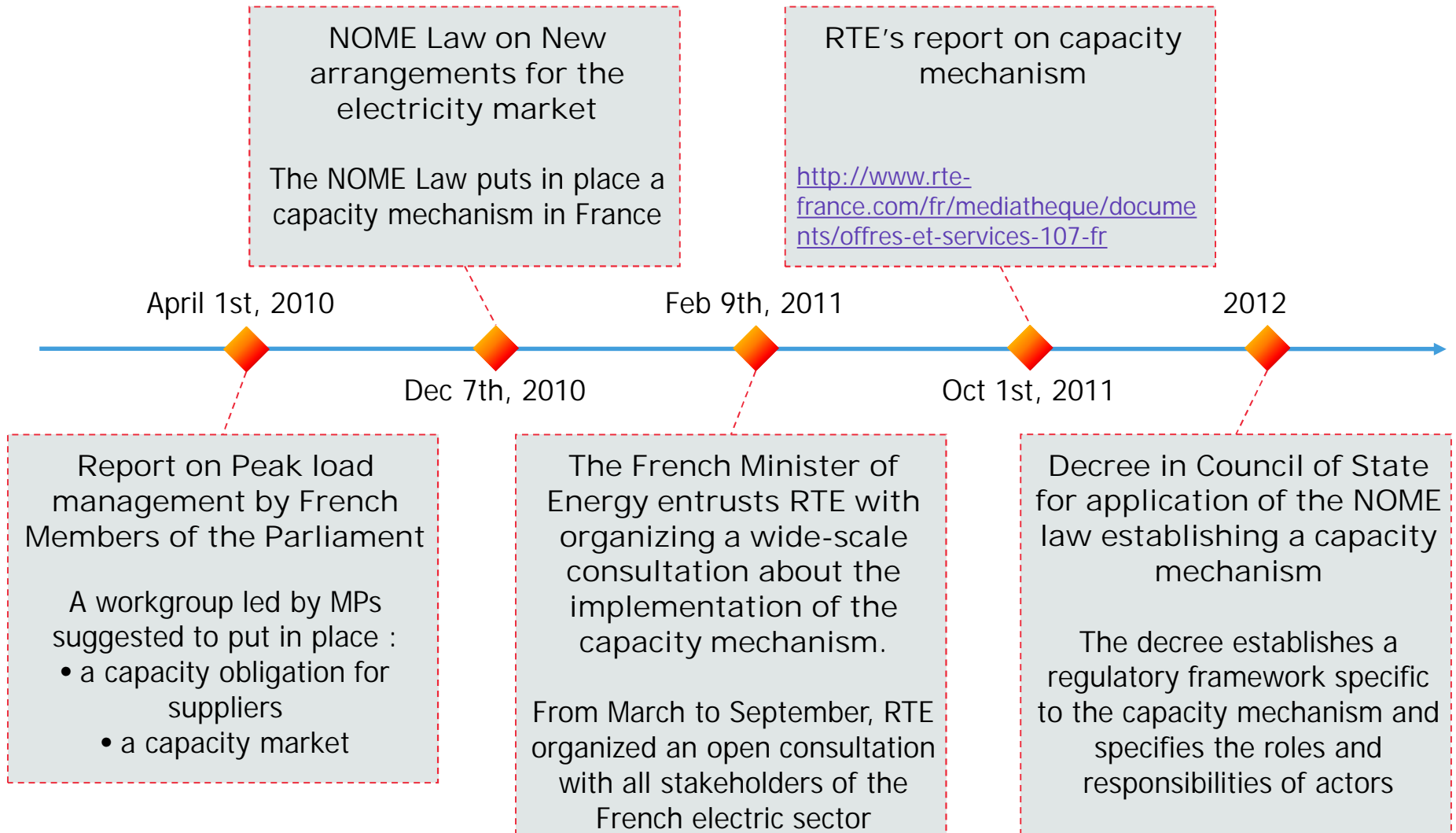
Principle

Administrative price is paid to all / specific capacities

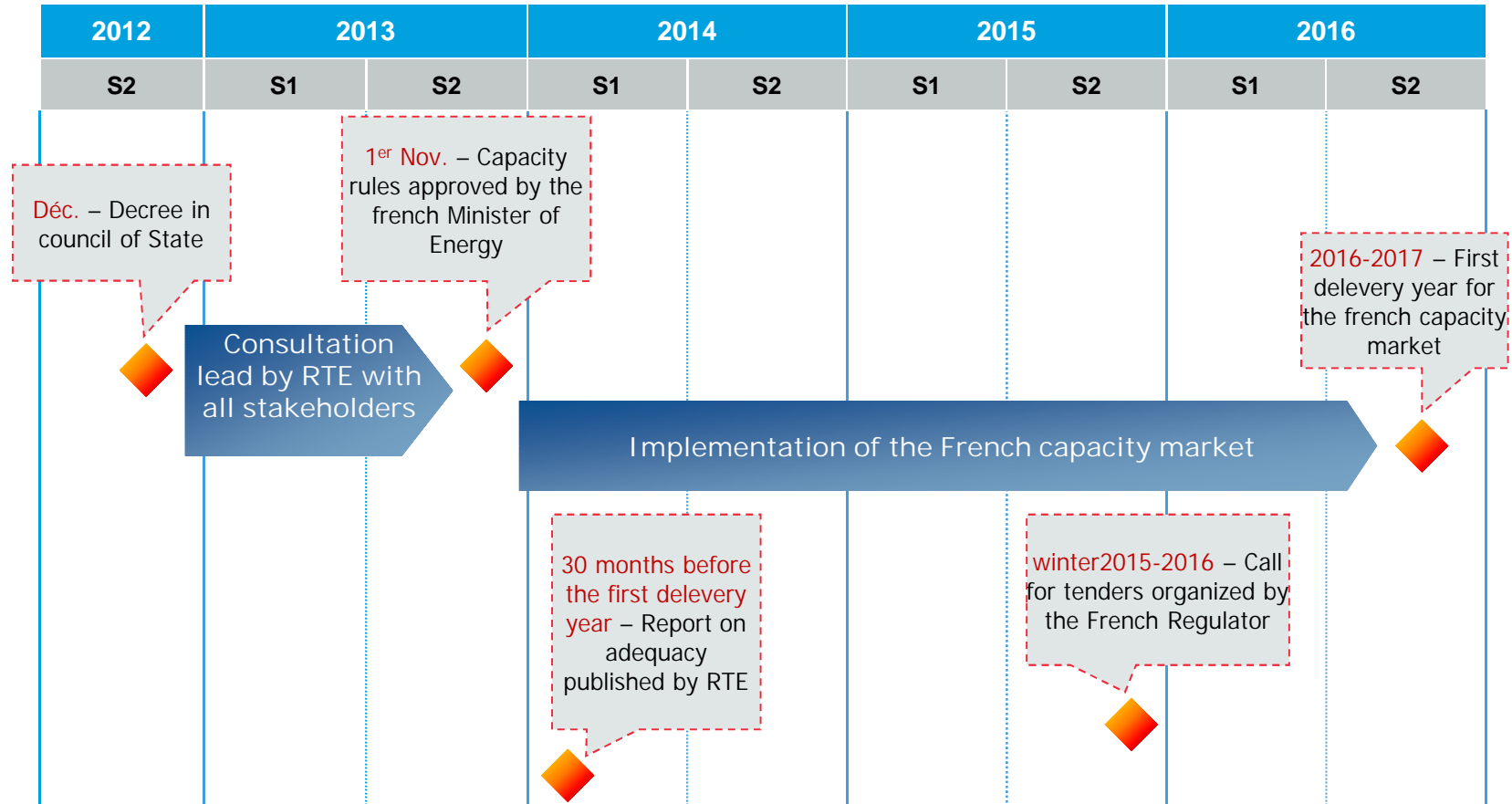
Steering with Prices – CAPACITY PAYMENT

The French Law decided the implementation of a Capacity Market, stressing the responsibility of Electricity Suppliers for Capacity Adequacy

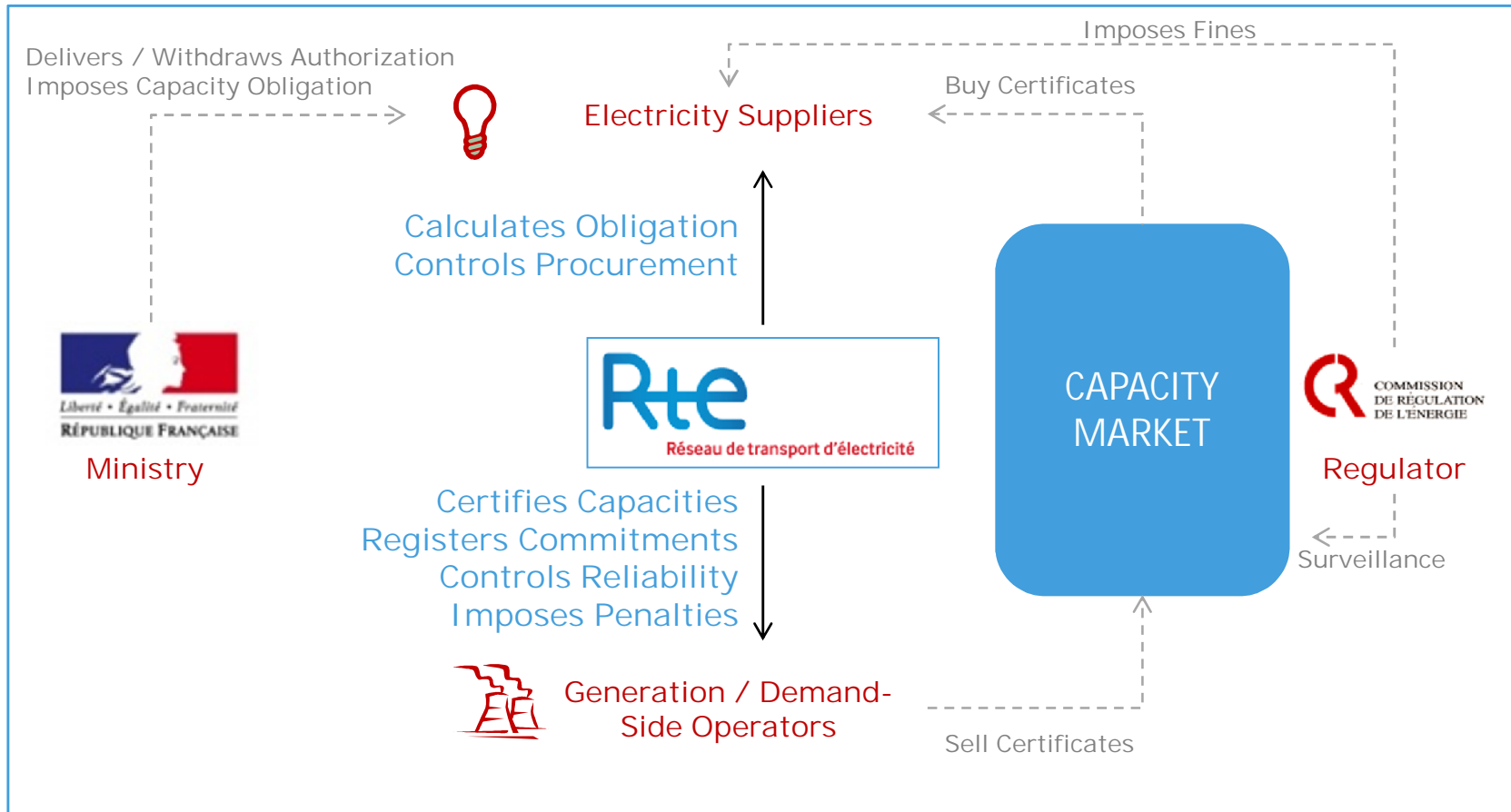
The technical issue triggered a political response



Next steps



RTE's Position in the Capacity Market is Pivotal



RTE was assigned central missions in the future Capacity Market to ensure players comply with their obligations and commitments. Once law was voted, general design options still had to be drafted.

04



Keys of the Capacity Mechanism

The French obligation capacity mechanism aims for 3 main objectives

Very important random of thermosensibility (2,3GW/ °C)
Security of supply is threatened during peak hours

^
To encourage demand management,
especially during peak hours

—
To reach the objectives at the best cost
for consumers and society

- ∨
- Each market participant must contribute to adequacy within its own responsibilities
 - To privilege market oriented solutions

To ensure physical adequacy and
security

- ∨
- The adequacy standard determined by French government must be reached
 - The mechanism must be compatible with the actual organization of the electric sector which is based on the role of market participants

The mechanism takes into account both French and European context.

Keys of the capacity mechanism to ensure the best cost to the consumers

Principle



The market model is based on provider liability and not the subsidy of capacities

Prescription



The mechanism is based on a dynamic requirement to avoid overcapacity cost to consumers

Financial surface

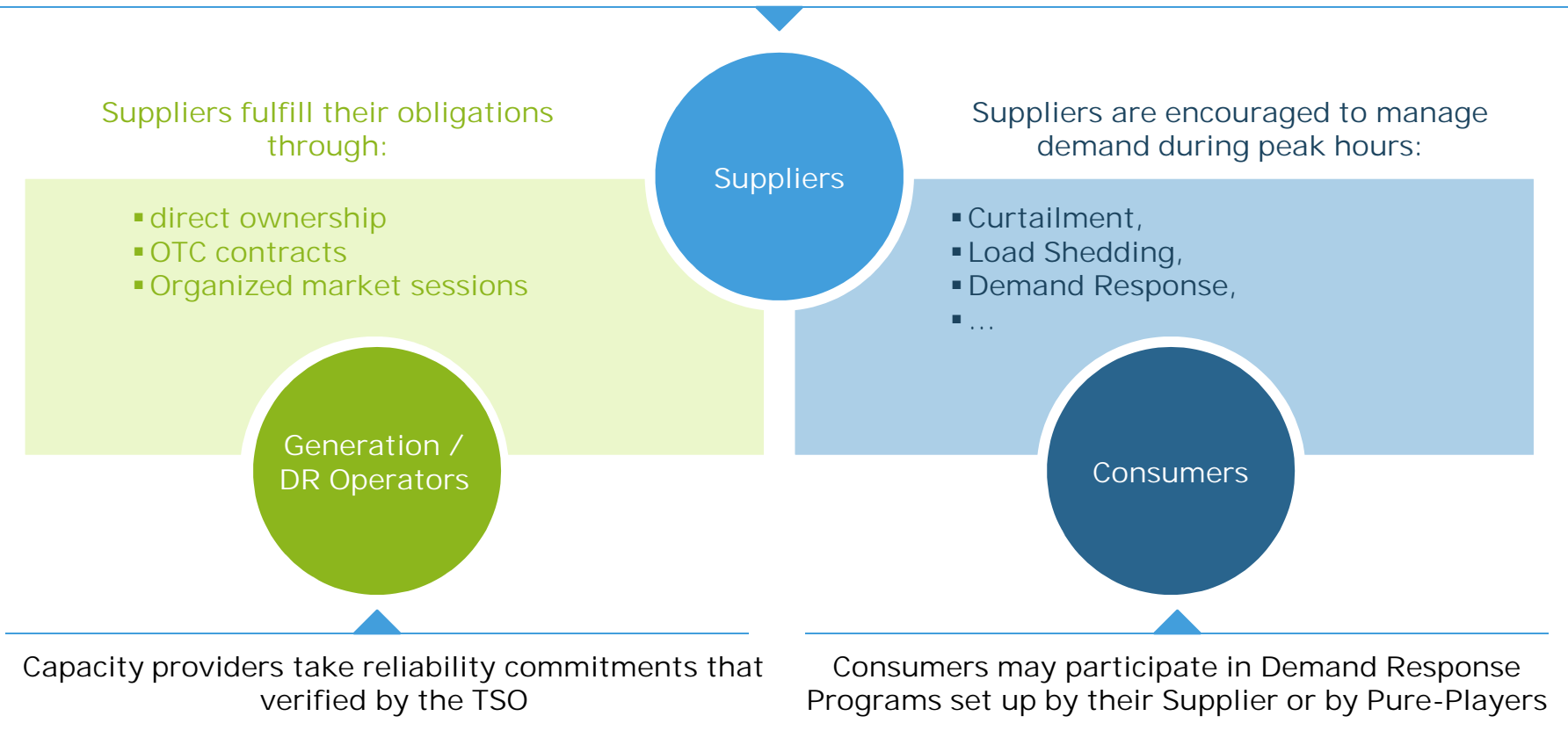


Financial surface of the mechanism is reduced by taking into account the possibilities of integrating upstream / downstream

The capacity mechanism market design is a prolongation of the existing design for energy markets in France

Overview of the market design : an adequacy target set by a dynamic criterion and based on individual market sourcing of capacity by each suppliers

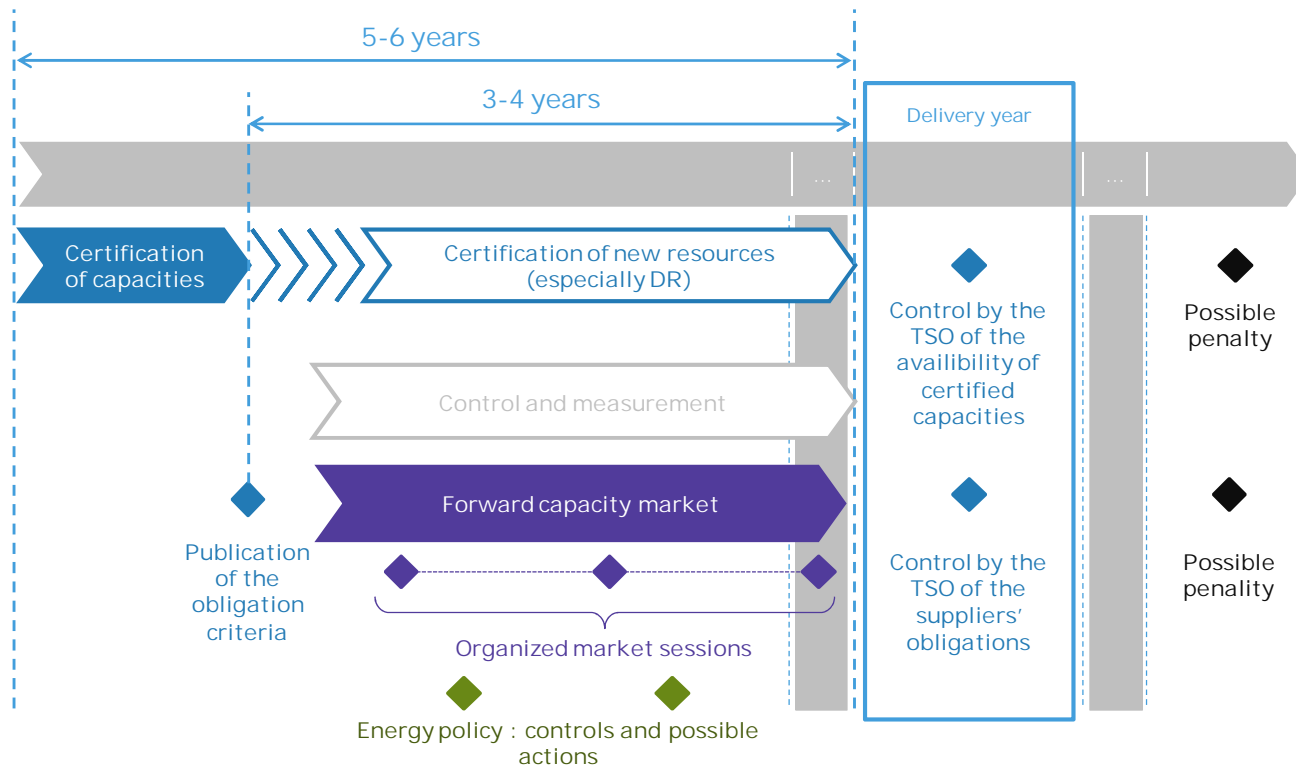
Each supplier is accountable for purchasing a sufficient amount of capacity on the market. Suppliers must comply with an adequacy criterion verified after delivery year, depending on their accurate consumption at peak load and taking temperature sensitivity into account.



The market design for capacity is very closed from the current organization for energy markets.

A market-based organisation

Potential timeline for a Delivery Cycle (illustration)



Key Features

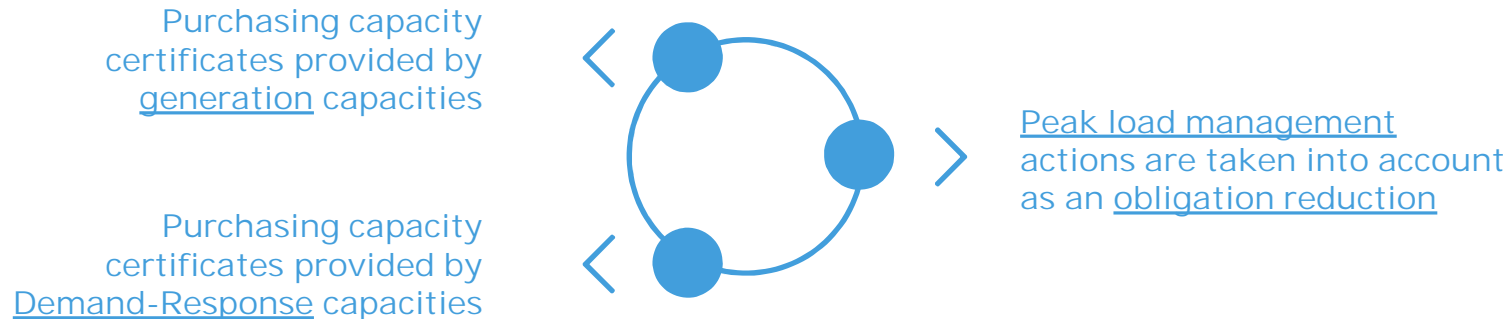
- Early-opening of certification process to enable forward and multi-year contracts
- Allowing late certification to facilitate integration of Demand Response
- Ensuring transparency of information to preserve market efficiency

Under the new scheme, suppliers are given a full array of options to fulfill their obligations ranging between investing in new capacity and managing demand during peak load

The capacity mechanism incentivizes Peak load management actions

The contributions of generation and demand-side response are taken into account without discrimination based on their contributions toward the Security of Supply

Options for suppliers to fulfill their obligations :



Key Points

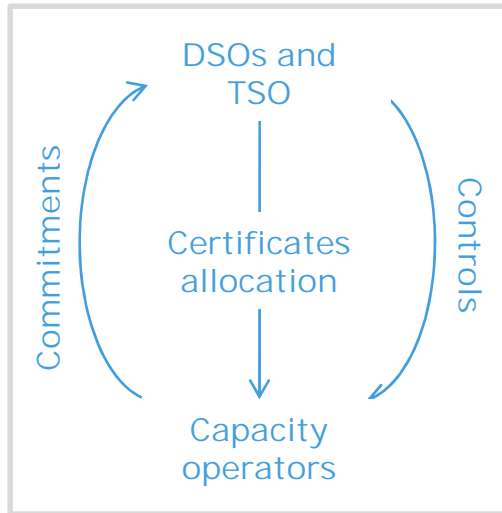
The market design is based on a dynamic prescription

- Based on Peak Load consumption of the delivery year ...
 - Each supplier is directly responsible towards peak load consumption of its clients
 - Peak load management actions are seen as obligation reduction
- ... and an extreme reference temperature and a security margin
 - Each supplier is responsible towards Security of Supply
 - Supplier's requirement takes into account the temperature sensitivity of its clients

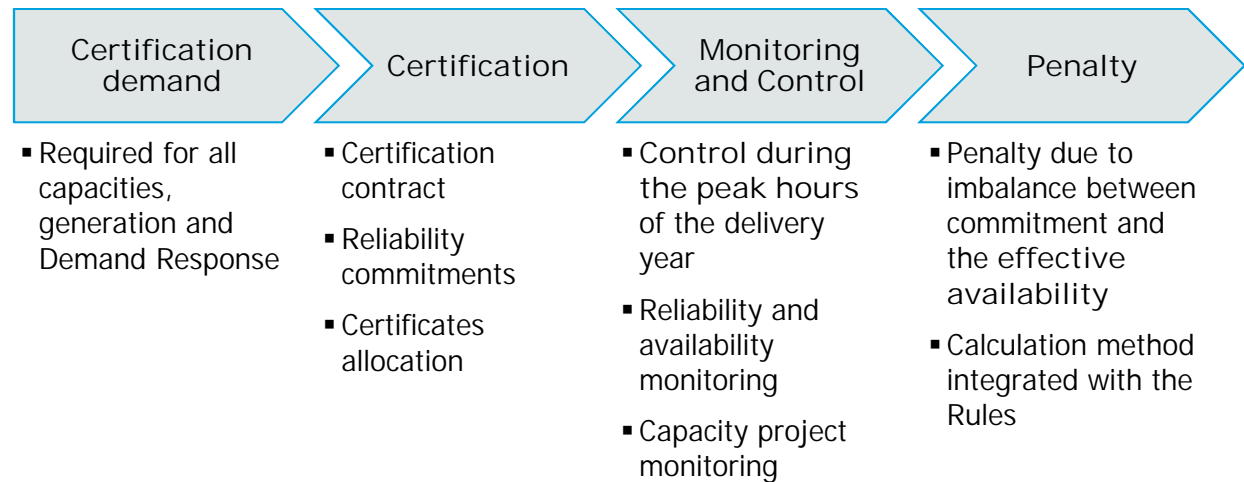
The capacity mechanism incentivizes the suppliers to tackle the peak load issue at its root cause

The certification of the capacities is the key of the mechanism

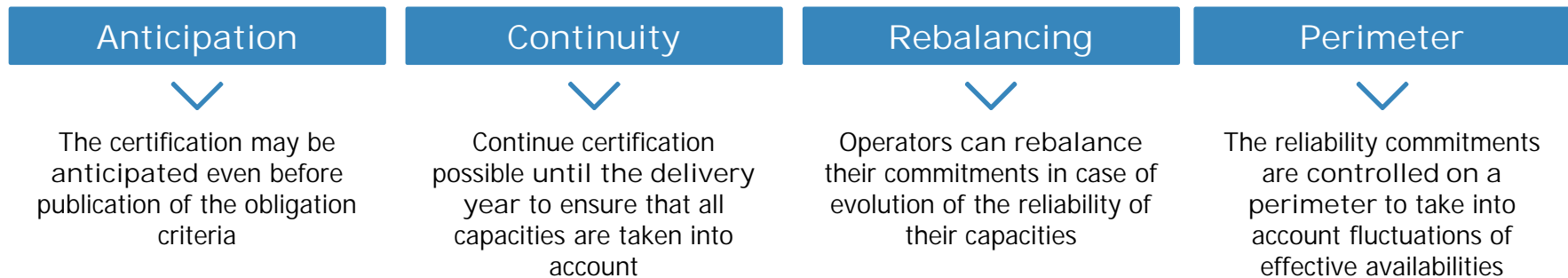
Certification validates a reliability commitment



A process of commitments, monitoring and controls...

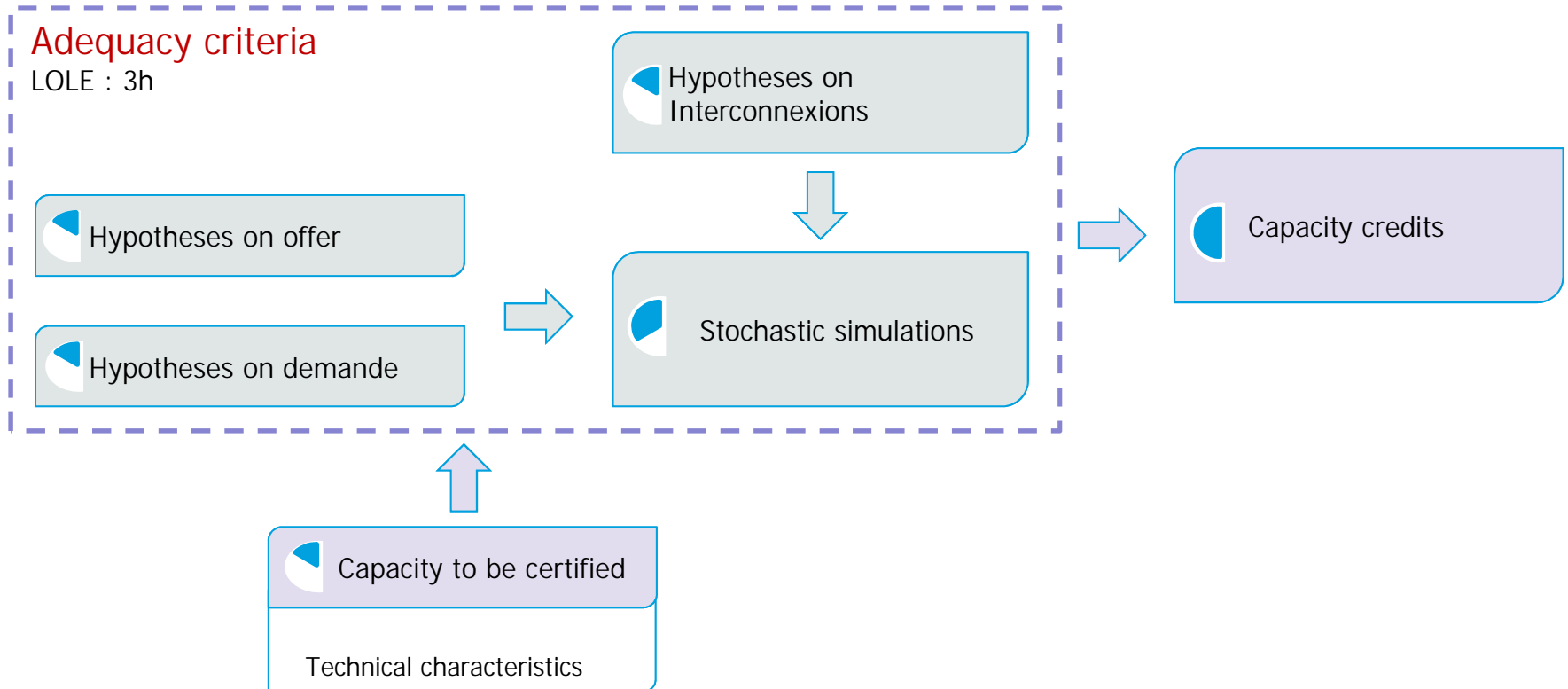


... integrating flexibilities necessary for its effectiveness



Reliability Commitments of all capacities is a "must-have" in order to provide a robust framework towards adequacy of capacity

Capacity Certification : methodology



A market design that is European friendly

Taking into account the European Market was an essential step of the design process

“The capacity mechanism takes into account the interconnection of the French and other european markets” (NOME Law)

Key features

- Capacity certificates give no right to their owner on the energy that will be generated. The capacity owners are committed to be available during peak hours but their energy can be exported at these times.
The French Capacity Mechanism has no impact on the functioning of the energy market.
- The market design is compatible with an explicit participation of foreign capacities as soon as cross-recognition will be possible.

The Capacity Mechanism is the answer to the French peak load issue to prevent exporting SoS risk to their neighboring countries

Energy Policy controls and possible actions

Introduction of a “Safety Net”

Objective

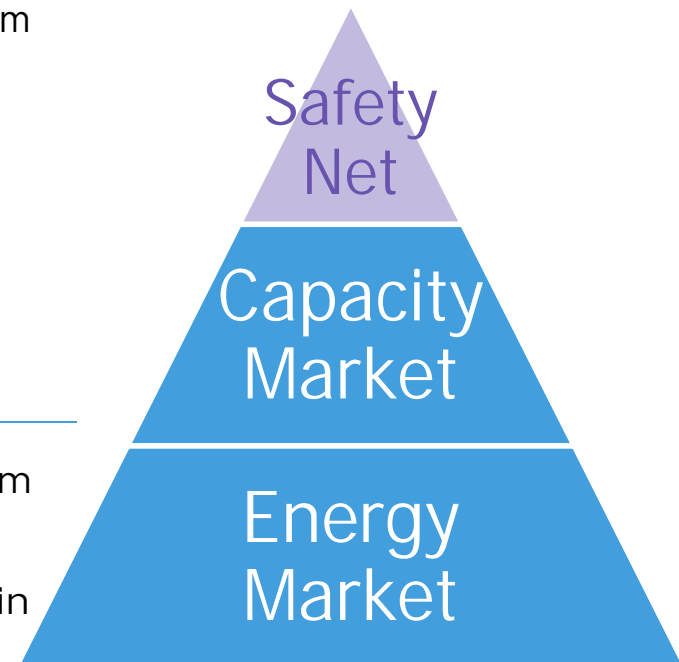
- The Ministry decided to implement the possibility of emergency tenders as a safety net

Principles

- Transitory tool to assure a good start of the mechanism
- Only activated for an exceptional risk on SoS
- Focused on resolving the exceptional lack of capacities
- Price signal remains on the market for all the capacities

Warnings

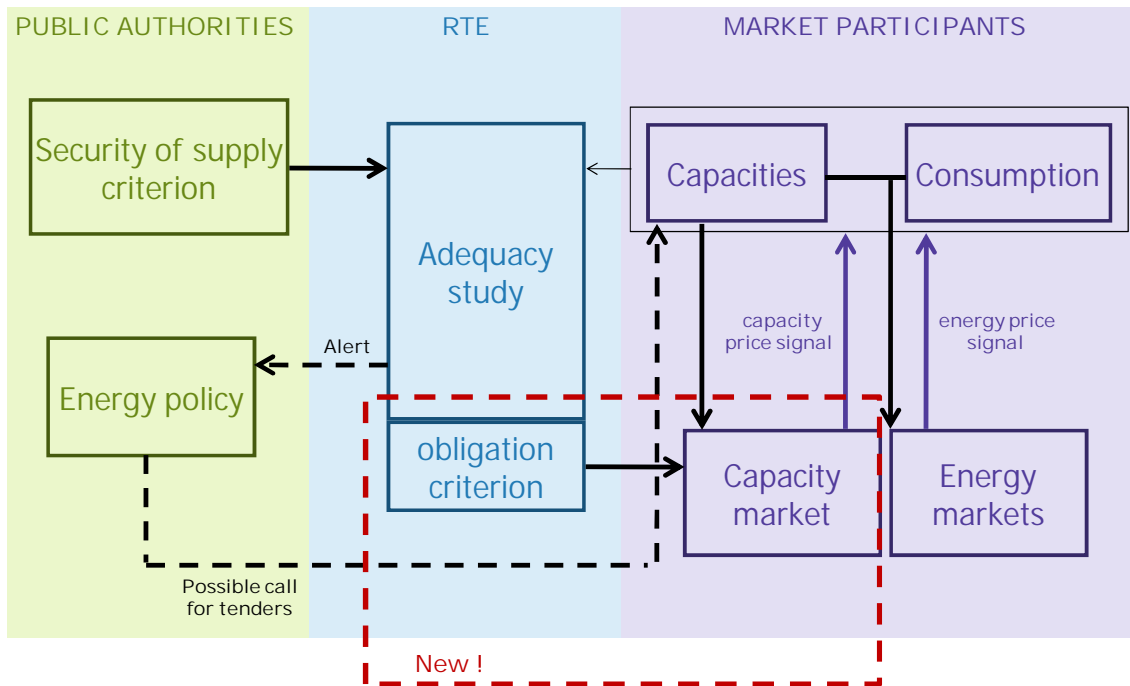
- The implementation of a complementary mechanism that is off the market could distort the signal
- If systemically activated this mechanism could drain all the new capacities off the market



The Capacity Market is a game changer: it fulfills the need for stronger commitments among operators and clarifies the responsibility of suppliers

Ensuring Adequacy of Capacity with the Capacity Market

Key Features



- Adequacy Obligation for Suppliers through a dynamic criterion taking temperature sensitivity into account
- Reliability Commitments for all capacities verified via physical & market controls
- Integration of Demand-Side Resources
- Incentivizing Suppliers to manage demand during peak load via Obligation Reduction

Market players receive a clear signal toward security of supply without being deprived of their responsibilities

Appendix

Insights from International Experiences

Complexity	<ul style="list-style-type: none">▪ Long Process / Nearly 6-7 years in the US▪ Continuous consultations are necessary
Diversity	<ul style="list-style-type: none">▪ Diverse Pursued Objectives from one market to another▪ No Universal Market Model
Reliability commitments	<ul style="list-style-type: none">▪ Physical Controls can be very intrusive▪ TSO's may validate Maintenance Schedules
Regulation	<ul style="list-style-type: none">▪ Regulation can be very intrusive▪ Up to total Revenue Control

International experiences underline that Security of Supply in France could only be achieved through designing an original solution