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# Cadre réglementaire de la flexibilité en France

## *état des lieux et évolutions*

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# What is demand response ?

- Demand response can include a broad variety of behaviours and of types of consumers involved:
  - **Modulation of household consumption** via postponement or renouncement of specific uses :
    - Conscious adaptation to tariff signals (i.e. « I start my washing machine at 11pm », EJP, Tempo « day colors »)
    - Automated frequency signals (i.e. « the water heater activates at night »)
    - Third-party activated demand response via *boxes*, allowing teleoperation of domestic heating.
  - **Industrial modulation of production processes** to optimize energy supply costs / provide grid services.
    - Often via dedicated control systems.
    - Directly managed by industrials or through the intervention of demand response operator
- These behaviours (i) provide flexibility to the power system, (i) help **managing peak load and contribute to a successful energy transition.**
- A suitable regulatory framework is required to tap DR potential => public intervention needed to design and enforce this framework

# Why demand response matters?

An essential component of the energy transition, as stated in the PPE

**Bringing flexibility to integrate a growing share of renewables**

PPE 2016 : **+50%** installed capacity by 2023

**Providing a high level of security of supply**

PPE 2016 (D.141-12-6) : **3h criterion**

**Creating value for consumers and sustainable growth**

PPE 2016 : **+32G€** gross available revenue of households in 2023

**Leveraging consumption modes to foster energy efficiency**

Legal objective : **-30% in 2030**  
PPE 2016 : **-12,6%** final energy consumption by 2023  
(compared to 2012)

# A legal framework to define, regulate and support DR

- A chapter of the legislative part of the Energy Code is dedicated to DR and includes:
  - a definition of DR (« *effacement* »):

Art. L.271-1 : «Demand Response (*effacement de consommation d'électricité*) is defined as the temporary decrease in the effective withdrawal of electricity from the public transmission or distribution operators of **one or more** consumption sites, following an *ad hoc* solicitation, compared to a **forecast consumption** program or an **estimated consumption** »

- Key principles

**Principle 1** : Freedom of choice between supplier managed DR and third party DR operation

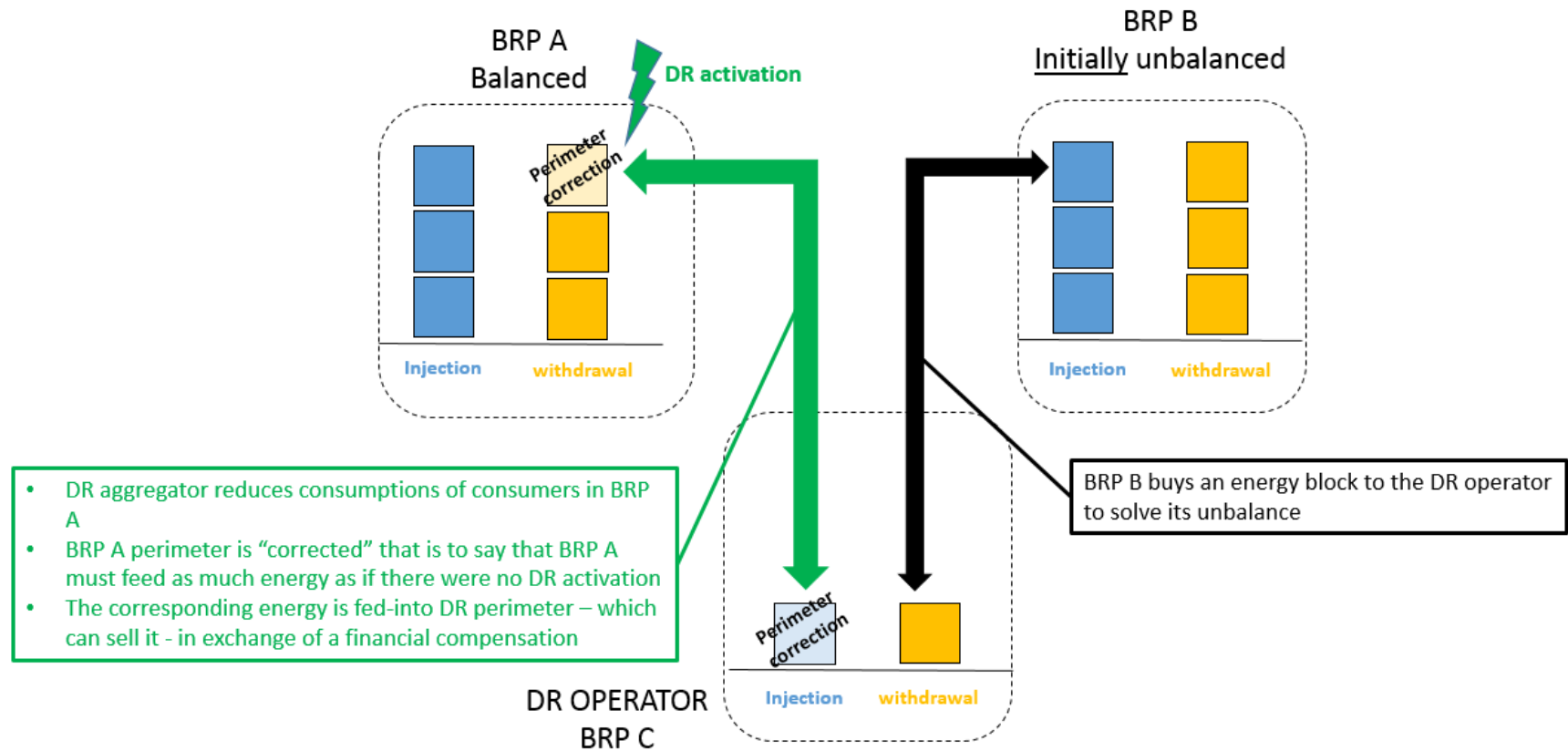
**Principle 2** : Free participation of DR to all electricity markets: capacity market, energy market, balancing and reserve markets

**Principle 3** : Right for DR operator to value consumers' flexibility without the prior agreement of consumers' suppliers

**Principle 4** : Ensuring market parties are remunerated for the energy they actually feed into the system during the demand response period

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- A 10-year process to establish a robust framework, which has involved several regulatory and court decisions (Autorité de la Concurrence 2012, Conseil Constitutionnel 2013, Conseil d'Etat 2016)
  - A set of principles supported at the European level by ENTSO-E, Eurelectric, and SmartEN

# A legal framework to define, regulate and support DR Compensation matters



- When DR is sold on energy markets or on balancing mechanism, there **must be a compensation** (paid either by the DR operator directly or by consumer as a proxy of the DR operator) to the supplier.
- **This compensation is defined based on a reference price and the DR volumes in the balance-responsibility perimeter of the supplier.**

↳ The necessity of a compensation is also recognized by case law : CE n° 387506, May 13th 2016 : « *Compensation is the payment for a good whose property is transferred from the supplier to the DR operator* ».

- Detailed rules for the determination of compensation are in R.271-8 and in the NEBEF rules approved by **the French NRA**

# A legal framework to define, regulate and support DR

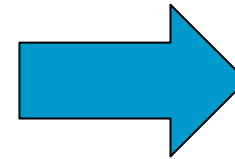
## Supporting DR development

The French regulatory framework also includes two supporting schemes that aims at encouraging DR development:

1. Annual Demand Response Tenders (*Appel d'offres effacement*)
  - a. Clear objective : reaching the PPE target
  - b. A support for small sites (<1MW) and larger ones (>1MW)
  - c. A remuneration granted through CFD contracts (capacity and some balancing revenues) to avoid over compensation and to incentivize market participation

**State Aid**  
 EC approval granted on  
 Feb. 8<sup>th</sup> 2018 (SA.48490)

Trajectoire objectif En MW	Volume annuel de l'appel d'offres effacement	Dont catégorie > 1 MW	Dont catégorie < 1 MW
2018	2200	1900	300
2019	2500	2000	500
2020	2900	2100	800
2021	2000	1000	1000
2022	1800	500	1300
2023	2000	500	1500



DRT 2018 yielded a total of **733MW**, 34 in small sites and 699 in sites >1MW

Figure 7. Trajectoire objectifs de développement des capacités d'effacement par l'appel d'offres (Source: notification, note engagements)

2. Valuing externalities linked to potential energy efficiency triggered by DR activation (i.e taking into account some DR benefits)

**State Aid**  
 EC approval required  
 before implementation

**Art. L.271-3 allows for a partial socialization of compensation costs on a derogatory basis, when DR « leads to significant energy efficiency ». In that case, compensation can be shared between the TSO and the DR operator. The part covered by the TSO is ultimately supported by BRPs**

# Opening all energy and capacity markets to Demand Response

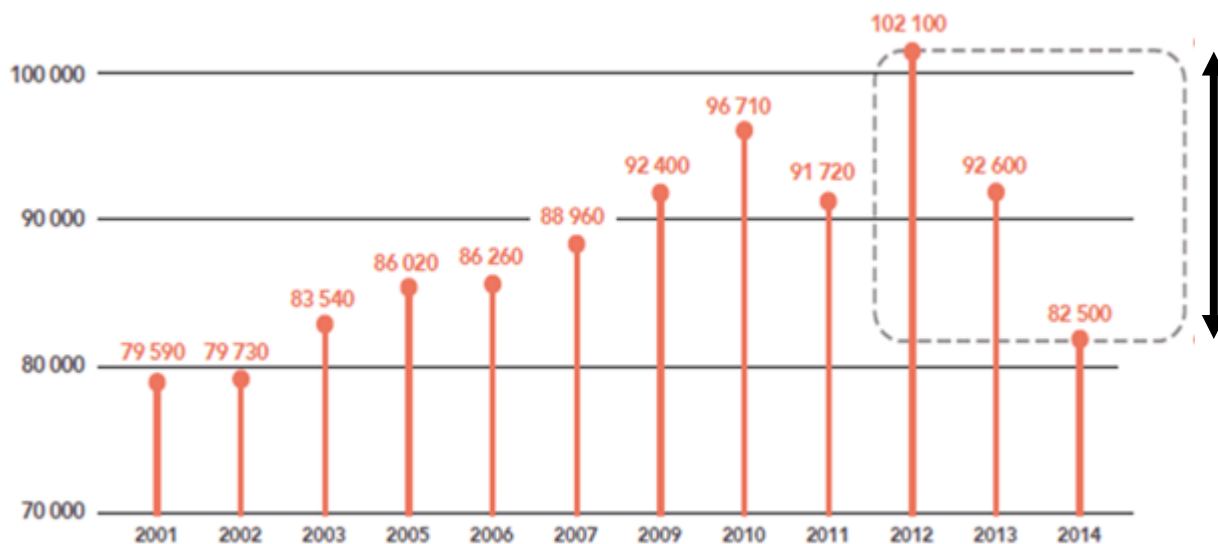
	Energy	Capacity
Balancing	<p><b>Balancing market open since 2003 for large sites and since 2007 for smaller ones</b></p> <p><b>2017</b> 726 MW offered on average every hour and 26GWh activated</p>	<p><b>Reserves and AS procurement open to DR</b></p> <p><b>FCR and aFRR (since 2014): 80 MW of DR in FCR in 2017</b> <b>mFRR and RR (since 2011): about 500 MW in 2017</b></p>
Wholesale Markets	<p><b>Participating as a resource in energy market since 2014</b></p> <p><b>2017</b> 40 GWh of « DR energy» sold through the market</p>	<p><b>Participating as a resource since the launch of the mechanism in 2017</b></p> <p><b>For 2018</b> 2 GW of DR capacity certified in the mechanism</p>
Within portfolio	<p><b>Portfolio optimization for suppliers (sourcing vs sales)</b></p>	<p><b>Portfolio optimization for suppliers against capacity obligation (about 700MW for 2018)</b></p>

**A core principle**  
Ensuring a level playing field between generation and demand response capacities

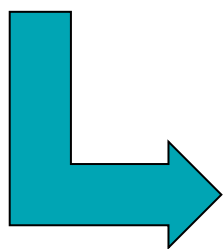
# Opening all energy and capacity markets to Demand Response

## Focus on the French capacity market

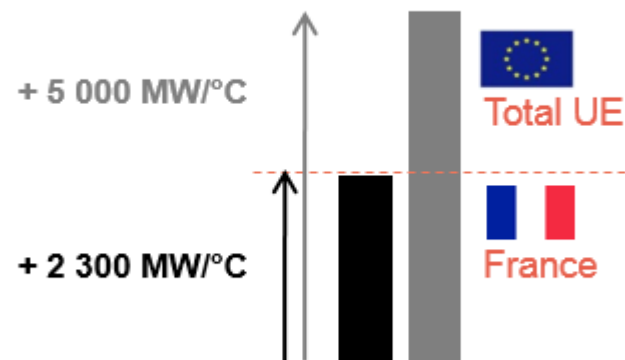
### Why a capacity market in the French context?



Peak load can vary up to  
**20 GW** depending on  
climatic conditions  
= 40 CCGT  
= 20 nuclear plants!



The French power system  
accounts for half of the  
European thermo-sensitivity

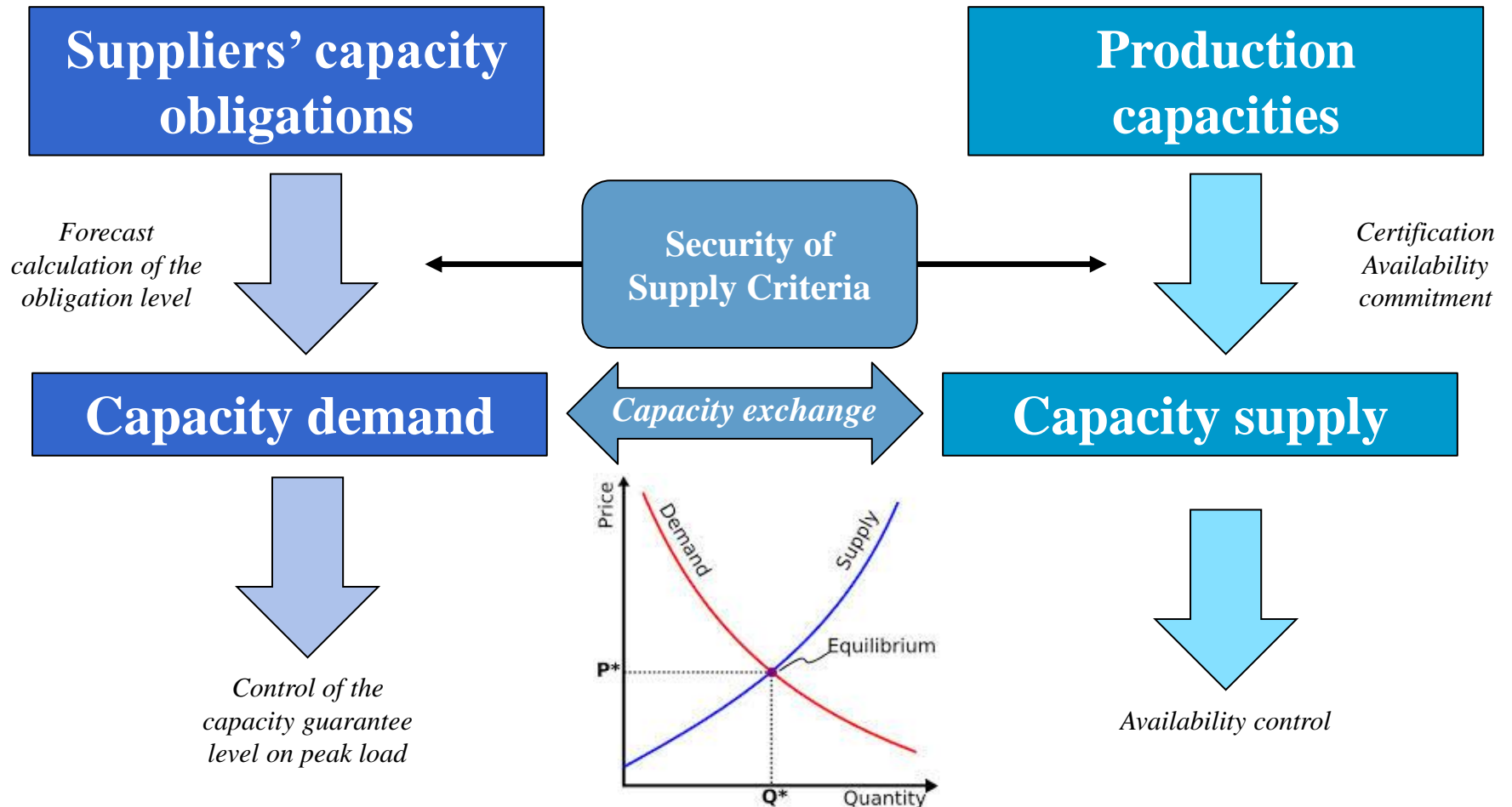




# Opening all energy and capacity markets to Demand Response

## Focus on the French capacity market

### *The French capacity market in a nutshell*



*Capacity price reflects the cost of supply security for each delivery year*

- Enacted by the NOME Law (Dec. 7th 2010) : Arts. L.335-1
- Dec. 14th 2012 Decree, followed by detailed rules.
- State aid approval : SA.39621 (Nov. 8th 2016)



# Opening all energy and capacity markets to Demand Response

## Focus on the French capacity market

*Allowing consumers to choose the level of security of supply they are delivered*

### French Public Authorities:

Definition, in the regulation, of the required national level of security of supply through a reliability criteria  
Today → LOLE of 3h per year



**RTE computes the main parameters of the French CM to translate this political requirement into the mechanism.**

**These parameters intervene in the computation of suppliers' obligation**

All consumers are delivered the same level of security of supply (LOLE 3h/year), unless they decide to value their DR capacities and opt for a de facto less ambitious reliability criteria

**Allowing individualization of SoS on voluntary basis**

Demand Response can participate in two different ways in the French capacity mechanism

### Implicit Demand Response

Consumers can opt for dynamic pricing or time-of-use tariffs which lead them to reduce their consumption during peaks periods and thus reduce the induced capacity obligation for their suppliers

Rules for avoiding double counting

### Explicit Demand Response

Consumers – individually or with the help of an aggregator - can go through the certification process to offer their DR capacities in the market. Their capacities have to be available during peak periods

≈ 700 MW

≈ 2 GW

“The Commission takes the view that France has struck the right balance between the different obligations of demand-side response capacities without restricting their participation in the mechanism”

# Longer term considerations and conclusions

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- Demand response is already an important tool for **energy transition in France**.
- **Market design has been gradually improved over the past decade to allow demand response participation in all energy and capacity markets.**
- A deep **commitment to sustain development** of new capacities, to reach 6GW targets while ensuring general **reliability** of demand response activities.
- **Efforts for adapting market rules and mechanisms to the variety (and complexity) of DR types must be pursued, but be balanced with the need for administrative streamlining and intelligibility of the regulatory context.**
- Hopefully, CEP adoption will bring closer MS rules on DR market participation and will open new markets to DR aggregators.



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# Annexes



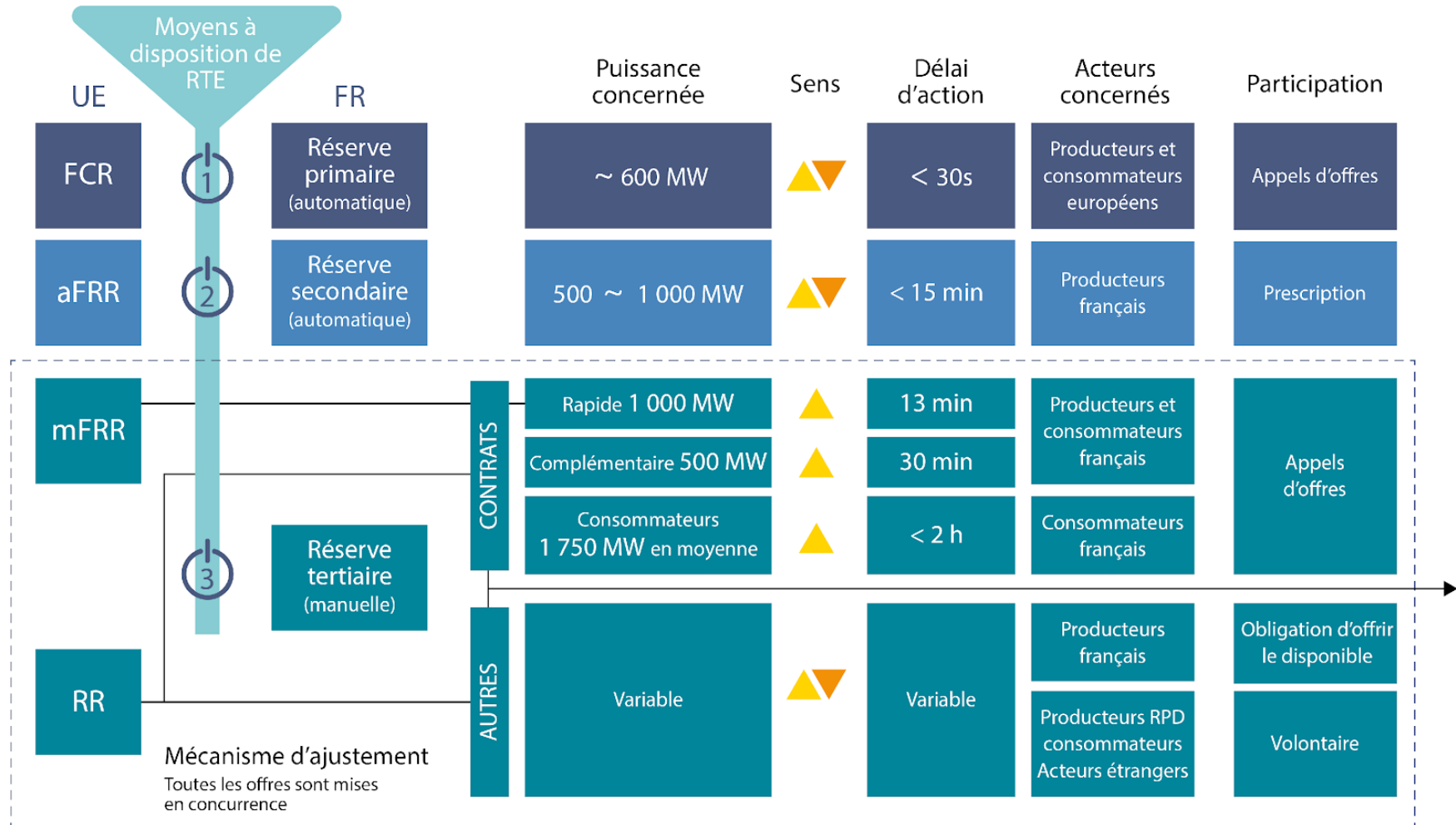
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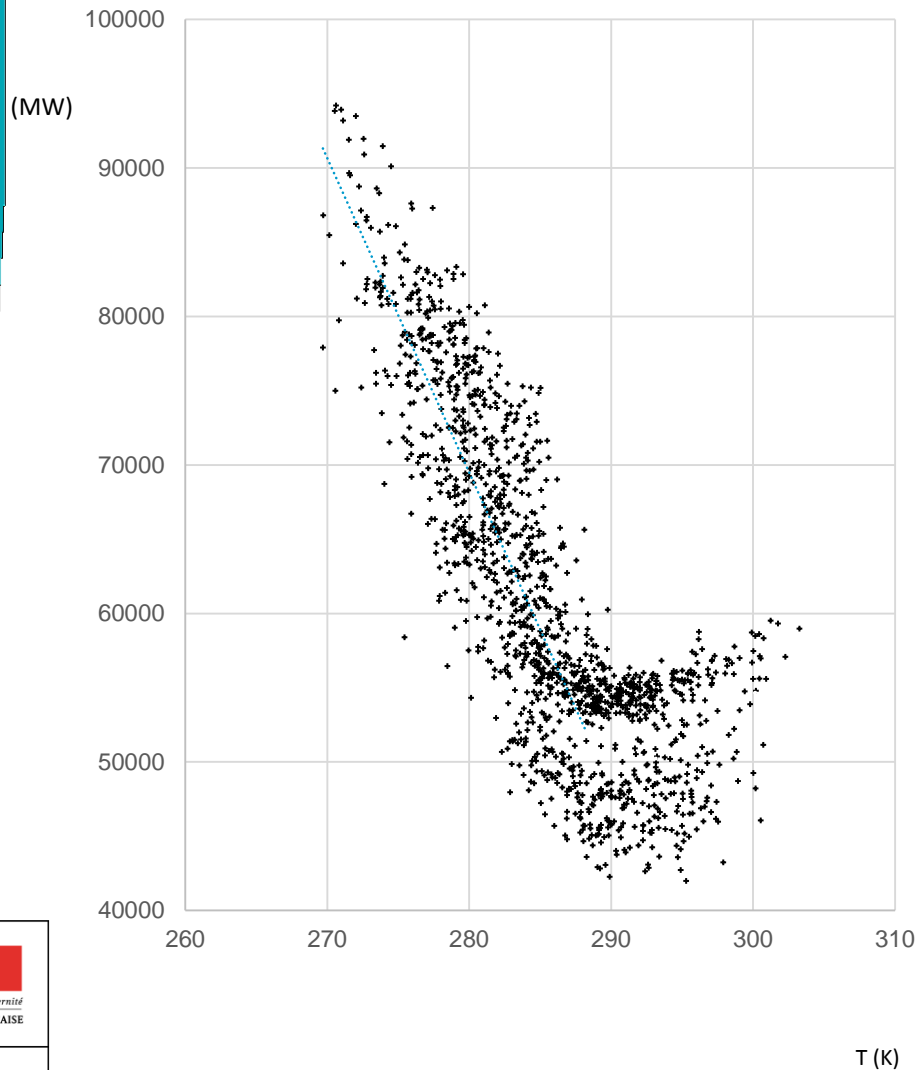
# Opening all energy and capacity markets to Demand Response Ancillary Services and Balancing Mechanism

Activation à la hausse ▲  
Activation à la baisse ▼



# Thermo-sensitivity and peakload demand

## Thermosensitivity of demand on the French market



## Peak Load and quantiles of demand on the French market

