Updating regulatory and market frameworks

French electricity markets update

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Brief outlook on the French electrical system

The French electrical system in 2017 :

- **130 GW installed capacity** : 63,1 Nuclear, 18,9 Fossil, 48,6 Renewables (25,5 Hydro, 13,6 Wind, 7,7 Solar).

- **Fast development of renewable sources :**
  - **+1797MW Wind in 2017**
  - **+887MW Solar in 2017**

- A **low-carbon electricity production** : 52g_{CO2}/kWh avg in 2017

- **Total 2017 production** : 529 TWh (151 TWh Domestic)

- **A retail market that is increasingly competitive** :
  - 17,7% domestic consumption and 87,9% non-domestic are supplied under a market offer (as opposed to the regulated tariffs)

- **Rising market prices due to the current ETS price surge and fossil fuel prices** (Cal-19 price yesterday @ 56.8€/MW)

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Key context element #1 : the *Programmation Pluriannuelle de l'Energie*

- The Energy Transition Law of Aug. 18th 2015 created a fundamental public policy tool to achieve the energy transition : **the PPE (*Programmation Pluriannuelle de l'Energie*),** defined in articles L.141-1 and following of the Energy Code.

- It defines quantitative objectives (L.141-3), and deals with all aspects of the Energy Transition :
  - *Energy efficiency*
  - *Fostering RES development*
  - *Security of Supply*
  - *Grid Development*

- **The PPE is structured in two 5 year periods**
  - The first one, enacted in 2016, exceptionally covered 2016-2018 and 2018-2023.
  - **A new one is currently under review, over the periods 2018-2013 and 2024-2028**

Pursuing dynamic growth of renewables

PPE 2016 Renewables target : **+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)

PPE 2016 key orientations

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Key context element #2 : The Clean Energy Package

- Based on Commission proposals published in November 2016, the Clean energy for all Europeans package consists of eight legislative acts, expected to come into force within the upcoming weeks.
- **<u>Regarding electricity market design, two major legislative acts :</u>**

Directive on common rules for the internal market for electricity

- **Mostly demand side issues, in particular** :
- Consumer protection (billing, smart meters, supplier-customer relationship, dynamic pricing, etc.)
- Demand response and aggregation
- Regulated tariffs and price interventions

Regulation on the internal market for electricity

- **Mostly supply side issues, in particular :**
- Adequacy assessment and capacity mechanisms

- **<u>Subsidiary impacts on the French market framework from other CEP acts :</u>**
- *Regulation establishing a European Union Agency for the Cooperation of Energy Regulators*
- *Regulation on risk-preparedness in the electricity sector*
- *The revised Renewable Energy Directive (EU) 2018/2001*

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Hot Topics for today

In this fast-evolving regulatory and technical context, how do we :

I. Ensure consumer protection through regulated tariffs while fostering a competitive and open supply market.

II. Develop the adequate tools to ensure *security of supply* for the French system : the capacity mechanism and its recent evolutions.

III. Allow full parity between production and demand response and develop DR as an important tool for the success of the Energy transition.

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I. Regulated tariffs, supply sector competition and consumer protection

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I. A gradual opening to competition of Energy markets

Dec. 19th 1996

- **Directive 96/92/CE**
- Initial unbundling (separation of transportation and distribution – art.14)
- Gradual opening of the supply market to competition

Feb. 1999

- Competition on the large consumers market segment (>100GWh)

Jun. 2000

- **Decree 2000-456**
- Competition for consumers above 16GWh

Jan. 3rd 2003

- **Law on electricity and gas markets and the public service of energy**

Feb. 2003

- **Decree 2003-100**
- Competition for consumers above 7GWh

Jul. 2004

- **Decree 2004-597**
- Competition for any non-residential customer

Jul. 2007

- Eligibility of all consumers to market offers

1996-2009 : Unbundling and opening of all market segments to competition

Jul. 13th 2009

- **2009/72/CE Directive**
- Unbundling of production transportation (art.9), distribution (art.26) and supply -- 4 segment model in French Law (L.111-1)
- Independent NRAs (art.35 & 36)
- Allow entry of competitors to historical vertically integrated monopolies

Dec. 7th 2010

- **NOME Law**
- Suppression of regulated tariffs for large consumers in 2016
- General principle of tariff « contestability »
- Legal dispositions regarding the ARENH system.
- Capacity mechanism

Jun. 12th 2012

- **SA.21918 Decision**
- ARENH system
- Approval of regulated tariffs for large and mid-size consumers (*Jaune & Vert*) until Dec. 31st 2015

Jan. 1st 2016

- Suppression of regulated tariffs for large consumers (>36kVA)

Jun. 18th 2018

- **Conseil d'Etat** decision on small consumer tariff (*Tarif Bleu*) compatibility with EU law.

?

2009-2018 : Development of competition and tariff reform

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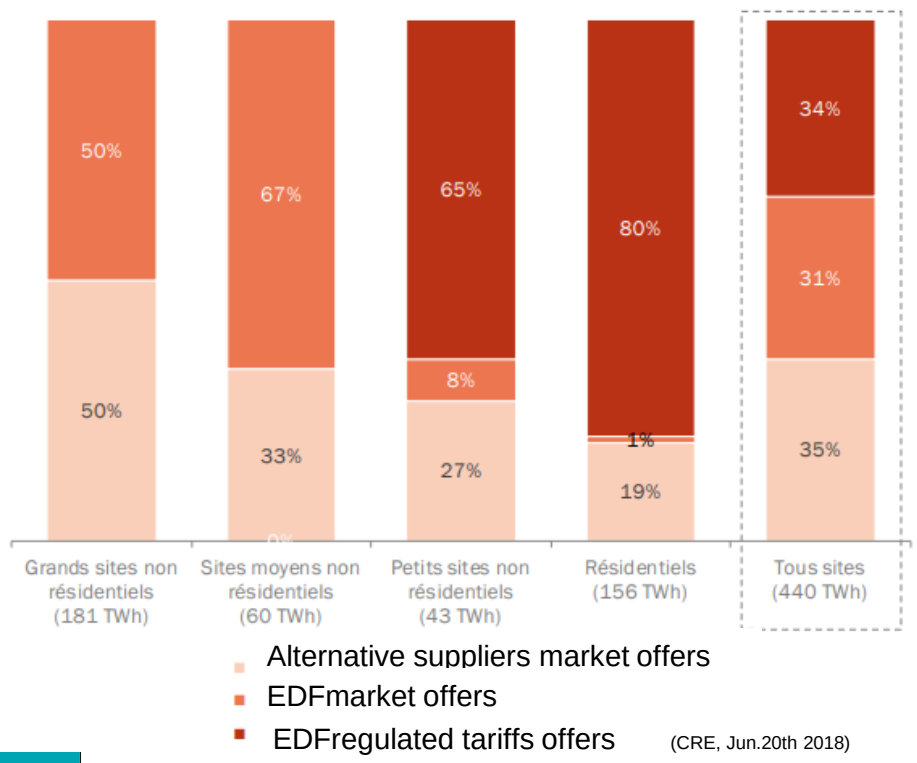
I. The French market today



(CRE, Jun.20th 2018)

The supply market segment has gradually opened in the last decade to competition, with consumers retaining the ability to choose freely between regulated tariffs (if below 36kVA) and market offers.

- Regulated tariffs are designed by the independent Commission de Régulation de l'Energie (NRA), which proposes tariffs to the Minister
- Regulated tariffs are available to any consumer below 36kVA
- Regulated tariffs are built to ensure that EDF competitors can replicate them under realistic market conditions, as the addition of cost elements determined by the CRE. (*principe de contestabilité*)
- A specific scheme allows alternative suppliers to acquire nuclear-produced electricity at a regulated 42€/MWh cost to supply end-consumers, up to 100TWh/year
  - *"To ensure the freedom of choice of an electricity supplier while delivering to the territory's attractivity and end-consumers the competitiveness of the nuclear production plants, […]"*

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Hot Topics in the supply market

- May 18th 2018 Conseil d'Etat decision, following a legal challenge of regulated tariffs by alternative suppliers :
  - Recognizes the **general compatibility of regulated tariffs** with EU law, retaining as an argument the *"fulfilling of general interest economic objectives, such as price stability"*
  - Indicates that regulated tariffs for consumers below 36kVA may , insofar as they are offered to **non-residential sites of large corporations** may exceed what is strictly necessary to meet these objectives
  - Legal dispositions are being prepared to take into account these dispositions by H1 2019.
- Art. 5 of the electricity directive of the Clean energy Package includes specific dispositions for regulated tariffs :
  - General principle forbidding such tariffs and public price intervention.
  - **Transitionally, Member-States which apply price interventions at the date of entry into force may maintain them for microenterprises and domestic consumers**, vulnerable or not.
  - French Authorities support this position as **regulated tariffs are a useful, consumer-protective price reference** that will remain necessary, and other mechanisms may be more relevant for vulnerable consumers (*energy voucher*). The "contestability principle" ensures that regulated tariffs shall not interfere with the competitive functioning of the supply market.
  - The energy law currently under parliamentary review will include a legislative instrument ensuring the perimeter change and directive transposition.

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II. Developing the adequate tools to ensure Security of Supply

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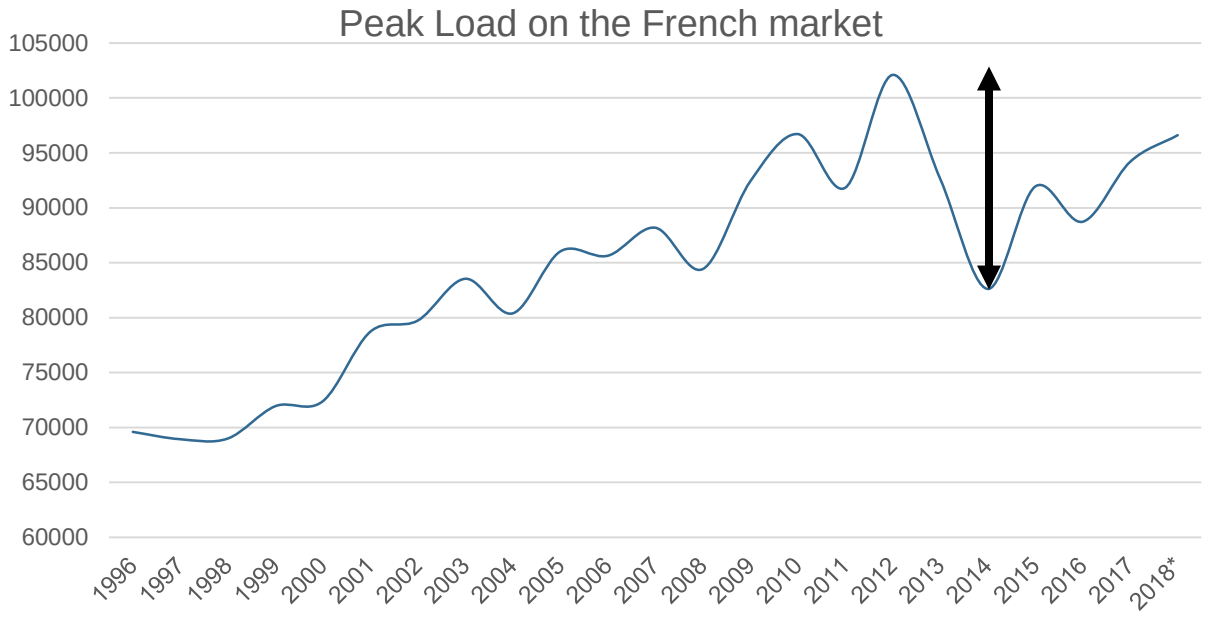
II. Developing the adequate tools for SoS

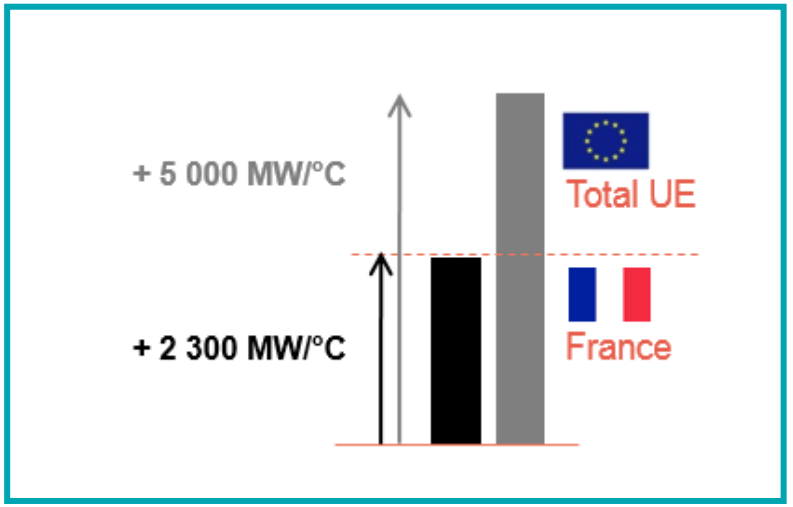
At stake : a specific French security of supply issue

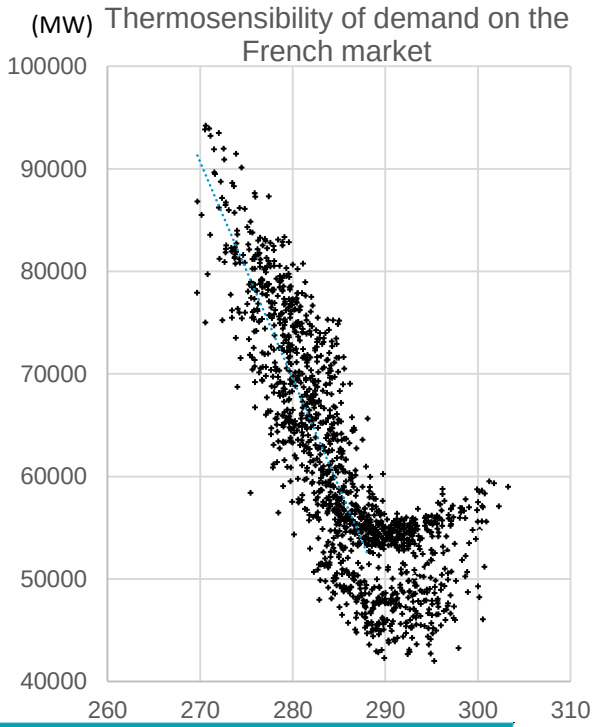


Peak load can vary up to **20 GW** depending on climatic conditions

= 40 CCGT
= 20 nuclear plants

The French power system accounts for half of the European thermosensibility





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Opening all energy and capacity markets to Demand Response
Focus on the French capacity market

The French capacity market in a nutshell

Suppliers' capacity obligations

Production capacities

Forecast calculation of the obligation level

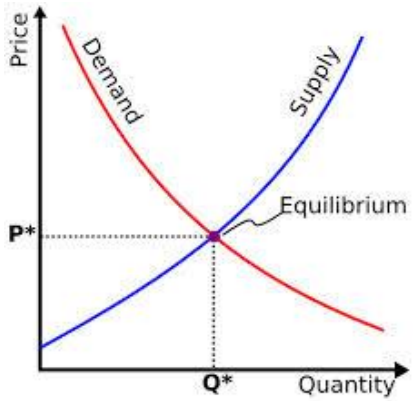
Security of Supply Criteria

Certification Availability commitment

Capacity demand

Capacity exchange

Capacity supply



Control of the capacity guarantee level on peak load

Availability control

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)*

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Hot Topics : Achieving the legal implementation of the capacity mechanism

A mechanism with several favorable characteristics …

- market-based approach and price formation.
- Technology-neutrality and openness to demand response
- Allows for long term price signals reflecting SoS, based on the 3h criterion.

… in the process to meet the conditions stated in the Commission's decision before dec. 31st 2018.

State aid Approval : *SA. 39621 (Nov. 8th 2016)*

Current decree project

(ETA : mid-nov. 2018)

(to be followed by an arrêté before Dec. 31st 2018)

Nov. 29th 2016 arrêté

(stricter conditions to prevent market manipulation)

Enabling explicit participation of cross-border capacities

Long term capacity tender (7 year) to allow for new capacity development when necessary

Target : full participation of cross-border capacities in DY2019

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Hot Topics : Capacity mechanisms in the Clean Energy Package

- Capacity mechanisms and strategic reserves have been one of the key topics in debate in the Clean Energy Package :
  - Arts. 20-27 of the project of regulation on the internal market for electricity.

- **Key dispositions** :
  - **Member-States may put in place capacity mechanisms** or reserves based on the security of supply issues they identify, while respecting certain **environmental performance criteria** for installations in those schemes.
  - **A European adequacy assessment** must be performed to identify continental supply-demand adequacy while retaining the possibility for national-level, more precise studies.
  - **Member states** implementing CRM must perform an “implementation plan” (market reform plan) to be updated regularly and reviewed by the EC.

- **Next steps for the French mechanism** :
  - Implementing the environmental performance criteria (linked with both the criteria featured in the PPE and already in place for the long-term tender).
  - Performing the implementation plan
  - Possible adaptations of the mechanism (decentralized mechanism)

III. Fostering demand response as a useful tool in the Energy transition

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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

French legal framework to define, regulate and support DR

- France has pioneered efforts to integrate DR in its energy market.

Legal 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

- 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

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Opening all energy and capacity markets to Demand Response

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

A core principle

Ensuring a level playing field between generation and demand response capacities

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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:

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

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

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

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

State Aid
EC approval granted on Feb. 8th 2018 (SA.48490)

- The compensation model and link between DR operator and supplier is the main issue in the CEP (art. 17 Directive). The current solution found in the CEP is fully compatible with the French compensation model.
- **Next steps** : reviewing the support framework to achieve the PPE DR objectives.

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Conclusion

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