

# CRE experiences on Demand Response

*November 2013*

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# A long history of time-based tariffs provided by suppliers


Historically: 2 main time-based tariffs offered in France

## Time-of-use

- ✓ Every day peak/off peak hours
- ✓ Launched in 1965
- ✓ 33% of households
- ✓ >50% of residential consumption
- ✓ Specific meters
- ✓ Offered by all suppliers

## Critical peak pricing

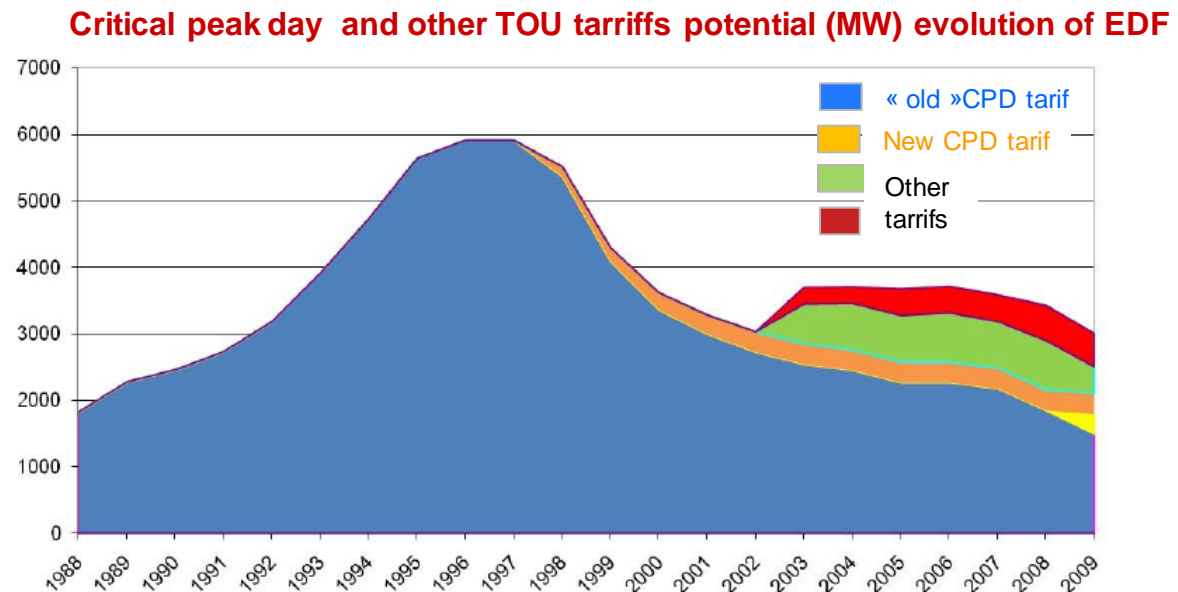
- ✓ 22 days a year chosen in Day Ahead
- ✓ Launched in 1982, new formula in 1996
- ✓ 6.5 GW of DR capacity at its highest
- ✓ Specific meters
- ✓ Signal limited to incumbent EDF

 Dynamic pricing tariffs based on Spot prices are now being offered by all suppliers to consumers equipped with smart meters (big consumers)

# A long history of time-based tariffs provided by suppliers

- The critical peak pricing tariff has been declining since late 90s, even though a new formula has been launched in 1996
- A decline mainly due to the loss of industrial consumers:

- ✓ Closure of important industrial sites
- ✓ Development of alternative suppliers (which can't offer the tariff)
- ✓ Increased costs and regulatory constraints for behind-the-meter production capacities (50% of the consumers)



Source: EDF, 2010, working group on peak management

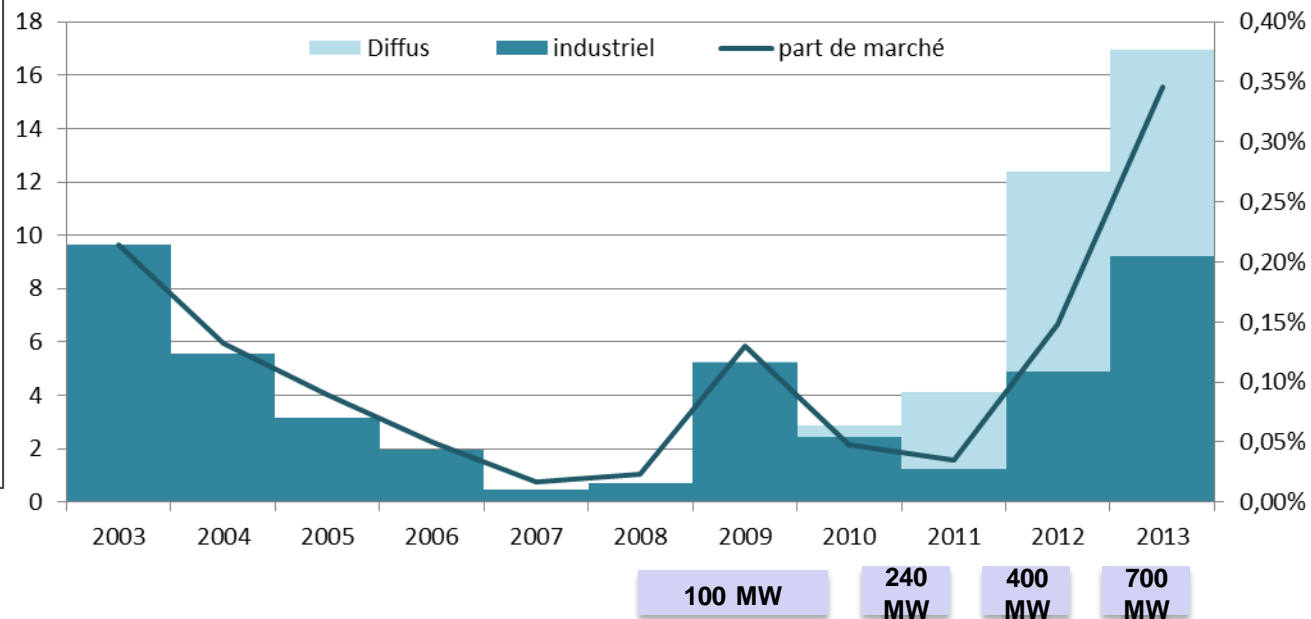
**Smart meters to help introducing new tariffs' structures to stimulate DR**

# A more recent development of explicit demand response

- The balancing mechanism launched in 2003 is open to explicit demand response resources:
  - Participation of industrial consumers connected to the transmission grid since the beginning;
  - In 2007, experiment launched by CRE to promote the development of small scale demand response.

- ✓ Around 1 GW of available DR capacity in 2012
- ✓ Vigorous development of small scale DR (households)
- ✓ Capacity remuneration since 2008

Demand participation on balancing market (GWh and market share)



# A more recent development of explicit demand response

- Beyond the balancing market, limited or no development at all of explicit demand response
- A new mechanism under implementation will give a **clear framework for DR valuation on wholesale market**
- Demand response will also be able to participate alongside supply to the future capacity mechanism currently under construction, which should spur their development

**Today, CRE is working to allow the full participation of demand response to the energy and capacity markets alongside supply, in compliance with the energy efficiency Directive**

# A more recent development of explicit demand response (2)

- **New demand response actors are developing a large scope of explicit demand response services on the balancing mechanism:**
  - Suppliers of industrial consumers
  - Industrial consumers directly
  - Aggregators of large to small industrial as well as residential consumers
- **From the large industries (>100 MW) to the smallest consumers (~kW), all consumption sources are being valued**
- **Aggregators now focus on small industrial sites and businesses to raise new DR capacities that were not valued until now**

# A new legal context

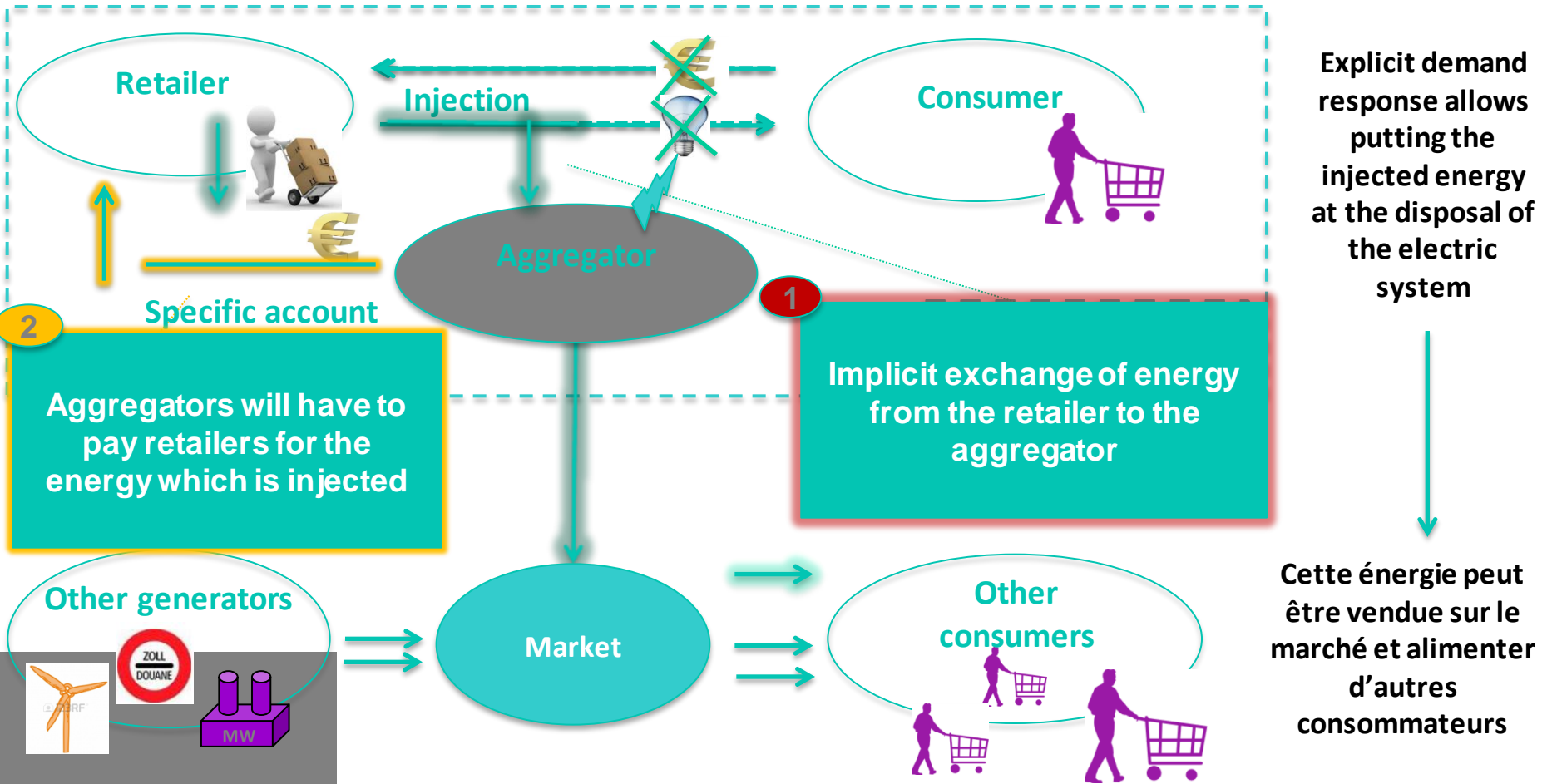
- Until now, RTE proposed rules for CRE's approval regarding the balancing market and balancing responsible parties' obligations **BUT no clear legal basis explained how demand response could participate in these markets** (in particular for small consumers participation)
- Contractual agreement in place between the supplier of the consumer and the demand response operator: consulted by CRE, the French competition authority highlighted the risks of such an approach (need to maintain a level playing field between the supplier and the DR operator)
- **A new law was adopted in April 2013 giving :**
  - **A mandate for CRE to propose a Decree** to give a framework to enable aggregators to value DR on markets and to foster the development of DR: public consultation in June, formal proposal in July/October
  - An experiment to be launched soon: RTE submitted rules in October



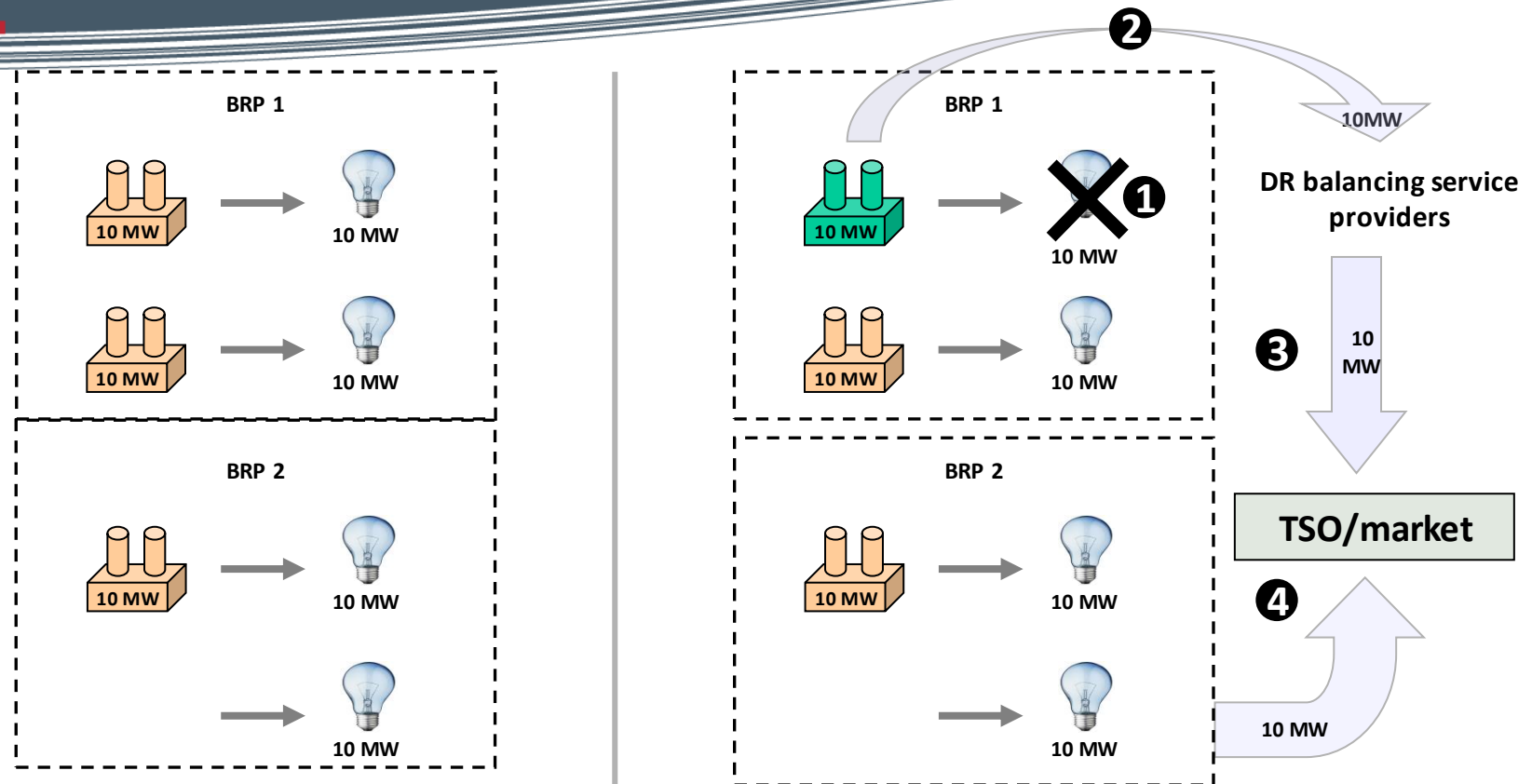
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# How explicit DR works?



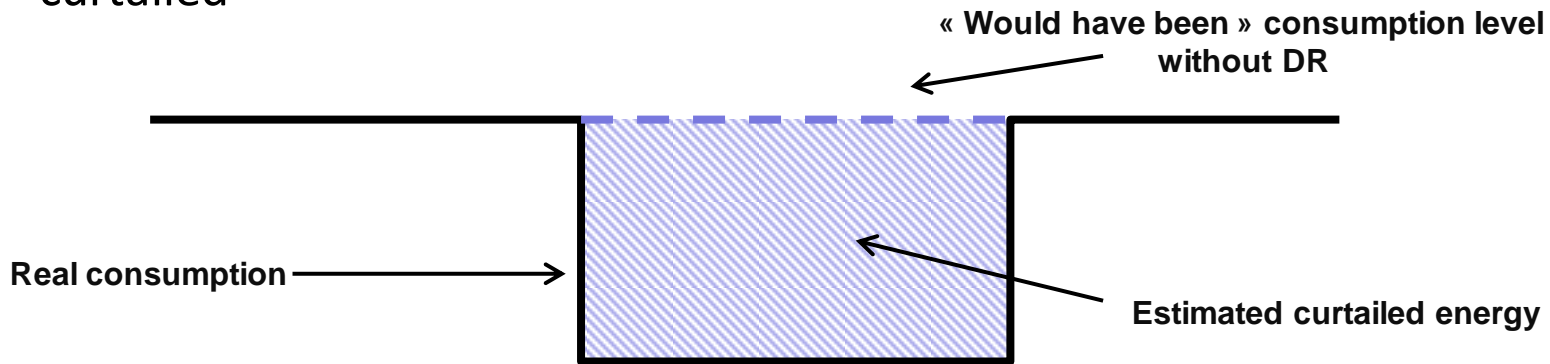
# Which market design for explicit DR?



- The generator in green must be incentivised to generate electricity
  - ➔ Remuneration for the energy produced
- Valuation of the DR offers (balancing market for now, but the same is true for wholesale market) should be shared between the generator / supplier within BRP1 and the DR operator

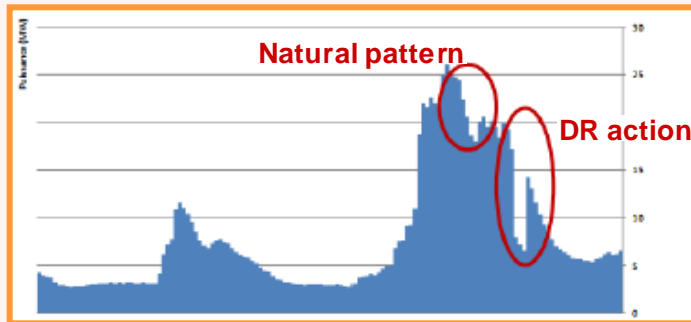
# How to measure explicit demand response

- The control of the DR action aims at certifying the volume of energy curtailed



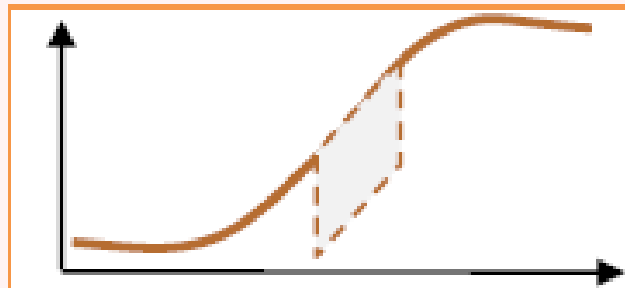
- Specific issues raised:
  - Which data available for real-time measuring of the consumption in absence of smart meters?
  - Basic methodology has shown its limits: need for adapted methods for various kinds of DR
  - How to assess the “would have been” level of consumption?

# How to measure explicit demand response: examples



- Isolate the DR action from the natural consumption pattern

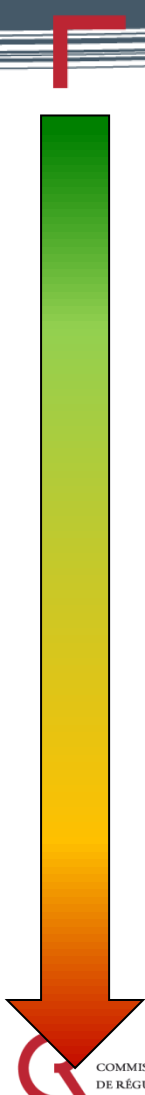
- Electric water heating consumption peak: need for a specific methodology



- Specific industrial process or postponed maintenance



# What role for the DSOs in DR value chain?

- 
- ✓ Assess impacts on Distribution Networks to ensure network security
  - ✓ Provide data necessary to explicit demand response's control
  - ✓ Participate to controls and certification processes
  - ✓ Use demand response as system services for network operations
  - ✓ Provide demand response in the market

# What role for the DSOs?

- In France, during consultation, some market participants raised concerns about DSOs' role in the demand response value chain:
  - **Complexity of having multiple DSOs** to deal with (>100 DSOs in France)
  - Fear **too much constraint** to be put on demand response's development
  - Fear that **DSOs be active in the competitive part of DR value chain**
- On the other hand, DSOs want to:
  - Be able to **assess impacts of DR** on their networks to ensure system security
  - Be able to **value DR as system services** for network operation
- It raises the question:
  - What is the **best market design** for DSOs to be able to use DR as system services? (owned by DSOs, contracts DSOs-DR operators, tenders?)



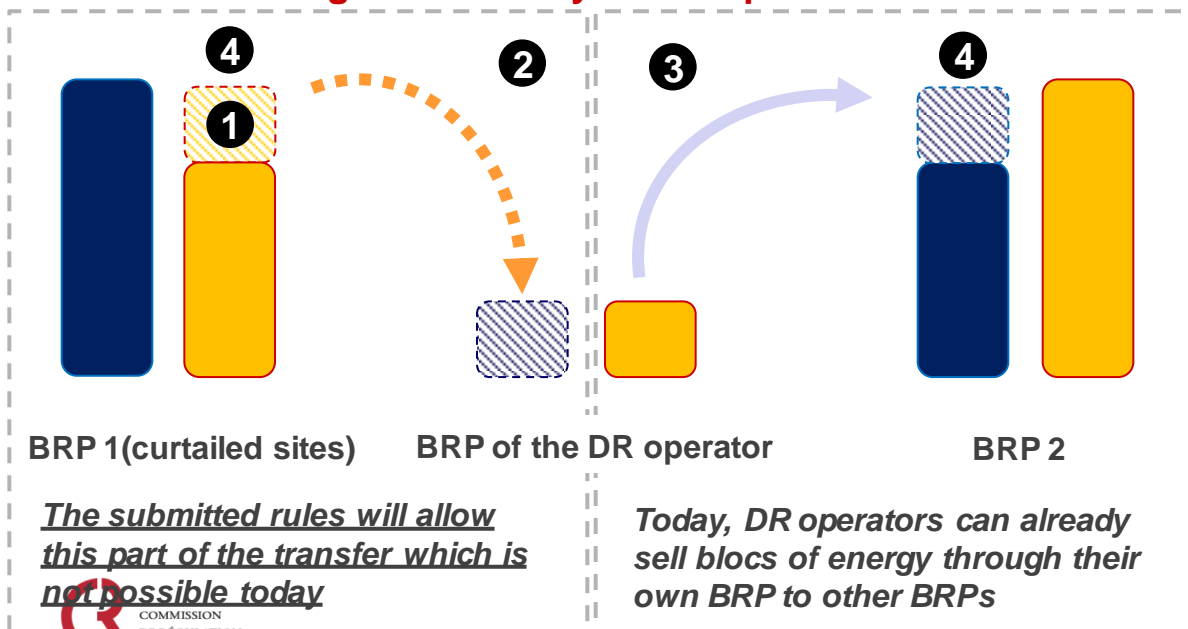
**Thank you for your attention**



# Which market design for explicit DR?

- **Maintain the effectiveness of the DR action for the balancing the system** **Explicit participation of demand response** resources to the wholesale market (mechanism under implementation) alongside supply resource
- Bidding of **demand response based on a transfer of energy** to the balancing responsible party of the site

## Market design that is likely to be implemented in France



- 1 The DR operator curtails the consumption
- 2 The corresponding block of energy is transferred to the BRP of the DR operator
- 3 The DR operator can sell the block of energy on the market or directly to another BRP
- 4 The block of energy is then taken into account in the BRPs settlement