EU Netcode Emergency & Restoration

Users group WG SO EMD – Market interactions workshop

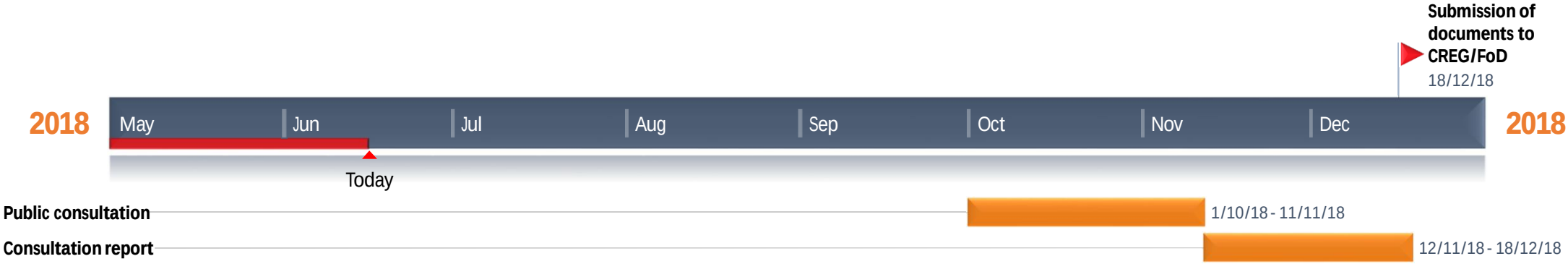
05/09/2018

Legal requirements

By 18 December 2018:

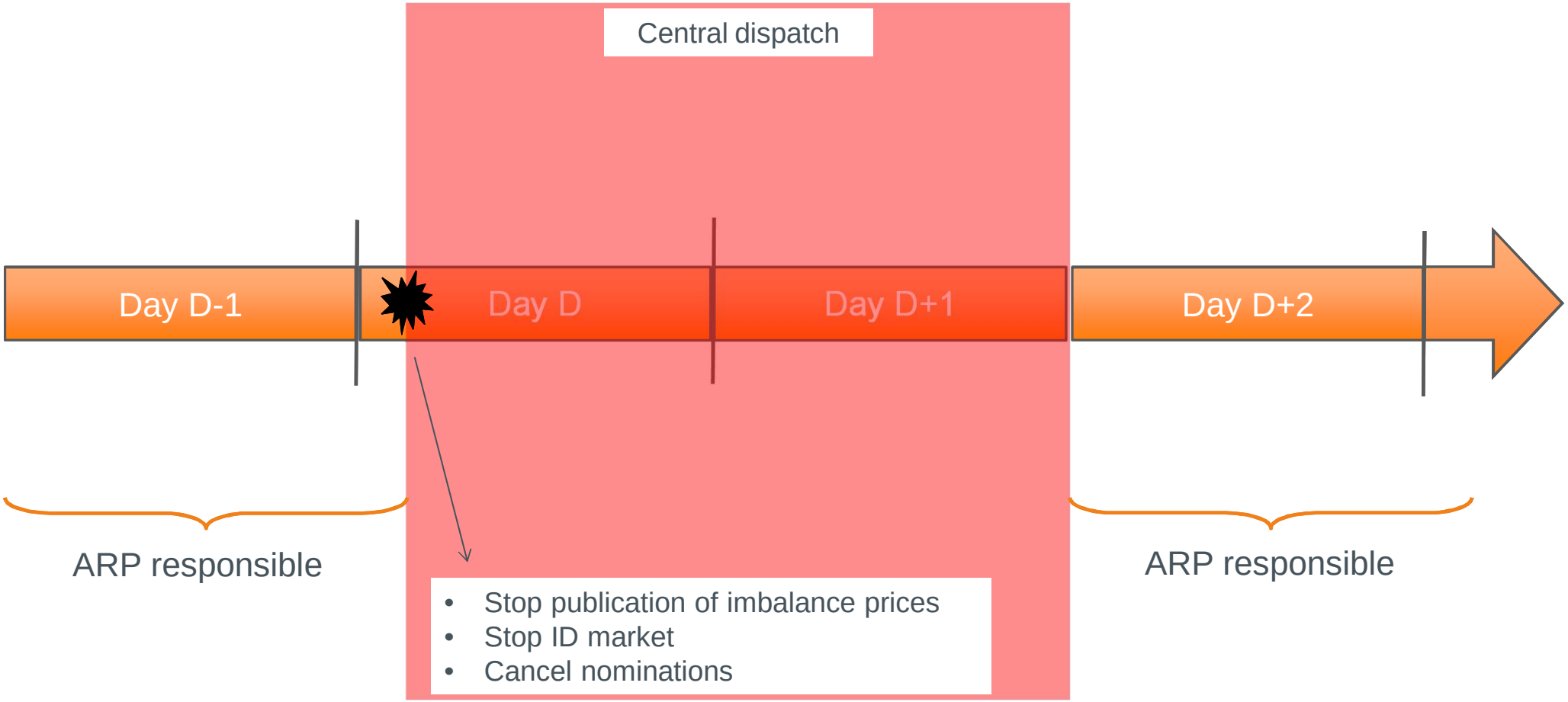
- each TSO shall develop a proposal for **rules concerning the suspension and restoration of market activities**. [Art 36(1)]
- each TSO shall develop a proposal for **rules for imbalance settlement** and settlement of balancing capacity and balancing energy which shall be applicable for imbalance settlement **periods during which the market activities were suspended**. The TSO may propose the same rules it applies for normal operations. [Art 39(1)]

Both to be submitted to CREG for approval after a public consultation

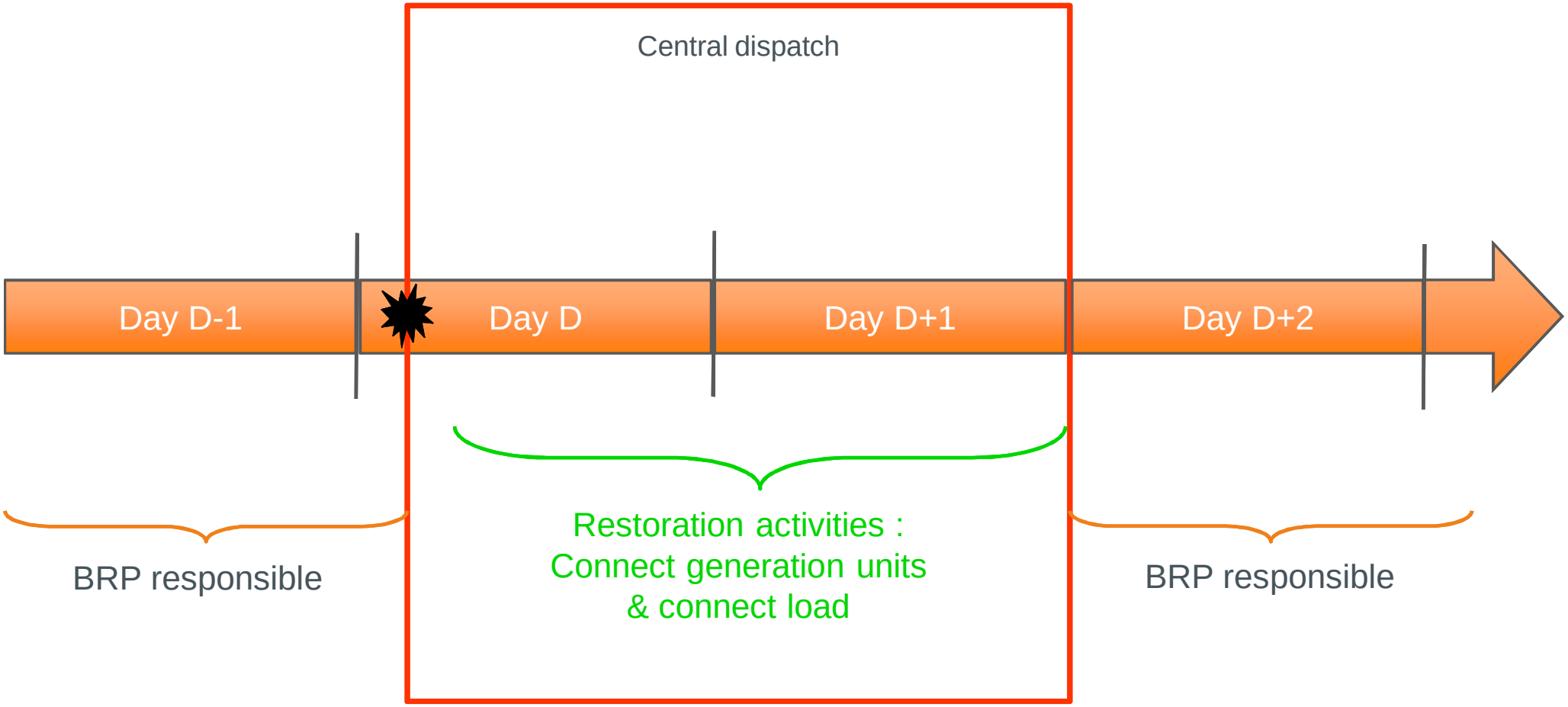


Art 4(3) Regulatory authorities (...) shall decide on the proposals (...) within six months from the date of submission by the TSO.

General principles : full black-out in Belgium

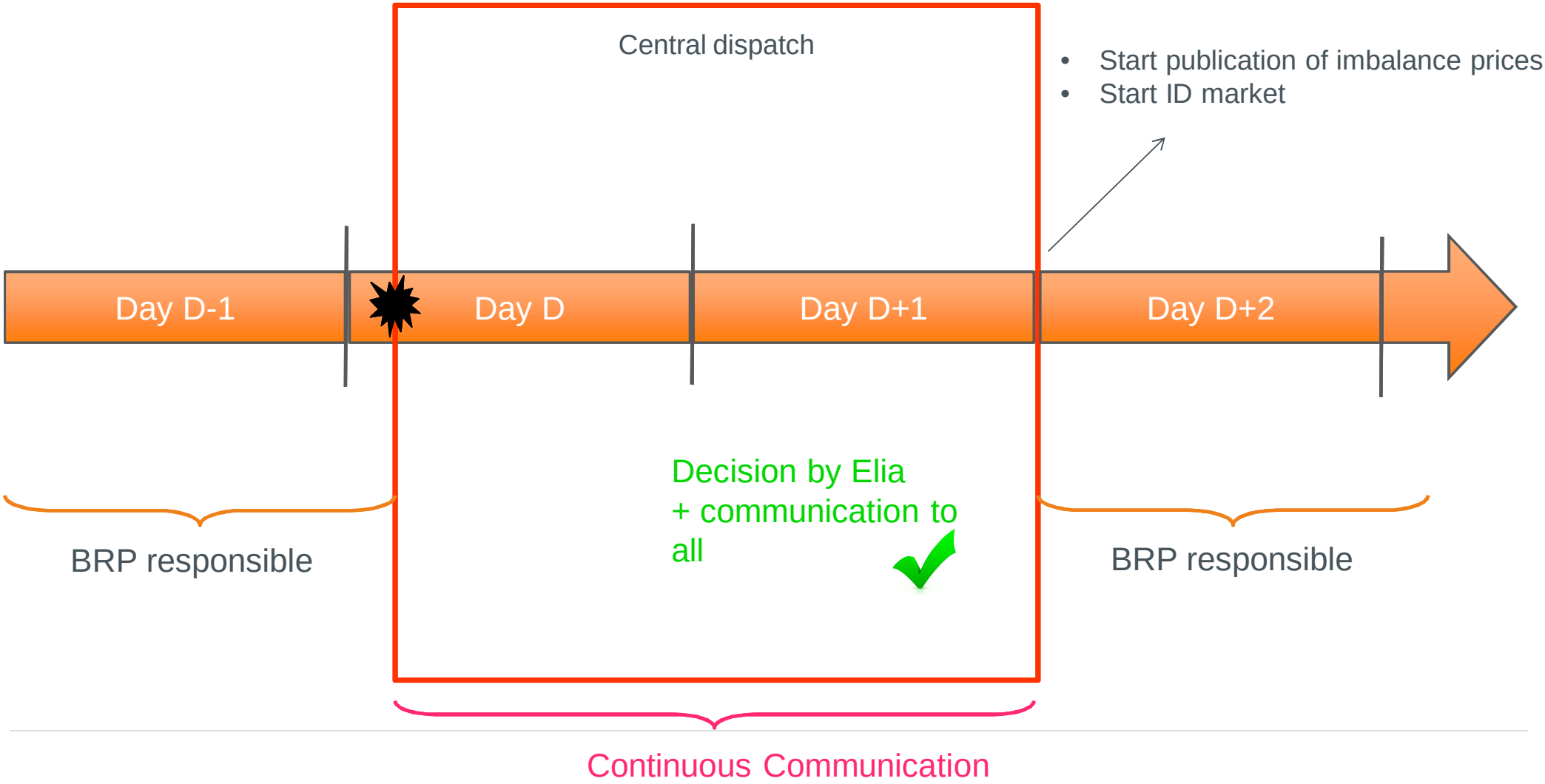


General principles



General principles

General principles



Rules for imbalance settlement during market suspension

Constraints regarding to rules for imbalance settlement

Art. 39.3: The rules shall:

(a) ensure the **financial neutrality** of each TSO (…) ;

(b) **avoid distortions of incentives or counterproductive incentives** to balance responsible parties, balance service providers and TSOs;

(c) **incentivise balance responsible parties to strive to be balanced** or help the system to restore its balance;

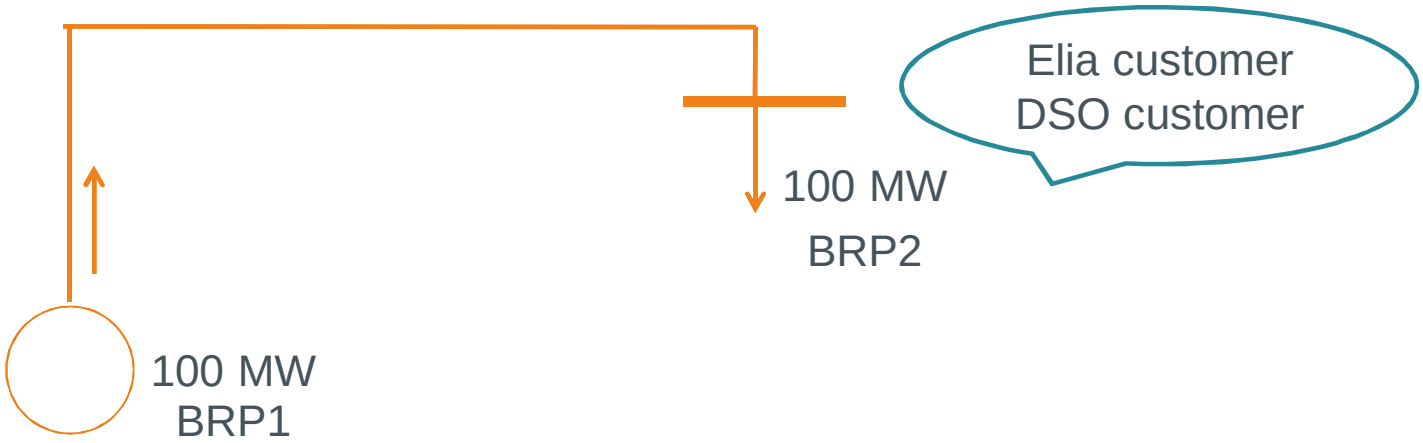
(d) **avoid any financial penalties** imposed on balance responsible parties and balancing service providers due to the execution of the actions requested by the TSO;

(e) **discourage TSOs from suspending market activities**, unless strictly necessary, and incentivise TSOs to restore the market activities as soon as possible; and

(f) **incentivise balance service providers to offer services** to the connecting TSO that helps restore the system to normal state.

During Central Dispatch

- Elia decides upon



- Proposal :
  - no imbalance settlement as in normal situation
  - Settlement of delivered energy :
    - should be financially neutral and an easy process, use existing contractual relationships
    - same price for produced energy and delivered energy, defined ex-ante

Imbalance settlement – General principles during market suspension

- **Restoration tariff**: tariff at which producers have to sell energy to Elia and consumers have to buy from Elia during central dispatch

  Existing examples ex-ante :

  → Example Czech Republic: publication of emergency tariff approved by regulator on 1st Jan each year

  → Example Australia: tariff based on 28d moving average price for week and weekend days, published each week

  Other possibility, but more complex :

  COST-BASED principle -> ex-post calculation and reporting to & validation by CREG

  - Generation units : start & incremental bids based upon CIPU procedures day-ahead [CIPU contract holder]
  - Connected load : ∑ Elia's activation costs/load [Access holders]

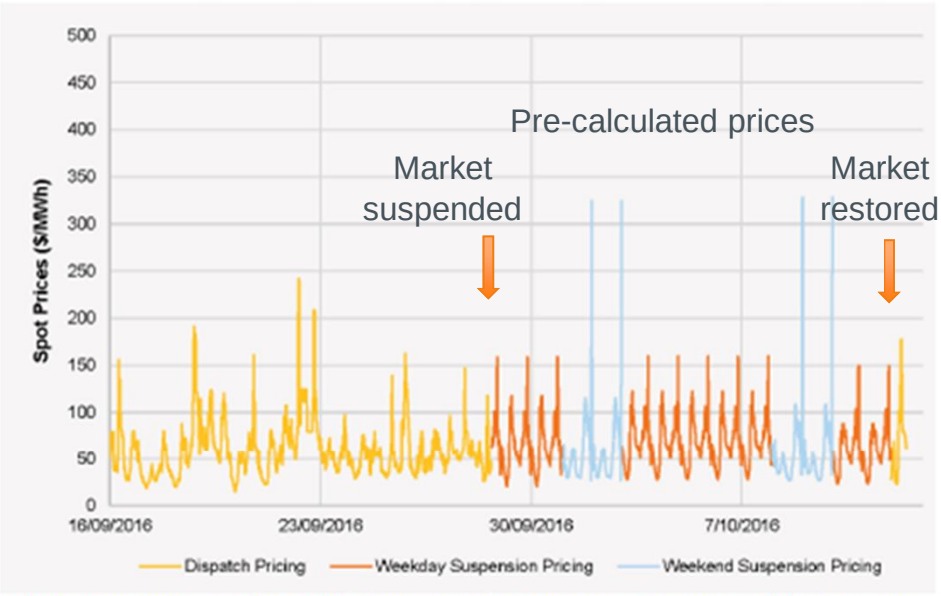
Australian reference:

Two **price sets for producers and consumers**: one for weekday days and one for weekend days

Historical average of prices over 28 day period

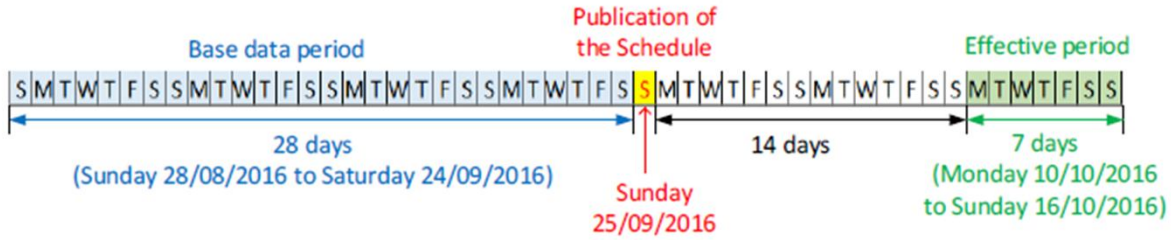
Possible simplifications: e.g. peak and off peak prices

Figure 29 30-minute spot market price in SA since 16 September 2016



Note: Price spikes on weekends reflect price spikes that occurred during the four week price-averaging period prior to Market suspension.

Figure 2: Market Suspension Pricing Schedule - Timeline



Activation of the load shedding plan – case study

Activation of the load shedding plan

- System is in emergency state as long as frequency is outside range 49,8 – 50,2 Hz
- During activation of one or more steps of the automatic load shedding plan, BRP positions might be (heavily) distorted, resulting mainly in LONG positions. Assuming incident is outside Belgium, offtake is reduced by load shedding while injections remain constant.
- System Imbalance will be very high (zone is too strong). Primary control (FCR) is totally activated and secondary control (aFRR) is put in *frozen mode* to prevent automatic reduction of injections in response of positive ACE signal.
- Frequency leader will be appointed on synchronous area level and will instruct Elia what to do with ACE of that moment.
- **BRPs keep their responsibility** to endeavor a balanced portfolio in real time. However, BRPs should not reduce their injection as it would be counterproductive
  - **Elia requires BRPs to keep following their programs**
  - **Publication of imbalance prices is put on hold**
  - **Imbalance settlement is done ex-post**

E&R - Whereas (9)

TSOs should ensure the continuity of energy transactions during emergency, blackout or restoration state and only suspend market activities and market's accompanying processes as a last resort.

Art. 35.1 – Markets could be suspended when

A TSO may temporarily suspend one or more market activities laid down in paragraph 2 where:

(a) the transmission system of the TSO is in blackout state; or

(b) the TSO has exhausted all options provided by the market and the continuation of market activities under the emergency state would deteriorate one or more of the conditions referred to in Article 18(3) of Regulation (EU) 2017/1485; or

(c) the continuation of market activities would decrease significantly the effectiveness of the restoration process to the normal or alert state; or

(d) tools and communication means necessary for the TSOs to facilitate market activities are not available.

To develop the market rules, these situations needs to be converted into **objectively defined parameters** (art 36.4). These parameters should be **assessed in real time** (art. 36.6)

Art. 35.2 – Market activities that could be suspended

Art. 35.2: The following market activities may be suspended:

(a) the **provision of cross zonal capacity** for capacity allocation on the corresponding bidding zone borders for each market time unit where it is expected that the transmission system shall not be restored to the normal or alert state;

(b) the **submission by a balancing service provider of balancing capacity** and balancing energy bids;

(c) the **provision by a balance responsible party of a balanced position** at the end of the day-ahead timeframe if required by the terms and conditions related to balancing;

(d) the **provision of modifications of the position of balance responsible parties**;

(e) the **provision of schedules** referred to in Article 111(1) and (2) of Regulation (EU) 2017/1485, and

(f) other **relevant market activities** the suspension of which is deemed necessary to preserve and/or restore the system.

Communication procedure

Article 38 of NCER:

- 1. ***Rules for suspension and restoration of market activities shall also contain a communication procedure*** *detailing the tasks and actions expected from each party in its different roles during the suspension and restoration of market activities.*
- *2. The communication procedure shall provide that information is sent,* ***simultaneously,*** *to* ***TSOs, NEMOs, BRP, BSP, transmission connected DSOs and relevant regulatory authority***
- *3.* The communication procedure shall include at least the following steps:

(a) the notification by the TSO that **market activities have been suspended** in accordance with Article 35;
(b) the notification by the TSO of **best estimate for the time and date for transmission system restoration**;
(c) the **notification by the NEMO** and other entities designated to execute market functions according to Regulation (EU) 2015/1222 and to Regulation (EU) 2016/1719 **of the suspension of their activities**, if any;
(d) the **updates by the TSOs on the process for restoration of the transmission system**;
(e) the notification by the entities referred to in points (a) to (d) of paragraph 2, that their **market tools and communication systems are operational**;
(f) the notification by the TSO(s) that the **transmission system has been restored back to normal state or alert state**;
(g) the notification **by the NEMO** and other entities assigned or delegated to execute market functions according to Regulation (EU) 2015/1222 of the **best estimate for time and date when market activities will be restored**; and
(h) the confirmation **by the NEMO** and other entities assigned or delegated to execute market functions according to Regulation (EU) 2015/1222 **that market activities have been restored**.

- *...*

General principles for market suspension rules (1/2)

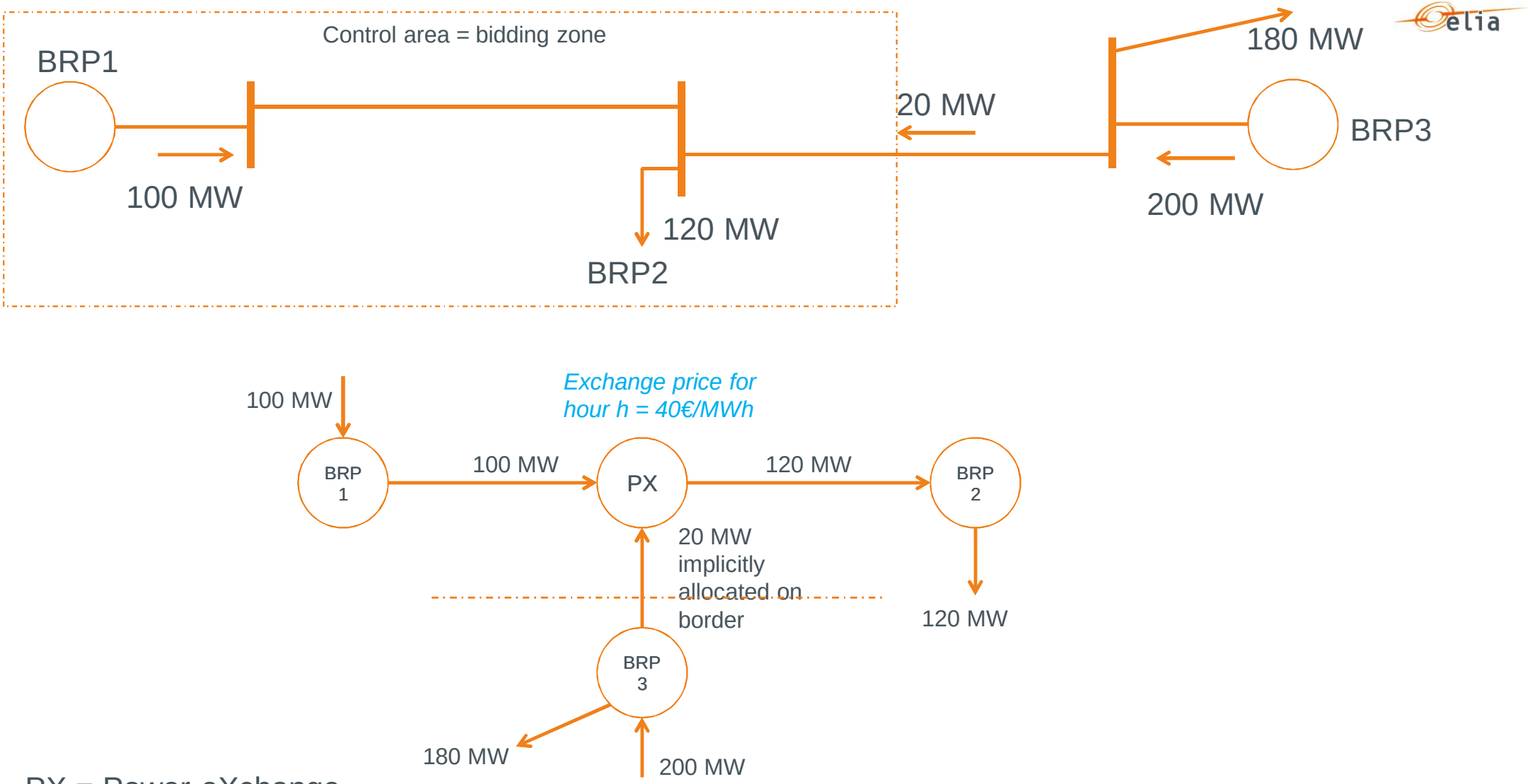
Market suspension	**Putting on hold the responsibility of BRPs** to strive to have a balanced portfolio in real time

- **Keep the BRP responsibility the longest time possible** as they have a positive impact on grid stability due to the financial incentives proposed by the market
- If possible **keep market coupling active** as it will help to restore the market afterwards :
  - When BRP responsibility is put on hold, market places are no longer relevant, but can remain operational
  - If the normal cross border capacity calculation process does not work anymore, the cross-border capacity that will be allocated to the market coupling algorithm, should be set to a default value that can be 0. This default value has to be decided based on the situation.

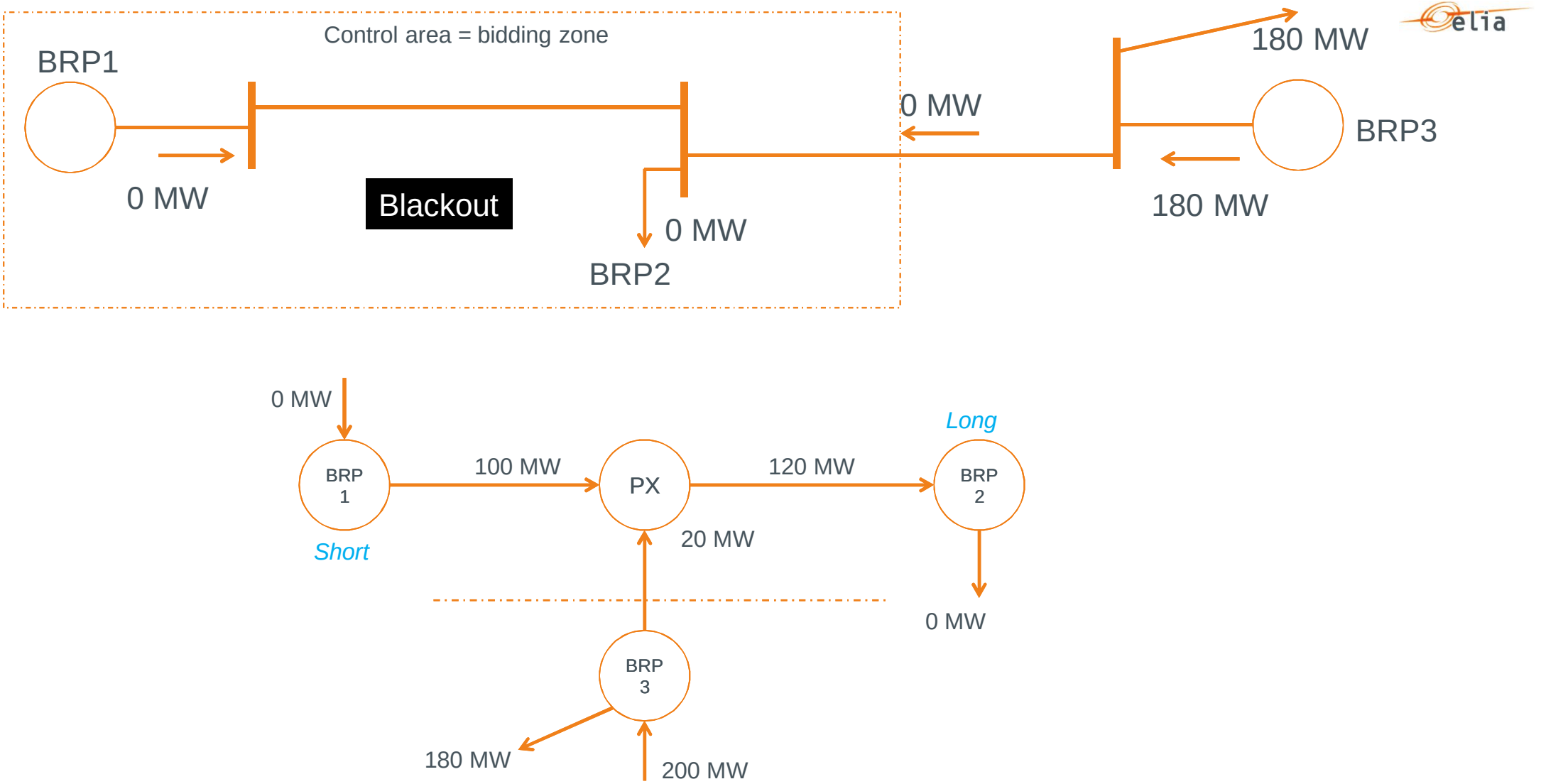
General principles for market suspension rules (2/2)

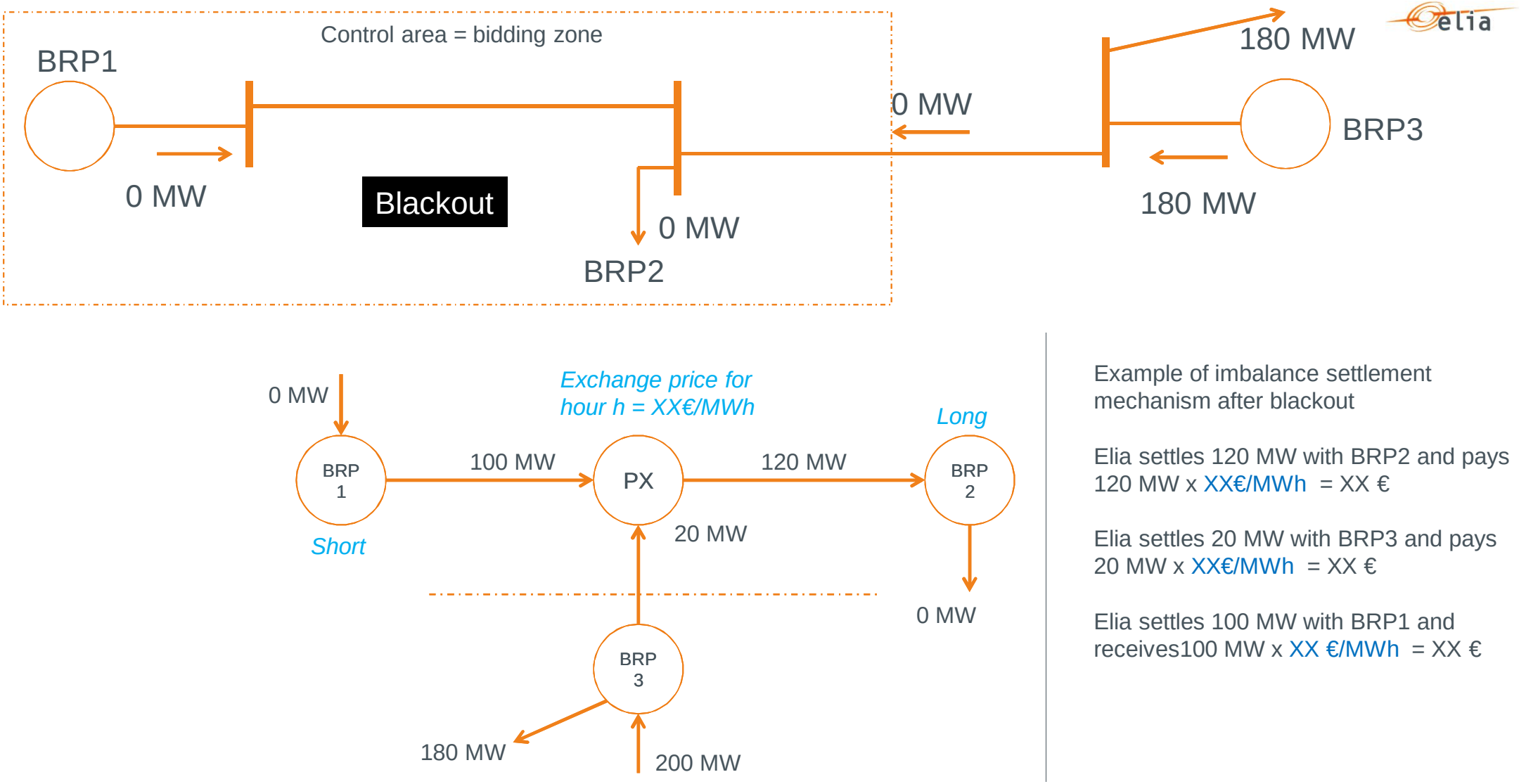
Market suspension in case of:

- **Full blackout** : No transport of electricity is possible, the markets cannot be used; BRP responsibility is put on hold
  - A full blackout is defined as zero voltages in the entire control area, except some small islands or PGMs in houseload operation
- **Unavailable tools and communication systems** : Market transactions cannot occur anymore; TSO may decide to put on hold BRP responsibility
- No market suspension for situations b) and c) of NCER Art. 35.1 : the financial incentives proposed by the markets help to stabilize the grid.



PX = Power eXchange


Control area = bidding zone
BRP1
0 MW
Blackout
0 MW
BRP2
0 MW
180 MW
BRP3
180 MW
0 MW
BRP 1
Short
100 MW
PX
20 MW
120 MW
Long
BRP 2
0 MW
BRP 3
180 MW
200 MW



Example of imbalance settlement mechanism after blackout

Elia settles 120 MW with BRP2 and pays 120 MW x XX€/MWh = XX €

Elia settles 20 MW with BRP3 and pays 20 MW x XX€/MWh = XX €

Elia settles 100 MW with BRP1 and receives100 MW x XX €/MWh = XX €