



The strategic reserve – a mechanism to cover structural shortages

Elia has been given the task of organising a strategic reserve mechanism to cover the structural shortages in the winter period. This mechanism differs from the balancing resources that offset the sum of residual imbalances of ARPs in real time. The strategic reserve makes use of demand side management and out-of-market generation units.

I. The strategic reserve: basic principles

I.1. General background – A mechanism to help ensure security of supply

The Act of 26 March 2014 introduced the strategic reserve mechanism into the Act of 29 April 1999 concerning organisation of the electricity market (Article 7bis- 7novies). Such a strategic reserve will ensure adequate security of supply throughout the winter period lasting from the 1st of November until the 31st of March each year¹. This system forms part of the government plan launched in 2013 to accompany the shutdowns of power stations and safeguard the security of the Belgian control area's electricity supply in the short, medium and long term. The Act of 30 July 2018 amended the legal framework of the strategic reserve.

I.2. When should the strategic reserve be activated?

Elia was given the task of organising this mechanism and constituting a strategic reserve to cover the risk of structural shortages² in the control area during the winter. This makes the strategic reserve different from balancing reserves, which are used to address sudden or residual imbalances in the Belgian control area.

I.3. Two sources used for the strategic reserve

The strategic reserve takes two forms, whose activation produces similar results:

- the 'strategic reserve delivered by generation units' (SGR)³;
- the 'strategic reserve delivered by a reduction in the offtake on the demand side' (SDR)⁴.

The SGR is supplied by generation units in the Belgian control area that have already been shut down according to the Electricity Act⁵. The generation unit will be considered to be operating out-of-market for the share of capacity contracted by Elia. The idea behind this is to minimise any interference between the strategic reserve and the operation of the electricity market.

The SDR is supplied by demand-side management offers: a temporary reduction in offtake, whether individual or aggregated, has the same impact on the balance of the control area as an increase in generation. The SDR-volume (Rref) is offered on the basis of the offtake of individual or grouped 'Delivery Points'⁶, who need to be connected to (a) (sub)meter(s) in order that Elia can control and measure the delivery of the SDR-service. By participating in the Strategic Demand Reserve, the SDR supplier is committing himself to reduce its global offtake, behind a delivery point or multiple delivery points, at Elia's request and against remuneration. Furthermore there exist two variants of SDR, who both will reduce their offtake to a power level (Target). The Target is the level of offtake that SDR-unit should reach during the period of effective delivery of activation. This level is fixed in the case of SDR DROP TO, and variable in the case of SDR DROP BY (for which the reduction in offtake, ΔP , is fixed).

1 For more details, see www.power-in-balance.be

2 The structural shortage of the area is calculated on the basis of the Loss of Load Expectation (LOLE), i.e. a statistical calculation used to determine the anticipated number of hours during which it will not be possible for all generation resources available to the Belgian power grid to cover the load, taking account of interconnections, for a statistically normal year. See the relevant Act (Article 2, 52°-53° and Article 7bis).

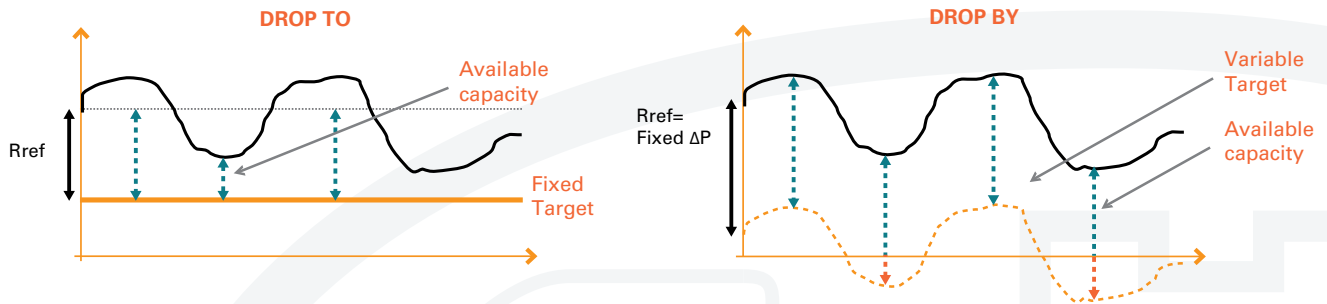
3 Also called the 'Strategic Generation Reserve' or SGR.

4 Also called the 'Strategic Demand Reserve' or SDR.

5 According to Article 7quinquies of the Act, these generation units will have already been out of service, either temporarily or permanently, since the end of the winter period preceding the year for which the constitution of a strategic reserve is being considered.

6 A Delivery Point can be:

- a. an Access Point connected to the ELIA Grid;
- a. an Access Point connected to the Distribution Grid;
- c. another point within the electrical facilities of a grid user downstream of an Access Point connected to the ELIA Grid (hereafter defined as 'Delivery Point within an Industrial Site');
- d. a point in a CDS connected to the ELIA Grid.



II. Constitution of the strategic reserve - An annual procedure

II.1. Annual procedure

Each year, the Federal Minister for Energy may, following the advice of the authorities (the Directorate-General for Energy) and a statistical analysis of security of supply conducted by Elia, instruct Elia to constitute a strategic reserve for the upcoming winter period. In the decision, the Minister sets the required strategic reserve volume in MW, with a specific volume. This volume can be revised by the Minister until September 1, taking into account latest information concerning the upcoming winter period. The strategic reserve can change year by year depending on requirements, following the same procedure. In other words, the Minister decides on the required volume while the market sets the price of the strategic reserve, by means of the offers received during the tendering process.

II.2. Competitive tendering procedure for the strategic reserve and award of contracts

Elia sets the tendering rules for the procedure for constitution of strategic reserve⁷ following a public consultation involving the market players, CREG and the authorities.

The constitution procedure includes the procedure for admission of candidate suppliers, the key principles of the SGR and SDR contracts, the instructions for submitting offers, the criteria for allocation of the strategic reserve⁸ and, finally, the contract process and the contract award notice.

At the end of the contract award process, the selected tenderers sign a contract with Elia covering the upcoming winter period, unless CREG deems that the offered prices are manifestly unreasonable. If this is deemed to be the case, the volumes and prices can be imposed on the selected tenderers by Royal Decree for the required period.

II.3. Remuneration

The remuneration mechanism varies depending on whether the suppliers are offering SGR or SDR. The total remuneration is determined by the prices offered by the suppliers during the contract award procedure and CREG's opinion on whether the offers are unreasonable.

The remuneration for the SGR covers the expenses incurred by the supplier for keeping available and generating the energy at Elia's request. This remuneration takes account of the cost of the fuels and overheads, and of the period of activation and the volume injected in MWh. For the SDR, suppliers are remunerated for the availability of the contracted capacity and for the activation of the SDR.

For each activation of the SGR and SDR, Elia checks the energy actually injected or shed in each quarter-hour, with penalties being incurred in the event of failure to execute the contract properly.

III. Activation of the strategic reserve

III.1 Principles

Elia submits yearly the rules governing the functioning of the Strategic Reserve⁹ and they are approved by CREG. The document describes arrangements for how the suppliers of the contracted strategic reserve are activated by Elia in the course of a winter period.

⁷ Procedure for Constitution of Strategic Reserves, available at www.elia.be > Products & Services > Strategic Reserve > Documents.

⁸ While the strategic reserve award criteria form part of the Procedure for Constitution of Strategic Reserves, the technical and economic criteria for offers are defined in the Functioning Rules approved by CREG.

⁹ Functioning Rules of the Strategic Reserve, available at www.elia.be > Products & Services > Strategic Reserve > Documents.

The document also details rules for identifying a structural shortage and principles regarding the activation of the strategic reserve by Elia. It sets out the rules governing the reservation of capacity, the operational process of activation and remuneration for the energy, and the impact of the strategic reserve on imbalance tariffs. The Functioning Rules also provide for making data available to the market relating to the reservation and activation of the strategic reserve, and the general monitoring of the mechanism. Finally, the Functioning Rules foresee in conditions for SGR units if they wish to return to the market.

III.2 Identifying the risk of a structural shortage

The strategic reserve is activated once an energy shortage on the Day Ahead electricity market (economic trigger) or a risk of structural shortage in the Elia control area (technical trigger) has been detected.

The economic trigger

The economic trigger is based on an automatic risk detection process: if the results of at least one Day Ahead Market (DAM) segment of a Nominated Electricity Market Operator (NEMO) indicates a shortage in the total volume of energy on offer vis-à-vis the demand for energy, on day D-1, these NEMOs launch a process for additional energy allocation for the specific market segment, namely the Strategic Reserve Market (SRM) segment¹⁰.

In practical terms, after the results of the Day Ahead Market segment, the NEMOs with a SRM communicate the uncovered demand in their Day Ahead Market to Elia. Hereafter, Elia puts a strategic reserve volume at their disposal (if the available strategic reserve volume is insufficient, Elia will allocate this volume pro rata the uncovered demand of each NEMO). The NEMOs will thereafter allocate the available strategic reserve volume to meet the energy demand, to the extent possible, on the NEMO's DAM that has not been covered and has been transferred to the SRM segment¹¹. If the volume is insufficient, it will be allocated to meet demand on a pro-rata basis. These exchanges of energy are made at the maximum price that applies on the Belgian DAM (currently 3,000 €/MWh). Elia publishes before the DAM closure the strategic reserve volume at its disposal for each hour of the following day¹².

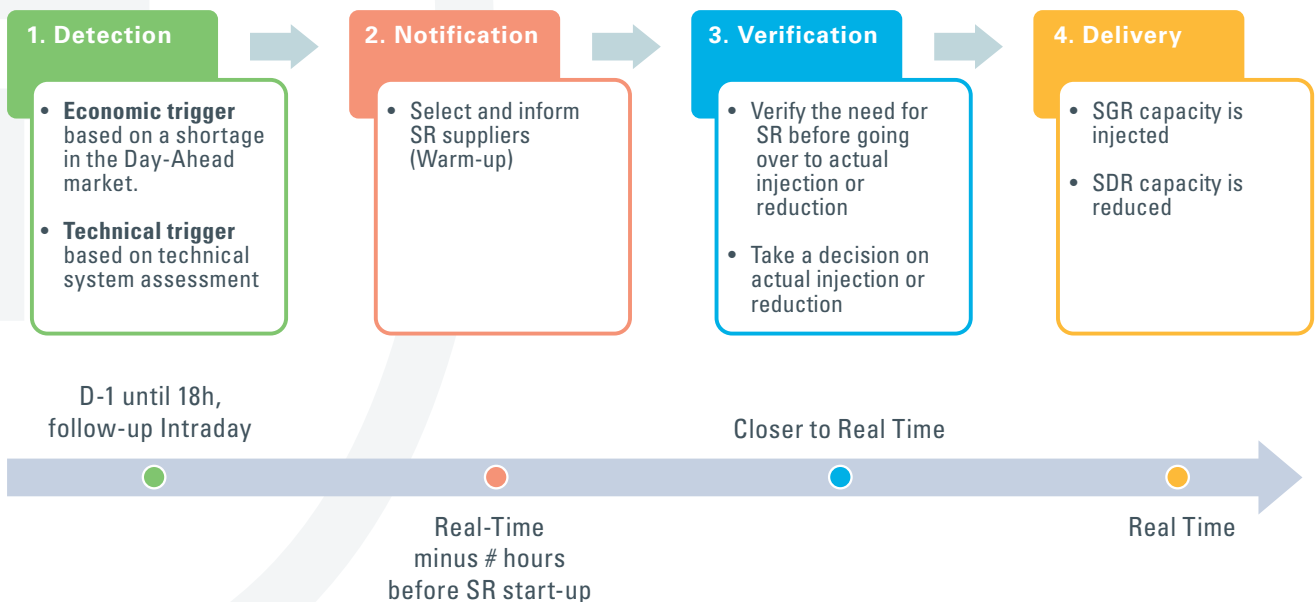
The technical trigger

The technical trigger is activated if on day D-1 or in the course of a day (intraday basis) Elia identifies a structural shortage risk. Specifically, Elia will use as its basis forecasts for the total generation¹³ and total consumption of the control area. If Elia considers there is a sufficient risk of a structural shortage, it may then resort to using the strategic reserve.

III.3 The four phases in the activation of the strategic reserve

The operational stages in the activation process make allowances for the time needed for the suppliers of strategic reserves to prepare their units, while providing as much flexibility as possible to cancel or put off activation.

The four phases in the activation process:



¹⁰ NEMOs with a SRM-segment are published on the website of Elia (www.elia.be > product and services > strategic reserve > Documents).

¹¹ This will not be the case when this situation occurs during a decoupling of at least one Day Ahead Market of a NEMO in Belgium. This is a situation where the DAM is not coupled with other Day-Ahead Markets and thus where no results are obtained from the algorithm for price coupling with other day-ahead markets (e.g. following an IT problem). In this case, the market results on DAM are calculated by means of a local matching.

¹² These volumes are limited to the volumes of SGR units.

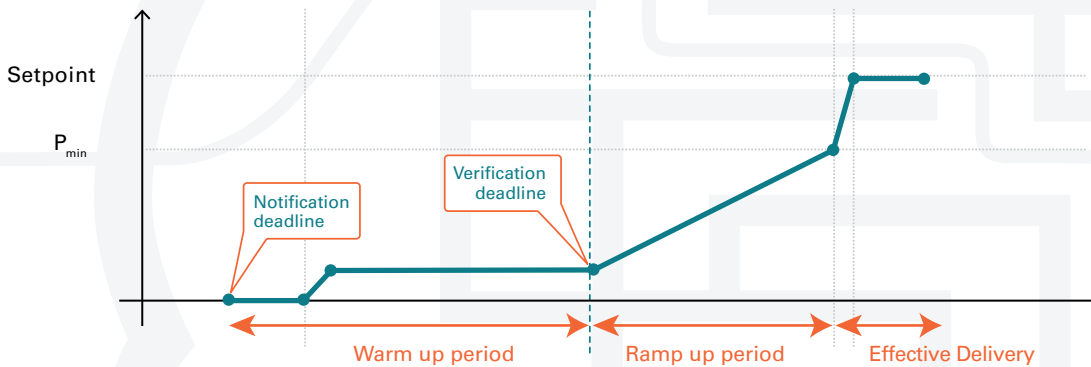
¹³ This corresponds to the generation forecast throughout the day, including planned net imports, the generation of centralised units and generation forecasts for solar/wind energy facilities and decentralised units.

1. Detection: once the need to activate the strategic reserve has been identified (based on the technical or economic trigger), Elia selects from among the units constituting the strategic reserve those that need to be activated to cover the volume needed at the appropriate time.

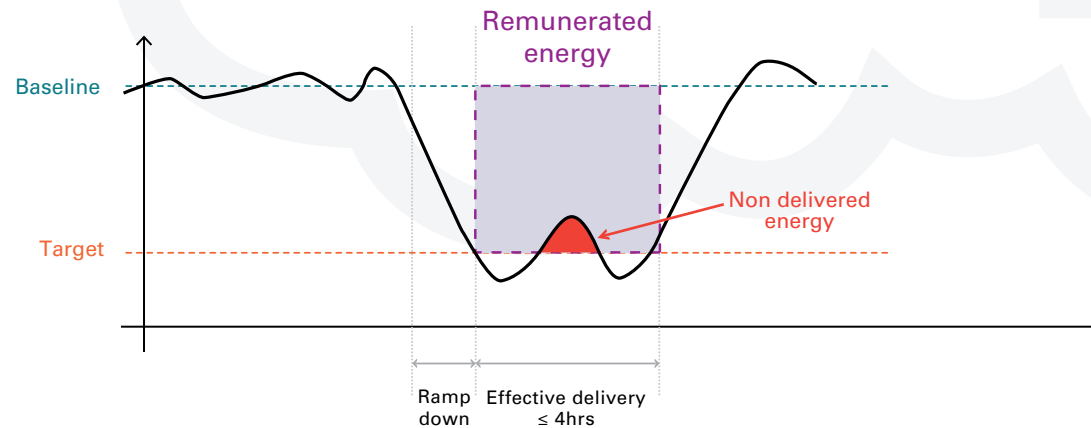
2. Notification: the selected suppliers are notified several hours before activation so that they can prepare their units to be ready to inject/shed the volume required at the moment needed, taking into account their activation times (known as 'warm-up' period). This preparation phase may take up to 5 hours and may be cancelled by Elia without prior warning. At the end of the notification phase, Elia indicates whether the process should move on to the verification phase, the notification phase should be extended, or the activation request should be cancelled.

3. Verification: at this stage, Elia confirms the need and the required volume of energy. Elia instructs the suppliers (SGR and/or SDR), i.e. the units that received the notification and therefore are supposed to have carried out the necessary preparations during the warm-up period and ready to gradually inject energy in the net, to activate the service or keep it on standby or stop it. The verification phase takes place after the notification and takes into account the necessary time for the selected units to reach the set point. It is always possible to cancel the activation before the delivery phase.

The SGR units start their 'ramp-up period': this is the second start-up phase, during which the injected capacity gradually rises until it reaches the minimum generation level of the unit.



The SDR units start their 'ramp-down' period: suppliers have up to 1 hour 30 minutes to gradually shed demand to below the Shedding Limit¹⁴ indicated in the contract.



4. Delivery: the beginning of the phase of effective delivery is the moment on which the unit must attain the required power level demanded by Elia (taking into account the duration of the previous phases who are specific for each unit; this quarter is determined when Elia is calling on the unit) and ends when Elia asks to stop the unit. Elia may interrupt the activation phase at any time when the activated volumes are no longer required.

14 Shedding Limit: This is the capacity level under which a SDR supplier undertakes to shed the total consumption of its access point(s) in case of activation.

IV. Impact of strategic reserve activation on the ARP's balancing perimeter

For SGR units, the Electricity Act¹⁵ stipulates that generation units supplying the strategic reserve are out-of-market. Access points relating to SGR unit injections are in the perimeter of an ARP but their contribution is neutralised in the perimeter of that ARP. This rule only applies to injection; any offtake at the same access points remains active in the ARP's perimeter. The ARP contract describes this partial neutralisation of the ARP's perimeter.

For SDR units, the next principles are being applied:

- For Delivery points that are access points to the Elia-grid; the effect of activation is being replaced by the baseline¹⁶ of the ARP(s) in the corresponding perimeter during the Ramp-down period until the end of the effective delivery;
- For all other Delivery points the ARP's perimeter will not be adapted.

V. Impact of strategic reserve activation on the imbalance price

A structural shortage means that total injection, including import of energy from other control areas, is not sufficient to cover the needs of the Belgian control area. Such a situation results in real time in a negative imbalance in the perimeter of the ARPs concerned and in the control area. The energy supplied by the strategic reserve is brought to the market at a price consistent with the required price signals, at least at the value of the so-called Administrative Imbalance Price (AIP). The imbalance tariff is significantly higher because it must encourage every ARP to remain in balance or to restore the perimeter to balance as quickly as possible.

Activation of the strategic reserve by Elia, after the determination of a risk of a 'Structural Shortage of the Zone' by an economic or technical trigger, is a necessary condition but is not sufficient to trigger this AIP. Elia uses a real time indicator, the 'Structural Shortage Indicator' (or SSI), to characterise the situation that the area's security of supply would be in if no strategic reserve had been launched. It is the combination of the strategic reserve activation with the SSI which triggers the AIP¹⁷. When for a quarter-hour, the strategic reserve is activated following an economic or technical trigger, the SSI is positive during the current and last previous quarter-hour, and the quarter-hour is in the "period to cover", i.e. with a Structural Shortage of the Zone following an economic or technical trigger, the imbalance tariff will be set at the AIP, currently set at a value of at least 10,500 €/MWh, as specified in the tariff for maintaining and restoring the individual balance of access responsible parties¹⁸. The imbalance price will exceed the value of 10,500 €/MWh when set by the selection of an offer on the balancing market with an activation price higher than 10,500€.

		REAL TIME INDICATOR	
		SSI = 0	SSI = 1 SI < - IBIDs ¹⁹ for 2 consecutive quarters
DETECTION & ACTIVATION	No foreseen injection of SR	Normal imbalance tariff	
	Foreseen injection of SR during 'the period to be covered'	Corrected price, reflecting the situation without SR injection Based on Available Regulation Capacity	Administrative Imbalance Price (AIP), currently set at a value of at least 10,500 €/MWh

VI. Information made available to the market in the event of strategic reserve activation

Elia informs market players about the stages of a current activation and their impact on the indicators used to set prices for offsetting quarter-hourly imbalances. This publication takes place 15 minutes after real time using non-validated information, and 15 days after the month concerned using validated information.

For the duration of the strategic reserve activation, market players will have the following information:

- The 'RSS feed' sends updates about a detection of an economic/technical trigger, but also about different states and volumes during activation as soon as this information is known and gets communicated to the supplier involved. Each visitor can subscribe to receive these updates.
- The page 'Activation status' contains real time information about the current status of strategic reserve – both day-ahead and intraday. This information contains information about the activated trigger, the current status of activation and the volumes reflecting the need of strategic reserve. This information becomes visible from the moment the status/trigger is active.

¹⁵ Article 7 quinquies, paragraph 2(2) of the Electricity Act.

¹⁶ A baseline is an estimate of the electricity that would have been consumed in the absence of an activation.

¹⁷ 'Functioning rules', on www.elia.be > The Functioning Rules always have priority on the product sheet. Products & Services > Strategic Reserve > Documents.

¹⁸ Available at www.elia.be > Elia > Transmission tariffs

¹⁹ On units that can be coordinated, as published on the 'available regulation capacity' on www.elia.be > Grid Data > Balancing.

- The page 'Using regulation capacity' shows the strategic reserve volume activated by Elia in the control area and other balancing resources that were activated during that quarter-hour.
- The page 'Available regulation capacity' shows the instantaneous projection of the volumes that can be activated to offset the imbalances and the marginal prices corresponding to their activation on the basis of nominations. Using the bid prices for available regulation volume per volume, the imbalance tariffs are administratively recalculated during an injection of strategic reserve.
- On the page 'Imbalance prices', the system imbalance of the control area, the net regulation volume and the corresponding imbalance price can be consulted. On this page, a graph indicating the volume I C bids, an indication when there is a SR need and the evolution of the imbalance of the system can be found.
- The page 'SR capacity' presents the available SGR capacity that can be sold in day ahead, in case of an economic trigger, as well as the effective volume sold based on an economic trigger.
- The page 'Delivery tests' shows the executed tests, as well as the maximal power and the period of the test. In case of a test on demand of the supplier, this information is published before the test, after approval of the test by Elia. In case of a test on demand of Elia, this information is not published on beforehand, but will only be announced by means of RSS Feed at the time that the notification message is send to the supplier.
- A 'User manual', explaining the location of the ELIA website where the ARPs and other market players can find the necessary information with regards to the mechanism of strategic reserve.

VII. Legal and contractual basis

The strategic reserve mechanism is provided for by the Act of 29 April 1999 concerning organisation of the electricity market (Article 7bis – 7novies). The arrangements on how it is organised are set out in the Rules governing the Functioning of the Strategic Reserve, which are approved by CREG. Elia and the suppliers chosen to participate in the strategic reserve are bound by service contracts, after selection of offers following an annual tendering procedure.

Functioning Rules, Procedure of Constitution and other relevant documents can be found on:
www.elia.be > Products and Services > Strategic Reserves > Documents

The strategic reserve in 5 key points

- The strategic reserve is designed to address the risk of a structural shortage in the Belgian control area during the winter period. The strategic reserve is different from balancing reserves, which are used to address sudden or residual imbalances.
- The strategic reserve is activated in four phases, following detection of a risk of an energy shortage on the electricity market (economic trigger) or in the control area (technical trigger).
- The strategic reserve is contracted by Elia with generation units, which are situated out-of-market, that inject energy into the grid (SGR) and with access points (delivery points) that shed consumption (SDR).
- SR units operate out-of-market in order to minimise interference between the strategic reserve and the operation of the interconnected market.
- The energy supplied by the strategic reserve is brought to the market at a price consistent with the required price signals during a period of structural shortage.

