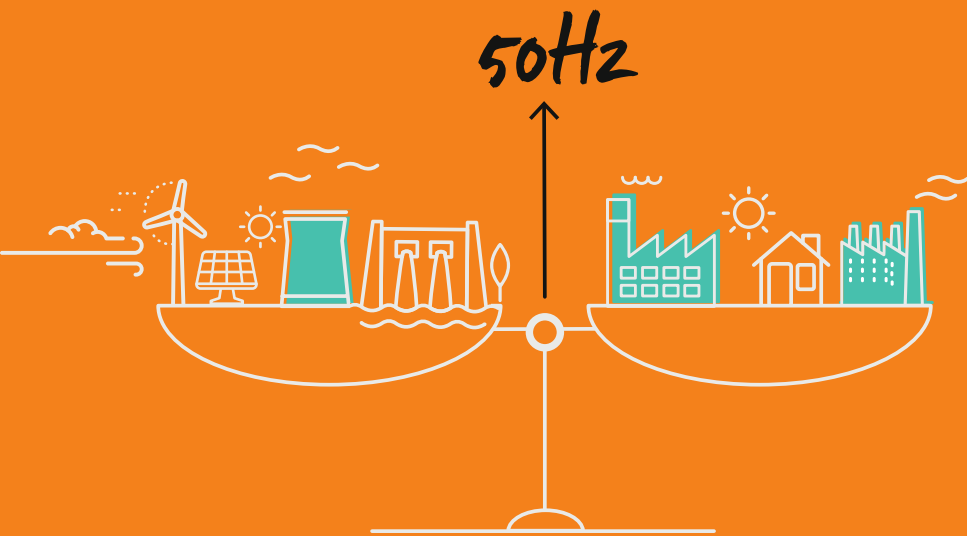


# Flexible Demand Management Products .....



# A question of balance



Elia faces a daunting challenge: maintaining a balance between injected and consumed energy 24 hours a day, seven days a week.

Electricity cannot be stored in large quantities. This means that generation must be **adjusted continually** in line with consumption.

Transmission system operators (TSOs) such as Elia oversee balance in their own control areas in accordance with joint rules agreed at European level.

This balance is essential to ensure that the grid operates correctly at the required constant frequency of 50 Hz.



# Control reserves

Elia works with its fellow European TSOs to maintain grid balance by means of a regulation procedure involving three types of control reserve:

## Primary reserve for frequency control (R1 or FCR)

Participating system actors react to frequency deviations automatically and very quickly, within 0 to 30 seconds.

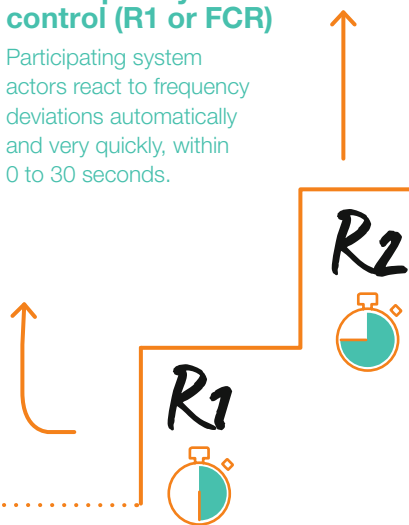
## Secondary reserve for automatic frequency restoration (R2 or aFRR)

This reserve is activated on the basis of a signal sent automatically and continually. System actors who participate in R2 must react within 30 seconds to 15 minutes to release the primary reserve and restore the grid frequency to 50 Hz.



## Tertiary reserve for manual frequency restoration (R3 or mFRR)

This reserve enables Elia to cope with a significant or systematic imbalance in the control area and/or resolve major congestion problems. It is activated on the basis of a manual signal by Elia and must be fully available within 15 minutes.



When unexpected fluctuations result in an imbalance between the energy injected into and taken out of the grid, balance must be restored very quickly by adjusting generation or consumption upwards or downwards. This is done by means of **control reserves**.

## Example of how the system works



### Incident

A Belgian power station shuts down following a major failure. The frequency drops below 50 Hz.

### R1

Primary reserve is **activated immediately** throughout the region to prevent a further drop in frequency.

### R2

After 30 seconds, **Belgian secondary reserve** automatically takes over, to restore the frequency to 50 Hz.

### R3

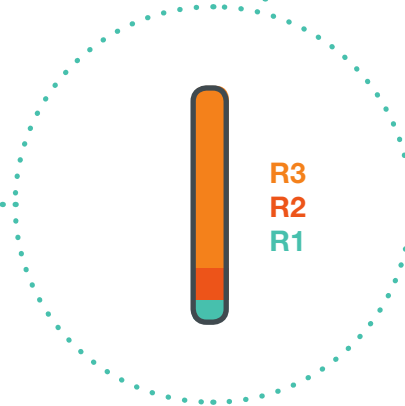
After 15 minutes, it is replaced by **Belgian tertiary reserve**, activated manually by Elia.

# We need you!

With the Belgian and European energy mix changing rapidly, there is a growing need for flexible capacity, partly because of the increasing role played by renewable energy, much of it volatile, in electricity generation. Elia must therefore find new ways to acquire this flexibility. As well as power stations, industrial businesses connected to the transmission and distribution system can also contribute to the reserves by agreeing to adjust their consumption, and/or any decentralised generation they have, subject to certain conditions.

This is where you come in!

**In 2017, Elia contracts the following reserve:**



**R1 = 68 MW**

Already open to flexible demand

**R2 = 144 MW**

Not yet open to flexible demand

**R3 = 780 MW**

Already open to flexible demand

In addition, Elia will be acquiring non-reserved volumes of R3 under a new product being rolled out in 2017: **Non-reserved R3.**



# What can you offer Elia in return for payment?

Elia does not generate electricity itself. It must therefore rely on the market, including industrial customers like yourself, to acquire the flexibility it needs to maintain balance on the grid.

## 2 types of products



### Reserved volumes

(= availability must be guaranteed throughout the contract, whether monthly or weekly)



### Non-reserved volumes

(= no availability requirement outside of the energy offer made to Elia)

$R_1$



Primary reserve  
(activated automatically in a few seconds)

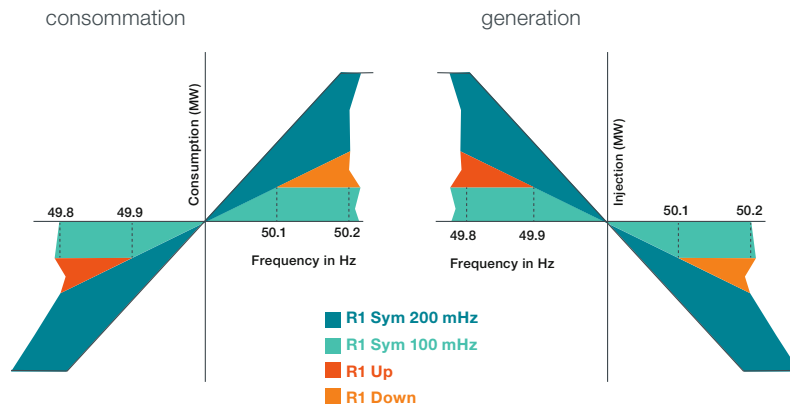
$R_3$



Tertiary reserve  
(activated manually in under 15 minutes)

# R<sub>1</sub>

## Zoom on primary reserve



### What is it?

**Reservation** product: continuous, **automatic and decentralised** response to frequency deviations. The volume must be deployed in full **within 30 seconds**.



### Who can offer it?

Consumers and holders of decentralised generation capacity connected to the transmission or distribution system or aggregators who can react **almost immediately** to a frequency deviation on the grid.



### Volume offered?

A minimum of 1 MW (can be spread across multiple sites or offered with a partner).



### Types of services you can offer Elia?

#### 4 different products:

- **R1 Sym 200 mHz:** You agree either to increase your consumption (or reduce your injection) or to reduce your consumption (or increase your injection) in the event of a change in frequency in one direction or the other. Elia will expect you to react in proportion to the deviation within a frequency range of 200 mHz.
- **R1 Sym 100 mHz:** Identical to the previous product, but in the event of a change in frequency in one direction or the other. Elia will expect you to react in proportion to the deviation within a frequency range of 100 mHz.
- **R1 Up:** You agree to reduce your consumption (or increase your injection) if the frequency falls below 49.9 Hz.
- **R1 Down:** You agree to increase your consumption (or reduce your injection) if the frequency rise above 50.1 Hz.



### How does Elia buy this service?

Via **weekly** auctions open to all participants connected to the Elia grid, the distribution systems or a closed distribution system (CDS).



### Availability of the service offered?

The service offered must be **100% available** during the supply period.

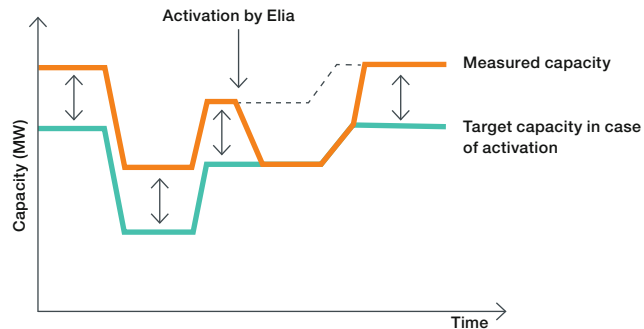


### What's in it for you?

Elia will pay a **reservation fee** for the service, based on the volume offered.

R3

# Zoom on Tertiary reserve (reserved volumes)



### What is it?

**Reservation** product: activated manually at Elia's request. The volume must be deployed in full within 15 minutes, i.e. the target capacity must be reached within 15 minutes.



### Who can offer it?

Consumers and holders of decentralised generation capacity connected to the transmission or distribution system or aggregators who can react **within 15 minutes and for a period of 2 or 8 hours**, depending on the product chosen.



### Volume offered?

A minimum of 1 MW (can be spread across multiple sites or offered with a partner).



### Types of services you can offer Elia?

#### **2 different products:**

- **R3 Standard:** activation of up to 8 hours per day, with an unlimited number of activations.
- **R3 Flex:** activation of up to 2 hours every 12 hours, with a maximum of 8 activations per month.



### How does Elia buy this service?

Via **monthly** auctions open to all participants connected to the Elia grid, the distribution systems or a closed distribution system (CDS).



### Availability of the service offered?

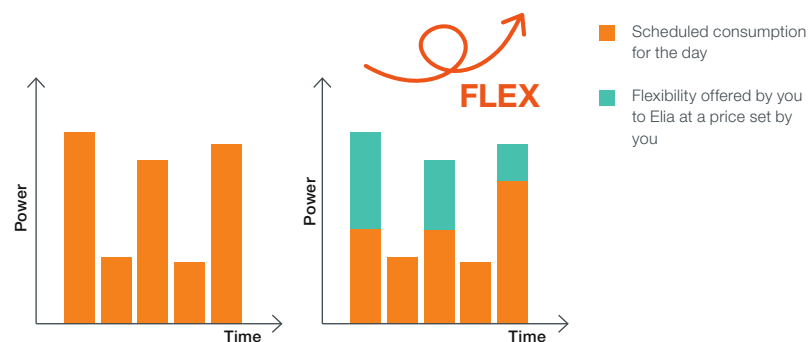
The service offered must be **100% available** during the supply period.



### What's in it for you?

Elia will pay a **reservation fee** for the service, based on the volume it activates.

# Zoom on Tertiary reserve (non-reserved volumes)



## **What is it?**

**Non-reserved** product: activated manually at Elia's request. The volume must be deployed within a maximum of 15 minutes.



## **Who can offer it?**

Consumers and holders of decentralised generation connected to the transmission system who are able to **react to a signal from Elia within a maximum of 15 minutes** for a period of at least 15 minutes.



## **Volume offered?**

A minimum of 1 MW (can be spread across multiple sites or offered with a partner).



## **Types of services you can offer Elia?**

Offers of MW/h flexibility on a 15-minute basis at times that suit you and at a price that you set yourself.



## **How does Elia buy this service?**

Offers are submitted **via a portal** for each quarter-hour of the 24-hour day. Elia activates the volume it needs up to the maximum offered.



## **Availability of the service offered?**

As it isn't a reserved product, the service **only has to be available at the time of activation.**



## **What's in it for you?**

If you are activated, Elia will pay you **a fee based on the price you set.**



# How to participate in flexibility products?



## Submit your application

using a form available at [www.elia.be](http://www.elia.be)



## Sign a framework contract between your company and Elia



## Complete an equipment test

- Test of IT communication equipment between your company and Elia
- Activation simulation



## Submit your offer

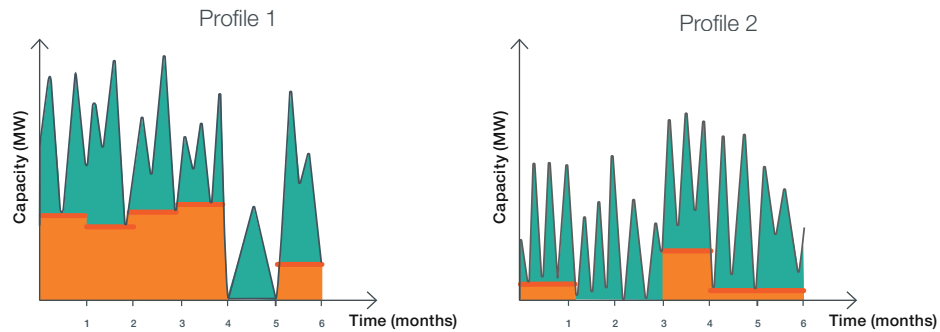
- Weekly auctions for R1
- Monthly auctions for R3 (reserved volumes)
- Continuous auctions for R3 (non-reserved volumes)



## Provide the service

# Some examples

You can offer Elia more than one service at the same time depending on your load profile and provided that those services meet the specifications for each product.



- Consumption
- Non-reserved R3
- Reserved R3

# To sum up...

	R1	Reserved R3	Non-Reserved R3
<b>Type</b>	Reservation product	Reservation product	Non-reserved product
<b>Pruchase</b>	Short term (every week)	Short term (every month)	Very short term (15 minutes)
<b>Activations</b>	<ul style="list-style-type: none"> <li>• Constant activation</li> <li>• Reaction within a maximum of 30 secondes after a frequency deviation</li> </ul>	<p><b>Standard</b></p> <ul style="list-style-type: none"> <li>• maximum 8 hours' activation/day</li> <li>• no set time between 2 activations</li> <li>• unlimited activations</li> </ul> <p><b>Flex</b></p> <ul style="list-style-type: none"> <li>• maximum 2 hours' activation</li> <li>• 12 hours between each activation</li> <li>• maximum 8 activations a month</li> </ul>	<ul style="list-style-type: none"> <li>• 15 minutes' activation</li> <li>• Availability reported by the flexibility service provider</li> </ul>
<b>Availability</b>	100 %	100 %	/
<b>Remuneration</b>			
- Capacity (average)	Yes	Yes	No
- Activation	No	No	Yes

# Need more information?

Feel free to contact us via

- your Contracting Manager
- your Key Account Manager
- the Contracting Department ([contracting\\_as@elia.be](mailto:contracting_as@elia.be))



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[www.elia.be](http://www.elia.be)