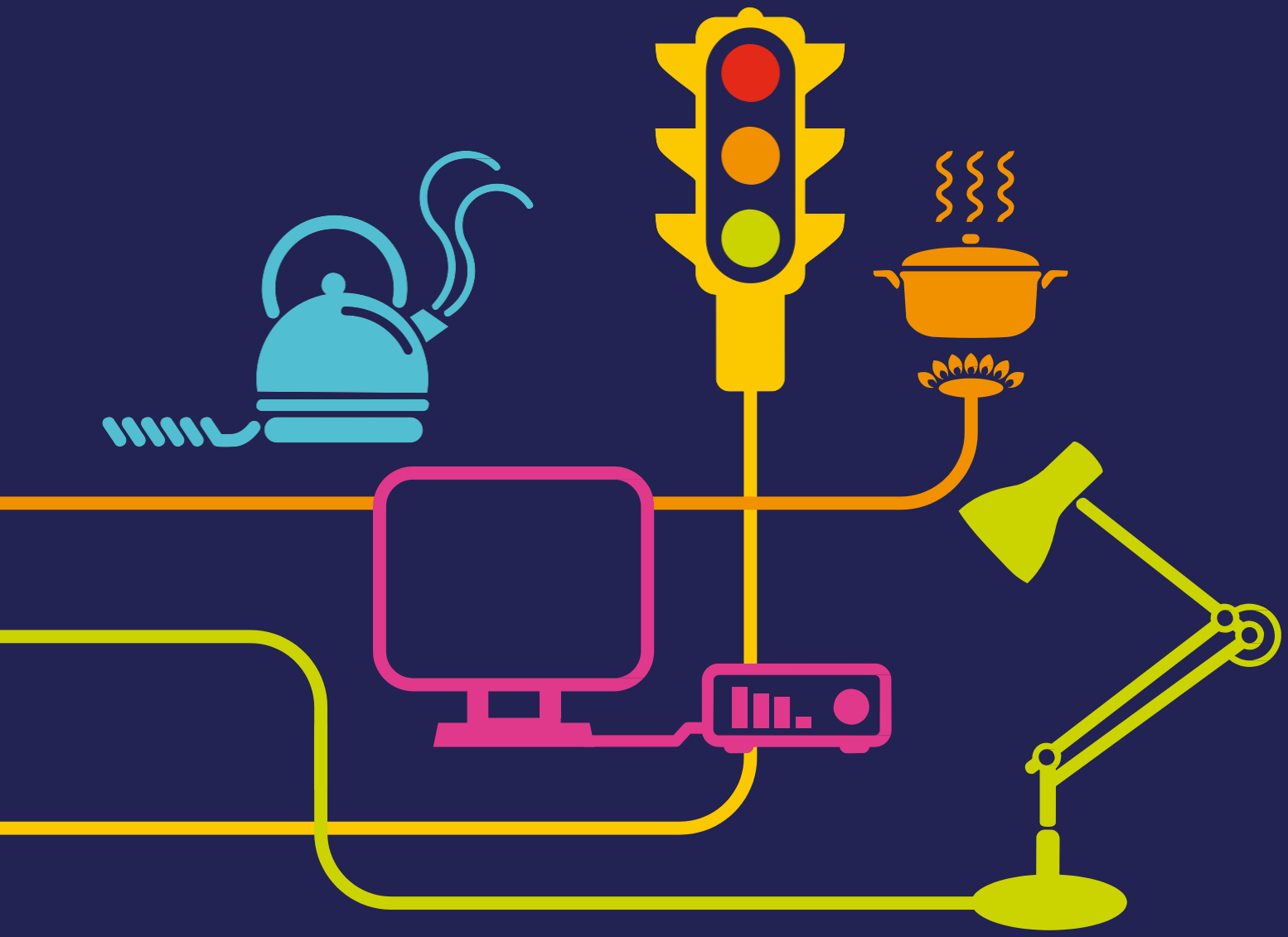
nationalgrid

Mandatory Frequency Response



A guide to the services procured by National Grid to manage the system frequency

Version 1.1

“National Grid is an international electricity and gas company responsible for operating the electricity and gas transmission systems across Great Britain”

What is frequency?

System frequency is a continuously changing variable that is determined and controlled by the second by second (real time) balance between system demand and total generation. If demand is greater than generation the frequency falls, while if generation is greater than demand the frequency rises.

The two types of Frequency Response are:

Dynamic Frequency Response - is a continuously provided service whereby the energy changes in line with system frequency.

Static Frequency Response - energy change is triggered at a defined frequency level.

Generators are required as a condition of their Generation License to comply with the Grid Code (CC 6.3.7). In turn the Grid Code places technical obligations on Generators in respect of their ability to provide frequency response.

Who is obliged to participate?

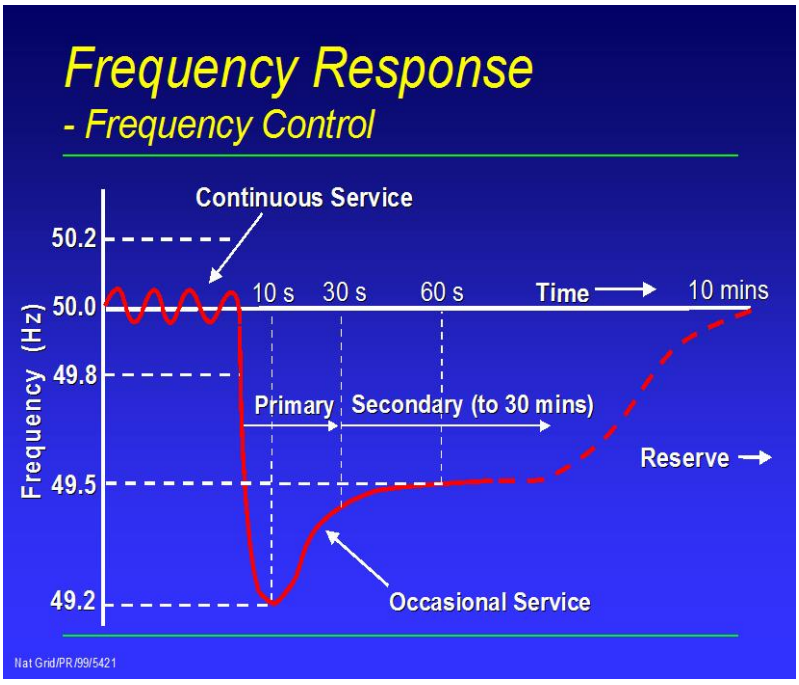
The capability to provide this service may be a condition of connection for generators connecting to the GB Transmission System. All large power stations connected to the transmission network are obliged to have this capability. This is dependent on which Transmission Owner's network the power station is located in, as highlighted below:

	National Grid	Scottish Power	Scottish Hydro Electricity Transmission
Small	<50MW	<30MW	<10MW
Medium	>50MW = <100MW	N/A	N/A
Large	**=>100MW**	**=>30MW**	**=>10MW**

What is Mandatory Frequency Response

Mandatory Frequency Response is an automatic change in active power output in response to a frequency change. The service is needed to maintain the frequency within statutory **(49.5Hz - 50.5Hz)** and operational limits **(49.8Hz - 50.2Hz)**.

National Grid achieves this by using one of three response services, which are defined below:



Primary Response - provision of additional active power (or a decrease in demand) within 10 seconds after an event and can be sustained for a further 20 seconds.

Secondary Response – provision of additional active power (or decrease in active power demand) within 30 seconds after an event and can be sustained for a further 30 minutes.

High Frequency Response - the reduction in active power within 10 seconds after an event and sustained indefinitely.

How is the service procured?

Once a new generating unit is built (or modified), National Grid must test its response capabilities before it can start to provide the service. Following successful assessment by National Grid that the generating unit meets the minimum requirements, a Mandatory Service Agreement (MSA) is put in place (or amended), which allows National Grid to instruct the service when it is needed.

Generators submit prices for Holding Payments on a monthly basis through the online Frequency Response Price Submission System[1] (FRPS). FRPS is available between the **5th and 15th** working days of each month.

Payment

When the service provider delivers the service as instructed, they will be paid in accordance with the CUSC section 4.1.3.8 with two types of payment:

Holding Payment (£/h): Made for the capability of the unit to provide response when the unit has been instructed into frequency response mode.

Response Energy Payment (£/MWh): Reflects the cost incurred or saved in changing the amount of energy delivered to and from the system when providing Frequency Response. This can be a payment or a charge depending on whether the generator provides more or less energy during response, and the payment is set out in the CUSC.

[1] https://www.nationalgrid.com/frps/

Contact:
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Information:
For more information on Balancing Services please visit:

http://www2.nationalgrid.com/UK/Services/Balancing-services/Frequency-response/Mandatory-Frequency-Response/