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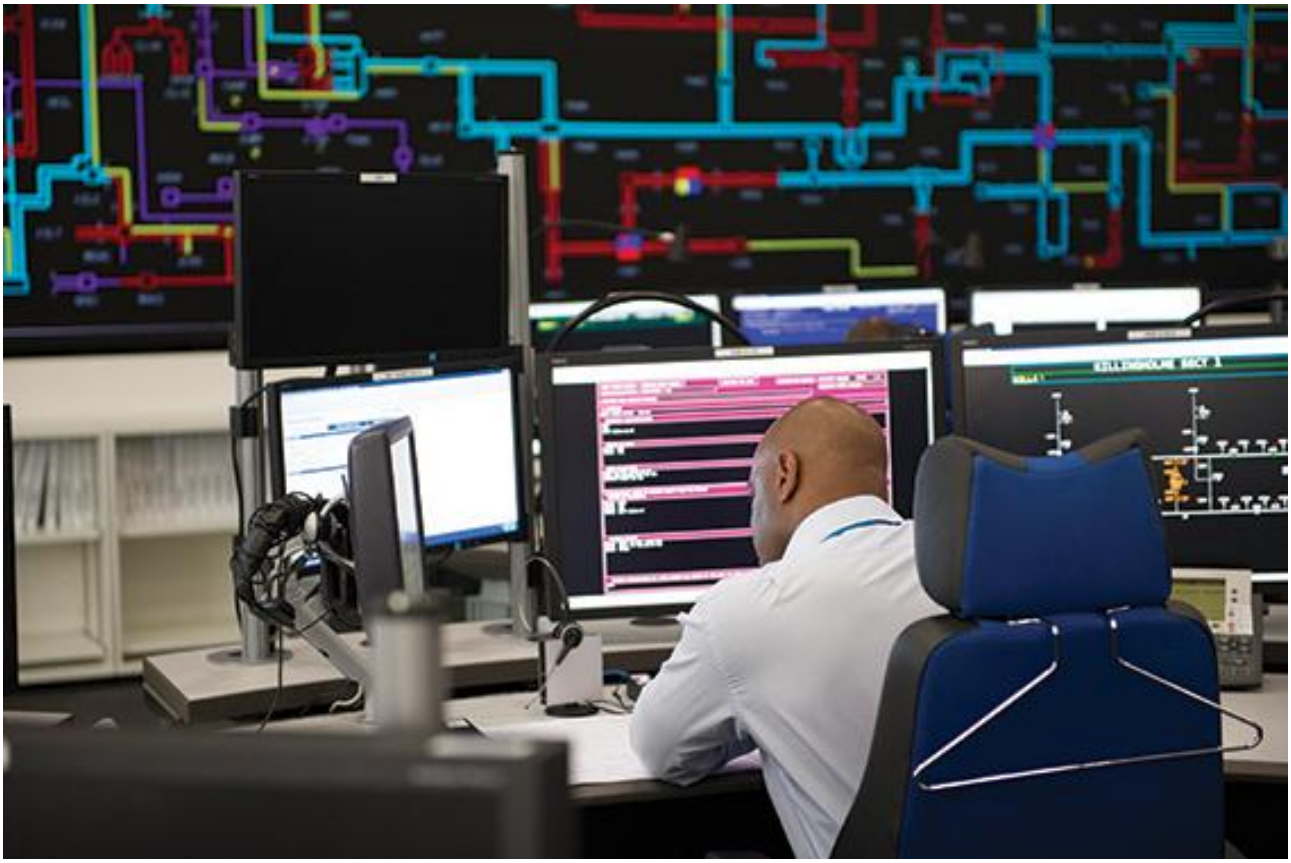
National Grid factsheet

New tools to balance the network



In June 2013, Ofgem published their Capacity Assessment Report which highlighted a narrowing of capacity margins in the mid-decade period. In response, National Grid proposed two additional system balancing tools that could provide new opportunities for businesses and the energy market, and could be used in the unlikely event of a shortfall of generating capacity in the electricity market.

These proposals were the subject of an extensive industry consultation process through the second half of 2013, and were approved by Ofgem in December 2013.

National Grid announced its intention to procure these tools to provide additional support over winters 2014/15 and 2015/16. The licensing arrangements for these tools came into effect in June 2014, allowing the procurement process to commence.

Why did you develop these tools?
A large amount of old coal and oil power stations are closing, and the economics for gas generators means some are temporarily closing ('mothballing'). A decline in available power is leading to tighter margins (the difference between the power generation available and peak demand), making our role in matching generation and demand more challenging.

In light of this potential challenge, DECC, National Grid and Ofgem each agreed that it was prudent to consider the case for National Grid procuring additional balancing tools.

Both tools were developed to benefit both consumers and industry by providing National Grid with additional reserves to balance the transmission system with the least impact on energy bills. Finding new ways to encourage a greater role for the demand side will also benefit the UK's energy landscape in the future.

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New tools to balance the network

What are the new balancing tools?

Demand Side Balancing Reserve (DSBR) provides an opportunity for large consumers or owners of small embedded generation to earn money through a combination of upfront payments and utilisation payments by contracting to reduce demand or provide generation when required. Further payments are received in the event that the service is utilised. DSBR will not be used to force consumers or businesses to switch off or reduce electricity demand, but it will provide a choice for those who wish to save energy and receive payments when asked to do so during times of high demand. The service would be required for short periods between 4pm and 8pm on weekday evenings between November and February.

This will help stimulate a (Demand Side Response or DSR) market which ultimately will help keep energy system costs down for consumers by avoiding the need to build additional power stations to service "peak" demands.

Supplemental Balancing Reserve (SBR) will include contracts between National Grid and generators to make their power stations available in winter, where they would otherwise be closed or mothballed. This additional capacity would only be used as a last resort to balance the system in the unlikely event that there is not sufficient generating capacity available in the market. This could act as a safety net to safeguard consumer interests against the risk of tightening margins.

How much of these new tools do you need?
In June 2014 we identified a need for up to 330MW of the new balancing tools for this winter and up to 1,800MW for the winter of 2015/16. We also identified a requirement for 2016/17 and 2017/18.

More recently, following a closure announcement at Barking power station, fires at Ironbridge, Ferrybridge, and Didcot B, and reduced output of nuclear plant at Heysham and Hartlepool we have increased our requirement for these new balancing tools to 1,100MW for this winter.

These volumes are based on ensuring sufficient capacity is available to meet the reliability standard set by government across a credible range of outcomes in terms of generation availability, continental imports and demand. These additional reserves will help ensure that the country continues to benefit from the levels of system security that we are used to.

When will you procure these tools?
The initial requirement for this winter was met by running a pilot for the new DSBR service. This was tendered in the summer of 2014. Contracts were awarded to 12 companies representing 24 DSBR Units providing 319MW across 431 individual sites.

A precautionary tender for SBR was launched in September to deal with the uncertain outlook at that time. Subsequently we have offered SBR contracts to three power stations, which together with the DSBR already procured, will provide an additional 1.1GW of reserve capacity for this winter.

The requirement for 2015/16 will be tendered to both DSBR and SBR in two equal tranches. The first DSBR tender for 2015/16 was opened in October, and will be followed by the first SBR tender for 2015/16 in November, with both closing on 5th December 2014. A second tender for both services will be run early next year. The requirements for 2016/17 and 2017/18 will be reviewed closer to the time.

How much will these new tools cost consumers?
These products are expected to cost less than £1 on the annual domestic consumer bill. That said, we will always use the most economic option for consumers. So if it is cheaper to pay businesses to reduce their demand than to fire up a generator, then that is what the demand side balancing reserve will allow us to do.

What do we do?
National Grid owns and operates the electricity and gas networks that connect people to the energy they use.

"We are the 'system operator' for the high-voltage electricity transmission network – the country's power motorways - responsible for managing the flows of electricity to homes and businesses on a real time basis."

We don't generate the power - neither do we sell it to consumers. We all pay our bills to energy suppliers, who buy enough electricity to meet their customers' needs from the power stations and other electricity producers.

"Once that electricity enters our network, our job is to 'fine tune' the system to make sure supply and demand match second by second."

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Basically, for that last hour leading up to real-time, we operate the system in real time, balancing supply and demand to deliver electricity securely to the distribution networks.

To do that, we have a range of different tools we can use to balance the network, making sure we have secure power supplies. We do this either through a market tool called the balancing mechanism or through a competitive tender process to buy the 'balancing' services we need.

Who does what in the electricity industry?

Electricity Generators produce electricity from fossil fuels and nuclear power stations as well as renewable sources such as wind, biomass and hydro. Electricity generators sell the electricity they produce in the wholesale market to electricity suppliers.

Electricity Suppliers buy electricity from the wholesale markets and sell it to consumers. Electricity suppliers have contracts with electricity generators to provide the energy their customers use.

The Department of Energy & Climate Change (DECC) is the Government department that works to make sure the UK has secure, clean, affordable energy supplies. DECC are responsible for setting energy policy and responsible for energy security; making sure UK businesses and households have secure supplies of energy for light and power, heat and transport.

Ofgem is the Office of Gas and Electricity Markets, the industry regulator that works independent of Government and the energy industry. Ofgem has a duty to protect the interests of consumers. Ofgem supervise market activity retail competition and regulate the energy networks. Ofgem can take steps to promote energy security in the event that the market does not deliver.

Will the lights go out?
Based on our experience of running the system and on current information about plant availability and demand, we are expecting the upcoming winters to be manageable. But we can't be complacent. Things can happen that could affect the electricity network, such as power stations breaking down or a sudden cold snap. As a system operator who takes its role seriously, the best thing is for us to be prepared and have the tools available just in case. Hence why we are going out and producing additional reserves in the form of these new balancing tools for the next two winters.

Will businesses be forced to switch off?
These balancing services are voluntary and DSBR will not be used to force consumers or businesses to switch off or reduce electricity demand. It will provide a choice for those who have the flexibility to reduce their electricity usage and receive payments when asked to do so during times of high demand. Many large businesses do this already by routinely reducing their electricity usage in peak demand periods to reduce their costs.

What is plant margin?
Plant margin is the available generation available above demand. We like to have a certain amount of generation available over and above what is needed to manage any plant failure or forecast errors. Our latest view on plant margins will be included in our Future Energy Scenarios publication in July.

What does de-rated mean?
We commonly refer to the de-rated plant margin when considering security of supply. This takes account of plant availability and reliability, for example the likelihood of the wind blowing during times of peak demand, and which way the interconnectors will be flowing (importing or exporting)

What's the difference between STOR and capacity margins?
STOR or Short-term Operating Reserves is used by the system operator to deal with short term operational issues such as plant failure and demand forecast errors – some of this is provided by generating plant that forms part of the capacity margin, some is provided by embedded generation and the demand–side.

An adequate capacity margin provides the assurance that there will be sufficient generation and reserve available in operational timescales to meet peak demand – if the margin gets tight, the risk of there being sufficient generation available to balance the system increases.