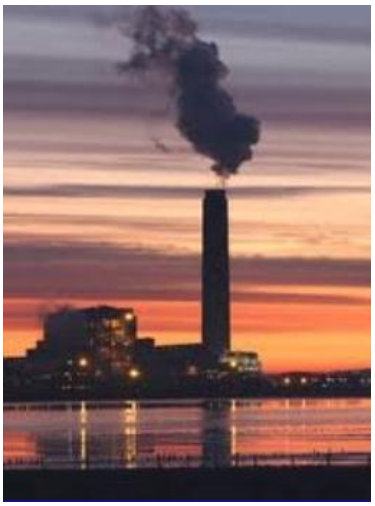
Black Start and Rota Load Disconnection

Power Supplies this Winter



National Grid have the responsibility of balancing the energy market in mainland UK, ensuring that there is always enough generation to meet the customer demand. However we face a challenging period as old 'dirty' power stations are closed to meet emissions targets and before new 'clean' energy sources become fully available. This winter, similar to the last couple of winters, we are facing uncertainty about the amount of power reserves available to avoid energy shortages over peak periods.

So what happens if there is not enough power to go round?

There are commercial arrangements in place between National Grid and strategic Power Stations to provide a continuous reserve of electricity available to cater for shortages (planned and unplanned).

Ahead of this winter there are two new commercial mechanisms available to National Grid to assist this process:-

- The ' Supplemental Balancing Reserve' a scheme to allow generators to make more plant available to provide power at peak times between November and February, and
- The Demand Side Balancing Reserve (DSBR), which encourages large energy users to reduce consumption during peak hours.

Rota Load Disconnections

In the unlikely event that the commercial arrangements don't allow the Energy Market to provide adequate energy supplies then it's possible that the Secretary of State for Business, Innovation and Skills may authorise energy restrictions, and the use of 'Rota Load Disconnections' under the Electricity Supply Emergency Code[1], to reduce the use of electricity to within the level of available generation. SP Energy Networks have emergency plans and arrangements in place to deal with any such eventuality.

The purpose of Rota Load Disconnection is to control/reduce the demand for electricity to the level of generation that is available. This is achieved by dividing all users of electricity into groups called 'blocks'; a customer's block is determined by their postcode and position on the local network. These blocks are then switched off in turn, on a 'rota', for a period of three hours. If the level of electricity shortfall increases, more blocks are switched off resulting in interruption to a larger number of customers. Once introduced Rota Load Disconnections will continue for the full duration of the shortfall in electricity generation.

There are government guidelines which allow a very few essential organisations to remain on supply during Rota Load Disconnection (these companies MUST however reduce their electricity consumption). These organisations fall into 3 categories, V - Vital (e.g. Hospitals, Airports, Railtracks, Water Treatment sites), F - Food processes, and O - Continuous processes (e.g. Steelworks, Glass producers).

[1] Electricity Supply Emergency Code (last implemented during 1972 coal shortages) - https://www.gov.uk/government/publications/electricity-supply-emergency-code-revised-january-2005

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How are Rotas devised?

Each distribution area across the UK is split into 18 BLOCKS which are each made up of a number of discrete geographical areas. Each of these blocks are assigned an alphabetic letter between A and U, the letters F, I and O are not used.

Each day of the week is split into 8 three hour SLOTS. The first slot of a day starts at 06:30.

The blocks are allocated to the slots in such a way as to allow businesses in any given block to operate as normally as possible for 3 days in succession. This means that power cuts will either be concentrated between Monday and Wednesday or Thursday and Saturday with Sunday being shared between all blocks. The more severe the emergency, the greater the number of blocks that will be switched off at the same time.

How will you know when you will be without electricity?

In event of Rota Disconnection becoming necessary a range of communications methods will be available. There are two pieces of information that you need to be aware of; Firstly your Rota Load Disconnection Block letter and secondly the slots which show when you will be affected.

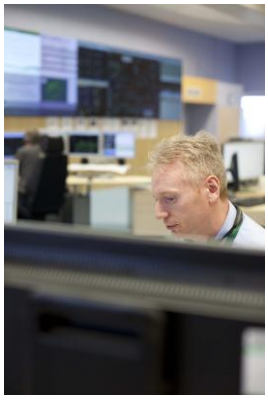
Your Rota Load Disconnection Block letter is static and will not change during an emergency. It is based on where you live and how your electricity is supplied. You can find out your Rota Load Disconnection Block letter on your electricity bill under the address, or by visiting www.spenergynetworks.co.uk/pages/rota_load_disconnections.asp

You can also find out your block letter by visiting the Energy Emergencies Executive website www.energyemergencies.gov.uk, or by ringing 08000 12 12 33. You will need your Post Code, and then just follow the prompts carefully. Alternatively, you can text your Post Code to 86633.

Once you have your Rota Block letter you then need to know when that letter will be switched off and on. The Schedule of Rota Load Disconnections will be published through National & Local TV and/or Radio Stations. (The Energy Emergencies Executive website is currently being upgraded to provide this information along with the development of a smart phone and tablet app). You will receive **48hrs notice** of Rota Load disconnection being introduced.

How often will I be switched off?

The electricity supply will be turned off to certain areas (known as blocks) for 3 hours at a time, depending on the shortage of electricity. This could be affected by the weather, the time of day and the demand for electricity.



At the lowest level of emergency, you could expect to be without electricity for just three slots in a week. However, if there is a severe shortage of electricity, you may be without supply for several slots in a week.

Additional measures

In addition to these planned arrangements the distribution network operators (like SP Energy Networks) have continually available plans to deal with a short term emergency shortfall in available generation, these plans are generally controlled from our control centres in Kirkintilloch and Prenton, (i.e. voltage reduction or emergency demand disconnection), with further automatic arrangements embedded in our key substations (low

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frequency disconnection).

Black Start

In the extremely unlikely event that all measures summarised above fail, the UK mainland power network could have to recover from which is known as Black Start.

Black Start is the term given to the recovery phase from a total or widespread loss of the UK mainland power network, caused through a shortage in generation available to meet demand, technical failure, severe weather situations, or any combination of these conditions. The total or widespread shutdown of the entire UK mainland power network is identified as a risk on the National Risk Register.

In essence the process requires the starting up of designated (contracted) Black Start Power Stations, re-energising the Transmission and Distribution network and then connecting customer load.

Black Start Power Stations need to have the ability to 'start up' without the need for external power from the Grid.

Whilst there have been some notable regional power failures from 'transmission network failures' such as the hurricane in 1987 affecting much of the south east of England and affecting London in 2003, there has not been a total shutdown of the UK power Network since the Grid was developed in 1920's and 30's. We have no reason to believe that the risk of a black start event in winter is any higher than in recent winters; however we remain fully engaged in appropriate Industry/Government forum to monitor the situation and alert to all emerging threats to the security of supply.