Electricity Transmission

How the energy not supplied (ENS) incentive affects company behaviour

Appendix to National Grid's response to Ofgem's RIIO-2 sector-specific methodology annex on electricity transmission

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nationalgrid

What behaviour does the ENS incentive drive?

Ofgem asked for some examples of how the ENS incentive affects transmission owners' behaviour in its sector-specific consultation. This slide pack is our response to Ofgem's request.

ENS drives a variety of processes within NGET

Weekly demand at risk process	There is a cross-business weekly "Demand at Risk" web conference to identify actions needed to reduce ENS.
Early Return To Service (ERTS) reviews	The ERTS is the earliest a circuit can be returned from outage in an emergency. We can often achieve a quicker ERTS to minimise ENS, but this usually incurs additional cost
Daily weather reviews	We can recall circuits to provide additional security if inclement weather is forecast.
Weekend / Bank Holiday working	We can move work to lower demand times where ENS is a consideration.
Offline build	We can sometimes deliver a more expensive off-line build to minimise the risk of ENS.

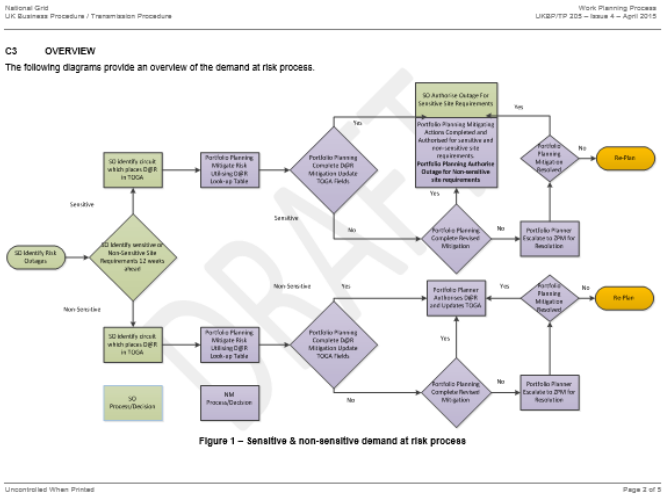
We provide some further examples on the next 4 slides.

Demand at Risk Process

The demand at risk process reduces the likelihood of energy not supplied over and above the security standards.

The procedure sets out the process for managing outages that place demand at risk. The purpose of this process is to minimise the risk of loss of supplies by raising awareness of these outages, understanding the risks we are taking and where possible taking mitigating actions to manage these risks.

The planning team in the Electricity System Operator (ESO) identify outages which place demand at risk. The Electricity Transmission planning team review the outages identified by the ESO and put in place actions to mitigate the risk e.g. site health checks and overhead line patrols.



Specialist equipment used to reduce demand at risk

Scheme to replace a damaged tower on the Bradford – Leeds route

Removing a tower and replacing in-situ with a new one would involve 6+ weeks with demand at risk.

The scheme used a specialised reduced-height piling rig to install new foundations under the existing live circuits.

New solution reduced demand at risk from 6 weeks to 4 days

We used a short double-circuit outage for the final transfer from the old tower to the new tower.

The work was planned over a low demand period (weekend of 6-9 July 2018) to further minimise the risk of energy not supplied.

The extra cost we incurred on the project was to reduce the risk of loss of supply.

Use of temporary protection units (Dalek)

Standard emergency return to service (ERTS) time for protection replacement is 10 days

On the Amersham-Iver-East Claydon outage in 2018 the standard ERTS time would have put demand at risk.

We reviewed different options to try to reduce the demand at risk and minimise the risk of energy not supplied.

We used Temporary Protection units (Daleks)

By investing in a temporary protection unit we reduced the ERTS to 24 hours.

This minimised the potential for energy not supplied considerably.

We made additional investment in a number of these units to create a new lower standard.

GIS substation modification to reduce ENS

In a Gas Insulated Substation (GIS) a main ‘gas zone’ and adjacent zones need to be de-pressurised to work on a single piece of equipment

Standard practice is to take adjacent zones out of service when working on a piece of equipment.

At Elstree (London) this could have put demand at risk during the Winter period (Dec 2016) following a shunt reactor fault.

Additional segregation created using a blanking plate

The adjacent zone included the crucial Elstree – St Johns Wood circuit (Central London).

By installing ‘barrier cones’, we removed the crucial circuit from the adjacent zone.

This allowed us to return the circuit to service, reduce the risk of ENS, whilst carrying out the repair on the shunt reactor.