



DS3 Programme

Operational Capability Outlook 2015

Document version:	2.0
Date of current issue:	30 th April 2015

Purpose

This briefing paper sets out the TSOs' view of how operational capability metrics for the Irish and Northern Irish power system are expected to change out to 2020. In particular, it highlights the likely changes to the System Non Synchronous Penetration (SNSP¹) metric.

This document will be updated each year with the latest available information.

It should be noted that other power system metrics can result in system constraints. These are beyond the scope of this document and are instead covered by the 'Operations Security Update' published regularly on www.eirgrid.com.

SNSP Projection to 2020

The all island SNSP is currently limited to 50%. This was a key output of the all island [Facilitation of Renewables](#) studies completed in 2010 and has been reaffirmed by subsequent analysis.

These same studies identified a number of power system challenges which needed to be overcome to go above this 50% SNSP limit. These are currently being addressed as part of the DS3 Programme, with the SNSP metric approximately projected to increase out to 2020 per Figure 1.

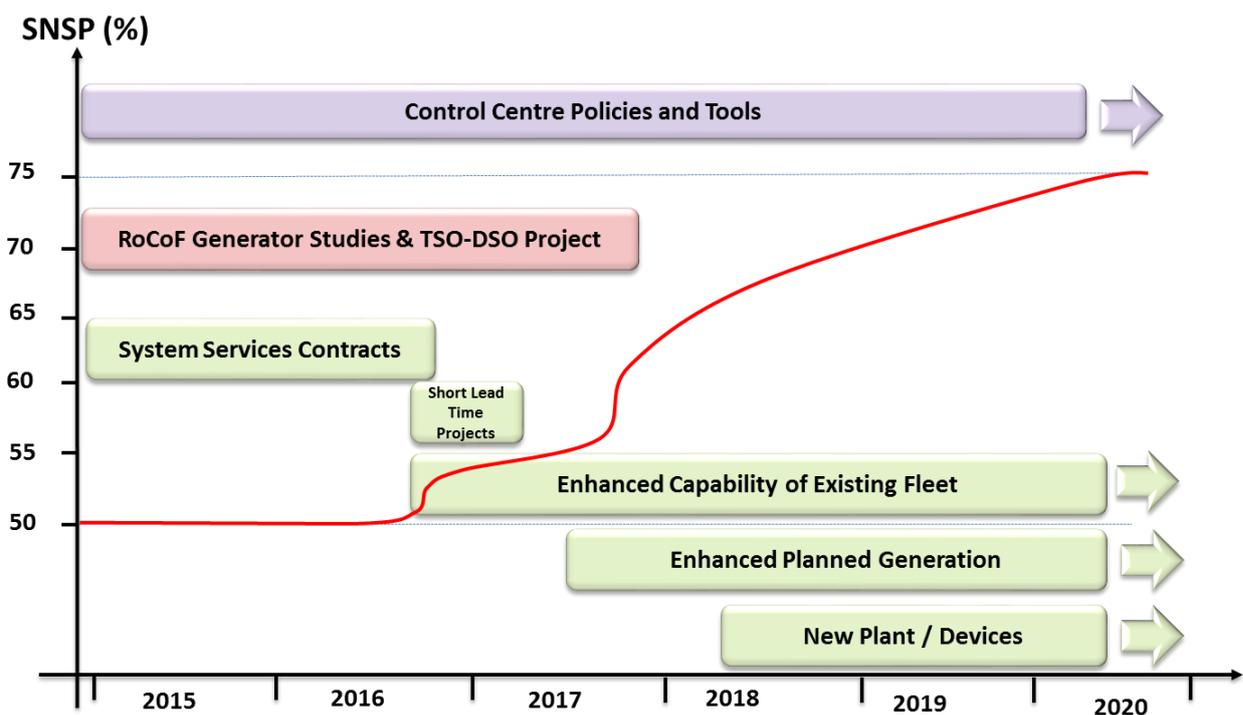


Figure 1 – Approximation of SNSP increase out to 2020 in red with an illustration of key enablers

As stated above, Figure 1 is an approximation by the TSO of how the SNSP is expected to increase out to 2020 – it reflects industry feedback from forums such as the DS3 Advisory Council. At a high level, the key enablers for the DS3 Programme are:

- System Services Implementation Project:

¹ SNSP is a real-time measure of the percentage of generation that comes from non-synchronous sources, such as wind and HVDC interconnector imports, relative to the system demand.

- Driver #1: Interim, regulated System Services tariffs in place. It is expected that projects with short lead times (e.g. DSM, battery storage) could result in a small increase in SNSP.
- Driver #2: The capability of the existing generation fleet will be increased in tandem with major plant maintenance outages which take place up to every 5 years.
- Driver #3: Plant or network devices, which are scheduled to connect, will increase the performance capability of the system in response to System Services contracts.
- Driver #4: Plant or network devices, built in response to System Services, connect to the system.
- RoCoF Implementation Project:
 - Driver #1: RoCoF standard moves to 1 Hz/s over 500 ms in Q4 2017 resulting in an approx. 5% increase in SNSP. The implementation timeframe reflects that close to full compliance of the generation fleet is required to move to the new standard.
 - Driver #2: The capability of the existing fleet and connection of new plant or network devices result in increased provision of related System Services, e.g. FFR (Fast Frequency Response).
- Development of Operational Policies:
 - Driver: Delivery of revised voltage and frequency operational policies which reflect the needs of the transmission and distribution systems.
- Launch of new Control Centre Tools:
 - Driver: Delivery of enhanced control centre tools which complement revised operational policies and system services. Examples include developing the capability of the existing WSAT tool, delivery of an all island EMS, ramping tool etc.

Separately, the TSOs are currently examining short term options which could lead to increases in SNSP under specific system conditions. This includes work in the following areas:

- Frequency regulation review
- Development of ramping policies and tools
- Development of a Voltage Dip Induced Frequency Dip operational policy
- Formulation of WSAT Transfers in weak areas of the network

The impact of such a change on curtailment levels is not likely to be very significant.

It should be noted that it is difficult to be fully prescriptive in describing the changes above, particularly for those years out towards 2020. However, once the DS3 Programme has been fully implemented, the outputs will enable the power system to be securely and reliably operated up to 75% SNSP.

Curtailement Analysis

<The Operational Capability Outlook will be circulated to the DS3 Advisory Council for comment. Based on any feedback, this will then feed into high level techno-economic analysis of wind dispatch down levels in 2017.>

Replacement of SNSP Metric

The TSOs keep all power system metrics under regular review through internal assessment and analysis – the same process is applied to the SNSP metric.

Although it is currently expected that the SNSP metric will be in operation for the next number of years, this regular review process will likely lead to its replacement with other, more suitable operational capability measures. These will be identified by the DS3 Programme and communicated to industry. These are likely to include, but not limited to, minimum inertia limits, RoCoF standard, minimum number of conventional generators etc.

Communications of Changes to Operational Capability Metrics

Changes to operational capability metrics in Ireland and Northern Ireland will be communicated as follows:

- Via annual publication of the 'DS3 Programme: Operational Capability Outlook'
- Via an update on the DS3 section of the EirGrid/SONI website
- Via a suitable update of the published 'Operational Constraints Update' document
- Via the DS3 Advisory Council and Industry Fora