

DS3 Programme Operational Capability Outlook 2016

May 2016



Purpose

EirGrid and SONI are the Transmission System Operators (TSOs) in Ireland and Northern Ireland. It is our job to manage the electricity supply and the flow of power across the island of Ireland. Electricity is generated from gas, coal and renewable sources (such as wind and solar power) at sites across the island. Our high voltage transmission network then transports electricity to high demand centres, such as cities, towns and industrial sites.

We have a responsibility to enable increased levels of renewable energy to generate on the power system. However, we want to make sure that the system operates securely and efficiently, while allowing for more renewable energy. In 2010, we carried out the Facilitation of Renewables studies. These studies identified 50% as the current maximum allowable level of renewable generation on the power system. We refer to this as the System Non Synchronous Penetration (SNSP) limit. In order to meet governments' renewable energy policy objectives, we will have to be able to operate at up to 75% SNSP.

This briefing paper sets out our view of the likely changes to the System Non Synchronous Penetration (SNSP) metric to 2020. 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. This document will be updated in Q1 of each year with the latest available information.

SNSP Projection to 2020

Our 'Delivering a Secure Sustainable Electricity System (DS3)' programme seeks to address these challenges of integrating more renewable generation (up to 75%) onto our power system. The figure below is an approximation by the TSO of how the SNSP limit is expected to increase out to 2020.

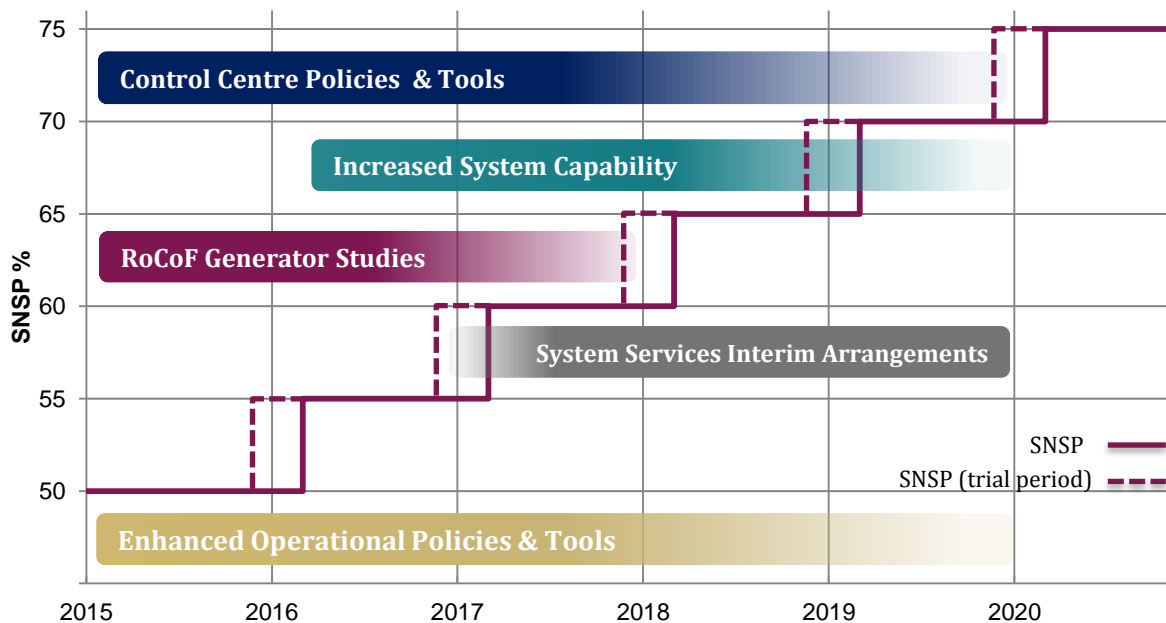


Figure 1 is an approximation by the TSO of how the SNSP limit is expected to increase out to 2020. The dashed line indicates the current SNSP system trial of 55% which commenced on the 16/10/2015. It is expected that similar trials will be conducted in the coming years with a view to achieving the overall goal of 75% SNSP by 2020.

SNSP limit increases to 55% in Q1 2016:

- Driver: Changes to operational capability metrics in Ireland and Northern Ireland. This includes implementation of Control Centre Tools – Ramping Tool, High Frequency Analysis and Frequency Regulation.

SNSP limit increases to 60% in Q1 2017:

- Driver: Proposed System Services Interim Arrangements are operational. It is expected that projects with short lead times (e.g. DSM, battery storage) could result in a small increase in SNSP limit.

SNSP limit increases to 65% in Q1 2018:

- Driver: RoCoF standard moves to 1 Hz/s over 500ms in Q4 2017 resulting in an increase in SNSP of approximately 5%. The implementation timeframe reflects that close to full compliance of the generation fleet is required to move to the new standard.
- Driver: System Services Enduring Arrangements are in place.

SNSP limit increases to 70% in Q1 2019

- Driver: Delivery of revised voltage and frequency operational policies which reflect the needs of the transmission and distribution systems.

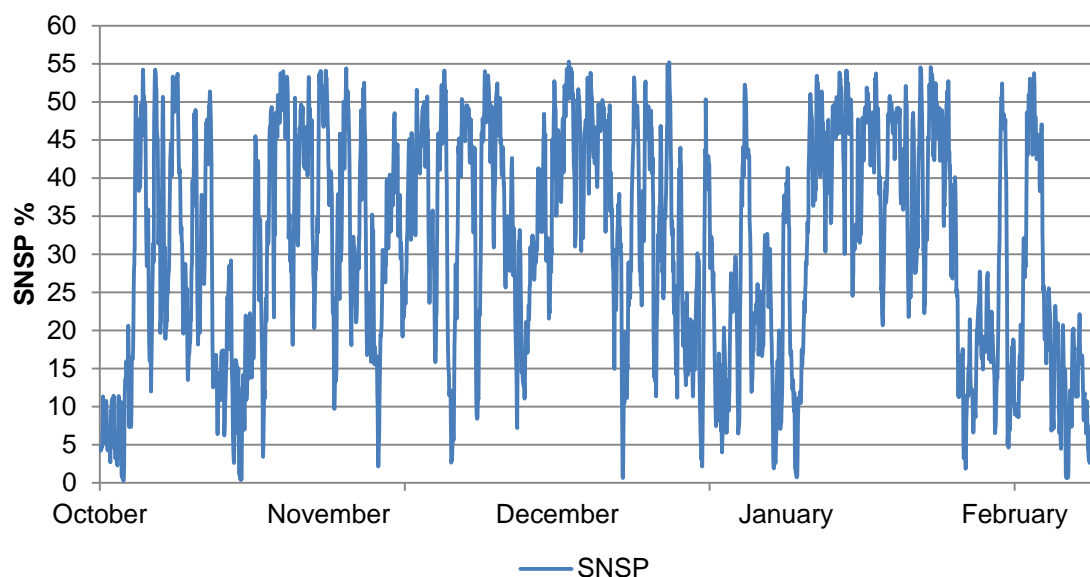
SNSP limit increases to 75% in Q1 2020

- Driver: Launch of new Control Centre Tools: 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.

SNSP Update

In October 2015, we carried out a system trial where the maximum SNSP level is increased to 55%. Following successful completion of this trial, a decision was made to move SNSP level to 55% on a permanent basis. This increased limit came into effect from the 01/03/2016. The movement of the SNSP limit is the first significant move towards achieving the renewable energy policy objectives our respective governments and reducing the cost of electricity for customers on the island. It is expected that similar trials will be conducted in the coming years with a view to achieving the overall goal of 75% SNSP by 2020. The development of operational practices of this nature have helped to establish Ireland and Northern Ireland as a centre for integrating renewable energy systems and EirGrid Group is now recognised as a world leader in this area.

SNSP Trial Period



Replacement of SNSP Metric

We have a responsibility to enable increased levels of generation from renewable sources, such as wind and solar, on the power system of Ireland and Northern Ireland. We must deliver this whilst also ensuring secure electricity supply. As TSO we regularly review power system metrics through internal assessment. The same processes is applied to the system limit for SNSP.

It is currently expected that the SNSP metric will be in operation for the next number of years. However, the 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, Industry Fora and Joint Grid Code Review Panel.