

Temporal Scarcity Scalar values for use in Volume Capped Arrangements

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Background

As part of the design of the Volume Capped arrangements, the SEMC stated in their decision paper SEM-18-049¹ that:

“The temporal scarcity scalars will be applied based on an average wind year rather than operational SNSP. The SEM Committee requests the TSOs to provide clarity to industry on how this average wind year approach will be determined and applied as soon as possible in advance of the start of the procurement process”

Following from this, the TSOs consulted² on a methodology for determining the value of the Temporal Scarcity Scalars to be used in the Volume Capped contracts. This methodology was outlined in a TSO recommendation paper³ and approved by the SEMC in SEM-19-005⁴.

This information note goes into further detail on modelling details and calculation of the TSS values.

Modelling details

The approach outlined in the documents referred to above can be described as follows:

1. Select the yearly wind profile that most closely matches the average from the most recent five years.
2. Run a Plexos study using this profile, with demand, generation portfolio and system operation inputs taken from a forecast of 2025.
3. Take the half-hourly SNSP output from the Plexos study and convert to two sets of half-hourly TSS values (one for FFR, one for the remaining services).
4. Average these TSS values over each half-hour to get two TSS values, which are then applied for the duration of the contracts.

The Plexos study which formed the core of our modelling exercise was taken from EirGrid’s Future Energy Scenarios, specifically the Steady Evolution scenario.

Steady Evolution Plexos model

In 2017 EirGrid introduced scenario planning as a way of developing the electricity grid so that it continues to support Ireland’s economic growth and expanding population in the face of an uncertain future, further detail on this is available on the EirGrid website. Of the scenarios developed, we decided that the Steady Evolution scenario would be the most appropriate one on which to base the average Temporal Scarcity Scalar (TSS) calculation.

¹ <https://www.semcommittee.com/sites/semc/files/media-files/SEM-18-049%20DS3%20System%20Services%20Fixed%20Contracts%20Procurement%20Arrangements.pdf>

² <http://www.eirgridgroup.com/site-files/library/EirGrid/DS3-System-Services-Fixed-Contracts-consultation.pdf>

³ http://www.eirgridgroup.com/site-files/library/EirGrid/DS3-System-Services-Fixed-Contracts-Recommendation_04022019_FINAL.pdf

⁴ <https://www.semcommittee.com/publications/sem-19-005-sem-committee-decision-paper-ds3-system-services-fixed-contracts-contractual>

The Steady Evolution scenario assumes that renewable electricity generation maintains a steady pace of growth. This is due to steady improvements in the economy and in the technologies which generate electricity. New consumer technologies help to increase energy efficiency in homes and businesses.

For estimation of an average TSS, the SNSP for each half hour interval in the Steady Evolution scenario 2025 model was determined. The SNSP was estimated to be above 50% for 52% of the time and above 60% for 38% of the time. Further detail is provided in the table below:

<i>Intervals</i>	<i>Hours</i>	<i>% of Year</i>
Intervals <50% SNSP	4169	48
Intervals between 50% and 60% SNSP	1265	14
Intervals between 60% and 70% SNSP	1309	15
Intervals >70% SNSP	1993	23

The TSS was applied as follows for each half hour time interval:

<i>Intervals</i>	<i>TSS POR-TOR 2</i>	<i>TSS FFR</i>
Intervals <50% SNSP	1	0
Intervals between 50% and 60% SNSP	1	1
Intervals between 60% and 70% SNSP	4.7	4.7
Intervals >70% SNSP	6.3	6.3

TSS values

Based on the study described above, the TSS values to be applied for the Volume Capped Arrangements are 2.29 for FFR and 2.76 for POR – TOR2.