

# Annual Renewable Energy Constraint and Curtailment Report 2017

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## Non-technical Summary

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01/06/2018



## Background

EirGrid and SONI are the Transmission System Operators in Ireland and Northern Ireland respectively. We have prepared this report on the dispatch-down of renewable energy in 2017, as required under European and national legislation.

In Ireland and Northern Ireland renewable energy is predominantly sourced from wind. Other sources include hydroelectricity, solar photovoltaic, biomass and waste. These latter sources of energy are generally maximised in dispatch and due to their small overall contribution to renewable energy, they are excluded from the report.

## What is Wind Dispatch-Down?

Dispatch-down of wind energy refers to the amount of wind energy that is available but cannot be produced. Dispatch-down due to overall power system limitations is referred to as curtailment. Dispatch-down due to a local network limitation is referred to as a constraint.

EirGrid and SONI have a role in facilitating EU and government energy policy. In relation to renewable energy sources we must ensure that generation from these are prioritised. We must also ensure that the power system is safe and secure at all times.

There are times when not all energy from wind generators can be used. For example, if there is too much renewable energy, then this could cause instability to the system. Alternatively, in some locations there may not be enough capacity in the transmission circuits to safely carry the power from a group of wind farms. In these cases, EirGrid and SONI may have to instruct the wind farms to generate less than they could.

Each year we must report to our regulators, the Commission for the Regulation of Utilities in Ireland and the Utility Regulator in Northern Ireland on this. The full report<sup>1</sup> details the measures taken to dispatch-down renewable energy for system security reasons, and on the corrective measures that we intend to take in order to prevent inappropriate dispatching-down.

## Wind Dispatch-Down in 2017

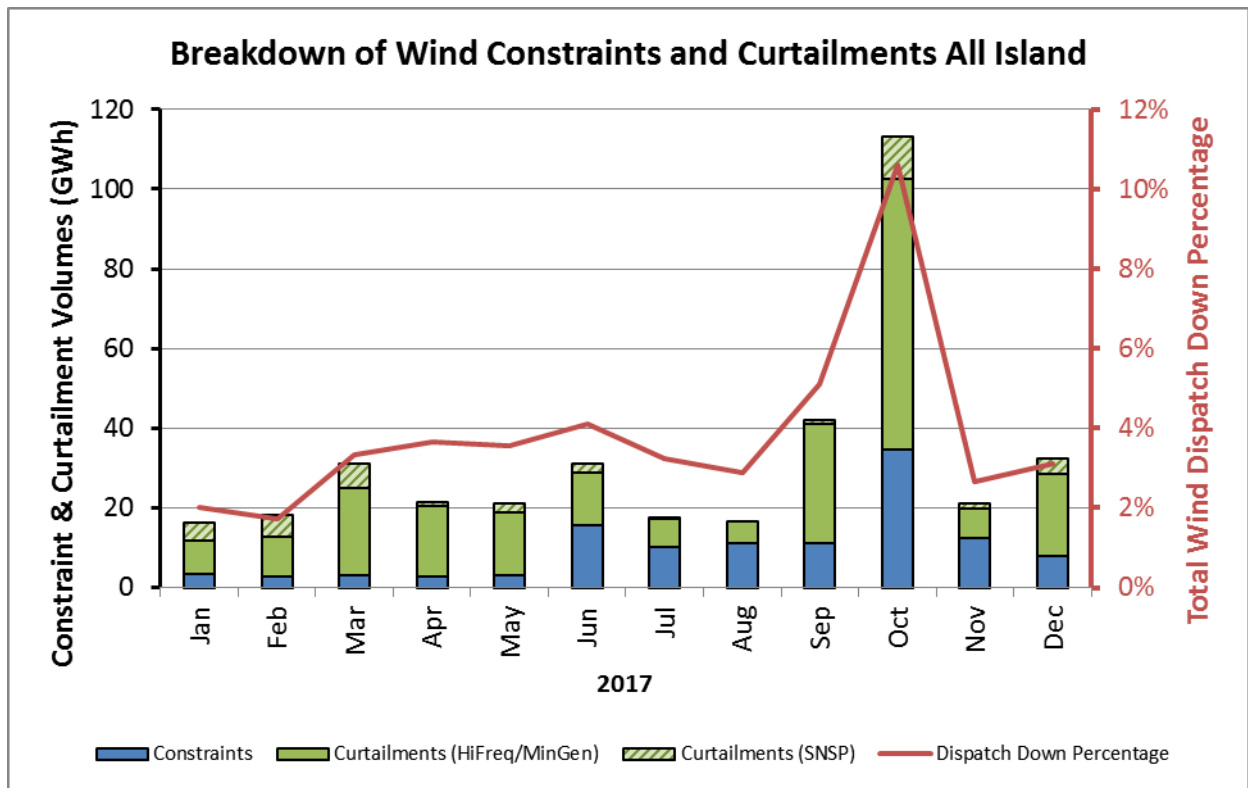
In 2017, the total wind energy generated in Ireland and Northern Ireland was 9,280 GWh, while 386 GWh of wind energy was dispatched-down. This represents 4% of the total available wind energy in 2017, and is an increase of about 159 GWh on the 2016 figure. In Ireland, the dispatch-down energy from wind resources was 277 GWh; this is equivalent to 3.7% of the total available wind energy.

In Northern Ireland, the dispatch-down energy from wind resources was 109 GWh; this is equivalent to 5% of the total available wind energy.

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<sup>1</sup> Available at [www.eirgridgroup.com](http://www.eirgridgroup.com) and [www.soni.ltd.uk](http://www.soni.ltd.uk)

The figure below shows the total annual dispatch-down of wind energy on the island by both volume and month for 2017.



Note: The bar chart shows the breakdown of dispatch-down energy by category (reason code), but only the three main constraint and curtailment categories are represented. The remaining categories are too small to display in this chart, but are detailed in the full report.

### Contributing Factors to Wind Dispatch-Down in 2017

Overall, the dispatch-down of energy from wind resources increased from 2.9% in 2016 to 4% in 2017. However, during 2017 an additional 1,440 GWh of wind energy was generated compared to 2016. The level of dispatch-down is affected by a number of factors which vary from year to year.

The amount of wind installed on the system and the capacity factor of the wind generation will have a significant impact on the levels of dispatch-down. The total capacity of wind generation on the island rose by 744 MW in 2017 while the average wind capacity factor remained the same at 26%.

SNSP (System Non-Synchronous Penetration) is the sum of non-synchronous generation (such as wind, solar and HVDC imports) as a percentage of total demand and exports. When the SNSP limit is raised, a trial period takes place before it becomes permanent. During the trial period, the system is operated at this increased SNSP limit except in times of extreme system events or during system testing.

The SNSP level was increased from 55% to 60% on a trial basis in November 2016 and permanently in March 2017. This limit was raised again to 65% on a trial basis in November 2017. Separately, a series of trials took place to increase exports on EWIC to 500 MW for various levels of wind generation. The trials were completed and the EWIC export limit was permanently increased to 500 MW in November 2017. These two measures facilitate higher levels of wind generation.

The level of demand is another important factor which affects the dispatch-down of wind. Increased demand generally enables greater levels of wind to be accommodated on the system. In 2017 however, the all island demand marginally increased by 0.7% so it would not be expected to impact on dispatch-down levels.

Temporary outages of transmission equipment are sometimes necessary to allow the connection of new windfarms to the network or for network improvement works. These works can lead to reduced network capacity and consequentially increased levels of dispatch-down in the short-term. During 2017 there were significant capital works undertaken to upgrade the transmission system. This helped facilitate increased levels of wind on the system at certain times.

## Measures to Reduce Wind Dispatch-Down

The fundamental issues which give rise to curtailment are being addressed by the DS3 programme (Delivering a Secure, Sustainable Electricity System). This programme will securely and efficiently increase the level of wind generation which can be accommodated on the system and other system wide limitations.

More information on the DS3 programme can be found here:

<http://www.eirgridgroup.com/how-the-grid-works/ds3-programme/>

