

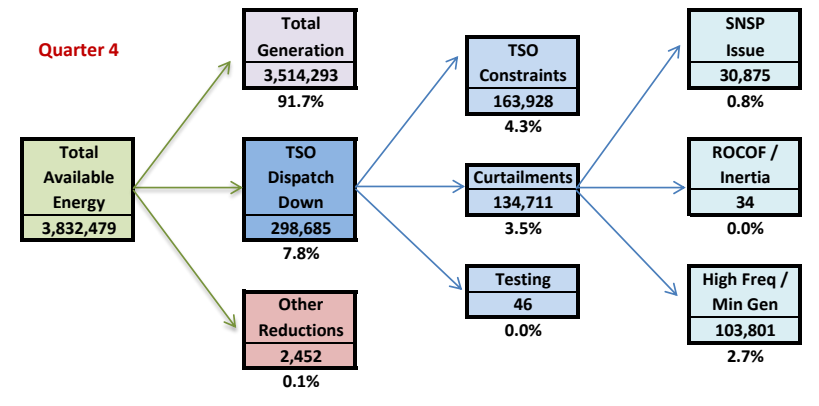
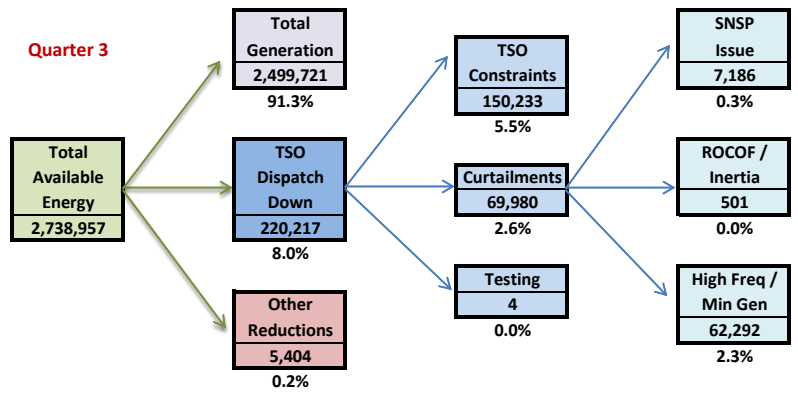
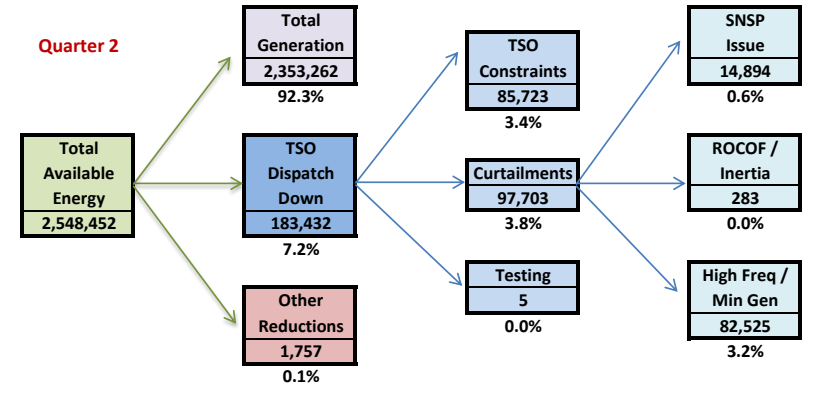
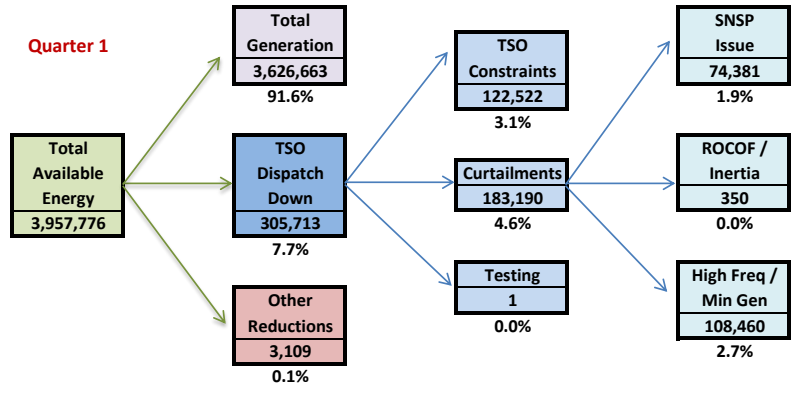
Volumes (MWh)	Jan	Feb	Mar	Qtr1	Apr	May	Jun	Qtr2	Jul	Aug	Sep	Qtr3	Oct	Nov	Dec	Qtr4	2019
Available Energy	1,035,718	1,559,040	1,363,019	3,957,776	1,089,840	680,792	777,820	2,548,452	636,808	1,066,656	1,035,492	2,738,957	1,220,160	1,074,349	1,537,971	3,832,479	13,077,664
Generation	979,573	1,428,284	1,218,806	3,626,663	979,902	650,546	722,814	2,353,262	603,251	955,538	940,932	2,499,721	1,133,722	1,022,318	1,358,254	3,514,293	11,993,941
TSO Dispatch Down	52,818	119,627	133,267	305,713	104,105	27,450	51,877	183,432	30,641	104,578	84,998	220,217	80,857	48,322	169,506	298,685	1,008,046
Other Reductions	155	1,398	1,556	3,109	968	340	449	1,757	82	613	4,710	5,404	1,000	692	760	2,452	12,722
TSO Dispatch Down:																	
TSO Constraints	11,307	30,212	81,003	122,522	46,182	14,267	25,273	85,723	19,874	61,292	69,068	150,233	56,660	36,564	70,704	163,928	522,405
Curtailements	41,511	89,415	52,264	183,190	57,918	13,182	26,603	97,703	10,767	43,287	15,926	69,980	24,188	11,757	98,766	134,711	485,584
TSO Testing	0	1	-	1	5	-	0	5	0	-	4	4	10	0	36	46	56
Curtailements:																	
SNSP Issue	7,480	46,682	20,219	74,381	12,873	-	2,021	14,894	1,948	2,348	2,891	7,186	-	-	30,875	30,875	127,337
ROCOF / Inertia	-	-	350	350	283	-	-	283	-	501	-	501	-	34	-	34	1,169
High Freq / Min Gen	34,031	42,733	31,696	108,460	44,761	13,182	24,582	82,525	8,819	40,437	13,036	62,292	24,188	11,723	67,891	103,801	357,079

Percentages	Jan	Feb	Mar	Qtr1	Apr	May	Jun	Qtr2	Jul	Aug	Sep	Qtr3	Oct	Nov	Dec	Qtr4	2019
Generation	94.6%	91.6%	89.4%	91.6%	89.9%	95.6%	92.9%	92.3%	94.7%	89.6%	90.9%	91.3%	92.9%	95.2%	88.3%	91.7%	91.7%
TSO Dispatch Down	5.1%	7.7%	9.8%	7.7%	9.6%	4.0%	6.7%	7.2%	4.8%	9.8%	8.2%	8.0%	6.6%	4.5%	11.0%	7.8%	7.7%
Other Reductions	0.0%	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%	0.1%	0.0%	0.1%	0.5%	0.2%	0.1%	0.1%	0.0%	0.1%	0.1%
TSO Dispatch Down:																	
TSO Constraints	1.1%	1.9%	5.9%	3.1%	4.2%	2.1%	3.2%	3.4%	3.1%	5.7%	6.7%	5.5%	4.6%	3.4%	4.6%	4.3%	4.0%
Curtailements	4.0%	5.7%	3.8%	4.6%	5.3%	1.9%	3.4%	3.8%	1.7%	4.1%	1.5%	2.6%	2.0%	1.1%	6.4%	3.5%	3.7%
TSO Testing	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Curtailements:																	
SNSP Issue	0.7%	3.0%	1.5%	1.9%	1.2%	0.0%	0.3%	0.6%	0.3%	0.2%	0.3%	0.3%	0.0%	0.0%	2.0%	0.8%	1.0%
ROCOF / Inertia	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
High Freq / Min Gen	3.3%	2.7%	2.3%	2.7%	4.1%	1.9%	3.2%	3.2%	1.4%	3.8%	1.3%	2.3%	2.0%	1.1%	4.4%	2.7%	2.7%

User Guide Available at: <http://www.eirgridgroup.com/how-the-grid-works/renewables/>

Disclaimer: EirGrid as the Transmission System Operator (TSO) for Ireland and SONI as the TSO for Northern Ireland make no warranties or representations of any kind with respect of this document, including, without limitation, its quality, accuracy and completeness. The TSOs do not accept liability for any loss or damage arising from the use of this document or any reliance on the information it contains. Use of this document and the information it contains is at the user's sole risk. In addition, the TSOs strongly recommend that any party wishing to make a decision based on the content of this document should consult the TSOs in advance.

Graphical Representation of the Breakdown of Wind Dispatch Down Energy Volumes (MWh) and Percentages (%)



User Guide Available at: <http://www.eirgridgroup.com/how-the-grid-works/renewables/>

Disclaimer: EirGrid as the Transmission System Operator (TSO) for Ireland and SONI as the TSO for Northern Ireland make no warranties or representations of any kind with respect to this document, including, without limitation, its quality, accuracy and completeness. The TSOs do not accept liability for any loss or damage arising from the use of this document or any reliance on the information it contains. Use of this document and the information it contains is at the user's sole risk. In addition, the TSOs strongly recommend that any party wishing to make a decision based on the content of this document should consult the TSOs in advance.

Regional Wind Dispatch Down Percentages

Region	Jan	Feb	Mar	Qtr1	Apr	May	Jun	Qtr2	Jul	Aug	Sep	Qtr3	Oct	Nov	Dec	Qtr4	2019
NI	9.7%	10.7%	11.8%	10.8%	11.4%	3.8%	11.2%	9.4%	8.2%	15.2%	8.4%	11.0%	7.4%	7.4%	16.2%	11.1%	10.7%
MID	4.5%	6.8%	3.9%	5.3%	7.3%	2.7%	4.3%	5.0%	1.7%	5.8%	6.4%	5.1%	4.9%	2.6%	11.9%	7.0%	5.7%
NE	6.1%	5.2%	4.0%	5.0%	4.9%	2.2%	4.4%	4.1%	1.5%	3.6%	2.2%	2.6%	2.3%	1.4%	8.4%	4.8%	4.3%
NW	3.5%	9.6%	14.7%	9.9%	11.5%	4.7%	8.5%	8.9%	5.6%	17.9%	15.4%	13.7%	6.4%	5.9%	9.3%	7.5%	9.8%
SE	4.0%	5.0%	4.7%	4.6%	5.1%	2.0%	3.0%	3.6%	1.0%	4.4%	2.6%	3.0%	3.3%	1.4%	7.7%	4.3%	4.0%
SW	4.1%	8.5%	14.8%	9.3%	12.3%	5.0%	5.9%	8.3%	4.8%	7.9%	9.8%	7.9%	7.4%	5.4%	11.3%	8.3%	8.5%
W	4.1%	6.6%	7.5%	6.3%	8.9%	5.3%	7.9%	7.6%	5.9%	14.2%	10.6%	10.9%	9.5%	3.6%	8.2%	7.4%	7.8%

User Guide Available at: <http://www.eirgridgroup.com/how-the-grid-works/renewables/>

Disclaimer: EirGrid as the Transmission System Operator (TSO) for Ireland and SONI as the TSO for Northern Ireland make no warranties or representations of any kind with respect of this document, including, without limitation, its quality, accuracy and completeness. The TSOs do not accept liability for any loss or damage arising from the use of this document or any reliance on the information it contains. Use of this document and the information it contains is at the user's sole risk. In addition, the TSOs strongly recommend that any party wishing to make a decision based on the content of this document should consult the TSOs in advance.

Historical Wind Dispatch Down (Constraint and Curtailment) Percentages for Ireland (IE), Northern Ireland (NI) and All Island (AI)

Month	2011			2012			2013			2014			2015			2016			2017			2018			2019		
	NI	IE	AI	NI	IE	AI	NI	IE	AI	NI	IE	AI	NI	IE	AI	NI	IE	AI	NI	IE	AI	NI	IE	AI	NI	IE	AI
Jan	0.0%	0.8%	0.6%	0.5%	2.2%	1.9%	0.7%	0.4%	0.5%	2.9%	4.9%	4.5%	4.3%	4.3%	4.3%	3.4%	3.5%	3.5%	2.4%	1.9%	2.0%	5.7%	3.5%	3.9%	9.7%	3.8%	5.1%
Feb	0.0%	0.6%	0.5%	0.2%	2.8%	2.2%	0.3%	0.7%	0.6%	3.2%	3.7%	3.6%	4.6%	4.1%	4.2%	2.3%	3.3%	3.1%	2.0%	1.7%	1.7%	2.9%	2.0%	2.2%	10.7%	6.8%	7.7%
Mar	2.7%	1.8%	2.0%	0.8%	2.4%	2.0%	0.6%	0.3%	0.3%	1.8%	4.0%	3.5%	11.4%	8.0%	8.8%	0.9%	2.4%	2.1%	3.0%	3.4%	3.3%	5.9%	4.4%	4.7%	11.8%	9.2%	9.8%
Qtr1	0.7%	1.0%	0.9%	0.5%	2.4%	2.0%	0.6%	0.4%	0.5%	2.7%	4.2%	3.9%	6.9%	5.4%	5.8%	2.4%	3.2%	3.0%	2.4%	2.3%	2.4%	4.9%	3.3%	3.6%	10.8%	6.8%	7.7%
Apr	1.3%	1.2%	1.3%	0.2%	1.4%	1.2%	2.6%	4.7%	4.3%	1.8%	4.2%	3.7%	2.8%	1.8%	2.0%	0.8%	1.4%	1.3%	4.2%	3.5%	3.6%	19.2%	7.4%	9.8%	11.4%	9.0%	9.6%
May	2.2%	3.5%	3.2%	0.6%	1.6%	1.4%	3.7%	6.1%	5.6%	1.5%	2.8%	2.5%	3.8%	4.5%	4.3%	1.1%	1.2%	1.2%	3.6%	3.5%	3.5%	6.1%	4.7%	5.0%	3.8%	4.1%	4.0%
Jun	0.4%	0.8%	0.7%	0.4%	4.0%	3.3%	1.9%	3.7%	3.4%	0.6%	3.3%	2.7%	4.2%	5.0%	4.8%	0.3%	0.7%	0.7%	4.7%	3.9%	4.1%	11.0%	8.0%	8.6%	11.2%	5.6%	6.7%
Qtr2	1.6%	2.3%	2.2%	0.4%	2.2%	1.9%	2.9%	5.0%	4.6%	1.5%	3.4%	3.0%	3.7%	3.9%	3.8%	0.8%	1.2%	1.1%	4.2%	3.7%	3.8%	13.0%	6.6%	8.0%	9.4%	6.6%	7.2%
Jul	0.2%	3.3%	2.8%	0.5%	1.9%	1.6%	0.8%	4.2%	3.4%	1.6%	3.9%	3.4%	2.8%	3.8%	3.7%	6.2%	2.3%	3.1%	4.4%	2.8%	3.2%	2.1%	1.9%	2.0%	8.2%	3.8%	4.8%
Aug	0.0%	0.7%	0.5%	4.0%	4.2%	4.1%	2.4%	5.4%	4.7%	3.8%	3.5%	3.6%	5.0%	5.8%	5.6%	7.0%	4.6%	5.0%	3.1%	2.8%	2.9%	5.8%	2.2%	3.0%	15.2%	8.4%	9.8%
Sep	2.4%	3.9%	3.7%	0.4%	4.8%	3.7%	0.5%	4.2%	3.3%	0.1%	2.2%	1.8%	1.5%	2.7%	2.5%	5.8%	5.6%	5.6%	4.2%	5.4%	5.1%	13.1%	5.5%	7.4%	8.4%	8.2%	8.2%
Qtr3	1.5%	3.1%	2.8%	1.5%	3.8%	3.3%	1.3%	4.6%	3.9%	2.4%	3.3%	3.1%	3.1%	4.1%	3.9%	6.3%	4.4%	4.8%	3.9%	3.9%	3.9%	8.7%	3.6%	4.8%	11.0%	7.3%	8.0%
Oct	2.4%	4.7%	4.3%	0.0%	0.3%	0.2%	1.6%	5.9%	5.0%	4.5%	8.2%	7.4%	4.2%	3.8%	3.9%	1.9%	1.8%	1.8%	14.6%	9.2%	10.6%	10.2%	6.9%	7.7%	7.4%	6.4%	6.6%
Nov	1.2%	2.3%	2.1%	0.1%	1.0%	0.8%	4.0%	3.0%	3.2%	2.0%	3.2%	3.0%	6.9%	6.8%	6.9%	2.7%	1.0%	1.3%	3.2%	2.5%	2.6%	10.2%	5.2%	6.4%	7.4%	3.9%	4.5%
Dec	0.7%	2.2%	1.9%	0.8%	2.8%	2.5%	2.0%	4.4%	3.8%	4.5%	5.0%	4.9%	6.2%	6.3%	6.3%	3.8%	3.1%	3.3%	5.3%	2.5%	3.1%	14.9%	7.2%	8.9%	16.2%	9.6%	11.0%
Qtr4	1.4%	2.9%	2.6%	0.4%	1.6%	1.4%	2.4%	4.5%	4.0%	3.9%	5.7%	5.3%	6.1%	6.0%	6.0%	3.0%	2.1%	2.3%	8.5%	4.9%	5.7%	11.7%	6.4%	7.7%	11.1%	6.9%	7.8%
Year Total DD	1.3%	2.4%	2.2%	0.7%	2.5%	2.1%	1.9%	3.5%	3.2%	2.8%	4.4%	4.1%	5.3%	5.1%	5.1%	3.2%	2.8%	2.9%	5.0%	3.7%	4.0%	9.4%	5.0%	6.0%	10.7%	6.9%	7.7%
Constraints	0.3%	0.5%	0.4%	0.3%	0.9%	0.8%	0.5%	1.0%	0.9%	1.0%	1.5%	1.4%	1.9%	1.8%	1.8%	1.3%	1.4%	1.4%	1.9%	1.0%	1.2%	4.0%	1.7%	2.2%	4.7%	3.8%	4.0%
Curtailments	1.1%	2.0%	1.8%	0.4%	1.5%	1.3%	1.3%	2.5%	2.3%	1.8%	2.9%	2.6%	3.4%	3.3%	3.3%	1.9%	1.4%	1.5%	3.1%	2.6%	2.7%	5.4%	3.3%	3.8%	6.0%	3.1%	3.7%
Wind Installed Capacity (MW)	512	1,578	2,090	600	1,697	2,296	640	1,916	2,556	729	2,260	2,989	751	2,440	3,191	943	2,788	3,731	1,154	3,305	4,459	1,276	3,660	4,936	1,276	4,127	5,403
Wind Generation (GWh)	943	4,256	5,198	1,020	4,102	5,122	1,259	4,642	5,901	1,453	5,116	6,568	1,803	6,537	8,339	1,725	6,115	7,840	2,051	7,229	9,280	2,391	8,685	11,076	2,462	9,532	11,994
Wind Capacity Factors	21%	31%	28%	21%	29%	27%	23%	29%	28%	24%	28%	27%	28%	32%	31%	23%	27%	26%	22%	27%	26%	22%	28%	27%	22%	28%	26%
SNSP Limit	50%			50%			50%			50%			55% Trial from Oct			55% Perm from Mar 60% Trial from Nov			60% Perm from Mar 65% Trial from Nov			65% Perm from Apr			65%		

Notes:

"Dispatch Down" consists of constraints, curtailments and wind testing.

The darker shaded cells indicate higher dispatch-down percentages in order to produce a graphical representation similar to a heat map.

A more accurate methodology for calculating wind dispatch down was implemented from 2016. Figures from previous years are best estimates.

Wind installed capacities, generation and capacity factors are indicative and based on the latest available information.

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.

For more information see annual and quarterly dispatch down reports on : <http://www.eirgridgroup.com/how-the-grid-works/renewables/>

User Guide Available at: <http://www.eirgridgroup.com/how-the-grid-works/renewables/>

Disclaimer: EirGrid as the Transmission System Operator (TSO) for Ireland and SONI as the TSO for Northern Ireland make no warranties or representations of any kind with respect of this document, including, without limitation, its quality, accuracy and completeness. The TSOs do not accept liability for any loss or damage arising from the use of this document or any reliance on the information it contains. Use of this document and the information it contains is at the user's sole risk. In addition, the TSOs strongly recommend that any party wishing to make a decision based on the content of this document should consult the TSOs in advance.

Regional Controllable Wind Dispatch Down Percentages

Wind Dispatch Down (Constraint and Curtailment) Percentages and Breakdown per Region - for controllable winfarms only
Curtailments + Constraints + Testing = 100% of Dispatch Down (Testing portion is usually very small and hence not shown in the table below)

	Cap (MW)	2016				2017					2018				2019						
		Qtr1	Qtr2	Qtr3	Qtr4	2016	Qtr1	Qtr2	Qtr3	Qtr4	2017	Qtr1	Qtr2	Qtr3	Qtr4	2018	Qtr1	Qtr2	Qtr3	Qtr4	2019
MID	470	1.3%	0.4%	2.5%	1.7%	1.5%	2.7%	3.9%	4.2%	5.4%	4.1%	4.8%	5.3%	2.7%	5.5%	4.8%	5.3%	5.0%	5.1%	7.0%	5.7%
Constraints		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	1.0%	1.7%	0.8%	1.3%	0.1%	0.8%	0.2%	0.6%	0.2%	1.0%	2.6%	3.7%	1.9%
Curtailments		1.3%	0.4%	2.5%	1.7%	1.5%	2.6%	3.6%	3.2%	3.7%	3.3%	3.5%	5.2%	1.9%	5.3%	4.1%	5.1%	4.1%	2.5%	3.3%	3.8%
NE	132	0.9%	0.5%	1.9%	2.1%	1.4%	2.7%	2.6%	2.7%	4.7%	3.3%	3.2%	5.3%	2.7%	5.0%	4.1%	5.0%	4.1%	2.6%	4.8%	4.3%
Constraints		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%	0.0%	0.2%	0.2%	0.1%
Curtailments		0.9%	0.5%	1.9%	2.1%	1.4%	2.7%	2.6%	2.7%	4.7%	3.3%	3.2%	5.3%	2.6%	4.9%	4.1%	4.9%	4.1%	2.4%	4.6%	4.2%
NW	334	2.8%	1.8%	8.2%	2.9%	3.8%	2.9%	5.0%	5.1%	6.9%	4.9%	4.9%	9.4%	11.1%	12.9%	9.4%	9.9%	8.9%	13.7%	7.5%	9.8%
Constraints		1.3%	1.5%	5.9%	1.2%	2.3%	1.1%	1.5%	2.2%	2.2%	1.7%	0.7%	3.3%	9.4%	8.3%	5.2%	4.8%	4.7%	11.7%	2.9%	5.6%
Curtailments		1.5%	0.3%	2.3%	1.6%	1.5%	1.8%	3.4%	2.9%	4.8%	3.2%	4.2%	6.0%	1.7%	4.6%	4.2%	5.2%	4.1%	2.0%	4.6%	4.2%
SE	323	2.6%	0.6%	2.7%	1.9%	2.0%	2.5%	3.3%	3.0%	4.6%	3.4%	4.1%	5.9%	2.6%	5.2%	4.5%	4.6%	3.6%	3.0%	4.3%	4.0%
Constraints		0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.4%	0.0%	0.1%	0.1%	0.0%	0.2%	0.8%	0.3%
Curtailments		2.6%	0.6%	2.7%	1.8%	2.0%	2.5%	3.3%	2.9%	4.5%	3.4%	4.1%	5.9%	2.2%	5.2%	4.4%	4.6%	3.6%	2.8%	3.5%	3.7%
SW	1,409	6.2%	2.1%	6.8%	2.9%	4.8%	3.0%	5.3%	3.8%	5.1%	4.2%	3.1%	8.7%	3.1%	7.3%	5.6%	9.3%	8.3%	7.9%	8.3%	8.5%
Constraints		4.7%	1.7%	4.6%	1.3%	3.3%	0.7%	2.6%	1.2%	1.3%	1.3%	0.3%	5.3%	1.8%	2.8%	2.3%	5.6%	5.5%	5.9%	5.4%	5.5%
Curtailments		1.5%	0.4%	2.2%	1.6%	1.5%	2.3%	2.6%	2.6%	3.8%	2.8%	2.8%	3.4%	1.2%	4.5%	3.2%	3.7%	2.9%	2.1%	2.9%	3.0%
W	784	2.0%	1.4%	4.0%	2.5%	2.5%	2.1%	3.1%	6.7%	6.4%	4.8%	3.3%	7.2%	4.0%	6.6%	5.3%	6.3%	7.6%	10.9%	7.4%	7.8%
Constraints		0.2%	0.5%	0.0%	0.5%	0.3%	0.2%	0.3%	4.4%	2.5%	2.0%	0.2%	2.4%	2.1%	2.0%	1.6%	2.2%	3.7%	9.3%	4.3%	4.6%
Curtailments		1.8%	0.9%	4.0%	2.1%	2.2%	1.9%	2.8%	2.3%	3.9%	2.8%	3.2%	4.7%	1.9%	4.6%	3.7%	4.1%	3.8%	1.7%	3.0%	3.2%
IE	3,451	3.7%	1.4%	5.2%	2.5%	3.3%	2.7%	4.3%	4.5%	5.6%	4.2%	3.7%	7.5%	4.0%	7.2%	5.6%	7.5%	7.2%	8.0%	7.3%	7.5%
Constraints		2.2%	0.9%	2.6%	0.7%	1.7%	0.4%	1.2%	1.8%	1.5%	1.2%	0.4%	2.9%	2.4%	2.4%	1.9%	3.2%	3.7%	5.8%	4.1%	4.1%
Curtailments		1.6%	0.5%	2.5%	1.7%	1.6%	2.3%	3.0%	2.7%	4.0%	3.0%	3.3%	4.6%	1.7%	4.7%	3.7%	4.3%	3.5%	2.1%	3.3%	3.4%
NI	1,072	2.8%	0.9%	7.0%	3.3%	3.6%	2.6%	4.5%	4.3%	8.7%	5.3%	5.3%	13.8%	9.0%	12.6%	10.0%	11.6%	10.1%	11.6%	11.7%	11.3%
Constraints		0.0%	0.3%	3.8%	1.6%	1.4%	0.2%	1.3%	2.0%	3.8%	2.0%	1.0%	2.5%	6.6%	6.5%	4.3%	3.9%	3.4%	6.4%	6.3%	5.0%
Curtailments		2.7%	0.6%	3.2%	1.7%	2.2%	2.4%	3.2%	2.3%	4.8%	3.3%	4.3%	11.3%	2.4%	6.0%	5.7%	7.7%	6.7%	5.1%	5.4%	6.3%
AI	4,524	3.5%	1.3%	5.6%	2.6%	3.4%	2.7%	4.3%	4.5%	6.3%	4.5%	4.1%	8.9%	5.3%	8.5%	6.7%	8.5%	7.8%	8.7%	8.2%	8.3%
Constraints		1.7%	0.8%	2.9%	0.9%	1.6%	0.4%	1.3%	1.9%	2.1%	1.4%	0.6%	2.8%	3.4%	3.4%	2.5%	3.4%	3.6%	6.0%	4.5%	4.3%
Curtailments		1.8%	0.5%	2.7%	1.7%	1.8%	2.3%	3.0%	2.6%	4.2%	3.1%	3.5%	6.1%	1.9%	5.1%	4.2%	5.1%	4.1%	2.8%	3.7%	4.0%

Note: This table shows average figures for controllable winfarms only. This is different from the first table which shows figures for all windfarms. This allows for more appropriate comparison between winfarms and regions/jurisdictions.

User Guide Available at: <http://www.eirgridgroup.com/how-the-grid-works/renewables/>

Disclaimer: EirGrid as the Transmission System Operator (TSO) for Ireland and SONI as the TSO for Northern Ireland make no warranties or representations of any kind with respect of this document, including, without limitation, its quality, accuracy and completeness. The TSOs do not accept liability for any loss or damage arising from the use of this document or any reliance on the information it contains. Use of this document and the information it contains is at the user's sole risk. In addition, the TSOs strongly recommend that any party wishing to make a decision based on the content of this document should consult the TSOs in advance.



Ireland Quarterly Wind Dispatch Down Report 2019

2019 Qtr4

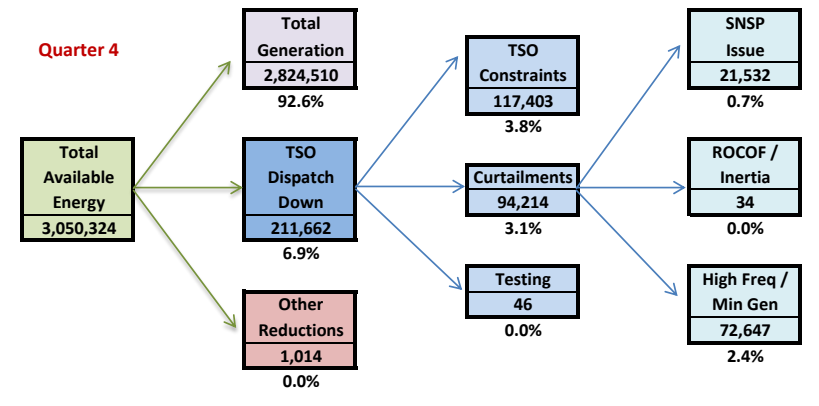
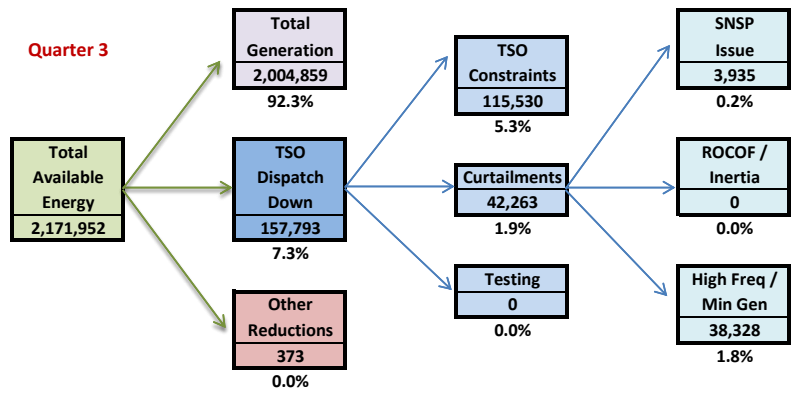
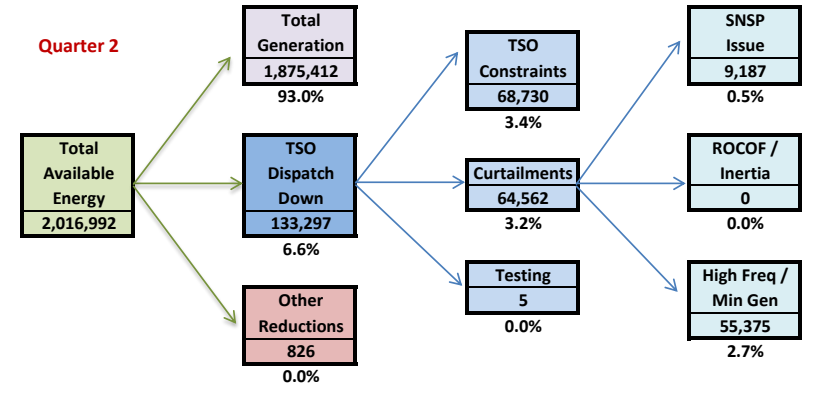
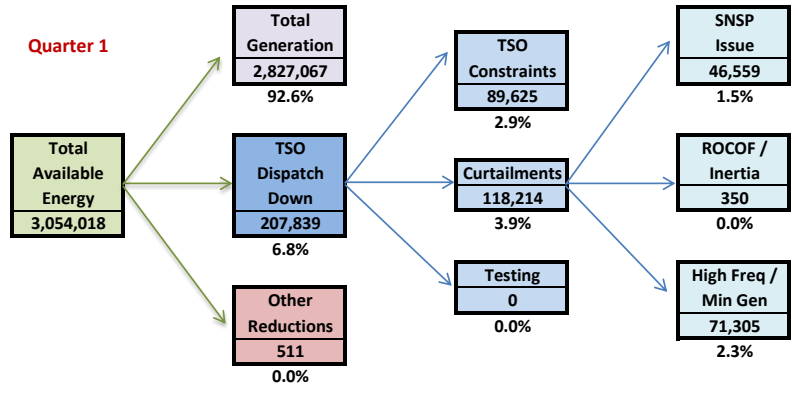
Volumes (MWh)	Jan	Feb	Mar	Qtr1	Apr	May	Jun	Qtr2	Jul	Aug	Sep	Qtr3	Oct	Nov	Dec	Qtr4	2019
Available Energy	801,555	1,213,856	1,038,607	3,054,018	844,400	549,280	623,313	2,016,992	492,177	844,249	835,526	2,171,952	962,630	881,604	1,206,090	3,050,324	10,293,287
Generation	768,913	1,122,835	935,319	2,827,067	763,806	524,774	586,832	1,875,412	472,304	769,095	763,460	2,004,859	896,665	844,660	1,083,184	2,824,510	9,531,847
TSO Dispatch Down	30,220	82,547	95,073	207,839	76,207	22,461	34,629	133,297	18,714	70,820	68,258	157,793	61,882	34,149	115,630	211,662	710,591
Other Reductions	98	283	130	511	648	33	146	826	50	168	155	373	371	319	324	1,014	2,724
TSO Dispatch Down:																	
TSO Constraints	1,572	23,762	64,291	89,625	40,555	12,707	15,469	68,730	13,267	46,286	55,977	115,530	46,192	26,385	44,826	117,403	391,288
Curtailements	28,648	58,785	30,782	118,214	35,647	9,754	19,161	64,562	5,448	24,534	12,281	42,263	15,681	7,764	70,769	94,214	319,252
TSO Testing	0	0	-	0	5	-	0	5	0	-	-	0	10	-	36	46	51
Curtailements:																	
SNSP Issue	4,287	29,776	12,496	46,559	7,967	-	1,220	9,187	-	1,786	2,149	3,935	-	-	21,532	21,532	81,213
ROCOF / Inertia	-	-	350	350	-	-	-	-	-	-	-	-	-	34	-	34	384
High Freq / Min Gen	24,361	29,009	17,936	71,305	27,680	9,754	17,941	55,375	5,448	22,748	10,132	38,328	15,681	7,730	49,236	72,647	237,655

Percentages	Jan	Feb	Mar	Qtr1	Apr	May	Jun	Qtr2	Jul	Aug	Sep	Qtr3	Oct	Nov	Dec	Qtr4	2019
Generation	95.9%	92.5%	90.1%	92.6%	90.5%	95.5%	94.1%	93.0%	96.0%	91.1%	91.4%	92.3%	93.1%	95.8%	89.8%	92.6%	92.6%
TSO Dispatch Down	3.8%	6.8%	9.2%	6.8%	9.0%	4.1%	5.6%	6.6%	3.8%	8.4%	8.2%	7.3%	6.4%	3.9%	9.6%	6.9%	6.9%
Other Reductions	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
TSO Dispatch Down:																	
TSO Constraints	0.2%	2.0%	6.2%	2.9%	4.8%	2.3%	2.5%	3.4%	2.7%	5.5%	6.7%	5.3%	4.8%	3.0%	3.7%	3.8%	3.8%
Curtailements	3.6%	4.8%	3.0%	3.9%	4.2%	1.8%	3.1%	3.2%	1.1%	2.9%	1.5%	1.9%	1.6%	0.9%	5.9%	3.1%	3.1%
TSO Testing	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Curtailements:																	
SNSP Issue	0.5%	2.5%	1.2%	1.5%	0.9%	0.0%	0.2%	0.5%	0.0%	0.2%	0.3%	0.2%	0.0%	0.0%	1.8%	0.7%	0.8%
ROCOF / Inertia	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
High Freq / Min Gen	3.0%	2.4%	1.7%	2.3%	3.3%	1.8%	2.9%	2.7%	1.1%	2.7%	1.2%	1.8%	1.6%	0.9%	4.1%	2.4%	2.3%

User Guide Available at: <http://www.eirgridgroup.com/how-the-grid-works/renewables/>

Disclaimer: EirGrid as the Transmission System Operator (TSO) for Ireland and SONI as the TSO for Northern Ireland make no warranties or representations of any kind with respect of this document, including, without limitation, its quality, accuracy and completeness. The TSOs do not accept liability for any loss or damage arising from the use of this document or any reliance on the information it contains. Use of this document and the information it contains is at the user's sole risk. In addition, the TSOs strongly recommend that any party wishing to make a decision based on the content of this document should consult the TSOs in advance.

Graphical Representation of the Breakdown of Wind Dispatch Down Energy Volumes (MWh) and Percentages (%)



User Guide Available at: <http://www.eirgridgroup.com/how-the-grid-works/renewables/>

Disclaimer: EirGrid as the Transmission System Operator (TSO) for Ireland and SONI as the TSO for Northern Ireland make no warranties or representations of any kind with respect to this document, including, without limitation, its quality, accuracy and completeness. The TSOs do not accept liability for any loss or damage arising from the use of this document or any reliance on the information it contains. Use of this document and the information it contains is at the user's sole risk. In addition, the TSOs strongly recommend that any party wishing to make a decision based on the content of this document should consult the TSOs in advance.



Northern Ireland Quarterly Wind Dispatch Down Report 2019

2019 Qtr4

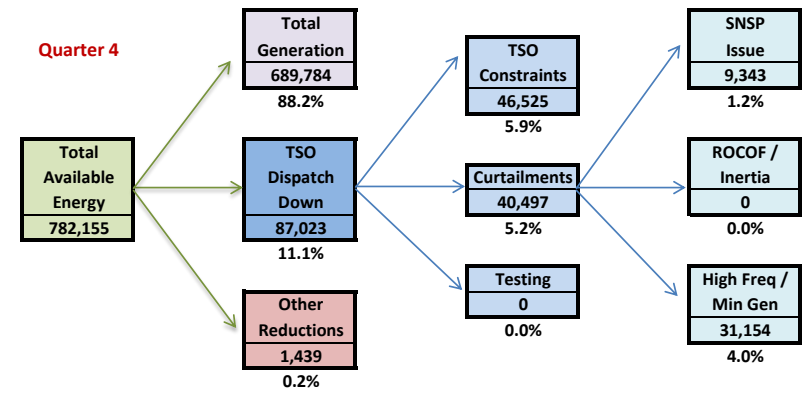
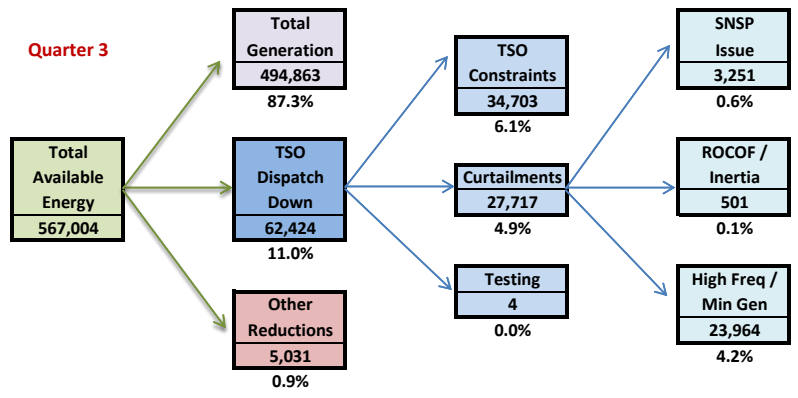
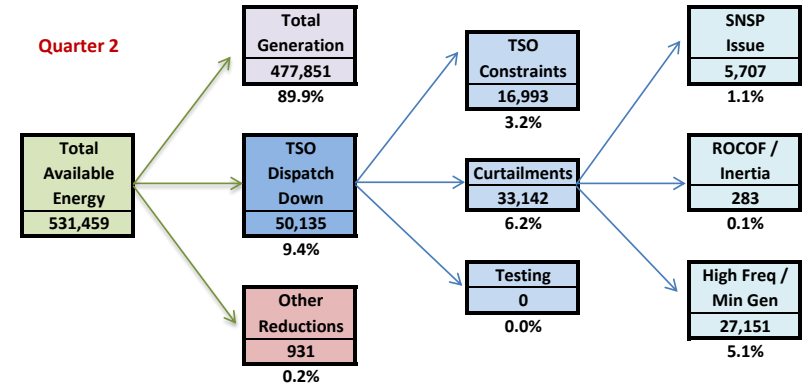
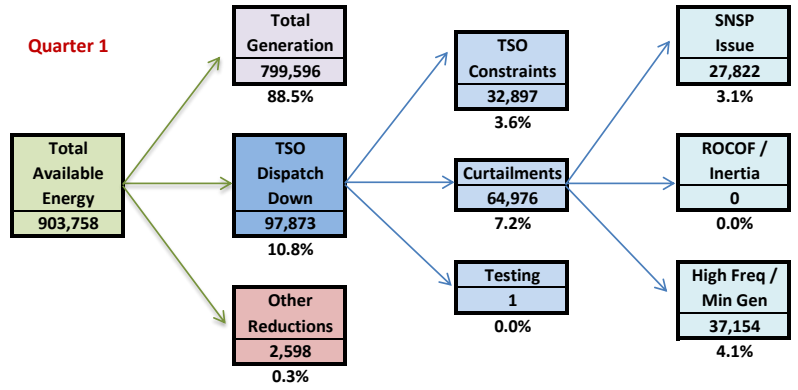
Volumes (MWh)	Jan	Feb	Mar	Qtr1	Apr	May	Jun	Qtr2	Jul	Aug	Sep	Qtr3	Oct	Nov	Dec	Qtr4	2019
Available Energy	234,163	345,183	324,412	903,758	245,440	131,512	154,508	531,459	144,631	222,407	199,966	567,004	257,530	192,744	331,880	782,155	2,784,377
Generation	210,660	305,449	283,487	799,596	216,097	125,772	135,983	477,851	130,947	186,443	177,472	494,863	237,056	177,658	275,070	689,784	2,462,093
TSO Dispatch Down	22,598	37,080	38,195	97,873	27,898	4,989	17,247	50,135	11,926	33,758	16,740	62,424	18,975	14,172	53,875	87,023	297,455
Other Reductions	56	1,116	1,426	2,598	320	307	303	931	32	445	4,554	5,031	630	373	436	1,439	9,998
TSO Dispatch Down:																	
TSO Constraints	9,735	6,450	16,712	32,897	5,628	1,560	9,805	16,993	6,607	15,006	13,090	34,703	10,468	10,179	25,878	46,525	131,118
Curtailements	12,863	30,630	21,483	64,976	22,270	3,429	7,443	33,142	5,319	18,752	3,645	27,717	8,507	3,993	27,997	40,497	166,332
TSO Testing	0	1	-	1	0	-	-	0	-	-	4	4	-	0	-	0	5
Curtailements:																	
SNSP Issue	3,193	16,906	7,723	27,822	4,906	-	801	5,707	1,948	562	742	3,251	-	-	9,343	9,343	46,123
ROCOF / Inertia	-	-	-	-	283	-	-	283	-	501	-	501	-	-	-	-	785
High Freq / Min Gen	9,670	13,724	13,760	37,154	17,081	3,429	6,642	27,151	3,372	17,689	2,904	23,964	8,507	3,993	18,654	31,154	119,423

Percentages	Jan	Feb	Mar	Qtr1	Apr	May	Jun	Qtr2	Jul	Aug	Sep	Qtr3	Oct	Nov	Dec	Qtr4	2019
Generation	90.0%	88.5%	87.4%	88.5%	88.0%	95.6%	88.0%	89.9%	90.5%	83.8%	88.8%	87.3%	92.0%	92.2%	82.9%	88.2%	88.4%
TSO Dispatch Down	9.7%	10.7%	11.8%	10.8%	11.4%	3.8%	11.2%	9.4%	8.2%	15.2%	8.4%	11.0%	7.4%	7.4%	16.2%	11.1%	10.7%
Other Reductions	0.0%	0.3%	0.4%	0.3%	0.1%	0.2%	0.2%	0.2%	0.0%	0.2%	2.3%	0.9%	0.2%	0.2%	0.1%	0.2%	0.4%
TSO Dispatch Down:																	
TSO Constraints	4.2%	1.9%	5.2%	3.6%	2.3%	1.2%	6.3%	3.2%	4.6%	6.7%	6.5%	6.1%	4.1%	5.3%	7.8%	5.9%	4.7%
Curtailements	5.5%	8.9%	6.6%	7.2%	9.1%	2.6%	4.8%	6.2%	3.7%	8.4%	1.8%	4.9%	3.3%	2.1%	8.4%	5.2%	6.0%
TSO Testing	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Curtailements:																	
SNSP Issue	1.4%	4.9%	2.4%	3.1%	2.0%	0.0%	0.5%	1.1%	1.3%	0.3%	0.4%	0.6%	0.0%	0.0%	2.8%	1.2%	1.7%
ROCOF / Inertia	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.2%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
High Freq / Min Gen	4.1%	4.0%	4.2%	4.1%	7.0%	2.6%	4.3%	5.1%	2.3%	8.0%	1.5%	4.2%	3.3%	2.1%	5.6%	4.0%	4.3%

User Guide Available at: <http://www.eirgridgroup.com/how-the-grid-works/renewables/>

Disclaimer: EirGrid as the Transmission System Operator (TSO) for Ireland and SONI as the TSO for Northern Ireland make no warranties or representations of any kind with respect of this document, including, without limitation, its quality, accuracy and completeness. The TSOs do not accept liability for any loss or damage arising from the use of this document or any reliance on the information it contains. Use of this document and the information it contains is at the user's sole risk. In addition, the TSOs strongly recommend that any party wishing to make a decision based on the content of this document should consult the TSOs in advance.

Graphical Representation of the Breakdown of Wind Dispatch Down Energy Volumes (MWh) and Percentages (%)



User Guide Available at: <http://www.eirgridgroup.com/how-the-grid-works/renewables/>

Disclaimer: EirGrid as the Transmission System Operator (TSO) for Ireland and SONI as the TSO for Northern Ireland make no warranties or representations of any kind with respect to this document, including, without limitation, its quality, accuracy and completeness. The TSOs do not accept liability for any loss or damage arising from the use of this document or any reliance on the information it contains. Use of this document and the information it contains is at the user's sole risk. In addition, the TSOs strongly recommend that any party wishing to make a decision based on the content of this document should consult the TSOs in advance.

Notes:

Other Reductions include DSO constraints, developer outage and developer testing.

Certain types of reductions are outside of the control of the TSO and are not logged.

Therefore, **Available Energy \neq Generation + TSO Dispatch Down + Other Reductions.**

The format of this report has been modified from Qtr4 2019 to show the levels of constraints/curtailments in actual percentages instead of proportions.

Reason Codes Used for Curtailments/Constraints:

Transmission (TSO) Constraints: Used to resolve a local network issue.

TSO Testing: Used when wind farm testing is carried out by the TSO, e.g. for commissioning and monitoring.

Curtailments:

High Frequency/Minimum Generation: Used when attempting to alleviate an emergency high frequency event or in order to facilitate the minimum level of conventional generation on the system to satisfy reserve requirements, priority dispatch or to provide ramping capabilities.

SNSP Issue: Used to reduce the System Non-Synchronous Penetration.

ROCOF/Inertia: Used when the Rate of Change of Frequency (ROCOF) value for the loss of the largest single infeed is unacceptably high and wind must be dispatched down as a result or when the system inertia is too low.

Other Reductions:

DSO/DNO Constraints: Used when a dispatch is carried out as a result of a request from the Distribution System Operator or the Distribution Network Operator.

Developer Outage: Used when a wind farm must reduce output mainly to carry out software upgrades.

Developer Testing: Used when testing is carried out by a wind farm developer.

User Guide Available at: <http://www.eirgridgroup.com/how-the-grid-works/renewables/>

Disclaimer: EirGrid as the Transmission System Operator (TSO) for Ireland and SONI as the TSO for Northern Ireland make no warranties or representations of any kind with respect of this document, including, without limitation, its quality, accuracy and completeness. The TSOs do not accept liability for any loss or damage arising from the use of this document or any reliance on the information it contains. Use of this document and the information it contains is at the user's sole risk. In addition, the TSOs strongly recommend that any party wishing to make a decision based on the content of this document should consult the TSOs in advance.