

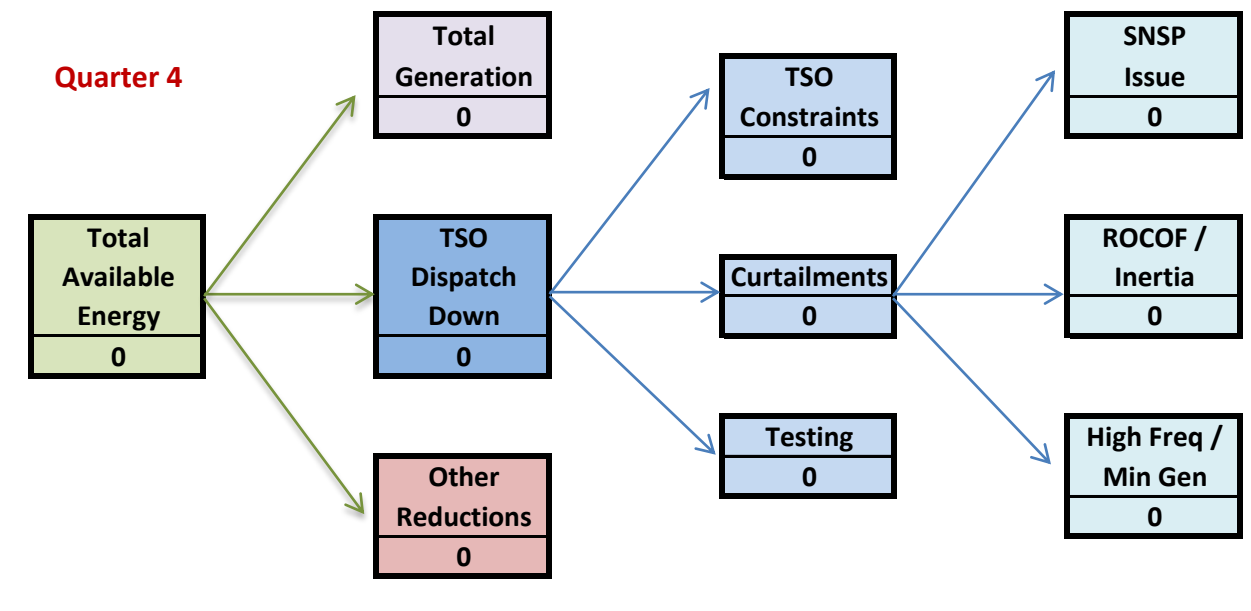
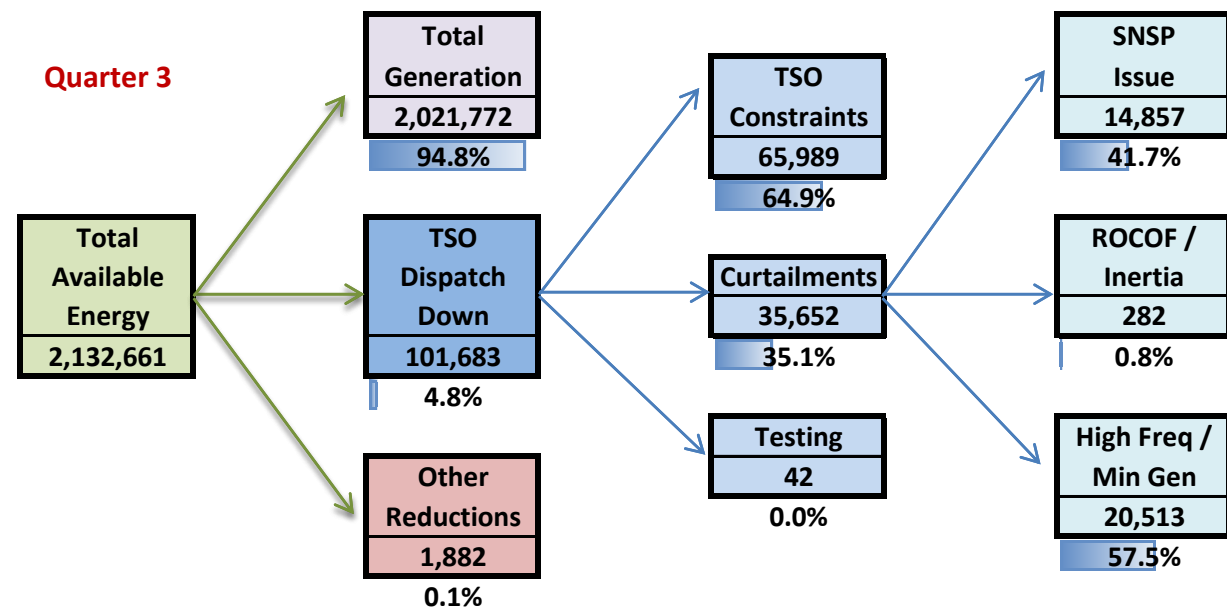
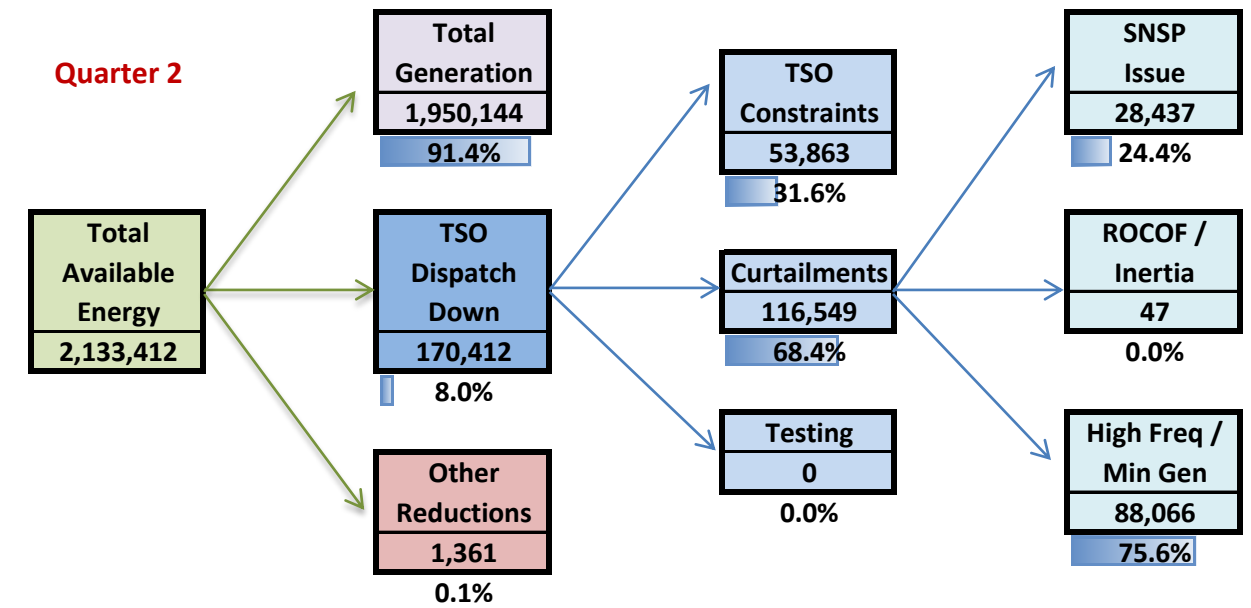
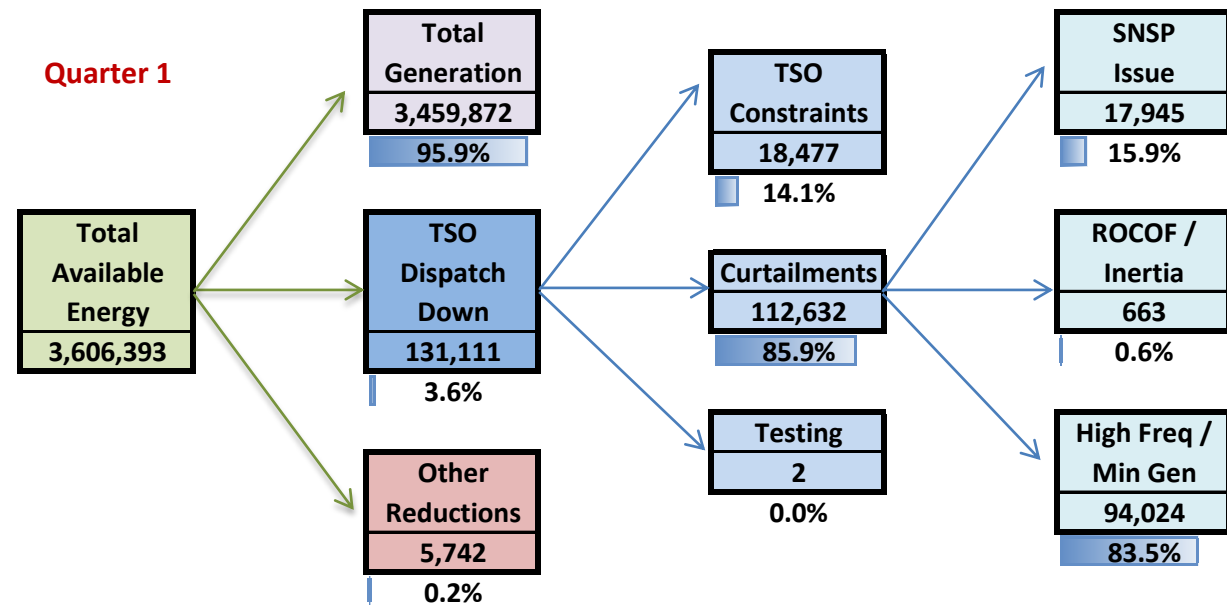
Volumes (MWh)	Jan	Feb	Mar	Qtr1	Apr	May	Jun	Qtr2	Jul	Aug	Sep	Qtr3	Oct	Nov	Dec	Qtr4	2018
Available Energy	1,489,990	1,073,356	1,043,047	3,606,393	986,868	688,707	457,836	2,133,412	441,170	742,929	948,562	2,132,661	-	-	-	-	7,872,465
Generation	1,423,116	1,046,496	990,259	3,459,872	883,883	652,498	413,762	1,950,144	431,240	718,012	872,519	2,021,772	-	-	-	-	7,431,787
TSO Dispatch Down	58,403	23,327	49,381	131,111	96,932	34,188	39,293	170,412	8,687	22,637	70,359	101,683	-	-	-	-	403,207
Other Reductions	3,960	1,492	290	5,742	817	108	436	1,361	425	380	1,077	1,882	-	-	-	-	8,984
TSO Dispatch Down:																	
TSO Constraints	11,003	3,142	4,332	18,477	9,879	16,519	27,465	53,863	4,781	18,765	42,444	65,989	-	-	-	-	138,329
Curtailments	47,398	20,185	45,049	112,632	87,053	17,669	11,828	116,549	3,907	3,872	27,873	35,652	-	-	-	-	264,833
TSO Testing	2	-	-	2	-	-	-	-	-	0	42	42	-	-	-	-	44
Curtailments:																	
SNSP Issue	8,378	2,161	7,406	17,945	28,435	2	-	28,437	-	335	14,521	14,857	-	-	-	-	61,239
ROCOF / Inertia	1	550	112	663	47	-	-	47	59	89	134	282	-	-	-	-	992
High Freq / Min Gen	39,019	17,474	37,531	94,024	58,571	17,667	11,828	88,066	3,848	3,448	13,218	20,513	-	-	-	-	202,602

Percentages	Jan	Feb	Mar	Qtr1	Apr	May	Jun	Qtr2	Jul	Aug	Sep	Qtr3	Oct	Nov	Dec	Qtr4	2018
Generation	95.5%	97.5%	94.9%	95.9%	89.6%	94.7%	90.4%	91.4%	97.7%	96.6%	92.0%	94.8%					94.4%
TSO Dispatch Down	3.9%	2.2%	4.7%	3.6%	9.8%	5.0%	8.6%	8.0%	2.0%	3.0%	7.4%	4.8%					5.1%
Other Reductions	0.3%	0.1%	0.0%	0.2%	0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%					0.1%
TSO Dispatch Down:																	
TSO Constraints	18.8%	13.5%	8.8%	14.1%	10.2%	48.3%	69.9%	31.6%	55.0%	82.9%	60.3%	64.9%					34.3%
Curtailments	81.2%	86.5%	91.2%	85.9%	89.8%	51.7%	30.1%	68.4%	45.0%	17.1%	39.6%	35.1%					65.7%
TSO Testing	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%					0.0%
Curtailments:																	
SNSP Issue	17.7%	10.7%	16.4%	15.9%	32.7%	0.0%	0.0%	24.4%	0.0%	8.7%	52.1%	41.7%					23.1%
ROCOF / Inertia	0.0%	2.7%	0.2%	0.6%	0.1%	0.0%	0.0%	0.0%	1.5%	2.3%	0.5%	0.8%					0.4%
High Freq / Min Gen	82.3%	86.6%	83.3%	83.5%	67.3%	100.0%	100.0%	75.6%	98.5%	89.0%	47.4%	57.5%					76.5%

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



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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		
	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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%			
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%			
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%			
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%			
Year Total	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%	8.1%	4.3%	5.1%
Wind Installed Capacity (MW)	515	1,585	2,100	603	1,703	2,306	644	2,008	2,652	733	2,279	3,013	755	2,447	3,203	948	2,779	3,727	1,160	3,311	4,471			
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			
Wind Capacity Factors	21%	31%	28%	21%	28%	27%	23%	29%	27%	24%	27%	26%	28%	32%	31%	23%	27%	26%	22%	27%	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		

Notes:

"Dispatch Down" consists of TSO 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.

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Regional Wind Dispatch Down Percentages

Region	Jan	Feb	Mar	Qtr1	Apr	May	Jun	Qtr2	Jul	Aug	Sep	Qtr3	Oct	Nov	Dec	Qtr4	2018
NI	5.7%	2.9%	5.9%	4.9%	19.2%	6.1%	11.0%	13.0%	2.1%	5.8%	13.1%	8.7%					8.1%
M	5.5%	3.1%	5.6%	4.8%	7.6%	3.5%	3.0%	5.3%	1.6%	1.1%	4.5%	2.7%					4.4%
NE	2.3%	2.4%	5.3%	3.2%	9.5%	2.1%	1.9%	5.3%	1.0%	1.1%	4.6%	2.7%					3.6%
NW	5.7%	2.3%	6.4%	4.9%	10.6%	5.3%	13.1%	9.4%	6.8%	8.2%	15.0%	11.1%					7.8%
SE	4.2%	2.9%	5.3%	4.1%	8.8%	4.0%	2.6%	5.9%	0.9%	0.6%	5.2%	2.6%					4.2%
SW	3.2%	1.9%	4.3%	3.1%	5.5%	8.7%	15.2%	8.7%	1.8%	2.4%	4.5%	3.1%					4.6%
W	3.2%	1.9%	4.8%	3.3%	12.4%	2.2%	3.4%	7.1%	2.1%	2.2%	6.8%	4.0%					4.6%

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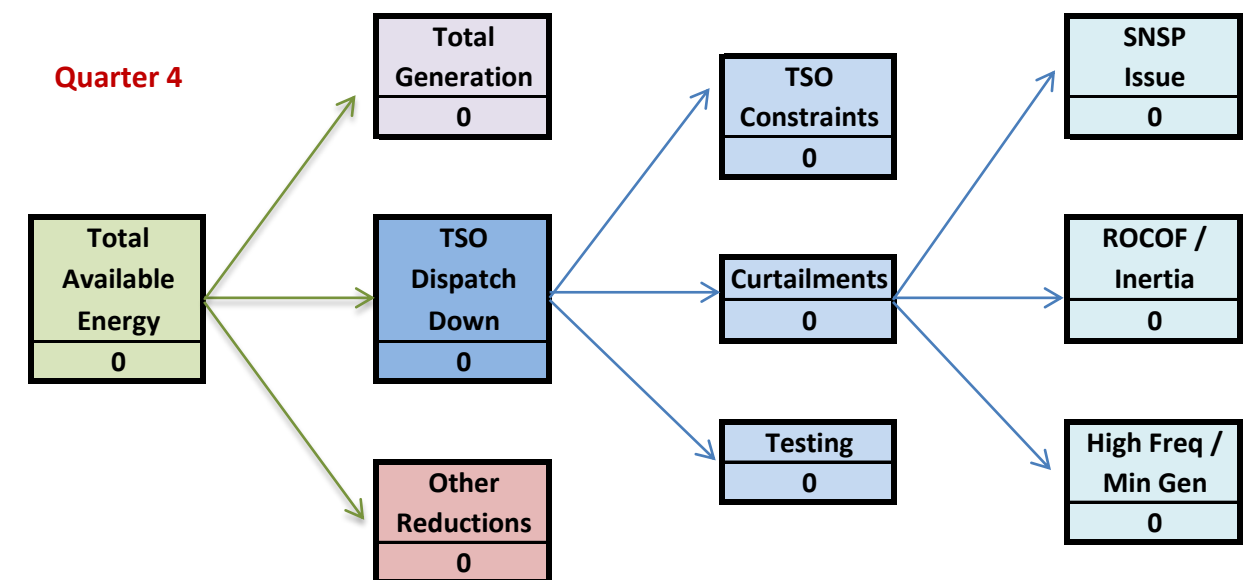
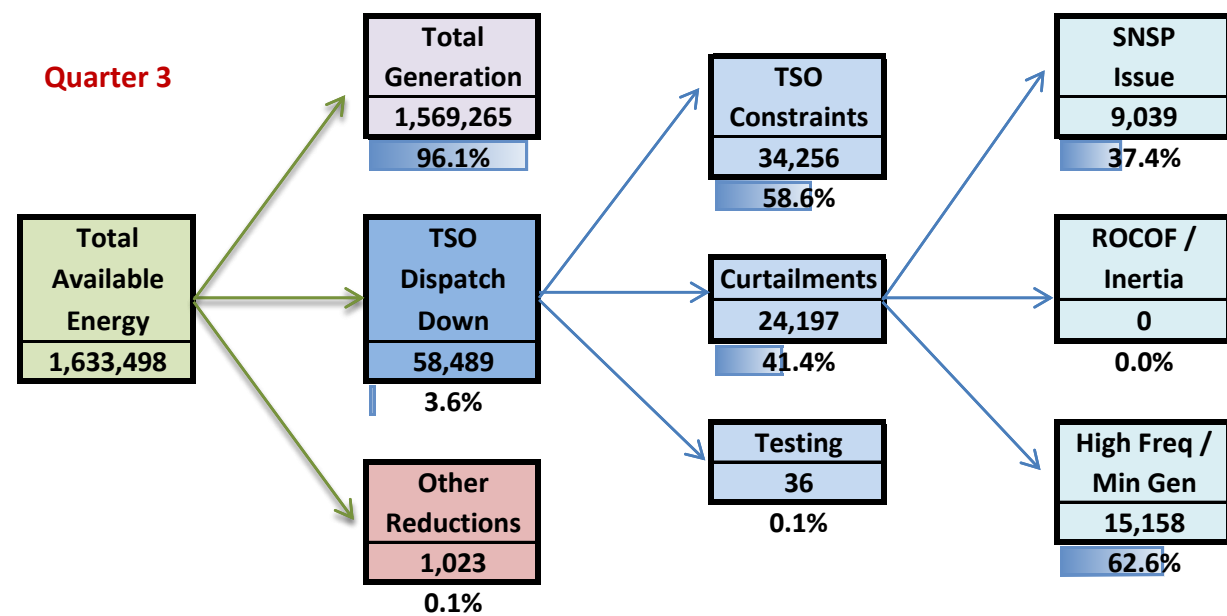
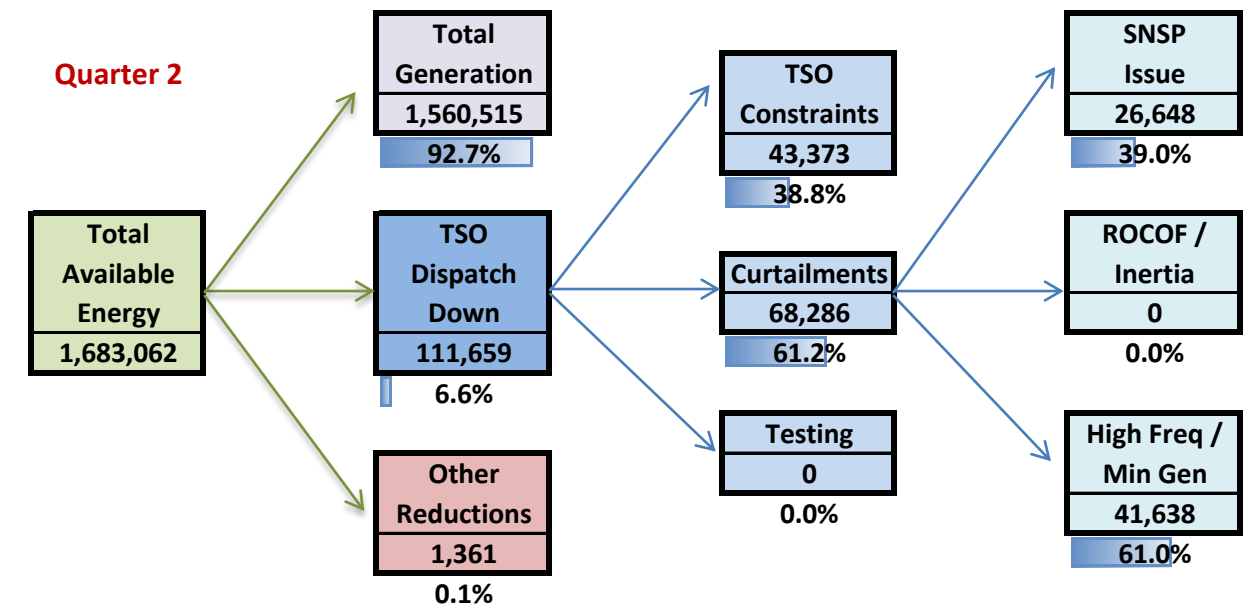
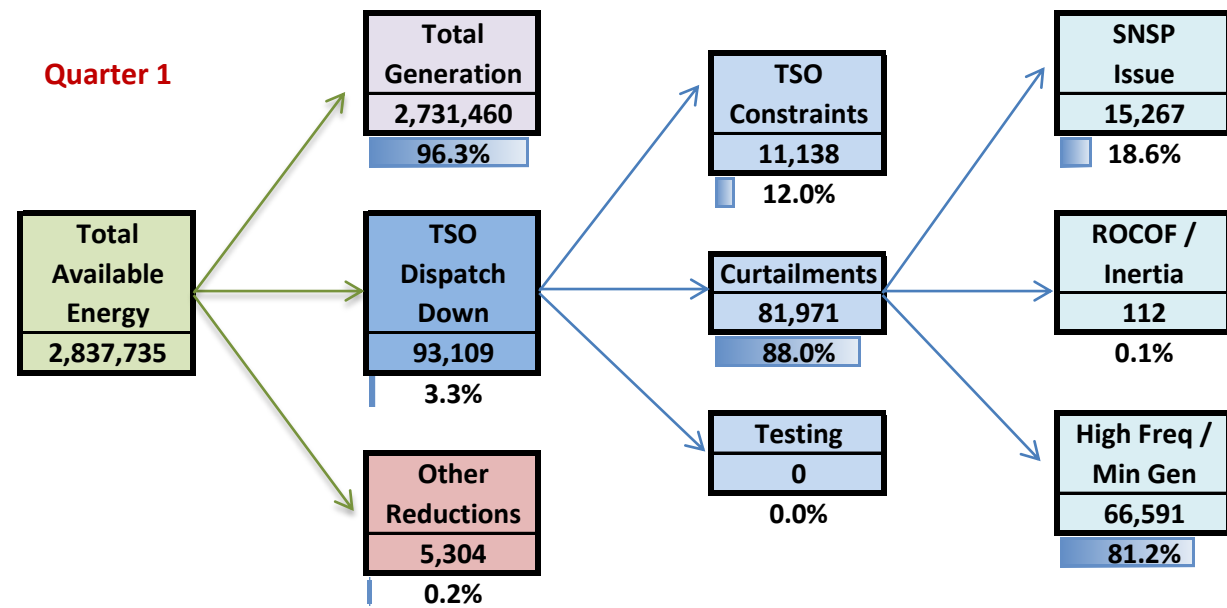
Volumes (MWh)	Jan	Feb	Mar	Qtr1	Apr	May	Jun	Qtr2	Jul	Aug	Sep	Qtr3	Oct	Nov	Dec	Qtr4	2018
Available Energy	1,175,274	854,216	808,245	2,837,735	783,147	535,868	364,047	1,683,062	349,969	576,951	706,579	1,633,498	-	-	-	-	6,154,295
Generation	1,127,424	834,092	769,944	2,731,460	720,527	509,379	330,608	1,560,515	342,413	562,603	664,248	1,569,265	-	-	-	-	5,861,240
TSO Dispatch Down	40,619	16,989	35,500	93,109	57,728	24,920	29,011	111,659	6,745	12,971	38,773	58,489	-	-	-	-	263,257
Other Reductions	3,606	1,450	249	5,304	817	108	436	1,361	107	165	751	1,023	-	-	-	-	7,688
TSO Dispatch Down:																	
TSO Constraints	8,274	1,328	1,536	11,138	7,553	13,087	22,733	43,373	3,512	10,001	20,742	34,256	-	-	-	-	88,766
Curtailments	32,345	15,661	33,964	81,971	50,175	11,833	6,278	68,286	3,233	2,970	17,994	24,197	-	-	-	-	174,454
TSO Testing	-	-	-	-	-	-	-	-	-	0	36	36	-	-	-	-	36
Curtailments:																	
SNSP Issue	6,531	1,476	7,260	15,267	26,647	2	-	26,648	-	198	8,841	9,039	-	-	-	-	50,955
ROCOF / Inertia	-	-	112	112	-	-	-	-	-	-	-	-	-	-	-	-	112
High Freq / Min Gen	25,815	14,185	26,591	66,591	23,529	11,832	6,278	41,638	3,233	2,772	9,154	15,158	-	-	-	-	123,387

Percentages	Jan	Feb	Mar	Qtr1	Apr	May	Jun	Qtr2	Jul	Aug	Sep	Qtr3	Oct	Nov	Dec	Qtr4	2018
Generation	95.9%	97.6%	95.3%	96.3%	92.0%	95.1%	90.8%	92.7%	97.8%	97.5%	94.0%	96.1%					95.2%
TSO Dispatch Down	3.5%	2.0%	4.4%	3.3%	7.4%	4.7%	8.0%	6.6%	1.9%	2.2%	5.5%	3.6%					4.3%
Other Reductions	0.3%	0.2%	0.0%	0.2%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%	0.1%					0.1%
TSO Dispatch Down:																	
TSO Constraints	20.4%	7.8%	4.3%	12.0%	13.1%	52.5%	78.4%	38.8%	52.1%	77.1%	53.5%	58.6%					33.7%
Curtailments	79.6%	92.2%	95.7%	88.0%	86.9%	47.5%	21.6%	61.2%	47.9%	22.9%	46.4%	41.4%					66.3%
TSO Testing	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%
Curtailments:																	
SNSP Issue	20.2%	9.4%	21.4%	18.6%	53.1%	0.0%	0.0%	39.0%	0.0%	6.7%	49.1%	37.4%					29.2%
ROCOF / Inertia	0.0%	0.0%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%					0.1%
High Freq / Min Gen	79.8%	90.6%	78.3%	81.2%	46.9%	100.0%	100.0%	61.0%	100.0%	93.3%	50.9%	62.6%					70.7%

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



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Northern Ireland Quarterly Wind Dispatch Down Report 2018

2018 Qtr3

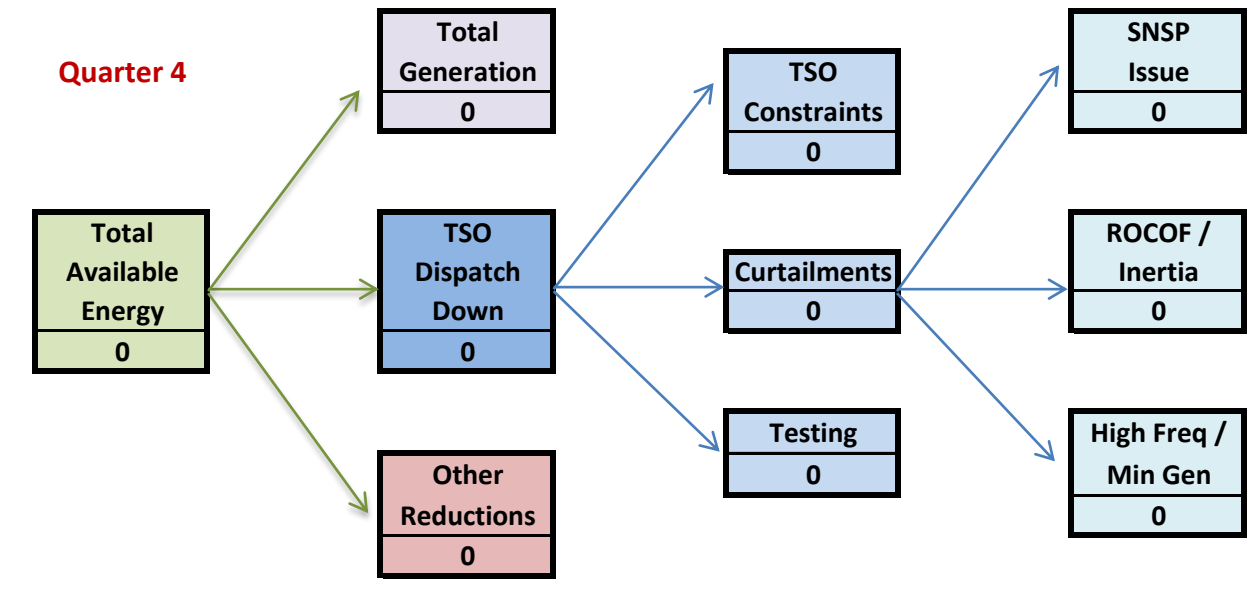
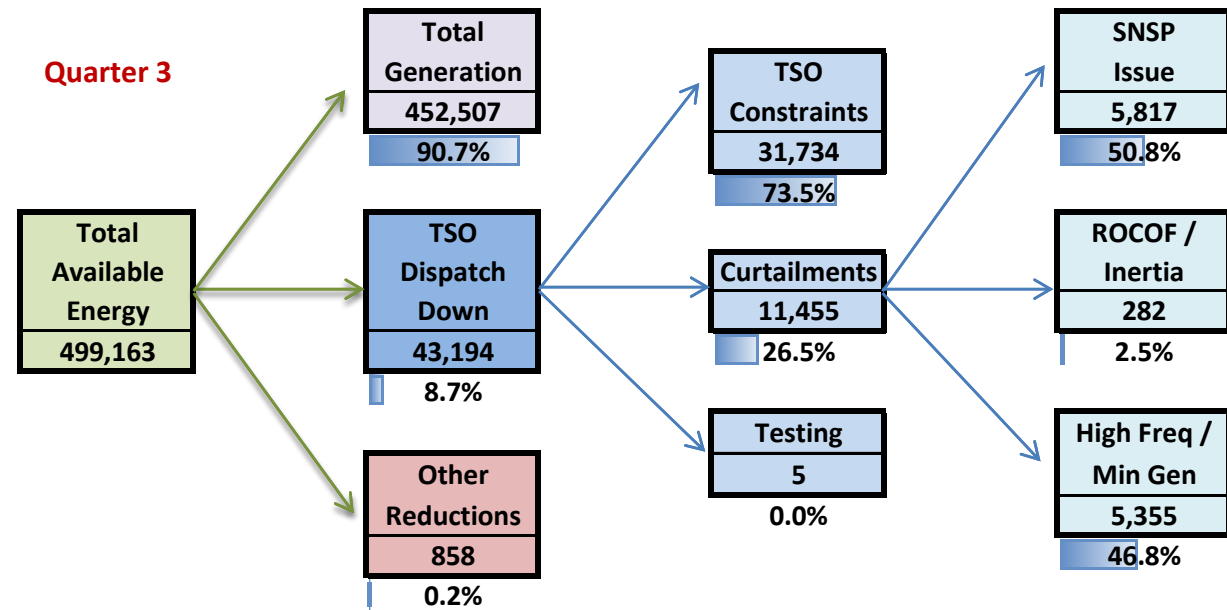
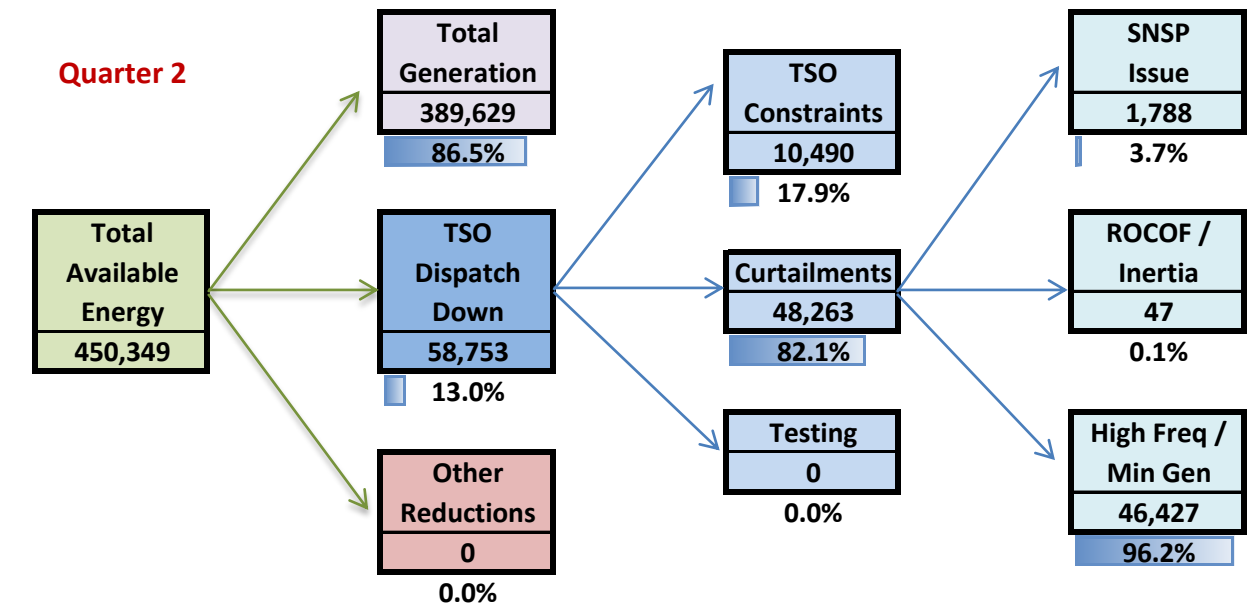
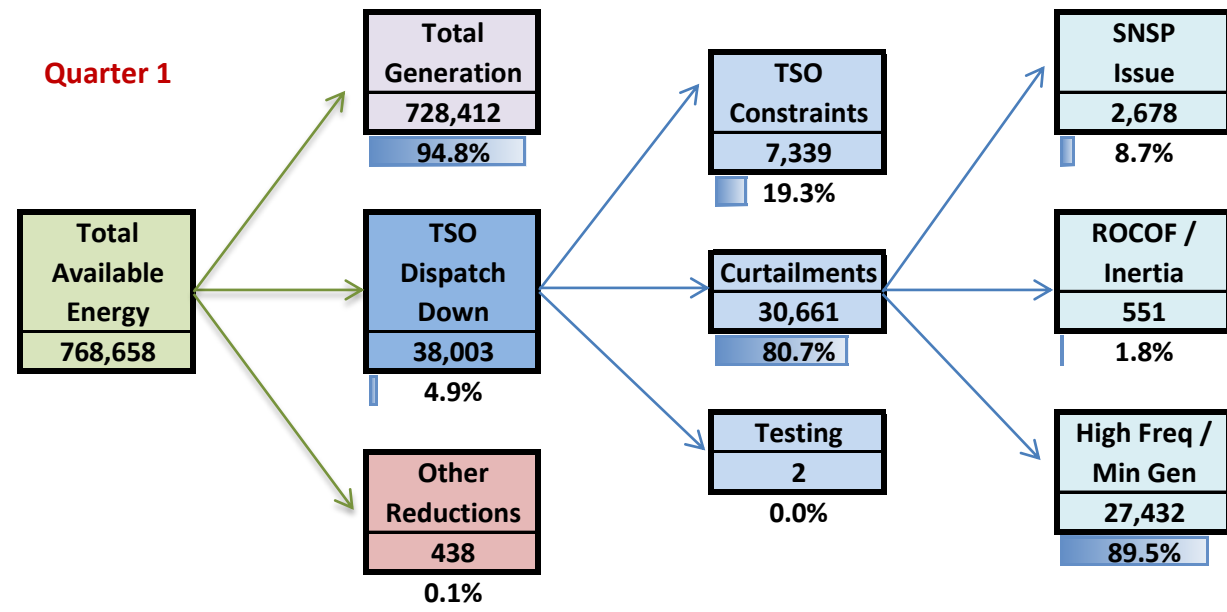
Volumes (MWh)	Jan	Feb	Mar	Qtr1	Apr	May	Jun	Qtr2	Jul	Aug	Sep	Qtr3	Oct	Nov	Dec	Qtr4	2018
Available Energy	314,716	219,140	234,802	768,658	203,721	152,839	93,789	450,349	91,201	165,979	241,983	499,163	-	-	-	-	1,718,170
Generation	295,693	212,404	220,315	728,412	163,356	143,119	83,153	389,629	88,827	155,409	208,271	452,507	-	-	-	-	1,570,547
TSO Dispatch Down	17,784	6,338	13,881	38,003	39,203	9,268	10,282	58,753	1,943	9,666	31,586	43,194	-	-	-	-	139,950
Other Reductions	354	43	41	438	-	-	-	-	317	215	326	858	-	-	-	-	1,296
TSO Dispatch Down:																	
TSO Constraints	2,729	1,814	2,796	7,339	2,326	3,432	4,732	10,490	1,269	8,764	21,702	31,734	-	-	-	-	49,563
Curtailments	15,053	4,523	11,085	30,661	36,877	5,836	5,550	48,263	674	902	9,879	11,455	-	-	-	-	90,379
TSO Testing	2	-	-	2	-	-	-	-	-	-	5	5	-	-	-	-	8
Curtailments:																	
SNSP Issue	1,848	685	145	2,678	1,788	0	-	1,788	-	137	5,681	5,817	-	-	-	-	10,284
ROCOF / Inertia	1	550	-	551	47	-	-	47	59	89	134	282	-	-	-	-	880
High Freq / Min Gen	13,204	3,289	10,940	27,432	35,042	5,836	5,550	46,427	615	676	4,064	5,355	-	-	-	-	79,215

Percentages	Jan	Feb	Mar	Qtr1	Apr	May	Jun	Qtr2	Jul	Aug	Sep	Qtr3	Oct	Nov	Dec	Qtr4	2018
Generation	94.0%	96.9%	93.8%	94.8%	80.2%	93.6%	88.7%	86.5%	97.4%	93.6%	86.1%	90.7%					91.4%
TSO Dispatch Down	5.7%	2.9%	5.9%	4.9%	19.2%	6.1%	11.0%	13.0%	2.1%	5.8%	13.1%	8.7%					8.1%
Other Reductions	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.3%	0.1%	0.1%	0.2%					0.1%
TSO Dispatch Down:																	
TSO Constraints	15.3%	28.6%	20.1%	19.3%	5.9%	37.0%	46.0%	17.9%	65.3%	90.7%	68.7%	73.5%					35.4%
Curtailments	84.6%	71.4%	79.9%	80.7%	94.1%	63.0%	54.0%	82.1%	34.7%	9.3%	31.3%	26.5%					64.6%
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%
Curtailments:																	
SNSP Issue	12.3%	15.1%	1.3%	8.7%	4.8%	0.0%	0.0%	3.7%	0.0%	15.2%	57.5%	50.8%					11.4%
ROCOF / Inertia	0.0%	12.2%	0.0%	1.8%	0.1%	0.0%	0.0%	0.1%	8.8%	9.8%	1.4%	2.5%					1.0%
High Freq / Min Gen	87.7%	72.7%	98.7%	89.5%	95.0%	100.0%	100.0%	96.2%	91.2%	75.0%	41.1%	46.8%					87.6%

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

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



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