

February 8th, 2017

2017/273

Swedish Interconnectors

COMP Case No 39351

Monitoring Report No 13

Introduction

This report is submitted to comply with section 5 (Monitoring provisions) of Svenska kraftnät's Commitments (26 January 2010) under Article 9 of Council Regulation No. 1/2003 in connection with the European Commission investigation in Case COMP/39351 – Swedish Interconnectors. The Commitments were adopted and made binding by decision of the Commission on 14 April 2010. Regarding this, Svenska kraftnät would like to emphasize that that we are monitoring the development of the European Network Codes continuously and how they will relate to our Commitment.

The report is prepared in good faith and aims at providing any information the Commission may need in order to judge whether Svenska kraftnät is proceeding in accordance with the Commitments. Additional information can be provided to the Commission upon request.

In accordance with what was stated in last (twelfth) monitoring report this thirteenth monitoring report has been submitted by 10 February 2017 at the latest.

In order to have sufficient time for proper assessments (in line with what is stated in the Commitment) and internal processes the next (fourteenth) monitoring report will be submitted by 9th of February 2018 at latest, covering the whole year of 2017.

Svenska kraftnät confirms that the report does not contain any confidential information and may be freely distributed to third parties.

Sundbyberg, February 8th 2017



Mikael Odenberg

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1 Svenska kraftnät's commitment

As committed, Svenska kraftnät has subdivided the Swedish part of the Nordic electricity market into several bidding zones and the Swedish Transmission System is operated on this basis since November 1, 2011. Congestion in the Swedish Transmission System, with exception of Congestion in the West Coast Corridor, is generally managed without limiting Trading Capacity on Interconnectors. This can be seen in subsequent chapters, and is particularly evident in Table 3 in each chapter (there is one chapter per quarter).

2 Period January 1 – March 31, Q1 2016

This section describes operational experience and measures regarding allocation of trading capacity in the period January 1 to March 31, 2015.

In the period, totally 2 183 hours, the main direction of the power flow was southbound.

The interconnector NordBalt, between the areas Sweden SE4 and Lithuania LT, was taken into operation on February 18, 2016. All figures for the interconnector SE4-LT presented for Q1 2016 are based on the period from February 18 to March 31, totally 1 031 hours.

Table 1 below shows the average prices in Sweden and all neighbouring areas for the above mentioned period (excluding Germany and Poland). Table 2 summarises the number of hours where price differences occurred between the respective zones.

Area	Average Price Level (EUR)	Maximum Price (EUR)	Minimum Price (EUR)
SE1	23,08	214,25	4,69
SE2	23,08	214,25	4,69
SE3	24,11	214,25	4,69
SE4	24,50	214,25	4,69
DK1	21,56	92,75	-13,45
DK2	24,16	214,25	-6,04
FI	30,43	214,25	4,69
NO1	23,73	214,25	9,25
NO3	23,19	214,25	12,69
NO4	22,64	214,25	12,69
LT	29,54	95,02	11,18

Table 1. Average, maximum, and minimum prices for areas within Nord Pool.

No of hours where price for row area greater than for column area	SE1	SE2	SE3	SE4	DK1	DK2	FI	NO1	NO3	NO4	LT

SE1	-	0	0	0	449	86	0	165	10	416	0
SE2	0	-	0	0	449	86	0	165	10	416	0
SE3	139	139	-	0	482	86	0	175	149	554	0
SE4	299	299	177	-	645	86	37	308	309	650	0
DK1	190	190	62	42	-	31	16	187	198	588	3
DK2	314	314	196	20	584	-	45	317	324	663	0
FI	1 268	1 268	1 206	1 178	1 478	1 242	-	1 249	1 270	1 453	4
NO1	178	178	42	42	452	112	39	-	175	578	3
NO3	141	141	141	141	497	194	98	301	-	491	37
NO4	108	108	108	108	452	161	83	212	0	-	30
LT	736	736	736	706	784	723	398	746	735	847	-

Table 2. Number of hours where the price for the area in the row was higher than for the area in the column.

Summary of table 1 and 2:

- LT had the highest average price, followed by FI, SE4, DK2, SE3, NO1, NO3, SE1, SE2, NO4, DK1 respectively.
- SE1 and SE2 had a common price during all hours.

2.1 Allocation of trading capacity

Table 3 below summarises how often Svenska kraftnät have allocated less trading capacity than maximum NTC for interconnectors and corridors between internal areas in the period.

Interconnectors/ corridors between internal areas	No of limited hours		No of days with limitation		Average reduction	
	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound
SE1-SE2	94	0	5	0	0 %	0 %
SE2-SE3	1 319	0	55	0	4 %	0 %
SE3-SE4	1 115	0	48	0	3 %	0 %
SE1-FI	1 274	228	56	13	1 %	-2 %
SE1-NO4	0	0	0	0	0 %	0 %
SE2-NO3	0	0	0	0	0 %	0 %
SE2-NO4	0	0	0	0	0 %	0 %
SE3-DK1	4	541	1	62	0 %	7 %
SE3-FI	2	2	1	1	0 %	0 %
SE3-NO1	519	12	62	2	5 %	0 %
SE4-DE	0	481	0	60	0 %	4 %
SE4-DK2	6	482	1	59	0 %	4 %
SE4-PL	40	451	3	57	1 %	5 %
SE4-LT	266	266	13	13	26 %	26 %

Table 3. Limitations in trading capacity on interconnectors and corridors between internal areas as enforced by Svenska kraftnät. The columns with average reductions shows the average NTC divided by maximum NTC.

The majority of the limitations of export capacity on the interconnector SE1-FI, enforced by Svenska kraftnät during the period, are because of that the NTC depends on forecasted transfer between Kalix - Ossauskoski and Ivalo - Varangerbotn. The forecasted transfer can both increase and decrease the NTC. The interconnector Kalix – Ossauskoski was dismantled on January 25, 2016.

Table 4 below summarises the time during which neighbouring TSOs have allocated less trading capacity than maximum NTC to interconnectors in the period.

Interconnectors/ corridors between internal areas	No of limited hours		No of days with limitation		Average reduction	
	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound
SE1-SE2	-	-	-	-	-	-
SE2-SE3	-	-	-	-	-	-
SE3-SE4	-	-	-	-	-	-
SE1-FI	1 302	58	1 302	235	2 %	-2 %
SE1-NO4	2 183	91	2 183	2 183	27 %	18 %
SE2-NO3	763	36	763	0	10 %	0 %
SE2-NO4	2 183	91	2 183	2 183	28 %	44 %
SE3-DK1	198	9	198	0	2 %	0 %
SE3-FI	10	2	10	10	0 %	0 %
SE3-NO1	15	2	15	2 088	0 %	7 %
SE4-DE	977	64	977	1 646	32 %	45 %
SE4-DK2	45	5	45	45	1 %	1 %
SE4-PL	1 195	91	1 195	2 183	41 %	86 %
SE4-LT	266	266	13	13	26 %	26 %

Table 4. Limitations in trading capacity on interconnectors as enforced by neighbouring TSOs. The columns with average reductions shows the average NTC divided by maximum NTC.

Table 5 below summarises the time during which capacities on interconnectors and corridors between internal areas have been reduced, taking into account reductions by both Svenska kraftnät and neighbouring TSOs.

Interconnectors/ corridors between internal areas	No of limited hours		No of days with limitation		Average reduction	
	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound
SE1-SE2	94	0	5	0	0 %	0 %
SE2-SE3	1 319	0	55	0	4 %	0 %
SE3-SE4	1 115	0	48	0	3 %	0 %
SE1-FI	1 302	235	58	15	2 %	-2 %
SE1-NO4	2 183	2 183	91	91	27 %	18 %
SE2-NO3	763	0	36	0	10 %	0 %
SE2-NO4	2 183	2 183	91	91	28 %	44 %
SE3-DK1	202	545	10	63	3 %	7 %
SE3-FI	10	10	2	2	0 %	0 %
SE3-NO1	537	2 088	64	87	5 %	7 %
SE4-DE	979	1 795	64	91	32 %	46 %
SE4-DK2	51	529	6	60	1 %	5 %
SE4-PL	1 218	2 183	91	91	42 %	86 %
SE4-LT	266	266	13	13	26 %	26 %

Table 5. Final limitations in trading capacity on interconnectors and corridors between internal areas as enforced by both Svenska kraftnät and neighbouring TSOs. The columns with average reductions shows the average NTC divided by maximum NTC.

Detailed information for each limitation is provided in the attached tables A2 to A5 in appendix A and in the attachment. This information includes the reason for each limitation.

2.2 Comments on each interconnector

2.2.1 SE1-FI, North Finland

Svenska kraftnät has reduced the export and import capacity for 1 274 and 228 hours, respectively, on the interconnector between SE1 and FI, because the NTC depends on forecasted transfer between Kalix – Ossauskoski and Ivalo – Varangerbotn. The interconnector Kalix – Ossauskoski was dismantled on January 25, 2016.

2.2.2 SE1-NO4, North Norway

Svenska kraftnät has not reduced the capacity on the interconnector between SE1 and NO4. In total, the export and import on the interconnector have been reduced during all hours.

2.2.3 SE2-NO3, Central Norway

Svenska kraftnät has not reduced the capacity on the interconnector between SE2 and NO3. In total, the export and import on the interconnector have been reduced for 765 and 0 hours, respectively.

2.2.4 SE2-NO4, North Norway

Svenska kraftnät has not reduced the capacity on the interconnector between SE2 and NO4. In total, the export and import on the interconnector have been reduced during all hours.

2.2.5 SE3-DK1, Western Denmark

Svenska kraftnät has reduced the export and import capacity for 4 and 541 hours, respectively, on the interconnector between SE3 and DK1. The reason for reductions set by Svenska kraftnät was mainly congestion in the West Coast Corridor. In total, the export and import on the interconnector have been reduced for 202 and 545 hours, respectively.

2.2.6 SE3-FI, Southern Finland

Svenska kraftnät has reduced the export and import capacity for 2 and 2 hours, respectively, on the interconnector between SE3 and FI. The reason for reductions set by Svenska kraftnät was planned maintenance. In total, the export and import on the interconnector have been reduced for 10 and 10 hours, respectively.

2.2.7 SE3-NO1, Southern Norway

Svenska kraftnät has reduced the export and import capacity for 519 and 12 hours, respectively, on the interconnector between SE3 and NO1. The reason for export reductions set by Svenska kraftnät was mainly congestion in the West Coast Corridor. In total, the export and import on the interconnector have been reduced for 537 and 2 088 hours, respectively.

2.2.8 SE4-DE, Germany

Svenska kraftnät has reduced the export and import capacity for 0 and 481 hours, respectively, on the interconnector between SE4 and DE. The main reason for reductions set by Svenska kraftnät was congestion in the West Coast Corridor. In total, the export and import on the interconnector have been reduced for 979 and 1 795 hours, respectively.

2.2.9 SE4-DK2, Eastern Denmark

Svenska kraftnät has reduced the export and import capacity for 6 and 482 hours, respectively, on the interconnector between SE4 and DK2. The main reason for reductions set by Svenska kraftnät was congestion in the West Coast Corridor, but also due to planned excavation work close to interconnector. In total, the export and import on the interconnector have been reduced for 51 and 529 hours, respectively.

2.2.10 SE4-PL, Poland

Svenska kraftnät has reduced the export and import capacity for 40 and 451 hours, respectively, on the interconnector between SE4 and PL. The main reason for reductions set by Svenska kraftnät was congestion in the West Coast Corridor, and the reason for the other reductions were planned maintenance. In total, the export and import on the interconnector have been reduced for 1 218 and 2 183 hours, respectively.

2.2.11 SE4-LT, Lithuania

Svenska kraftnät has reduced the export and import capacity for 266 and 266 hours, respectively, on the interconnector between SE4 and LT. The main reason for reductions set by Svenska kraftnät were cable faults. In total, the export and import on the interconnector have been reduced for 266 and 266 hours, respectively.

Appendix A – 2016 Q1

The attached spreadsheet contains data for each hour during the period. Each value in the spreadsheet is explained in the table below.

Value	Explanation
Maximum NTC export/southbound (MW) Maximum NTC import/northbound (MW)	Maximum NTC for export/import, as agreed by TSOs on both sides, and maximum NTC for corridors between internal areas in south/north direction. These values normally only change after the network has been reinforced.
Svk NTC export (MW) Svk NTC import (MW)	Svenska kraftnät's view of NTC for export/import.
Svk Reduction export (Y/N) Svk Reduction import (Y/N)	Yes (Y), if Svenska kraftnät's view of NTC for export/import is lower than maximum NTC, otherwise No (N).
Svk Reduction export (MW) Svk Reduction import (MW)	Difference between maximum NTC and Svenska kraftnät's view of NTC.
Svk Reason for export reduction Svk Reason for import reduction	Reason codes for Svenska kraftnät's reduction of capacities. Reduction codes are according Nord Pool's instructions only reported when the reduction is greater than 100 MW. Because of this principle, there might be mismatches between the figures shown in table 3 and 5 and tables A2 to A5. See separate sheet in spreadsheet file for explanation of the codes.
Neighbouring TSO NTC export (MW) Neighbouring TSO NTC import (MW)	Neighbouring TSO's view of NTC for export/import.
Final NTC export/southbound (MW) Final NTC import/northbound (MW)	Final NTC for corridors between internal areas in south/north direction, and the minimum of Svenska kraftnät's view and the neighbouring TSO's view of the export/import NTC on interconnectors.
Final Reduction export/southbound (Y/N) Final Reduction import/northbound (Y/N)	Yes (Y), if the final NTC is lower than the maximum NTC, otherwise No (N).
Final Reduction export/southbound (MW) Final Reduction import/northbound (MW)	Difference between maximum NTC and final NTC.

Final Reason for export/southbound reduction Final Reason for import/northbound reduction	Reason codes for reduction of the final capacities. Reduction codes are according Nord Pool's instructions only reported when the reduction is greater than 100 MW. Because of this principle, there might be mismatches between the figures shown in table 3 and 5 and tables A2 to A5. See separate sheet in spreadsheet file for explanation of the codes.
Registered physical flow (positive for imports and negative for exports/positive for southbound and negative for northbound)	Measured flow on interconnectors and corridors between internal areas.
Electricity price level SE1/SE2/SE3/SE4/DK1/DK2/NO1/NO3/NO4/FI/LT (EUR)	Price level in SE1, SE2, SE3, SE4, DK1, DK2, NO1, NO3, NO4, FI, and LT. Prices for DE and PL are not available, since they are not part of Nord Pool. Red figures indicate a higher price than neighbouring SE-area, and blue indicates a lower price.
Price difference (Y/N)	Yes (Y), if there is a price difference between neighbouring SE-area and current area, otherwise No (N). Blank for DE and PL.

Table A1. Explanation of data in the attached spreadsheet.

Tables A2 to A5 shows how of many hours the capacities have been reduced per type of reduction for each interconnector and corridor between internal areas. The reason codes are explained in the attached spreadsheet.

	1010	1162	1267	1421	1422	1433	1462	1563	1567	1621	1622	1623	1624	2214	2223	2523	2524	9967	9999
SE1-SE2	2 113			18	11					41									
SE2-SE3	864				29	2					1 288								
SE3-SE4	1 410					4						576			2	191			
SE1-FI	2 183																		
SE1-NO4	2 183																		
SE2-NO3	2 183																		
SE2-NO4	2 183																		
SE3-DK1	2 179					4													
SE3-FI	2 181					2													
SE3-NO1	1 708					4						7	407	4			53		
SE4-DE	2 183																		
SE4-DK2	2 179					4													
SE4-PL	2 143	26					14												
SE4-LT	765		215					24	24									3	

Table A2. Number of hours per type of export reduction (for interconnectors) and per type of southbound reduction (for corridors between internal areas) enforced by Svenska kraftnät.

	1010	1162	1267	1433	1462	1563	1567	1623	1624	2214	2224	2524	9967	9999
SE1-SE2	2 183													
SE2-SE3	2 183													
SE3-SE4	2 183													
SE1-FI	2 183													
SE1-NO4	2 183													
SE2-NO3	2 183													
SE2-NO4	2 183													
SE3-DK1	1 728			4				7	396			48		
SE3-FI	2 181			2										
SE3-NO1	2 177			4						2				
SE4-DE	1 933			4					230			16		
SE4-DK2	1 791			4				5	340		4	39		
SE4-PL	1 937	26		4	14				188			14		
SE4-LT	765		215			24	24						3	

Table A3. Number of hours per type of import reduction (for interconnectors) and per type of northbound reduction (for corridors between internal areas) enforced by Svenska kraftnät.

	1010	1126	1158	1162	1414	1420	1421	1422	1431	1433	1442	1445	1447	1450	1462	1515	1550	1621	1622	1623	1624	1915
SE1-SE2	2 113						18	11										41				
SE2-SE3	864							29		2									1 288			
SE3-SE4	1 410									4										576		
SE1-FI	2 111					4			68													
SE1-NO4	1 751												30	384			18					
SE2-NO3	1 701												30	384		24	18					26
SE2-NO4	1 751												30	384			18					
SE3-DK1	1 981									4	198											
SE3-FI	2 173		8							2												
SE3-NO1	1 689				9					4		5								7	409	
SE4-DE	1 291																					
SE4-DK2	2 134	45								4												
SE4-PL	975			13											12							
SE4-LT	765																					

	2214	2223	2523	2524	9967	9999
SE1-SE2						
SE2-SE3						
SE3-SE4		2	191			
SE1-FI						
SE1-NO4						
SE2-NO3						
SE2-NO4						
SE3-DK1						
SE3-FI						
SE3-NO1	6			54		
SE4-DE						892
SE4-DK2						
SE4-PL						1 183
SE4-LT					3	263

Table A4. Number of hours per type of export reduction as enforced by Svenska kraftnät and neighbouring TSOs (for interconnectors) and per type of southbound reduction (for corridors between internal areas) enforced by Svenska kraftnät.

	1010	1126	1158	1162	1414	1420	1431	1433	1445	1447	1450	1515	1550	1623	1624	1714	1955	2214	2224	2524	9967	9999	
SE1-SE2	2 183																						
SE2-SE3	2 183																						
SE3-SE4	2 183																						
SE1-FI	2 176					4	3																
SE1-NO4	1 701									30	384	24	18				26						
SE2-NO3	2 183																						
SE2-NO4	1 953									30	182		18										
SE3-DK1	1 728							4						7	396						48		
SE3-FI	2 173		8					2															
SE3-NO1	1 810				9			4	12							342		6					
SE4-DE	678														76						7		1 422
SE4-DK2	1 747	45						4						5	340				4	38			
SE4-PL	24			2											7								2 150
SE4-LT																					3		263

Table A5. Number of hours per type of import reduction as enforced by Svenska kraftnät and neighbouring TSOs (for interconnectors) and per type of northbound reduction (for corridors between internal areas) enforced by Svenska kraftnät.

3 Period April 1 – June 30, Q2 2016

This section describes operational experience and measures regarding allocation of trading capacity in the period April 1 to June 30, 2016.

In the period, totally 2 184 hours, the main direction of the power flow was southbound.

Table 1 below shows the average prices in Sweden and all neighbouring areas for the above mentioned period (excluding Germany and Poland). Table 2 summarises the number of hours where price differences occurred between the respective zones.

Area	Average Price Level (EUR)	Maximum Price (EUR)	Minimum Price (EUR)
SE1	26,45	167,88	6,01
SE2	26,45	167,88	6,01
SE3	26,45	167,88	6,01
SE4	26,51	167,88	6,01
DK1	24,61	55,54	6,01
DK2	26,78	167,88	6,01
FI	30,22	167,88	6,01
NO1	22,85	37,08	6,01
NO3	25,52	95,18	11,28
NO4	22,66	45,00	11,28
LT	35,45	167,88	6,01

Table 1. Average, maximum, and minimum prices for areas within Nord Pool.

No of hours where price for row area greater than for column area	SE1	SE2	SE3	SE4	DK1	DK2	FI	NO1	NO3	NO4	LT
SE1	-	0	0	0	599	5	0	931	222	1 328	0
SE2	0	-	0	0	599	5	0	931	222	1 328	0
SE3	7	7	-	0	599	5	0	931	225	1 328	0
SE4	38	38	31	-	627	5	8	941	245	1 343	0
DK1	56	56	50	44	-	29	22	735	205	1 186	4
DK2	176	176	170	143	716	-	83	987	368	1 372	13
FI	816	816	816	815	1 211	801	-	1 366	922	1 539	3
NO1	12	12	9	9	148	12	9	-	4	847	6
NO3	204	204	204	204	726	204	137	1 120	-	1 460	83
NO4	73	73	73	73	358	73	54	670	14	-	36
LT	1 601	1 601	1 601	1 597	1 797	1 585	1 178	1 847	1 666	1 877	-

Table 2. Number of hours where the price for the area in the row was higher than for the area in the column.

Summary of table 1 and 2:

- LT had the highest average price, followed by FI, DK2, SE4, SE1, SE2, SE3, NO3, DK1, NO1, and NO4 respectively.
- SE1 and SE2 had a common price during all hours.

3.1 Allocation of trading capacity

Table 3 below summarises how often Svenska kraftnät have allocated less trading capacity than maximum NTC for interconnectors and corridors between internal areas in the period.

Interconnectors/ corridors between internal areas	No of limited hours		No of days with limitation		Average reduction	
	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound
SE1-SE2	416	0	24	0	4 %	0 %
SE2-SE3	2 002	0	84	0	6 %	0 %
SE3-SE4	1 776	0	74	0	6 %	0 %
SE1-FI	435	1 573	24	69	8 %	11 %
SE1-NO4	47	108	2	10	2 %	4 %
SE2-NO3	0	0	0	0	0 %	0 %
SE2-NO4	0	47	0	2	0 %	1 %
SE3-DK1	81	396	4	40	2 %	6 %
SE3-FI	25	25	4	4	1 %	1 %
SE3-NO1	387	66	37	5	4 %	1 %
SE4-DE	0	297	0	33	0 %	3 %
SE4-DK2	9	299	1	32	0 %	3 %
SE4-PL	79	358	4	34	4 %	7 %
SE4-LT	1 134	1 143	48	49	46 %	46 %

Table 3. Limitations in trading capacity on interconnectors and corridors between internal areas as enforced by Svenska kraftnät. The columns with average reductions shows the average NTC divided by maximum NTC.

The majority of the limitations of export capacity on the interconnector SE1-FI, enforced by Svenska kraftnät during the period, are because of that the NTC depends on forecasted transfer between Ivalo - Varangerbotn. The forecasted transfer can both increase and decrease the NTC.

Table 4 below summarises the time during which neighbouring TSOs have allocated less trading capacity than maximum NTC to interconnectors in the period.

Interconnectors/ corridors between internal areas	No of limited hours		No of days with limitation		Average reduction	
	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound
SE1-SE2	-	-	-	-	-	-
SE2-SE3	-	-	-	-	-	-
SE3-SE4	-	-	-	-	-	-
SE1-FI	516	1 562	24	68	9 %	10 %
SE1-NO4	2 184	2 184	91	91	56 %	55 %
SE2-NO3	2 023	81	85	4	31 %	2 %
SE2-NO4	2 184	2 104	91	88	54 %	58 %
SE3-DK1	110	119	7	9	3 %	3 %
SE3-FI	9	9	2	2	0 %	0 %
SE3-NO1	175	1 650	12	70	1 %	13 %
SE4-DE	1 189	1 539	72	88	29 %	38 %
SE4-DK2	49	32	5	4	0 %	1 %
SE4-PL	863	2 184	91	91	33 %	86 %
SE4-LT	1 094	1 094	48	48	44 %	44 %

Table 4. Limitations in trading capacity on interconnectors as enforced by neighbouring TSOs. The columns with average reductions shows the average NTC divided by maximum NTC.

Table 5 below summarises the time during which capacities on interconnectors and corridors between internal areas have been reduced, taking into account reductions by both Svenska kraftnät and neighbouring TSOs.

Interconnectors/ corridors between internal areas	No of limited hours		No of days with limitation		Average reduction	
	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound
SE1-SE2	416	0	24	0	4 %	0 %
SE2-SE3	2 002	0	84	0	6 %	0 %
SE3-SE4	1 776	0	74	0	6 %	0 %
SE1-FI	588	1 573	31	69	10 %	11 %
SE1-NO4	2 184	2 184	91	91	56 %	55 %
SE2-NO3	2 023	81	85	4	31 %	2 %
SE2-NO4	2 184	2 104	91	88	54 %	58 %
SE3-DK1	119	443	8	46	3 %	7 %
SE3-FI	25	25	4	4	1 %	1 %
SE3-NO1	476	1 663	42	71	5 %	14 %
SE4-DE	1 189	1 606	72	88	29 %	39 %
SE4-DK2	58	331	6	36	1 %	4 %
SE4-PL	911	2 184	91	91	35 %	87 %
SE4-LT	1 142	1 151	50	51	46 %	46 %

Table 5. Final limitations in trading capacity on interconnectors and corridors between internal areas as enforced by both Svenska kraftnät and neighbouring TSOs. The columns with average reductions shows the average NTC divided by maximum NTC.

Detailed information for each limitation is provided in the attached tables A2 to A5 in appendix A and in the attachment. This information includes the reason for each limitation.

3.2 Comments on each interconnector

3.2.1 SE1-FI, North Finland

Svenska kraftnät has reduced the export and import capacity for 435 and 1 573 hours, respectively, on the interconnector between SE1 and FI, mainly because the NTC depends on forecasted transfer between Ivalo – Varangerbotn, but also due to planned maintenance on the interconnector. In total, the export and import on the interconnector have been reduced for 588 and 1 573 hours, respectively.

3.2.2 SE1-NO4, North Norway

Svenska kraftnät has reduced the export and import capacity for 47 and 108 hours, respectively, on the interconnector between SE1 and NO4 because of planned maintenance close to the interconnector. In total, the export and import on the interconnector have been reduced during all hours.

3.2.3 SE2-NO3, Central Norway

Svenska kraftnät has not reduced the capacity on the interconnector between SE2 and NO3. In total, the export and import on the interconnector have been reduced for 2 023 and 81 hours, respectively.

3.2.4 SE2-NO4, North Norway

Svenska kraftnät has not reduced the capacity on the interconnector between SE2 and NO4. In total, the export and import on the interconnector have been reduced during all hours.

3.2.5 SE3-DK1, Western Denmark

Svenska kraftnät has reduced the export and import capacity for 81 and 396 hours, respectively, on the interconnector between SE3 and DK1. The main reasons for reductions set by Svenska kraftnät was congestion in the West Coast Corridor and planned maintenance on the interconnector. In total, the export and import on the interconnector have been reduced for 119 and 443 hours, respectively.

3.2.6 SE3-FI, Southern Finland

Svenska kraftnät has reduced the export and import capacity for 25 and 25 hours, respectively, on the interconnector between SE3 and FI. The reason for reductions set by Svenska kraftnät was outage of the interconnector because of planned maintenance on the interconnector. In total, the export and import on the interconnector have been reduced for 25 and 25 hours, respectively.

3.2.7 SE3-NO1, Southern Norway

Svenska kraftnät has reduced the export and import capacity for 387 and 66 hours, respectively, on the interconnector between SE3 and NO1. The reason for reductions set by Svenska kraftnät was mainly congestion in the West Coast Corridor. In total, the export and import on the interconnector have been reduced for 476 and 1 663 hours, respectively.

3.2.8 SE4-DE, Germany

Svenska kraftnät has reduced the export and import capacity for 0 and 297 hours, respectively, on the interconnector between SE4 and DE. The reason for reductions set by Svenska kraftnät was mainly congestion in the West Coast Corridor. In total, the export and import on the interconnector have been reduced for 1 189 and 1 606 hours, respectively.

3.2.9 SE4-DK2, Eastern Denmark

Svenska kraftnät has reduced the export and import capacity for 9 and 299 hours, respectively, on the interconnector between SE4 and DK2. The reason for reductions set by Svenska kraftnät was mainly congestion in the West Coast Corridor. In total, the export and import on the interconnector have been reduced for 58 and 331 hours, respectively.

3.2.10 SE4-PL, Poland

Svenska kraftnät has reduced the export and import capacity for 79 and 358 hours, respectively, on the interconnector between SE4 and PL. The reason for reductions set by Svenska kraftnät was mainly congestion in the West Coast Corridor, in addition the capacity was reduced because of planned maintenance. In total, the export and import on the interconnector have been reduced for 911 and 2 184 (all) hours, respectively.

3.2.11 SE4-LT, Lithuania

Svenska kraftnät has reduced the export and import capacity for 1 134 and 1 143 hours, respectively, on the interconnector between SE4 and LT. The main reasons for reductions set by Svenska kraftnät were cable faults. In total, the export and import on the interconnector have been reduced for 1 142 and 1 151 hours, respectively.

Appendix A – 2016 Q2

The attached spreadsheet contains data for each hour during the period. Each value in the spreadsheet is explained in the table below.

Value	Explanation
Maximum NTC export/southbound (MW) Maximum NTC import/northbound (MW)	Maximum NTC for export/import, as agreed by TSOs on both sides, and maximum NTC for corridors between internal areas in south/north direction. These values normally only change after the network has been reinforced.
Svk NTC export (MW) Svk NTC import (MW)	Svenska kraftnät's view of NTC for export/import.
Svk Reduction export (Y/N) Svk Reduction import (Y/N)	Yes (Y), if Svenska kraftnät's view of NTC for export/import is lower than maximum NTC, otherwise No (N).
Svk Reduction export (MW) Svk Reduction import (MW)	Difference between maximum NTC and Svenska kraftnät's view of NTC.
Svk Reason for export reduction Svk Reason for import reduction	Reason codes for Svenska kraftnät's reduction of capacities. Reduction codes are according Nord Pool's instructions only reported when the reduction is greater than 100 MW. Because of this principle, there might be mismatches between the figures shown in table 3 and 5 and tables A2 to A5. See separate sheet in spreadsheet file for explanation of the codes.
Neighbouring TSO NTC export (MW) Neighbouring TSO NTC import (MW)	Neighbouring TSO's view of NTC for export/import.
Final NTC export/southbound (MW) Final NTC import/northbound (MW)	Final NTC for corridors between internal areas in south/north direction, and the minimum of Svenska kraftnät's view and the neighbouring TSO's view of the export/import NTC on interconnectors.

Final Reduction export/southbound (Y/N) Final Reduction import/northbound (Y/N)	Yes (Y), if the final NTC is lower than the maximum NTC, otherwise No (N).
Final Reduction export/southbound (MW) Final Reduction import/northbound (MW)	Difference between maximum NTC and final NTC.
Final Reason for export/southbound reduction Final Reason for import/northbound reduction	Reason codes for reduction of the final capacities. Reduction codes are according Nord Pool's instructions only reported when the reduction is greater than 100 MW. Because of this principle, there might be mismatches between the figures shown in table 3 and 5 and tables A2 to A5. See separate sheet in spreadsheet file for explanation of the codes.
Registered physical flow (positive for imports and negative for exports/positive for southbound and negative for northbound)	Measured flow on interconnectors and corridors between internal areas.
Electricity price level SE1/SE2/SE3/SE4/DK1/DK2/NO1/NO3/NO4/FI/LT (EUR)	Price level in SE1, SE2, SE3, SE4, DK1, DK2, NO1, NO3, NO4, FI, and LT. Prices for DE and PL are not available, since they are not part of Nord Pool. Red figures indicate a higher price than neighbouring SE-area, and blue indicates a lower price.
Price difference (Y/N)	Yes (Y), if there is a price difference between neighbouring SE-area and current area, otherwise No (N). Blank for DE and PL.

Table A1. Explanation of data in the attached spreadsheet.

Tables A2 to A5 shows how of many hours the capacities have been reduced per type of reduction for each interconnector and corridor between internal areas. The reason codes are explained in the attached spreadsheet.

	1010	1114	1125	1157	1162	1167	1267	1414	1421	1422	1423	1425	1426	1431	1432	1433	1457	1458	1467	1499
SE1-SE2	1 778								183						35					3
SE2-SE3	240								57	17	11					12				3
SE3-SE4	1 497										66								10	
SE1-FI	1 885			234					29								17			10
SE1-NO4	2 137								24					23						
SE2-NO3	2 184																			
SE2-NO4	2 184																			
SE3-DK1	2 103		72									9								
SE3-FI	2 159																	14		10
SE3-NO1	1 867	12						9												
SE4-DE	2 184																			
SE4-DK2	2 175												9							
SE4-PL	2 105				79															
SE4-LT	1 050					235	470													189

	1521	1522	1567	1621	1622	1623	1624	2199	2214	2221	2222	2223	2257	2299	2522	2524	2531	9967	9999
SE1-SE2	48			94		18		7		9				2			7		
SE2-SE3		48			1 341			7			4			2	442				
SE3-SE4						601						10							
SE1-FI													1	1			7		
SE1-NO4																			
SE2-NO3																			
SE2-NO4																			
SE3-DK1																			
SE3-FI														1					
SE3-NO1							217		8							71			
SE4-DE																			
SE4-DK2																			
SE4-PL																			
SE4-LT			72															144	24

Table A2. Number of hours per type of export reduction (for interconnectors) and per type of southbound reduction (for corridors between internal areas) enforced by Svenska kraftnät.

	1010	1114	1125	1157	1162	1167	1267	1414	1421	1425	1426	1431	1457	1458	1462	1463	1467	1499	1567	1610
SE1-SE2	2 184																			
SE2-SE3	2 160																			
SE3-SE4	2 184																			
SE1-FI	1 911			234					11				17					10		
SE1-NO4	2 095								59			23								
SE2-NO3	2 184																			
SE2-NO4	2 137								24			23								
SE3-DK1	1 823		72							9										
SE3-FI	2 159													14				10		
SE3-NO1	2 155	12						9												
SE4-DE	1 983														9					1
SE4-DK2	1 911									9										
SE4-PL	1 928				79										9					
SE4-LT	1 041					235	470										198		72	

	1624	2214	2226	2299	2522	2524	2531	9967	9999
SE1-SE2									
SE2-SE3					24				
SE3-SE4									
SE1-FI				1					
SE1-NO4							7		
SE2-NO3									
SE2-NO4									
SE3-DK1	211					69			
SE3-FI				1					
SE3-NO1		8							
SE4-DE	137					54			
SE4-DK2	196		2			66			
SE4-PL	116					52			
SE4-LT							144	24	

Table A3. Number of hours per type of import reduction (for interconnectors) and per type of northbound reduction (for corridors between internal areas) enforced by Svenska kraftnät.

	1010	1114	1125	1126	1151	1157	1162	1167	1263	1267	1413	1414	1417	1421	1422	1423	1425	1426	1431	1432	1433	1442	1443	1450	1457	1458
SE1-SE2	1 778													183						35						
SE2-SE3	240													57	17	11					12					
SE3-SE4	1 497															66										
SE1-FI	1 629					243								29					240						24	
SE1-NO4	161													6										2 017		
SE2-NO3	161																							2 023		
SE2-NO4	161																							2 023		
SE3-DK1	2 065		101														9					9				
SE3-FI	2 159																									14
SE3-NO1	1 775	13			4						2	9	81													
SE4-DE	1 153								139																	
SE4-DK2	2 125			32														9					18			
SE4-PL	1 275						67																			
SE4-LT	1 042							235		216																

	1467	1499	1521	1522	1567	1621	1622	1623	1624	2199	2213	2214	2221	2222	2223	2251	2257	2299	2314	2522	2524	2531	9940	9967	9999
SE1-SE2		3	48			94		18		7			9					2				7			
SE2-SE3		3		48			1 341			7				4				2		442					
SE3-SE4	10							601							10										
SE1-FI		10															1	1				7			
SE1-NO4																									
SE2-NO3																									
SE2-NO4																									
SE3-DK1																									
SE3-FI		7																1					3		
SE3-NO1								217		2	4					2			4		71				
SE4-DE																									892
SE4-DK2																									
SE4-PL																									842
SE4-LT	183				24																			72	412

Table A4. Number of hours per type of export reduction as enforced by Svenska kraftnät and neighbouring TSOs (for interconnectors) and per type of southbound reduction (for corridors between internal areas) enforced by Svenska kraftnät.

	1010	1114	1125	1126	1151	1157	1162	1167	1263	1267	1414	1417	1421	1425	1426	1442	1445	1450	1457	
SE1-SE2	2 184																			
SE2-SE3	2 160																			
SE3-SE4	2 184																			
SE1-FI	1 903					234							11							24
SE1-NO4	161												6						2 010	
SE2-NO3	2 103											81								
SE2-NO4	161																		2 023	
SE3-DK1	1 776		101											9		14				
SE3-FI	2 159																			
SE3-NO1	1 413	13			4						9							569		
SE4-DE	794								139											
SE4-DK2	1 879			32											9					
SE4-PL							17													
SE4-LT	1 033							235		216										

	1458	1467	1499	1545	1567	1624	1642	2214	2226	2257	2299	2314	2522	2524	2531	9940	9967	9999		
SE1-SE2																				
SE2-SE3													24							
SE3-SE4																				
SE1-FI			10							1	1									
SE1-NO4															7					
SE2-NO3																				
SE2-NO4																				
SE3-DK1						211	4							69						
SE3-FI	14		7								1					3				
SE3-NO1				168				4				4								
SE4-DE						37								41						1 173
SE4-DK2						196			2					66						
SE4-PL						1								4						2 162
SE4-LT		192			24													72		412

Table A5. Number of hours per type of import reduction as enforced by Svenska kraftnät and neighbouring TSOs (for interconnectors) and per type of northbound reduction (for corridors between internal areas) enforced by Svenska kraftnät.

4 Period July 1 – September 30, Q3 2016

This section describes operational experience and measures regarding allocation of trading capacity in the period July 1 to September 30, 2016.

In the period, totally 2 208 hours, the main direction of the power flow was southbound.

Table 1 below shows the average prices in Sweden and all neighbouring areas for the above mentioned period (excluding Germany and Poland). Table 2 summarises the number of hours where price differences occurred between the respective zones.

Area	Average Price Level (EUR)	Maximum Price (EUR)	Minimum Price (EUR)
SE1	29,49	49,4	8,12
SE2	29,49	49,4	8,12
SE3	29,56	49,4	8,12
SE4	29,72	55,45	8,12
DK1	27,61	54,12	6,97
DK2	30,21	81,29	8,12
FI	31,62	72,04	8,12
NO1	22,9	43,81	8,12
NO3	29,13	44,78	12,14
NO4	25,55	28,58	12,14
LT	35,70	202,04	14,46

Table 1. Average, maximum, and minimum prices for areas within Nord Pool.

No of hours where price for row area greater than for column area	SE1	SE2	SE3	SE4	DK1	DK2	FI	NO1	NO3	NO4	LT
SE1	-	0	0	0	1 078	10	0	2 041	387	1 648	0
SE2	0	-	0	0	1 078	10	0	2 041	387	1 648	0
SE3	29	29	-	0	1 079	10	0	2 041	387	1 648	0
SE4	106	106	79	-	1 124	10	26	2 043	448	1 648	0
DK1	132	132	103	84	-	2	84	1 504	391	1 188	59
DK2	235	235	218	171	1 156	-	148	2 064	550	1 658	103
FI	621	621	610	593	1 331	572	-	2 074	864	1 679	9
NO1	2	2	0	0	125	1	0	-	3	98	0
NO3	231	231	231	231	1 139	237	208	2 115	-	1 712	168
NO4	101	101	101	101	819	107	97	2 025	12	-	75
LT	1 215	1 215	1 208	1 184	1 582	1 147	758	2 117	1 357	1 814	-

Table 2. Number of hours where the price for the area in the row was higher than for the area in the column.

Summary of table 1 and 2:

- LT had the highest average price, followed by FI, DK2, SE4, SE3, SE2, SE1, NO3, DK1, NO4, and NO1.
- SE1 and SE2 had a common price during all hours.

4.1 Allocation of trading capacity

Table 3 below summarises how often Svenska kraftnät have allocated less trading capacity than maximum NTC for interconnectors and corridors between internal areas in the period.

Interconnectors/ corridors between internal areas	No of limited hours		No of days with limitation		Average reduction	
	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound
SE1-SE2	1 521	0	64	0	2 %	0 %
SE2-SE3	2 208	0	92	0	18 %	0 %
SE3-SE4	1 962	0	82	0	9 %	0 %
SE1-FI	0	1 948	0	82	-3 %	4 %
SE1-NO4	0	213	0	14	0 %	1 %
SE2-NO3	26	11	2	1	1 %	0 %
SE2-NO4	41	17	4	1	1 %	1 %
SE3-DK1	537	767	25	48	16 %	20 %
SE3-FI	24	24	1	1	0 %	0 %
SE3-NO1	430	331	33	17	6 %	6 %
SE4-DE	396	329	17	28	16 %	9 %
SE4-DK2	251	196	12	22	9 %	3 %
SE4-PL	426	447	18	30	17 %	15 %
SE4-LT	552	568	23	25	25 %	25 %

Table 3. Limitations in trading capacity on interconnectors and corridors between internal areas as enforced by Svenska kraftnät. The columns with average reductions shows the average NTC divided by maximum NTC.

The majority of the limitations of export capacity on the interconnector SE1-FI, enforced by Svenska kraftnät during the period, are because of that the NTC depends on forecasted transfer between Ivalo - Varangerbotn. The forecasted transfer can both increase and decrease the NTC.

Table 4 below summarises the time during which neighbouring TSOs have allocated less trading capacity than maximum NTC to interconnectors in the period.

Interconnectors/ corridors between internal areas	No of limited hours		No of days with limitation		Average reduction	
	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound
SE1-SE2	-	-	-	-	-	-
SE2-SE3	-	-	-	-	-	-
SE3-SE4	-	-	-	-	-	-
SE1-FI	613	1 963	28	83	8 %	4 %
SE1-NO4	2 208	2 208	92	92	71 %	47 %
SE2-NO3	2 134	327	90	15	33 %	5 %
SE2-NO4	2 208	2 208	92	92	53 %	76 %
SE3-DK1	744	536	33	24	24 %	16 %
SE3-FI	74	74	4	4	1 %	1 %
SE3-NO1	1 464	2 208	63	92	25 %	62 %
SE4-DE	1 138	1 656	70	90	24 %	36 %
SE4-DK2	99	27	6	3	1 %	1 %
SE4-PL	976	2 208	92	92	38 %	83 %
SE4-LT	562	562	24	24	25 %	25 %

Table 4. Limitations in trading capacity on interconnectors as enforced by neighbouring TSOs. The columns with average reductions shows the average NTC divided by maximum NTC.

Table 5 below summarises the time during which capacities on interconnectors and corridors between internal areas have been reduced, taking into account reductions by both Svenska kraftnät and neighbouring TSOs.

Interconnectors/ corridors between internal areas	No of limited hours		No of days with limitation		Average reduction	
	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound
SE1-SE2	1 521	0	64	0	2 %	0 %
SE2-SE3	2 208	0	92	0	18 %	0 %
SE3-SE4	1 962	0	82	0	9 %	0 %
SE1-FI	613	1 963	28	83	8 %	4 %
SE1-NO4	2 208	2 208	92	92	71 %	47 %
SE2-NO3	2 134	327	90	15	33 %	5 %
SE2-NO4	2 208	2 208	92	92	53 %	76 %
SE3-DK1	806	783	37	48	26 %	21 %
SE3-FI	74	74	4	4	1 %	1 %
SE3-NO1	1 602	2 208	74	92	28 %	63 %
SE4-DE	1 298	1 763	73	91	32 %	39 %
SE4-DK2	323	223	15	24	10 %	3 %
SE4-PL	1 090	2 208	92	92	42 %	83 %
SE4-LT	562	578	24	26	25 %	26 %

Table 5. Final limitations in trading capacity on interconnectors and corridors between internal areas as enforced by both Svenska kraftnät and neighbouring TSOs. The columns with average reductions shows the average NTC divided by maximum NTC.

Detailed information for each limitation is provided in the attached tables A2 to A5 in appendix A and in the attachment. This information includes the reason for each limitation.

4.2 Comments on each interconnector

4.2.1 SE1-FI, North Finland

Svenska kraftnät has reduced the export and import capacity for 0 and 1 948 hours, respectively, on the interconnector between SE1 and FI, because the NTC depends on forecasted transfer between Ivalo – Varangerbotn. In total, the export and import on the interconnector have been reduced for 613 and 1 963 hours, respectively.

4.2.2 SE1-NO4, North Norway

Svenska kraftnät has reduced the export and import capacity for 0 and 213 hours, respectively, on the interconnector between SE1 and NO4 because of thermal overload. In total, the export and import on the interconnector have been reduced during all hours.

4.2.3 SE2-NO3, Central Norway

Svenska kraftnät has reduced the export and import capacity for 26 and 11 hours, respectively, on the interconnector between SE2 and NO3 because of planned maintenance close to the interconnector. In total, the export and import on the interconnector have been reduced for 2 134 and 327 hours, respectively.

4.2.4 SE2-NO4, North Norway

Svenska kraftnät has reduced the export and import capacity for 41 and 17 hours, respectively, on the interconnector between SE2 and NO4, mainly because of planned maintenance on the interconnector. In total, the export and import on the interconnector have been reduced during all hours.

4.2.5 SE3-DK1, Western Denmark

Svenska kraftnät has reduced the export and import capacity for 537 and 767 hours, respectively, on the interconnector between SE3 and DK1. The main reason for reductions set by Svenska kraftnät was because of planned maintenance on the interconnector and close to the interconnector, but also congestion in the West Coast Corridor. In total, the export and import on the interconnector have been reduced for 806 and 783 hours, respectively.

4.2.6 SE3-FI, Southern Finland

Svenska kraftnät has reduced the export and import capacity for 24 and 24 hours, respectively, on the interconnector between SE3 and FI. The reason for reductions set by Svenska kraftnät was outage of the interconnector. In total, the export and import on the interconnector have been reduced for 74 and 74 hours, respectively.

4.2.7 SE3-NO1, Southern Norway

Svenska kraftnät has reduced the export and import capacity for 430 and 331 hours, respectively, on the interconnector between SE3 and NO1. The reason for reductions set by Svenska kraftnät was mainly congestion in the West Coast Corridor, but also planned maintenance on the interconnector and close to the interconnector. In total, the export and import on the interconnector have been reduced for 1 602 and 2 208 hours, respectively.

4.2.8 SE4-DE, Germany

Svenska kraftnät has reduced the export and import capacity for 396 and 329 hours, respectively, on the interconnector between SE4 and DE. The main reasons for reductions set by Svenska kraftnät was because of planned maintenance on the interconnector and congestion in the West Coast Corridor. In total, the export and import on the interconnector have been reduced for 1 298 and 1 763 hours, respectively.

4.2.9 SE4-DK2, Eastern Denmark

Svenska kraftnät has reduced the export and import capacity for 251 and 196 hours, respectively, on the interconnector between SE4 and DK2. The main reason for reductions set by Svenska kraftnät was congestion in the West Coast Corridor, but also planned maintenance close to the interconnector. In total, the export and import on the interconnector have been reduced for 323 and 223 hours, respectively.

4.2.10 SE4-PL, Poland

Svenska kraftnät has reduced the export and import capacity for 426 and 447 hours, respectively, on the interconnector between SE4 and PL. The main reasons for reductions set by Svenska kraftnät was because of planned maintenance on the interconnector and congestion in the West Coast Corridor. In total, the export and import on the interconnector have been reduced for 1 090 and 2 208 hours, respectively.

4.2.11 SE4-LT, Lithuania

Svenska kraftnät has reduced the export and import capacity for 552 and 568 hours, respectively, on the interconnector between SE4 and LT. The main reasons for reductions set by Svenska kraftnät was because of maintenance on the interconnector. In total, the export and import on the interconnector have been reduced for 562 and 578 hours, respectively.

Appendix A – 2016 Q3

The attached spreadsheet contains data for each hour during the period. Each value in the spreadsheet is explained in the table below.

Value	Explanation
Maximum NTC export/southbound (MW) Maximum NTC import/northbound (MW)	Maximum NTC for export/import, as agreed by TSOs on both sides, and maximum NTC for corridors between internal areas in south/north direction. These values normally only change after the network has been reinforced.
Svk NTC export (MW) Svk NTC import (MW)	Svenska kraftnät's view of NTC for export/import.
Svk Reduction export (Y/N) Svk Reduction import (Y/N)	Yes (Y), if Svenska kraftnät's view of NTC for export/import is lower than maximum NTC, otherwise No (N).
Svk Reduction export (MW) Svk Reduction import (MW)	Difference between maximum NTC and Svenska kraftnät's view of NTC.
Svk Reason for export reduction Svk Reason for import reduction	Reason codes for Svenska kraftnät's reduction of capacities. Reduction codes are according Nord Pool's instructions only reported when the reduction is greater than 100 MW. Because of this principle, there might be mismatches between the figures shown in table 3 and 5 and tables A2 to A5. See separate sheet in spreadsheet file for explanation of the codes.
Neighbouring TSO NTC export (MW) Neighbouring TSO NTC import (MW)	Neighbouring TSO's view of NTC for export/import.
Final NTC export/southbound (MW) Final NTC import/northbound (MW)	Final NTC for corridors between internal areas in south/north direction, and the minimum of Svenska kraftnät's view and the neighbouring TSO's view of the export/import NTC on interconnectors.

Final Reduction export/southbound (Y/N) Final Reduction import/northbound (Y/N)	Yes (Y), if the final NTC is lower than the maximum NTC, otherwise No (N).
Final Reduction export/southbound (MW) Final Reduction import/northbound (MW)	Difference between maximum NTC and final NTC.
Final Reason for export/southbound reduction Final Reason for import/northbound reduction	Reason codes for reduction of the final capacities. Reduction codes are according Nord Pool's instructions only reported when the reduction is greater than 100 MW. Because of this principle, there might be mismatches between the figures shown in table 3 and 5 and tables A2 to A5. See separate sheet in spreadsheet file for explanation of the codes.
Registered physical flow (positive for imports and negative for exports/positive for southbound and negative for northbound)	Measured flow on interconnectors and corridors between internal areas.
Electricity price level SE1/SE2/SE3/SE4/DK1/DK2/NO1/NO3/NO4/FI/LT (EUR)	Price level in SE1, SE2, SE3, SE4, DK1, DK2, NO1, NO3, NO4, FI, and LT. Prices for DE and PL are not available, since they are not part of Nord Pool. Red figures indicate a higher price than neighbouring SE-area, and blue indicates a lower price.
Price difference (Y/N)	Yes (Y), if there is a price difference between neighbouring SE-area and current area, otherwise No (N). Blank for DE and PL.

Table A1. Explanation of data in the attached spreadsheet.

Tables A2 to A5 shows how of many hours the capacities have been reduced per type of reduction for each interconnector and corridor between internal areas. The reason codes are explained in the attached spreadsheet.

	1010	1114	1125	1156	1158	1162	1163	1225	1267	1414	1415	1422	1423	1432	1433	1434	1462	1463	1567	1622
SE1-SE2	2 169													39						
SE2-SE3												1 396		53						307
SE3-SE4	397												35		48	157				
SE1-FI	2 208																			
SE1-NO4	2 208																			
SE2-NO3	2 184										11			11						
SE2-NO4	2 191			17																
SE3-DK1	1 673		456					24							55					
SE3-FI	2 184				24															
SE3-NO1	1 910	58								11				11	47					
SE4-DE	1 819						83									282		24		
SE4-DK2	1 957														16	234				
SE4-PL	1 806					234										120	48			
SE4-LT	1 656								360											120

	1623	1624	2214	2215	2223	2233	2234	2522	2523	9999
SE1-SE2										
SE2-SE3								452		
SE3-SE4	763				20				788	
SE1-FI										
SE1-NO4										
SE2-NO3				2						
SE2-NO4										
SE3-DK1										
SE3-FI										
SE3-NO1		141	26			4				
SE4-DE										
SE4-DK2							1			
SE4-PL										
SE4-LT										72

Table A2. Number of hours per type of export reduction (for interconnectors) and per type of southbound reduction (for corridors between internal areas) enforced by Svenska kraftnät.

	1010	1114	1125	1156	1158	1162	1163	1225	1267	1355	1414	1415	1433	1434	1462	1463	1567	1624	2214	2226	2233	9999		
SE1-SE2	2 208																							
SE2-SE3	2 208																							
SE3-SE4	2 208																							
SE1-FI	2 208																							
SE1-NO4	2 189									19														
SE2-NO3	2 197											11												
SE2-NO4	2 191			17																				
SE3-DK1	1 469		434					24					29	120								132		
SE3-FI	2 184				24																			
SE3-NO1	2 009	58									30		85							22		4		
SE4-DE	1 945						83						24	56		24						76		
SE4-DK2	2 038												37	8								117	6	2
SE4-PL	1 850					234							16		48							60		
SE4-LT	1 640								360				16					120					72	

Table A3. Number of hours per type of import reduction (for interconnectors) and per type of northbound reduction (for corridors between internal areas) enforced by Svenska kraftnät.

	1010	1011	1114	1118	1125	1150	1155	1156	1158	1162	1163	1225	1267	1325	1415	1417	1422	1423	1431	1432	1433	1434	1442	1445	1447
SE1-SE2	2 169																			39					
SE2-SE3																	1 396			53					
SE3-SE4	397																	35			48	157			
SE1-FI	1 613																		595						
SE1-NO4	74			924		6	472																		11
SE2-NO3	74			924		6	451	18							11	10					11				23
SE2-NO4	510			907		6	18	59																	23
SE3-DK1	1 399				288							48		24								47		402	
SE3-FI	2 110	24							74																
SE3-NO1	764		2																	11	38			442	
SE4-DE	1 104										1											234			
SE4-DK2	1 909																				16	210			
SE4-PL	1 186									76												85			
SE4-LT	1 648												96												

	1450	1543	1545	1622	1623	1624	2214	2215	2223	2233	2234	2245	2345	2424	2522	2523	9999
SE1-SE2																	
SE2-SE3				307											452		
SE3-SE4					763				20							788	
SE1-FI																	
SE1-NO4	721																
SE2-NO3	678							2									
SE2-NO4	685																
SE3-DK1																	
SE3-FI																	
SE3-NO1			821			114	9			4		2	1				
SE4-DE																	869
SE4-DK2		72								1							
SE4-PL														7			854
SE4-LT																	464

Table A4. Number of hours per type of export reduction as enforced by Svenska kraftnät and neighbouring TSOs (for interconnectors) and per type of southbound reduction (for corridors between internal areas) enforced by Svenska kraftnät.

	1010	1011	1118	1125	1126	1150	1155	1156	1158	1162	1163	1225	1267	1415	1417	1431	1433	1434	1442	1443	1445	1447	1450	1545
SE1-SE2	2 208																							
SE2-SE3	2 208																							
SE3-SE4	2 208																							
SE1-FI	2 088															120								
SE1-NO4	74		924			6	472															11	721	
SE2-NO3	1 113		882			6								11	10									186
SE2-NO4	552		907			6		35														11	697	
SE3-DK1	1 448			303								48					21	63	205					
SE3-FI	2 110	24							74															
SE3-NO1																	77				408			1 708
SE4-DE	867										1						20	55						
SE4-DK2	2 011				18												37	8		9				
SE4-PL	73									58														
SE4-LT	1 632												96				16							

	1624	2214	2226	2233	2245	2424	9999
SE1-SE2							
SE2-SE3							
SE3-SE4							
SE1-FI							
SE1-NO4							
SE2-NO3							
SE2-NO4							
SE3-DK1	120						
SE3-FI							
SE3-NO1		3			12		
SE4-DE	58						1 207
SE4-DK2	117		6	2			
SE4-PL						24	2 053
SE4-LT							464

Table A5. Number of hours per type of import reduction as enforced by Svenska kraftnät and neighbouring TSOs (for interconnectors) and per type of northbound reduction (for corridors between internal areas) enforced by Svenska kraftnät.

5 Period October 1 – December 31, Q4 2016

This section describes operational experience and measures regarding allocation of trading capacity in the period October 1 to December 31, 2016.

In the period, totally 2 209 hours, the main direction of the power flow was southbound.

Table 1 below shows the average prices in Sweden and all neighbouring areas for the above mentioned period (excluding Germany and Poland). Table 2 summarises the number of hours where price differences occurred between the respective zones.

Area	Average Price Level (EUR)	Maximum Price (EUR)	Minimum Price (EUR)
SE1	36,7	104,96	4,02
SE2	36,7	104,96	4,02
SE3	36,72	104,96	4,02
SE4	37,3	104,96	4,02
DK1	32,82	104,96	-53,62
DK2	36,36	104,96	-53,62
FI	37,48	104,96	4,02
NO1	35,13	104,96	22,87
NO3	36,82	104,96	11,91
NO4	29,3	50,47	20,02
LT	37,92	97,65	4,02

Table 1. Average, maximum, and minimum prices for areas within Nord Pool.

No of hours where price for row area greater than for column area	SE1	SE2	SE3	SE4	DK1	DK2	FI	NO1	NO3	NO4	LT
SE1	-	0	0	0	1 347	241	0	820	188	1 937	85
SE2	0	-	0	0	1 347	241	0	820	188	1 937	85
SE3	3	3	-	0	1 347	241	0	820	189	1 937	85
SE4	179	179	176	-	1 425	241	139	916	305	1 937	88
DK1	301	301	298	296	-	261	285	397	437	2 087	348
DK2	281	281	278	128	1 252	-	209	964	406	1 903	162
FI	244	244	241	179	1 434	371	-	986	379	1 947	89
NO1	447	447	444	444	1 087	574	443	-	532	2 357	521
NO3	487	487	487	487	1 489	640	483	1 149	-	1 989	519
NO4	68	68	68	68	280	184	68	27	7	-	68
LT	425	425	422	262	1 454	454	240	1 051	531	1 953	-

Table 2. Number of hours where the price for the area in the row was higher than for the area in the column.

Summary of table 1 and 2:

- LT had the highest average price, followed by FI, SE4, NO3, SE3, SE2, SE1, DK2, NO1, DK1 and NO4.
- SE1 and SE2 had a common price during all hours.

5.1 Allocation of trading capacity

Table 3 below summarises how often Svenska kraftnät have allocated less trading capacity than maximum NTC for interconnectors and corridors between internal areas in the period.

Interconnectors/ corridors between internal areas	No of limited hours		No of days with limitation		Average reduction	
	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound
SE1-SE2	25	0	2	0	0 %	0 %
SE2-SE3	1 026	0	45	0	4 %	0 %
SE3-SE4	1 779	0	76	0	11 %	0 %
SE1-FI	802	1 182	35	51	-1 %	1 %
SE1-NO4	4	21	1	2	0 %	0 %
SE2-NO3	0	0	0	0	0 %	0 %
SE2-NO4	0	0	0	0	0 %	0 %
SE3-DK1	29	951	5	76	1 %	18 %
SE3-FI	93	93	4	4	3 %	3 %
SE3-NO1	879	129	74	12	12 %	1 %
SE4-DE	370	755	16	67	13 %	12 %
SE4-DK2	679	1 114	31	74	17 %	24 %
SE4-PL	161	725	7	67	4 %	11 %
SE4-LT	460	736	20	40	21 %	27 %

Table 3. Limitations in trading capacity on interconnectors and corridors between internal areas as enforced by Svenska kraftnät. The columns with average reductions shows the average NTC divided by maximum NTC.

The majority of the limitations of export capacity on the interconnector SE1-FI, enforced by Svenska kraftnät during the period, are because of that the NTC depends on forecasted transfer between Ivalo - Varangerbotn. The forecasted transfer can both increase and decrease the NTC.

Table 4 below summarises the time during which neighbouring TSOs have allocated less trading capacity than maximum NTC to interconnectors in the period.

Interconnectors/ corridors between internal areas	No of limited hours		No of days with limitation		Average reduction	
	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound
SE1-SE2	-	-	-	-	-	-
SE2-SE3	-	-	-	-	-	-
SE3-SE4	-	-	-	-	-	-
SE1-FI	816	1 214	36	53	0 %	2 %
SE1-NO4	2 209	2 209	92	92	42 %	53 %
SE2-NO3	2 088	15	88	1	32 %	1 %
SE2-NO4	2 209	2 209	92	92	87 %	83 %
SE3-DK1	1 441	16	60	2	36 %	0 %
SE3-FI	92	157	4	8	3 %	4 %
SE3-NO1	489	2 209	25	92	7 %	48 %
SE4-DE	1 207	1 707	79	89	29 %	45 %
SE4-DK2	160	164	9	9	4 %	6 %
SE4-PL	887	2 092	92	92	34 %	74 %
SE4-LT	460	460	20	20	21 %	21 %

Table 4. Limitations in trading capacity on interconnectors as enforced by neighbouring TSOs. The columns with average reductions shows the average NTC divided by maximum NTC.

Table 5 below summarises the time during which capacities on interconnectors and corridors between internal areas have been reduced, taking into account reductions by both Svenska kraftnät and neighbouring TSOs.

Interconnectors/ corridors between internal areas	No of limited hours		No of days with limitation		Average reduction	
	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound	Export/ South- bound	Import/ North- bound
SE1-SE2	25	0	2	0	0 %	0 %
SE2-SE3	1 026	0	45	0	4 %	0 %
SE3-SE4	1 779	0	76	0	11 %	0 %
SE1-FI	816	1 239	36	54	0 %	2 %
SE1-NO4	2 209	2 209	92	92	42 %	53 %
SE2-NO3	2 088	15	88	1	32 %	1 %
SE2-NO4	2 209	2 209	92	92	87 %	83 %
SE3-DK1	1 441	960	60	75	36 %	18 %
SE3-FI	93	158	4	8	3 %	4 %
SE3-NO1	1 189	2 209	86	92	17 %	46 %
SE4-DE	1 357	1 871	80	91	38 %	47 %
SE4-DK2	687	1 241	32	81	17 %	28 %
SE4-PL	954	2 208	92	92	36 %	78 %
SE4-LT	460	736	20	40	21 %	27 %

Table 5. Final limitations in trading capacity on interconnectors and corridors between internal areas as enforced by both Svenska kraftnät and neighbouring TSOs. The columns with average reductions shows the average NTC divided by maximum NTC.

Detailed information for each limitation is provided in the attached tables A2 to A5 in appendix A and in the attachment. This information includes the reason for each limitation.

5.2 Comments on each interconnector

5.2.1 SE1-FI, North Finland

Svenska kraftnät has reduced the export and import capacity for 802 and 1 182 hours, respectively, on the interconnector between SE1 and FI, because the NTC depends on forecasted transfer between Ivalo – Varangerbotn. In total, the export and import on the interconnector have been reduced for 816 and 1 239 hours, respectively.

5.2.2 SE1-NO4, North Norway

Svenska kraftnät has reduced the export and import capacity for 4 and 21 hours, respectively, on the interconnector between SE1 and NO4, because of maintenance close to the interconnector. In total, the export and import on the interconnector have been reduced during all hours.

5.2.3 SE2-NO3, Central Norway

Svenska kraftnät has not reduced the capacity on the interconnector between SE2 and NO3. In total, the export and import on the interconnector have been reduced for 2 088 and 15 hours, respectively.

5.2.4 SE2-NO4, North Norway

Svenska kraftnät has not reduced the capacity on the interconnector between SE2 and NO4. In total, the export and import on the interconnector have been reduced during all hours.

5.2.5 SE3-DK1, Western Denmark

Svenska kraftnät has reduced the export and import capacity for 29 and 951 hours, respectively, on the interconnector between SE3 and DK1. The main reason for reductions set by Svenska kraftnät was mainly congestion in the West Coast Corridor, but also due to planned maintenance close to interconnector. In total, the export and import on the interconnector have been reduced for 1 441 and 960 hours, respectively.

5.2.6 SE3-FI, Southern Finland

Svenska kraftnät has reduced the export and import capacity for 93 and 93 hours, respectively, on the interconnector between SE3 and FI. The reasons for reductions set by Svenska kraftnät was planned maintenance of the interconnector. In total, the export and import on the interconnector have been reduced for 93 and 158 hours, respectively.

5.2.7 SE3-NO1, Southern Norway

Svenska kraftnät has reduced the export and import capacity for 879 and 129 hours, respectively, on the interconnector between SE3 and NO1. The reason for reductions set by Svenska kraftnät was mainly congestion in the West Coast Corridor, but also due to planned maintenance close to interconnector. In total, the export and import on the interconnector have been reduced for 1 189 and 2 209 hours, respectively.

5.2.8 SE4-DE, Germany

Svenska kraftnät has reduced the export and import capacity for 370 and 755 hours, respectively, on the interconnector between SE4 and DE. The main reason for reductions set by Svenska kraftnät was congestion in the West Coast Corridor, but also due to maintenance in Söderåsen station. In total, the export and import on the interconnector have been reduced for 1 357 and 1 871 hours, respectively.

5.2.9 SE4-DK2, Eastern Denmark

Svenska kraftnät has reduced the export and import capacity for 679 and 1 114 hours, respectively, on the interconnector between SE4 and DK2. The main reason for reductions set by Svenska kraftnät was congestion in the West Coast Corridor, but also due to maintenance in Söderåsen station. In total, the export and import on the interconnector have been reduced for 687 and 1 241 hours, respectively.

5.2.10 SE4-PL, Poland

Svenska kraftnät has reduced the export and import capacity for 161 and 725 hours, respectively, on the interconnector between SE4 and PL. The main reason for reductions set by Svenska kraftnät was congestion in the West Coast Corridor, but also due to maintenance in Söderåsen station. In total, the export and import on the interconnector have been reduced for 954 and 2 208 hours, respectively.

5.2.11 SE4-LT, Lithuania

Svenska kraftnät has reduced the export and import capacity for 460 and 736 hours, respectively, on the interconnector between SE4 and LT. The main reasons for reductions set by Svenska kraftnät was because congestion in the West Coast Corridor and due to planned maintenance and failure on the interconnector. In total, the export and import on the interconnector have been reduced for 460 and 736 hours, respectively.

Appendix A – 2015 Q4

The attached spreadsheet contains data for each hour during the period. Each value in the spreadsheet is explained in the table below.

Value	Explanation
Maximum NTC export/southbound (MW) Maximum NTC import/northbound (MW)	Maximum NTC for export/import, as agreed by TSOs on both sides, and maximum NTC for corridors between internal areas in south/north direction. These values normally only change after the network has been reinforced.
Svk NTC export (MW) Svk NTC import (MW)	Svenska kraftnät's view of NTC for export/import.
Svk Reduction export (Y/N) Svk Reduction import (Y/N)	Yes (Y), if Svenska kraftnät's view of NTC for export/import is lower than maximum NTC, otherwise No (N).
Svk Reduction export (MW) Svk Reduction import (MW)	Difference between maximum NTC and Svenska kraftnät's view of NTC.
Svk Reason for export reduction Svk Reason for import reduction	Reason codes for Svenska kraftnät's reduction of capacities. Reduction codes are according Nord Pool's instructions only reported when the reduction is greater than 100 MW. Because of this principle, there might be mismatches between the figures shown in table 3 and 5 and tables A2 to A5. See separate sheet in spreadsheet file for explanation of the codes.
Neighbouring TSO NTC export (MW) Neighbouring TSO NTC import (MW)	Neighbouring TSO's view of NTC for export/import.
Final NTC export/southbound (MW) Final NTC import/northbound (MW)	Final NTC for corridors between internal areas in south/north direction, and the minimum of Svenska kraftnät's view and the neighbouring TSO's view of the export/import NTC on interconnectors.

Final Reduction export/southbound (Y/N) Final Reduction import/northbound (Y/N)	Yes (Y), if the final NTC is lower than the maximum NTC, otherwise No (N).
Final Reduction export/southbound (MW) Final Reduction import/northbound (MW)	Difference between maximum NTC and final NTC.
Final Reason for export/southbound reduction Final Reason for import/northbound reduction	Reason codes for reduction of the final capacities. Reduction codes are according Nord Pool's instructions only reported when the reduction is greater than 100 MW. Because of this principle, there might be mismatches between the figures shown in table 3 and 5 and tables A2 to A5. See separate sheet in spreadsheet file for explanation of the codes.
Registered physical flow (positive for imports and negative for exports/positive for southbound and negative for northbound)	Measured flow on interconnectors and corridors between internal areas.
Electricity price level SE1/SE2/SE3/SE4/DK1/DK2/NO1/NO3/NO4/FI/LT (EUR)	Price level in SE1, SE2, SE3, SE4, DK1, DK2, NO1, NO3, NO4, FI, and LT. Prices for DE and PL are not available, since they are not part of Nord Pool. Red figures indicate a higher price than neighbouring SE-area, and blue indicates a lower price.
Price difference (Y/N)	Yes (Y), if there is a price difference between neighbouring SE-area and current area, otherwise No (N). Blank for DE and PL.

Table A1. Explanation of data in the attached spreadsheet.

Tables A2 to A5 shows how of many hours the capacities have been reduced per type of reduction for each interconnector and corridor between internal areas. The reason codes are explained in the attached spreadsheet.

	1010	1125	1126	1167	1267	1422	1423	1424	1431	1433	1434	1458	1467	1622	1623	1624	1625	1633	2210	2214	2223	2258	2522
SE1-SE2	2 191					18																	
SE2-SE3	1 225					25				145				664		48							96
SE3-SE4	603						72	6		24	466				901	48		12			5		
SE1-FI	2 209																						
SE1-NO4	2 205								4														
SE2-NO3	2 209																						
SE2-NO4	2 209																						
SE3-DK1	2 180	4						6		19													
SE3-FI	2 116											92										1	
SE3-NO1	1 466							6		22						665	14			4			
SE4-DE	1 839									21	349												
SE4-DK2	1 531		12					6		19	640					1							
SE4-PL	2 048									21	140												
SE4-LT	1 748			80	168								211						1				

	2524	2533	2534
SE1-SE2			
SE2-SE3		6	
SE3-SE4			72
SE1-FI			
SE1-NO4			
SE2-NO3			
SE2-NO4			
SE3-DK1			
SE3-FI			
SE3-NO1	32		
SE4-DE			
SE4-DK2			
SE4-PL			
SE4-LT			

Table A2. Number of hours per type of export reduction (for interconnectors) and per type of southbound reduction (for corridors between internal areas) enforced by Svenska kraftnät.

	1010	1125	1126	1167	1267	1424	1431	1433	1434	1458	1467	1624	1625	2210	2214	2226	2258	2524
SE1-SE2	2 209																	
SE2-SE3	2 209																	
SE3-SE4	2 209																	
SE1-FI	2 209																	
SE1-NO4	2 205						4											
SE2-NO3	2 209																	
SE2-NO4	2 209																	
SE3-DK1	1 330	4				6		19	154			652	12					32
SE3-FI	2 116									92							1	
SE3-NO1	2 176					6		23							4			
SE4-DE	1 640					6		19				514	11					19
SE4-DK2	1 137		12			6		21	414			575	15			1		28
SE4-PL	1 691					6		19				466	12					15
SE4-LT	1 491			80	168	6		19			211	221	11	1				

Table A3. Number of hours per type of import reduction (for interconnectors) and per type of northbound reduction (for corridors between internal areas) enforced by Svenska kraftnät.

	1010	1125	1126	1157	1158	1422	1423	1424	1431	1433	1434	1442	1443	1445	1450	1456	1458	1467	1545	1622	1623	1624	1625	
SE1-SE2	2 191					18																		
SE2-SE3	1 225					25				145										664		48		
SE3-SE4	603						72	6		24	466										901	48		
SE1-FI	2 177			32																				
SE1-NO4	441								4						1 607	157								
SE2-NO3	465														1 571	161								
SE2-NO4	441														1 183	585								
SE3-DK1	768	24										1 417												
SE3-FI	2 116				1												91							
SE3-NO1	1 158							6		22				4					309			658	14	
SE4-DE	1 041									21	327													
SE4-DK2	1 523		20					6		19	632		8									1		
SE4-PL	1 284									17	90													
SE4-LT	1 749																	115						

	1633	1915	2214	2223	2245	2258	2522	2524	2533	2534	9999
SE1-SE2											
SE2-SE3							96		6		
SE3-SE4	12			5						72	
SE1-FI											
SE1-NO4											
SE2-NO3		12									
SE2-NO4											
SE3-DK1											
SE3-FI						1					
SE3-NO1			4		2			32			
SE4-DE											820
SE4-DK2											
SE4-PL											818
SE4-LT											344

Table A4. Number of hours per type of export reduction as enforced by Svenska kraftnät and neighbouring TSOs (for interconnectors) and per type of southbound reduction (for corridors between internal areas) enforced by Svenska kraftnät.

	1010	1114	1125	1126	1157	1158	1326	1424	1431	1433	1434	1443	1445	1450	1456	1458	1467	1545	1624	1625	1914	1950	2214	
SE1-SE2	2 209																							
SE2-SE3	2 209																							
SE3-SE4	2 209																							
SE1-FI	2 177				32																			
SE1-NO4	368								4					1 607	157							73		
SE2-NO3	2 209																							
SE2-NO4	368													1 183	585							73		
SE3-DK1	1 319		16					6		19	154								651	12				
SE3-FI	2 050					1				66						91								
SE3-NO1		8						6		15			92					2 073			12		2	
SE4-DE	604									19									170	10				
SE4-DK2	1 010			44			16	6		21	414	73							575	15				
SE4-PL	57																		209	4				
SE4-LT	1 498									19							115		221	11				

	2226	2245	2258	2524	9999
SE1-SE2					
SE2-SE3					
SE3-SE4					
SE1-FI					
SE1-NO4					
SE2-NO3					
SE2-NO4					
SE3-DK1				32	
SE3-FI			1		
SE3-NO1		1			
SE4-DE				10	1 396
SE4-DK2	7			28	
SE4-PL				1	1 938
SE4-LT					344

Table A5. Number of hours per type of import reduction as enforced by Svenska kraftnät and neighbouring TSOs (for interconnectors) and per type of northbound reduction (for corridors between internal areas) enforced by Svenska kraftnät.