SVENSKA KRAFTNÄT

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Swedish Interconnectors

COMP Case No 39351

Monitoring Report No 15

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 European Network codes will have an impact on the management of the Swedish interconnectors, but the major impact is expected after the commitments expires. More specifically, the implementation of the Nordic capacity calculation methodology according to CACM changes how the capacity will be allocated on the Swedish interconnectors.

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 (fourteenth) monitoring report this fifthteenth monitoring report has been submitted by 8 February 2019 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 (sixteenth) monitoring report will be submitted by 14th of February 2020 at latest, covering the whole year of 2019.

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

Sundbyberg, January 31, 2019

Ulla Sandborgh

Ulla Sandborgh

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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 2018

This section describes operational experience and measures regarding allocation of trading capacity in the period January 1 to March 31, 2018.

In the period, totally 2 159 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.

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

Area	Average Price Level (EUR)	Maximum Price (EUR)	Minimum Price (EUR)
SE1	38.87	255.02	15.18
SE2	38.87	255.02	15.18
SE3	39.00	255.02	15.18
SE4	39.48	255.02	15.18
DK1	35.44	93.43	-15.00
DK2	38.13	255.02	-15.00
FI	41.97	255.02	15.18
NO1	38.36	255.02	24.07
NO3	38.82	255.02	24.67
NO4	37.78	255.02	24.67
LT	42.36	255.02	15.18

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

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	698	256	0	247	67	403	5
SE2	0	-	0	0	698	256	0	247	67	403	5
SE3	46	46	-	0	701	256	0	256	110	427	5
SE4	189	189	161	-	813	256	106	410	251	492	5
DK1	209	209	178	152	-	43	154	318	239	529	129
DK2	276	276	250	116	583	-	191	479	321	545	102
FI	492	492	458	414	1 014	650	-	599	536	743	12
NO1	155	155	118	118	662	311	118	-	116	496	121
NO3	92	92	92	92	706	292	91	218	-	428	95
NO4	62	62	62	62	675	272	61	197	0	-	65
LT	743	743	723	592	1 194	816	314	830	766	920	-

Summary of table 1 and 2:

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

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.

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	1 475	0	62	0	4 %	0 %
SE2-SE3	2 159	0	90	0	8 %	0 %
SE3-SE4	1 381	0	81	0	2 %	0 %
SE1-FI	378	1 572	21	71	-1 %	1 %
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	10	1 076	1	90	0 %	16 %
SE3-FI	20	20	2	2	0 %	0 %
SE3-NO1	1 063	65	89	5	14 %	0 %
SE4-DE	239	1 132	10	90	11 %	23 %
SE4-DK2	17	1 081	1	90	0 %	16 %
SE4-PL	0	1 066	0	90	0 %	16 %
SE4-LT	168	1 186	7	90	8 %	23 %

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.

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.

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	384	1 572	22	71	-1 %	1 %
SE1-NO4	2 159	2 159	90	90	29 %	29 %
SE2-NO3	773	0	35	0	13 %	0 %
SE2-NO4	2 159	2 159	90	90	32 %	42 %
SE3-DK1	7	7	2	2	0 %	0 %
SE3-FI	9	9	1	1	0 %	0 %
SE3-NO1	33	2 159	3	90	0 %	19 %
SE4-DE	387	1 493	23	83	14 %	53 %
SE4-DK2	1 002	1 002	44	44	7 %	16 %
SE4-PL	109	2 040	7	90	3 %	58 %
SE4-LT	168	168	7	7	8 %	8 %

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.

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.

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	1 475	0	62	0	4 %	0 %
SE2-SE3	2 159	0	90	0	8 %	0 %
SE3-SE4	1 381	0	81	0	2 %	0 %
SE1-FI	384	1 572	22	71	-1 %	1 %
SE1-NO4	2 159	2 159	90	90	29 %	29 %
SE2-NO3	773	0	35	0	13 %	0 %
SE2-NO4	2 159	2 159	90	90	32 %	42 %
SE3-DK1	17	1 080	3	90	0 %	16 %
SE3-FI	20	20	2	2	0 %	0 %
SE3-NO1	1 063	2 159	89	90	14 %	19 %
SE4-DE	387	1 824	23	90	14 %	58 %
SE4-DK2	1 002	1 620	44	90	7 %	27 %
SE4-PL	109	2 139	7	90	3 %	62 %
SE4-LT	168	1 186	7	90	8 %	23 %

Detailed information for each limitation is provided in the tables B1 to B4 in appendix B 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 378 and 1 572 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 384 and 1 572 hours, respectively.

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 773 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 10 and 1 076 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 17 and 1 080 hours, respectively.

2.2.6 SE3-FI, Southern Finland

Svenska kraftnät has reduced the export and import capacity for 20 and 20 hours, respectively, on the interconnector between SE3 and FI. The reason for reductions set by Svenska kraftnät was maintenance. In total, the export and import on the interconnector have been reduced for 20 and 20 hours, respectively.

2.2.7 SE3-NO1, Southern Norway

Svenska kraftnät has reduced the export and import capacity for 1 063 and 65 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 1 063 and 2 159 hours, respectively.

2.2.8 SE4-DE, Germany

Svenska kraftnät has reduced the export and import capacity for 239 and 1 132 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 addition to that, the interconnector had a cable fault between March 20 and

May 24. In total, the export and import on the interconnector have been reduced for 387 and 1 824 hours, respectively.

2.2.9 SE4-DK2, Eastern Denmark

Svenska kraftnät has reduced the export and import capacity for 17 and 1 081 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. In total, the export and import on the interconnector have been reduced for 1 002 and 1 620 hours, respectively.

2.2.10 SE4-PL, Poland

Svenska kraftnät has reduced the export and import capacity for 0 and 1 066 hours, respectively, on the interconnector between SE4 and PL. The 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 109 and 2 139 hours, respectively.

2.2.11 SE4-LT, Lithuania

Svenska kraftnät has reduced the export and import capacity for 168 and 1 186 hours, respectively, on the interconnector between SE4 and LT. The main reason for reductions set by Svenska kraftnät was congestion in the West Coast Corridor, but also due to cable faults in the interconnector. In total, the export and import on the interconnector have been reduced for 168 and 1 186 hours, respectively.

3 Period April 1 – June 30, Q2 2018

This section describes operational experience and measures regarding allocation of trading capacity in the period April 1 to June 30, 2018.

In the period, totally 2 184 hours, the main direction of the power flow was south-bound.

Table 6 below shows the average prices in Sweden and all neighbouring areas for the above mentioned period (excluding Germany and Poland). Table 7 summarises the number of hours where price differences occurred between the respective zones.

Table 6. Average, maximum, and minimum prices for areas within Nord Pool.

Area	**Average Price Level (EUR)**	**Maximum Price (EUR)**	**Minimum Price (EUR)**
SE1	38.53	64.99	1.59
SE2	38.53	64.99	1.59
SE3	38.55	64.99	1.59
SE4	40.38	177.22	1.59
DK1	38.55	144.33	0.03
DK2	40.89	177.22	0.03
FI	41.96	219.95	1.59
NO1	38.74	61.14	2.89
NO3	39.38	64.99	2.92
NO4	40.06	64.99	3.88
LT	44.96	255.03	1.59

Table 7. Number of hours where the price for the area in the row was higher than for the area in the column.

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	549	260	0	335	101	145	36
SE2	0	-	0	0	549	260	0	335	101	145	36
SE3	6	6	-	0	549	260	0	335	106	150	36
SE4	286	286	280	-	664	260	170	515	349	373	36
DK1	572	572	568	411	-	72	433	641	569	579	299
DK2	579	579	574	377	442	-	435	704	574	579	282
FI	515	515	511	415	889	608	-	688	530	562	46
NO1	257	257	257	256	627	418	253	-	52	105	265
NO3	362	362	362	360	768	528	334	564	-	77	320
NO4	492	492	492	490	888	669	456	771	295	-	444
LT	949	949	949	808	1 203	971	631	1 017	943	955	-

Summary of table 6 and 7:

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

3.1 Allocation of trading capacity

Table 8 below summarises how often Svenska kraftnät have allocated less trading capacity than maximum NTC for interconnectors and corridors between internal areas in the period.

Table 8. 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.

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	1 938	0	81	0	6 %	0 %
SE2-SE3	2 184	0	91	0	11 %	0 %
SE3-SE4	2 184	0	91	0	20 %	0 %
SE1-FI	557	1 590	30	71	-1 %	3 %
SE1-NO4	96	131	4	10	2 %	3 %
SE2-NO3	15	13	1	1	1 %	1 %
SE2-NO4	412	408	18	17	19 %	19 %
SE3-DK1	106	1 600	10	91	3 %	32 %
SE3-FI	0	0	0	0	0 %	0 %
SE3-NO1	1 412	184	91	15	26 %	5 %
SE4-DE	1 132	1 804	48	91	52 %	65 %
SE4-DK2	650	1 757	29	91	16 %	45 %
SE4-PL	366	1 378	18	91	7 %	27 %
SE4-LT	366	1 378	18	91	7 %	27 %

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

Table 9. Limitations in trading capacity on interconnectors as enforced by neighbouring TSOs. The columns with average reductions shows the average NTC divided by maximum NTC.

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	583	1 591	31	71	-1 %	2 %
SE1-NO4	2 184	2 184	91	91	47 %	29 %
SE2-NO3	1 739	309	74	16	29 %	6 %
SE2-NO4	2 184	2 184	91	91	49 %	61 %
SE3-DK1	0	0	0	0	0 %	0 %
SE3-FI	13	670	1	29	0 %	5 %
SE3-NO1	392	1 220	23	71	12 %	17 %
SE4-DE	1 314	1 737	56	83	59 %	71 %
SE4-DK2	1 095	1 099	53	53	26 %	34 %
SE4-PL	42	2 144	2	90	2 %	69 %
SE4-LT	20	20	3	3	0 %	0 %

Table 10 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.

Table 10. 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.

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	1 938	0	81	0	6 %	0 %
SE2-SE3	2 184	0	91	0	11 %	0 %
SE3-SE4	2 184	0	91	0	20 %	0 %
SE1-FI	588	1 598	32	72	-1 %	3 %
SE1-NO4	2 184	2 184	91	91	47 %	30 %
SE2-NO3	1 739	322	74	17	29 %	6 %
SE2-NO4	2 184	2 184	91	91	49 %	61 %
SE3-DK1	106	1 605	10	91	3 %	32 %
SE3-FI	13	670	1	29	0 %	5 %
SE3-NO1	1 576	1 245	91	72	34 %	19 %
SE4-DE	1 314	2 066	56	91	59 %	79 %
SE4-DK2	1 113	1 977	53	91	26 %	54 %
SE4-PL	408	2 184	20	91	9 %	73 %
SE4-LT	379	1 392	20	91	8 %	28 %

Detailed information for each limitation is provided in the attached tables C1 to C4 in appendix C 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 557 and 1 590 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 close to the interconnector. In total, the export and import on the interconnector have been reduced for 588 and 1 598 hours, respectively.

3.2.2 SE1-NO4, North Norway

Svenska kraftnät has reduced the export and import capacity for 96 and 131 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 reduced the export and import capacity for 15 and 13 hours, respectively, on the interconnector between SE2 and NO3, because of maintenance on the interconnector. In total, the export and import on the interconnector have been reduced for 1 739 and 322 hours, respectively.

3.2.4 SE2-NO4, North Norway

Svenska kraftnät has reduced the export and import capacity for 412 and 408 hours, respectively, on the interconnector between SE2 and NO4, because of maintenance on the interconnector. 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 106 and 1 600 hours, respectively, on the interconnector between SE3 and DK1. The reasons for reductions set by Svenska kraftnät was congestion in the West Coast Corridor and planned maintenance near the interconnector. In total, the export and import on the interconnector have been reduced for 106 and 1 605 hours, respectively.

3.2.6 SE3-FI, Southern Finland

Svenska kraftnät has reduced the export and import capacity for 0 and 0 hours, respectively, on the interconnector between SE3 and FI. In total, the export and import on the interconnector have been reduced for 13 and 670 hours, respectively.

3.2.7 SE3-NO1, Southern Norway

Svenska kraftnät has reduced the export and import capacity for 1 576 and 1 245 hours, respectively, on the interconnector between SE3 and NO1. The reasons for reductions set by Svenska kraftnät was congestion in the West Coast Corridor, maintenance and failure on and close to the interconnector. In total, the export and import on the interconnector have been reduced for 1 576 and 1 245 hours, respectively.

3.2.8 SE4-DE, Germany

Svenska kraftnät has reduced the export and import capacity for 1 132 and 1 804 hours, respectively, on the interconnector between SE4 and DE. The reason

for reductions set by Svenska kraftnät was congestion in the West Coast Corridor and planned outage near the interconnector. In addition to that, the interconnector had a cable fault between March 20 and May 24. In total, the export and import on the interconnector have been reduced for 1 314 and 2 066 hours, respectively.

3.2.9 SE4-DK2, Eastern Denmark

Svenska kraftnät has reduced the export and import capacity for 650 and 1 757 hours, respectively, on the interconnector between SE4 and DK2. The reason for reductions set by Svenska kraftnät was congestion in the West Coast Corridor, maintenance on and close to the interconnector. In total, the export and import on the interconnector have been reduced for 1 113 and 1 977 hours, respectively.

3.2.10 SE4-PL, Poland

Svenska kraftnät has reduced the export and import capacity for 366 and 1 378 hours, respectively, on the interconnector between SE4 and PL. The reason for reductions set by Svenska kraftnät was congestion in the West Coast Corridor and maintenance close to the interconnector. In total, the export and import on the interconnector have been reduced for 408 and 2 184 hours, respectively.

3.2.11 SE4-LT, Lithuania

Svenska kraftnät has reduced the export and import capacity for 366 and 1 378 hours, respectively, on the interconnector between SE4 and LT. The reason for reductions set by Svenska kraftnät was congestion in the West Coast Corridor and maintenance close to the interconnector. In total, the export and import on the interconnector have been reduced for 379 and 1 392 hours, respectively.

4 Period July 1 – September 30, Q3 2018

This section describes operational experience and measures regarding allocation of trading capacity in the period July 1 to September 30, 2018.

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

Table 11 below shows the average prices in Sweden and all neighbouring areas for the above mentioned period (excluding Germany and Poland). Table 12 summarises the number of hours where price differences occurred between the respective zones.

Table 11. Average, maximum, and minimum prices for areas within Nord Pool.

Area	**Average Price Level (EUR)**	**Maximum Price (EUR)**	**Minimum Price (EUR)**
SE1	51.88	79.52	2.33
SE2	51.88	79.52	2.33
SE3	52.22	82.51	2.33
SE4	53.19	89.12	2.33
DK1	52.60	91.31	-6.79
DK2	54.02	99.64	2.33
FI	53.52	84.48	2.33
NO1	50.16	70.46	2.33
NO3	50.83	73.54	2.33
NO4	49.67	73.14	2.33
LT	57.55	135.99	2.40

Table 12. Number of hours where the price for the area in the row was higher than for the area in the column.

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	538	56	0	637	479	1 081	115
SE2	0	-	0	0	538	56	0	637	479	1 081	115
SE3	146	146	-	0	541	56	7	637	537	1 087	122
SE4	395	395	309	-	636	56	206	851	678	1 097	142
DK1	663	663	578	446	-	43	519	821	808	1 098	457
DK2	672	672	611	439	588	-	523	997	859	1 180	467
FI	505	505	412	349	792	374	-	960	819	1 197	115
NO1	109	109	53	53	445	88	53	-	275	907	165
NO3	62	62	62	62	549	101	59	535	-	869	153
NO4	132	132	132	131	534	168	123	434	93	-	207
LT	1 068	1 068	1 013	853	1 129	843	800	1 231	1 192	1 434	-

Summary of table 11 and 12:

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

4.1 Allocation of trading capacity

Table 13 below summarises how often Svenska kraftnät have allocated less trading capacity than maximum NTC for interconnectors and corridors between internal areas in the period.

Table 13. 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.

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	1 985	0	83	0	6 %	0 %
SE2-SE3	2 208	0	92	0	30 %	0 %
SE3-SE4	2 208	0	92	0	26 %	0 %
SE1-FI	528	1 608	33	67	1 %	4 %
SE1-NO4	0	1 292	0	69	0 %	6 %
SE2-NO3	0	0	0	0	0 %	0 %
SE2-NO4	199	309	17	19	3 %	9 %
SE3-DK1	284	1 172	14	75	9 %	28 %
SE3-FI	117	328	5	14	3 %	14 %
SE3-NO1	1 021	194	67	12	20 %	2 %
SE4-DE	132	955	7	68	4 %	20 %
SE4-DK2	569	1 282	24	71	5 %	32 %
SE4-PL	267	1 027	14	68	11 %	26 %
SE4-LT	1 104	1 821	46	92	50 %	66 %

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

Table 14. Limitations in trading capacity on interconnectors as enforced by neighbouring TSOs. The columns with average reductions shows the average NTC divided by maximum NTC.

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	208	1 608	13	67	-1 %	4 %
SE1-NO4	2 049	2 016	87	84	58 %	31 %
SE2-NO3	1 770	743	79	34	31 %	6 %
SE2-NO4	2 208	2 208	92	92	50 %	61 %
SE3-DK1	699	699	30	30	17 %	23 %
SE3-FI	379	439	17	19	5 %	8 %
SE3-NO1	478	985	23	45	7 %	16 %
SE4-DE	1 132	1 515	48	74	12 %	37 %
SE4-DK2	2 034	2 038	86	86	21 %	38 %
SE4-PL	185	2 194	11	92	8 %	74 %
SE4-LT	1 238	1 238	62	62	50 %	50 %

Table 15 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.

Table 15. 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.

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	1 985	0	83	0	6 %	0 %
SE2-SE3	2 208	0	92	0	30 %	0 %
SE3-SE4	2 208	0	92	0	26 %	0 %
SE1-FI	528	1 608	33	67	1 %	4 %
SE1-NO4	2 049	2 091	87	88	58 %	32 %
SE2-NO3	1 770	743	79	34	31 %	6 %
SE2-NO4	2 208	2 208	92	92	50 %	62 %
SE3-DK1	721	1 511	32	86	17 %	41 %
SE3-FI	427	626	19	27	5 %	16 %
SE3-NO1	1 181	1 003	70	47	24 %	16 %
SE4-DE	1 146	1 976	49	92	15 %	49 %
SE4-DK2	2 058	2 158	87	91	21 %	50 %
SE4-PL	297	2 208	18	92	11 %	77 %
SE4-LT	1 238	1 924	62	92	50 %	66 %

Detailed information for each limitation is provided in the attached tables D1 to D4 in appendix D 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 528 and 1 608 hours, respectively, on the interconnector between SE1 and FI, because of thermal overload and because the NTC depends on forecasted transfer between

Ivalo – Varangerbotn. In total, the export and import on the interconnector have been reduced for 528 and 1 608 hours, respectively.

4.2.2 SE1-NO4, North Norway

Svenska kraftnät has reduced the export and import capacity for 0 and 1 292 hours, respectively, on the interconnector between SE1 and NO4, because of thermal overload and planned outage near the interconnector. In total, the export and import on the interconnector have been reduced for 2 049 and 2 091 hours, respectively.

4.2.3 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 1 770 and 743 hours, respectively.

4.2.4 SE2-NO4, North Norway

Svenska kraftnät has reduced the export and import capacity for 199 and 309 hours, respectively, on the interconnector between SE2 and NO4, because of thermal overload and planned outage 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 284 and 1 172 hours, respectively, on the interconnector between SE3 and DK1. The reasons for reductions set by Svenska kraftnät were congestion in the West Coast Corridor and planned outage on or near the interconnector. In total, the export and import on the interconnector have been reduced for 721 and 1 511 hours, respectively.

4.2.6 SE3-FI, Southern Finland

Svenska kraftnät has reduced the export and import capacity for 117 and 328 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, outages near the interconnector, and thermal overload. In total, the export and import on the interconnector have been reduced for 427 and 626 hours, respectively.

4.2.7 SE3-NO1, Southern Norway

Svenska kraftnät has reduced the export and import capacity for 1 021 and 194 hours, respectively, on the interconnector between SE3 and NO1. The reasons for reductions set by Svenska kraftnät were congestion in the West Coast Corridor, planned outages on the interconnector and outage close to the interconnector. In total, the export and import on the interconnector have been reduced for 1 181 and 1 003 hours, respectively.

4.2.8 SE4-DE, Germany

Svenska kraftnät has reduced the export and import capacity for 132 and 955 hours, respectively, on the interconnector between SE4 and DE. The reasons for reductions set by Svenska kraftnät were congestion in the West Coast Corridor and outage on the interconnector, and thermal overload. In total, the export and import on the interconnector have been reduced for 1 146 and 1 976 hours, respectively.

4.2.9 SE4-DK2, Eastern Denmark

Svenska kraftnät has reduced the export and import capacity for 132 and 955 hours, respectively, on the interconnector between SE4 and DK2. The reasons for reductions set by Svenska kraftnät were congestion in the West Coast Corridor, planned outage and disturbance on the interconnector and planned outage near the interconnector. In total, the export and import on the interconnector have been reduced for 2058 and 2 158 hours, respectively.

4.2.10 SE4-PL, Poland

Svenska kraftnät has reduced the export and import capacity for 267 and 1 027 hours, respectively, on the interconnector between SE4 and PL. The reasons for reductions set by Svenska kraftnät were congestion in the West Coast Corridor, planned outage, and thermal overload near the interconnector. In total, the export and import on the interconnector have been reduced for 297 and 2 208 hours, respectively.

4.2.11 SE4-LT, Lithuania

Svenska kraftnät has reduced the export and import capacity for 1 104 and 1 821 hours, respectively, on the interconnector between SE4 and LT. The reasons for reductions set by Svenska kraftnät were congestion in the West Coast Corridor and planned outage. In total, the export and import on the interconnector have been reduced for 1 238 and 1 821 hours, respectively.

5 Period October 1 – December 31, Q4 2018

This section describes operational experience and measures regarding allocation of trading capacity in the period October 1 to December 31, 2018.

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

Table 16 below shows the average prices in Sweden and all neighbouring areas for the above mentioned period (excluding Germany and Poland). Table 17 summarises the number of hours where price differences occurred between the respective zones.

Table 16. Average, maximum, and minimum prices for areas within Nord Pool.

Area	Average Price Level (EUR)	Maximum Price (EUR)	Minimum Price (EUR)
SE1	47.44	128.26	1.92
SE2	47.44	128.26	1.92
SE3	48.20	128.26	1.92
SE4	52.18	128.26	1.92
DK1	49.36	128.26	-9.90
DK2	51.53	128.26	-9.90
FI	49.58	128.26	1.92
NO1	47.18	105.02	1.92
NO3	47.14	78.81	1.92
NO4	47.15	78.81	12.10
LT	54.90	131.50	1.92

Table 17. Number of hours where the price for the area in the row was higher than for the area in the column.

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	398	218	0	432	295	479	40
SE2	0	-	0	0	398	218	0	432	295	479	40
SE3	176	176	-	0	403	218	3	489	439	610	40
SE4	685	685	601	-	594	218	541	758	766	849	65
DK1	712	712	621	374	-	30	579	730	780	885	357
DK2	900	900	838	451	480	-	766	929	947	1 008	421
FI	551	551	422	280	664	461	-	776	720	862	45
NO1	314	314	196	196	416	303	199	-	244	448	222
NO3	199	199	178	166	453	287	178	454	-	265	192
NO4	228	228	228	225	517	349	226	488	80	-	216
LT	1 108	1 108	1 057	613	1 030	780	881	1 166	1 164	1 215	-

Summary of table 16 and 17:

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

5.1 Allocation of trading capacity

Table 18 below summarises how often Svenska kraftnät have allocated less trading capacity than maximum NTC for interconnectors and corridors between internal areas in the period.

Table 18. 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.

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	524	24	24	1	1 %	0 %
SE2-SE3	2 209	0	92	0	11 %	0 %
SE3-SE4	2 209	136	92	7	13 %	6 %
SE1-FI	316	1 136	15	50	0 %	2 %
SE1-NO4	732	732	31	31	30 %	29 %
SE2-NO3	0	72	0	3	0 %	0 %
SE2-NO4	0	72	0	3	0 %	1 %
SE3-DK1	96	1 243	6	92	2 %	22 %
SE3-FI	7	7	1	1	0 %	0 %
SE3-NO1	1 507	278	92	14	23 %	5 %
SE4-DE	34	1 194	3	91	1 %	20 %
SE4-DK2	400	1 421	19	92	6 %	26 %
SE4-PL	39	1 225	4	91	1 %	21 %
SE4-LT	286	1 340	13	91	13 %	30 %

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

Table 19. Limitations in trading capacity on interconnectors as enforced by neighbouring TSOs. The columns with average reductions shows the average NTC divided by maximum NTC.

Interconnectors/ corridors between internal areas	No of limited hours		No of days with limitation		Average reduction	
	Export/ Southbound	Import/ Northbound	Export/ Southbound	Import/ Northbound	Export/ Southbound	Import/ Northbound
SE1-SE2	-	-	-	-	-	-
SE2-SE3	-	-	-	-	-	-
SE3-SE4	-	-	-	-	-	-
SE1-FI	316	1 136	15	50	0 %	2 %
SE1-NO4	583	2 209	30	92	21 %	29 %
SE2-NO3	564	255	29	11	13 %	7 %
SE2-NO4	2 209	2 209	92	92	36 %	39 %
SE3-DK1	307	307	14	14	3 %	7 %
SE3-FI	0	0	0	0	0 %	0 %
SE3-NO1	518	1 954	23	82	1 %	7 %
SE4-DE	635	1 779	30	86	19 %	59 %
SE4-DK2	295	296	16	16	8 %	9 %
SE4-PL	134	1 759	11	80	4 %	48 %
SE4-LT	264	292	11	13	12 %	12 %

Table 20 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.

Table 20. 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.

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	524	24	24	1	1 %	0 %
SE2-SE3	2 209	0	92	0	11 %	0 %
SE3-SE4	2 209	136	92	7	13 %	6 %
SE1-FI	316	1 136	15	50	0 %	2 %
SE1-NO4	954	2 209	45	92	34 %	41 %
SE2-NO3	564	327	29	14	13 %	7 %
SE2-NO4	2 209	2 209	92	92	36 %	39 %
SE3-DK1	403	1 396	20	92	5 %	27 %
SE3-FI	7	7	1	1	0 %	0 %
SE3-NO1	1 542	1 954	92	82	23 %	11 %
SE4-DE	657	2 012	32	92	20 %	63 %
SE4-DK2	595	1 579	30	92	13 %	32 %
SE4-PL	173	2 086	15	92	5 %	58 %
SE4-LT	286	1 354	13	91	13 %	30 %

Detailed information for each limitation is provided in the attached tables E1 to E4 in appendix E 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 316 and 1 136 hours, respectively, on the interconnector between SE1 and FI, because failure on the interconnector, and because the NTC depends on forecasted transfer

between Ivalo – Varangerbotn. In total, the export and import on the interconnector have been reduced for 316 and 1 136 hours, respectively.

5.2.2 SE1-NO4, North Norway

Svenska kraftnät has reduced the export and import capacity for 732 and 732 hours, respectively, on the interconnector between SE1 and NO4, because of planned outage on the interconnector and planned outage near the interconnector. In total, the export and import on the interconnector have been reduced for 954 and 2 209 hours, respectively.

5.2.3 SE2-NO3, Central Norway

Svenska kraftnät has reduced the export and import capacity for 0 and 72 hours, respectively, on the interconnector between SE2 and NO3, because of thermal overload. In total, the export and import on the interconnector have been reduced for 564 and 327 hours, respectively.

5.2.4 SE2-NO4, North Norway

Svenska kraftnät has reduced the export and import capacity for 0 and 72 hours, respectively, on the interconnector between SE2 and NO4, because of thermal overload. 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 96 and 1 243 hours, respectively, on the interconnector between SE3 and DK1. The reasons for reductions set by Svenska kraftnät were congestion in the West Coast Corridor and planned outage near the interconnector. In total, the export and import on the interconnector have been reduced for 403 and 1 396 hours, respectively.

5.2.6 SE3-FI, Southern Finland

Svenska kraftnät has reduced the export and import capacity for 7 and 7 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 7 and 7 hours, respectively.

5.2.7 SE3-NO1, Southern Norway

Svenska kraftnät has reduced the export and import capacity for 1 507 and 278 hours, respectively, on the interconnector between SE3 and NO1. The reasons for reductions set by Svenska kraftnät were congestion in the West Coast Corridor, planned outage on the interconnector, and planned outage near the interconnector. In total, the export and import on the interconnector have been reduced for 1 542 and 1 954 hours, respectively.

5.2.8 SE4-DE, Germany

Svenska kraftnät has reduced the export and import capacity for 34 and 1 194 hours, respectively, on the interconnector between SE4 and DE. The reasons for reductions set by Svenska kraftnät were congestion in the West Coast Corridor and planned outage near the interconnector. In total, the export and import on the interconnector have been reduced for 657 and 2 012 hours, respectively.

5.2.9 SE4-DK2, Eastern Denmark

Svenska kraftnät has reduced the export and import capacity for 400 and 1 421 hours, respectively, on the interconnector between SE4 and DK2. The reasons for reductions set by Svenska kraftnät were congestion in the West Coast Corridor, planned outage on the interconnector, and planned outage near the interconnector. In total, the export and import on the interconnector have been reduced for 595 and 1 579 hours, respectively.

5.2.10 SE4-PL, Poland

Svenska kraftnät has reduced the export and import capacity for 39 and 1 225 hours, respectively, on the interconnector between SE4 and PL. The reasons for reductions set by Svenska kraftnät were congestion in the West Coast Corridor, planned outage on the interconnector, and planned outage near the interconnector. In total, the export and import on the interconnector have been reduced for 173 and 2 086 hours, respectively.

5.2.11 SE4-LT, Lithuania

Svenska kraftnät has reduced the export and import capacity for 286 and 1 340 hours, respectively, on the interconnector between SE4 and LT. The reasons for reductions set by Svenska kraftnät were congestion in the West Coast Corridor, planned outage on the interconnector, and planned outage near the interconnector. In total, the export and import on the interconnector have been reduced for 286 and 1 354 hours, respectively.

Appendix A –Explanation of Attachments

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

Table A1. Explanation of data in the attached spreadsheets.

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.

Appendix B – 2018 Q1

Tables B1 to B4 shows how of many hours the capacities have been reduced per type of reduction for each interconnector and corridor between internal areas for 2018 Q1. The reason codes are explained in the attached spreadsheet.

Table B1. 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	1126	1158	1263	1267	1421	1425	1433	1621	1622	1623	1624	1823	1824	2022	2023	2033	2034	2233	2522	2523	2534
SE1-SE2	684					83			1 392													
SE2-SE3	96							13		595					186		213			1 056		
SE3-SE4	1 239							4			120		44	2		156		96	2		40	456
SE1-FI	2 159																					
SE1-NO4	2 159																					
SE2-NO3	2 159																					
SE2-NO4	2 159																					
SE3-DK1	2 149						10															
SE3-FI	2 139		20																			
SE3-NO1	1 190											969										
SE4-DE	1 920			239																		
SE4-DK2	2 142	17																				
SE4-PL	2 159																					
SE4-LT	1 991				168																	

Table B2. 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	1263	1267	1425	1433	1624	2233	2424
SE1-SE2	2 159									
SE2-SE3	2 159									
SE3-SE4	2 159									
SE1-FI	2 159									
SE1-NO4	2 159									
SE2-NO3	2 159									
SE2-NO4	2 159									
SE3-DK1	1 249					10		900		
SE3-FI	2 139		20							
SE3-NO1	2 151						4		4	
SE4-DE	1 254			239				666		
SE4-DK2	1 151	14						994		
SE4-PL	1 316							843		
SE4-LT	1 140				168			842		9

Table B3. 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	1118	1125	1126	1157	1158	1267	1421	1425	1433	1443	1450	1550	1621	1622	1623	1624	1823	1824	1955	2022	2023
SE1-SE2	684							83						1 392								
SE2-SE3	96									13					595						186	
SE3-SE4	1 239									4						120		44	2			156
SE1-FI	2 153				6																	
SE1-NO4	1 434	612										28	24							61		
SE2-NO3	1 474	612										49	24									
SE2-NO4	1 503	612										44										
SE3-DK1	2 142		7						10													
SE3-FI	2 139					20																
SE3-NO1	1 213																946					
SE4-DE	1 794																					
SE4-DK2	1 157			960							42											
SE4-PL	2 087																					
SE4-LT	1 991						168															

	2033	2034	2233	2522	2523	2534	9999
SE1-SE2							
SE2-SE3	213			1 056			
SE3-SE4		96	2		40	456	
SE1-FI							
SE1-NO4							
SE2-NO3							
SE2-NO4							
SE3-DK1							
SE3-FI							
SE3-NO1							
SE4-DE							365
SE4-DK2							
SE4-PL							72
SE4-LT							

Table B4. 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.

	1010	1118	1125	1126	1157	1158	1267	1425	1433	1443	1445	1450	1624	1714	1955	1956	2233	2245	2424	9999
SE1-SE2	2 159																			
SE2-SE3	2 159																			
SE3-SE4	2 159																			
SE1-FI	2 153				6															
SE1-NO4	1 458	612										28			61					
SE2-NO3	2 159																			
SE2-NO4	1 458	612										28				61				
SE3-DK1	1 242		7					10					900							
SE3-FI	2 139					20														
SE3-NO1	471								4		15			1 658			3	8		
SE4-DE	450												287							1 422
SE4-DK2	578			734						34			813							
SE4-PL	60												352							1 747
SE4-LT	1 141						168						841						9	

Appendix C – 2018 Q2

Tables C1 to C4 shows how of many hours the capacities have been reduced per type of reduction for each interconnector and corridor between internal areas for 2018 Q2. The reason codes are explained in the attached spreadsheet.

Table C1. 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	1126	1263	1323	1415	1421	1422	1423	1425	1426	1431	1432	1433	1434	1456	1463	1533	1563	1621	1622	1623
SE1-SE2	1 591					43	162				96	155		18					119		
SE2-SE3	24					18	435					141	118	18			48			548	49
SE3-SE4	4	48		91				264					78	307			48				405
SE1-FI	2 141					40					3										
SE1-NO4	2 088										96										
SE2-NO3	2 169				13																
SE2-NO4	1 776														408						
SE3-DK1	2 078								11				71				24				
SE3-FI	2 184																				
SE3-NO1	849												48				24				
SE4-DE	1 051		816					12								120		185			
SE4-DK2	1 536	176						40		379				48							
SE4-PL	1 893							12		42			59	178							
SE4-LT	1 829							12		42			59	242							

	1624	1823	1933	2022	2023	2033	2215	2222	2223	2226	2233	2234	2523	2534
SE1-SE2														
SE2-SE3			6	122	7	646		4						
SE3-SE4		13							10			1	891	24
SE1-FI														
SE1-NO4														
SE2-NO3							2							
SE2-NO4														
SE3-DK1														
SE3-FI														
SE3-NO1	1 261										2			
SE4-DE														
SE4-DK2									2	3				
SE4-PL														
SE4-LT														

Table C2. 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	1263	1414	1415	1421	1422	1423	1425	1426	1431	1433	1434	1456	1463	1533	1563	1624	2214	2226	2233
SE1-SE2	2 184																				
SE2-SE3	2 184																				
SE3-SE4	2 184																				
SE1-FI	2 088										96										
SE1-NO4	2 080					5					99										
SE2-NO3	2 171				13																
SE2-NO4	1 776													408							
SE3-DK1	713						10	80	12			133				24		1 212			
SE3-FI	2 184																				
SE3-NO1	2 013			30			4					100				24			9		4
SE4-DE	467		816									26			120	24	185	546			
SE4-DK2	479	161						29		369		68	58			24		992		4	
SE4-PL	957											26				24		1 177			
SE4-LT	950											26				24		1 184			

Table C3. 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	1118	1126	1156	1158	1263	1323	1414	1415	1421	1422	1423	1425	1426	1431	1432	1433	1434	1443	1445	1447	1450	1456	1533	1621	1622
SE1-SE2	1 591									43	162				96	155		18							119	
SE2-SE3	24									18	435					141	118	18						48		548
SE3-SE4	4		48				91					264					78	307						48		
SE1-FI	2 133									40					11											
SE1-NO4	921	79																				1 184				
SE2-NO3	733	79		171					13												101	1 052				
SE2-NO4	766	79		17																		914	408			
SE3-DK1	2 078												11				71							24		
SE3-FI	2 171				13																					
SE3-NO1	676							84									48			230				24		
SE4-DE	904					264																				
SE4-DK2	1 073		1 008									22							77							
SE4-PL	1 852											11		42			59	178								
SE4-LT	1 823											11		42			59	242								

	1623	1624	1823	1915	1933	2022	2023	2033	2214	2215	2222	2223	2226	2233	2234	2245	2314	2347	2523	2534	9999
SE1-SE2																					
SE2-SE3	49				6	122	7	646			4										
SE3-SE4	405		13									10			1				891	24	
SE1-FI																					
SE1-NO4																					
SE2-NO3				32						2								1			
SE2-NO4																					
SE3-DK1																					
SE3-FI																					
SE3-NO1		1 116							1					2		2	1				
SE4-DE																					1 016
SE4-DK2												1	3								
SE4-PL																					42
SE4-LT																					7

Table C4. 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.

	1010	1118	1126	1158	1263	1414	1415	1421	1422	1423	1425	1426	1431	1433	1434	1443	1445	1446	1447	1450	1456	1533	1624	1714
SE1-SE2	2 184																							
SE2-SE3	2 184																							
SE3-SE4	2 184																							
SE1-FI	2 080												104											
SE1-NO4	1 055	79						5					99							946				
SE2-NO3	1 853						13												101	217				
SE2-NO4	895	79																		802	408			
SE3-DK1	721								10	80	12			133								24	1 204	
SE3-FI	1 514			13										657										
SE3-NO1	1 087					115			4					48			293	49				24		260
SE4-DE	185				264									17								24	343	
SE4-DK2	250		479							13		359		57	58	77						24	860	
SE4-PL														2									465	
SE4-LT	957													26								24	1 170	

	1914	1945	2214	2226	2233	2245	2246	2314	9999
SE1-SE2									
SE2-SE3									
SE3-SE4									
SE1-FI									
SE1-NO4									
SE2-NO3									
SE2-NO4									
SE3-DK1									
SE3-FI									
SE3-NO1	280	6	8		4	1	3	2	
SE4-DE									1 351
SE4-DK2				7					
SE4-PL									1 717
SE4-LT									7

Appendix D – 2018 Q3

Tables D1 to D4 shows how of many hours the capacities have been reduced per type of reduction for each interconnector and corridor between internal areas for 2018 Q3. The reason codes are explained in the attached spreadsheet.

Table D1. 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	1121	1125	1126	1133	1156	1158	1162	1163	1167	1226	1357	1363	1422	1423	1431	1433	1434	1462
SE1-SE2	1 825		203														11			
SE2-SE3						24												1 152		
SE3-SE4						24										438		254		
SE1-FI	1 781												410							
SE1-NO4	2 208																			
SE2-NO3	2 208																			
SE2-NO4	2 149						59													
SE3-DK1	1 946			168		72												22		
SE3-FI	2 091							69												
SE3-NO1	1 258	31													16					
SE4-DE	2 076									18				14						
SE4-DK2	1 783				359							24							18	
SE4-PL	1 941								164											3
SE4-LT	1 104										768									

	1467	1533	1622	1623	1624	1631	2033	2214	2221	2522	2523	2533	2534	2557	2558
SE1-SE2						168			1						
SE2-SE3		456	120				72			144		240			
SE3-SE4		96		192							1 197	7			
SE1-FI														17	
SE1-NO4															
SE2-NO3															
SE2-NO4															
SE3-DK1															
SE3-FI															48
SE3-NO1					901			2							
SE4-DE													100		
SE4-DK2					24										
SE4-PL													100		
SE4-LT	336														

Table D2. 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	1133	1156	1158	1162	1163	1167	1355	1356	1423	1431	1433	1434	1462	1467	1623	1624	1631	2214	2233	2534
SE1-SE2	2 208																							
SE2-SE3	2 208																							
SE3-SE4	2 208																							
SE1-FI	2 208																							
SE1-NO4	1 993										198	3		11							3			
SE2-NO3	2 208																							
SE2-NO4	1 957					59						192												
SE3-DK1	1 109		168		72														15	844				
SE3-FI	1 880						69						48		210								1	
SE3-NO1	2 119	35													50							4		
SE4-DE	1 345								18											845				
SE4-DK2	934			110												251			17	800				96
SE4-PL	1 257							164									3			784				
SE4-LT	428									768								336		676				

Table D3. 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	1121	1125	1126	1133	1145	1156	1158	1162	1225	1226	1357	1358	1363	1422	1423	1431	1433	1434	1442	1443	1445	1447	1450
SE1-SE2	1 825		203															11							
SE2-SE3						24													1 152						
SE3-SE4						24											438		254						
SE1-FI	1 781												410												
SE1-NO4	481																							78	1 649
SE2-NO3	481																							138	1 539
SE2-NO4	743							119																353	993
SE3-DK1	1 511			209							436								22		29				
SE3-FI	1 781								87					16					276						
SE3-NO1	1 094	57					33									16							119		
SE4-DE	1 062														14										
SE4-DK2	174				888							1 097								18		5			
SE4-PL	1 920									9															
SE4-LT	1 104																								

	1462	1466	1533	1545	1622	1623	1624	1631	2033	2214	2221	2226	2314	2522	2523	2533	2534	2557	2558	9942	9999
SE1-SE2								168			1										
SE2-SE3			456		120				72					144		240					
SE3-SE4			96			192									1 197	7					
SE1-FI																		17			
SE1-NO4																					
SE2-NO3		50																			
SE2-NO4																					
SE3-DK1																				1	
SE3-FI																			48		
SE3-NO1				39			844			1			5								
SE4-DE																	100				1 032
SE4-DK2							24					2									
SE4-PL	3																100				176
SE4-LT																					1 104

Table D4. 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.

	1010	1114	1125	1126	1156	1158	1225	1226	1355	1356	1358	1423	1433	1434	1442	1443	1445	1446	1447	1450	1462	1545	1623	1624
SE1-SE2	2 208																							
SE2-SE3	2 208																							
SE3-SE4	2 208																							
SE1-FI	2 208																							
SE1-NO4	559								78	2									78	1 488				
SE2-NO3	1 575																			633				
SE2-NO4	914				119					99									144	932				
SE3-DK1	767		213				403								14								15	795
SE3-FI	1 582					87					16	48	474											
SE3-NO1	1 406	59											50				506	24				151		
SE4-DE	641																							606
SE4-DK2	50			622				546						251		9							9	623
SE4-PL																					3			374
SE4-LT	428																							676

	1631	2214	2226	2233	2245	2314	2534	9942	9999
SE1-SE2									
SE2-SE3									
SE3-SE4									
SE1-FI									
SE1-NO4	3								
SE2-NO3									
SE2-NO4									
SE3-DK1								1	
SE3-FI				1					
SE3-NO1		4			2	6			
SE4-DE									961
SE4-DK2			2				96		
SE4-PL									1 831
SE4-LT									1 104

Appendix E – 2018 Q4

Tables E1 to E4 shows how of many hours the capacities have been reduced per type of reduction for each interconnector and corridor between internal areas for 2018 Q4. The reason codes are explained in the attached spreadsheet.

Table E1. 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	1155	1158	1167	1257	1421	1422	1423	1426	1431	1432	1433	1434	1455	1462	1531	1621	1622	1623	1624	1822	2214
SE1-SE2	1 831						24	11	11			7	133						192					
SE2-SE3									112				206	96						367			6	
SE3-SE4	212									16				118	24						66			
SE1-FI	2 185						24																	
SE1-NO4	1 477			234				90				282				102		24						
SE2-NO3	2 209																							
SE2-NO4	2 209																							
SE3-DK1	2 113													96										
SE3-FI	2 202				7																			
SE3-NO1	986									11				158								1 052		2
SE4-DE	2 182									11				11	5									
SE4-DK2	1 814	48	37							22	113			173										
SE4-PL	2 170									11				11	5		12							
SE4-LT	1 923					264				11				11										

	2222	2233	2522	2523	2533
SE1-SE2					
SE2-SE3	4		1 384		34
SE3-SE4				1 773	
SE1-FI					
SE1-NO4					
SE2-NO3					
SE2-NO4					
SE3-DK1					
SE3-FI					
SE3-NO1					
SE4-DE					
SE4-DK2		2			
SE4-PL					
SE4-LT					

Table E2. 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.

	1 010	1125	1126	1155	1158	1167	1257	1421	1423	1426	1431	1433	1434	1455	1462	1531	1624	2224	2226	2233	2234
SE1-SE2	2 185						24														
SE2-SE3	2 209																				
SE3-SE4	2 080								11			118									
SE1-FI	2 185						24														
SE1-NO4	1 477			234				90			282			102		24					
SE2-NO3	2 209																				
SE2-NO4	2 209																				
SE3-DK1	1 154								11			49					995				
SE3-FI	2 202				7																
SE3-NO1	2 043								11			149								6	
SE4-DE	1 268								11			11					919				
SE4-DK2	840	40	44						11	83		151	5				1 031	1	1		2
SE4-PL	1 225								11			11			12		950				
SE4-LT	1 033					264			11			11					890				

Table E3. 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	1118	1125	1126	1155	1158	1225	1226	1257	1421	1422	1423	1426	1431	1432	1433	1434	1443	1445	1447	1450	1455	1462	1531
SE1-SE2	1 831								24	11	11			7	133									
SE2-SE3											112				206	96								
SE3-SE4	212											16				118	24							
SE1-FI	2 185								24															
SE1-NO4	1 254	5			235					90				282						199	19	101		24
SE2-NO3	1 627	5			118														260	179	19			
SE2-NO4	1 662	5			354															188				
SE3-DK1	1 806		43				264									96								
SE3-FI	2 202					7																		
SE3-NO1	986											11				158								
SE4-DE	1 608											11				11	5							
SE4-DK2	1 619		48	233				18				22	113			143		8						
SE4-PL	2 036											11				11	5						12	
SE4-LT	1 923											11				11								

	1621	1622	1623	1624	1822	2214	2222	2226	2233	2347	2522	2523	2533	9999
SE1-SE2	192													
SE2-SE3		367			6		4				1 384		34	
SE3-SE4			66									1 773		
SE1-FI														
SE1-NO4														
SE2-NO3										1				
SE2-NO4														
SE3-DK1														
SE3-FI														
SE3-NO1				1 052		2								
SE4-DE														574
SE4-DK2								3	2					
SE4-PL														134
SE4-LT														264

Table E4. 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.

	1010	1118	1125	1126	1155	1158	1225	1226	1257	1421	1423	1426	1431	1433	1434	1445	1447	1450	1455	1462	1531	1624	1714
SE1-SE2	2 185								24														
SE2-SE3	2 209																						
SE3-SE4	2 080										11			118									
SE1-FI	2 185								24														
SE1-NO4	1 441	5			235					90			282				11	19	101		24		
SE2-NO3	2 074																135						
SE2-NO4	2 016	5															188						
SE3-DK1	963		19				243				11			49								924	
SE3-FI	2 202					7																	
SE3-NO1	1 380										11			149		616							48
SE4-DE	390										8			5								267	
SE4-DK2	687		40	218				18			11	83		151	5							988	
SE4-PL	185										11			11						12		603	
SE4-LT	1 024										11			11								890	

	2224	2226	2233	2234	2355	9999
SE1-SE2						
SE2-SE3						
SE3-SE4						
SE1-FI						
SE1-NO4					1	
SE2-NO3						
SE2-NO4						
SE3-DK1						
SE3-FI						
SE3-NO1			5			
SE4-DE						1 539
SE4-DK2	1	5		2		
SE4-PL						1 387
SE4-LT						273