SVENSKA KRAFTNÄT

Ärendenr: 2020/226 Version: 1.0

Swedish Interconnectors

COMP Case No 39351

Monitoring Report No 16

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 continuously monitoring the development of the European electricity market legislation and how the development will affect our Commitment.

The European Network codes and the Clean Energy for All Europeans package will have an impact on the management of the Swedish interconnectors. However, the major impact is expected after the commitments expires. In the shorter term, the implementation of the Nordic capacity calculation methodology according to the Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a Guideline on Capacity Allocation and Congestion Management changes the capacity allocation on the Swedish interconnectors. In addition, the allocated transmission capacities of interconnectors will be affected by the provisions regarding the minimum levels of available capacity for cross-zonal trade according to article 16 Regulation (EU) 2019/943 of the European parliament and of the council of 5 June 2019 on the internal market for electricity. However, the Swedish national regulatory authority has approved Svenska kraftnät´s application for a derogation for one year from complying with the minimum levels of available capacity for cross-zonal trade.

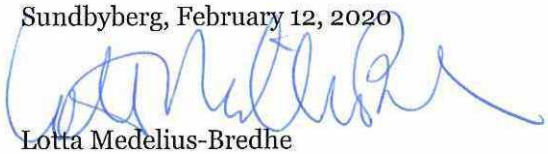
This report is prepared in good faith and aims at providing any information the Commission may need in order to judge whether Svenska kraftnät is proceeding in accordance with the Commitments. Additional information can be provided to the Commission upon request.

In accordance with what was stated in last (fifthteenth) monitoring report this sixteenth monitoring report has been submitted by 14 February 2020 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 (seventeenth) monitoring report will be submitted by 12th of June 2020 at latest, covering 1st of January to 19th of April 2020.

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

Sundbyberg, February 12, 2020



Lotta Medelius-Bredhe

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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 2019

This section describes operational experience and measures regarding allocation of trading capacity in the period January 1 to March 31, 2019.

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	46.04	107.67	2.90
SE2	46.04	107.67	2.90
SE3	46.47	109.45	2.90
SE4	46.87	109.45	2.90
DK1	42.22	109.45	-48.29
DK2	43.74	109.45	-48.29
FI	47.55	109.45	2.90
NO1	48.12	109.45	37.12
NO3	46.33	68.80	30.19
NO4	45.90	68.00	30.19
LT	47.85	109.45	1.17

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	796	388	0	56	123	272	79
SE2	0	-	0	0	796	388	0	56	123	272	79
SE3	211	211	-	0	800	388	0	69	323	462	79
SE4	291	291	168	-	874	388	104	227	381	515	84
DK1	461	461	346	292	-	61	291	283	541	667	296
DK2	464	464	379	273	546	-	315	340	536	669	285
FI	585	585	469	424	1 054	765	-	520	670	793	105
NO1	969	969	758	746	1 115	794	751	-	981	1 121	770
NO3	383	383	383	383	924	559	382	58	-	264	446
NO4	383	383	383	383	890	559	382	57	0	-	446
LT	629	629	562	448	1 125	789	173	608	695	819	-

Summary of table 1 and 2:

- NO1 had the highest average price, followed by LT, FI, SE4, SE3, NO3, SE1, SE2, NO4, DK2, 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	298	0	16	0	2 %	0 %
SE2-SE3	2 159	0	90	0	8 %	0 %
SE3-SE4	1 819	118	85	5	4 %	5 %
SE1-FI	907	1 158	39	49	0 %	1 %
SE1-NO4	0	9	0	2	0 %	0 %
SE2-NO3	0	0	0	0	0 %	0 %
SE2-NO4	617	617	27	27	29 %	29 %
SE3-DK1	159	1 345	8	89	4 %	25 %
SE3-FI	10	10	2	2	0 %	0 %
SE3-NO1	1 433	465	89	23	23 %	5 %
SE4-DE	0	1 207	0	88	0 %	20 %
SE4-DK2	363	1 455	17	89	9 %	28 %
SE4-PL	12	1 236	1	88	1 %	22 %
SE4-LT	0	1 224	0	88	0 %	21 %

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	901	1 158	38	49	0 %	1 %
SE1-NO4	804	2 159	34	90	22 %	32 %
SE2-NO3	1 163	288	49	12	18 %	2 %
SE2-NO4	2 159	2 159	90	90	48 %	56 %
SE3-DK1	24	24	1	1	1 %	1 %
SE3-FI	32	32	2	2	1 %	1 %
SE3-NO1	401	2 159	25	90	1 %	2 %
SE4-DE	25	1 621	2	85	0 %	56 %
SE4-DK2	166	167	11	11	6 %	6 %
SE4-PL	164	1 318	13	71	4 %	27 %
SE4-LT	0	0	0	0	0 %	0 %

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	298	0	16	0	2 %	0 %
SE2-SE3	2 159	0	90	0	8 %	0 %
SE3-SE4	1 819	118	85	5	4 %	5 %
SE1-FI	931	1 158	40	49	0 %	0 %
SE1-NO4	804	2 159	34	90	22 %	32 %
SE2-NO3	1 163	288	49	12	18 %	2 %
SE2-NO4	2 159	2 159	90	90	49 %	56 %
SE3-DK1	159	1 345	8	89	4 %	25 %
SE3-FI	42	42	4	4	2 %	2 %
SE3-NO1	1 434	2 159	89	90	23 %	6 %
SE4-DE	25	1 952	2	89	0 %	62 %
SE4-DK2	396	1 478	21	89	10 %	29 %
SE4-PL	164	1 954	13	90	4 %	42 %
SE4-LT	0	1 224	0	88	0 %	21 %

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 907 and 1 158 hours, respectively, on the interconnector between SE1 and FI, because the NTC depends on forecasted transfer between Ivalo – Varangerbotn, and because of

planned outage near the interconnector. In total, the export and import on the interconnector have been reduced for 931 and 1 158 hours, respectively.

2.2.2 SE1-NO4, North Norway

Svenska kraftnät has reduced the export and import capacity for 0 and 9 hours, respectively, on the interconnector between SE1 and NO4. The reason for reductions set by Svenska kraftnät was planned outage near the interconnector. In total, the export and import on the interconnector have been reduced for 804 and 2 159 hours, respectively.

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 1 163 and 288 hours, respectively.

2.2.4 SE2-NO4, North Norway

Svenska kraftnät has reduced the export and import capacity for 617 and 617 hours, respectively, on the interconnector between SE1 and NO4. The reason for reductions set by Svenska kraftnät was planned outage of the interconnector. In total, the export and import on the interconnector have been reduced for all hours, respectively.

2.2.5 SE3-DK1, Western Denmark

Svenska kraftnät has reduced the export and import capacity for 159 and 1 345 hours, respectively, on the interconnector between SE3 and DK1. The reason for reductions set by Svenska kraftnät was congestion in the West Coast Corridor, planned outage near the interconnector, and failure on the interconnector. In total, the export and import on the interconnector have been reduced for 159 and 1 345 hours, respectively.

2.2.6 SE3-FI, Southern Finland

Svenska kraftnät has reduced the export and import capacity for 10 and 10 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 42 and 42 hours, respectively.

2.2.7 SE3-NO1, Southern Norway

Svenska kraftnät has reduced the export and import capacity for 1 433 and 465 hours, respectively, on the interconnector between SE3 and NO1. The reason for export reductions set by Svenska kraftnät was congestion in the West Coast Corridor, and planed outage near the interconnector. In total, the export and import on the interconnector have been reduced for 1 434 and 2 159 hours, respectively.

2.2.8 SE4-DE, Germany

Svenska kraftnät has reduced the export and import capacity for 0 and 1 207 hours, respectively, on the interconnector between SE4 and DE. 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 25 and 1 952 hours, respectively.

2.2.9 SE4-DK2, Eastern Denmark

Svenska kraftnät has reduced the export and import capacity for 363 and 1 455 hours, respectively, on the interconnector between SE4 and DK2. The reason for reductions set by Svenska kraftnät was congestion in the West Coast Corridor, failure on the interconnector, planned outage on the interconnector, and planned outage near interconnector. In total, the export and import on the interconnector have been reduced for 396 and 1 478 hours, respectively.

2.2.10 SE4-PL, Poland

Svenska kraftnät has reduced the export and import capacity for 12 and 1 236 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 planned outage on the interconnector. In total, the export and import on the interconnector have been reduced for 164 and 1 954 hours, respectively.

2.2.11 SE4-LT, Lithuania

Svenska kraftnät has reduced the export and import capacity for 0 and 1 224 hours, respectively, on the interconnector between SE4 and LT. 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 0 and 1 224 hours, respectively.

3 Period April 1 – June 30, Q2 2019

This section describes operational experience and measures regarding allocation of trading capacity in the period April 1 to June 30, 2019.

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	33,01	60,70	0,12
SE2	33,01	60,70	0,12
SE3	33,01	60,70	0,12
SE4	34,57	72,94	0,12
DK1	36,47	76,50	-19,93
DK2	37,23	76,50	-19,93
FI	37,36	199,91	0,12
NO1	37,00	58,16	5,86
NO3	35,36	60,70	1,38
NO4	35,32	60,70	1,38
LT	44,09	200,03	0,12

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	359	178	0	75	151	223	10
SE2	0	-	0	0	359	178	0	75	151	223	10
SE3	3	3	-	0	359	178	0	75	154	226	10
SE4	411	411	411	-	439	178	199	445	430	454	17
DK1	1 083	1 083	1 083	894	-	52	859	705	959	981	592
DK2	1 139	1 139	1 139	916	319	-	870	784	1 003	1 023	592
FI	527	527	527	464	728	586	-	529	571	598	20
NO1	1 006	1 006	1 003	925	790	667	944	-	923	1 003	721
NO3	546	546	546	542	690	533	522	160	-	103	463
NO4	543	543	543	542	692	537	519	160	14	-	463
LT	1 030	1 030	1 030	939	1 117	1 014	687	1 017	1 018	1 035	-

Summary of table 6 and 7:

- LT had the highest average price, followed by FI, DK2, NO1, DK1, NO3, NO4, SE4, 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/ Southbound	Import/ Northbound	Export/ Southbound	Import/ Northbound	Export/ Southbound	Import/ Northbound
SE1-SE2	1 878	0	79	0	10 %	0 %
SE2-SE3	2 184	0	91	0	12 %	0 %
SE3-SE4	2 184	32	91	3	18 %	1 %
SE1-FI	123	1 596	9	68	1 %	4 %
SE1-NO4	111	212	5	12	5 %	7 %
SE2-NO3	1 613	0	68	0	41 %	0 %
SE2-NO4	98	1 727	5	73	4 %	26 %
SE3-DK1	527	1 835	25	91	23 %	58 %
SE3-FI	12	12	2	2	0 %	0 %
SE3-NO1	2 073	855	91	40	56 %	20 %
SE4-DE	411	1 804	18	91	10 %	53 %
SE4-DK2	554	1 838	25	91	16 %	56 %
SE4-PL	402	1 817	20	91	16 %	56 %
SE4-LT	284	1 808	13	91	10 %	53 %

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	30	1 578	2	67	-2 %	2 %
SE1-NO4	1 443	2 184	62	91	30 %	28 %
SE2-NO3	1 905	671	80	29	42 %	13 %
SE2-NO4	2 184	2 184	91	91	86 %	90 %
SE3-DK1	557	557	25	25	24 %	24 %
SE3-FI	531	208	24	10	14 %	9 %
SE3-NO1	1 065	1 533	46	66	5 %	8 %
SE4-DE	661	1 663	29	88	8 %	45 %
SE4-DK2	254	249	14	14	9 %	9 %
SE4-PL	187	1 290	16	71	5 %	34 %
SE4-LT	195	195	20	20	2 %	2 %

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	1 878	0	79	0	10 %	0 %
SE2-SE3	2 184	0	91	0	12 %	0 %
SE3-SE4	2 184	32	91	3	18 %	1 %
SE1-FI	123	1 596	9	68	1 %	4 %
SE1-NO4	1 443	2 184	62	91	33 %	32 %
SE2-NO3	2 154	671	90	29	54 %	13 %
SE2-NO4	2 184	2 184	91	91	86 %	90 %
SE3-DK1	592	1 860	29	91	25 %	60 %
SE3-FI	543	220	26	12	14 %	10 %
SE3-NO1	2 184	1 764	91	76	57 %	25 %
SE4-DE	1 072	2 080	47	91	18 %	68 %
SE4-DK2	607	1 890	29	91	19 %	59 %
SE4-PL	488	2 132	28	91	18 %	69 %
SE4-LT	479	1 839	33	91	12 %	54 %

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 123 and 1 596 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 and close to the interconnector. In total, the export and import on the interconnector have been reduced for 123 and 1 596 hours, respectively.

3.2.2 SE1-NO4, North Norway

Svenska kraftnät has reduced the export and import capacity for 111 and 212 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 for 1 443 and 2 184 hours, respectively.

3.2.3 SE2-NO3, Central Norway

Svenska kraftnät has reduced the export and import capacity for 1 613 and 0 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 2 154 and 671 hours, respectively.

3.2.4 SE2-NO4, North Norway

Svenska kraftnät has reduced the export and import capacity for 98 and 1 727 hours, respectively, on the interconnector between SE2 and NO4, because of maintenance close to 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 527 and 1 835 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 maintenance on and near the interconnector, and disturbance on the interconnector. In total, the export and import on the interconnector have been reduced for 592 and 1 860 hours, respectively.

3.2.6 SE3-FI, Southern Finland

Svenska kraftnät has reduced the export and import capacity for 12 and 12 hours, respectively, on the interconnector between SE3 and FI. The reasons for reductions set by Svenska kraftnät were planned maintenance on and near the interconnector. In total, the export and import on the interconnector have been reduced for 543 and 220 hours, respectively.

3.2.7 SE3-NO1, Southern Norway

Svenska kraftnät has reduced the export and import capacity for 2 073 and 855 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 on and close to the interconnector. In total, the export and import on the interconnector have been reduced for 2 184 and 1 764 hours, respectively.

3.2.8 SE4-DE, Germany

Svenska kraftnät has reduced the export and import capacity for 411 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 total, the export and import on the interconnector have been reduced for 1 072 and 2 080 hours, respectively.

3.2.9 SE4-DK2, Eastern Denmark

Svenska kraftnät has reduced the export and import capacity for 554 and 1 838 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 607 and 1 890 hours, respectively.

3.2.10 SE4-PL, Poland

Svenska kraftnät has reduced the export and import capacity for 402 and 1 817 hours, respectively, on the interconnector between SE4 and PL. The reason for reductions set by Svenska kraftnät was congestion in the West Coast Corridor, maintenance on and close to the interconnector, and disturbance on the interconnector. In total, the export and import on the interconnector have been reduced for 488 and 2 132 hours, respectively.

3.2.11 SE4-LT, Lithuania

Svenska kraftnät has reduced the export and import capacity for 284 and 1 808 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 479 and 1 839 hours, respectively.

4 Period July 1 – September 30, Q3 2019

This section describes operational experience and measures regarding allocation of trading capacity in the period July 1 to September 30, 2019.

In the period, totally 2 209 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	35,30	66,73	6,56
SE2	35,31	66,73	6,56
SE3	35,62	69,75	6,56
SE4	37,52	72,28	6,56
DK1	37,38	80,01	-35,75
DK2	38,62	80,01	0,04
FI	47,80	199,98	6,56
NO1	33,23	41,88	6,56
NO3	34,81	66,73	6,56
NO4	34,61	52,79	6,56
LT	49,04	199,95	6,56

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	506	45	0	1 153	586	746	0
SE2	2	-	0	0	506	45	0	1 153	587	748	0
SE3	103	101	-	0	508	45	0	1 153	641	775	0
SE4	503	501	447	-	522	45	29	1 291	870	931	3
DK1	903	901	857	735	-	30	320	1 284	1 073	1 103	255
DK2	919	917	874	744	509	-	322	1 470	1 108	1 144	257
FI	1 361	1 360	1 353	1 267	1 446	1 236	-	1 639	1 459	1 457	44
NO1	73	71	42	42	273	46	38	-	290	345	38
NO3	47	46	46	46	520	91	45	1 086	-	289	45
NO4	54	54	54	54	532	99	53	1 103	75	-	53
LT	1 410	1 409	1 404	1 329	1 529	1 333	298	1 670	1 503	1 503	-

Summary of table 11 and 12:

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

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	1 079	21	49	4	9 %	1 %
SE2-SE3	2 208	0	92	0	22 %	0 %
SE3-SE4	2 208	605	92	28	23 %	27 %
SE1-FI	396	2 072	36	87	-2 %	6 %
SE1-NO4	18	1 029	1	54	1 %	6 %
SE2-NO3	18	0	1	0	0 %	0 %
SE2-NO4	153	2 208	14	92	4 %	32 %
SE3-DK1	1 283	1 282	55	73	30 %	27 %
SE3-FI	18	120	1	6	1 %	5 %
SE3-NO1	1 488	1 335	83	58	28 %	36 %
SE4-DE	155	676	10	59	5 %	14 %
SE4-DK2	715	1 233	33	72	14 %	25 %
SE4-PL	1 077	1 535	49	86	48 %	57 %
SE4-LT	373	863	19	63	14 %	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 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	127	2 072	7	87	-3 %	5 %
SE1-NO4	1 162	2 208	59	92	37 %	39 %
SE2-NO3	1 248	150	60	8	19 %	1 %
SE2-NO4	2 208	2 208	92	92	37 %	52 %
SE3-DK1	719	719	33	33	17 %	16 %
SE3-FI	114	197	5	9	4 %	7 %
SE3-NO1	1 286	1 652	55	70	9 %	20 %
SE4-DE	631	1 396	28	74	7 %	38 %
SE4-DK2	104	104	5	5	1 %	2 %
SE4-PL	1 001	1 606	46	80	44 %	61 %
SE4-LT	317	381	23	26	10 %	11 %

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	1 079	21	49	4	9 %	1 %
SE2-SE3	2 208	0	92	0	22 %	0 %
SE3-SE4	2 208	605	92	28	23 %	27 %
SE1-FI	514	2 072	40	87	-1 %	6 %
SE1-NO4	1 162	2 208	59	92	37 %	40 %
SE2-NO3	1 248	150	60	8	20 %	1 %
SE2-NO4	2 208	2 208	92	92	37 %	54 %
SE3-DK1	1 294	1 283	57	73	30 %	27 %
SE3-FI	114	198	5	9	4 %	8 %
SE3-NO1	1 902	1 693	88	72	30 %	39 %
SE4-DE	723	1 708	34	87	10 %	45 %
SE4-DK2	715	1 233	33	72	14 %	25 %
SE4-PL	1 135	1 931	54	89	49 %	69 %
SE4-LT	475	991	32	68	15 %	24 %

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 396 and 1 608 hours, respectively, on the interconnector between SE1 and FI, because of thermal overload, planned outage near 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 514 and 2 072 hours, respectively.

4.2.2 SE1-NO4, North Norway

Svenska kraftnät has reduced the export and import capacity for 18 and 1 029 hours, respectively, on the interconnector between SE1 and NO4, because of thermal overload, planned outage on the interconnector, and planned outage near the interconnector. In total, the export and import on the interconnector have been reduced for 1 162 and 2 208 hours, respectively.

4.2.3 SE2-NO3, Central Norway

Svenska kraftnät has reduced the export and import capacity for 18 and 0 hours, respectively, on the interconnector between SE2 and NO3, because of planned outage near the interconnector. In total, the export and import on the interconnector have been reduced for 1 248 and 150 hours, respectively.

4.2.4 SE2-NO4, North Norway

Svenska kraftnät has reduced the export and import capacity for 153 and 2 208 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 1 283 and 1 282 hours, respectively, on the interconnector between SE3 and DK1. 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 1 294 and 1 283 hours, respectively.

4.2.6 SE3-FI, Southern Finland

Svenska kraftnät has reduced the export and import capacity for 18 and 120 hours, respectively, on the interconnector between SE3 and FI. The reasons for reductions set by Svenska kraftnät were planned maintenance on the interconnector, and outage near the interconnector. In total, the export and import on the interconnector have been reduced for 114 and 198 hours, respectively.

4.2.7 SE3-NO1, Southern Norway

Svenska kraftnät has reduced the export and import capacity for 1 488 and 1 335 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 1 902 and 1 693 hours, respectively.

4.2.8 SE4-DE, Germany

Svenska kraftnät has reduced the export and import capacity for 155 and 676 hours, respectively, on the interconnector between SE4 and DE. 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 723 and 1 708 hours, respectively.

4.2.9 SE4-DK2, Eastern Denmark

Svenska kraftnät has reduced the export and import capacity for 715 and 1 233 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 planned outage near the interconnector. In total, the export and import on the interconnector have been reduced for 715 and 1 233 hours, respectively.

4.2.10 SE4-PL, Poland

Svenska kraftnät has reduced the export and import capacity for 1 077 and 1 535 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 disturbance on the interconnector, and planned outage near the interconnector. In total, the export and import on the interconnector have been reduced for 1 135 and 1 931 hours, respectively.

4.2.11 SE4-LT, Lithuania

Svenska kraftnät has reduced the export and import capacity for 373 and 863 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 on and near the interconnector. In total, the export and import on the interconnector have been reduced for 475 and 991 hours, respectively.

5 Period October 1 – December 31, Q4 2019

This section describes operational experience and measures regarding allocation of trading capacity in the period October 1 to December 31, 2019.

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	37,54	80,75	1,40
SE2	37,54	80,75	1,40
SE3	38,47	87,12	1,40
SE4	40,35	87,12	1,40
DK1	37,98	87,12	-16,09
DK2	39,82	87,12	-16,09
FI	43,46	104,04	1,40
NO1	38,97	84,33	30,04
NO3	37,80	80,75	3,93
NO4	37,54	80,75	3,93
LT	43,53	104,04	1,40

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	1 239	692	0	159	67	211	11
SE2	0	-	0	0	1 239	692	0	159	67	211	11
SE3	333	333	-	0	1 244	692	0	221	369	497	11
SE4	623	623	430	-	1 340	692	136	595	640	701	15
DK1	798	798	630	359	-	80	343	735	813	846	268
DK2	765	765	617	290	667	-	303	754	780	817	216
FI	1 042	1 042	895	748	1 804	1 407	-	965	1 044	1 077	206
NO1	1 479	1 479	1 230	1 210	1 552	1 233	1 187	-	1 457	1 593	1 185
NO3	169	169	169	159	1 289	794	154	185	-	203	154
NO4	148	148	148	138	1 275	784	134	180	0	-	134
LT	1 026	1 026	908	723	1 845	1 390	231	974	1 025	1 052	-

Summary of table 16 and 17:

- LT had the highest average price, followed by FI, SE4, DK2, NO1, SE3, DK1, NO3, SE1, SE2, and NO4.
- 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/ Southbound	Import/ Northbound	Export/ Southbound	Import/ Northbound	Export/ Southbound	Import/ Northbound
SE1-SE2	617	0	26	0	5 %	0 %
SE2-SE3	2 209	0	92	0	15 %	0 %
SE3-SE4	2 209	132	92	6	15 %	6 %
SE1-FI	506	1 642	23	72	4 %	7 %
SE1-NO4	91	92	4	4	4 %	4 %
SE2-NO3	576	0	24	0	16 %	0 %
SE2-NO4	0	406	0	17	0 %	5 %
SE3-DK1	1 164	1 370	50	81	31 %	33 %
SE3-FI	41	834	2	36	0 %	38 %
SE3-NO1	1 769	1 357	86	58	25 %	14 %
SE4-DE	61	831	3	67	2 %	15 %
SE4-DK2	90	868	6	70	2 %	16 %
SE4-PL	40	817	3	68	1 %	15 %
SE4-LT	36	813	2	67	1 %	15 %

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/ 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	366	1 583	18	71	0 %	2 %
SE1-NO4	635	2 209	31	92	18 %	20 %
SE2-NO3	639	0	31	0	8 %	0 %
SE2-NO4	2 209	2 209	92	92	27 %	43 %
SE3-DK1	869	869	37	37	23 %	23 %
SE3-FI	70	70	3	3	1 %	1 %
SE3-NO1	1 554	2 178	66	91	14 %	15 %
SE4-DE	660	1 625	40	84	23 %	58 %
SE4-DK2	168	282	10	16	6 %	7 %
SE4-PL	139	803	17	56	3 %	18 %
SE4-LT	0	0	0	0	0 %	0 %

Table 20 below summarises the time during which capacities on interconnectors and corridors between internal areas has 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	617	0	26	0	5 %	0 %
SE2-SE3	2 209	0	92	0	15 %	0 %
SE3-SE4	2 209	132	92	6	15 %	6 %
SE1-FI	506	1 652	23	73	4 %	7 %
SE1-NO4	635	2 209	31	92	18 %	20 %
SE2-NO3	730	0	34	0	18 %	0 %
SE2-NO4	2 209	2 209	92	92	27 %	43 %
SE3-DK1	1 221	1 414	53	82	32 %	34 %
SE3-FI	111	834	5	36	1 %	38 %
SE3-NO1	1 829	2 178	86	91	28 %	20 %
SE4-DE	697	1 870	42	89	25 %	63 %
SE4-DK2	247	1 107	15	75	7 %	22 %
SE4-PL	162	1 482	18	91	5 %	30 %
SE4-LT	36	813	2	67	1 %	15 %

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 506 and 1 642 hours, respectively, on the interconnector between SE1 and FI, because of planned outage on the interconnector, planned outage near 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 506 and 1 652 hours, respectively.

5.2.2 SE1-NO4, North Norway

Svenska kraftnät has reduced the export and import capacity for 91 and 92 hours, respectively, on the interconnector between SE1 and NO4, because of planned outage near the interconnector. In total, the export and import on the interconnector have been reduced for 635 and 2 209 hours, respectively.

5.2.3 SE2-NO3, Central Norway

Svenska kraftnät has reduced the export and import capacity for 576 and 0 hours, respectively, on the interconnector between SE2 and NO3, because of planned outage near the interconnector. In total, the export and import on the interconnector have been reduced for 730 and 0 hours, respectively.

5.2.4 SE2-NO4, North Norway

Svenska kraftnät has reduced the export and import capacity for 0 and 406 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 1 164 and 1 370 hours, respectively, on the interconnector between SE3 and DK1. The reasons for reductions set by Svenska kraftnät were congestion in the West Coast Corridor, planned outage on the interconnector, planned outage near the interconnector, and failure on the interconnector. In total, the export and import on the interconnector have been reduced for 1 221 and 1 414 hours, respectively.

5.2.6 SE3-FI, Southern Finland

Svenska kraftnät has reduced the export and import capacity for 41 and 834 hours, respectively, on the interconnector between SE3 and FI. The reason for reductions set by Svenska kraftnät was planned outage near the interconnector. In total, the export and import on the interconnector have been reduced for 111 and 834 hours, respectively.

5.2.7 SE3-NO1, Southern Norway

Svenska kraftnät has reduced the export and import capacity for 1 769 and 1 357 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 1 829 and 2 178 hours, respectively.

5.2.8 SE4-DE, Germany

Svenska kraftnät has reduced the export and import capacity for 61 and 831 hours, respectively, on the interconnector between SE4 and DE. 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 697 and 1 870 hours, respectively.

5.2.9 SE4-DK2, Eastern Denmark

Svenska kraftnät has reduced the export and import capacity for 90 and 868 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 247 and 1 107 hours, respectively.

5.2.10 SE4-PL, Poland

Svenska kraftnät has reduced the export and import capacity for 40 and 817 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 162 and 1 482 hours, respectively.

5.2.11 SE4-LT, Lithuania

Svenska kraftnät has reduced the export and import capacity for 36 and 813 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 near the interconnector. In total, the export and import on the interconnector have been reduced for 36 and 813 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 – 2019 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 2019 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	1156	1158	1421	1426	1431	1433	1456	1462	1525	1526	1622	1623	1624	1822	1823	2023	2034	2214	2223
SE1-SE2	1 909				170		79														
SE2-SE3								161					192			3					
SE3-SE4	1 687							110						8			61	12	10		4
SE1-FI	2 150				9																
SE1-NO4	2 159																				
SE2-NO3	2 159																				
SE2-NO4	1 542		113						504												
SE3-DK1	2 000							110			48				1						
SE3-FI	2 149			10																	
SE3-NO1	922							128							1 100					4	
SE4-DE	2 159																				
SE4-DK2	1 796	37				114		114				72									
SE4-PL	2 147									12											
SE4-LT	2 159																				

	2226	2231	2233	2522	2523	9999
SE1-SE2		1				
SE2-SE3				1 803		
SE3-SE4			3		264	
SE1-FI						
SE1-NO4						
SE2-NO3						
SE2-NO4						
SE3-DK1						
SE3-FI						
SE3-NO1			5			
SE4-DE						
SE4-DK2	1		1			24
SE4-PL						
SE4-LT						

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	1156	1158	1162	1421	1426	1433	1456	1462	1525	1526	1624	2214	2226	2233	9999
SE1-SE2	2 159																
SE2-SE3	2 159																
SE3-SE4	2 041							114								4	
SE1-FI	2 159																
SE1-NO4	2 150					9											
SE2-NO3	2 159																
SE2-NO4	1 542		113						504								
SE3-DK1	944							110			48		1 057				
SE3-FI	2 149			10													
SE3-NO1	2 030							119						6		4	
SE4-DE	1 169												990				
SE4-DK2	748	37					160					72	1 114		4		24
SE4-PL	1 116				6					12			1 025				
SE4-LT	1 081												1 078				

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	1126	1156	1158	1226	1250	1421	1426	1431	1433	1456	1525	1526	1550	1622	1623	1624	1822	1823	2023	2034	2214
SE1-SE2	1 909						170		79													
SE2-SE3										161					192			3				
SE3-SE4	1 687									110						8			61	12	10	
SE1-FI	2 150						9															
SE1-NO4	1 355		252			24								528								
SE2-NO3	996		611			24								528								
SE2-NO4	1 014		101			24					516			504								
SE3-DK1	2 000									110		48					1					
SE3-FI	2 117			42																		
SE3-NO1	921									128							1 101					4
SE4-DE	2 141																					
SE4-DK2	1 763	69			72			114		114			24									
SE4-PL	2 002																					
SE4-LT	2 159																					

	2223	2226	2231	2233	2522	2523	9999
SE1-SE2			1				
SE2-SE3					1 803		
SE3-SE4	4			3		264	
SE1-FI							
SE1-NO4							
SE2-NO3							
SE2-NO4							
SE3-DK1							
SE3-FI							
SE3-NO1				5			
SE4-DE							18
SE4-DK2		2		1			
SE4-PL							157
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	1126	1156	1158	1162	1226	1250	1421	1426	1433	1456	1525	1526	1550	1624	2214	2226	2233	9999
SE1-SE2	2 159																		
SE2-SE3	2 159																		
SE3-SE4	2 041									114								4	
SE1-FI	2 159																		
SE1-NO4	1 020		602				24	9						504					
SE2-NO3	1 871													288					
SE2-NO4	1 302		101				24				516			216					
SE3-DK1	944									110		48			1 057				
SE3-FI	2 117			42															
SE3-NO1	2 030									119						6		4	
SE4-DE	323														353				1 483
SE4-DK2	725	69				24			160				48		1 104		5		24
SE4-PL	396				4										821				938
SE4-LT	1 081														1 078				

Appendix C – 2019 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 2019 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	1115	1125	1126	1156	1262	1414	1421	1422	1423	1424	1425	1426	1431	1432	1433	1434	1457	1458	1462	1463	1467	1525
SE1-SE2	306							1 638						54	162								
SE2-SE3									1 371						15	558							
SE3-SE4										198						975	6						
SE1-FI	2 091													88				3					
SE1-NO4	2 073													111									
SE2-NO3	571	72													1 517	24							
SE2-NO4	2 088				96																		
SE3-DK1	1 657		426							3		9				65							24
SE3-FI	2 172														7				3				
SE3-NO1	183						8			3	364				260	191							
SE4-DE	1 900															18	257				9		
SE4-DK2	1 654			332									9			185							
SE4-PL	1 782					96										18	223			65			
SE4-LT	1 900															18	257					9	

	1621	1622	1623	1624	1631	2223	2226	2233	2257	2258	2326	2331	2332	2522	2523	2533	2534
SE1-SE2	18				6												
SE2-SE3		24												216			
SE3-SE4			24												654	63	264
SE1-FI									1			1					
SE1-NO4																	
SE2-NO3																	
SE2-NO4																	
SE3-DK1																	
SE3-FI										1			1				
SE3-NO1				1 173		2											
SE4-DE																	
SE4-DK2							2	1			1						
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	1114	1125	1126	1156	1262	1414	1421	1423	1424	1425	1426	1431	1432	1433	1434	1457	1458	1462	1463	1467	1525	1624
SE1-SE2	2 184																						
SE2-SE3	2 184																						
SE3-SE4	2 152								32														
SE1-FI	2 113												66				3						
SE1-NO4	2 005							24					155										
SE2-NO3	2 184																						
SE2-NO4	2 088				96																		
SE3-DK1	386		426								8				42							16	1 306
SE3-FI	2 172													7				3					
SE3-NO1	1 605	22					9		7	380					141								
SE4-DE	431									48					402					8			1 295
SE4-DK2	357			44						128		9			114	232							1 298
SE4-PL	414					96				48					342				90				1 194
SE4-LT	440									192					258						8		1 286

	2214	2233	2257	2258	2314	2331	2332
SE1-SE2	3						
SE2-SE3							
SE3-SE4							
SE1-FI			1			1	
SE1-NO4							
SE2-NO3							
SE2-NO4							
SE3-DK1							
SE3-FI				1			1
SE3-NO1	8	8			4		
SE4-DE							
SE4-DK2		2					
SE4-PL							
SE4-LT							

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	1115	1125	1126	1150	1156	1158	1225	1262	1414	1421	1422	1423	1424	1425	1426	1431	1432	1433	1434	1442	1443	1447	1450	1455
SE1-SE2	306										1 638						54	162							
SE2-SE3												1 371						15	558						
SE3-SE4													198						975	6					
SE1-FI	2 091																88								
SE1-NO4	686				157	265											90						609	356	21
SE2-NO3	30	72				120												1 002	24				609	327	
SE2-NO4	279					1 746																		138	21
SE3-DK1	1 592		452					24					3		9				65		12				
SE3-FI	1 641						3											7	528						
SE3-NO1	173									8			3	364				260	191				18		
SE4-DE	1 239																		18	257					
SE4-DK2	1 577			408												9			177			8			
SE4-PL	1 723								96										18	194					
SE4-LT	1 876																		18	257					

	1457	1458	1462	1463	1467	1525	1621	1622	1623	1624	1631	2223	2226	2233	2257	2258	2326	2331	2332	2522	2523	2533	2534	9942	9999
SE1-SE2							18				6														
SE2-SE3								24												216					
SE3-SE4									24												654	63	264		
SE1-FI	3														1			1							
SE1-NO4																									
SE2-NO3																									
SE2-NO4																									
SE3-DK1						24																		3	
SE3-FI		3														1			1						
SE3-NO1										1 165		2													
SE4-DE				9																					661
SE4-DK2													3	1			1								
SE4-PL			20																						133
SE4-LT					9																				24

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	1114	1125	1126	1145	1150	1156	1158	1225	1262	1414	1423	1424	1425	1426	1431	1432	1433	1434	1443	1445	1447	1450
SE1-SE2	2 184																						
SE2-SE3	2 184																						
SE3-SE4	2 152											32											
SE1-FI	2 113															66							
SE1-NO4	235					157	672									134						609	356
SE2-NO3	1 544						103															537	
SE2-NO4	327						1 746																90
SE3-DK1	368		452						17					8				42					
SE3-FI	1 964							3									7	205					
SE3-NO1	1 100	23			24						9	7	379					141			34	447	
SE4-DE	186												48					255					
SE4-DK2	308			117									118		9			114	242	8			
SE4-PL	144									63			48					330					
SE4-LT	457												192					245					

	1455	1457	1458	1462	1467	1525	1624	2214	2226	2233	2257	2258	2314	2331	2332	9942	9999
SE1-SE2																	
SE2-SE3																	
SE3-SE4																	
SE1-FI		3									1			1			
SE1-NO4	21																
SE2-NO3																	
SE2-NO4	21																
SE3-DK1						16	1 278									3	
SE3-FI			3									1			1		
SE3-NO1								8		8			4				
SE4-DE							847										848
SE4-DK2							1 265		1	2							
SE4-PL				44			852										703
SE4-LT					8		1 258										24

Appendix D – 2019 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 2019 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	1125	1126	1156	1162	1262	1323	1357	1414	1421	1422	1423	1424	1425	1426	1431	1432	1433	1434	1455	1456	1458	1462
SE1-SE2	1 140									735	29					84	219						
SE2-SE3											721						114	960					
SE3-SE4							114					148						930					
SE1-FI	2 075							133															
SE1-NO4	2 190																			18			
SE2-NO3	2 190										18												
SE2-NO4	2 131			53																	24		
SE3-DK1	973	10										84		283				856					
SE3-FI	2 190																					18	
SE3-NO1	801								11		18	54	46					812					
SE4-DE	2 053											48							77				
SE4-DK2	1 493		8									48			12			593	41				
SE4-PL	1 131				42	696						48											291
SE4-LT	1 835											48							77				

	1463	1467	1622	1623	1624	2214	2222	2226	2231	2323	2522	2523	2534
SE1-SE2									1				
SE2-SE3			154				2				257		
SE3-SE4				198								710	108
SE1-FI													
SE1-NO4													
SE2-NO3													
SE2-NO4													
SE3-DK1					2								
SE3-FI													
SE3-NO1					464	2							
SE4-DE	30												
SE4-DK2					1			4		8			
SE4-PL													
SE4-LT		248											

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	1125	1126	1156	1162	1262	1355	1356	1357	1414	1421	1423	1424	1425	1426	1431	1433	1434	1455	1456	1458	1462	1463	1467
SE1-SE2	2 187										21													
SE2-SE3	2 208																							
SE3-SE4	1 603											60					528							
SE1-FI	2 149															59								
SE1-NO4	1 964						107	16	3		90								18					
SE2-NO3	2 208																							
SE2-NO4	2 089			53				42												24				
SE3-DK1	991	229										48	39	298			134							
SE3-FI	2 088																101				18			
SE3-NO1	974									42		54					1 126							
SE4-DE	1 605											48	36				26						30	
SE4-DK2	993		8									48	48		60		262	274						
SE4-PL	706				42	696						48	38				27					291		
SE4-LT	1 401											48	38				19							248

	1623	1624	2214	2226	2233	2234	2323	2326	2333	2555
SE1-SE2										
SE2-SE3										
SE3-SE4	17									
SE1-FI										
SE1-NO4										10
SE2-NO3										
SE2-NO4										
SE3-DK1		469								
SE3-FI									1	
SE3-NO1			8		2		2			
SE4-DE		463								
SE4-DK2		505		4		1	4	1		
SE4-PL		360								
SE4-LT		454								

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	1125	1126	1145	1155	1156	1157	1158	1262	1323	1325	1357	1414	1421	1422	1423	1424	1425	1426	1431	1432	1433	1434	1442
SE1-SE2	1 140													735	29					84	219			
SE2-SE3															721						114	960		
SE3-SE4										114						148						930		
SE1-FI	1 963						56					133								56				
SE1-NO4	1 052				133																			
SE2-NO3	975				118										18									
SE2-NO4	1 129				56	124																		
SE3-DK1	962	91									11					84		272				685		101
SE3-FI	2 094							96																
SE3-NO1	801			16									59		18	37	46					796		
SE4-DE	1 883															47							77	
SE4-DK2	1 493		8													48			12			593	41	
SE4-PL	1 079								48							48								
SE4-LT	1 835															48							77	

	1445	1447	1450	1455	1456	1458	1462	1463	1467	1622	1623	1624	2214	2222	2226	2231	2314	2323	2522	2523	2534	9999
SE1-SE2																1						
SE2-SE3										154				2					257			
SE3-SE4											198									710	108	
SE1-FI																						
SE1-NO4		11	994	18																		
SE2-NO3	137	165	795																			
SE2-NO4		11	864		24																	
SE3-DK1												2										
SE3-FI						18																
SE3-NO1												432	2				1					
SE4-DE								13														188
SE4-DK2												1			4			8				
SE4-PL							38															995
SE4-LT									36													212

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	1118	1125	1126	1155	1156	1158	1262	1325	1355	1356	1357	1414	1421	1423	1424	1425	1426	1431	1433	1434	1442	1443	1445
SE1-SE2	2 187													21										
SE2-SE3	2 208																							
SE3-SE4	1 603														60					528				
SE1-FI	2 149																		59					
SE1-NO4	896				133					76	16	3		54										
SE2-NO3	2 123	5																						
SE2-NO4	1 368					124					42													
SE3-DK1	990		244						1						48	39	287			109		21		
SE3-FI	2 010						78													101				
SE3-NO1	593												53		48					1 126				378
SE4-DE	804														37	36				13				
SE4-DK2	993			8											48	48		60		192	274		70	
SE4-PL	343							23							4	25				27				
SE4-LT	1 346														48	38				19				

	1447	1450	1455	1456	1458	1462	1463	1467	1623	1624	2214	2226	2233	2234	2314	2323	2326	2333	2355	2555	9999
SE1-SE2																					
SE2-SE3																					
SE3-SE4									17												
SE1-FI																					
SE1-NO4	34	967	18																1	10	
SE2-NO3	40	40																			
SE2-NO4	11	639		24																	
SE3-DK1										469											
SE3-FI					18													1			
SE3-NO1											7		1		2						
SE4-DE							9			267											1 042
SE4-DK2										505		4		1		4	1				
SE4-PL						28				291											1 467
SE4-LT								36		454											267

Appendix E – 2019 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 2019 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	1157	1225	1323	1414	1422	1423	1425	1432	1433	1434	1455	1457	1462	1463	1525	1621	1622	1623	1624	2223	2226	2234
SE1-SE2	1 592							114			408								95						
SE2-SE3								198			55	641								724					
SE3-SE4						7			34			748	36								675		10		6
SE1-FI	2 048			83											75										
SE1-NO4	2 118													91											
SE2-NO3	1 633							528			48														
SE2-NO4	2 209																								
SE3-DK1	1 045	216			48			59		518		275						48							
SE3-FI	2 168							18			23														
SE3-NO1	996						356	96				118										643			
SE4-DE	2 148												37				24								
SE4-DK2	2 119		50										37											2	1
SE4-PL	2 169												36			4									
SE4-LT	2 173												36												

	2257	2522	2523	2534
SE1-SE2				
SE2-SE3		591		
SE3-SE4			662	31
SE1-FI	3			
SE1-NO4				
SE2-NO3				
SE2-NO4				
SE3-DK1				
SE3-FI				
SE3-NO1				
SE4-DE				
SE4-DK2				
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.

	1010	1125	1126	1157	1225	1414	1425	1433	1434	1455	1457	1462	1463	1525	1624	2214	2226	2257
SE1-SE2	2 209																	
SE2-SE3	2 209																	
SE3-SE4	2 077							132										
SE1-FI	2 048			83							75							3
SE1-NO4	2 118									91								
SE2-NO3	2 209																	
SE2-NO4	2 209																	
SE3-DK1	883	201			48		496	8	37					48	488			
SE3-FI	1 375							834										
SE3-NO1	1 775					293		132								9		
SE4-DE	1 486							96					24		603			
SE4-DK2	1 356		50					96							701		6	
SE4-PL	1 489							96				4			620			
SE4-LT	1 469							96							644			

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	1114	1125	1126	1156	1157	1158	1225	1323	1414	1422	1423	1425	1432	1433	1434	1443	1445	1447	1450	1455	1456	1457	1462
SE1-SE2	1 592										114			408										
SE2-SE3											198			55	641									
SE3-SE4									7			34			748	36								
SE1-FI	2 038					93																	75	
SE1-NO4	1 551				46														8	354	202			
SE2-NO3	1 479				32						528			48					8	66				
SE2-NO4	1 608				46														8	530		17		
SE3-DK1	988		273					48			59		518		275									
SE3-FI	2 098						70				18			23										
SE3-NO1	869	183								167	96				118			73	6					
SE4-DE	1 516															37								
SE4-DK2	1 962			183												37	24							
SE4-PL	2 054															36								4
SE4-LT	2 173															36								

	1525	1545	1550	1621	1622	1623	1624	2223	2226	2234	2257	2522	2523	2534	9999
SE1-SE2				95											
SE2-SE3					724							591			
SE3-SE4						675		10		6			662	31	
SE1-FI											3				
SE1-NO4			48												
SE2-NO3			48												
SE2-NO4															
SE3-DK1	48														
SE3-FI															
SE3-NO1		122					575								
SE4-DE															656
SE4-DK2									2	1					
SE4-PL															115
SE4-LT															

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	1114	1125	1126	1156	1157	1225	1414	1425	1433	1434	1443	1445	1447	1450	1455	1456	1457	1462	1525	1545	1550	1624	2214
SE1-SE2	2 209																							
SE2-SE3	2 209																							
SE3-SE4	2 077									132														
SE1-FI	2 038					93												75						
SE1-NO4	1 553				46									8	352	202						48		
SE2-NO3	2 209																							
SE2-NO4	1 656				46										490		17							
SE3-DK1	839		250				48		496	8	37									48			483	
SE3-FI	1 375									834														
SE3-NO1	1 302	185						18		132			314	6							240			8
SE4-DE	393									94													189	
SE4-DK2	1 140			202						96		80											685	
SE4-PL	912									86									4				598	
SE4-LT	1 469									96													644	

	2226	2245	2257	2314	9999
SE1-SE2					
SE2-SE3					
SE3-SE4					
SE1-FI			3		
SE1-NO4					
SE2-NO3					
SE2-NO4					
SE3-DK1					
SE3-FI					
SE3-NO1		2		2	
SE4-DE					1 533
SE4-DK2	6				
SE4-PL					609
SE4-LT					