ITC Transit Losses Data Report 2013

Published following the requirements of Articles 4.2 and 4.3 of Annex Part A of Regulation (EU) No 838/2010

9 September 2014

Contents

1. Background and purpose of this document

The Inter Transmission System Operator Compensation for Transits (ITC) is governed by Article 13 of Regulation (EC) No 714/2009. Commission Regulation (EU) No 838/2010 contains further specifications of this ITC mechanism. According to Articles 4.2 and 4.3 of the Annex, Part A, of Commission Regulation (EU) No 838/2010 ENTSO-E is mandated to determine:

The amount of losses incurred on national transmission systems by calculating the difference between:

  (1) the amount of losses actually incurred on the transmission system during the relevant period; and

  (2) the estimated amount of losses on the transmission system which would have been incurred on the system during the relevant period if no transits of electricity had occurred.

ENTSO-E is also responsible for publishing this calculation and its method in an appropriate format. This document contains these publications.

2. The method

The losses caused by transits in each transmission system are determined by:

- Recording the load flow Situation for each ITC Party for 6 monthly snapshots T (3rd Wednesdays and preceding Sundays at 03:30h, 11:30h and 19:30h CET/CEST):

  - with transit represented on interconnected system;

  - with transit represented on disconnected system;

- The losses caused by transit for the particular hour $\Delta Ploss_k(T)$ is then determined as the difference of losses observed in the two situations;

- Based on a mapping that attributes every hour of the month to one of the six snapshots timestamps T, each snapshot timestamp is given a weight wT;

- The overall monthly amount of transit losses for each ITC party is derived by aggregating the weighted transits for the particular hours.
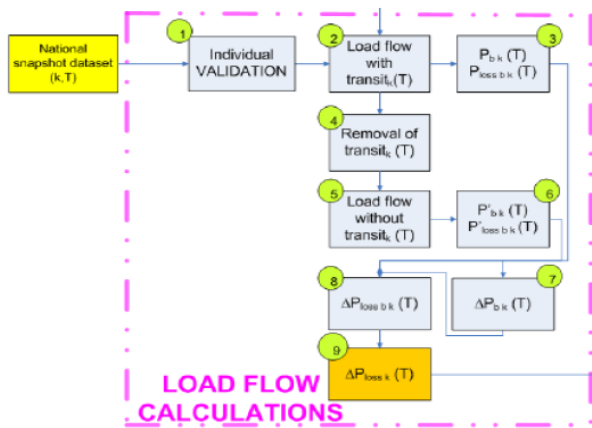
Annex 1 contains further illustrations of this method.

3. The calculation

Annex 2 contains the calculation results for the year 2013.
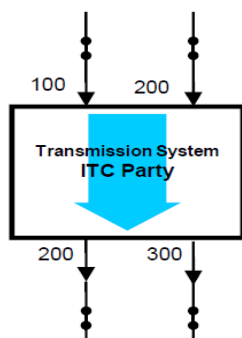
4. Annex 1: Illustration of the methodology

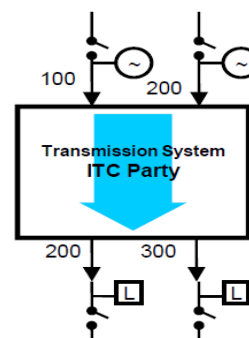### Monthly WWT Calculation: Introduction

- The losses caused by transit ΔPloss k (T) are determined for each ITC Party k for 6 monthly snapshots T (3rd Wednesdays and preceding Sundays at 03:30h, 11:30h and 19:30h CET/CEST)

- Based on a mapping that attributes every hour of the month to one of the six snapshots timestamps T, each snapshot timestamp is given a weight wT

- The monthly WWT compensation is yielded by ITC Party k's losses costs Closses(k) multiplied by the losses energy caused by transit.

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27 July 2012 | Page 1

ΔPloss k (T) – load flow calculation (Module 2-3)

Recorded Situation with transit represented on interconnected system (snapshots)
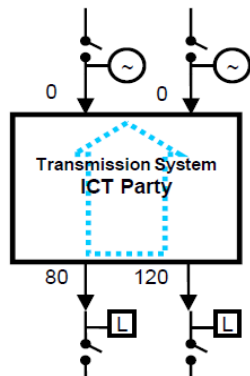(measured load flow, result from State Estimation)

Recorded Situation with transit represented on disconnected system
(measured load flow, result from State Estimation)

Transit = Minimum { Σ Export, Σ Import}
Example: Σ Export = 500 MW, Σ Import =300 MW
                 Transit = Minimum { 500 , 300 } = 300 MW

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27 July 2012 | Page 3

4

ΔPloss k (T) – load flow without transits (Module 4-5-6-7)

Recorded Situation without transit represented on disconnected system
(measured load flow, result from State Estimation)

Removal of transit by modifying the flows on tie-lines

If $\left(\sum_i Pex_i \geq \sum_j Pim_j\right)$ then $Pex'_k = Pex_k \cdot \left(1 - \dfrac{\sum_i Pim_i}{\sum_j Pex_j}\right)$

$$Pim'_m = 0$$

If $\left(\sum_i Pex_i < \sum_j Pim_j\right)$ then $Pim'_k = Pim_k \cdot \left(1 - \dfrac{\sum_j Pex_j}{\sum_i Pim_i}\right)$

Distribution of the overall modification in losses observed on the slack node to all generators nodes

$$P'_i = P_i \cdot \left(1 + \frac{\Delta P_{Loss}}{\sum_n P_n}\right)$$

ΔPloss b k (T) – for each branch (Module 8)

In case the relative share of losses caused by transits exceeds the relative share of power flow caused by transits, it shall be delimited to this proportion. (Interpretation of ERGEG Guideline)

ΔPloss b k (T) = Ploss b k (T) – P'loss b k (T)
Δ ploss b k (T) = Δ Ploss b k (T)/Ploss b k (T)
Δ p b k (T) = Δ P b k (T)/ P b k (T)
If {sign (Δ ploss b k (T)) = sign (Δ p b k (T)) and | Δ ploss b k (T)| > | Δ p b k (T)| }
then

Δ Ploss b k (T) = Δ p b k (T) * Ploss b k (T)

else

Δ Ploss b k (T) = Ploss b k (T) – P'loss b k (T)

K	country
B	branch
T	snapshot timestamt
Ploss	relative increase in losses
Δp	relative increase in flows

5

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ΔPloss b k (T) – sum for ITC party (Module 9-10)

Sum of all branches within a country

$$\Delta P_{Loss\_k}(T) = \sum_{b} \Delta P_{Loss\_b\_k}(T)$$

The losses energy caused by transit is the scalar product of the ΔPloss k (T) vector times the wT vector that attributes each hour of the month to a snapshot

$$Compensati \quad on\_WWT \ (k,m) = Closses \ (k) \sum_{T=1}^{6} \left[\Delta P_{loss\_k}(T) w_T \right]$$

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27 July 2012 | Page 6

5. Annex 2: The calculation results

	2013											
	WWT	WWT	WWT	WWT	WWT	WWT	WWT	WWT	WWT	WWT	WWT	WWT
	weighted	weighted	weighted	weighted	weighted	weighted	weighted	weighted	weighted	weighted	weighted	weighted
	MWh	MWh	MWh	MWh	MWh	MWh	MWh	MWh	MWh	MWh	MWh	MWh
Country	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Albania / AL	-1.072,75	-513,51	234,94	120,30	-2,80	-463,43	-193,35	-271,56	-296,08	-47,63	-170,80	-561,33
Austria / AT	22.626,89	18.487,53	24.219,85	13.535,42	6.811,95	7.454,34	2.214,11	7.862,92	7.642,01	15.910,70	31.057,23	18.427,97
Belgium / BE	6.432,65	4.329,58	2.605,32	1.007,65	2.629,65	4.711,71	5.316,81	9.551,33	6.165,18	-429,41	7.905,29	7.952,64
Bosnia / BA	1.314,85	1.502,57	1.613,34	4.288,10	693,57	1.519,01	4.085,99	2.517,27	3.800,60	2.470,42	3.452,13	3.415,37
Bulgaria / BG	2.763,88	2.025,29	1.619,80	1.075,45	3.819,78	3.640,85	2.481,22	1.517,78	2.394,56	981,45	1.515,18	2.980,45
Croatia / HR	15.978,97	7.607,88	8.138,09	7.563,17	3.057,51	3.882,20	4.493,39	394,52	1.841,18	4.590,43	10.076,35	3.490,01
Czech Rep. / CZ	6.124,39	3.234,06	4.240,22	494,38	1.294,71	5.739,32	4.815,79	3.765,12	385,67	-2.388,68	1.564,17	24.407,13
Denmark / DK	34.862,26	25.686,34	21.779,94	23.572,52	29.929,54	34.571,83	45.463,98	16.802,17	21.998,58	12.466,05	16.942,93	31.960,29
Finland / FI	12.339,08	6.542,20	7.525,38	3.569,15	2.635,19	3.383,36	6.593,22	7.181,88	3.106,47	2.044,59	6.385,32	22.282,46
France / FR	1.287,57	15.046,54	18.225,16	29.277,99	12.324,09	7.364,52	2.001,96	1.749,59	16.663,15	23.424,73	16.615,81	31.547,68
Germany / DE	94.701,13	55.812,12	40.571,66	44.343,84	75.249,21	27.460,44	23.418,32	37.908,75	35.310,73	13.124,16	47.867,32	20.626,94
Great Britain / GB	-7.304,16	-6.498,90	-2.458,38	-4.648,06	-4.162,70	-1.847,49	-5.670,99	-5.683,49	-3.192,30	-7.265,28	-11.053,05	-9.703,98
Greece / GR	312,72	4.252,73	2.731,68	1.852,23	1.906,09	3.696,38	171,72	1.999,18	2.381,52	2.166,16	242,58	1.788,50
Hungary / HU	3.973,14	1.679,41	1.219,14	661,21	149,47	1.035,81	1.252,49	1.532,81	1.721,61	2.031,92	3.966,18	7.814,58
Ireland / IE	2.598,28	356,63	12,81	-165,11	142,13	597,83	744,14	326,50	-74,37	108,09	153,84	802,26
Italy / IT	142,32	0,00	0,00	-632,92	-494,31	1.030,79	-2.785,14	-2.880,57	-73,25	-1.313,80	24,00	-2.453,35
Estonia / EE	1.197,44	1.366,30	4.201,61	3.024,05	1.898,26	3.291,23	4.135,40	3.899,40	1.517,69	4.034,38	9.078,43	18.493,64
Latvia / LV	3.861,82	3.164,25	2.554,07	4.730,10	8.231,11	4.924,61	4.914,33	4.899,48	5.097,67	8.277,67	5.560,27	5.093,78
Lithuania / LT	-72,42	316,64	591,79	1.033,92	950,18	-3,80	-258,26	772,98	238,57	1.481,17	345,08	-1.513,56
Luxembourg/LU	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
FYROM / MK	148,86	639,64	262,14	220,12	158,61	303,65	866,66	538,88	489,70	189,13	575,79	188,24
Montenegro / ME	429,09	1.162,60	2.522,19	1.195,78	863,43	98,63	386,59	-437,22	728,12	458,23	237,66	465,90
Netherlands / NL	11.203,29	1.286,77	10.344,43	585,74	9.188,21	5.745,50	5.617,46	975,29	2.958,68	7.303,18	4.743,57	3.476,07
Northern Ireland / NI	51,19	3,46	377,06	71,13	352,30	7,83	21,32	1,11	0,00	192,00	218,14	446,41
Norway / NO	792,13	-2.214,12	8.321,63	-2.886,84	4.935,45	9.432,22	-2.321,23	6.444,24	976,89	6.478,53	6.950,94	1.841,17
Poland / PL	1.459,42	3.760,17	11.791,04	2.344,35	4.196,92	7.272,00	7.661,11	6.794,84	6.128,02	5.766,85	-1.660,82	31.555,71
Portugal / PT	7.019,64	7.258,54	699,09	79,13	-246,11	779,61	196,16	1.477,63	1.419,94	65,90	4.719,51	12.419,05
Romania / RO	-2.171,66	-4.170,52	-3.109,40	-384,79	362,15	-2.309,46	-1.521,66	-1.058,67	-975,94	-857,79	362,61	-3.889,86
Serbia / RS	6.489,69	539,49	1.866,44	6.151,45	1.096,52	472,82	-146,81	1.001,54	3.146,21	3.368,85	7.519,18	6.040,01
Slovakia / SK	959,20	1.660,98	2.192,11	913,77	2.919,55	4.544,95	5.355,71	4.680,25	1.652,26	730,62	1.424,07	13.104,60
Slovenia / SI	8.057,99	2.031,52	3.026,29	-64,01	312,50	3.032,39	1.683,44	504,39	820,98	3.734,96	4.718,79	5.264,68
Spain / ES	574,00	3.026,66	15.007,06	16.659,35	18.161,79	11.751,64	896,71	8.292,09	10.426,11	1.224,14	496,27	-16.543,09
Sweden / SE	49.500,55	29.926,62	24.595,10	20.463,34	3.989,81	34.659,70	43.801,44	44.745,65	13.582,28	817,28	28.233,54	66.837,39
Switzerland / CH	36.545,84	42.456,87	42.070,05	39.332,01	28.781,42	12.921,12	29.445,46	10.566,86	12.667,37	28.775,95	44.993,19	72.272,70
TOTAL	323.127,289	231.766,344	259.591,646	219.383,896	222.135,184	200.702,102	195.137,482	178.372,907	160.649,784	139.914,909	255.060,698	380.330,478