

## Change of cross-zonal capacity allocation mechanism on LitPol and SwePol

### Conditions for cross-zonal capacity calculation and allocation on LitPol and SwePol interconnectors

In order to meet all security requirements of Polish power system (KSE) operation, PSE reflects the requirements regarding generation conditions in Poland in offered cross-zonal capacities. This refers to both the electricity export from Poland and import to Poland.

Regarding the export, this is the case when available generation capacities are insufficient to meet power reserve requirements in the form of generation increase (upward reserve) and maximum possible cross-border exchange due to the capacity of interconnectors. In such situation, the priority is providing required power reserve level, as a precondition of security of electricity supply. It should be pointed out that this solution supports procurement of power reserve shortly before the electricity supply<sup>1</sup>, which in turn allows for not limiting generation capacities available on market due to earlier purchase of power reserves. In this way, electricity consumers have access to wider range of generation capacities within market processes in long-term, yearly, monthly and daily time horizons. Earlier procurement of power reserves would limit this scope, thereby worsening the effectiveness of commercial transactions.

Also in case of the electricity import to Poland, the factors affecting its permissible values are the security conditions of the Polish power system. However, in this case is about not exceeding the minimum levels of electricity generation in given locations of the KSE in order to guarantee appropriate power reserve level in the form of generation decrease (downward reserve) and keeping quality parameters of energy supply such as voltage stability, short-circuit power, etc.

Applying the above mechanism is dictated by the fact, that the aforementioned issues are not directly taken into account within the market processes. Hence, it is necessary to consider them indirectly during the calculation of available transmission capacity.

### What is the goal of changes introduced to capacity allocation mechanism?

Change of cross-zonal capacity calculation and allocation mechanism on LitPol and SwePol aims to increase the effectiveness of the market coupling mechanism on these interconnectors while meeting the security requirements of electricity supply to customers.

Currently, the generation conditions described above must be reflected in cross-border capacities offered by PSE by appropriate adjustment of particular interconnections capacities. However, from the point of view of market participants, such approach is burdened with the risk of not optimal splitting of generation conditions into individual interconnections – overstated on one interconnection and underestimated on the other or vice versa. Therefore PSE, Svenska Kraftnat and Litgrid have decided to start using the Polish optimization area to ensure that the generation conditions in Poland are met jointly for both interconnections. Consequently, the market participants needs regarding the use of these interconnections will decide which part of the generation conditions (i.e. allocation constrains) will be fulfilled on each of these interconnections. This will allow to effectively use the capacity of each of these interconnections, depending on the current price differences in individual markets.

### What are allocation constrains?

Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management (CACM) introduces a mechanism of “allocation constraints”. This constraints shall reflect the conditions for the cross-border capacity allocation, which on the one hand must be kept during allocation process to ensure safe operation of transmission systems, and on the other

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<sup>1</sup> On the Polish market the power reserves are procured in day preceding the day of electricity delivery, after the closure of Day-Ahead market.

hand cannot be in an efficient way directly reflected in cross-border transmission capacities. CACM particularly assumes the use of allocation constraints to increase the efficiency of capacity allocation. Allocation constrains are bidirectional, with independent values for import to Poland and export from Poland directions.

### What is changing in the offering of capacities on LitPol and SwePol?

Change of cross-zonal capacity allocation mechanism on LitPol and SwePol introduces allocation constrains as separate condition in the allocation process independent from the capacity of these interconnections. The allocation constrains will have to be fulfilled jointly for both interconnections and it will not matter what part of constraints will be fulfilled on each of these interconnections. The bidding zone configuration taking into account the modified capacity allocation method is presented in the Figure 1.

The technical possibility of applying the allocation constrains using the Polish PLA optimization area has already been implemented in IT systems in December 2015 along with launching the market coupling mechanism at the LitPol link. Those constrains are already visible in TGE and Nord Pool IT systems, but has not been activated yet.

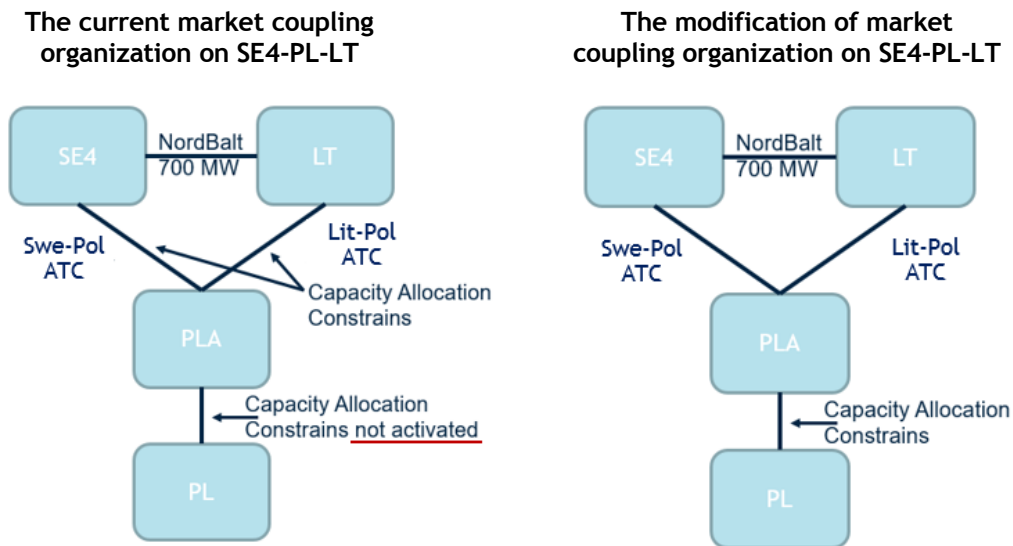


Figure 1. Bidding Zone Configuration

#### Bidding Zone Configuration:

- PL – Polish market area, operated by TGE power exchange
- SE4 – Swedish market area, operated by Nord Pool power exchange
- LT – Lithuanian market area, operated by the Nord Pool power exchange
- PLA – Polish optimization area (technical tool for handling "allocation constrains")

### What will be impact of the planned changes on the transmission capacity of Polish Power System ?

The planned changes of cross-zonal capacity allocation mechanism on LitPol and SwePol will increase the flexibility of usage by European market participants import and export capacities of Polish Power System.

Application of the allocation constraints in the new formula, independent from the individual interconnections capacity, will allow to take into account generation conditions without necessity to correct the NTC values of each interconnection. As a result, the PSE will not make the capacity adjustment of each interconnection to meet the terms of generation, but will transfer to the allocation mechanism (TGE / NPS) independently:

- (I) the network capacity of the individual LitPol and SwePol interconnections and

- (II) the value of the allocation constrains. Such a solution would allow market participants to freely use import and export opportunities, within capacity limits and system safety conditions.

For example, if day ahead market price differences shows, that it is most advantageous for the market to realize all Polish imports by SwePol interconnection only, than the market coupling mechanism will be able to allocate trade in this way. Under the current rules, this could not be possible due to earlier splitting of allocation constrains between LitPol and SwePol in another way.

#### **How the introduced changes will affect the possibilities of energy transit through the KSE?**

Planned changes of cross-zonal capacity allocation mechanism on LitPol and SwePol will improve capabilities of using the LitPol and SwePol network infrastructure for the transit of electricity through KSE.

Currently, due to the generation conditions in KSE there are cases of limiting the possibilities of exchanging electricity between KSE and other systems using LitPol and SwePol interconnections. In such cases, the energy transit through the KSE - from Sweden to Lithuania or in the opposite direction is also limited. This will be changed by the new way of application of allocation constrains. After updating market coupling arrangements it will be possible to realize the transit of electricity in accordance with the LitPol and SwePol interconnection capacities values, irrespectively from the allocation constrains values. In other words within the capacity allocation process, capacities between LitPol, SwePol and KSE (energy exchange with KSE) and LitPol and SwePol through KSE (energy transit) will provide separate opportunities for electricity exchange.

#### **Will the planned market coupling changes affect the capacities of synchronous interconnections?**

The planned changes concern only the LitPol and SwePol capacity allocation mechanisms, and will not apply to the capacity of synchronous interconnections, i.e. capacities of interconnections with the German, Czech and Slovakian systems. On these interconnections, until implementation of market coupling mechanism, the allocation constrains will still be included into volumes of offered capacities. The market coupling mechanism on KSE synchronous interconnections will be implemented after the operators develop the flow-based allocation methodology and get approval from CORE (merged CEE and CWE regions) CCR Regulators. According to a regional roadmap of realized jointly by operators and power exchanges CEE-NWE Flow-Based Market Coupling project this will take place at the earliest in 2019.

#### **What will be the practical effect of allocation mechanism change on LitPol and SwePol?**

practical effect of change of allocation mechanism on LitPol and SwePol can be illustrated with two typical cases. In the examples following indications are used:

- ATC – offered capacities,
- $ATC_{ex}$  LitPol – export capacities of LitPol interconnection,
- $ATC_{ex}$  SwePol – export capacities of SwePol interconnection,
- $ATC_{ex}$  synchronous – synchronous interconnection capacities,
- PL-PLA capacities – Poland import/export possibilities, expressed by the "allocation constrains"
- IRiESP – Polish grid code.

**Case 1.** Off-peak hours: no possibility of importing electricity to Poland due to the need of providing a minimum amount of downward balancing power reserve; No export constrains due to generation conditions in KSE.

- **Currently:** LitPol and SwePol import ATC equals 0; no possibility of transit of electricity through KSE.

- **After change:** PL-PLA import capacities equals 0, but LitPol and SwePol capacities will be calculated according to network technical capacities. In such a case, it still will not be possible to import electricity into Poland due to KSE safety conditions (applying the allocation constrains does not change these conditions), however the capacity of the SwePol and LitPol interconnections could be used to transit electricity from Sweden to Lithuania or vice versa, depending on the price differences between SE4 and LT bidding zones.

**Case 2.** Peak hours: Due to the generation conditions, export possibilities from Poland are limited to 800MW; No import restrictions due to generation conditions in the KSE.

- **Currently:** LitPol and SwePol ATC must take into account generation conditions, so the offered network capacities of the interconnections are appropriately adjusted. Let's assume that in this example 800MW of export capacities are split as follows:  $ATC_{ex}$  LitPol 200 MW,  $ATC_{ex}$  SwePol 200MW and  $ATC_{ex}$  synchronous 400MW. With such a division the maximum possible export from Poland to Lithuania and to Sweden is 200 MW for each of these interconnections.
- **After change:** in this example, export allocation constrains PL-PLA will be equal 400 MW (the remaining 400 MW is for synchronous interconnections), while LitPol and SwePol capacities will be calculated according to network technical capacities. As a result, it is possible to allocate a total of 400 MW of export capacity from Poland to LitPol and to use the remaining capacity of LitPol and SwePol to transfer energy from Sweden to Lithuania, or vice versa, of course, within the network capacities of these interconnections.