Explanatory document to Svenska kraftnäts' proposal for arrangements in accordance with Article 30(6) of Commission Regulation (EU) 2016/1719 of 26 September 2016 establishing a guideline on forward capacity allocation

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1. Introduction

This document contains description and an explanation of the proposal for Arrangements to make available hedging opportunities on both sides of the borders of Finland and Sweden. The Arrangements are to comply with the requirements of the Commission Regulation (EU) 2016/1719 establishing a guideline on forward capacity allocation (FCA Regulation) applicable to arrangements developed after decision on Article 30.5(b). Besides this Introductory chapter the document provides additional information on Forward capacity calculation, Forward capacity allocation, the Hedging Product Coupling process, the Forward allocation platform and Firmness of allocated cross-zonal capacity.

The proposal for the Arrangements is developed with aim to support the hedging opportunities on both sides of the borders between Finland and Sweden. This is understood to be achieved by offering support in products that the market has demand for and regularly use for hedging purposes. The arrangements involve that the TSOs support the market by offering to enter long-term contracts on the relevant borders for the decision in question. The proposal is built on a few principles:

- Adding hedging opportunities in existing products increases the efficiency of the efforts by the TSOs.
- Continuously traded products have smaller risk of being over- or undervalued compared to products that are offered only once per year or month.
- Price transparency of transactions arranged by TSOs (or on TSO's behalf) enhances price discovery process of all market participants.

Current Nordic situation – product overview

The current setup of the platform-based financial market in the Nordics, is built around the common Nordic reference price, the so-called "System" (SYS) price[1]. Large volumes of contracts are traded in forwards and futures settled against the system price, which used to serve as a general proxy for many of the bidding zones in the Nordics. System price futures are offered for continuous trading at NASDAQ, EEX, and ICE ENDEX alike.

Hedging of the specific Day-ahead price risks for each specific bidding zone requires a Contract for Difference, which has the name of Electricity Price Area Differentials (EPAD). They are settled against the hourly difference in Day-ahead prices of the specific bidding zone vis-à-vis the System price. By combining the two types of contracts, a market participant can attain a perfect hedge for their position in a specific bidding zone.

The Nordic market model, as described above, is potentially subject to changes in the near future. The 20th of June 2023 EEX and NASDAQ informed the market that they have agreed that EEX will acquire NASDAQ's European power trading and clearing operations. The transaction is subject to regulatory approvals, but if

[1] Price calculation | Nord Pool (nordpoolgroup.com)

approved, the deal will entail changes to the current Nordic electricity market model, according to EEX. These changes includes the withdrawal of EPADs from the product portfolio and an introduction of zonal futures for each of the bidding zones in the Nordics.

Besides the standardized contracts being available on one or more of the trading platform offered by NASDAQ, ICE ENDEX and EEX, there is also a multitude of different contracts being available through bilateral trading.

Common for all non-standardized contracts is that they are not suitable for use in the Hedging Product Coupling, since they are uniquely designed for a specific situation and specific parties and cannot be matched efficiently across a bidding zone border.

2. Forward capacity calculation

The TSOs shall determine the volume of the long-term cross-zonal capacity available for the Hedging Product Coupling. The long-term capacity calculation methodology (LT CCM) for the CCR Nordic approved in accordance with Article 10 of the FCA Regulation is not yet implemented. Until this LT CCM is available, the TSOs will use a transitional methodology to calculate the long-term capacities for the purpose of the Hedging Product Coupling. In the transitional phase, each TSO will individually calculate the available capacity using the NTC approach. In this calculation, the TSOs will take into account the forecasted impacts of planned and unplanned outages on the availability of the cross-zonal capacity. The lower of the values calculated by the individual TSOs will be used the starting point the splitting of capacity for the yearly, quarterly and monthly timeframes. The TSOs will provide the split capacities to the Market Coupling Operator (MCO) who will convert these offered capacities to corresponding volumes of Hedging Products that will be auctioned in the Hedging Product Auctions.

The products auctioned in the Hedging Product Auctions are listed products. This means that the products are firm and cannot be curtailed e.g. case of interconnector outages. The TSOs' ability to fulfil the obligations resulting from the Auctions depend entirely on how much congestion income is generated in the day-head markets. For this reason, the offered capacities must never be lower than what can be given in the day-ahead markets in all scenarios.

For the FI-SE1 border, the most relevant scenario is the planned or unplanned outage of one AC line in which case the dimensioning fault in the Finnish electricity system limits the guaranteed capacity on this border to 200 MW. This is because in case the largest power generating unit in Finland trips, the only remaining AC line on the FI-SE1 bidding zone border must be able to accommodate the immediate flow of the replacement power from elsewhere in the Nordic synchronous area without the AC line breaking due to overloading.

For the FI-SE3 bidding zone border, the most relevant scenario is the planned or unplanned outage of the 800 MW Fenno-Skan 2 cable in which case the capacity on this border is limited to the volume that can be transmitted via the 400 MW

Fenno-Skan 1 cable. This sets the upper limit to the guaranteed capacity for this border to 400 MW. However, due to the operational security reasons in the Swedish electricity system, it may not always be possible to guarantee this capacity on both directions.

Due to the above reasons, the TSOs estimate the long-term cross-zonal capacity available for the Hedging Product Auctions to be approximately 10-20 % of the capacity that in normal situations can be given to the day-ahead markets. The long-term capacities within this range will respect the operational security criteria in all the relevant scenarios that the TSOs have considered.

For the first year of applying the Hedging Product Coupling the following sharing key will be used for allocation of long-term cross-zonal capacity to different maturities: allocation of approximately 40% of the available long-term cross-zonal capacity to the yearly Hedging Products, approximately 40% to the quarterly Hedging Products and approximately 20% to the monthly Hedging Products. TSOs intend to consult the market participants on the splitting of the total long-term cross-zonal capacity to the different Hedging Product maturities annually.

To make sure TSOs do not flood the market an allocation constraint is introduced to the Hedging Product Coupling.

The indicative values of the long-term cross-zonal capacities will be published in the Auction calendar at least one month before the first Auction of the yearly, quarterly or monthly Hedging Products is organised. The offered capacities for the yearly products will always be confirmed at least one week before the Auctions. For the quarterly and monthly products, the offered capacities will be confirmed at least two days before the Auctions. In case the offered capacities deviate from the indicate values, the TSOs will publish the reasons for the differences.

3. Forward capacity allocation

This section presents the concept for supplying additional hedging opportunities by TSOs allocating forward capacity. This consists of the basic principles of the concept in section 3.1, the use of the Hedging Product Coupling Condition in section 3.2, as well as a description of the Hedging Products of the concept in section 3.3.

3.1 The concept of Hedging Product Coupling

The Arrangements builds upon the concept of matching positions in financial Hedging Products (purchase and sell) across a bidding zone border in order to create a position for the TSO, which is equal to a financial transmission right obligation, see Figure 1. In essence, this will provide the TSO with a hedge of the future congestion income for the particular border and time period (maturity).

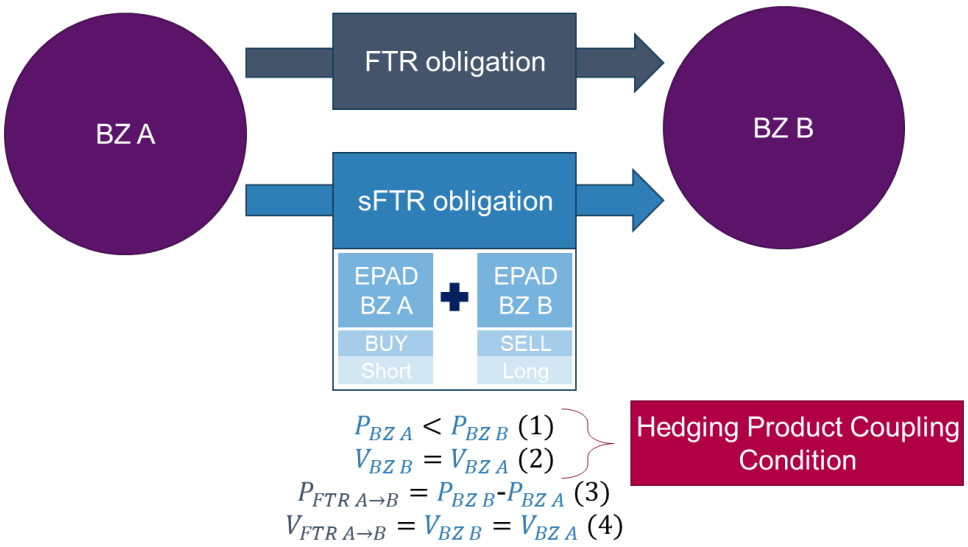

Figure 1: By applying the conditions for price (1) and volume (2), referred to as the Hedging Product Coupling Condition, the same financial positon for the TSOs as a financial transmission right obligation is generated using two products. In the figure, EPADs are such products, hedging against the volatility of the bidding zone price. In the figure, this combination of Hedging Products is referred to as synthetic Financial Transmission Right Obligation (sFTR). The relation between the sFTR and FTR in terms of price and volume is presented in (3) and (4).

The coupling has to provide symmetric positions on each side of the border, i.e. if the TSOs purchases a quarterly contract in Sweden, they will also sell a quarterly contract for settlement in the same time period on the Finnish side of the border. From a market participants' view however, the offering from TSOs does not oblige the buyer on one side of the border to also be a seller on the other side and vice versa. Any market participant can choose freely whether to only buy or sell or both, and in which bidding zone(s).

In order for the Hedging Product Coupling to generate positions equal to a financial transmission right obligation a price condition is also required. The price condition ensures that the financial transmission right obligation has the direction of the future power flow anticipated by market participants. The price condition is fulfilled if the TSOs purchase price in a bidding zone is lower or equal to the selling price in the adjacent bidding zone.

3.2 The use of the Hedging Product Coupling Condition

When allocating the coupled Hedging Products, the volume offered by TSOs for purchase and sale shall be distributed to market participants based on their bids and offers. Where TSOs offer to purchase Hedging Products, the offers from sellers will be accepted beginning with the lowest price and increasing to the price level of the offer that fulfils TSOs volume to purchase (marginal price). Where TSOs offer to sell Hedging Products, the bids from buyers will be accepted beginning with the highest price and decreasing to the price level of the bid that fulfils TSOs volume to sell (marginal price). The price at which TSOs purchase must always be lower than or equal to the price at which TSOs sell in each coupled transaction. An example of the use of the Hedging Product Coupling Condition in two adjacent biding zone shown in Figure 2.

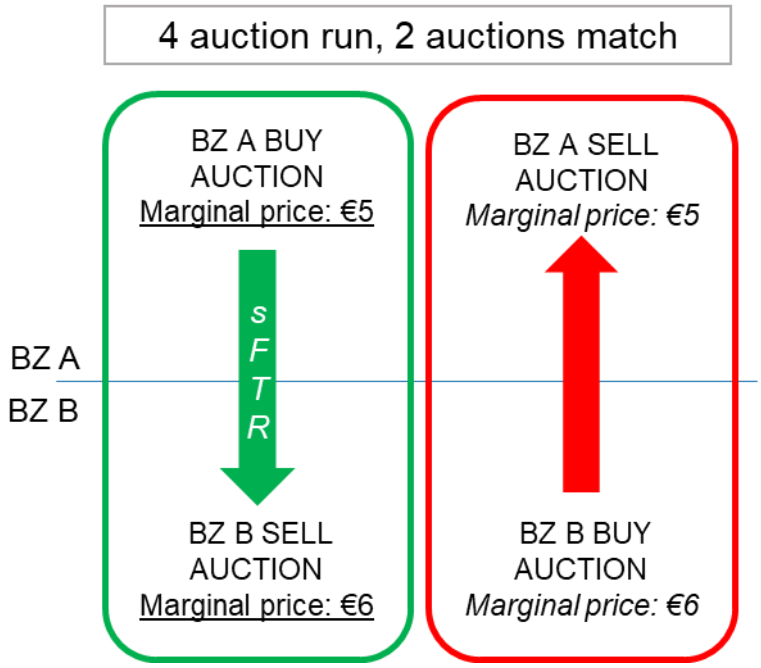

Figure 2: To allocate Hedging Products in the Hedging Product Coupling 4 separate Auctions, two in each biding zone, are run with the same maturity. In the BUY Auction of BZ A rendered a marginal price of €5 and the SELL Auction in BZ B rendered a marginal price of €6 at the same product volumes. The Hedging Product Coupling Condition is fulfilled and market participant's orders are match with the TSOs. The SELL and BUY Auction in biding zone A and B respectively rendered in a marginal price of €5 in respective Auction, thus the Hedging Coupling Condition was not fulfilled.

Besides the fulfilment of the Hedging Product Coupling Condition and the identical structure of contracts on both sides of the border there is no relationship between the contracts that TSOs enter into as buyers and the contracts that TSOs enter into as sellers.

3.3 Definition and choice of Hedging Products in the Auctions

The Arrangements in the proposal are designed with aim to support the market by adding hedging opportunities in the concerned bidding zones. The market is always evolving, and there is a possibility that the contracts most desired by the market change over time and need for new products can emerge. For this reason, the Arrangements are designed to allow for a change in the products used. However, there are a few criteria that need to be fulfilled for a product to be eligible for application for the Hedging Product Coupling. The product or the combination of products shall fulfil the following criteria:

a) be an obligation that hedges against the DA bidding zone price for the relevant bidding zone, being either;
   i) a future contract settled against the DA price of the particular bidding zone, or;
   ii) a CfD obligation settled against the DA price difference of the particular bidding zone and the calculated DA price of a hub (a reference price);
b) be traded on public exchanges;
c) be listed and cleared at authorised clearing houses according to applicable financial market legislation, as a formally defined standard product;

d) be free to list and hold no inherent restrictions so the product or products can be listed at additional exchanges and clearing houses if any such entity so desires; and

e) the eligible products shall be available in yearly, quarterly, and monthly maturities.

At the time of writing this proposal for the Arrangements EPADs are the only contracts available that are in line with the principles on which the products to be offered are chosen. However, if the deal between EEX and Nasdaq is approved and EPADs are not traded on the financial electricity market any more, they cannot be used for Hedging Product Coupling. To select the new Hedging Product(s) to be offered in the actions TSOs will consult market operators, CCPs and market participants. An evaluation of the products will be performed shall be performed within six (6) months after the fulfilment of the conditions set in Article 30(2) of the Arrangements and in accordance with the applicable national procurement legislations, and after that every two years. After evaluations, the products used in the HPC can be updated – if this proves to be requested by a sufficient number of market participants.

4. Hedging Product Coupling Process

This section presents the process for supplying additional hedging opportunities proposed in the Arrangements. The description of the Auction process to allocate Hedging Products is in section 4.1, which also includes an example. Section 4.2 describes the roles and the structure of the market of the Arrangements. Clearing of contracts entered into is the topic of section 4.3.

4.1 Auctions to allocate Hedging Products

In order to make the Hedging Products available to all market participants in an accessible way and to ensure as high a level of transparency as possible in the allocation, Auctions will be performed to allocate the Hedging Products.

The TSOs will appoint a Market Coupling Operator (MCO) using public procurement that will perform the Auctions and run the algorithm to allocate Hedging Products according to the Hedging Product Coupling Condition.

The Hedging Products that will be offered for coupling across the bidding zone borders SE1-FI and SE3-FI will be allocated in accordance with the Hedging Product Coupling Condition. TSOs offer to purchase and sell specific contracts of the specific maturities, the orders from market participants to enter into transactions with the TSOs should be matched to minimize TSOs price of purchase and maximize TSOs price for sales. The marginal bid/offer to match the TSOs offered volume shall set the price for all transactions entered into, i.e. marginal pricing shall apply.

Transparent and clear Auctioning rules, including gate opening time and gate closure time for each Auction opportunity, will be developed and published to provide guidance to all market participants wishing to participate. All practical details on how to register for participation, how to submit orders, how to change a submitted order etc. will also be available well in advance of an Auction.

Example: TSOs offer to enter into buy/sell positions for 10 MW in SE1 and FI, i.e. across SE1-FI bidding zone border.

In this example the allocation of Hedging Products for 10 MWh/h is presented. The example shows each step of the Auction process.

1. The allocation process start with market participants submitting their bids to the MCO, see Table 1. There are five different market participants taking part in the Auctions. The total volume of buy orders for SE1 are for 50 MWh/h, in FI 23 MWh/h and the sell orders in SE1 are 45 MWh/h and in FI 43 MWh/h.

2. The MCO applies marginal pricing principles and matches orders according to the Hedging Product Hedging Coupling Condition see Figure 3.

3. The MCO checks the matched orders with the respective CCP of each market participant to ensure that these can be cleared. If matched orders can be cleared, they are cleared by the CCP and the MCO informs all parties of the Auction about the results.

4. Each market participant will have the cleared positions at its selected CCP. For the TSO:s the total cleared volume and marginal price will be the positions they attains, see Table 2. For the market participants they will enter into the positions corresponding to their orders, see Table 3.

Table 1: The orders from the market participants for the four Auctions are rendered blow. Orders with negative volume indicate that these are sell orders.

MP 1 SE1		
	Price	Volume
MP 1 SE1	-2,8	-7
MP 1 SE1	-2,3	-3
MP 1 SE1	2,35	3
MP 1 SE1	3	7
Total volume sell		-10
Total volume buy		10

MP 1 FI		
	Price	Volume
MP 1 FI	163	-4
MP 1 FI	153	-3
MP 1 FI	143	-1
MP 1 FI	80	1
MP 1 FI	79	1
MP 1 FI	68	1
Total volume sell		-8
Total volume buy		3

MP 2 SE1		
	Price	Volume
MP 2 SE1	-7	-3
MP 2 SE1	-6,5	-3
MP 2 SE1	-5,5	-2
MP 2 SE1	0,95	2
MP 2 SE1	1	3
MP 2 SE1	1,25	5
Total volume sell		-8
Total volume buy		10

MP 2 FI		
	Price	Volume
MP 2 FI	160	-3
MP 2 FI	150	-2
MP 2 FI	139	-2
MP 2 FI	75	1
MP 2 FI	72	1
MP 2 FI	68	2
Total volume sell		-7
Total volume buy		4

MP 3 SE1		
	Price	Volume
MP 3 SE1	-2,4	-6
MP 3 SE1	-2,5	-4
MP 3 SE1	2,7	2
MP 3 SE1	4,5	8
Total volume sell		-10
Total volume buy		10

MP 3 FI		
	Price	Volume
MP 3 FI	105	-10
MP 3 FI	68	1
MP 3 FI	66	1
Total volume sell		-10
Total volume buy		2

MP 4 SE1		
	Price	Volume
MP 4 SE1	-5	-2
MP 4 SE1	-4,25	-3
MP 4 SE1	-2,5	-2
MP 4 SE1	0,8	1
MP 4 SE1	1	3
MP 4 SE1	2	6
Total volume sell		-7
Total volume buy		10

MP 4 FI		
	Price	Volume
MP 4 FI	200	-6
MP 4 FI	180	-2
MP 4 FI	160	-2
MP 4 FI	75	1
MP 4 FI	70	1
MP 4 FI	64,7	2
Total volume sell		-10
Total volume buy		4

MP 5 SE1		
	Price	Volume
MP 5 SE1	-3,4	-4
MP 5 SE1	-4,5	-6
MP 5 SE1	2,8	3
MP 5 SE1	4,8	7
Total volume sell		-10
Total volume buy		10

MP 5 FI		
	Price	Volume
MP 5 FI	185	-3
MP 5 FI	182	-3
MP 5 FI	175	-2
MP 5 FI	60	2
MP 5 FI	50	4
MP 5 FI	45	4
Total volume sell		-8
Total volume buy		10



Figure 3: The example show the matching of the orders submitted by market participants to MCO. The MCO matches the bids in the Auctions under the Hedging Product Coupling Conditions and at the same time applies marginal pricing in the Auctions. The green arrow indicates the two Auctions that couples and the green colour of the bars, each bar represents a specific order, the matched orders. Here one should remember that TSOs enter into buy positions in the SELL Auctions and sell positons in BUY Auctions, the Auctions are titled according to the Auction of the market participants rather than the TSOs.

Table 2: The results of the Hedging Product Coupling are as rendered below.

Biding zone	Direction	Marginal price [€/MWh/h]	Volume [MWh/h]
SE1	SELL	-5	10
FI	BUY	68	10

Table 3: The detailed results of the Hedging Product Coupling are render below, not published by the MCO.

Allocation [not published]			Price [€/MWh/h]	Volume [MWh/h]
SE1	SELL	Market Participant 1	-5	6
SE1	SELL	Market Participant 3	-5	4
FI	BUY	Market Participant 1	68	3
FI	BUY	Market Participant 2	68	4
FI	BUY	Market Participant 3	68	1
FI	BUY	Market Participant 4	68	2

4.2 Market structure and roles

There have been two major options analysed for how to set up the market in terms of roles and responsibilities:

1. An SAP (Single Allocation Platform) like structure
2. An SDAC (Single Day-Ahead Coupling) like structure

SAP is the preferred setup for the LTTR-markets in Europe, where the Joint Allocation Office (JAO)[2] allocates transmission rights on behalf of TSOs. In this

[2] www.jao.eu

kind of market setup, market participants need to establish ways of communicating and interacting directly with JAO, which serves as the only possible MCO. In the case of JAO, it is not foreseen that the MCO can or will ever be replaced by a competitor, but in the case of acting as the MCO for the allocation of coupled Hedging Products, it would be perfectly possible for different companies to compete for providing this service to TSOs.

In the SAP-like market setup, market participants will have to register with and place their orders directly with the MCO. They will also get information about the transactions they enter into from the MCO. If they so wish, market participants can still delegate tasks of interaction with the MCO to a third party or service provider. That will be the choice of each market participant. For the service provider to be able to represent the market participant, they should have the necessary proxy arrangements in place.

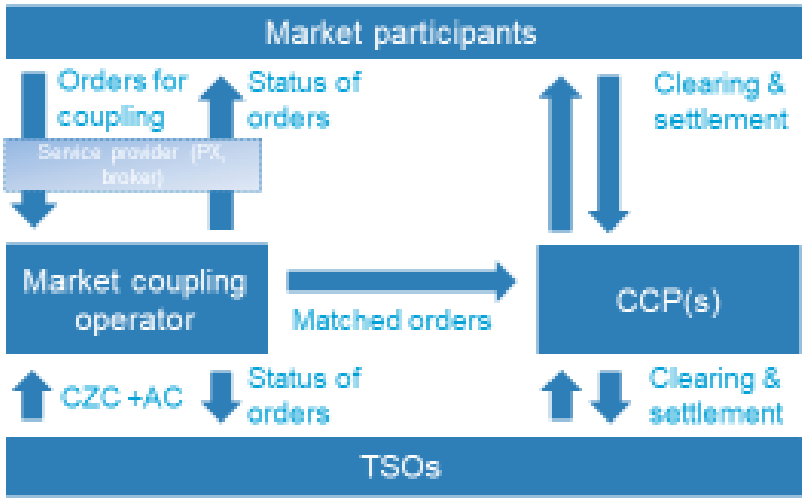

Figure 4: The market structure for the Hedging Product Coupling and the roles of the parties involved in the Auctions. The figure depicts the relations between the different roles.

The SDAC-like market structure, as the name indicates, is a design that resembles the setup of the European Single Day-Ahead Coupling. Most significantly, this model facilitates integration of several NEMOs or power exchanges that interact with the MCO on the market participants' behalf. This setup facilitates and also necessitates that all market participants are registered clients with a power exchange (NEMO, as it is called in the SDAC market) and perform their trading through this entity. On the other hand, the Market Coupling Operator will be either be an independent organization or a joint function performed by NEMOs in the SDAC setup.

Both of these alternatives create a complicated governance situation and/or establishment process, as can be seen from the European single day ahead and single intraday market coupling and current discussions for the update of Regulation (EU) 2015/1222 establishing a guideline on capacity allocation and congestion management, CACM Regulation (CACM 2.0).

Although the SDAC-like setup offers benefits in terms of creating a potentially equal playing field between NEMOs, the TSOs prefer not to present this alternative for the implementation of Hedging Product Coupling. Instead, the SAP-like structure has been chosen – to a large extent because its' simplicity and adjustability. For instance, this structure can be adapted to allow for NEMOs/power exchanges (or other service providers) to participate in the coupling for market participants that prefer this and find the value added by these service providers to outweigh any potential additional cost. For market participants that would rather register directly with the MCO and interact directly with the MCO, this will also be possible.

In both setups, the Hedging Product Coupling will require that market participants are clients with and have all the necessary arrangements in place to have their transactions cleared with a central counterparty (CCP) of their choice. The Hedging Product Coupling will only perform matching between the TSOs and market participants in contracts that are listed and cleared by entities that fulfil the requirements of CCPs in relevant legislation.

4.3 Clearing of contracts entered into

Since all products used in the Hedging Product Coupling will be listed at power exchanges and with CCPs, all transactions entered into will also have to be cleared using the respective CCP of the market participants' choice. The TSOs will be participating in the clearing and posting of collaterals just like regular market participants.

TSOs will be participating in the clearing and posting of collaterals, directly or indirectly, just like regular market participants and will register, directly or indirectly, with any CCP willing to clear the products used in the HPC that any market participant taking part in the HPC is using.

Fees and collateral requirements will be decided by each CCP and shall be according to their normal fee and collateral structure.

No financial position will remain between the TSOs and the market participants. All collateral and settlement payments will be handled according to contracts between market participant and CCP. The TSOs will have no remaining responsibilities with regards to any missing money or financial risk except for their own positions vis-à-vis the CCP.

5. Forward allocation platform

The MCO within the structure described in section 4.2 operates the forward allocation platform. The MCO is selected through a public tendering process every four years. The IT systems for the Hedging Coupling are foreseen to require relatively small investments due to the design of the Hedging Coupling process. The entity acting as MCO is required to transfer relevant tangible and intangible assets to its predecessor, facilitating continuity of the arrangements.

6. Firmness of allocated cross-zonal capacity

As the Hedging product coupling uses standard products the firmness defined for these will also apply. TSOs can manage their risk exposure via the capacity made available for the Hedging Product Coupling.