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2. Preliminary remarks

This document is an introduction to trading in power on the European Energy Exchange, hereafter referred to as EEX. Its aim is to provide information on trading in power on the EEX Derivatives Market to potential trading participants. EEX hereby points out that this document is subject to change. The provisions in the Exchange Rules, the EEX Trading Conditions, the Contract Specifications, the OTC Clearing Conditions, the Examination Regulations and the Clearing Conditions of European Commodity Clearing AG (ECC) shall be applicable. Moreover, EEX reserves the right to amend this document at any time without providing explicit information with regard to this.

3. Power Trading on the EEX Derivatives Market

Both exchange trading and entering of transactions for OTC clearing are possible on the EEX Derivatives Market.

3.1. Products on the EEX Derivatives Market

3.1.1. Unconditional and conditional derivatives transactions

On the EEX Derivatives Market unconditional futures contracts and conditional option contracts can be traded. Table 3.1 compares unconditional and conditional derivatives transactions.

Unconditional derivatives transactions (futures transaction)	Conditional derivatives transactions (option transaction)
Obligation to buy or sell a given underlying asset at a price specified today at a given time in the future.	Right to buy (buy option, call) or sell (sell option, put) a certain quantity of an underlying asset at a price specified today (exercise price) on the last day of trading (European option) or until the last trading day (American option).
Unlimited risk of loss	Limited risk of loss for the buyer, unlimited risk of loss for the seller
Unlimited potential for gains	Very high potential for gains
Neutralisation of risks	Risk insurance
No payment of premiums	Payment of premiums

Table 3.1: Comparison of conditional and unconditional derivatives transactions

3.1.2. Use of the futures and option contracts

The sale of futures contracts can be used to hedge against falling power prices (short hedge) and the purchase of futures contracts can be used to hedge against increasing power prices (long hedge). Moreover, option contracts can also be used for hedging.

Arbitrage uses the price differences between e.g. futures and options traded on the exchange and similar derivatives contracts traded off the exchange. In this context, the cheaper derivatives contract is bought, while the more expensive derivatives contract is sold at the same time.

A future is e.g. sold in the expectation of falling market prices with the intention of generating a profit by means of a subsequent repurchase of the derivatives contract at a lower price. Speculators assume risks and provide liquidity for the trading participants with a contrary view of the market. Speculation can also be engaged in through option contracts.

3.2. Power Futures

The following power futures can be traded on the EEX Derivatives Market:

- Phelix Base Week Futures (cash settlement)
- Phelix Peak Week Futures (cash settlement)
- Phelix Base Year/Quarter/Month Futures (cash settlement)
- Phelix Peak Year/Quarter/Month Futures (cash settlement)
- Phelix Off-Peak Year/Quarter/Month Futures (cash settlement)
- German Baseload Futures (physical settlement)
- German Peakload Futures (physical settlement)
- French Baseload Futures (physical settlement)
- French Peakload Futures (physical settlement)
- French Base Week Futures (cash settlement)
- French Peak Week Futures (cash settlement)

In the case of futures with physical settlement, the seller and the buyer agree to deliver or pay power with a certain quantity, a certain load profile and place of delivery at the price agreed on during a given period of time in the future upon the conclusion of the transaction. In the case of futures with financial settlement (cash settlement), the buyer and the seller agree to settle the price difference between the price agreed on and the future market price for a power delivery with a certain future delivery period, certain volume, load profile and place of delivery in cash upon the conclusion of the transaction. Furthermore, power futures are also characterised by the following product property (cf. also "Contract Specifications").

3.2.1. Delivery period

The delivery period describes the delivery period of the power delivery on which the futures contract is based. Delivery periods which can be traded on EEX are weeks (Week Futures), months (Month Futures), quarters (Quarter Futures) and years (Year Futures).

3.2.2. Load profile

The load profile describes at which delivery rate (volume of power per hour) the power delivery on which the futures contract is based is effected. Load profiles which can be traded on EEX are base load, peak load and off-peak load.

Base load comprises a constant delivery rate on all delivery days from Monday to Sunday and during all 24 delivery hours of a delivery day during the delivery period.

Peak load comprises a constant delivery rate on all delivery days from Monday to Friday and during all 12 delivery hours from 08:00am (CET) to 08:00pm (CET) of a delivery day during the delivery period.

Off-peak is the difference between base load and peak load. This load profile comprises the delivery days from Monday to Friday from 0:00am (CET) to 08:00am (CET) and from 08:00pm (CET) to 12:00pm (CET) as well as the time from 00:00am (CET) to 12:00pm (CET) from Saturday to Sunday.

3.2.3. Place of delivery

The place of delivery describes the balancing area within the transmission system of the delivery of power on which the futures contract is based. All admissible balancing zones of the EEX Spot Market (Phelix Base Futures, Phelix Peak Futures, Phelix Off-Peak Futures), the balancing zone of the German RWE Transportnetz Strom GmbH (German Baseload Futures, German Peakload Futures) or the balancing zone of the French RTE (French Baseload Futures, French Peakload Futures) are places of delivery for the futures.

3.2.4. Contract volume

The contract volume describes the quantity of power of a power delivery on which a futures contract is based. The contract volume corresponds to the product of “delivery rate x delivery days x delivery hours/day“. The delivery rate (power volume per hour) of all futures contracts is 1 MW. This e.g. results in the contract volume for a Baseload Month Future or a Phelix Base Month Future for the delivery month of September of “1 MW x 30 days x 24 h/day = 720 MWh“. The contract volume of Phelix Base Futures and Baseload Futures takes account of additional or reduced volumes of 1 MWh caused by the switch from daylight saving time to standard time and vice versa.

3.2.5. Tradeable delivery periods

Futures contracts which each have several delivery periods in the future can be traded. At maximum the respective next nine months into the future, the current month with regard to which the delivery of power on which the futures contract is based has already begun, the respective next eleven full quarters into the future and the respective next six full years into the future can be traded. The exact number of tradeable delivery periods is determined by the Management Board.

In this context, the Phelix Base/Peak Week Futures constitute an exception. The maximum tradeable delivery period for these comprises the current week as well as the next four weeks.

3.2.6. Expiry

Usually, expiry is reached on the last day of trading – with the exception of the week futures. Year futures and quarter futures reach expiry three exchange trading days before the beginning of the delivery period. Month futures reach their expiry on the exchange trading day before the last delivery day (Phelix Base Futures, Phelix Peak Futures, Phelix Off-Peak Futures) or two exchange trading days before the last delivery day (Baseload Futures, Peakload Futures). The Week Futures reach expiry on the Monday morning after the end of the delivery week. Settlement under the futures transaction is concluded upon expiry of the future.

3.2.7. Quotation

Prices for a futures contract are specified in EUR per MWh with two digits after the decimal point. This means the smallest price change is EUR 0.01 per MWh.

3.3. Examples of futures transactions

3.3.1. Phelix Base Month Futures

The following example is intended to illustrate the functional principle of a hedging transaction with the help of a Phelix Base Month Future.

A generating company is planning to sell all the power generated by its plant in the month of September 2010 (24 hours, 30 days) on the Spot Market via hourly contracts. It expects an average price of EUR 53.50 per MWh. Since the Spot Market price cannot be forecast with certainty, it decides to conclude a price hedging transaction on 1 July 2010 by selling 30 contracts of the Phelix Base Month Future for September 2010 at EUR 53.50 per MWh. The planned revenue from the delivery of power amounts to “30 MW x 24 h/day x 30 days x EUR 53.50 per MWh = EUR 1,155,600“.

The generating company sells approx. 30 MW per hour beginning on 31 August 2010 for the first delivery day (1 September 2010) and ending on 29 September 2010 for the last delivery day (30 September 2010) as planned. This means it submits price-independent bids for each one of the delivery days in September with the result that it sells the 30 MW in every hour at the respectively applicable Spot Market price. As a result, it achieves a price exactly corresponding to the average value of the daily Spot Market index, the Phelix Day Base. However, in this example the average has fallen to below the planned value of EUR 53.50 per MWh. The generating company only earns EUR 47.53 per MWh on average on the Spot Market and, this result falls short of the expected revenue by EUR 128,952.

However, the profits (Variation Margin) from the futures contract totalling EUR 128,952 offset exactly this shortfall in revenue of EUR 128,952. This clearly shows that the planned revenue totalling EUR 1,155,600 was fixed upon the conclusion of the futures transaction. It consists of the revenues on the Spot Market totalling “21,600 MWh x EUR 47.53 per MWh = EUR 1,026,648” and of the revenues on the Derivatives Market totalling “21,600 MWh x (EUR 53.50 per MWh – EUR 47.53 per MWh) = EUR 128,952”.

If we assume an Additional Margin Parameter of EUR 2.00 per MWh, the generating company in our example from 1 July 2010 (opening of position) to 29 September 2010 (expiry) has to deposit an Additional Margin for the position in Phelix Base Month Futures amounting to “30 MW x 24 h/day x 30 days x EUR 2.00 per MWh = EUR 43,200” with its clearing member. On account of an Expiry Month Factor which is bigger than 1, the Additional Margin can be specified at a corresponding higher amount upon the beginning of the delivery.

If applicable, the generating company also collects value-added tax totalling “EUR 1,026,648 x 19% = EUR 195,063.12” upon the sale on the Spot Market in addition.

Of course, an increase in the average Spot Market price is also possible, so that, in our example, the generating company would generate higher revenue on the Spot Market. In this case, however, the generating company would incur losses on the Derivatives Market, which would reduce its total revenue to exactly the planned amount of EUR 1,155,600 once again.

Exchange trading day		Daily settlement price of the Future [€ per MWh]	Phelix Day Base [€ per MWh]	Average Phelix Day Base [€ per MWh]	Variation Margin [€] (-) Additional contribution (+) Credit
Derivatives trading	Thu, 01/07/10	53.50	-	-	0

	Fri, 27/08/10	48.20	-	-	114,480
	Mo, 30/08/10	48.00	-	-	4,320
Derivatives and Spot trading	Tue, 31/08/10	47.00	48.00	48.00	21,600
	We, 01/09/10	47.50	48.20	48.10	-10,800
	Thu, 02/09/10	46.90	43.00	46.40	12,960

	Fri, 24/09/10	47.80	38.00	44.30	-19,440
	Mo, 27/09/10	48.30	48.00	45.04	-10,800
	Tue, 28/09/10	48.00	53.00	46.37	6,480
	We, 29/09/10	Final settlement price: 47.53	54.50	47.53	10,152
Total:					<u>128,952</u>

Figure 3.1 : Course of payments for a futures seller selling 30 Phelix Base Month Futures contracts for September 2010

Upon opening of the futures position the price of the planned sale on the EEX Spot Market is already established at EUR 53.50 per MWh in advance. This is done by using the average Spot

Market price (average of the daily EPEX Spot Market index, the Phelix Day Base, during the delivery month) as the final settlement price of the future.

3.3.2. German Baseload Futures

With regard to the example in section 3.3.1 equivalent hedging can also be achieved by selling German Baseload Month Futures for the month of September (Figure 3.2). For this reason, the generating company sells 30 German Baseload Month Futures contracts for September at a price of EUR 53.00 per MWh on 1 August. In this case, the planned revenue from the delivery of power amounts to “30 MW x 24 h/day x 30 days x EUR 53.00 per MWh = EUR 1,144,800”.

The future is traded with the full contract volume for the last time two exchange trading days before the first delivery day. On this day, the final settlement price is established – in our example it amounts to EUR 47.00 per MWh. This final settlement price remains constant during the subsequent settlement and constitutes the basis for the payment of the partial deliveries.

The settlement of the first partial delivery comprising the first delivery day (1 September) of the power delivery on which the future is based is prepared after the end of trading on 30 August. After that, the settlement of further partial deliveries is prepared every day until the settlement of the last partial delivery comprising the last delivery day (30 September) is prepared on 28 September.

With every settlement of a partial delivery which has commenced the contract volume of the Month Future on the next exchange trading day is reduced accordingly (BoM contract¹). The contract expires after the end of trading on 28 September.

Until the preparation of the settlement of the first partial delivery the settlement price of the month future fluctuates depending on the market value; in this context, profits and losses are realised as the Variation Margin. In our example, the price of the month future falls from EUR 53.00 per MWh to EUR 47 per MWh (final settlement price), which means that the generating company realises a profit of “30 MW x 24 h/day x 30 days x (EUR 53.00 per MWh – EUR 47.00 per MWh) = EUR 129,600” through the Variation Margin.

The delivery of power is settled on the basis of the final settlement price of EUR 47.00 per MWh. As a result of this, the generating company generates revenues of in total “30 MW x 24 h/day x 30 days x EUR 47.00 per MWh = EUR 1,015,200”. In line with the partial deliveries it receives these total revenues in partial payments.

In total, the generating company generates revenues totalling “EUR 129,600 + EUR 1,015,200 = EUR 1,144,800” through the Variation Margin and the payment for the delivery of power. This corresponds precisely to the planned revenue.

If applicable, the generating company also collects value-added tax totalling “EUR 1,015,200 x 19% = EUR 192,888”.

¹ =Balance of the Month

Exchange trading day	Contract volume in trading [MWh]	Settlement price of the future [€ per MWh]	Variation Margin [€] (-) Additional payment (+) Credit	Partial delivery per contract [MWh]	Payment partial delivery [€] (-) Additional payment (+) Credit	VAT partial delivery [€] (-) Additional payment (+) Credit	
Month Future	Mo, 01/08	720	53.00	0	-	-	
	Tue, 02/08	720	52.00	21,600	-	-	
	
	Mo, 29/08	720	47.00	108,000	-	-	
	Tue, 30/08	720	Final settlement price: 47.00	0	24	33,840	6,429.60
BoM Contract	We, 31/08	696	47.00	0	24	33,840	6,429.60
	Thu, 01/09	672	47.00	0	72	101,520	19,288.80
	Fr, 02/09	600	47.00	0	24	33,840	6,429.60

	Mo, 19/09	240	47.00	0	24	33,840	6,429.60
	Tue, 20/09	216	47.00	0	24	33,840	6,429.60
	We, 21/09	192	47.00	0	24	33,840	6,429.60
	Thu, 22/09	168	47.00	0	72	101,520	19,288.80
	Fr, 23/09	96	47.00	0	24	33,840	6,429.60

	Mo, 26/09	72	47.00	0	24	33,840	6,429.60
	Tue, 27/09	48	47.00	0	24	33,840	6,429.60
	We, 28/09	24	47.00	0	24	33,840	6,429.60
Thu, 29/09	0	-	-	-	-	-	
Total:			129,600	720	1,015,200	192,888	

Figure 3.2 : Course of payments for a futures seller selling 30 German Baseload Month Futures contracts for September 2010

If we assume an Additional Margin Parameter of EUR 4.00 per MWh, the generating company in the example in Figure 3.2 has to deposit an Additional Margin of “30 MW x 24 h/day x 30 days x EUR 4.00 per MWh = EUR 86,400” for the period from 1 August (opening of the position) until 29 August (one day before the beginning of settlement) with its clearing member. If we assume an Expiry Month Factor of 2, the Additional Margin from 30 August (beginning of settlement) to 28 September (expiry) amounts to “2 x 30 MW x 24 h/day x 30 days x EUR 4.00 per MWh = EUR 172,800”.

3.4. Power Options

The following power options can be traded on the EEX Derivatives Market:

- Phelix Base Month/Quarter/Year Options

3.4.1. Basic principle of options on futures

An option on a future is a contract between two parties under which the buyer is e.g. granted the following right in return for the payment of the option price (premium):

Right to buy	=> buy option	= call
... or to sell	=> sell option	= put
... a given futures contract	=> underlying asset	Phelix Base Year Future for the year 2011
... in a given quantity	=> number	1 MW
... at a price specified in advance	=> exercise price	EUR 52.00
... at or until a time specified	=> last trading day	09/12/2010

The seller (writer, grantor) assumes the obligation to sell (buy option, call) or buy (sell option, put) the underlying asset at the specified exercise price (base price, strike price) provided the buyer exercise his right, i.e. exercises the option. In return, he receives the option price paid by the buyer of the option. Depending on whether the option is a European-style or an American-style option, the buyer of the option can exercise his right on every exchange trading day until the last trading day (American option) or only on the last trading day (European option).

Buy option (Call)		Sell option (Put)	
Buyer of buy option (call)	Seller of a buy option (call)	Buyer of a sell option (put)	Seller of a sell option (put)
has the right to buy the underlying asset at the exercise price agreed on in advance but is not obliged to do so.	has the obligation to sell the underlying asset at the exercise price agreed on in advance if the buy option (call) is exercised.	has the right to sell the underlying asset at the exercise price agreed on in advance but is not obliged to do so.	has the obligation to buy the underlying asset at the exercise price agreed on in advance if the sell option (put) is exercised.

Table 3.2 : Long and short positions in options

The trading participant holds positions on the option market by buying and selling options. A position can either be “long” (buyer) or “short” seller) (tables 3.2 and 3.3).

Option positions can be “neutralised” by means of closing-out. This e.g. means a short position of 25 contracts in buy options (calls) on the Phelix Base Year Future for the year 2011 with an exercise price of EUR 52 can be closed out by buying 25 contracts in buy options (calls) on the Phelix Base Year Future for the 2011 at an exercise price of EUR 52. As a result of this, the obligation under the original short position has ceased to exist.

Exercise of a ...		Assignment of a ...	
Buy option (call)	Sell option (put)	Buy option (call)	Sell option (put)
leads to a ...			
long position in futures	short position in futures	short position in futures	long position in futures

Table 3.3 : Exercising of options on futures

3.4.2. Opening and closing-out

As in the case of futures, positions in options can be opened at any time during the trading hours and closed out by means of a matching transaction in the same option contract. For example, a buy positions is closed by a sell position. There are two possibilities of executing these transactions.

On the one hand, option contracts can be traded on the exchange market during the trading hours. The execution of an opening and closing-out transaction in this context automatically also includes clearing of this position. On the other hand, over-the-counter transactions in these option contracts and/or in contracts corresponding to the exchange option contracts in terms of their design can be submitted to ECC (clearing house of EEX) for clearing during the trading hours. This is done by using the OTC block trade entry function within the Eurex trading system. Essentially, it

corresponds to the EFP trade entry function used for futures. In this process, the buyer enters the details of the transaction into the system and receives a transaction number. He then forwards this number to the seller so that he can confirm the transaction entered. Option transactions arranged in this way by brokers can be forwarded to ECC for clearing.

In clearing, there is no differentiation between exchange transactions and over-the-counter transactions with regard to the positions. As a result of this, an option position can, e.g., be opened on the exchange and closed out over the counter.

3.4.3. Exercising

EEX offers European-style options, i.e. exercising of the options is only possible on the last day of trading. In this respect, the option contract to be exercised can be in-the-money, at-the-money or out-of-the-money as regards the price of the underlying asset. Exercising is possible both automatically and manually. However, automatic exercising is currently preset for all trading participants.

Automatic exercising

On the exercising day EEX establishes an intra-day fixing price for the respective underlying asset at 02:00pm (CET) and publishes it in due time before the expiry date of the option at 03:00pm (CET). During automatic exercising this intraday fixing price of the option constitutes the basis for the determination of the in-the-money amount per contract and account.

The in-the-money amount determined is automatically checked against the ITMMin² parameter specified by the trading participant. Should the in-the-money amount determined be higher than the parameter specified, the option is automatically exercised. If it is lower than the parameter, automatic exercising does not take place.

Manual exercising

Manual exercising of options is also possible. For example, options can be excluded from automatic exercising overall or out-of-the-money options can also be exercised manually. These specifications are exclusively made under the trading participant's responsibility.

During manual exercising the trading participants have to initiate exercising within the trading system on the expiry day. During the exercising period, the trading participant must filter for the option contract to be exercised in the "Exercise Overview" window and specify a corresponding number of contracts for exercising. As a result, the trading participant can exercise the entire position or a part thereof. Exercising is possible on the exercise day during the pre-trading and main trading phase, i.e. between 08:00am (CET) and 03:00pm (CET). On the exercise day the main trading phase is reduced (8:30am (CET) to 03:00pm (CET)).

Immediately after 03:00pm (CET), the respectively exercised long positions and the short positions assigned to these are displayed in the "Exercise Assignment Overview" window upon the switch to the POSTR system phase. In this context, a short position can be assigned in its entirety or only in part. On the following day, the assignment is shown in the trading system in the "Exercise Assignment Summary Overview" and "Assignment Overview" windows.

² =in-the-money minimum amount

On the exercise day, the futures position resulting from the exercised or assigned option position is opened for the trading participant concerned at the exercise price of the option (Table 3.3). The futures positions are booked within the position account in which the option position from which the futures position was established through exercising or assignment was booked. As early as on the exercise day, these futures positions are included in the calculation of the Variation Margin and Additional Margin, while all option positions which have fallen due are no longer considered with regard to the Premium Margin and the Additional Margin.

All exercises and assignments are also displayed to the trading participants in the form of reports. A clearing member can view the exercises and assignment for its trading participants at any time.

3.4.4. Fulfilment

After exercising, power options are fulfilled by recording of a corresponding futures position. For example, upon exercising of a buy option (call) on the Phelix base Year Future for the year 2011 a long position in the Phelix Base Year Future for the year 2011 is opened for the buyer of the option and a short position in the Phelix Base Year Future for the year 2011 is opened for the seller of the option at the respective exercise price on the last trading day. Just like the open futures positions, the futures positions opened by exercising or assignment can lead to the physical delivery of power (physical settlement of Phelix Futures). See section 4.2.3. for further details.

3.4.5. Quotation

The prices for the option premium are specified in EUR per MWh with three digits after the decimal point so that the smallest price change is EUR 0.001 per MWh.

3.4.6. Tradeable underlying assets

Options on the respective next five Phelix Base Month Futures (Phelix Base Month Option), the respective next six Phelix Base Quarter Futures (Phelix Base Quarter Option) and the respective next three Phelix Base Year Futures (Phelix Base Year option) can be traded.

3.4.7. Expiry

Expiry is defined as the time at which the respective option can be traded and exercised for the last time. As a rule, the last trading day of a Phelix Base Year Option is the second Thursday in December and at the expiry of each quarter (short-dated options). The last trading day of a Phelix Base Quarter Option for the first calendar quarter and of Phelix Base Month Options with the delivery month January is regularly the third Thursday in December. The last trading day of all other Phelix Base Quarter Options and Phelix Base Month Options is four exchange trading days before the beginning of the delivery period of the respective underlying asset.

3.4.8. Option series

The entire number of the buy and sell options (call and put options) with the same underlying asset and the same expiry date available for trading is referred to as an option series. At least three series with different exercise prices can be traded for every underlying asset and every maturity with one exercise price being in-the-money, one exercise price being at-the-money and one exercise price being out-of-the-money upon their introduction to trading.

Additional option series can be launched. The Management Board specifies the number of exercise prices available for trading and clearing.

3.4.9. Contract volume

The contract volume is defined as the number of futures with regard to which there is an obligation or right to deliver or accept these on the basis of exercising of an option contract. The option contracts refer to exactly one futures contract each.

3.4.10. Option price

The option price (premium, option premium) consists of two components, the intrinsic value and the fair value (option price = intrinsic value + fair value).

An option which permits buying or selling of the underlying asset at a more favourable price than on the market at the time of the assessment has an intrinsic value. The intrinsic value can only be positive or zero. An option with an intrinsic value is also referred to as “in-the-money”. An option without an intrinsic value is referred to as “out-of-the-money”. “At-the-money” means that the exercise price corresponds to the market price of the underlying asset.

The fair value comprises the possibility that the buyer’s expectations regarding the development of the underlying asset might be fulfilled during the remaining term to maturity. The buyer is ready to pay a certain amount – the fair value – for this. At the same time, the fair value is the compensation which the seller receives for the risk entered into. The closer an option approaches its last trading day, the smaller its fair value becomes until it finally amounts to zero on the last trading day. The decline in the fair value accelerates with the passage of time (fair value = option price – intrinsic value).

Regardless of the current supply and demand situation, the option price can be calculated theoretically on the basis of an option price model and various parameters (theoretical option price). The essential factors influencing the fair value and/or the option price are shown below:

- Volatility of the underlying asset:

Volatility reflects the assessment of the price fluctuations of the underlying asset. The higher the volatility is, the higher the option price is. An underlying asset with strongly fluctuating prices forms a higher risk for the seller of the option, which is why said seller requests a higher premium. Since all other factors influencing the fair value of an option (current price of the underlying asset, exercise price, short-term interest rate and remaining term to maturity) are fixed parameters or parameters determined externally, volatility constitute the decisive factor influencing the theoretical option price.

- Remaining term of an option:

The longer the remaining term to maturity is, the higher the risk is for the seller of the option and the higher the premium is. On the other hand, the closer the last day of trading approaches, the lower the fair value and, thus, the option premium will be.

- Short-term interest rate:

Since the theoretical option price is an expected value discounted by the short-term (risk-free) interest rate, the short-term (risk-free) interest rate is also included in the calculation. However, compared with the other determining factors it has a relatively low significance. In the case of options on futures, the interest rate only has an impact on the discount factor since it is known on the basis of theoretical considerations that futures correspond to shares with a dividend corresponding to the risk-free interest rate. As a result of this, both the premium of a buy option (call) and the premium of a sell option (put) decline with increasing interest rates.

Table 3.4 and Table 3.5 summarise these connections.

The price of a buy option (call) is the higher,	The price of a buy option (call) is the lower,
the higher the price of the underlying asset is.	the lower the price of the underlying asset is.
the lower the exercise price is.	the higher the exercise price is.
the longer the remaining term to expiry is.	the shorter the remaining term to expiry is.
the higher the volatility is.	the lower the volatility is.
the lower the interest rate is	the higher the interest rate is.

Table 3.4 : Factors influencing the price of a buy option (call)

The price of a sell option (put) is the higher,	The price of a sell option (put) is the lower,
the lower the price of the underlying asset is.	the higher the price of the underlying asset is.
the higher the exercise price is.	the lower the exercise price is.
the longer the remaining term to expiry is.	the shorter the remaining term to expiry is.
the higher the volatility is.	the lower the volatility is.
the lower the interest rate is.	the higher the interest rate is.

Table 3.5 : Factors influencing the price of a sell option (put)

3.5. Definition of the option as against the future

Options differ from futures both with regard to the obligations resulting from the contract and with regard to clearing.

While the future, as a fixed derivatives transaction, forms an obligation for the holder of the long as well as the holder of the short position, the option only constitutes an obligation for the holder of the short position. The holder of the long position, on the other hand, has the right to exercise the option but is not obliged to do so. This means the only risk for the buyer of the option is that his option is not in the money on the expiry day, which means that he does not exercise the option but lets it expire. As a result, he "loses" the option premium which he has already paid but does not have to make any further payments. However, the seller of the option runs the risk that an option which is in the money is exercised by the buyer of the option on the expiry day and that a futures position is recorded at the less favourable exercise price than the current futures market price for the seller of the option. This risk is covered by the option premium paid to him.

This difference also has an impact on clearing. While both the holder of the long position and the holder of the short position are required to furnish a security (Additional Margin) in the case of the future, a security only has to be furnished by the seller of the option (Premium Margin and Additional Margin) in the case of the option. These are a result of the different obligations which the holders of the positions have towards the clearing house as the central counterparty. In the case of a futures position, the clearing house demands a security covering the maximum closing-out costs to be expected in the event of the most unfavourable price development during the next exchange trading day. Since the futures position is assessed on a "mark-to-market" basis every day and since, as a result, profits and losses generated are balanced in terms of liquidity, only the price fluctuation during the next exchange trading day is relevant.

In the case of an option position, there is only a risk for the clearing house on account of a holder of a short position since the holder of this position is the only one who has entered into an obligation. In the event of a default on the part of the seller of the option, the clearing house would close out his option position. To this end, the premium in line with the market at the time of closing-out has to be paid. As a result of this, the highest possible closing-out risk arises for the most unfavourable development of the premium during the next exchange trading day from the premium itself (Premium Margin) and the assumed highest possible change of the premium (Additional Margin). Both margins are recalculated on every exchange trading day, i.e. they are adjusted to the changing premium and requested from the seller of the option.

3.6. Examples of option transactions

3.6.1. Power plant operator sells a buy option (call)

A power plant operator has a generating plant with a capacity of 25 MW. At EUR 30 per MWh the generating costs of this plant are relatively high. The use of the plant has not been planned yet for

next May so that the operator wishes to market the plant on the wholesale market. The operator of the plant takes this decision on 9 February. Since, at EUR 25.50 per MWh, the Phelix Base Month Future is far below the generating costs at that time and since the operator does not expect any further increase in the power price to above its own generating costs, he decided to sell a buy option (call) on the Phelix Base Month Future for the month of May. He selects his generation costs of EUR 30 per MWh as the exercise price. He receives a premium of EUR 0.900 per MWh for this, i.e. in total “25 MW x EUR 0.9 per MWh x 24 h/d x 31 d = EUR 16,740”.

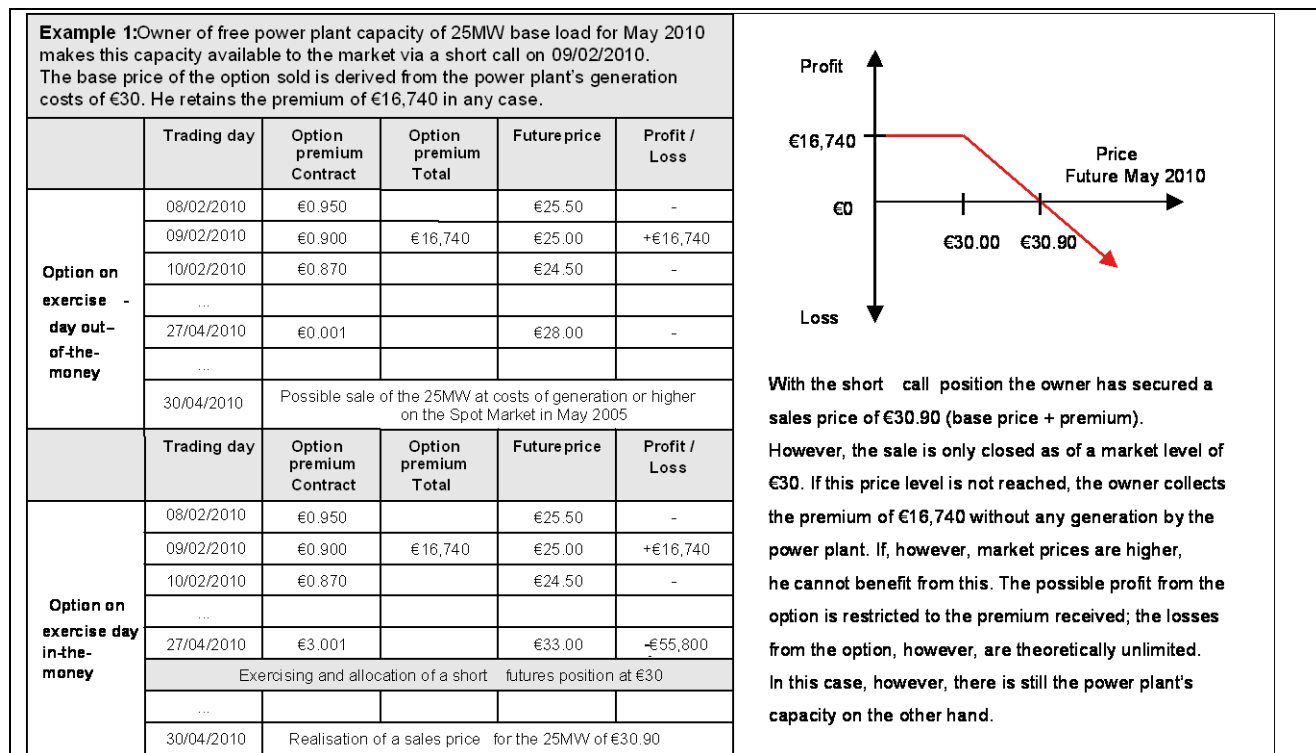


Figure 3.3 : Power plant operator sells a buy option (call)

Figure 3.3 shows that for the plant operator this premium corresponds to a profit as long as the futures price does not rise to more than EUR 30 per MWh on the last day of trading. In these cases, the option is not exercised and the operator can generate additional revenues on the Spot Market with the unused plant in May by generating power at Spot Market prices of more than EUR 30 per MWh and selling this power on the Spot Market.

If the futures price increases to more than EUR 30 per MWh, the option is exercised and the plant operator receives a sell position in the Phelix Base Month Future for the month of May at an exercise price of EUR 30 per MWh. If he closes out the futures position received in those cases, the profits resulting from the revenue from the option premium would decline as shown in Figure 3.3. As of a futures price of EUR 30.90 per MWh this would even lead to losses overall. However, it is more cost-efficient for the plant operator not to close out the futures position received but to provide physical fulfilment via his plant. This means he will be able to secure the revenue from the option premium even if futures prices increase to more than EUR 30 per MWh. In addition, he can generate additional revenue on the Spot Market with the plant used in this way in May by stopping the generation of power at prices of less than EUR 30 per MWh.

By selling a buy option (call) with the generating costs as the exercise price the plant operator managed to securely generate revenues of EUR 16,740 even if marketing of the plant's output above the generating costs on the futures market was not possible. The sale of a buy option (call) does not prevent the optimisation of the plant on the Spot Market and the generation of additional revenues there.

3.6.2. Industrial enterprise buys a buy option (call)

An industrial company with a high consumption of 25 MW base load which does not have its own generating facilities, however, wishes to secure the best possible price for its power procurement at all times. This industrial company has not yet covered its power requirements for the month of May. Internal calculations show that the company has to achieve a power price of less than EUR 31 per MWh at all times in order to be able to produce efficiently. At EUR 25 per MWh the futures price for the Phelix Base Month Future is clearly below this specification. However, the company's analysts assume that the futures price will fall by at least EUR 1 per MWh, but the company's risk directive does not permit keeping the power procurement for May unresolved and requires the position to be closed now.

In this context, options might be a solution. By buying a buy option (call) the company secures a maximum purchase price which corresponds to the exercise price of the option plus the option premium paid for itself. In this case, the industrial company decides to buy a buy option (call) on the Phelix Base Month Future for the month of May with an exercise price of EUR 30 per MWh in return for the payment of a premium of EUR 0.900 per MWh. In total, the company pays a premium of "25 MW x EUR 0.9 per MWh x 24 h/d x 31 d = EUR 16,740".

If the futures price on the expiry day is above the exercise price of EUR 30 per MWh, the company in its capacity as the buyer of the option will exercise the option and, thus, be assigned a buy position in Phelix Base Month Futures for the month of May at the more favourable exercise price. Since the company needs the power, it will physically fulfil the futures position on the Spot Market in May. Overall, the power price is established on the basis of the price of EUR 30 per MWh for the physically settled future and, in addition, EUR 0.90 per MWh for the option premium paid. Moreover, in the case of increasing futures prices – which is actually not expected to materialise – the company will also pay EUR 30.90 per MWh, which is not more than the commercially acceptable price of EUR 31 per MWh.

If, however, the market prices of the futures are below the exercise price on the expiry day, exercising is not profitable. The company will then secure its power requirements through a futures position at the respective market price instead. If the power price decreases by more than EUR 1 per MWh, as expected, i.e. if it falls to at least EUR 24.00 per MWh, the company pays EUR 24.90 per MWh for its power procurement in May under consideration of the option premium.

Figure 3.4 illustrates this example. This example shows that risks can be controlled targetedly with the help of options without foregoing opportunities – as in the case of futures.

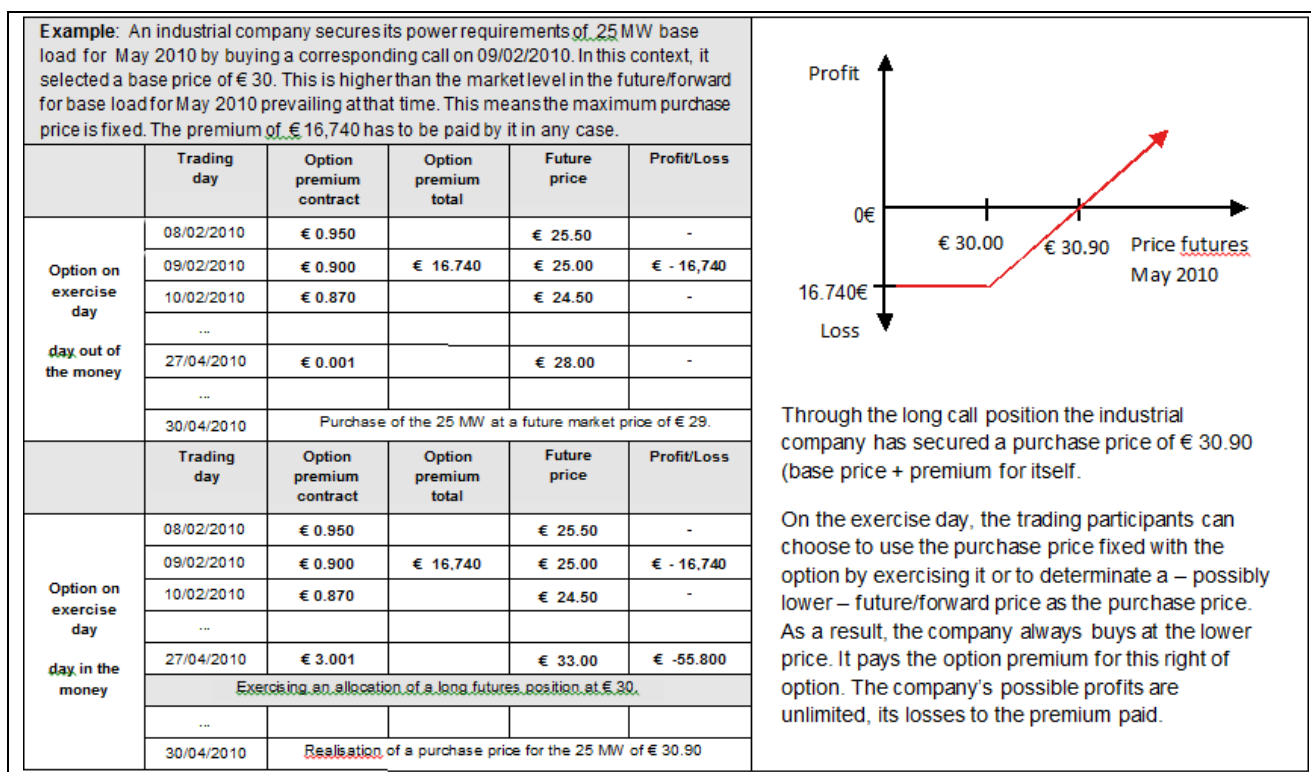


Figure 3.4 : An industrial company buys a buy option

4. Clearing

4.1. Clearing structure

ECC accedes to all transactions as the central contractual partner (central counterparty) and, hence, assumes the counterparty risk. The clearing structure consists of the central counterparty ECC and several banks, the clearing members.

In the context of this structure the trading participants settle their transactions with a clearing member of their choice, while the clearing members in turn settle these transactions with ECC. The trading participants have to deposit securities with their clearing member for liabilities entered into under transactions and the clearing members, in turn, have to deposit these with ECC. This structure safeguards the fulfilment of all transactions.

4.2. Settlement

4.2.1. Daily profit and loss settlement (Variation Margin)

On every day, EEX specifies a settlement price in line with the current market price of a given futures contract, which is specified by ECC, for every futures contract. The change in the value of the futures position which results from the change in the settlement price between the last and the current exchange trading day is credited to the trading participant in cash or debited in cash (Variation Margin). In this context, the value of a futures position is calculated as the product of “contracts x contract volume x settlement price”.

4.2.2. Settlement of year futures and quarter futures

Year futures and quarter futures are fulfilled by cascading. Cascading means that futures contracts with longer delivery periods are replaced by equivalent futures contracts with shorter delivery periods on the last day of trading.

Three exchange trading days before the beginning of the delivery period every position in year futures is replaced by equivalent positions in month futures for January, February and March and quarter futures for the second, third and fourth quarter, whose delivery periods taken together correspond to the year.

Three exchange trading days before the beginning of the delivery period every position in quarter futures is replaced by equivalent positions in month futures, whose delivery periods taken together correspond to the quarter.

Every cascading is effected by closing the position in Year Futures or Quarters to be cascaded and simultaneously opening several equivalent positions in futures with shorter delivery periods. In this case, the positions are closed at the final settlement price of the year future or quarter future and the equivalent new positions in futures with a shorter delivery period are opened at the final

settlement price. As a result of this, Variation Margins are incurred for the closed position and, additionally, for all newly opened positions on the day of cascading.

4.2.3. Settlement of financial week and month futures

French Week Futures, Phelix Week Futures and Phelix Month Futures are settled by means of cash settlement. There is no physical delivery during the delivery period but the seller and the buyer of the future only receive payments of money or have to effect such (Variation Margin) throughout the entire period until the end of the delivery period or until the position is closed. The amount of the payments is established on the basis of the difference between two consecutive settlement prices multiplied by the contract volume and the number of contracts. On the last day of trading, the last payment is established on the basis of the difference between the final settlement price and the settlement price for the preceding exchange trading day multiplied by the number of contracts and the contract volume. This last payment is also a Variation Margin. Afterwards, the week futures and month futures are considered fulfilled.

The settlement price for the French Week Futures, Phelix Week Futures and Phelix Month Futures on the last trading day is referred to as the final settlement price. On principle, the final settlement price is different from all previous daily settlement prices since it is established on the basis of the average of all daily EPEX Spot Market indices for the French auction or of the Phelix Day Base and Phelix Day Peak for the delivery days of the corresponding delivery month or of the corresponding delivery week.

Phelix stands for Physical Electricity Index. The Phelix Day Base is the simple average of the prices of all 24 individual hours of the auction for Germany/Austria on the EPEX Spot. The Phelix Day Peak is the simple average of the prices for the hours 9 to 20 (8:00am CET to 8:00pm CET) in the auction for Germany/Austria on EPEX Spot. The daily average values regarding the auction for France are established in line with this.

As a result of this, the final settlement price is the price at which the procurement of power could be achieved on EPEX Spot for a given month and a given load profile.

The trading participant has the possibility of combining the financial fulfilment of its positions in French Week Futures, Phelix Week Futures and/or Phelix Month Futures with a physical delivery or partial delivery of the quantity of power established contractually during the delivery period on EPEX Spot. To this end, the trading participant commissions the EPEX Spot Market Supervision to submit a bid corresponding to the futures position on EPEX Spot by submitting a fax once. In this respect, the trading participant is responsible for the content of the fax order.

The trading participants' admission to the Spot Market (EPEX Spot) and to the Derivatives Market (EEX) as well as the establishment of one or several trading accounts for hourly contracts on EPEX Spot, which are used specifically for physical fulfilment, constitute the precondition for this. This enables the trading participant to divide its trading activities in terms of portfolio optimisation and the fulfilment of its futures positions.

EPEXSPOT Bidding Form "Physical Fulfilment Month Futures"
 EUROPEAN POWER EXCHANGE Fax no.: +49 341 2156 111 (Leipzig) or +33 1 73 03 96 11 (Paris)

Member	Company Name				Corresponding Futures	
	Delivery Portfolio for Month Futures:				Market Member-ID: _ _ _ E X	
	Amendment bid:				Amendment valid from:	

Validity	Delivery Month	Month	Year
	TSO Area		

		Bid Monday - Friday				Automatic Check for EPEX (Not to be filled in)	Bid Saturday - Sunday				Automatic Check for EPEX (Not to be filled in)
		From Hour	To Hour	Buy (B) / Sell (S)	Volume in MW		From Hour	To Hour	Buy (B) / Sell (S)	Volume in MW	
Hourly Bids	Off-Peak 1 Bid	1	8			0	1	8			0
	Peakload Bid	9	20			0	9	20			0
	Off-Peak 2 Bid	21	24			0	21	24			0
		Sum in MWh									

Member	Date and Time:	Fax:
	Name of the Spot Trader (needs to be reachable during the weekend / duty number):	Phone:
	Signature of the Spot Trader:	Mobile:
		E-mail:

D: _____
 Z: _____
 IP: _____
 (will be filled in by EPEX)

Figure 4.1: Bidding form for physical settlement at EPEX Spot

With the help of the fax form "Physical Settlement of Futures" (Figure 4.1) the trading participant commissions the EPEX Spot Market Supervision to execute this at the latest by 4:00 pm (CET) two exchange trading days before the beginning of the delivery period in the case of month futures and by at the latest 12:00 noon (CET) on Friday in the case of week futures. Both positions from exchange trades and from transactions from the OTC clearing of EEX can be used as the basis. The order must be authorised by an exchange trader licensed for spot trading and it must comprise the balancing zone, the delivery period and the volume for the respective hours concerned. Orders may only be submitted for balancing zones for which the trading participant is licensed. The fax bid is considered binding regardless of open positions on the Derivatives Market. However, the EEX Market Supervision will randomly check the plausibility with the corresponding futures positions. Bids can be submitted for positions in French Week Futures, Phelix Week Futures and Phelix Month futures. Contrary positions in Phelix Week Futures and Phelix Month Futures (off-peak positions) can be fulfilled by means of bids regarding the corresponding off-peak hours on the Spot Market. If contrary positions in Phelix Week Futures and Phelix Month Futures are to be physically fulfilled on the Spot Market of EPEX Spot separately, this can only be done through different trading accounts.

In order to guarantee the highest possible likelihood of execution physical delivery is effected through price-independent bids in hourly contracts during the entire delivery period. In justified

exceptions the bids can also be changed during the delivery month (e.g. on account of closing-out of a futures position).

4.2.4. Fulfilment of Baseload and Peakload Futures

Baseload and Peakload Month Futures are fulfilled physically. In this context, the power delivery on which the futures contract is based is fulfilled in several equivalent partial deliveries. Usually, a partial delivery comprises one delivery day. As a result of this settlement in partial deliveries comprising one day each the contract volume of these month futures is reduced in line with the delivery days which have already been settled during the delivery and its amount is limited to the total of the deliveries which have not been settled yet – i.e. to the rest of the month (BoM, balance of the month). This means the month futures becomes a BoM contract with a contract volume which is reduced daily during the delivery. Figure 4.2 shows this partial physical fulfilment in a schematic overview.

Two exchange trading days before the first delivery day of a Baseload and/or Peakload Month Future the final settlement price is established in accordance with the current market value of the power delivery on which the futures contract is based. On this exchange trading day these month futures can be traded with their unreduced contract volume for the last time and they are based on a power delivery for the entire month for the last time; on all following exchange trading days the month future is only available as a BoM contract. After the end of trading the processes for the physical settlement of the delivery described below begin. The final settlement price established here is used as the settlement price of the corresponding BoM contracts on all subsequent exchange trading days.

A profit and loss settlement (Variation Margin) is carried out for every position in such a BoM contract after the end of trading. Since the settlement prices of BoM contracts remain constant during the delivery and correspond to the final settlement price, a Variation Margin can only be incurred with regard to positions which were opened or closed on the respective current exchange trading day. A Variation Margin is not incurred from existing positions from the preceding exchange trading day.

As the next step, the next partial delivery is prepared for settlement. The next partial delivery usually comprises the delivery day following the next exchange trading day. For example, on an exchange trading day which is a Tuesday the delivery day of Thursday (i.e. the first delivery day after the next exchange trading day, which is Wednesday) is prepared for settlement as a partial delivery.

Once the scope of the partial delivery to be settled is known, schedule reports for reporting to the transmission system operators, the payment of money for the partial delivery and, if applicable, the statutory VAT for the partial delivery can be calculated. The amount to be paid is established as the product of “contracts x delivery days of the partial delivery x delivery hours per day x final settlement price“. The VAT which has to be paid if applicable is established as a percentage of the payment (currently 19%).

On the following exchange trading day, which is the exchange trading day preceding the delivery day, the payments – if applicable including VAT – are settled between the buyer and the seller.

The payments are settled through the respective clearing members. Moreover, ECC also submits the schedules for the partial delivery to the respective transmission system operator, i.e. to RWE Transportnetz Strom GmbH (German Baseload Month Futures, German Peakload Month Futures) or RTE (French Baseload Month Futures, French Peakload Month Futures) on this day. ECC settles the spot transactions on power and the derivatives transactions on German Baseload Futures and/or German Peakload Futures via two separate exchange balance areas for the Spot Market and the Derivatives Market.

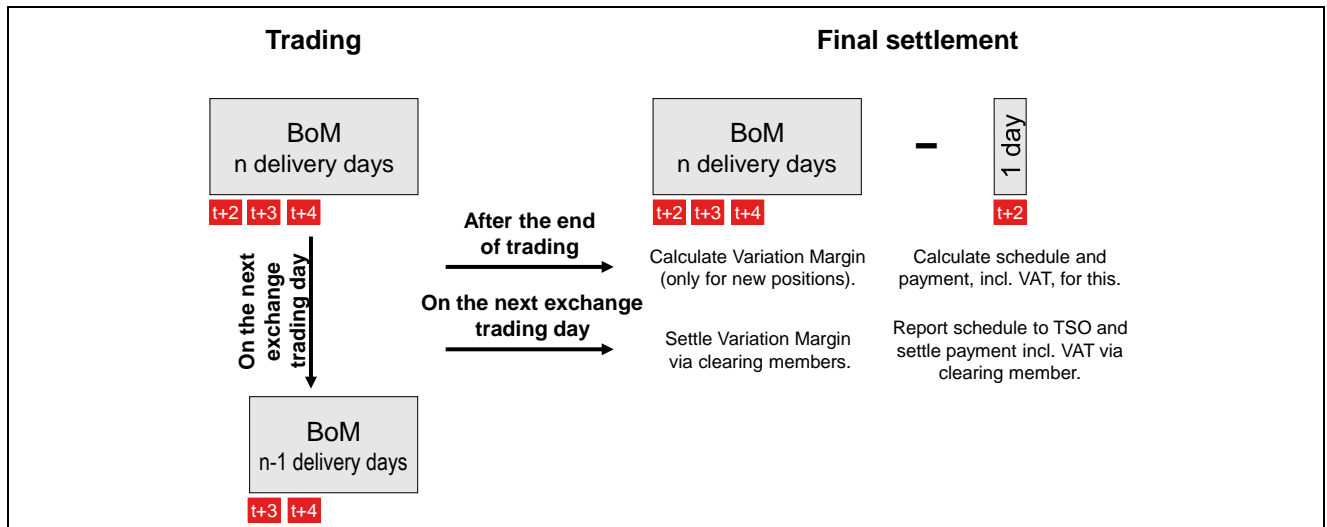


Figure 4.2: Physical fulfilment of Baseload and Peakload Month Futures

Furthermore, the contract volume of the BoM contract is reduced by the product of “delivery days of the partial delivery x delivery hours per day“ in trading on the following exchange trading day.

ECC reserves the right to have the trading participant’s ability to deliver and take delivery confirmed by the trading participant by furnishing evidence of a valid balance area agreement up to five days before the delivery. In case of inability to deliver and take delivery, ECC can have the corresponding positions in month futures closed out.

The physical fulfilment of a partial delivery described herein is prepared for the last time two exchange trading days before the last delivery day. After the end of trading on this day the corresponding month future expires and the last partial delivery is settled on the exchange trading proceeding the last delivery day.

The trading participant has the possibility to close-out an obligation to deliver or take delivery under a German Baseload Month Future or German Peakload Month Future on EPEX Spot. To this end, the trading participant commissions the EPEX Spot Market Supervision to place a bid corresponding to the futures positions on every exchange trading day during the delivery period on EPEX Spot by submitting one fax. In this respect, the trading participant is responsible for the content of the fax order.

The relevant preconditions and processes are established in line with the physical fulfilment of Phelix Base Month Futures and Phelix Peak Month Futures with the only difference being that buy positions in German Baseload Month Futures and German Peakload Month Futures lead to sell bids on EPEX Spot and vice versa.

4.2.5. Final settlement price

The settlement price upon expiry is referred to as the final settlement price.

In the case of year futures and quarter futures the final settlement price defines the value of the position to be cascaded.

In the case of Phelix Week Futures and Phelix Month Futures, the final settlement price constitutes the basis for the calculation of the cash settlement. For this reason, it corresponds to the average of all EPEX Spot Market indices – the Phelix Day Base (Phelix Base Week/Base Month Future) and the Phelix Day Peak (Phelix Peak Week/Peak Month Future) – during the delivery period of the corresponding futures contract.

In the case of Baseload Month Futures and Peakload Month Futures, the final settlement price constitutes the basis for the settlement of the power delivery (physical fulfilment) and is, thus, established as early as two exchange trading days before the first delivery day for these futures. The calculation of the settlement prices is detailed in the document "Procedure for the Determination of Settlement Prices".

4.3. Margins for power futures

Whenever a position is opened, a trading participant has to deposit a basic margin, the so-called Additional Margin, with its clearing member and the clearing member in turn has to deposit this margin with ECC. On other exchanges this margin is also referred to as the "initial margin". It covers the risk of the maximum costs incurred for closing out all open positions of a trading participant on the next exchange trading day subject to the assumption of the most unfavourable development of prices. The Additional Margin is fixed for the entire term of the contract. ECC establishes the amount of the Additional Margin.

4.4. Margins for power options

After the payment of the premium the option position does not pose any further risk for the buyer. The buyer has the right to exercise the option but is not obliged to do so. For this reason, the buyer is not obliged to furnish margins.

The seller of an option, on the other hand, has the obligation to open a corresponding futures position at the exercise price upon exercising of the option. For this reason, the seller has to furnish the Premium Margin and the Additional Margin. The amount of the margins to be furnished depends on the positions held in options and on the futures on which such are based.

In the event that the seller of an option is forced to close out its position, the value of the option sold is covered by the Premium Margin. The Premium Margin is adjusted to the new settlement price of the option contract on a daily basis.



The Additional Margin is used to cover the maximum losses to be expected for the next exchange trading day. It has to be furnished for a short position in options in addition to the Premium Margin.

The margin calculation is described in detail in the document „ECC Margining“, which is available on the ECC website.