

# SEMOpX (ECC) Credit Risk

Version 2

March 2021



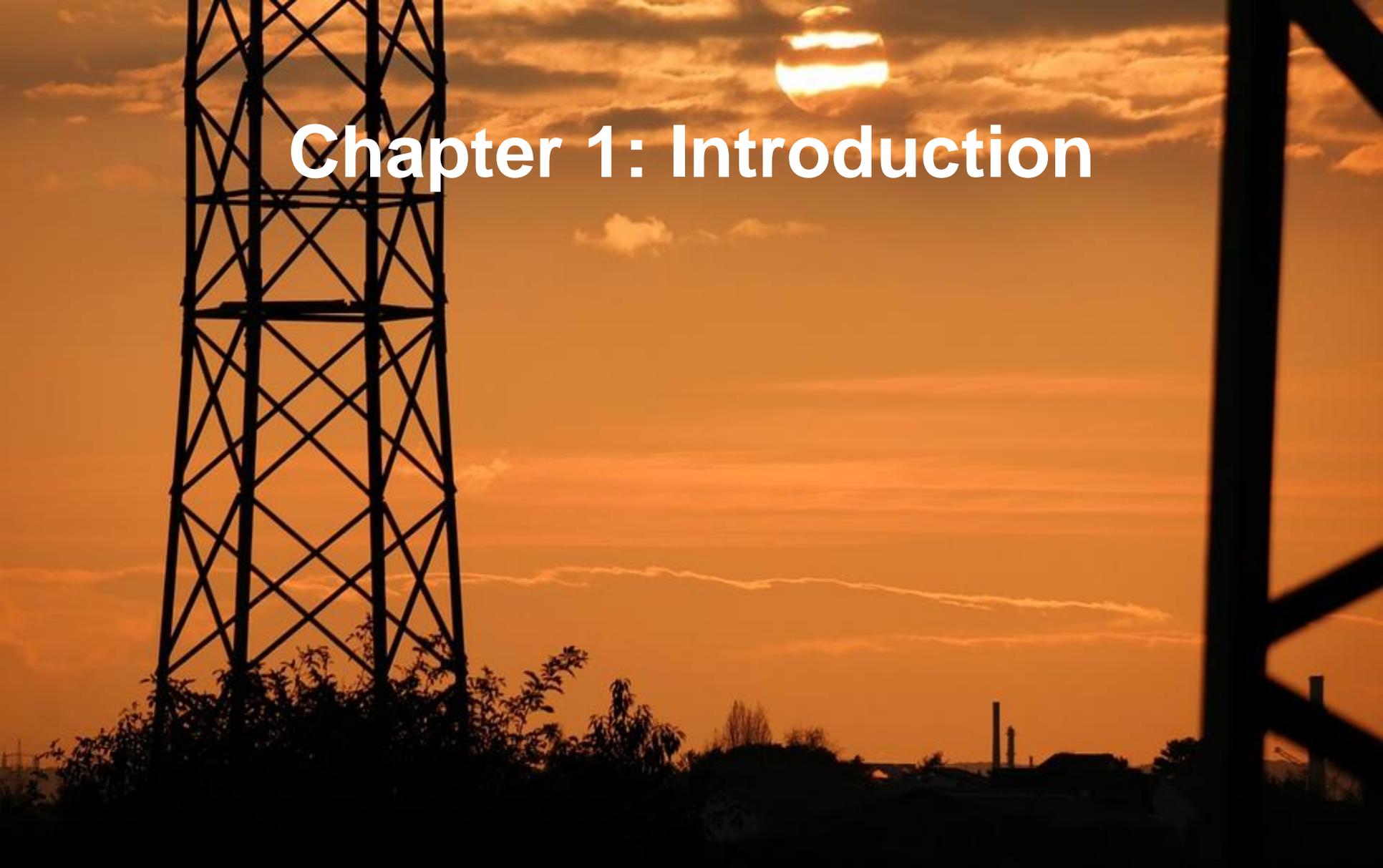
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# Learning Outcomes

This document will give you an understanding of:

- The banking options available to SEMOpx members
- The credit cover arrangements required for SEMOpx participation
- The effect of the choice of banking option on credit cover



# Chapter 1: Introduction

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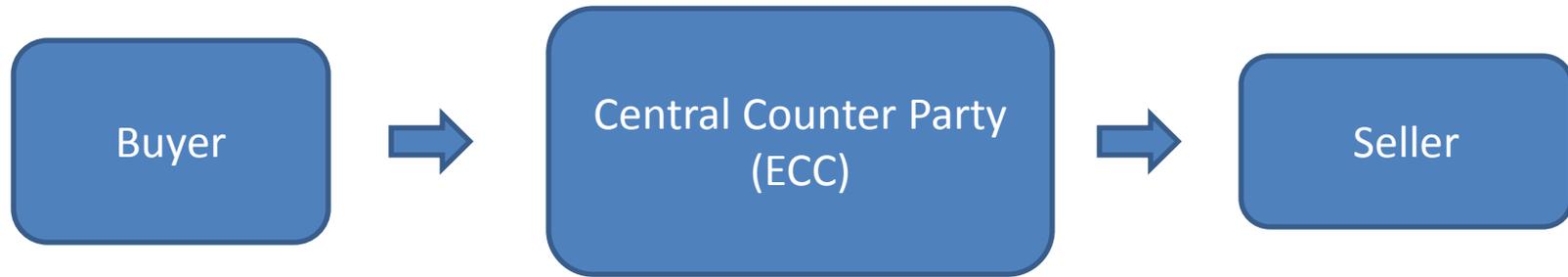
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# SEMOpX and Central Clearing

- SEMOpX is a NEMO for Ireland and Northern Ireland:
  - Combined entity of the EirGrid and SONI NEMO
  - Responsible for trades, market coupling etc.
- NEMOs act as central counter party (CCP) for all trades:
  - Acts as a guarantor for all payments on the exchange
  - Buy from the sellers and sell to the buyers
  - If any shortfall by participant, CCP guarantees payment
  - This ensures all trades on the exchange are low risk
- SEMOpX have procured European Commodity Clearing (ECC) as service provider:
  - Act as CCP on behalf of SEMOpX
  - Perform clearing, credit risk and settlement services (physical and financial settlement)
  - Act as guarantor for all payments (reduces SEMOpX's exposure to the market)

# Central Counter Party Model – Basic

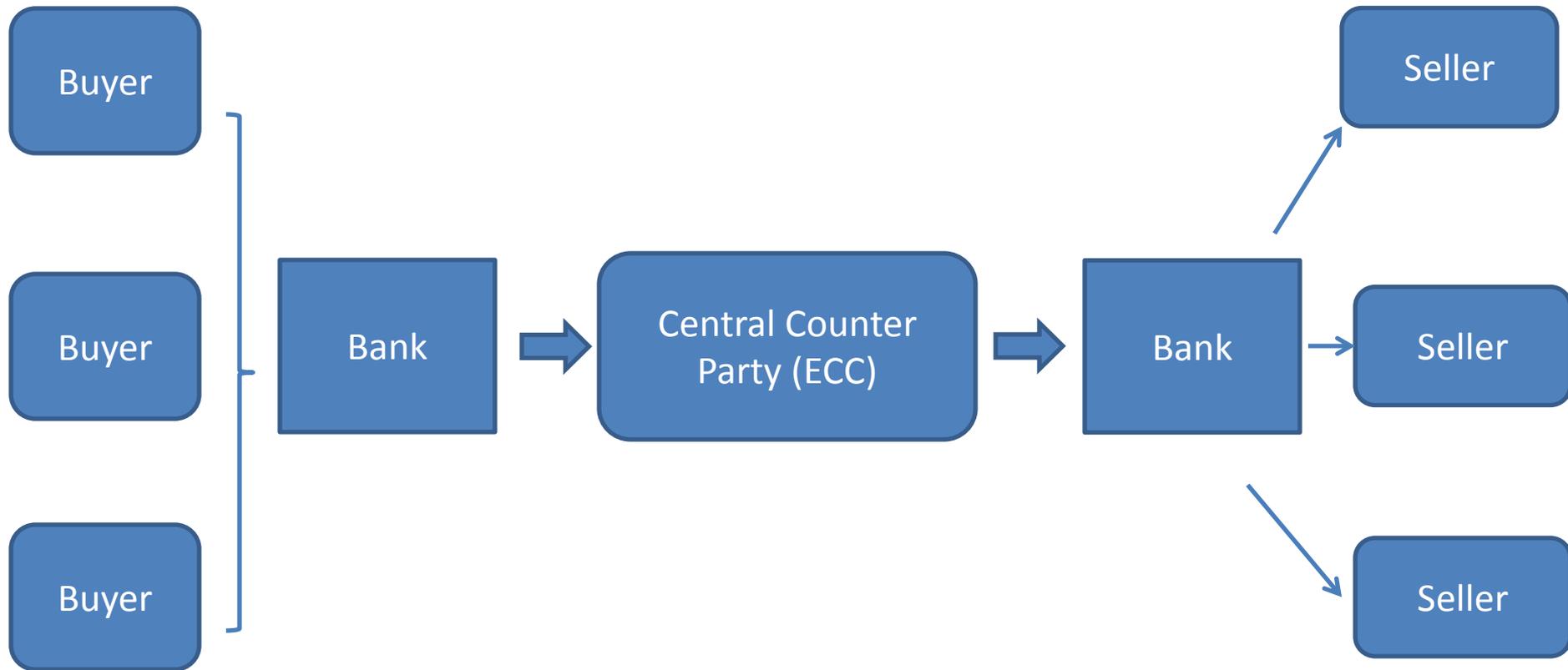


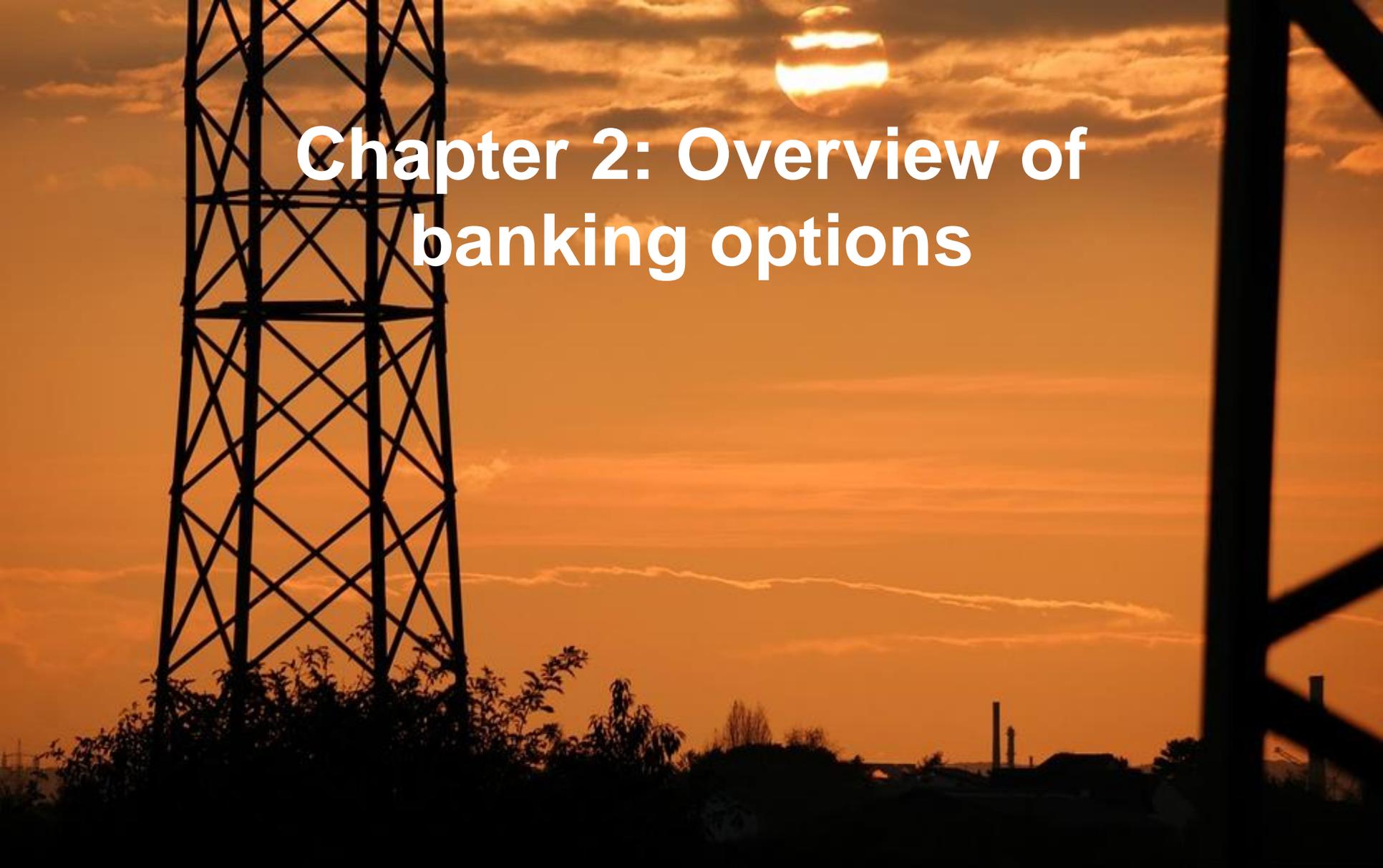
- CCP is in the middle of each transaction:
  - Buyer and seller interact with CCP and not each other for payment
- CCP guarantees the payment:
  - If the buyer does not pay, CCP still pays the seller
  - This provides strong protection to those selling energy
  - CCP will need to cover the risk of non-payment by buyers

# Central Counter Party – Risk Mitigation

- ECC acts as the Central Counter Party between buyer and seller:
  - Guarantee both ends of the trade
  - Have to pay sellers regardless
  - Exposed to the risk of non-payment
- ECC cover this risk in many ways:
  - Use of credit cover
  - Admission criteria to join the exchange
  - Clearing banks
- Key measure is the use of banks as clearers for participants:
  - Each participant signs up to an approved bank
  - Bank essentially guarantees the actions of their clients
  - ECC settles with the banks on both ends, the banks settle with participants
  - Reduces market risk: ECC exposed to bank rather than individual buyers and sellers (i.e. risk of bank defaulting on payment less than risk of individual buyers and sellers defaulting on payment)
  - Illustrated in the following slide

# Central Counter Party Model – Banks





# Chapter 2: Overview of banking options

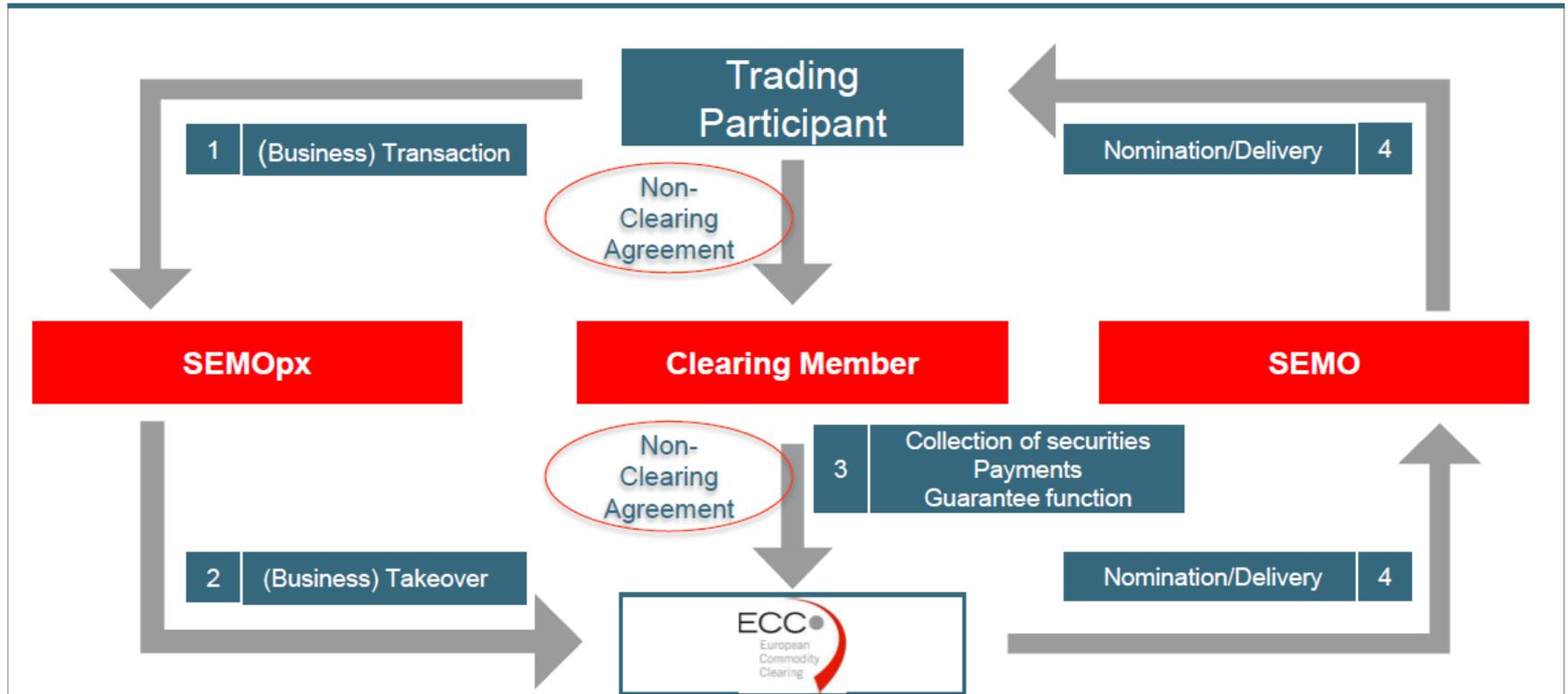
# SEMOpX Banking Options

- In order to trade in SEMOpX participants must:
  - Register with SEMOpX
  - Register with ECC
  - Register with a bank
  - For further information see SEMOpX registration training materials
- Two banking options are available:
  - Clearing bank
  - Settlement bank
- Must be an approved bank
- Participants choose one option and one bank only as part of registration

# Banking Options – Clearing bank

- Clearing banks act as an intermediary between ECC and the member:
  - Guarantee the payment from participants
  - Handle funds transfers to and from ECC
- Direct relationship between member and clearing bank:
  - Bank pass through the costs of dealing with ECC
  - Bank pass through the requirement for credit cover from ECC
  - Terms of this pass through care determined between the bank and the member
    - ECC require credit cover and guarantees from bank, and;
    - in turn bank requires credit cover and guarantees member.
- Member enters trilateral arrangement for clearing:
  - Parties are the member, bank and ECC
  - Covers all the required clearing arrangements
- Main member relationship is with ECC in terms of:
  - Registration
  - Reporting (payment and settlement reports)
  - Payments settled according to ECC rules

# Banking Options – Clearing Bank Diagram



## Irish Power Market (Spot Only at the moment):

**Clearing Members act as guarantor** and payment agent for all trades concluded on the Spot Market. They collect margins and all payments from their clients (trading participants).

# Banking Options – Clearing Bank Process

## 1. Business Transaction

- Entering orders into SEMOpx for matching process (auction or continuous)

## 2. Business Takeover

- SEMOpx run auction or match member's trade on the continuous market
- SEMOpx determine market results and pass market result to ECC

## 3. Trilateral Relationship

- Between member, bank and ECC
- Member deals with bank directly
- Bank deals with ECC directly to guarantee member's payment
- Collection of securities, payments, guarantees function

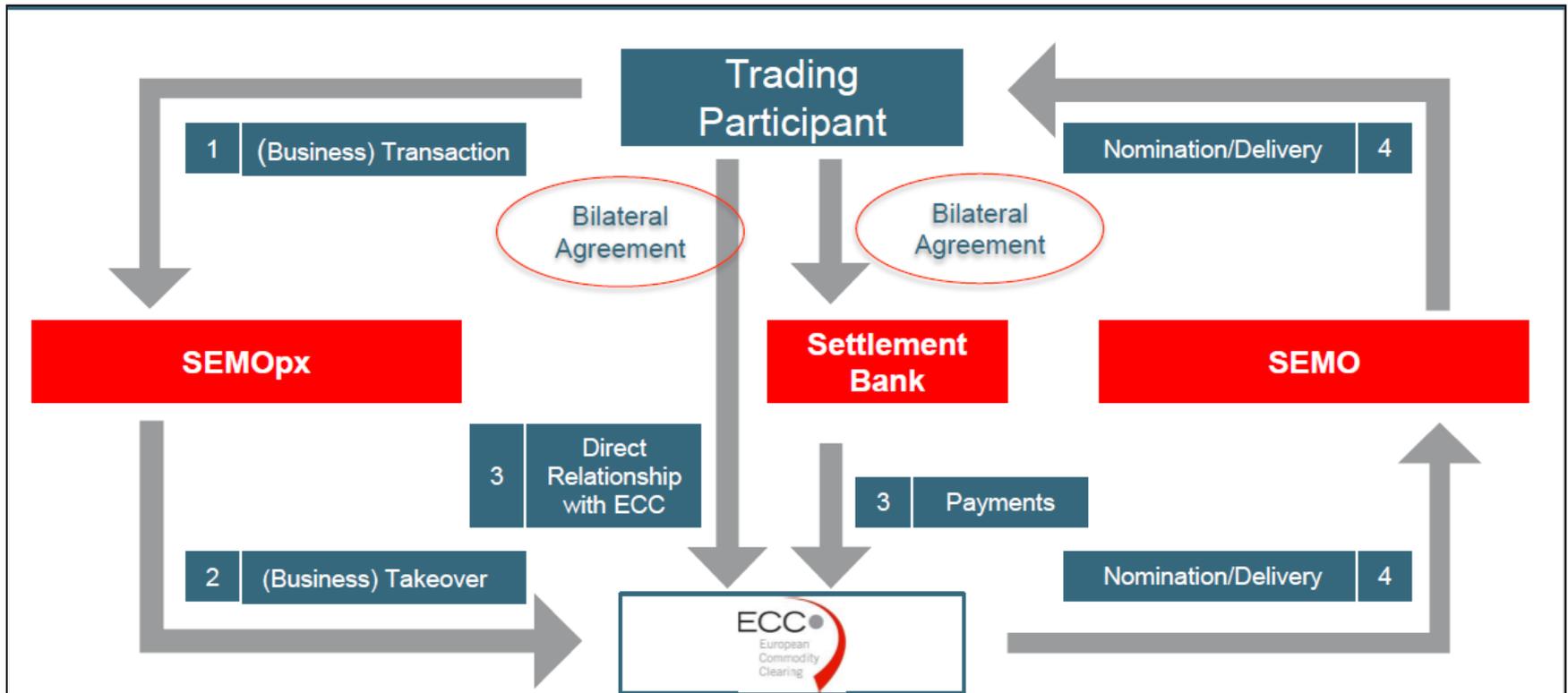
## 4. Nomination/Delivery

- Physical settlement
- ECC nominating over member's contracts to SEMO
- SEMO perform imbalance settlement to cover delivery of energy

# Banking Options – Settlement Bank

- Settlement bank acts as payment agent only:
  - No direct guarantee of member payments
  - Provide funds transfer facility for members to and from ECC
- Collateral requirements directly determined by ECC:
  - Amounts to be held are directly decided by ECC
  - Amounts based on bids to ECC
- Pre-funding of trading is used:
  - Meaning the amount a member trades on the exchange is limited to the amount held in collateral accounts with the settlement bank
  - Covers the fact that no guarantee is in place
  - Collateral drawn down when member defaults on payment

# Banking Options – Settlement Bank Diagram



## Irish Power Market (Spot Only at the moment):

**Settlement Banks act as payment agents** for all trades on the Spot Markets, e.g. provide accounts which can be used for all payments necessary for buying/selling power at the spot market. All trades of the Trading Participant need to be prefunded.

# Banking Options – Settlement Bank Process

## 1. Business Transaction

- Entering orders into SEMOpX for matching process (auction or continuous)

## 2. Business Takeover

- SEMOpX run auction or match member's trade on the continuous market
- SEMOpX determine market results and pass market result to ECC

## 3. Two Bilateral Agreements

- Member follows ECC rules e.g. posting collateral and following ECC payment cycle
- Settlement bank facilitates payments from member to ECC
- Settlement bank does not have a guarantee function
- Payments guaranteed by collateral posted by member to ECC

## 4. Nomination/Delivery

- Physical settlement
- ECC nominating over member's contracts to SEMO
- SEMO perform imbalance settlement to cover delivery of energy

# Banking Options – Overview

Item	Clearing Bank	Settlement Bank
Markets <i>(not relevant if only trading with SEMOpX)</i>	Spot & derivatives	Spot only
Guarantee Function	Yes, trades guaranteed by clearing bank on member's behalf	No, trades limited to the amount of collateral held in member's account
Trading Limit	Voluntary; set by bank on member's behalf	Mandatory; Set by ECC (collateral)
Pre-funding	Nature of collateral determined by the bank	Collateral funds must be held at settlement bank to trade
Collateral Type Accepted	Determined by the bank (subsequently bank posts ECC-accepted collateral to ECC)	EUR/GBP cash or bank guarantee only (only forms directly accepted by ECC)
Default Fund Contribution	Obligation on bank; may pass through cost	Obligation directly on participant
Exposure Type	Margining based on trades	Pre-funding of trades
Exposure Based On	Net trading at the clearing price based on net exposure	Gross trading at the bid price based on gross exposure

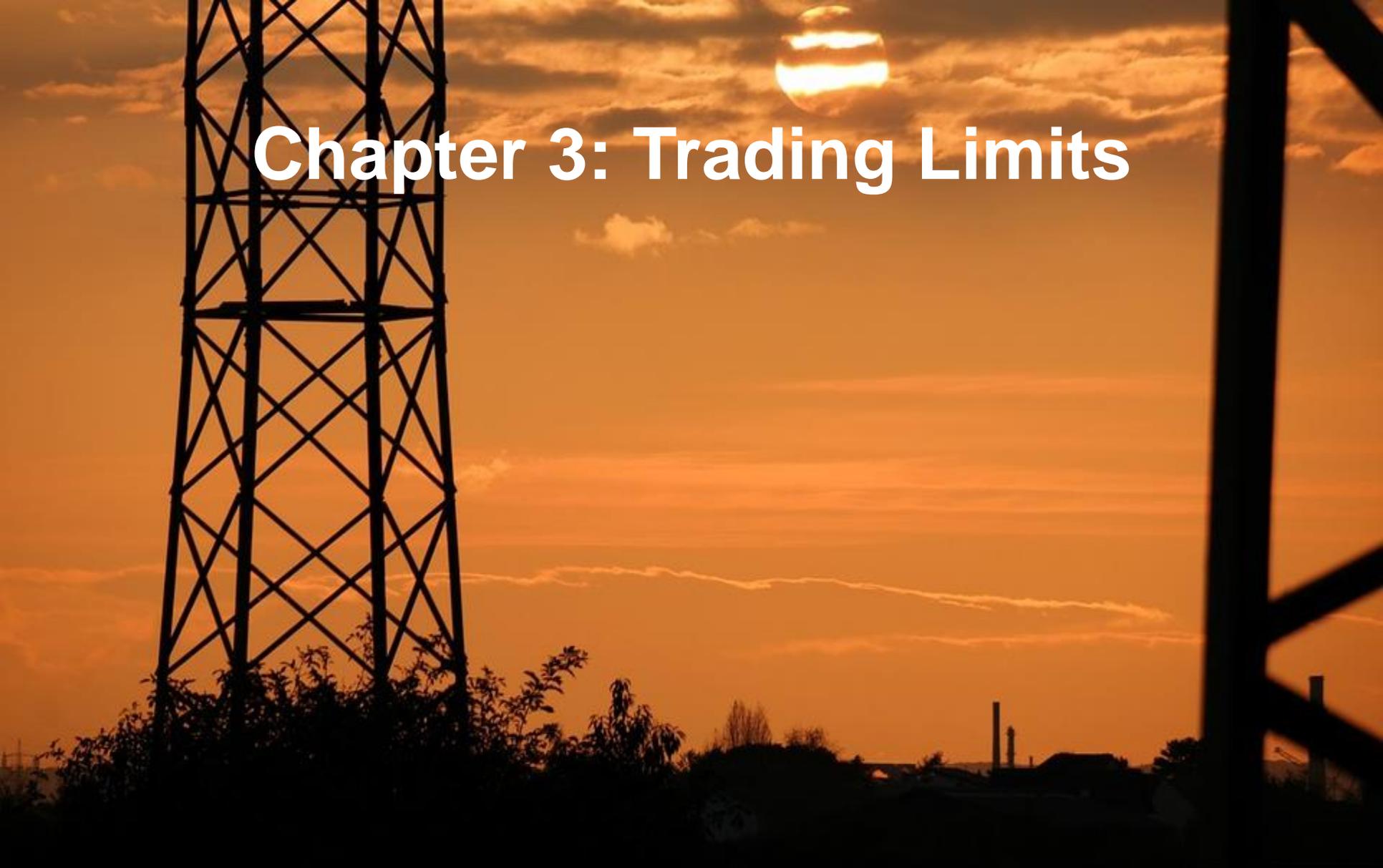
# Banking Options – Costs

		Clearing Bank	Settlement Bank
SEMOpX	Fixed Fee	€5,000 p.a	
	Variable Fee	€0.036 per MWh	
ECC	Variable Fee	€0.007/€0.006 per MWh	
	Annual Fee	None; minimum variable fees of €1,000 p.a	€12,500 for all spot markets or €9,000 for SEMOpX only
	Expense for Cash	Negative interest rate on cash collateral	
	Limit Adjustment Fee	Determined by bank	€100/€70 per limit adjustment
Bank	Bank Fees	Determined by bank	

\*Values relevant as at March 2021

# Clearing & Settlement Banks Details

- ECC Clearing Members: <https://www.ecc.de/ecc-en/about-ecc/partners-products/clearing-members>
- ECC Settlement Bank: <https://www.ecc.de/ecc-en/about-ecc/partners-products/settlement-banks>



# Chapter 3: Trading Limits

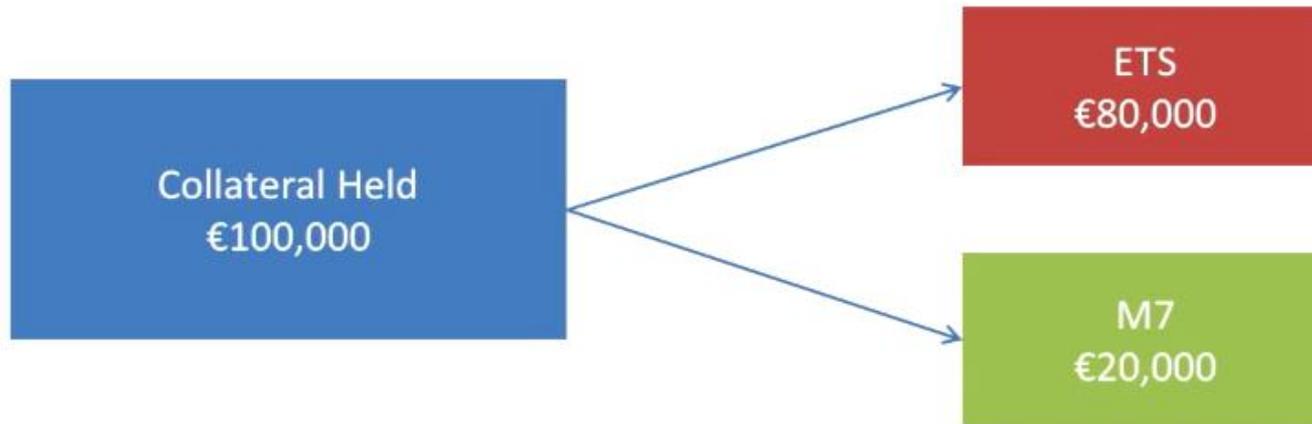
# SEMOpX Collateral Overview

- Collateral needs to be held to cover SEMOpX trades:
  - Risk that buyers do not pay sellers
- Setup determines collateral requirement
- Clearing banks using margining
  - Exposure based on current and predicted trading patterns
- Settlement banks use pre-funding
  - Amounts must be held based on trading activity
  - Trading is limited based on the pre-funded amounts

# Trading Limits

- Daily limit to the amount of trading in SEMOpX
  - Prevent trades which would cause too much exposure
  - Trades checked as they're entered
  - Trades breaching the limit are prevented
- Based on banking option
  - Clearing Bank decides on limit for its members based on margin requirements (at the discretion of the bank)
  - ECC determines limits for members using a Settlement Bank equal to the pre-funded collateral (mandatory limit)
- Separate limits for each SEMOpX system:
  - ETS covering all auctions
  - M7 covering continuous intraday trading
  - Amount used as trading limit must be split between ETS and M7 systems

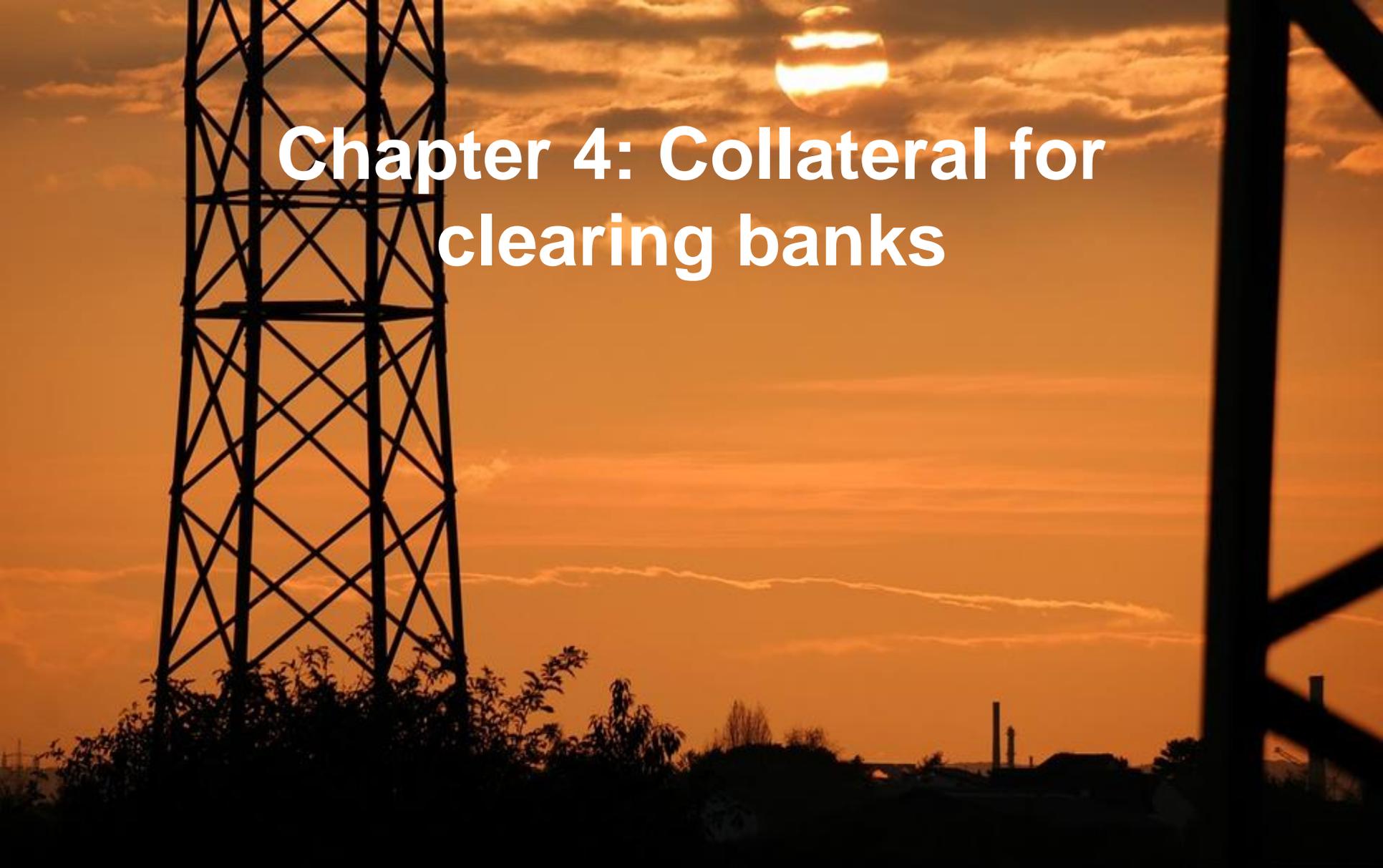
# Trading Limit Example



- Member X has €100,000 in collateral:
  - Must split this amount between ETS and M7 systems
  - ETS limit covers all auction trading
  - M7 limit covers all continuous trading
  - If expected trading split is 80% auction and 20% continuous trading
  - Member X splits €100,000 total on 80/20 basis

# SEMOpX Trading – Price Taking Orders

- All orders in SEMOpX are price affecting
  - Strictly speaking no price takers
  - Price takers are bidding to accept any price up to the limit
- Price limit for selling includes a negative price:
  - Day-Ahead Auction: Cap of €3,000 and Floor of - €500
  - Selling energy as a price taker will mean your price in - €500
  - Intraday Auctions and Continuous have different price caps
- Credit exposure and required funds depend on price of sale:
  - Sales for €0 or positive prices create no credit exposure
  - Sales at negative prices create a credit exposure
- Negative priced sales are similar to purchases



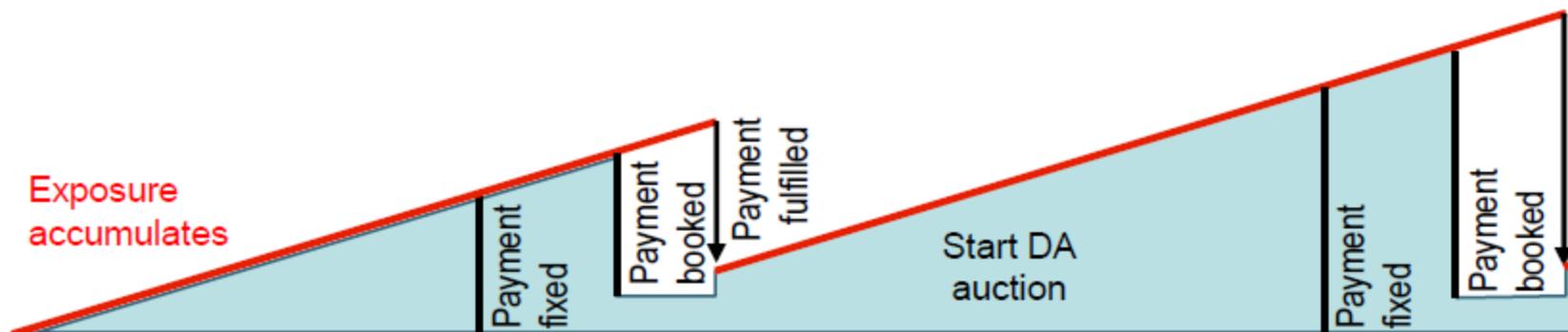
# Chapter 4: Collateral for clearing banks

# Clearing Bank Collateral Cover

- ECC determines margins for clearing banks:
  - Banks then pass these costs onto their clients
  - How this is passed on is determined between bank and client
  - Bank may allow arrangements ECC would not
- Margins are calculated based on historical performance:
  - Net market position (i.e. sales are netted off purchases)
  - Historical clearing price (i.e. bid price is ignored)
- Two margins in place:
  - Current exposure (i.e. trades which have settled but not paid for)
  - Initial margin (i.e. to cover trading while banks are closed)
- Bank determines the trading limit which applies
  - At the bank's discretion, most likely related to the collateral amounts

# Clearing Bank – Current Exposure Margin

- Covers purchases which have not been paid for yet:
  - Accumulates over the trading day, overnight or at weekends
  - Is valued at the price of the purchases (i.e. actual volume x price)
  - Is cleared when payments are made



- In this example:
  - Purchases increase the exposure during the day
  - Payment the following morning reduces exposure
  - Overnight purchases means morning payment does not reduce exposure to 0

# Current Exposure Example

- Company X purchases 50 MWh @ €50 in DAM on D-1
  - This purchase creates an exposure
  - Exposure is  $50 \text{ MWh} * €50 = \mathbf{€2,500}$
- At COB on D-1, Company X gets an invoice payable on D:
  - $50 \text{ MWh} * €50 = \mathbf{€2,500}$  (invoice amount)
- Company X purchases 50 MWh @ €40 overnight:
  - Exposure becomes  $2500 + (50*40) = \mathbf{€4,500}$
- Company X pays their invoice in full on D:
  - Exposure becomes  $€4,500 - €2,500 = \mathbf{€2,000}$

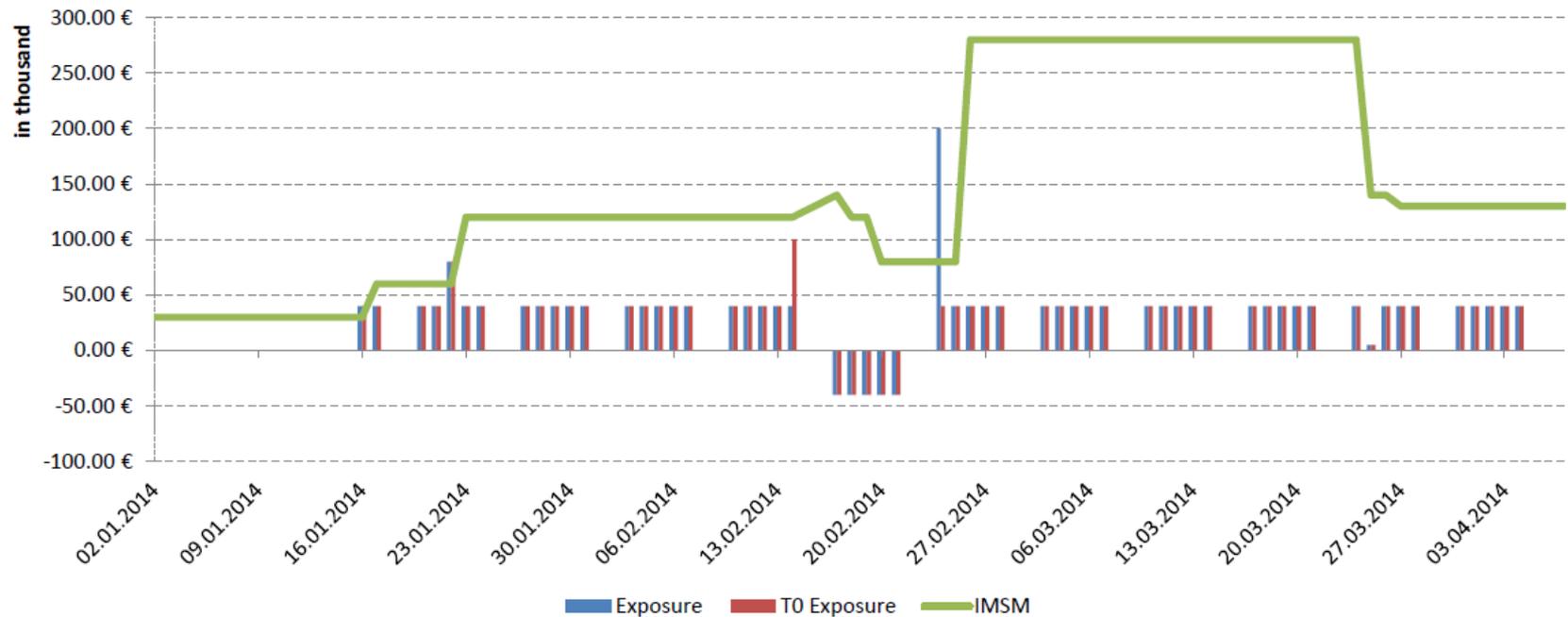
# Clearing Bank – Initial Margin for Spot Market

- Covers trading while banks are closed:
  - Overnight, weekends, bank holidays etc.
- Predicts behaviour based on past performance:
  - Uses 1 year look back period
  - Uses highest exposure in the last 20 days
- Is based on net exposure position:
  - Purchases increase the exposure
  - Sales (at positive prices) decrease the exposure
  - When you buy and sell, the net figure is used for your exposure
- ECC have tools for participants to forecast this exposure

# Clearing Bank – Initial Margin Example

## Example setup:

- A trading participant buys frequently 1.000 MWh for 40€ per MWh with no weekend trading. This leads to a daily financial exposure 40.000 EUR per ECC business day
- Increased exposure of 80.000 EUR due to higher prices on 22th of January 2014
- Higher exposure due to trading behaviour: High buy volume in day ahead auction which was sold shortly afterwards (but after calculation cut off) for the 14th of February 2014
- Increased exposure due to trading on weekends for the 24th of February 2014





# Chapter 5: Collateral for settlement banks

# Settlement Bank – Collateral

- Settlement banks do not use margins:
  - Margins are used where clearing banks gives a guarantee
  - Settlement banks do not provide this guarantee
  - Collateral is calculated on a different basis
  - Collateral must cover entire exposure of the bids
- Trading is strictly limited to the collateral held at the bank:
  - Cannot trade to an exposure beyond this limit
- Banks role is solely as a payment agent:
  - Collateral is used to guarantee the payment
  - Settlement bank does not take a role in risk management

# Settlement Bank – Trading Limit

- Limit is set based on the funds held in collateral:
  - Trading is limited to the amount held
- Limit will need to cover non-working day trades:
  - Weekend trading; bank holidays; overnight
- As a general rule:
  - For the auctions, 3 times daily exposure required to cover weekends (Fri-Sun)
  - For intraday continuous, 2 times daily exposure required to cover nights and weekends
- Exposure is counted at the bid price not cleared price

# Default Fund Contribution

- Fund of cash that ECC have available to cover the eventuality that a bank defaults on its payments to ensures payments are still made after the default
- Obligation to pay into fund is on clearing banks, where applicable:
  - Contribution is made by bank for all their clients
  - Cost of contribution may be passed to their clients
- Obligation is on participants for settlement bank users:
  - Must be included in collateral funds held at the banks
  - Required in addition to the collateral needed for the trade limit
  - 4% of collateral is required (i.e. total funds which need to be posted = collateral for desired trade limit \* 104%)

## Settlement Bank Example – Sell Order

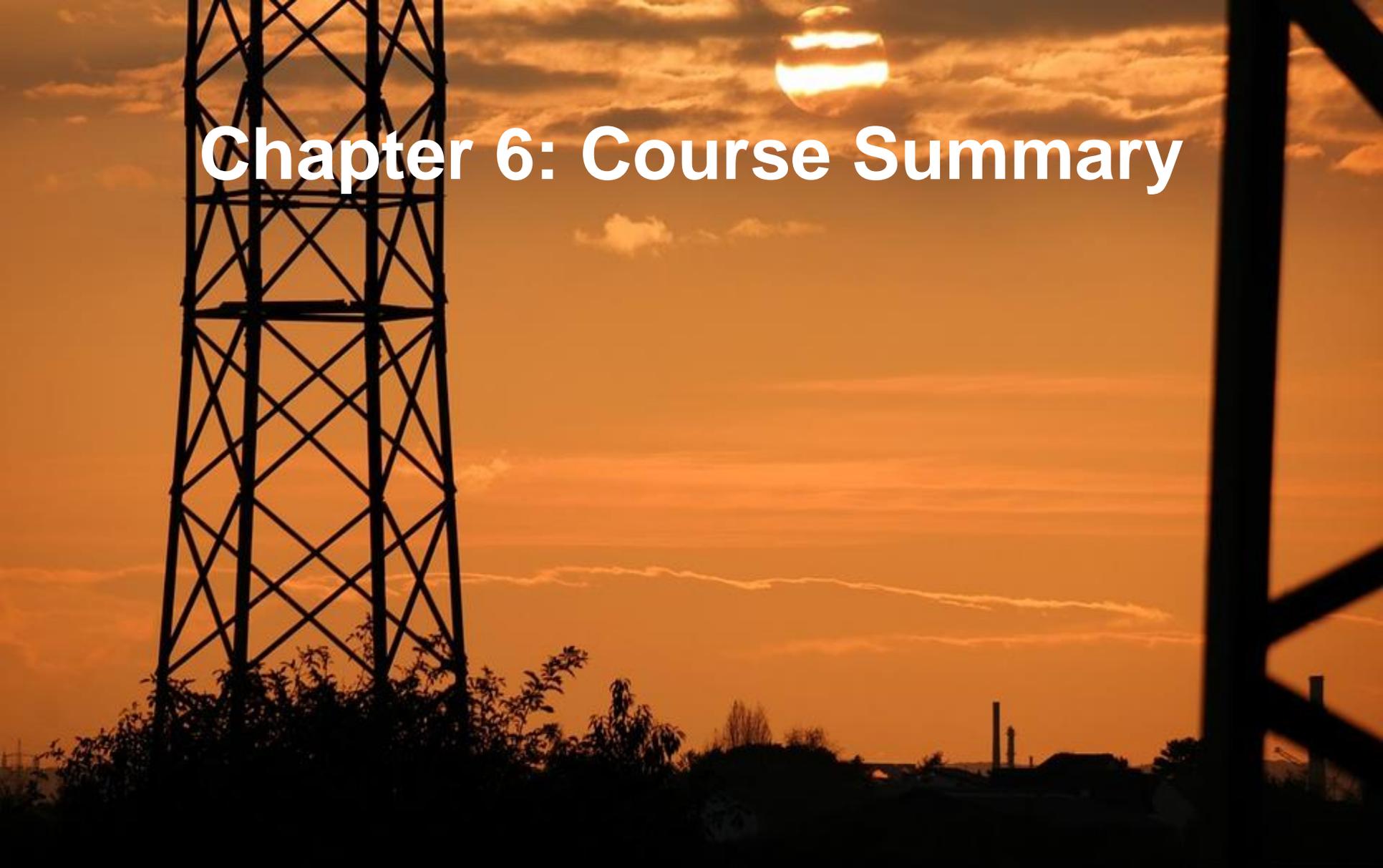
- Sell 10 MW in all hours at minimum price of €0
  - Collateral for pre-trade limit = €0 (bid price) \* 10 MW = **€0**
  - Default Fund = 4% \* Collateral = **€0**
  - Total funds necessary = **€0**
- No exposure created by sell order:
  - Will only accept positive prices
  - No exposure to ECC; therefore, no collateral required
  - No default fund due to no collateral requirement
- Exposure would be created by a price taking order:
  - Bid price would be -€500
  - Collateral and default fund contribution would be required

## Settlement Bank Example – Negative Price

- Sell 10 MW in all hours at minimum price of -€500
  - Collateral for pre-trade limit =  $-\text{€}500 \text{ (bid price)} * 10 \text{ MW} * 24 \text{ hours}$
  - Collateral required = **€120,000**
  - Default Fund =  $4\% * \text{Collateral} = \text{€}4,800$
  - Total funds necessary = **€124,800**
- Exposure created by negative price:
  - Bid price is used for exposure
  - Negative price could lead to participant owing ECC money
  - Collateral required for trading limit to enter these bids
  - Collateral required even if clearing price if positive
- **Note: this would also apply to a purchase**

## Settlement Bank Example – Buy and Sell

- Sell 10 MW in all hours at min price of €0
- Buy back 5 MW in 5 hours at maximum price of €50
- No exposure on sell order; exposure on buy order
  - No netting occurs, exposure is calculated on a gross basis
- Collateral requirement determined by buy order:
  - Collateral for pre-trade limit =  $€50(\text{bid price}) * 5 \text{ MW} * 5 \text{ hours}$
  - Collateral required = **€1,250**
  - Default Fund =  $4\% * \text{Collateral} = \text{€50}$
  - Total funds necessary = **€1,300**



# Chapter 6: Course Summary

# Useful Links

For more information please visit the following links:

- ECC Clearing House Conditions
  - <https://www.ecc.de/ecc-en/about-ecc/rules/clearing-conditions>
- SEMOpx rules
  - <https://www.semopx.com/rules-and-monitoring/market-rules/SEMOPx-Rules.docx>
- SEMOpx operating procedures:
  - <https://www.semopx.com/rules-and-monitoring/market-rules/SEMOPx-Operating-Procedures.docx>
- ECC webpage for invoicing:
  - <https://www.ecc.de/ecc-en/operations/invoicing>

# Review of Learning Objectives

After completing self-learning and instructor-led training for this course, you should understand:

The banking options available to SEMOpx members



The credit cover arrangements required for SEMOpx participation



The effect of the choice of banking option on credit cover



Should you have any questions please contact [info@semopx.com](mailto:info@semopx.com)