

I-SEM Training

Credit Risk Management

October 2017



Agenda

Training Topic	Training Sub-Topic
Learning Objectives	<ul style="list-style-type: none">• <i>What you should get from this module</i>
Credit Cover	<ul style="list-style-type: none">• <i>What is it?</i>• <i>What form does it take?</i>
SEMC Policy	<ul style="list-style-type: none">• <i>The requirements for full collateralisation</i>
Implementation for the SEM	<ul style="list-style-type: none">• <i>The three part exposure model</i>
Implications of I-SEM Decision	<ul style="list-style-type: none">• <i>How does full collateralisation work in the I-SEM?</i>• <i>Shifting risk from the MO to the NEMO</i>• <i>Traded not delivered</i>
I-SEM Implementation	<ul style="list-style-type: none">• <i>Leveraging on the SEM implementation</i>• <i>Separate approaches for supply and demand</i>• <i>Capacity credit requirement</i>

Learning Objectives

- By the end of this training session you should understand:
 - *What credit cover is and why we need it;*
 - *How the current arrangements were put in place;*
 - *How the current arrangements have been revised for the I-SEM;*
 - *How the I-SEM's sub-markets can work to reduce collateral burdens*

Chapter 1: Introduction

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Credit Risk Management

- **Credit Risk** is the risk of a Participant failing to meet their financial **obligations**
- Obligations are for the **exposures** they have, i.e. any unpaid bills, unbilled settlement or future settlement
- Participants are required to post **collateral** to cover this risk
- Collateral is the **Required Credit Cover** that Participant needs to have in place
- Effective management of Credit Risk is essential to ensuring the financial integrity of the market
- This process ensures that there is adequate liquid collateral in place to meet a participant's obligations should they default on their required payments
- This should prevent the other participants having to bear an unsecured bad debt in the event of payment default

Credit Risk Management

- SEMO manages the ***Credit Risk Requirements*** of each Participant in the current SEM
- In the new arrangements, SEMO will manage ***Credit Risk Requirements*** only in relation to settlement under the Trading & Settlement Code in the new market arrangements
- This covers balancing and imbalance settlement and capacity market settlement
- As many of the existing requirements were persisted for the new arrangements
- This self-learning course will explain Credit Risk firstly in the context of the current arrangements, and then set out how these were adapted to cover the new arrangements

Forms of Credit Cover

- Credit Cover under the TSC must be posted in the form of either:

Cash in euro or Pounds Sterling



Letter of Credit from banks



Forms of Credit Cover

- Participants can meet their Required Credit Cover by posting **Cash collateral**
- A participant seeking to do this must establish a SEM Collateral Reserve Account with the SEM Bank in each Currency Zone in which the Participant has a registered Unit as applicable
- This account will be held in Trust for the Participant:
 - Participant can deposit but not withdrawal
 - SEMO can withdraw for defaults or refund to Participant
- The SEM Collateral Reserve Accounts are interest bearing accounts and Participants have benefit of this interest
- It is preferable to have some cash for each Participant as it is more liquid (just a transfer internally from Cash Collateral to market accounts)

Forms of Credit Cover

- Participants can meet their Required Credit Cover by posting a **Letter of Credit**
- This is an **unconditional** and **irrevocable** standby letter of credit issued for the account of the Participant in favour of the SEMO
- This must provide for payment to the SEMO on demand (same day payment)
- This must be issued by a bank that meets the criteria stated in the code
- The wording of the LOC very important and needs to follow exactly the template in Appendix A of Part B the Trading & Settlement Code
- A LOC cannot be cancelled or amended without the Market Operator's agreement

Chapter 2: SEMC Policy

SEMC Policy

- The SEMC policy is often quoted as “full collateralisation” or 100% collateralisation
- This originates in the **Single Assumptions Document** from 2005
- This document set out many of the early design considerations for the SEM
- This states “*MO shall operate with minimum credit requirements and **no risk in financial settlement***”
- This means that in the event of an unsecured bad debt, the MO is not liable for this
- This led to the implementation that required all exposures to be collateralised and a mechanism for socialisation of bad debt should it arise

SEMC Policy

- The first draft of the TSC for the SEM (from 2005) stated:
 - *6.38 The settlement and invoice timeline described in section 6.2 defines a **need for credit cover for the cash flow between the MO and Participants**;*
 - *6.39 The level of Required Credit Cover for each Participant **is intended to cover all expected unpaid payment commitments to the MO over the Settlement Risk Period***
- The most important word in paragraph 6.39 is “**intended**”
- It must be understood that full collateralisation is the desired outcome
- However, due to the nature of the risk, there is always the chance that the calculations may not provide for full collateralisation
- This could arise following non-payment after a period of high consumption or after a period of high prices

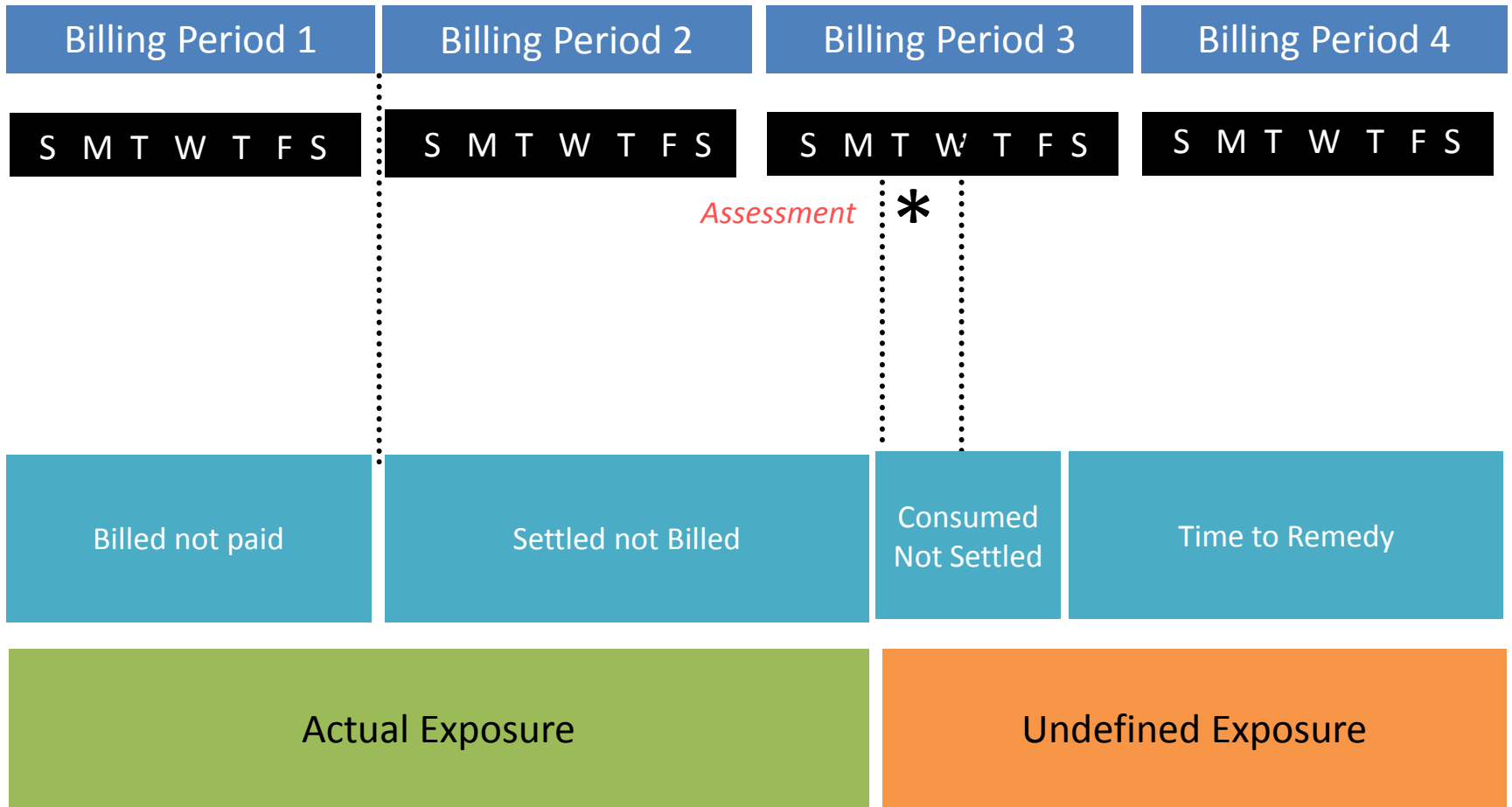
Chapter 3: Implementation for the SEM

Implementation for the SEM

- The implementation of Credit Cover Requirements for the SEM was designed to cover exposures in most circumstances
- It implements this by considering exposures in three elements:

#	Element	Description
1	Billed exposures	Relate to settlement calculations that have been included in a billing run and are still due for payment. In the diagram over, these are noted as “ Billed not paid ” and make up part of the Actual Exposure
2	Unbilled exposures	Relate to settlement calculations that have been determined but have not yet been included in a billing run. In the diagram over, these are noted as “ Settled not Billed ” and also make up part of the Actual Exposure
3	Undefined exposures	Relate to forward exposures, including amounts consumed and not yet settled. This is to cover the time between any potential default and when such a default is remedied

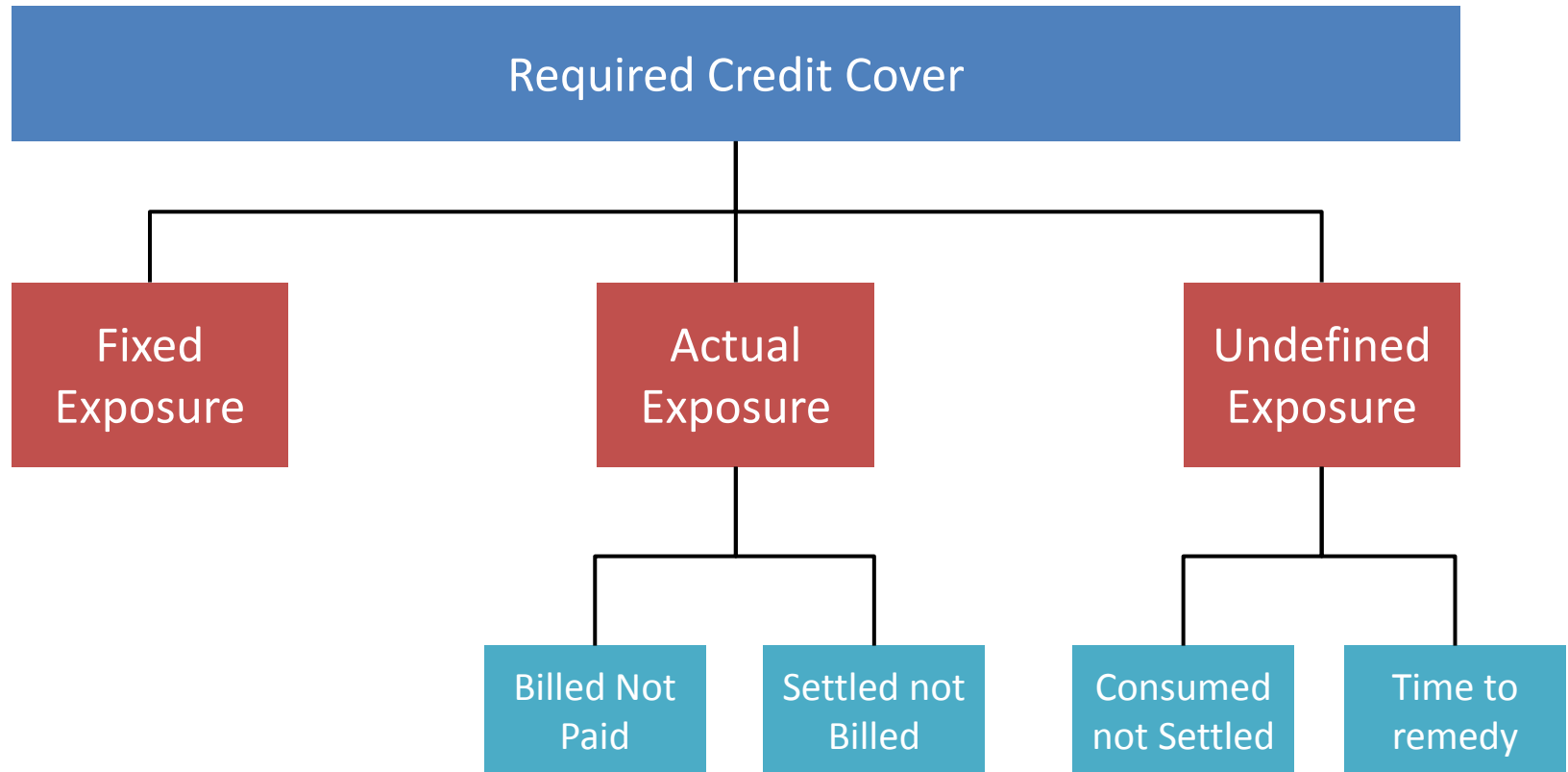
Implementation for the SEM



Implementation for the SEM

- The previous slide demonstrates how these elements are build up
- With a credit assessment taking place at the point marked *, the following elements are included:
 - *The invoices issued with respect to Billing Period 1: these would have issued the previous Friday and with a credit assessment taking place on a Tuesday, these amounts have not yet been paid;*
 - *All settlement statements issued after Billing Period 1: both indicative and initial statements would have been completed and are available for inclusion;*
 - *Undefined exposures calculated to cover dates for which settlement has not taken place: this includes current days where consumption has taken place but metering has not yet been provided ('Consumed not Settled') and forecast cast consumption across the undefined exposure period ('Time to Remedy');*
 - *A Fixed Credit Requirement amount is also required for each unit registered to the Participant*

Implementation for the SEM

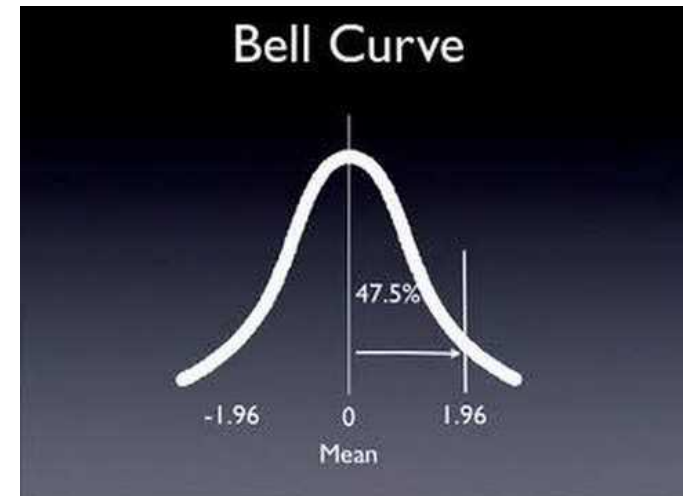


Implementation for the SEM

- Participants are classed as New, Adjusted or Standard for the determination of how their undefined exposure is calculated
- A **Standard Participant** has their undefined exposure determined **based on a statistical analysis of their historical settlement amounts**. This analysis is done across a period of time known as the Historical Assessment Period
- A **New Participant** does not have sufficient historical data to support an accurate statistical analysis; therefore, they must **provide a forecast** to the MO on registration which is used to determine their undefined exposure
- An **Adjusted Participant** is where a participant's consumption (or generation) profile has changed significantly such that a historical analysis will no longer be accurate. These are treated the same as a New Participant

Implementation for the SEM

- To calculate a Standard Participant's undefined exposure, the methodology used is:
 - Review the data in the Historical Assessment Period
 - Take Samples of settlement amounts for a period of time equal to the undefined exposure period
 - Calculate average settlement amounts for each sample and a standard deviation
 - Apply an Analysis Percentile Parameter: this is a z score value from a bell curve that provides a statistical confidence that up to a given percentage, all such scenarios should be covered



Implementation for the SEM

- For the SEM, this statistical analysis approach is used to determine:
 - Undefined exposure for Supplier Units for Trading Charges
 - Undefined exposure for Generator Units for Trading Payments
 - Undefined exposure for Supplier Units for Capacity Charges
 - Undefined exposure for Generator Units for Capacity Payments
 - The Credit Assessment Price for energy to be used in the determination of the undefined exposure for New and Adjusted Participants
- The same approach has been applied in the new I-SEM arrangements

Chapter 4: Implications of I-SEM Decision

Full collateralisation in the I-SEM

- The issue in the I-SEM is that collateral is now needed across different markets with different market operators
- Participants need to post collateral with SEM NEMO(s) for any ex-ante trading;
- For SEMOpx, a Trading Limit can be used
- In the same manner as SEMO's approach for Intraday Trading (IDT), if posted Credit Cover is insufficient, then trades above this level are not allowed
- However, exposure still exists in the balancing market
- What does full collateralisation look like for the BM?

Full collateralisation in the I-SEM

- To answer this, we must ask what is the risk?
- **For a supplier**, the risk is maximal as long as they are consuming
- While a supplier who trades on the ex-ante market shifts the default risk for its day-ahead position from SEMO to its SEM NEMO, its undefined exposure risk remains for its total exposure for dates that have not yet traded
- As a result, while a participant can reduce their required Credit Cover through ex-ante trading, (which will reduce their Actual Exposures), SEMO will continue to calculate the undefined exposure as if it doesn't do any ex-ante trading
- The principle is that if a participant defaults on their obligations, ex-ante trading will be first to go and all consumption will be as an imbalance

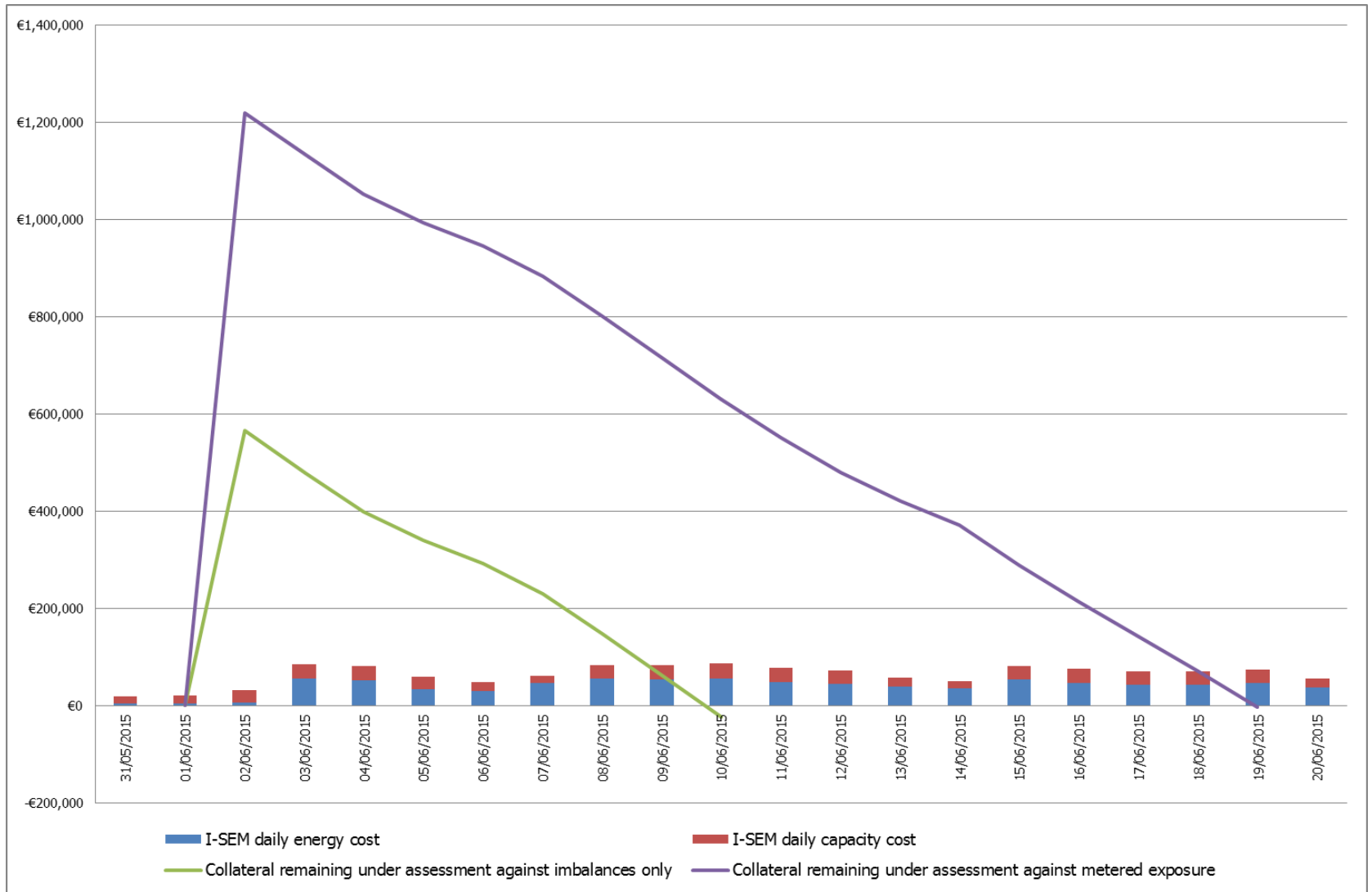
Full collateralisation in the I-SEM

- When a participant defaults, their trades in the day-ahead and intraday will be closed and all exposure will fall into ex-post settlement
- Therefore, if a default occurs, the full risk is that all liabilities of the defaulting party will appear in imbalance settlement
- The chart on **slide 27** demonstrates how calculating undefined exposure against historical imbalance settlement will not result in a collateral calculation that covers the undefined exposure as required
- The blocks at the bottom represent a participants energy and participant revenue and shows an increase in energy revenue after a default event has occurred

Full collateralisation in the I-SEM

- The green line represents the aggregate collateral that would be required if the calculation was based on historical imbalance settlement
- After the default, this collateral is drawn down to meet debts in imbalance settlement
- As can be seen, the posted collateral is exhausted under this approach after only nine days
- The purple line represents the aggregate collateral that would be required if the calculation is based on gross metering
- Again, after the default this is drawn down to cover non-payments
- However, here the posted collateral covers all debts that arise during the undefined exposure period and lasts to the end of the **Supplier Suspension Delay Period**

Full collateralisation in the I-SEM



Full collateralisation in the I-SEM

- This demonstrates that to calculate collateral based on historical imbalances is not a true risk assessment as it assumes no risk under the TSC where one actually exists
- This approach will not fulfil the SEMC position with regards to full collateralisation
- Given this, for the new arrangements, the Required Credit Cover for a supplier is determined from a statistical analysis of the gross metered demand over the Historical Assessment Period, by the Combined Credit Assessment Price
- The Combined Credit Assessment Price is made up of:



The Credit Assessment Price

Determined from a statistical analysis of historical imbalance settlement prices

The other tariffs that apply

The Imperfections Price, the Residual Error Volume Price and the Currency Adjustment Price

Full collateralisation in the I-SEM

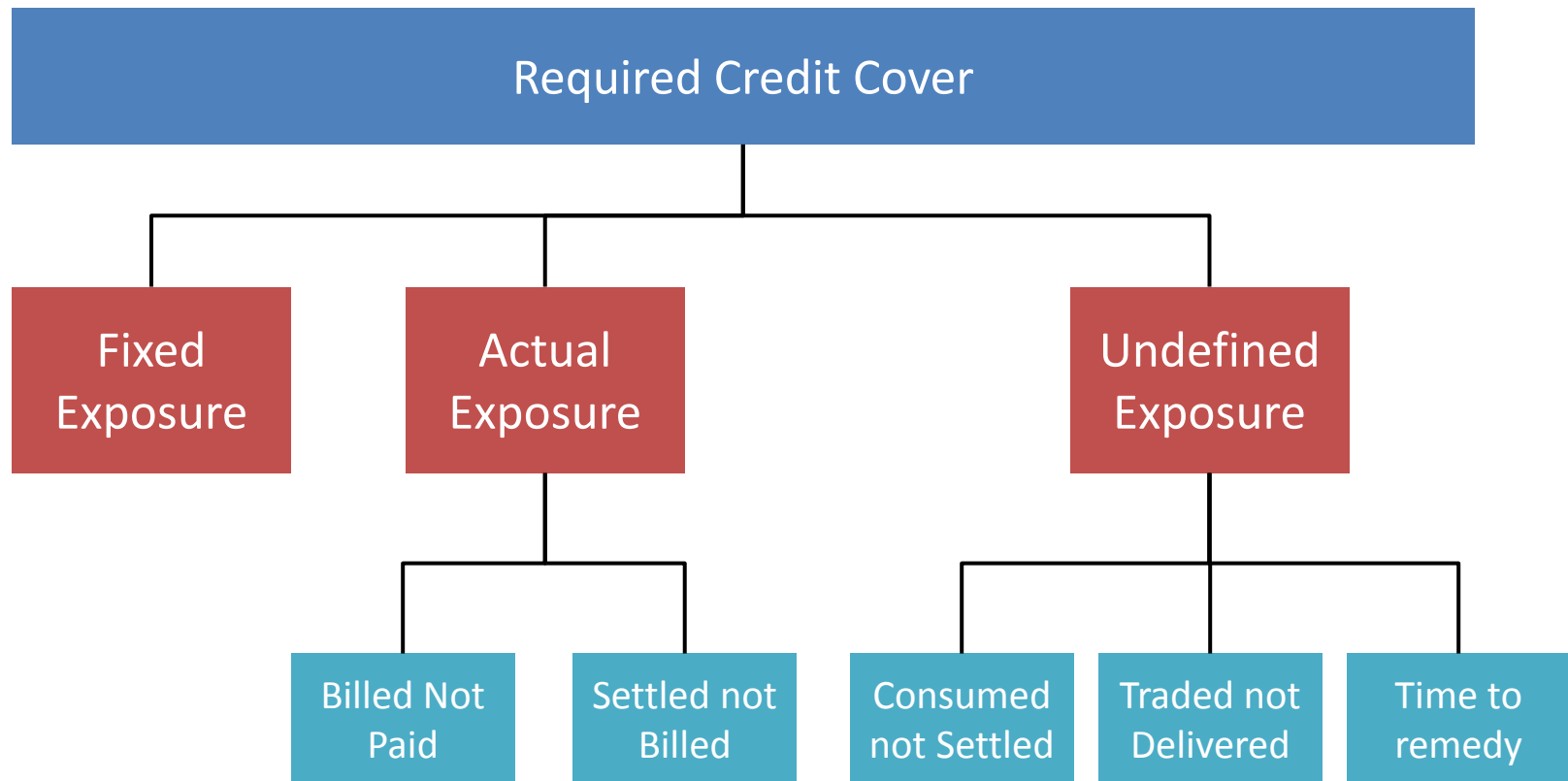
- We must also consider what the risk is in respect to generators
- For generators, the risk is minimal as long as they are producing
- When a generator sells and delivers, their exposure is limited to their imbalances only
- However, when a generator sells but still has yet to deliver, this creates **delivery risk**
- This is the risk that the generator will not deliver according to its sale and will result in a significant imbalance
- This risk arises around a generator tripping, inaccurate wind forecasts, or assetless traders not closing out their ex-ante positions

Full collateralisation in the I-SEM

- This is a new element to the undefined exposure
- The risk that you've sold something in another market but you default in the ex-post market
- Therefore, ex-ante sellers (generators, demand side units, assetless traders) must have sufficient credit posted in SEMO to cover the volume they've sold ex-ante at the imbalance price
- This is the **Traded Not Delivered** exposure
- This is included in calculations of Required Credit Cover for each participant

Chapter 5: I-SEM Implementation

Implementation for the I-SEM



I-SEM Implementation

- The implementation approach for I-SEM leveraged on the SEM implementation
- The approach of New/Adjusted/Standard participant persists
- The current model based on actual exposures and undefined exposures continues to apply
- The statistical calculation for undefined exposure for energy persists
- Settlement Reallocation Agreements are considered in the determination of each participant's Required Credit Cover calculation
- This is the process whereby one participant assigns financial responsibility to another
- The approach for I-SEM is for a transfer of full financial rights, liabilities and/or obligations between two participants

I-SEM Implementation – Generator Calculations

- There is a separate approach for the calculations for supply and demand
- For generators, we continue with SEM model based on historical settlement
- This means generators need to cover their imbalances only, as well as their Traded Not Delivered exposure
- Sales to any SEM NEMO are between the participant and their SEM NEMO
- There is a further impact for generators who are constrained off
- When they sell in the ex-ante market they get paid by a SEM NEMO
- When they are constrained off in the balancing market, they owe money to SEMO
- This may create large collateral requirement on these generators under the TSC
- In turn, this has led to the creation of a **payments in advance** process

I-SEM Implementation – Payments in Advance

- This allows generators to meet their collateral requirements
- Payments are made into the collateral reserve account
- These accrue during the SEMO billing cycle (same as current SEM)
- This allows participant to take cash receipts from ex-ante market sales and lodge these directly to the SEM collateral reserve account
- When SEMO issues its **Settlement Documents** after each billing cycle, full settlement amounts are shown
- At payment date, surplus from collateral reserve account is transferred to the clearing account

I-SEM Implementation – Supplier Calculations

- For suppliers, as we noted earlier, to continue with SEM model based on historical settlement would not be full collateralisation
- Calculating based only on imbalances would result in unsecured risk in the balancing market once a supplier ceases trading in the ex-ante markets
- As a result, the calculation for suppliers is based on:
 - *Statistical calculation of their historical metered volumes*
 - *Statistical calculation of the imbalance settlement price*
 - *Capped at the “strike price” for capacity market settlement*
 - *This means they are not exposed to scarcity prices should they arise*

I-SEM Implementation – Capacity calculations

- Capacity payments and charges are now calculated based on ex-ante auctions
- As a result, we can calculate the credit that a generator is entitled to because we know what their payment will be based on their awarded capacity
- Suppliers charge is determined by calculating a capacity charge price based on what needs to be paid
- For Credit Cover calculations, this is simulated by pro-rating the payment according to their share of demand (both actual and forecasted)

Credit Cover Increase Notice



Credit Cover
Report published
containing CCIN value

1st Working Day

2nd Working Day

Three credit assessments
daily

17:00

17:00

17:00

- There are three credit assessments run daily
- Where there is insufficient credit cover, a **Credit Cover Increase Notice** applies
- A participant must remedy this **within 2 working days**
- At any stage within the 2 Working Days a Participant can:
 - Submit increased collateral
 - Pay Bill(s) (before due date if necessary)
 - Use ex-ante markets to offset volumes

If a CCIN is not remedied by 17:00 2WD, the Participant is in Default & will be Suspended from the Market

Chapter 6: Course Summary

Review of Learning Objectives

After completing this course, you should now:

Understand what credit cover is and why we need it



Understand how the current arrangements were put in place



Understand how the current arrangements have been revised for the I-SEM



Understand how the I-SEM's sub-markets can work to reduce collateral burdens

