

I-SEM Training
Instructor Led Training
Part 1: Balancing Market Registration
Part 2: Balancing Market Bidding and Data Submission

Version 1



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Duration & Timing

The full training day will run from 10AM to 5PM with the following breaks:

Break	11am-11:20am
Lunch	12:15pm-1pm
Break	3:10pm-3:30pm

Part 1: Balancing Market Registration will be delivered from 10AM to 12:15PM.

Part 2: Balancing Market Bidding and Data Submission will be delivered from 1PM to 5PM.

Note: For the final three sessions of this training day (one in Belfast and two in Dublin) the day will run from 9AM to 4PM. This slide will be updated to reflect this and the exact timings of the day shortly.

Training Guidelines

Please ensure that you allow yourself enough time to arrive at the training room both at the start of the day and after each break so that the training can finish on time.

Please limit use of mobile phones throughout the day so as not to distract other trainees and ensure that mobile phones are kept on silent mode throughout the day.

Please ensure you have left the training room before answering a phone call.

The instructor will stop at various points throughout this presentation to deal with any questions that arise.

Please feel free to ask questions during the training session or alternatively please contact the Query Management Team through the mailbox: I-SEMproject@sem-o.com.

Agenda

Part 1: Balancing Market Registration

Learning Objectives

Topic 1: Recap on self-learning

Topic 2: Viewing Registration Information

Topic 3: Changing Registration Information

Topic 4: User Access Management

Topic 5: Course Summary

Part 2: Balancing Market Bidding and Data Submission

Learning Objectives

Topic 1: Submission Rights, Requirements and Timing

Topic 2: Data Submission and Retrieval Processes

Topic 3: Data Publication and Reporting

Topic 4: Registration Data (SLT Only)

Topic 5: Physical Notification Data

Topic 6: Units Under Test

Topic 7: Grid Code Data (SLT Only)

Topic 8: Technical Offer Data

Topic 9: Commercial Offer Data

Topic 10: Bidding Game

Topic 11: Course Summary

Part 1: Balancing Market Registration



Balancing Market Registration Agenda

Training Topic	Training Sub-Topic
Learning Objectives	
Topic 1: Recap on self-learning	<ul style="list-style-type: none"> • Entity Model • Process/Forms • Time for Questions
Topic 2: Viewing Registration Information	<ul style="list-style-type: none"> • Registration System Examples
Topic 3: Changing Registration Information	<ul style="list-style-type: none"> • Types of Changes • Online Registration Change Example • Offline Registration Change Example
Topic 4: User Access Management	<ul style="list-style-type: none"> • User Access Fundamentals • User Access System Examples • Changing User Access Example
Topic 5: Course Summary	<ul style="list-style-type: none"> • Review of Learning Objectives • Contact Details • Questions

Learning Objectives

- By the end of this training session you should, for arrangements under the Trading and Settlement Code:
 - Understand the main registration concepts
 - Have an awareness of the registration sections of the Balancing Market Interface
 - Understand how to go about changing registration information
 - Have an awareness of the user access management and how to change user access

Topic 1: Recap on Self Learning

Overview

Capacity

Day-ahead

Intraday

Balancing

TSC
Settlement



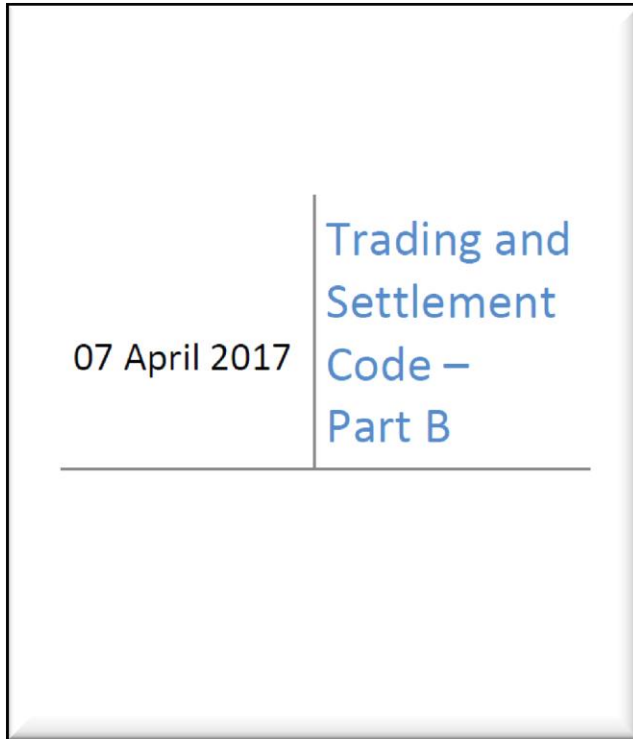
Balancing: After trading in the Day Ahead and Intraday markets is complete the System Operators use units to balance energy and for system security

Imbalance Settlement due to balance responsible I-SEM market design

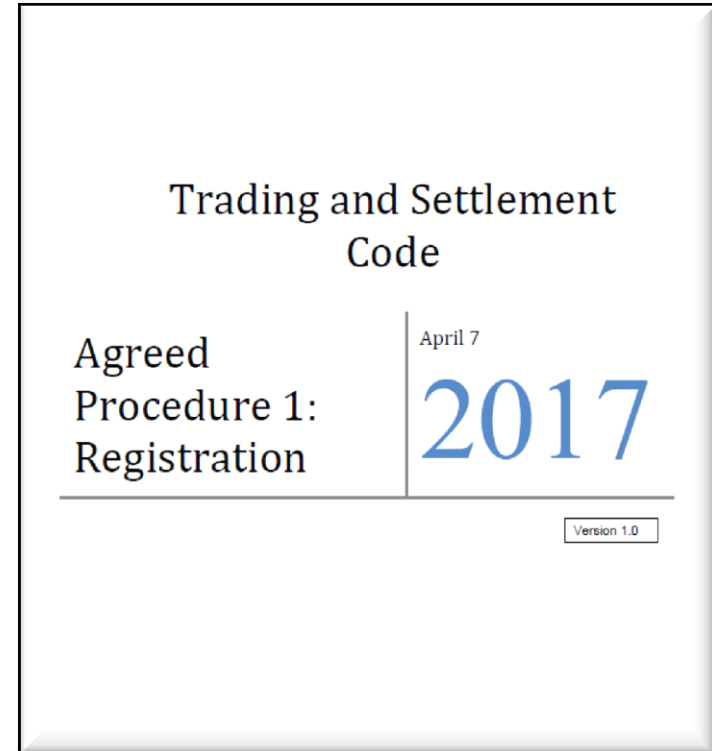
TSC registration needed for Day Ahead and Intraday market participation

Governing Rules

Trading and Settlement Code



Agreed Procedure 1 “Registration”

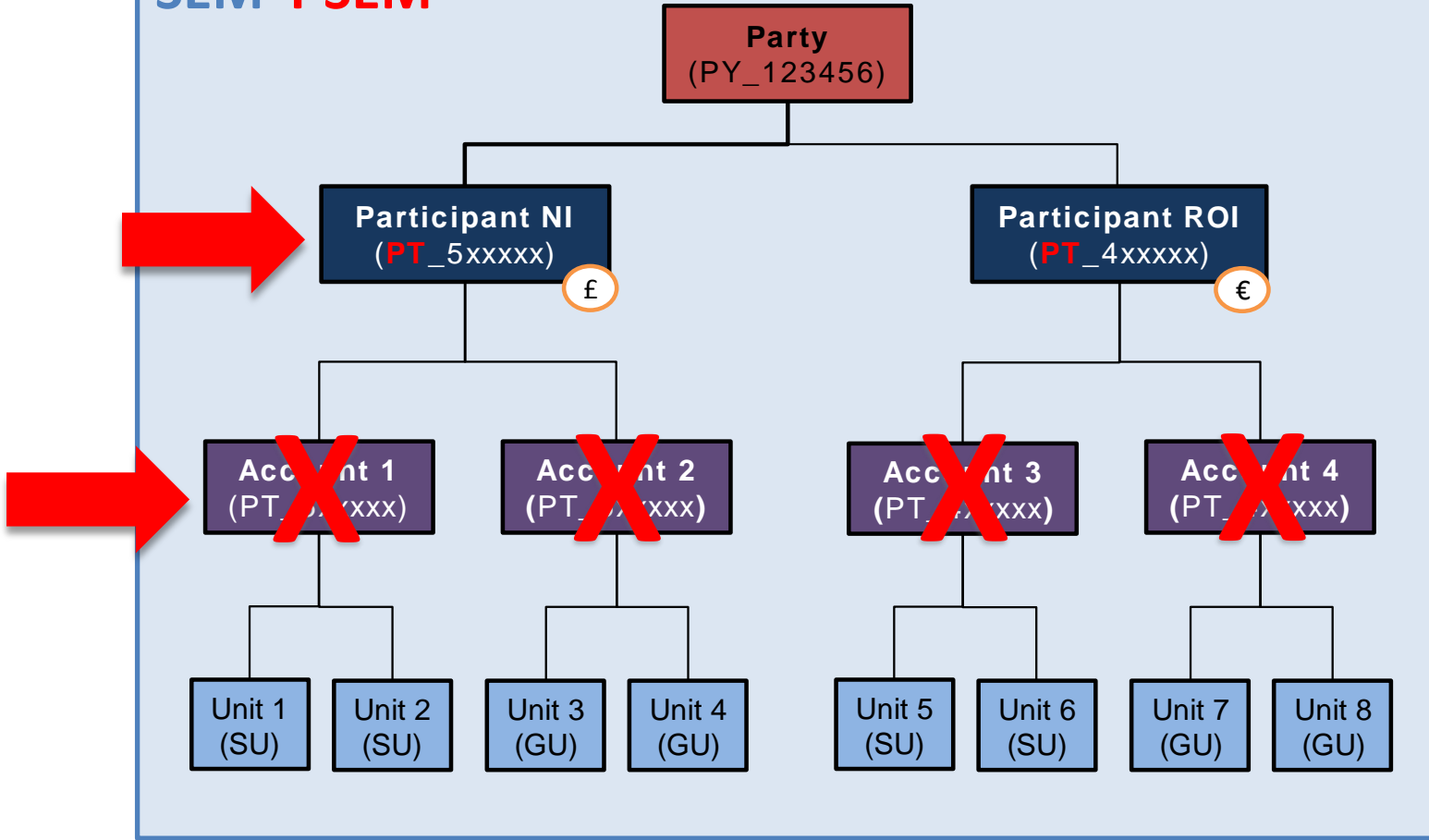


Entity Model (1/2)

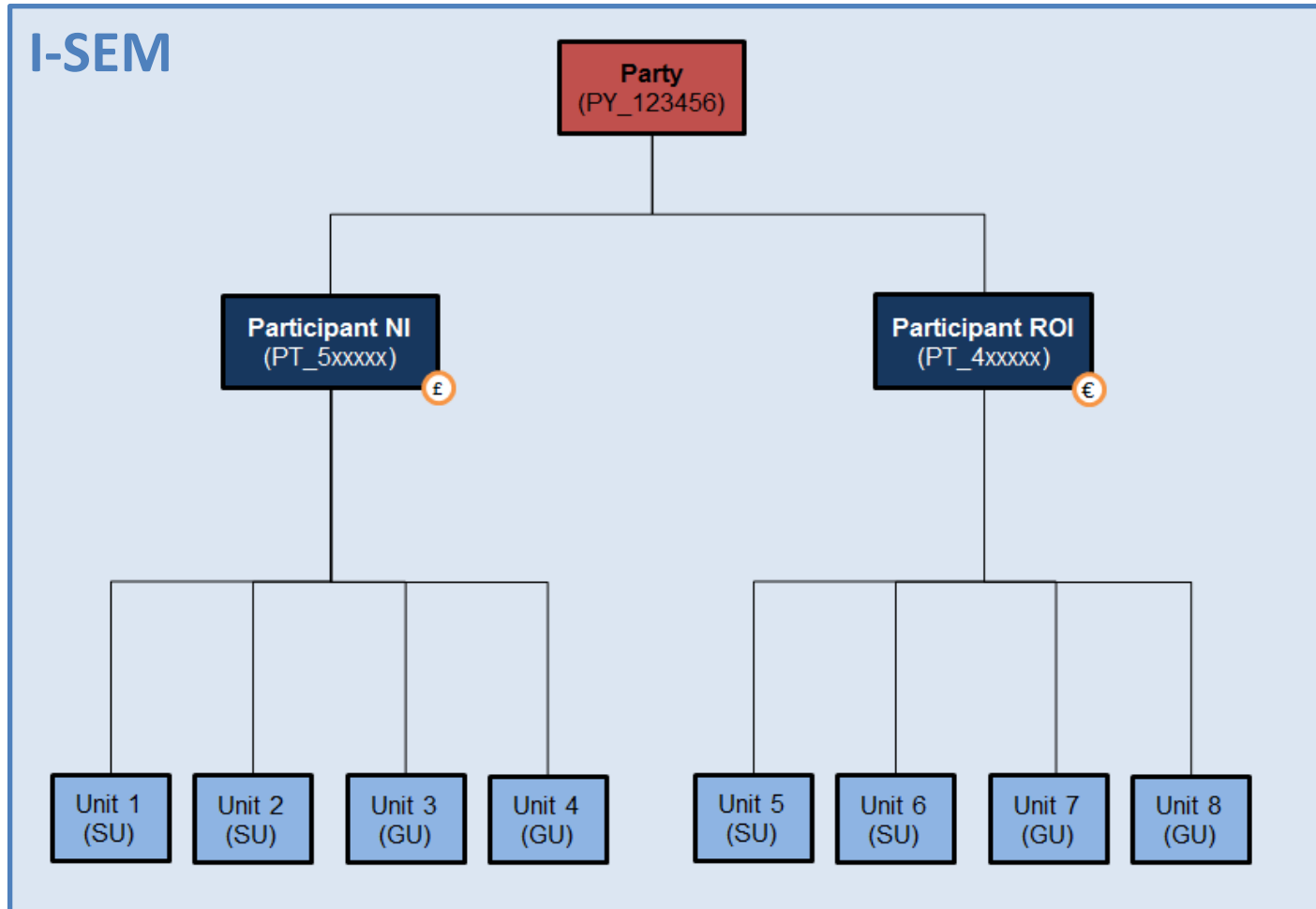


SEM I-SEM

~~SEM~~ I-SEM



Entity Model (2/2)



Units

Unit Type	Unit ID Naming Convention ^{#1}	SEM Relevant	I-SEM Relevant	
			Balancing Market Bids	Imbalance Settlement
Generation Unit: Dispatchable	GU	✓	✓	✓
Generation Unit: Non-Dispatchable (either controllable or non-controllable)	GU	✓	✗	✓
Demand Side Unit	DSU	✓	✓	✓
Aggregated Generation Unit	GU	✓	✓ ✗ ^{#2}	✓
Supplier Unit (incl. TSSU)	SU	✓	✗	✓
Assetless Unit	AU	✗	✗	✓
Trading Unit	TU	✗	✗	✓
Interconnector User ^{#3}	n/a	✓	n/a	n/a
Netting Generator Unit ^{#3}	GU	✓	n/a	n/a
Error Supplier Unit ^{#3}	SU	✓	n/a	n/a



#1 – Units/Unit IDs are sometimes referred to as ‘Resources/Resource Names’ respectively in the Balancing Market Interface.

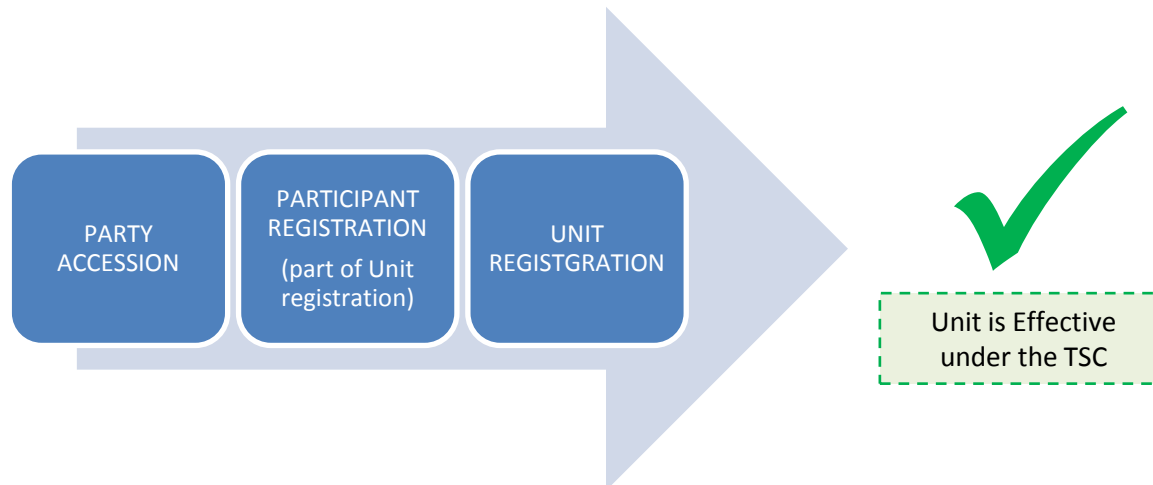
#2 – Dependent on whether the AGU is classified as Dispatchable or Non-Dispatchable.

#3 – These units are not longer relevant under I-SEM arrangements

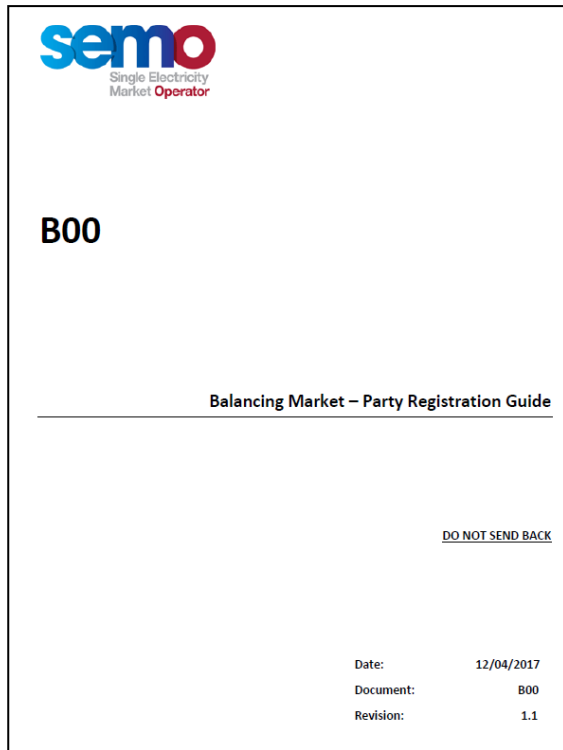
Overall Registration Process

The registration process consists of two important steps:

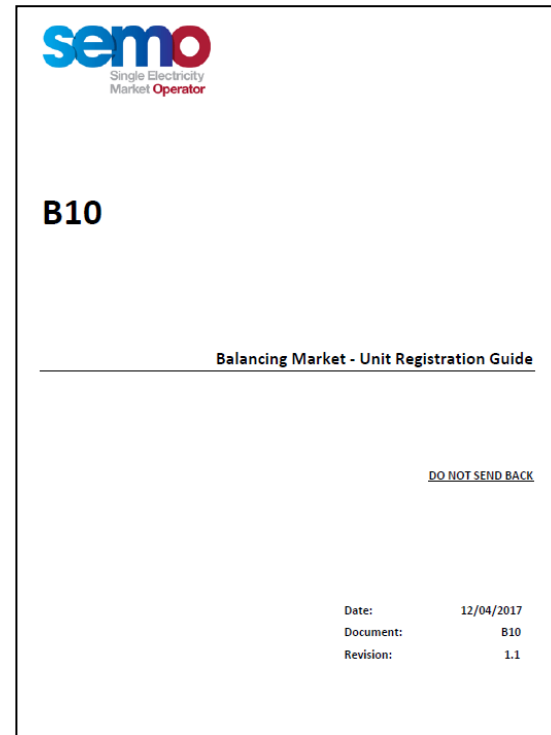
- (1) Party Accession:** Legal confirmation that the company will abide by the rules of the TSC.
- (2) Unit Registration:** Allows a unit to participate under the TSC. This may require the registration of a participant as well.



Application Guides and Forms



[B00 Balancing Market - Party Registration Guide](#)



[B10 Balancing Market - Unit Registration Guide](#)

External Organisations Registration Contacts

		Northern Ireland	Republic of Ireland
Regulatory Authorities		UREGNI www.uregni.gov.uk	CER www.cer.ie
Meter Data Providers	Distribution Connected	NIE T&D www.nienetworks.co.uk	MRSO www.mrso.ie
	Transmission Connected	SONI www.soni.ltd.uk	EirGrid www.eirgrid.com
Connection Agreements	Distribution Connected – DSO	NIE www.nienetworks.co.uk	ESB Networks www.esbnetworks.ie
	Transmission Connected – TSO	SONI www.soni.ltd.uk	EirGrid www.eirgrid.com
Use of System Charges	Distribution Connected – DUOS	NIE www.nienetworks.co.uk	ESB Networks www.esb.ie/networks/en/home/index.jsp
	Transmission Connected – TUOS	SONI www.soni.ltd.uk	EirGrid www.eirgrid.com

Summary of Key Points

Governing Rules

- Trading and Settlement Code and Agreed Procedures.

Entity Model

- Updated for the I-SEM, including Parties, Participants, Units and Trading Sites. No Accounts. With credit cover, settlement at the Participant level. Trading and Imbalance settlement at the Unit level.

Naming Standards

- Similar to SEM, a few new unit types such as AUs, TUs.

Intermediaries

- Concept maintained.

Registration Process

- Accede to Code as a Party, Register Units and Participants to participate under the TSC.

Registration Guides and Application Forms

- Available from the SEMO website.

External Organisations

- Interaction required with RAs, TSOs, DSOs, MDPs to complete Balancing Registration.

Topic 2: Viewing Registration Information

PARTY DASHBOARD

Participant System Example

PARTICIPANT LIST

Party - PY_034010

Filter by participant name

#	Participant Name	Jurisdiction
1	PT_402510	ROI

Double click to see Participant Information

No of Records - 1

Add ▲

Resource List

Trading Site List

Filter by resource name

#	Resource Name
1	AU_400100
2	DSU_402500
3	GU_402506
4	SU_400300

No of Records - 4

Add ▲

USER LIST

Filter by user name

#	User Name
1	JSMITH
2	SYSTEM_USER

No of Records - 2

Add ▲

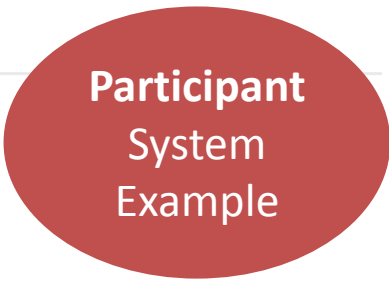
PARTICIPANT DETAILS

Trade Date:

Status:

Participant Name:

For this Participant...



- Participant
- Validity
- Balancing
- CRM
- NEMO
- Bank

Messages (1)

#	Type	Message
1	Information	Successfully retrieved the Participant.

- Participant List
- Party

General Information

Party Name *

Participant Name

Start Date * End Date

Company Name *

ACER Code

Jurisdiction Place Of Establishment * EIC Code

VAT Region * VAT Registration Number * VAT Status

Remit Reporting

....the general information is shown.

Start Date for the record, not the effective date! Effective date is held on the 'Validity' tab

PARTY DASHBOARD

Unit System Example

PARTICIPANT LIST

Party - PY_034010

Filter by participant name

#	Participant Name	Jurisdiction
1	PT_402510	ROI

No of Records - 1

Add ▲

Resource List

Trading Site List

Filter by resource name

#	Resource Name
1	AU_400100
2	DSU_402500
3	GU_402506
4	SO_400300

No of Records - 4

Add ▲

Double click to see unit information

USER LIST

Filter by user name

#	User Name
1	JSMITH
2	SYSTEM_USER

No of Records - 2

Add ▲

RESOURCE DETAILS

Unit System Example

Trade Date *

Status

Resource Name *

Resource

Validity

Balancing

CRM

NEMO

AoLR

Transfer

Messages (1)

#	Type	Message
1	Information	Successfully retrieved the Resource.

General Information on the Unit (relevant to multiple markets) is under the 'Resource' tab

General Information

Party Name *

Participant Name *

Resource Name

Start Date *

End Date

Jurisdiction *

Resource Type *

Acting as Intermediary

Station Name *

Station ID

RESOURCE DETAILS

Unit System Example

Trade Date *

Status

Resource Name *

Resource

Validity

Balancing

CRM

NEMO

AoLR

Transfer

Messages (1)

#	Type	Message
1	Information	Successfully retrieved the ResourceBalancing.

Balancing Market information under the 'Balancing' tab

General Information

Party Name *

Participant Name *

Resource Name

Start Date *

End Date

Trading Site Name *

Resource Type *

Dispatchable

Priority Dispatch

Energy Limited

Fuel Type *

Information continues when scroll down

Topic: Changing Registration Information

Updates to Registration Data

Change Type and Mechanism	Change
Online Registration Change (via Balancing Market Interface)	Change of Address Information ^{#1}
	Change of Bank Account Details ^{#2}
	<i>Change of Validated Technical Offer Data Set Details^{#3}</i>
Off-line Registration Change (via forms from sem-o.com)	Change of Registered Capacity for a Unit ^{#4}
	<i>Change from non-controllable to controllable^{#4}</i>
	AGU change of Registered Capacity or maximum Generation ^{#4}
	Change of Firm Access Quantity for a Trading Site ^{#4}
Online User Access Change (via Balancing Market Interface)	Creation and update of system user access ^{#1}
	Update of key contact for user ^{#1}
	<i>Assignment of Authorised Person by PAU to a user^{#1}</i>

#1 – Changes must be submitted a minimum of 3 working days before the proposed effective date.

#2 – Change to bank account details must follow the procedure outlined in section 2.11 of Agreed Procedure 4 – Transaction Submission and Validation, with timeframes for updates dependent on the response times of the Party to requested confirmations.

#3 – Changes must be submitted a minimum of 11 working days before the proposed effective date

#4 – Changes must be submitted 19 trading days prior to the proposed effective date. An email to i-semregistration@sem-o.com must also be provided confirming the submission

Online Change: Update of a VTOD set details

1

- Participant liaise with TSO to agree technical offer set changes

2

- Registration User **accesses BMI and amends VTOD set**

3

- Registration User **emails** i-semregistration@sem-o.com to confirm change has been submitted

4

- Amended VTOD set is reviewed and approved by the TSO

5

- SEMO accept VTOD set in BMI

6

- Unit is able to use amended VTOD set

Change of VTOD in a VTOD Set (1/2)

VTOD
System
Example

RESOURCE DETAILS

Trade Date *

Status

Resource Name *

#	Type	Message
1	Information	Successfully retrieved the ResourceBalancing.

General Information

Party Name *

Participant Name *

Resource Name

Start Date *

End Date

Click on
'menu'....

... select
Technical Offer

The image shows the EIRGRID GROUP logo at the top left of a dropdown menu. The menu is open, showing a list of options. The 'Generator Technical Offer' option is highlighted with a red box. A red arrow points from the text 'Click on 'menu'....' to the 'Menu' button (represented by a hamburger icon) at the top right of the menu. Another red arrow points from the text '... select Technical Offer' to the 'Generator Technical Offer' option.

- Party List
- Physical Notification
- Simple Generator Offer
- Complex Generator Offer
- Simple Demand Offer
- Complex Demand Offer
- Generator Technical Offer**
- Demand Technical Offer
- Technical Offer Choice
- Settlement Reallocation
- File-Upload External
- File-Upload Internal
- MP Reports
- CSB Reports

Change of VTOD in a VTOD Set (2/2)

VTOD
System
Example

GENERATOR TECHNICAL OFFER DATA

SYSTEM_USER@PY_034010 © 2015-10-10T22:22



Menu

Submit Date * Participant Name * Resource Name x Set Number* Status External Identifier

For Participant...

...and Unit...

...for VTOD Set 1

Block Loading Details

Flag	Hot *	Warm *	Cold *
<input checked="" type="checkbox"/>	<input type="text" value="5"/>	<input type="text" value="5"/>	<input type="text" value="5"/>

Cooling Boundary Details

Hot	Warm	Cold
<input type="text" value="12"/>	<input type="text" value="24"/>	<input type="text" value="0"/>

Start Up Details

Hot	Warm	Cold
<input type="text" value="2"/>	<input type="text" value="2.5"/>	<input type="text" value="6"/>

De Loading Details

#	Rate	Quantity	
1	<input type="text" value="10"/>		<input type="button" value="x"/>
2	<input type="text" value="15"/>	<input type="text" value="40"/>	<input type="button" value="x"/>

Dwell Down Times

#	Time	Quantity	
1	<input type="text" value="30"/>	<input type="text" value="15"/>	<input type="button" value="x"/>
2	<input type="text" value="15"/>	<input type="text" value="60"/>	<input type="button" value="x"/>

Dwell Up Times

#	Time	Quantity	
1	<input type="text" value="30"/>	<input type="text" value="15"/>	<input type="button" value="x"/>
2	<input type="text" value="15"/>	<input type="text" value="60"/>	<input type="button" value="x"/>

(1) Amend details by editing existing row or adding new row

Load Up Hot Times

Load Up Warm Times

Load Up Cold Times

Submit

(2) Don't forget to submit change for Approval

Offline Change: Non-Controllable to Controllable

1

- Obtain Operational Cert from System Operator

2

- Obtain form from sem-o.com website

3

- Complete and submit form via email

4

- SEMO confirm change and agrees effective date with all parties (TSO, Participant)

5

- Unit is active as controllable unit.

Topic 4: User Access Management

User Access Management

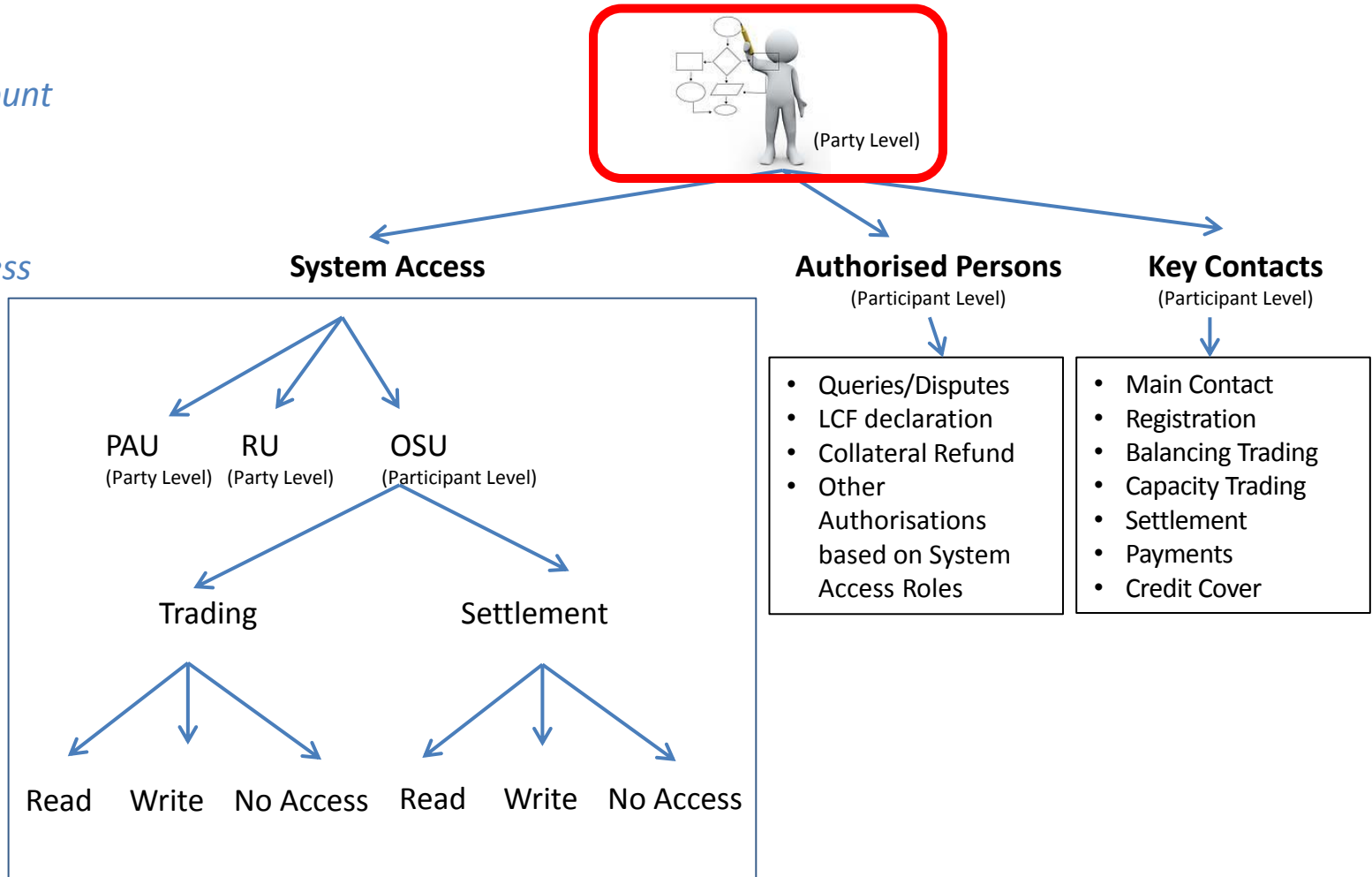
User Account

User Access

Roles

Function

Rights



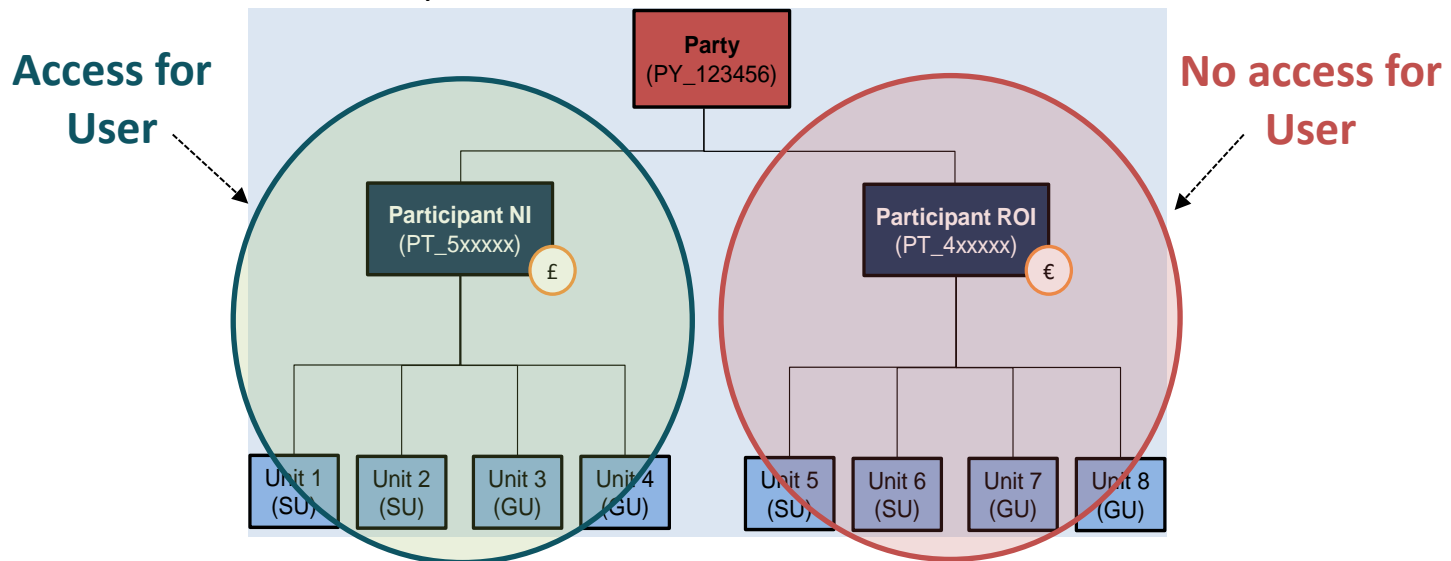
User Accounts

The user accounts are defined at a Party level. So if the same individual needs access to more than one party they will need to have separate user accounts and digital certificates for each.

User access can be restricted to functions at a Participant level under a Party

- Exception is Party Administrative User (PAU) and Registration User (RU) which are at the Party level only.

Example: a user could be restricted to have only trading access to units under Participant NI and no access to Participant ROI under the same Party.



PARTY DASHBOARD

User Account System Example

PARTICIPANT LIST

Party - PY_034010

Filter by participant name

#	Participant Name	Jurisdiction
1	PT_402510	ROI

No of Records - 1

Add ▲

Resource List

Trading Site List

Filter by resource name

#	Resource Name
1	AU_400100
2	DSU_402500
3	GU_402506
4	SU_400300

No of Records - 4

Add ▲

USER LIST

Filter by user name

#	User Name
1	JSMITH
2	SYSTEM_USER

Click on username to see details

No of Records - 2

Add ▲

USER DETAILS



Trade Date

Party Name

User Name *

#	Type	Message
1	Information	Successfully retrieved the User.

General Information

Party Name *

User Name *

Start Date *

End Date

Administrative User

Registration User

Surname *

Given Name *

Position *

Email *

Phone *

Mobile

Fax Number

Application Reference

Transaction ID

Information continues when scroll down



User Details continued

User
Account
System
Example

Authentication Information

Hide Details



Date of Birth *

13/08/2017



Last Secondary School *

The Marshes High

Authentication Code *

@47BLUE

Place of Birth *

Ward 9

Mother's Maiden Name *

Jetson

User Access Management

User Account



User Access

System Access

Authorised Persons

Key Contacts

(Participant Level)

(Participant Level)

Roles

PAU

RU

OSU

(Party Level)

(Party Level)

(Participant Level)

Function

Trading

Settlement

Rights

Read

Write

No Access

Read

Write

No Access

- Queries/Disputes
- LCF declaration
- Collateral Refund
- Other Authorisations based on System Access Roles

- Main Contact
- Registration
- Balancing Trading
- Capacity Trading
- Settlement
- Payments
- Credit Cover

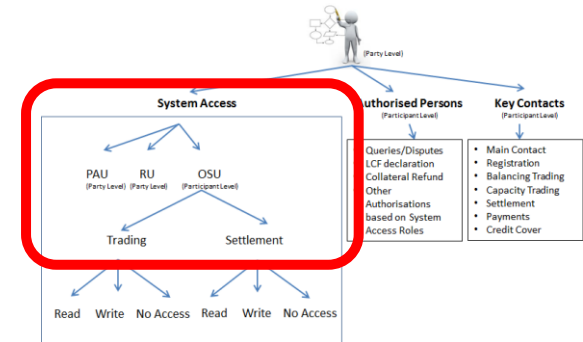
System Access (Roles)

A user account can be assigned different roles and rights for a given Party. The table below details the different user roles with the BMI.

Notes:

A user can be assigned a combination of the roles above if such access is deemed necessary. e.g. a user could have PAU, RU and OSU roles assigned to them for a give Party.

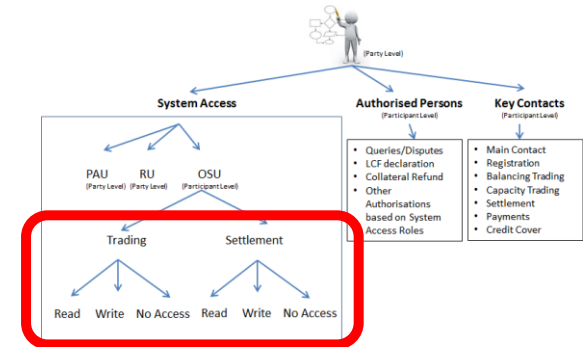
An OSU can have access further restricted to a Participant level, while PAU and RU access relates to the Party level.



User Role	Role Description	Create New Users	Submit/Query Registration	Trading & Settlement Access
Party Administrative User (PAU)	• Manages new and existing users (including new PAUs) for a Party	Y	N	N
Registration User (RU)	• Manages registration data related to Party, and its Participants and Units. e.g. new registrations, registration changes etc.)	N	Y	N
Other System User (OSU)	• Has access to the Balancing Market Trading Interface	N	N	Y (Optional)

System Access (OSU Functions)

A user account can be assigned the role of Other System User (OSU). This role is used for providing access to trading and settlement functionality in the Balancing Market. The table below details the different rights available for the OSU.



OSU Function	Function Description	Options for Access
BMI Trading	<ul style="list-style-type: none"> Access to Balancing Market trading 	Read Write No Access
BMI Settlement	<ul style="list-style-type: none"> Access to view and download settlement statements, settlement documents and other settlement reports. 	Read No Access

PARTY DASHBOARD

User Account System Example

PARTICIPANT LIST

Party - PY_034010

Filter by participant name

#	Participant Name	Jurisdiction
1	PT_402510	ROI

No of Records - 1

Add ▲

Resource List

Trading Site List

Filter by resource name

#	Resource Name
1	AU_400100
2	DSU_402500
3	GU_402506
4	SU_400300

No of Records - 4

Add ▲

USER LIST

Filter by user name

#	Username
1	JSMITH
2	SYSTEM_USER

Click on username to see details

No of Records - 2

Add ▲

USER DETAILS

...for Party...

...and user...



Trade Date Party Name Participant Name User Name

- User
- System Access**
- Authorization
- Key Contact
- Notification

Messages (1)

#	Type	Message
1	Information	Successfully retrieved the UserSystemAccess.

Relating to System Access...

System Access List

#	Participant Name *	System Name *	Start Date *	End Date	Access Code *	External User ID	<input type="button" value="+"/>
1	<input type="text" value="PT_402510"/>	<input type="text" value="BAL_TRADER"/>	13/08/2017		<input type="text" value="READ"/>		<input type="button" value="Edit"/>

...they have trading access to the systems...

...that is read only

...for this participant only

User Access Management

User Account



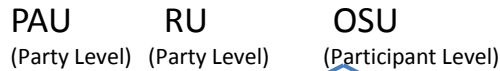
User Access

System Access

Authorised Persons
(Participant Level)

Key Contacts
(Participant Level)

Roles



Function



Rights



- Queries/Disputes
- LCF declaration
- Collateral Refund
- Other Authorisations based on System Access Roles

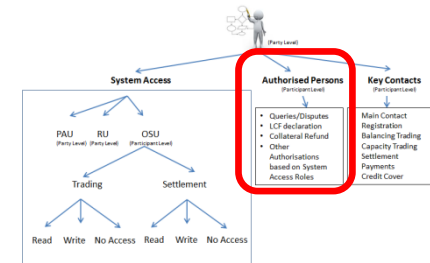
- Main Contact
- Registration
- Balancing Trading
- Capacity Trading
- Settlement
- Payments
- Credit Cover

Authorised Persons

Where communication with SEMO is not via the BMI, the communication must be from a duly authorised person.

To be an Authorised Person, the person must be registered as a User via the BMI and have been assigned authority for one or more categories of Authorised Person on the BMI.

SEMO would recommend that for each Participant at least one, and preferably two users, are given authorisation for each category.



Authorised Person Category	Description	How defined
A	• Submit Settlement Queries and Disputes	Specified explicitly for user in BMI
B	• Declare Limited Communication Failure	Specified explicitly for user in BMI
C	• Request Collateral Refund	Specified explicitly for user in BMI
1	• Submit/Modify Unit Registration and/or Interconnector Data	Based on having RU access in BMI
2	• Request Commercial Offer Data & Technical Offer Data	Based on having Trading access in BMI
3	• Ad hoc Report request (Includes Statements and Settlement Document)	Based on having Settlement access in BMI
4	• Requesting Digital Certificates	Based on having the PAU role in BMI

Categories A, B and C are specified in the User Access setup section of the BMI. Authorisation for categories 1 to 4 is determined from the user access the user has been given in the BMI.

As part of verifying the identity of an Authorised Person, SEMO may requests authentication information including name, signature, email, phone, authentication code, or confidential questions.

USER DETAILS

...for Party...

...and user...



Trade Date Party Name Participant Name User Name

User System Access **Authorization** Key Contact Notification

Messages (1)

#	Type	Message
1	Information	Successfully retrieved the UserAuthorisation.

Relating to Authorised Persons....

Authorisation List

#	Participant Name *	Authorisation Type *	Start Date *	End Date	Secondary Signatory	<input type="button" value="+"/>
1	<input type="text" value="PT_402510"/>	<input type="text" value="BAL_CRM_REQUEST_COLLATERAL_REFUND"/>	<input type="text" value="13/08/2017"/>	<input type="text"/>		<input type="button" value="Edit"/>

...for this participant only..

..they have Authorisation type to request collateral refunds...

...valid from this date

User Access Management

User Account



User Access

System Access

Authorised Persons

Key Contacts

(Participant Level)

(Participant Level)

Roles

PAU (Party Level) RU (Party Level) OSU (Participant Level)

Function

Trading Settlement

Rights

Read Write No Access Read Write No Access

- Queries/Disputes
- LCF declaration
- Collateral Refund
- Other Authorisations based on System Access Roles

- Main Contact
- Registration
- Balancing Trading
- Capacity Trading
- Settlement
- Payments
- Credit Cover

User Access (Key Contacts)

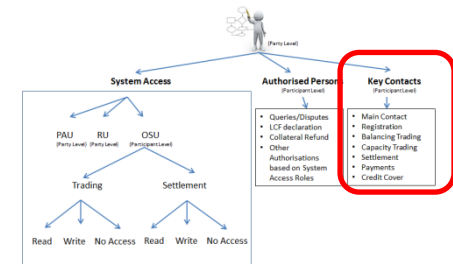
A user account can be assigned a key contact for different aspects of the TSC (and other markets).

When SEMO need to contact a Participant about some aspect of their market interactions they will reference the key contacts held on record in the BMI.

The valid key contact types are provided below.

A user can choose to be a key contact for any number of contact types.

SEMO would recommend that for each Participant at least one key contact should be provided for each contact type. Where SEMO need to communicate with one of these key contact groups they will use the latest key contact details held on the BMI to do so.



Contact Type	Description
Main Contact	• Assigned where a single user is to be the key contact for all the contact types
Registration	• Contact for registration related communications
Balancing Trading	• Contact for Balancing Market trading related communications
Capacity Trading	• Contact for Capacity Market trading related communications
Settlement	• Contact for settlement under the TSC, as well as other TSC tariffs and operator charges
Payments	• Contact for payment issues for both the TSC and Capacity Market e.g. missing payments.
Credit Cover	• Contact for credit cover increase notices and collateral for under the TSC

USER DETAILS

..for this Party...

...and user...



Trade Date

Party Name

Participant Name

User Name

User System Access Authorization **Key Contact** Notification

Messages (1)

#	Type	Message
1	Information	Successfully retrieved the UserKeyContact.

Relates to key contacts...

Key Contact List

#	Participant Name *	Key Contact Type *	Start Date *	End Date	Opt Out of Standard Notification	<input type="button" value="+"/>
1	PT_402510	BAL_CRM_SETTLEMENT	13/08/2017		false	<input type="button" value="Edit"/>
2	PT_402510	BAL_CRM_PAYMENTS	13/08/2017		false	<input type="button" value="Edit"/>

...for this participant only...

...they are a key contact for settlements and payments...

...valid from this date

PARTY DASHBOARD

Change in User
Authorisation
System
Example

PARTICIPANT LIST

Party - PY_034010

Filter by participant name

#	Participant Name	Jurisdiction
1	PT_402510	ROI

No of Records - 1

Add ▲

Resource List

Trading Site List

Filter by resource name

#	Resource Name
1	AU_400100
2	DSU_402500
3	GU_402506
4	SU_400300

No of Records - 4

Add ▲

USER LIST

Filter by user name

1	JSMITH
2	SYSTEM_USER

Party Administrative User (PAU)
double clicks on username
to see details

No of Records - 2

Add ▲

Change in User
Authorisation
System
Example

USER DETAILS

Trade Date Party Name Participant Name User Name

For User

User System Access **Authorization** Key Contact Notification

Messages (1)

#	Type	Message
1	Information	Successfully retrieved the UserAuthorisation.

(1) Select Authorisations tab

(2) Click "add" button

Authorisation List

#	Participant Name *	Authorisation Type *	Start Date *	End Date	Secondary Signatory	
1	PT_402510	BAL_CRM_REQUEST_COLLATERAL_REFUND	13/08/2017			<input type="button" value="+"/>

Change in User
Authorisation
System
Example

USER DETAILS

Trade Date

Party Name

Participant Name

Authorisation List

#	Participant Name *	Authorisation Type *
1	PT_402510	BAL_CRM_REQUEST_COLLATERA
2	PT_402510	BAL_CRM_SUBMIT_FORMAL_QUE

No of Records - 2

Edit Record

2

Participant Name *

PT_402510

Authorisation Type *

BAL_CRM_SUBMIT_FORMAL_QI

Start Date *

22/08/2017

End Date

Secondary Signatory

Delete From Grid ✕

Close

(3) A window will appear to enter user access details to add

(4) Once done, close the window

Change in User
Authorisation
System
Example

USER DETAILS

Trade Date Party Name Participant Name User Name *

Authorisation List

#	Participant Name *	Authorisation Type *	Start Date *	End Date	Secondary Signatory	<input type="button" value="+"/>
1	PT_402510	BAL_CRM_REQUEST_COLLATERAL_REFUND	13/08/2017			<input type="button" value=""/>
2	PT_402510	BAL_CRM_SUBMIT_FORMAL_QUERY_OR_DISPUTE	22/08/2017			<input type="button" value=""/>

(5) New authorisation will appear in the Authorisation List for the user.

(6) Edit box will be blue indicating the change has not been submitted yet

(7) Need to click the submit button to have the change saved and approved

No of Records - 2

USER DETAILS

Change in User
Authorisation
System
Example

Trade Date  Party Name Participant Name User Name *

 Query

 Reset






User System Access **Authorization** Key Contact Notification

Messages (1)

#	Type	Message
1	Information	Successfully retrieved the UserAuthorisation.

Authorisation List

#	Participant Name *	Authorisation Type *	Start Date *	End Date	Secondary Signatory	
1	PT_402510	BAL_CRM_REQUEST_COLLATERAL_REFUND	13/08/2017			
2	PT_402510	BAL_CRM_SUBMIT_FORMAL_QUERY_OR_DISPUTE	22/08/2017			

Topic 5: Course Summary

Review of Learning Objectives

As a result of this training module, for the arrangements under the Trading and Settlement Code, you should now:

Understand the main registration concepts



Have an awareness of the registration sections of the Balancing Market Interface



Understand how to go about changing registration information



Have an awareness of the user access management and how to change user access



Contact Details

If you have any questions on the Trading and Settlement Code registration process please contact:



I-SEM Registration
SEMO
The Oval,
160 Shelbourne Road
Ballsbridge
Dublin 4
D04 FW28
Ireland

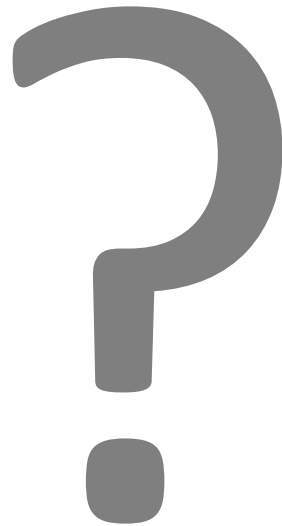


ROI: 1800 726772
NI: 0800 0726772
International: +353 (1)
2370584



i-semregistration@sem-o.com

Questions



Appendices

Appendices

These appendices will not be discussed during the instructor-led session, but have been provided as references showing further examples of the representation of registration information in the Balancing Market Interface.

System View: Party Dashboard

PARTY DASHBOARD

PARTICIPANT LIST

Party - PY_034010

Filter by participant name

#	Participant Name	Jurisdiction
1	PT_402510	ROI

Party ID. Double click to Party information

Resource = Unit

Resource List

Trading Site List

Filter by resource name

#	Resource Name
1	AU_400100
2	DSU_402500
3	GU_402506
4	SU_400300

Records - 4

Add

USER LIST

Filter by user name

#	User Name
1	JSMITH
2	SYSTEM_USER

No of Records - 2

Add

System View: Trading Site (1/3)

PARTY DASHBOARD

PARTICIPANT LIST

Party - PY_034010

Filter by participant name

#	Participant Name	Jurisdiction
1	PT_402510	ROI

Resource List

Trading Site List

Filter by resource name

#	Resource Name
1	AU_400100
2	DSU_402500
3	GU_402506
4	SU_400300

USER LIST

Filter by user name

#	User Name
1	JSMITH
2	SYSTEM_USER

Click on Trading Site List tab

ords - 4

Add ▲

No of Records - 2

Add ▲

System View: Trading Site (2/3)

PARTY DASHBOARD

PARTICIPANT LIST

Party - PY_034010

Filter by participant name

#	Participant Name	Jurisdiction
1	PT_402510	ROI

No of Records - 1

Add ▲

Resource List

Filter by trading site

#	Trading Site Name
1	TS_400300
2	TS_400301

No of Records - 2

Add ▲

Trading Site List

Filter by trading site

#	Trading Site Name
1	TS_400300
2	TS_400301

No of Records - 2

Add ▲

USER LIST

Filter by user name

#	User Name
1	JSMITH
2	SYSTEM_USER

No of Records - 2

Add ▲

**A list of trading sites will be shown.
Then double click on a Trading Site ID to see details.**

System View: Trading Site (3/3)

TRADING SITE DETAILS

Trade Date Status Participant Name * Trading Site Name *

Trading Site

Messages (1)

#	Type	Message
1	Information	Successfully retrieved the Trading Site.

General Information

Party Name

Participant Name Trading Site Name Start Date * End Date

Trading Site Long Name * Autoproducer

Firm Access Quantity * Maximum Export Capacity *

Generation Group Name Associated Supplier Unit

Trading Site details are shown, including Firm Access Quantities etc..

System View: User Access Details

USER DETAILS

SYSTEM_USER@PY_034010

Trade Date

Party Name

Participant Name

User Name *

For Party

...and user...

System Access List

#	Participant Name *	System Name *	Start Date *	End Date	Access Code *	External User ID	
1	PT_402510	BAL_CRM_SETTLEMENT	13/08/2017		READ		<input type="button" value="+"/>
2	PT_402510	BAL_TRADER	13/08/2017		WRITE		<input type="button" value="✎"/>

...and Participant...

...the system access for trading and settlement have been given...

...with rights of read and write respectively.

No of Records - 2

Submit

Part 2: Balancing Market Bidding and Data Submission



Balancing Market Bidding and Data Submission Agenda

Training Topic

Learning Objectives

Topic 1: Submission Rights, Requirements and Timing

Topic 2: Data Submission and Retrieval Processes

Topic 3: Data Publication and Reporting

Topic 4: Registration Data (SLT Only)

Topic 5: Physical Notification Data

Topic 6: Units Under Test

Topic 7: Grid Code Data (SLT Only)

Topic 8: Technical Offer Data

Topic 9: Commercial Offer Data

Topic 10: Bidding Game

Topic 11: Course Summary

Learning Objectives

- By the end of this training session you should understand:
 - How to access SEMO balancing market (BM) systems
 - Timelines for data submission for the BM
 - Process for technical data requirements for the BM
 - Process for commercial data requirements for the BM
 - The application of complex and simple commercial offer data in the BM
 - Default data requirements and how these are used in the BM
 - The Validation Technical Offer Data process
 - How to access data publications
- Following the presentation of training materials, a short bidding game will be undertaken, where trainees will be split into groups, given a scenario, and will have to submit simplified balancing market bids.

Topic 1: Submission Rights, Requirements and Timing



Submission Rights, Requirements and Timing (1/3)

Recap of Self-Learning Training.

- Participating in the TSC arrangements is mandatory for all units above the De Minimis Threshold, and therefore all of these units must provide some level of data, some more than others;
- Data submitted includes:
 - (Validation) Registration Data ((V)RD);
 - Physical Notification Data (PND);
 - (Validation) Technical Offer Data ((V)TOD);
 - Grid Code Data;
 - Commercial Offer Data (COD).
- Gate Opening Time for a Trading Day is 12:00 TD-19;
- Gate Closure 1 is 13:30 TD-1, for final Validation Data Set for VTOD for a Trading Day, and initial PND and COD for the Trading Day;
- Gate Closure 2 is one hour before the start of an Imbalance Settlement Period, for final PND and COD for that Imbalance Settlement Period;

Submission Rights, Requirements and Timing (2/3)

- There are technical elements of a Party's obligations and rights which refer to:
 - Communication Channels:
 - Type 1, manual including paper or email;
 - Type 2, assisted communication human to computer:
 - Type 2 channel to BMI is primarily screen based, Participants connecting can do so by selecting the appropriate Digital Cert and enter a valid password.
 - Type 3, automated communication computer to computer:
 - Participants connecting using Type 3 channel can do so using XML format.
 - System Categorisations:
 - Isolated Market Systems are within the control of the Party, used for its participation under the TSC, and the MO also has Isolated Market Systems used for other obligations and facilitation of participation not covered by Central Market Systems;
 - Central Market Systems are within the control of the MO, used for its obligations under the TSC related to data receipt and processing, calculation of prices, settlement and credit amounts, and formation and issuance of settlement documents.

Submission Rights, Requirements and Timing (3/3)

- Specific technical obligations for Parties are similar to today, referring to:
 - Communication Channel Qualification and Digital Certification;
 - Maintaining security and communication channels;
 - Testing and upgrading;
 - Communicating system failures to the MO.
- Technical obligations are largely the same as in the existing SEM arrangements, and are covered in TSC Chapter C, Appendix H, and Agreed Procedures 1, 3, 4, 5, 7, and 11.

Topic 2: Data Submission and Retrieval Processes



Data Submission and Retrieval Processes (1/17)

Registration Data Submission.

- Registration Data must be submitted to the MO and assessed to ensure it meets the eligibility criteria;
- A Participant and/or its Units are registered upon receipt of a Commencement Notice, and will be eligible for trading from the start of a Trading Day which corresponds with the relevant Effective Date on that Notice;
- A unique Digital Cert is issued to the persons nominated by the Party as Users;
- The Party undergoes Communication Channel Qualification;
- Thereafter the User is permitted access to the BMI on behalf of the registered Participant and Unit.

Data Submission and Retrieval Processes (2/17)

Registration Data Submission.

- Once registered, Participants can update their Registration Data and that of their units via the BMI;
- Such update requests must be submitted at least 3 Working Days before the effective date and are subject to validation and approval by the MO;
- Exceptions to this include:
 - Change Registered Capacity or Maximum Generation of an AGU;
 - The Firm Access Quantity of Trading Site(s) for each Trading Day.
- Where a Participant wishes to change Registered Capacity or Maximum Generation of an AGU, they must send a Registration Pack with updated information to the MO (no fee required). The change will be approved upon validation of the Registration Pack;
- Where a Participant wishes to change the Firm Access Quantity of a Trading Site, they must submit the appropriate form available from the MO website. The form is then issued to the relevant SO and validated in accordance with B.9.3 of the Code.

Data Submission and Retrieval Processes (3/17)

Registration Data Submission.

- A Participant may apply to change its attributes between being controllable or not, and dispatchable or not;
- They may register a Generator Unit as Non-Controllable until its Operational Readiness Confirmation is granted:
 - Upon receipt of confirmation, a Participant can apply to change their Registration Data to Controllable via the BMI.
- If the unit meets necessary Grid Code qualification requirements, they can also apply to change their Registration Data from being Non-Dispatchable to being Dispatchable;
- The application for change must be submitted at least 19 Trading Days prior to the effective date of the change (i.e. before Gate Opening for the Trading Day which is to be the effective date of the change);
- Email confirmation must follow the request no later than 1 Working Day after submission of the request by an approved Registration User;
- MO will (if approved) make the change in the system no later than 5 Working Days prior to the effective date and email the relevant Parties notifying that the change is complete.

Data Submission and Retrieval Processes (4/17)

Registration Data Submission.

- Some Registration Data is validated by External Organisations, in particular:
 - The SOs in respect of Grid Code compliance;
 - The MDPs in respect of meter data and retail market.
- Registration applicants should liaise with the SO and/or MDP prior to submission of a Registration Pack to facilitate the validation of Registration Data within 20 Working Days by the relevant External Organisations;
- The roles of these organisations is outlined in Agreed Procedure 1.

Data Submission and Retrieval Processes (5/17)

Registration Data Submission.

- Standing Offer Data (in the TSC Agreed Procedure 4 and the Technical Specification), also known as Default Data (in the TSC), is used as Gate Closure Data for GC1 to ensure valid offer data is always available for a Generator Unit;
- It is made up of both COD and VTOD items, they must be initially submitted during registration and can be updated following Communication Channel Qualification:
 - The earliest effective date for a Standing Offer Data submission is TD+19 days;
 - When a unit is being registered it must make a standard daily COD submission for each day until the day before the Standing Offer Data becomes effective to guarantee that they have data available, because the Standing Offer Data cannot be used for those days (VTOD set number 1 can be used from the Effective Date);
 - E.g. If a Unit, as part of registering, submits Standing Offer Data on 24th August, but their Effective Date for registration is 1st September, their Standing Offer Data will only be effective from 12th September, therefore they will need to make daily COD submissions for the days between 1st September and 11th September.
- This data must be kept up to date as necessary, Participants must review at least once per quarter.

Data Submission and Retrieval Processes (6/17)

Registration Data Submission.

- Standing Offer Data has a Day Type Parameter that identifies the calendar days for which the data will apply:
 - Identifies values of SUN, MON, TUE, WED, THU, FRI, SAT, or ALL;
 - All Generators must have SOD set with an “ALL” Day Type, and may submit multiple other SOD sets with other Day Types which would be selected as default data ahead of the “ALL” SOD set on those days;
 - Standing Offer Data with an “ALL” Day Type cannot have an expiry date, but SOD with other Day Types can have an expiry date after which the Market Operator shall not utilise the SOD set as default data.

Data Submission and Retrieval Processes (7/17)

Daily Data Submission and Retrieval.

- At a high level, the process for submitting or retrieving data, or retrieving a report, is as follows:
 - The Participant's system selects the required Data Transaction and submits it using an established connection;
 - MO's system issues a response message confirming that:
 - I. there was no error in any Element of a Data Transaction, and all of the relevant Elements of the Data Transaction are stored in the MO Market System; or
 - II. there was an error in a Data Transaction for a given Element, and the Data Transaction is rejected. The Participant will be required to submit a new Data Transaction. Note, Data Transactions included within the same message which have no errors are deemed successful and stored in the MO Market System.
 - If no response is received from the MO, a Participant may call the MO Helpdesk to establish whether it has been received.
- VRD, VTOD, COD and PND successfully submitted by a Participant to the MO will be passed to the SOs for validation and/or for use in scheduling and dispatch.

Data Submission and Retrieval Processes (8/17)

Daily Data Submission and Retrieval.

- Participants can submit and retrieve two classes of data:
 - Market Participant Registration data; and
 - Balancing Market Interface data.
- Some requirements around this include the following:
 - Only data from a single class can be used per Data Transaction, but multiple elements of that data class can be submitted in one Data Transaction;
 - Only one Settlement Reallocation Data Element can be included with an individual Data Transaction, and for submission must be via Type 1 Communication Channels;
 - Participants can request a specific Data Report or a list of all available Data Reports for a Data Report Data Transaction request;
 - Market Participant Registration data cannot be through Type 3 Communication Channels.
- See Agreed Procedure 4 Table 1 and Appendix 2 for Class and Element Mapping;
- The MO processes data it receives in order of receipt;
- Due to various levels of parallelism and pooling being implemented in this processing, sequencing cannot be guaranteed, Participants should configure its systems if a particular sequence of submission is desired.

Data Submission and Retrieval Processes (9/17)

Daily Data Submission and Retrieval.

- The MO will make daily, weekly, monthly and annual Data Reports, including settlement reports (confidential to that Participant), available via the BMI;
- Participants can submit a request for a specific Data Report through the BMI;
- Where Data Reports are updated by the MO, a message will be sent to the BMI to inform Participants that the Report is available;
- Reports can be viewed and accessed via Type 2 and Type 3 Channels;
- Reports and scheduled timelines of reports are set out in Appendix 2 “Report Listing” of Agreed Procedure 6.

Data Submission and Retrieval Processes (10/17)

Daily Data Submission and Retrieval.

- Validation checks for data submission, data retrieval and report requests include the following:
 - The submitted message is in the correct format;
 - The Sending Party is authorised to submit it;
 - The Data Transaction was submitted within timelines;
 - All required data is present for periods required.
- See Technical Specification for further information regarding the format, content and validation of Data Transactions and response messages.

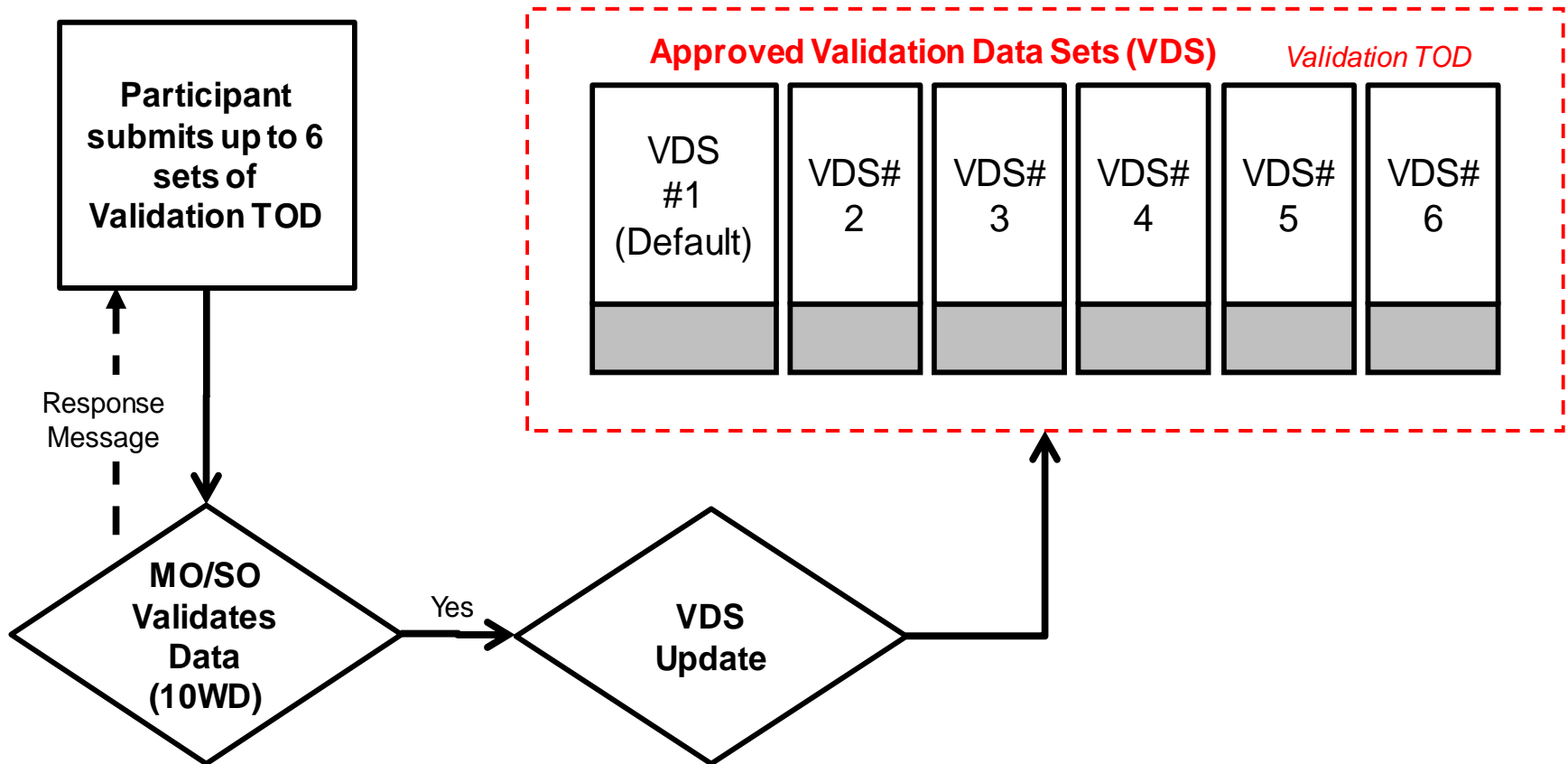
Data Submission and Retrieval Processes (11/17)

Submission of VTOD.

- Participants can submit up to six Validation Data Sets via the BMI;
- The set designated as no. 1 is the one used as Default Data / Standing Offer Data:
 - If a different VDS is intended to be used as default VTOD on different days, a number of submissions with different Day Type Parameters can be made for the Validation Data Set no. 1;
 - The MO issues the sets to the SO for approval;
 - When approved, the sets are numbered and approved in the MPI.
- Participants can submit a VDS Number up to 10 minutes prior to Gate Closure 1 to identify which of the six sets to use for a Trading Day, submissions include:
 - A Trading Day; and
 - A VDS Number.
- The following slides outline the processes for submitting and updating VTOD in a Validation Data Set, and VDS Numbers for use day-to-day.

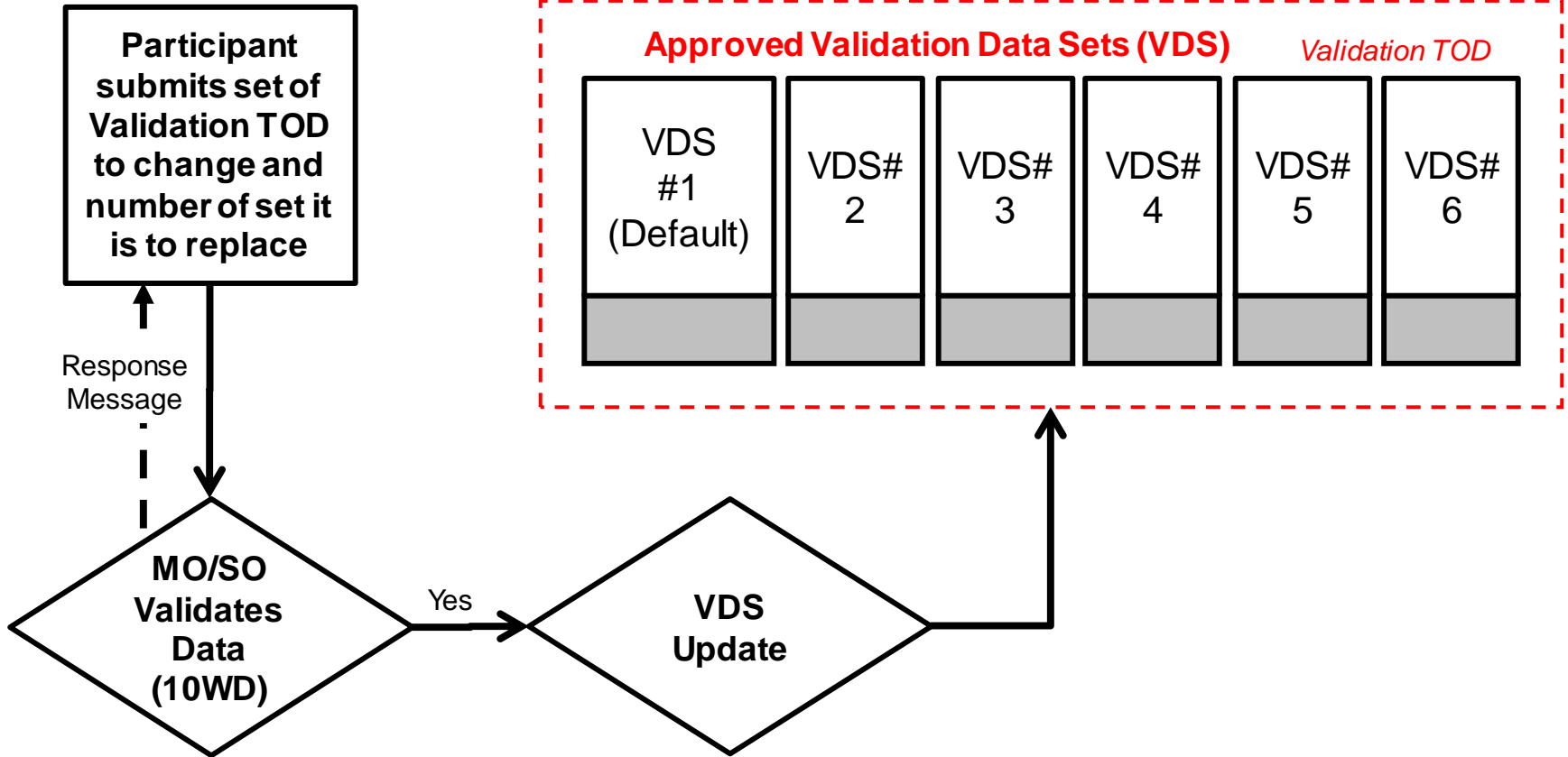
Data Submission and Retrieval Processes (12/17)

Submission of VTOD.



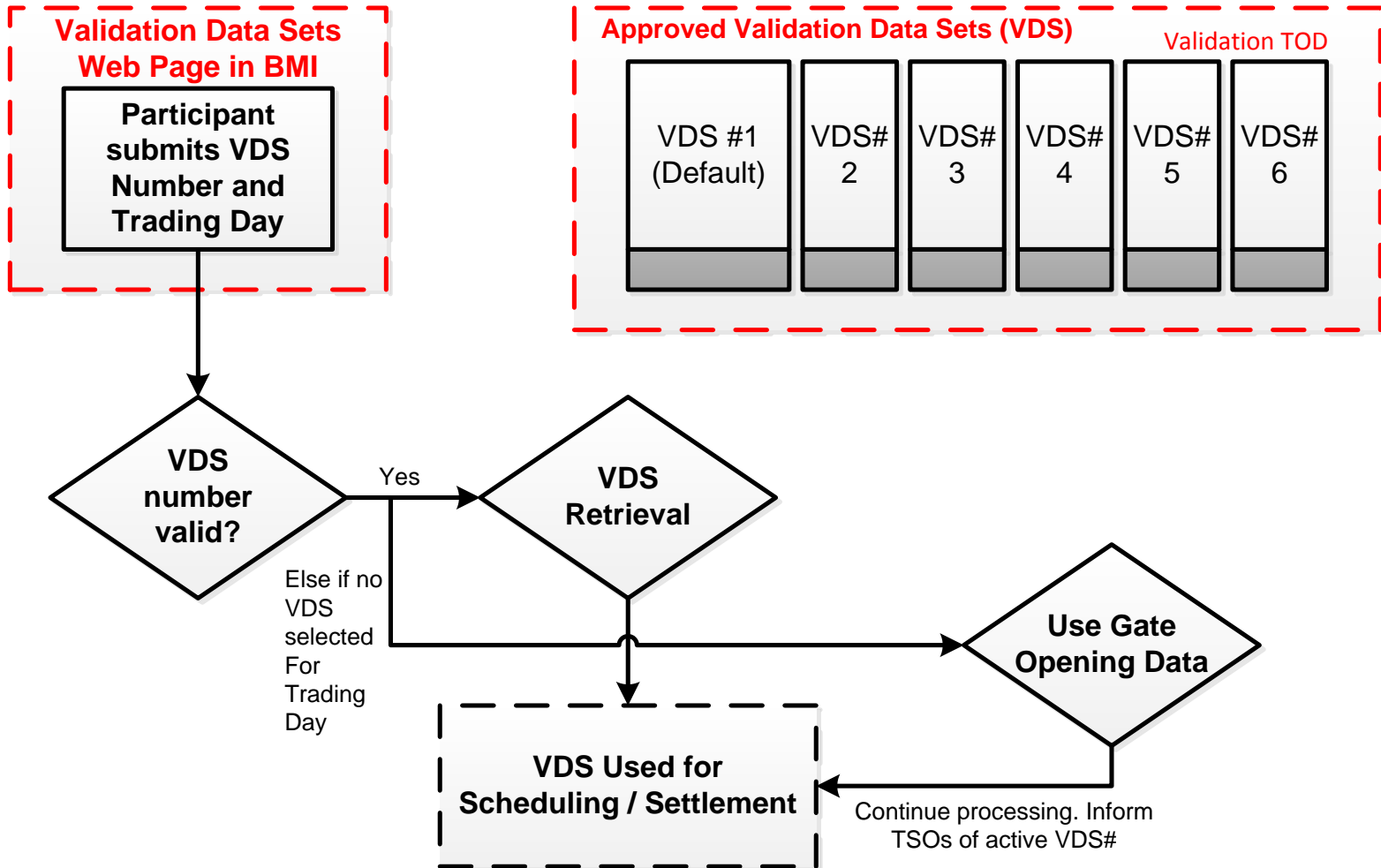
Data Submission and Retrieval Processes (13/17)

Submission of VTOD.



Data Submission and Retrieval Processes (14/17)

Submission of VTOD.



Data Submission and Retrieval Processes (15/17)

Emergency Communications.

- Participants must submit their own data. The only instances where the MO can enter data on behalf of the Participant are:
 - During the Initial Registration process; or
 - As a result of a system or communication failure.
- Detail of processes for Emergency Communications are in Agreed Procedure 7;
- There are two types of communication failure:
 - General Communication Failure (GCF) – where the MO has technical issues, impacting on data submission for all Parties;
 - Limited Communication Failure (LCF) – where one or more, but not all, Parties have technical issues, but the MO does not have technical issues, impacting on data submission.
- There is also a General System Failure, but this relates to the ability of the MO to carry out settlement rather than relating to the ability for participants to submit balancing market data.

Data Submission and Retrieval Processes (16/17)

Emergency Communications.

- If there is a GCF:
 - The MO will notify all impacted Parties of alternative communication methods and associated timelines for submitting the relevant Data Transaction(s);
 - The MO will notify impacted Parties of the Emergency Transaction Timeline regarding Data Transactions for Settlement. This may include an extension of the time allowed to submit data outside of the standard Gate Closures, as determined by the MO;
 - If the GCF affects the MO receiving Data Transactions from SOs, the MO will notify the SOs and request Data Transactions asap following the submission deadline;
 - The MO will update impacted parties at least daily of progress on restoring the systems, with estimates of when the system shall be restored if known.

Data Submission and Retrieval Processes (17/17)

Emergency Communications.

- If a Standard LCF occurs:
 - The Participant must inform the MO of their preferred method of communication for the duration of the LCF;
 - A Party's obligations regarding Data Transactions remain during the LCF;
 - The MO will process the Data Transactions from the alternative Communication Channel until the Participant can revert to the normal Communication Channel;
 - The Party must update the MO at least daily of progress in restoring their normal Communication Channel.
- If the LCF occurs to Offer Data for a Gate Window at least 5 minutes prior to Gate Closure:
 - The Participant must notify the MO of the LCF;
 - A Party's obligations regarding Data Transactions remain during the LCF;
 - If the LCF is valid, the Participant must submit their data in a correctly formatted file;
 - The MO will try to submit the data before Gate Closure and will notify the Party if submission to the BMI was successful or not;
 - If the Offer Data is received less than five minutes prior to the Gate Closure, the MO shall not submit it.

Topic 3: Data Publication and Reporting



Data Publication and Reporting (1/6)

- In the SLT Materials details of some key reports listed below were provided:
 - Public forecasts for wind, load, and imbalances (forecast Net Imbalance Volume);
 - Public aggregates of Ex-Ante Market Contracted Quantities for Generation, Demand and Wind;
 - Indicative Operations Schedules published privately and publically to different timeframes;
 - Imbalance Price Reports published publically ex-post close to real-time;
 - COD, TOD and PND.
- Settlement information published privately similar to today:
 - Settlement Statement;
 - Settlement Report;
 - Settlement Document (replaces Invoices and Self Billing Invoices in SEM);
 - Collateral Report and Collateral Refund Notice.
- The following slides give some background into how the data is determined, and into additional publications and reports which are available.

Data Publication and Reporting (2/6)

- Forecast Net Imbalance Volume:
 - Updated every half hour within the Trading Day:
 - Net Imbalance Volume Quantity in Imbalance Pricing is the sum of the volume of all balancing market actions taken;
 - Those actions are taken to resolve energy imbalances, and non-energy actions in addition to these should net out, therefore a proxy for Net Imbalance Volume Quantity can be found by considering the drivers for energy imbalances:
 - Sum of all the Physical Notifications (from latest data submitted);
 - Net Interconnector schedule (from the latest Interconnector Reference Programme);
 - TSO renewables forecast for non-dispatchable renewable units and the calculated imbalance, for each Imbalance Settlement Period (if renewable units submit PNs, those PNs are taken instead);
 - TSO Load Forecast (negative value, does not include Pumping Load or DSUs).

Data Publication and Reporting (3/6)

- Jurisdictional Load Forecast:
 - Based on historical analysis of the following data:
 - net export of generators (excluding wind) in the Jurisdiction;
 - net export of wind generators in the Jurisdiction;
 - total DSU MW reduction in the Jurisdiction;
 - net import into the Jurisdiction from the other SEM Jurisdiction;
 - net import into the Jurisdiction from GB.
 - Non-centrally monitored generation are inherently captured:
 - e.g. small scale CHP, small scale hydro, wind etc.;
 - The Load Forecast is based on historical demand data, and peaks are adjusted to the forecasted circumstances of the lookout period, with considerations of energy efficiencies and large connections;
 - Approach as described in the Generation Capacity Statement and Balancing Market Principles Statement.
 - The generator components of the forecast only reflect the generation visible to the TSOs via SCADA, so deeply embedded generation or micro-generation is not factored in.

Data Publication and Reporting (4/6)

- TSO Wind Forecast is provided by external providers for every windfarm that is centrally monitored by the TSO;
- TSO provides details to providers of each windfarm including:
 - No. of turbines, turbine types, permissible capacity (min of Registered Capacity and Maximum Export Capacity), installed capacity etc.
- Forecasts do account for:
 - Old legacy wind units that are still non-controllable and new Generators that are not yet controllable but are in the process of becoming controllable;
 - Information on outages where these are available;
 - Some out of market generation, because all units >5MW have to be controllable but don't have to be in the Market if they are <10MW.
- Forecasts do not account for:
 - Below De Minimis, non-controllable wind generation (including export-only Supplier Units);
 - Curtailment forecast, as these are only reflected by the TSO in real time and would not be available to forecast providers;
 - Wind regions.

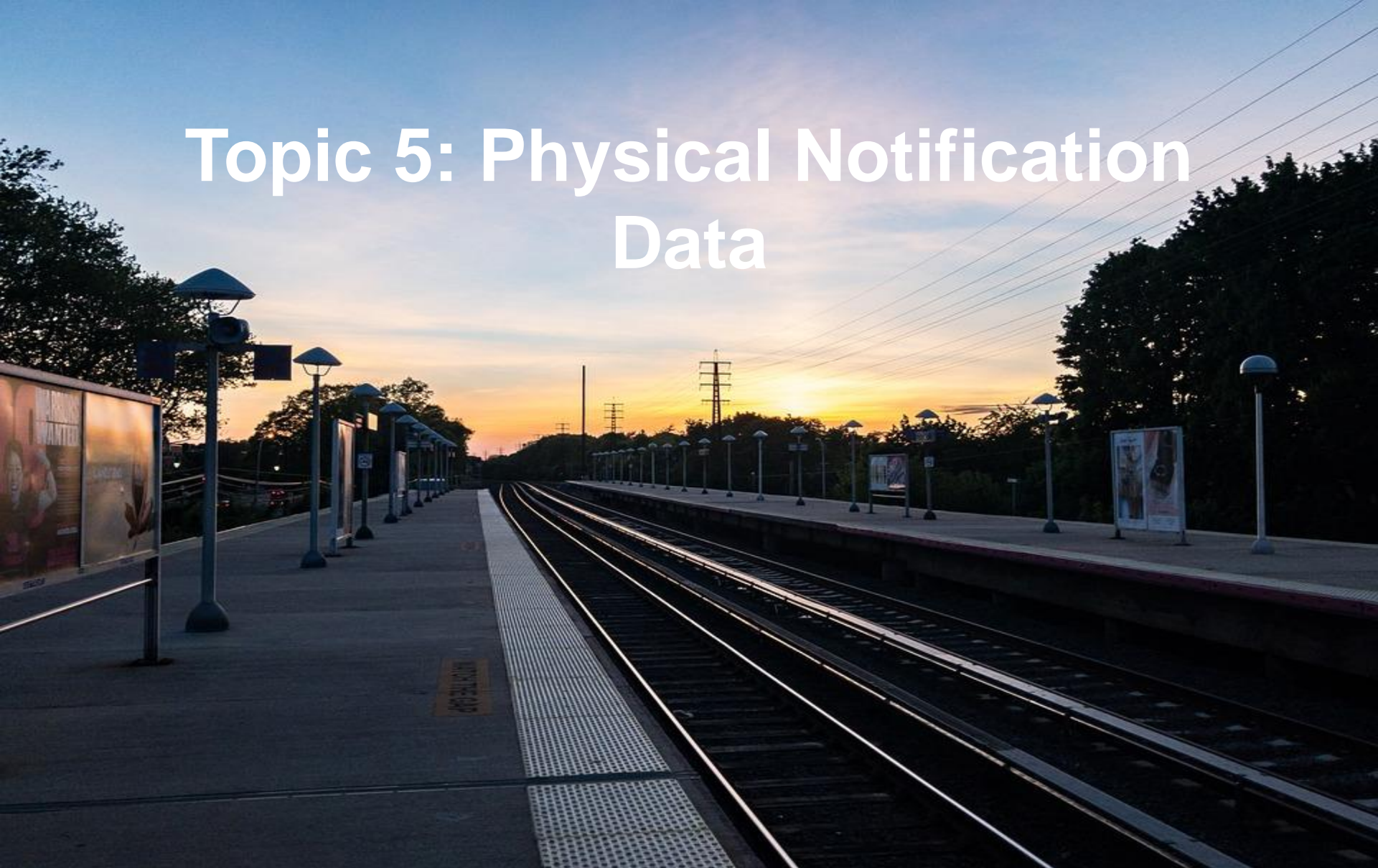
Data Publication and Reporting (5/6)

- Ex-post public publication of real-time dispatch and operational information:
 - Dispatch Instructions public on D+1 and D+4;
 - Outturn Availability, Minimum Stable Generation, Minimum Output;
 - Metered Volumes (generation and demand), by unit and jurisdiction;
 - Dispatch Quantities;
 - Fuel Flags, Energy Limits;
 - Average System Frequency.
- AoLR data published privately:
 - Publication of all information required to outline results of units participating under AoLR function:
 - Data and parameters submitted by the participant;
 - Forecast output values;
 - Resulting Traded Volumes and Positions, or indications of warnings or errors;
 - PN submission information, as applicable.

Data Publication and Reporting (6/6)

- Other areas where public data will be made available:
 - Transmission and Unit outage schedules;
 - Loss Factors;
 - Registered Units and Parties, with capacity and other information;
 - List of units under test;
 - Interconnector transfer capacities, SO-SO trades, flows and residual capacity;
 - Operational parameters for the coming Trading Day (System Shortfall Imbalance Index, System Imbalance Flattening Factor);
 - Exchange Rates;
 - Demand Control;
 - Settlement Calendar;
 - Balancing Market Operating Timetable;
 - Overall market costs in different areas:
 - Balancing Costs (considering imbalance being corrected), Overall Energy Market and Capacity Market financial information for each settlement run;
 - Cross Border market payment information for VAT proportions.
 - Provision of Wind Curtailment, TCG updates, Operating Reserve, Warning Limits etc. proposed via existing TSO publications or Market Messages.

Topic 5: Physical Notification Data



Physical Notification Data (1/9)

- Physical Notifications (PNs) are MW generation output (or consumption) profiles;
- They are used as the starting point for the Scheduling and Dispatch process:
 - Balancing Market cost is incurred if dispatch unit away from PN, dispatching to PN is “free”, optimise to minimise cost of dispatching away from PN for energy and non-energy balancing requirements.
- They are also used as starting point for pricing and settlement processes:
 - Differences between dispatch and latest PN submission at Gate Closure 2 are considered balancing market actions.

Physical Notification Data (2/9)

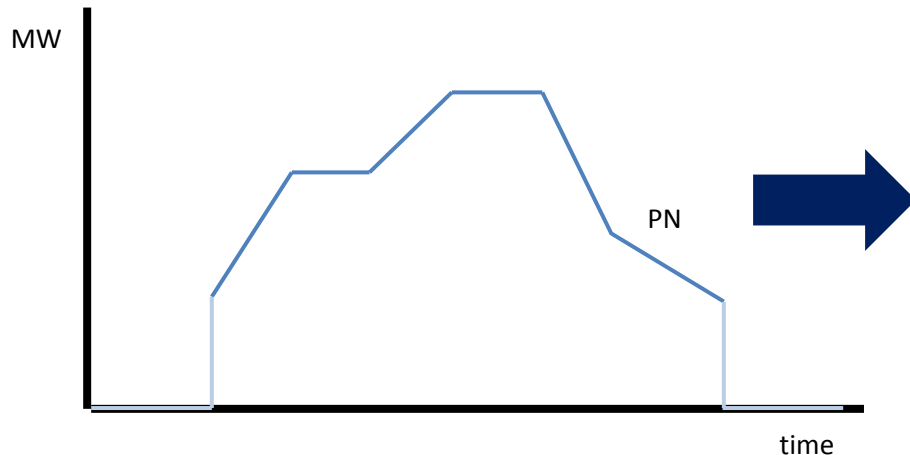
- PND needs to reflect the intended output of the unit in the absence of balancing market actions:
 - Differences between dispatch and the last PND to be submitted in advance of GC2 (the Final Physical Notification, FPN) are considered balancing market actions.
- PND needs to be physically feasible to dispatch:
 - Validations in submission process for approval/rejection, and ex-post for compliance, to ensure it is consistent with Technical Offer Data and Registration Data.
- At GC2, PND needs to reflect the final net market trade position:
 - Not validated as part of submission, ex-post market monitoring with some tolerances .
- The priority of the previous two requirements, if they are in conflict, is that the PND should be physically feasible to dispatch:
 - As the start point for scheduling and dispatch, and given that the dispatch profiles which will be compared with the PN profiles will be calculated based on physically feasible VTOD, the PND must be consistent with VTOD;
 - It is then a participant's obligation to ensure that its trades match as closely as possible with this physically feasible operation profile.

Physical Notification Data (3/9)

- For Dispatchable Priority Dispatch units, PND needs to reflect the output level to which the unit intends for Priority Dispatch to apply:
 - For dispatch decisions in the output range below PN are taken on priority order, dispatch decisions in the output range above PN are taken on basis of economic merit;
 - Dispatchable Priority Dispatch units can elect to be paid the Imbalance Settlement Price by submitting a PN higher than their net ex-ante traded position, the difference between the Ex-Ante Quantity and Metered Quantity is settled at the Imbalance Settlement Price;
 - PN submission for non-dispatchable priority dispatch units are not treated this way – submitted for forecast information only, TSOs take their forecast as PN for scheduling, MO takes Outturn Availability as FPN for settlement.

Physical Notification Data (4/9)

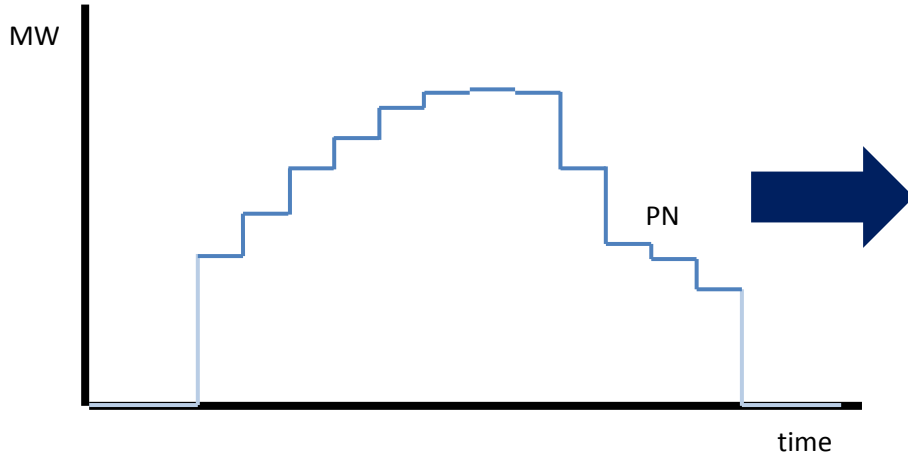
- Minute-by-minute resolution;
- From time and MW – To time and MW;
- Two formats:
 - Piecewise Linear (“A01” in Tech Spec, Spot MW values with linear interpolation, format for most units);



From Date/time	To Date/time	From MW	To MW	Under Test?
03/10/2016 16:45	03/10/2016 17:18	135	300	False
03/10/2016 17:18	03/10/2016 17:35	300	300	False
03/10/2016 17:35	03/10/2016 17:45	300	350	False
...etc.	...etc.	...etc.	...etc.	...etc.
04/10/2016 22:45	04/10/2016 23:00	215	145	False

Physical Notification Data (5/9)

- Minute-by-minute resolution;
- From time and MW – To time and MW;
- Two formats:
 - Piecewise Linear (“A01” in Tech Spec, Spot MW values with linear interpolation, format for most units);
 - Stepwise (“A04” in Tech Spec, constant MW values in 15 minute blocks, format for AoLR participating units, Supplier Units, below De-Minimis dispatchable units, and Non-Dispatchable units).



From Date/time	To Date/time	From MW	To MW	Under Test?
03/10/2016 16:45	03/10/2016 17:00	190	190	False
03/10/2016 17:00	03/10/2016 17:15	245	245	False
03/10/2016 17:15	03/10/2016 17:30	299	299	False
03/10/2016 17:30	03/10/2016 17:45	320	320	False
...etc.	...etc.	...etc.	...etc.	...etc.
04/10/2016 22:45	04/10/2016 23:00	180	180	False

Physical Notification Data (6/9)

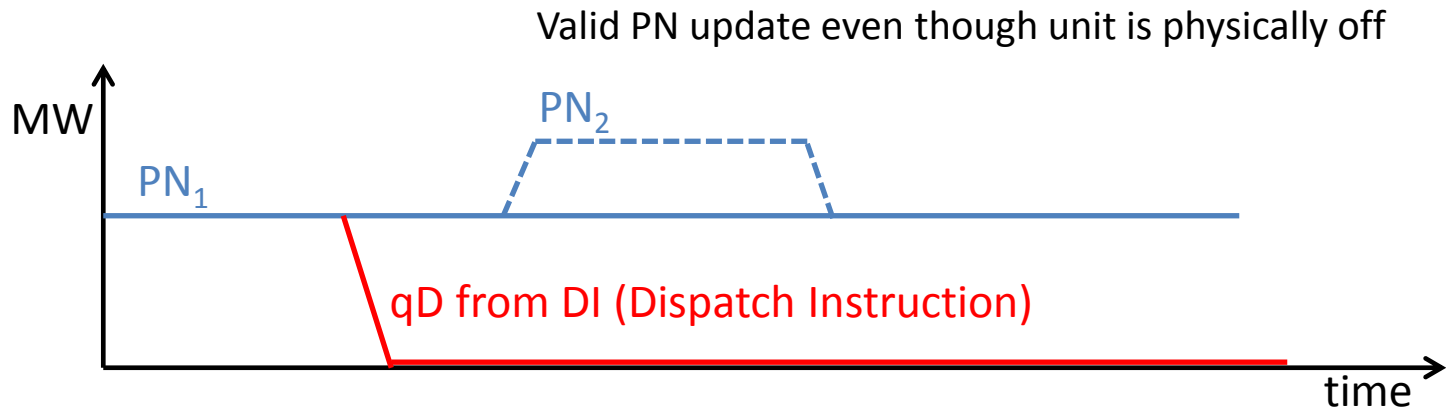
- While Final Physical Notifications (FPNs) are used to calculate Bid Offer Acceptances, each set of PN data submitted over time is timestamped to be used in different settlement purposes:
 - Information Imbalance Charge:
 - Considers the difference in the volume of PNs submitted over time vs the FPN for a given Imbalance Settlement Period, and if the volume of change is above a certain tolerance a charge can be applied.
 - Trade Opposite TSO Quantities:
 - Reduces Premium or Discount Payments in a given Imbalance Settlement Period if a change between the PN present at the time of a Balancing Market action, and the FPN, increases the volume of that action.
- Note that both of these settlement functions are expected to be switched off for I-SEM Go-Live.

Physical Notification Data (7/9)

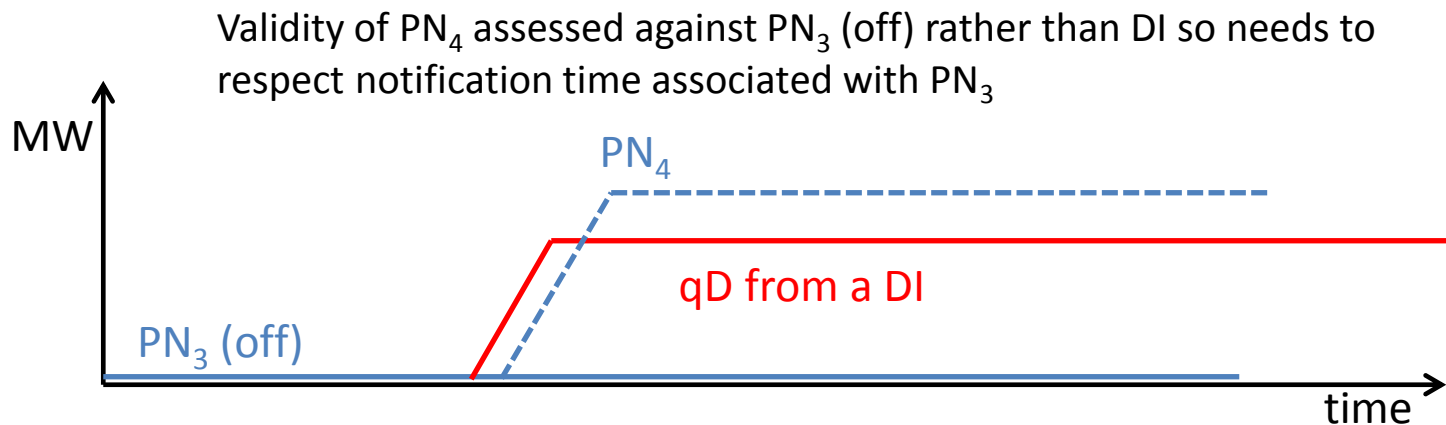
- Validation of PNs:
 - PNs submitted by Market Participants must be technically feasible from the perspective of the unit's technical capability, "consistent with TOD":
 - Dispatch Quantities will be calculated based on TOD and registration data as there is no other data available on which to base dispatch, therefore in order to compare like-with-like, PNs need to be based on the same data.
 - Validation of PNs will be performed by the TSOs to assess compliance with technical offer data, forecast availability etc.;
 - Validation of PNs will be performed against the previously submitted PN rather than the physically dispatched position;
 - A validation report will be issued. If a PN submission is deemed infeasible, the TSOs will reject the entire PN submission and will revert to using the last validated and accepted set of PNs;
 - The following slide shows an example of what is considered in validation when resubmitting PND after a previous submission.

Physical Notification Data (8/9)

Example 1



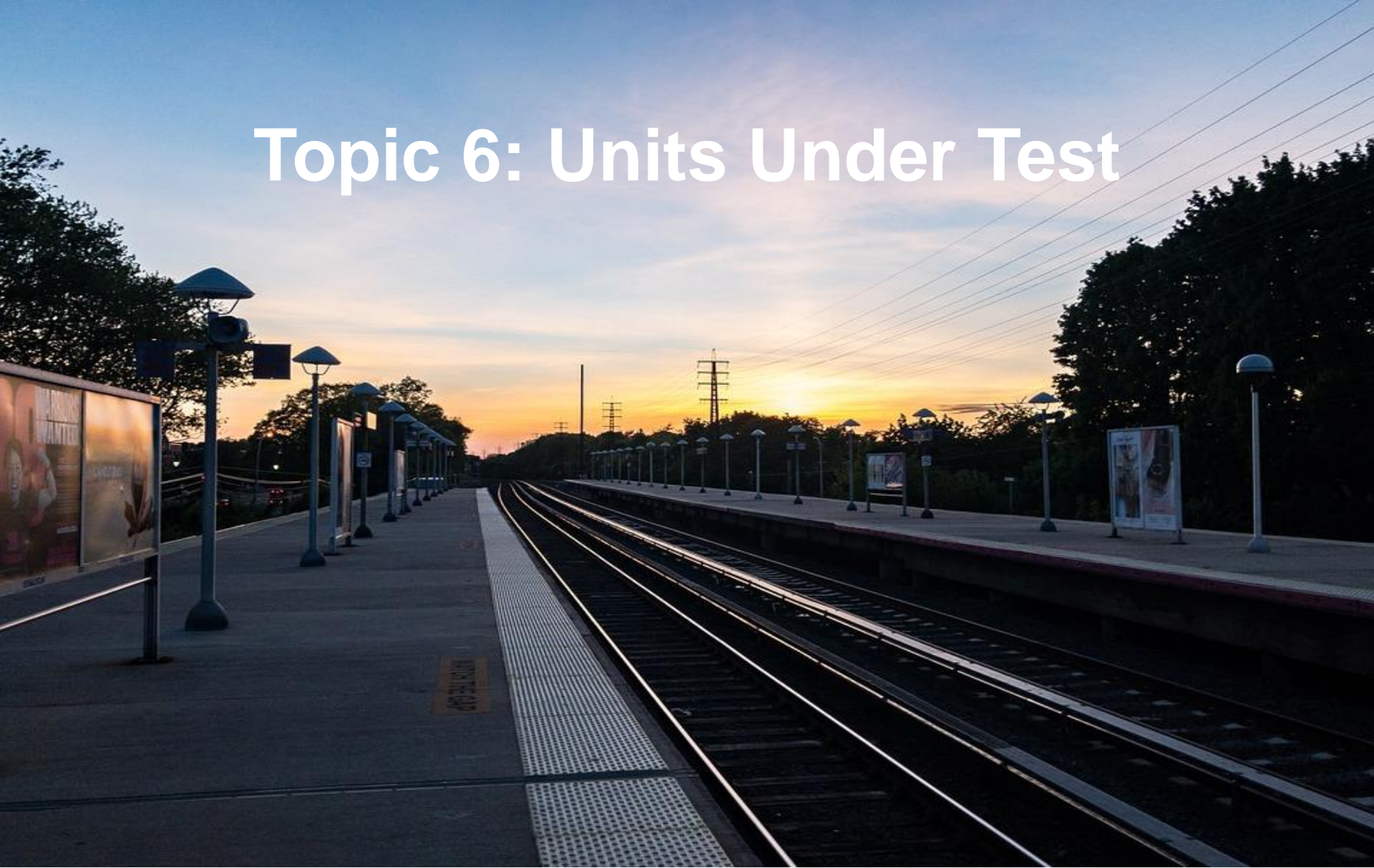
Example 2



Physical Notification Data (9/9)

- Explicit automatic validation rules in submission include the following:
 - A MW quantity cannot be less than Registered Minimum Output or greater than registered Maximum Generation;
 - If submitting piece-wise linear curves (majority of units), From Time must be equal to the previous To Time, From MW must be equal to the previous To MW;
 - If submitting stepwise curves, From MW must equal To MW, and From Time must equal previous To Time;
 - The first From Time must be the start of the earliest open Imbalance Settlement Period in the Trading Day;
 - The final To Time must be the end of the final Imbalance Settlement Period in the Trading Day, or in the following Trading Day if the Day-ahead Market gate closure time for that Trading Day has been passed.
- While these are the rules which determine an acceptance or rejection of PNs on submission, there is also a general requirement to be consistent with VTOD. Ex-post monitoring of PND complying with VTOD is expected.

Topic 6: Units Under Test



Units Under Test (1/4)

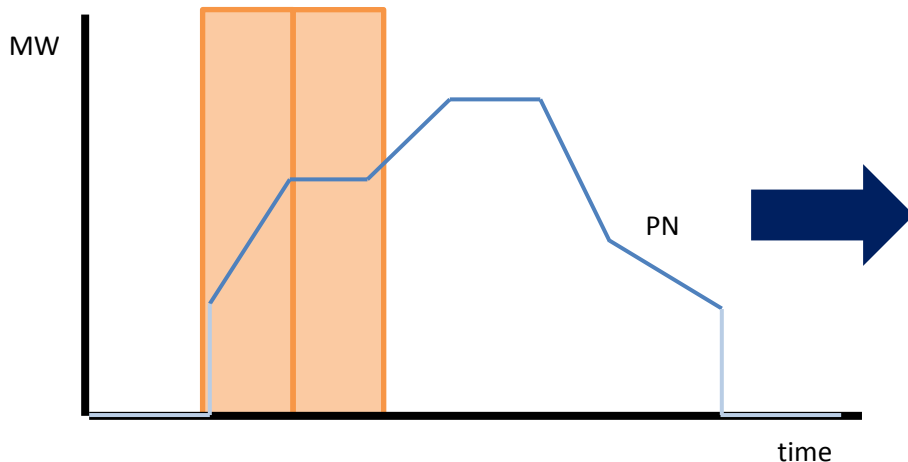
- The general process for Units Under Test is as follows:
 - The Participant submits a Generator Unit Under Test Request to MO;
 - The MO sends this to the SO for approval (separate process);
 - Following SO approval, the Participant submits Generator Unit Under Test Notice by submitting an “Under Test Flag” with the value “True” as part of their PND submission to the MO:
 - PN MW and Time values need to reflect the output profile in the Under Test Request, subject to manual validation and approval/rejection by the SOs.
 - The Participant submits COD and VDS Number as normal;
 - Following SO approval of PNs, they are included as under test in all subsequent scheduling and dispatch runs:
 - The Participant is issued dispatch instructions matching their PN in periods under test unless there is a system security requirement to do otherwise.
 - If they are dispatched away from their PN, Bid Offer Acceptances will be calculated as normal using the unit’s COD and VTOD.

Units Under Test (2/4)


- Testing has two categories with different submission requirements, primarily in terms of the amount of notice required in submitting for SO pre-approval:
 - Significant Testing:
 - Including commissioning new or existing units, Grid Code testing, testing following modifications to control systems or any tests that pose an additional risk of trip;
 - Pre-approval from SO required 5 working days in advance;
 - PN data with Under Test flags required in advance of Trading Day (by GC1).
 - Minor Testing:
 - Any testing that does not pose an increased risk of trip;
 - Pre-approval required but no fixed advance notice – if TSO can approve in time, it can be accommodated, including a short notice within-day request.

Units Under Test (3/4)

- Submitting “True” for an Under Test Flag as part of a PND submission ensures that the unit is seen as “Under Test” in the Imbalance Settlement Periods with these flags present;
- Participant can state in which subset of Imbalance Settlement Periods in the Trading Day it wishes to be considered “Under Test”;
- Unit has testing charges for those periods in which it has an “Under Test” status.



From Date/time	To Date/time	From MW	To MW	Under Test?
03/10/2016 16:45	03/10/2016 17:18	135	300	True
03/10/2016 17:18	03/10/2016 17:35	300	300	True
03/10/2016 17:35	03/10/2016 17:45	300	350	False
...etc.	...etc.	...etc.	...etc.	...etc.
04/10/2016 22:45	04/10/2016 23:00	215	145	False

 Imbalance Settlement Periods where Unit Under Test status granted.

Units Under Test (4/4)

- “Dispatch Instruction Test Flags” are an exception which may arise:
 - Not part of the normal Unit Under Test process – if the normal process is followed for Units Under Test, this flag will not be applied to a Dispatch Instruction;
 - Normally a Participant modifies/extends their test through PND submissions;
 - Dispatch Instruction Test Flags apply if an SO approves new/modified test proposals after GC2, i.e. when PND submission has closed for a period, in situations where:
 - The Participant could not have reasonably foreseen the need before Gate Closure;
 - The Participant cannot follow approved test PNs; or
 - The Participant has failed to sync, has no PNs and unit is no longer required.
- Dispatch Instructions with this flag are not sent to pricing and settlement calculations:
 - Extension or modification to test seen as an Uninstructed Imbalance;
 - The Dispatch Quantity profile, and therefore balancing market quantities, will be based on previous instructions excluding ones with this flag;
 - If there are any differences between the resulting Dispatch Quantity profile and Final Physical Notification profile, Bid Offer Acceptances will be calculated as normal using their submitted COD.

Topic 8: Technical Offer Data



Technical Offer Data (1/4)

- Validation Technical Offer Data (VTOD) is data which represents how a unit can physically operate:
 - This data also needs to comply with Grid Code requirements on reflecting the real capabilities of the unit.
- VTOD is used for:
 - Scheduling and dispatch (in order to model units in a way which reflects how they can operate so that unit schedules and dispatch instructions are physically feasible according to TOD); and
 - Instruction profiling (calculate the Dispatch Quantity minute-by-minute profile which reflects the generation that the unit should have done to meet its dispatch instruction according to what it stated it could do, used to calculate Balancing Market quantities).

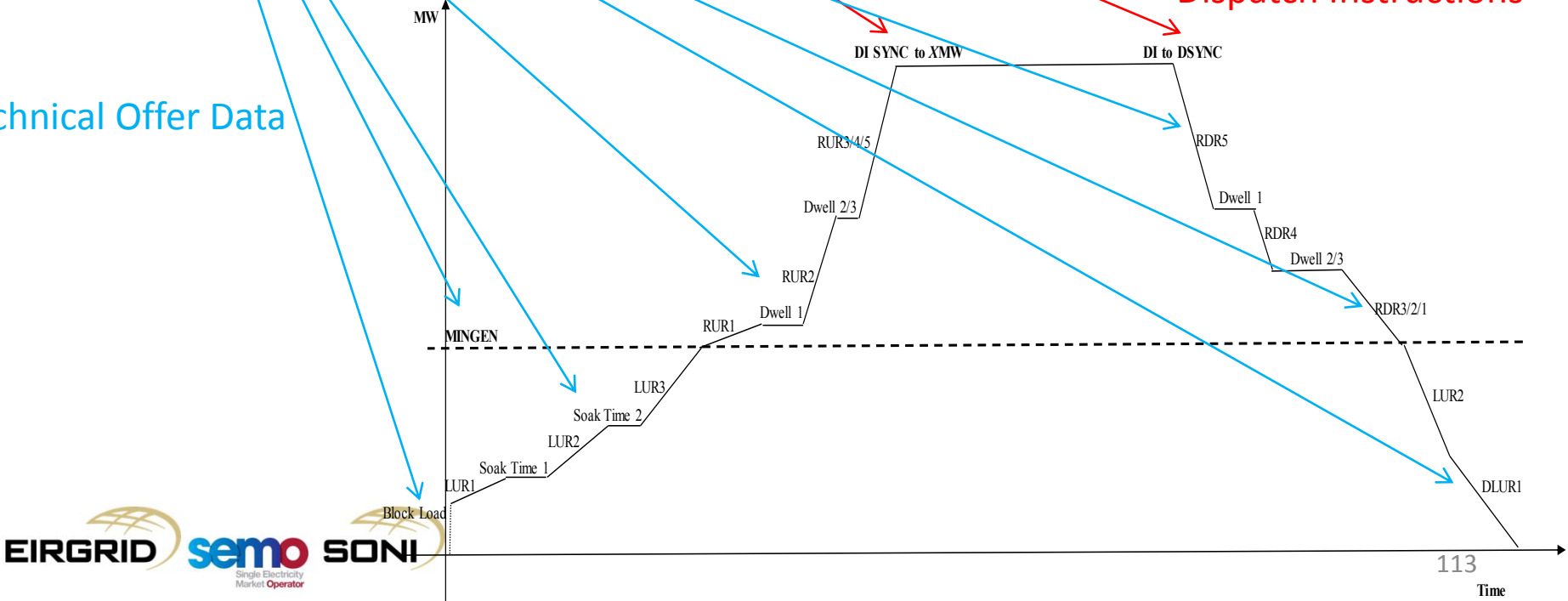
Technical Offer Data (2/4)

TOD is used in Instruction Profiling to calculate the MW output a unit should be performing to meet its dispatch instruction. Instruction Profiling has uses in two areas.

SEM Inputs

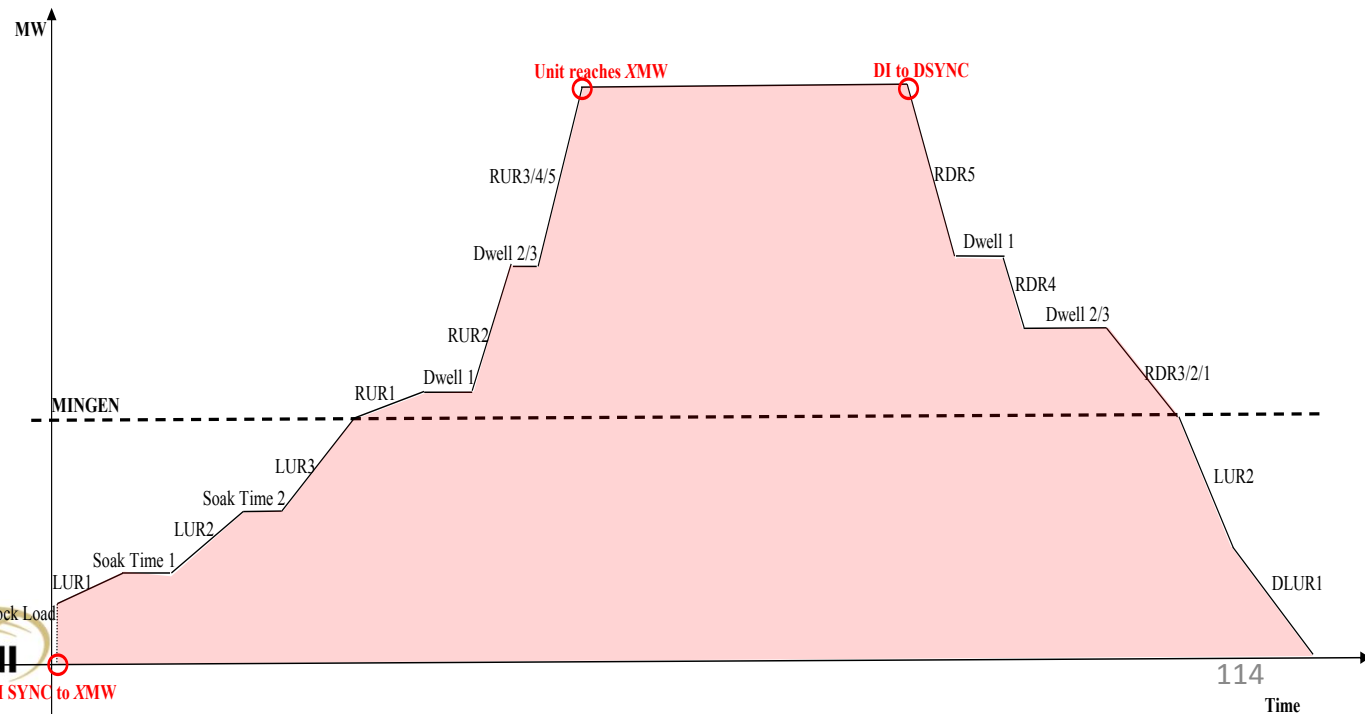
Dispatch Instructions

Technical Offer Data



Technical Offer Data (3/4)

- Like today this is used to calculate the half-hour resolution Dispatch Quantity, which considers the output of the unit over an Imbalance Settlement Period;
- This is used to have a half-hour resolution quantity for dispatch to compare with other half-hour quantities, such as calculating Uninstructed Imbalance Charges;
- Three step process to calculate this:
 1. Dispatch Instruction recorded and validated from EDIL;
 2. Create a Profile joining all the DI according to Technical Offer Data (TOD);
 3. Calculate Dispatch Quantity as the area under the curve.



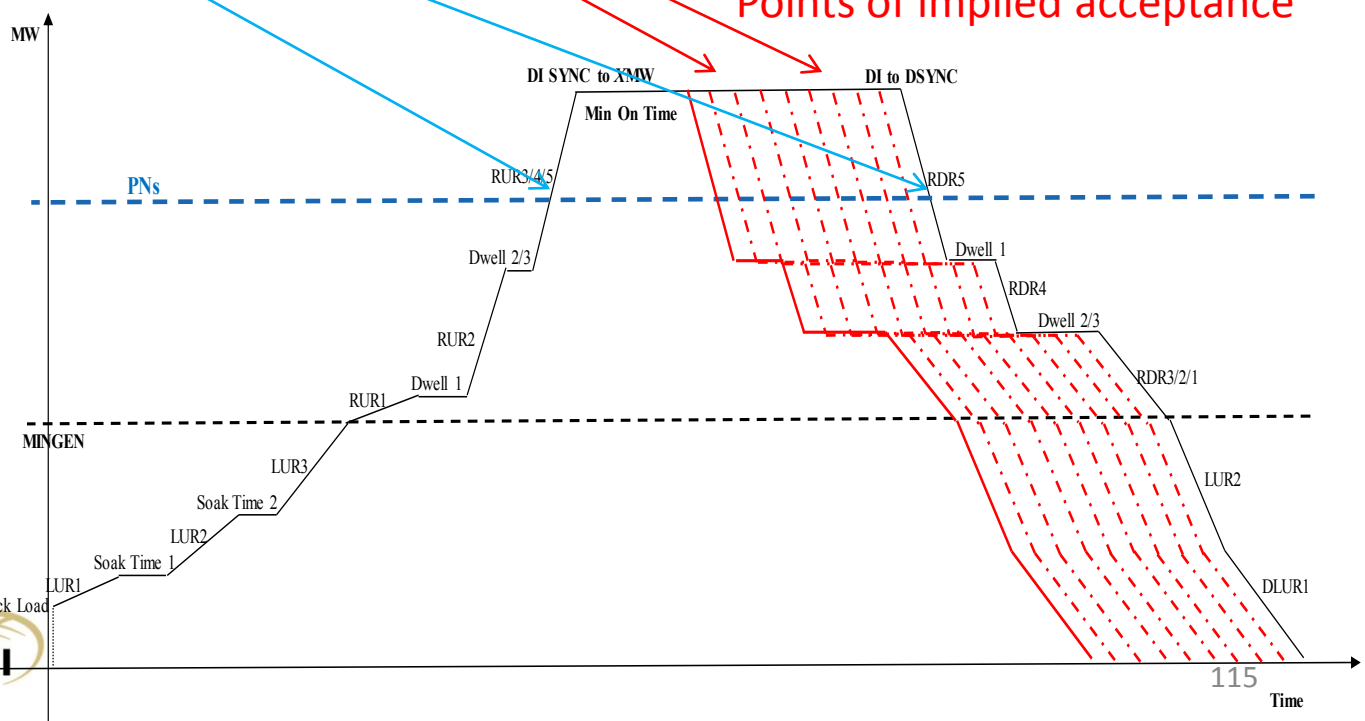
Technical Offer Data (4/4)

Additional Outputs

Another use of TOD in instruction profiling is to create a minute-by-minute resolution Dispatch Quantity profile which is used along with the PN profile to calculate Bid Offer Acceptances. Every Bid Offer Acceptance has its own Dispatch Quantity profile to calculate the accepted quantity for that particular acceptance.

Cross points between profiles of Instructions and PNs

Points of implied acceptance



Topic 9: Commercial Offer Data



Commercial Offer Data (1/19)

- COD is data which represents the cost implications for dispatching a unit differently from its market position (defined through its PND submission);
- This data is one of the primary means by which a unit can interact with the Balancing Market, influencing its schedule, the imbalance price, and its settlement amounts;
- There are three COD submission types, in two format types:
 - Default Data (also known as Standing Offer Data):
 - Complex Bid Offer Data format, mandatory, initially submitted as part of registration;
 - Trading Day Specific data:
 - Complex Bid Offer Data format, optional.
 - Trading Period Specific data:
 - Simple Bid Offer Data format, optional.

Commercial Offer Data (2/19)

	Complex Bid Offer Data	Simple Bid Offer Data
Mandatory?	Yes (default data in registration)	No
Format	<p>Single Start Up Cost per Warmth State (Hot / Warm / Cold) (€ or £)</p> <p>Single No Load Cost (€/hr or £/hr)</p> <p>10 part Inc and 10 part Dec Price / Quantity Pair curves (MW and €/MWh or £/MWh)</p>	10 part Inc and 10 part Dec Price / Quantity Pair curves in MW and €/MWh or £/MWh
Timeframe covered in submission	Trading Day	Imbalance Settlement Period
Timeframe covered in resubmission	All open Imbalance Settlement Periods for the relevant Trading Day after time of resubmission	Imbalance Settlement Period if still open at time of resubmission
Balancing Market Principles Code of Practice	Applies	Does not apply
Treatment of Fixed Costs	Explicitly submitted as separate data	Implicitly in prices submitted
Use in Scheduling and Dispatch	For Unit Commitment decisions, and Economic Dispatch decisions if no Simple data submitted	For Economic Dispatch decisions
Use in Imbalance Pricing	For actions taken before GC2, and PQ Pair elements for actions taken after GC2 if no Simple data submitted	For actions taken after GC2
Use in Imbalance Settlement	For non-energy actions, for actions taken before GC2, and PQ Pair elements for actions taken after GC2 if no Simple data submitted	For energy actions taken after GC2

Commercial Offer Data (3/19)

- Different COD formats are used for different aspects of Scheduling and Dispatch:
 - Unit commitment decisions (using LTS and RTC runs) will be based on complex format commercial data with MW dispatch (using RTD runs) based on simple format commercial data.
 - The ability of this approach to deliver a stable and efficient scheduling and dispatch process relies on consistency between unit commitment decisions made using complex data with the resulting MW dispatch decisions of already committed units made using simple data.

Scheduling/Dispatch Run	Source of Commercial Data		
	Primary	Back-Up 1	Back-Up 2
LTS – Long Term Schedule	Complex	Default	N/A
RTC – Real-Time Commitment	Complex	Default	N/A
RTD – Real-Time Dispatch	Simple (if submitted)	Complex (Inc/Dec component only)	Default (Inc/Dec component only)

Commercial Offer Data (4/19)

- Which set of COD is used for pricing and settlement is based on:
 - The timing of the Balancing Market actions taken;
 - What formats of COD are submitted; and
 - The reason for which the action was taken (energy vs non-energy) – this only influences the COD used for settlement, not for pricing.

Commercial Offer Data (5/19)

- For timing of actions taken:
 - This depends on the timing of the Dispatch Instructions which open Bid Offer Acceptances;
 - Each Dispatch Instruction has the following time attributes:
 - Instruction Issue Time (i.e. the time the SO sends, or would have had to send, the Dispatch Instruction to the unit to result in a Bid Offer Acceptance); and
 - Instruction Effective Time (i.e. the time when, in order to comply with the instruction of meeting its instructed level in time, the unit must start changing its output).
 - If the Instruction Issue Time is before GC2 for the Imbalance Settlement Period with the Instruction Effective Time, then Complex COD must be used, otherwise Simple COD may be used.

Commercial Offer Data (6/19)

- For the formats submitted:
 - When Complex COD needs to be used, the following is the priority of submissions used:
 - Use Trading Day Specific Complex COD if submitted; else
 - Use Default Complex COD.
 - When Simple COD needs to be used, the following is the priority of submissions used:
 - Use Trading Period Specific Simple COD if submitted; else
 - Use Inc/Dec curve from Trading Day Specific Complex COD if submitted; else
 - Use Inc/Dec curve from Default Complex COD.
- The following slides show examples of determining which set of COD to use for calculating Bid Offer Acceptances in different periods based on timing of actions taken and formats submitted.

Commercial Offer Data (7/19)

- Using Complex and Simple Formats based on timing:
 - Before BM gate closure, Evergreen Complex and IDM;
 - After BM gate closure, Period Specific Simple only;
 - Similar to GB (before gate closure balancing service contracts or intraday market applies, after gate closure simple incs and decs apply).

23:00

23:00

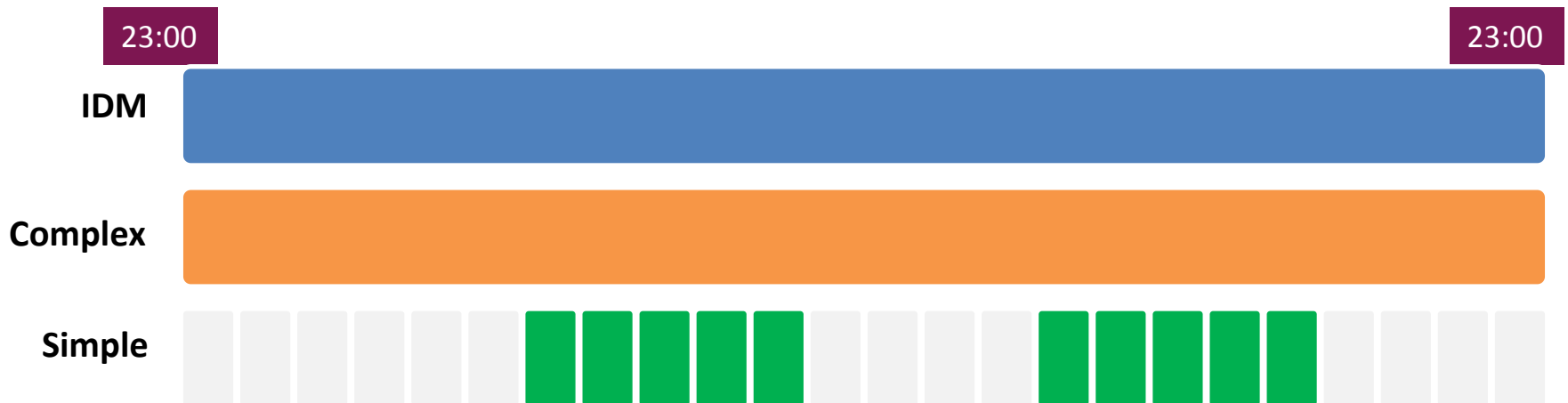
Intraday Market

Trading Day Specific Evergreen Complex 3 Part

Period Specific Simple Inc and Dec

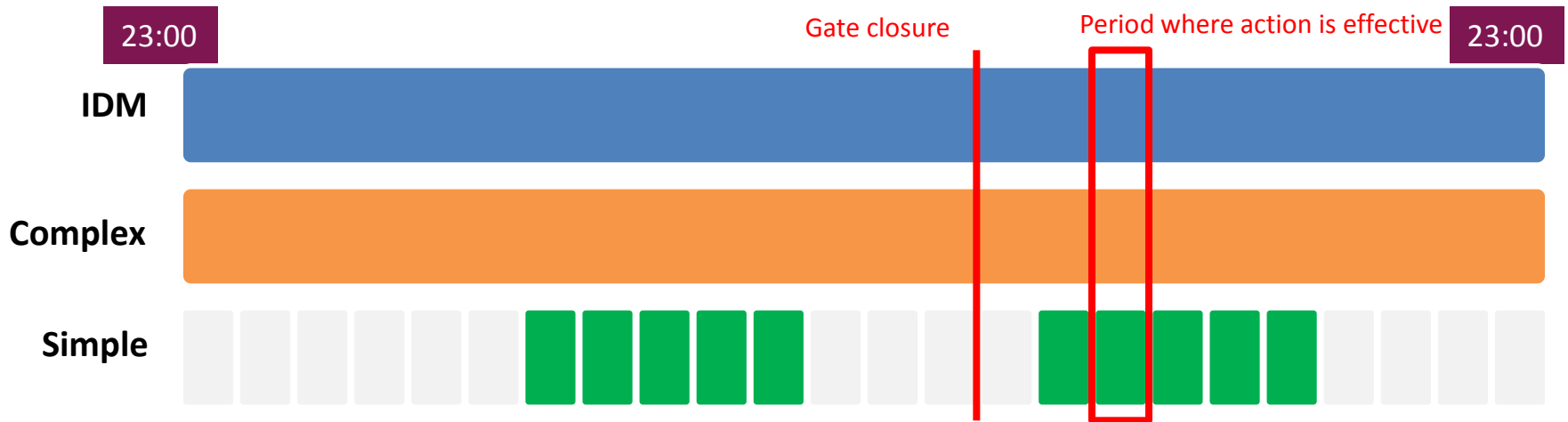
Commercial Offer Data (8/19)

- Using Complex and Simple Formats based on timing:
 - Before BM gate closure, Evergreen Complex and IDM;
 - After BM gate closure, Period Specific Simple only;
 - Highlighted area shows price format which applies in pricing and settlement based on timing of action.



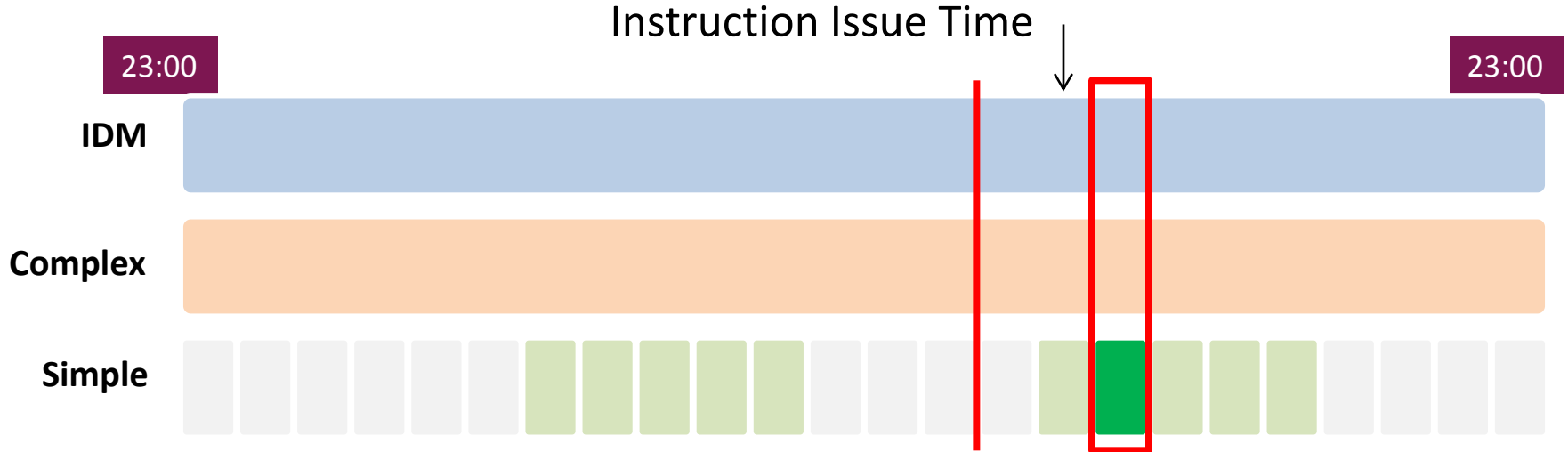
Commercial Offer Data (9/19)

- Using Complex and Simple Formats based on timing:
 - Before BM gate closure, Evergreen Complex and IDM;
 - After BM gate closure, Period Specific Simple only;
 - Highlighted area shows price format which applies in pricing and settlement based on timing of action.



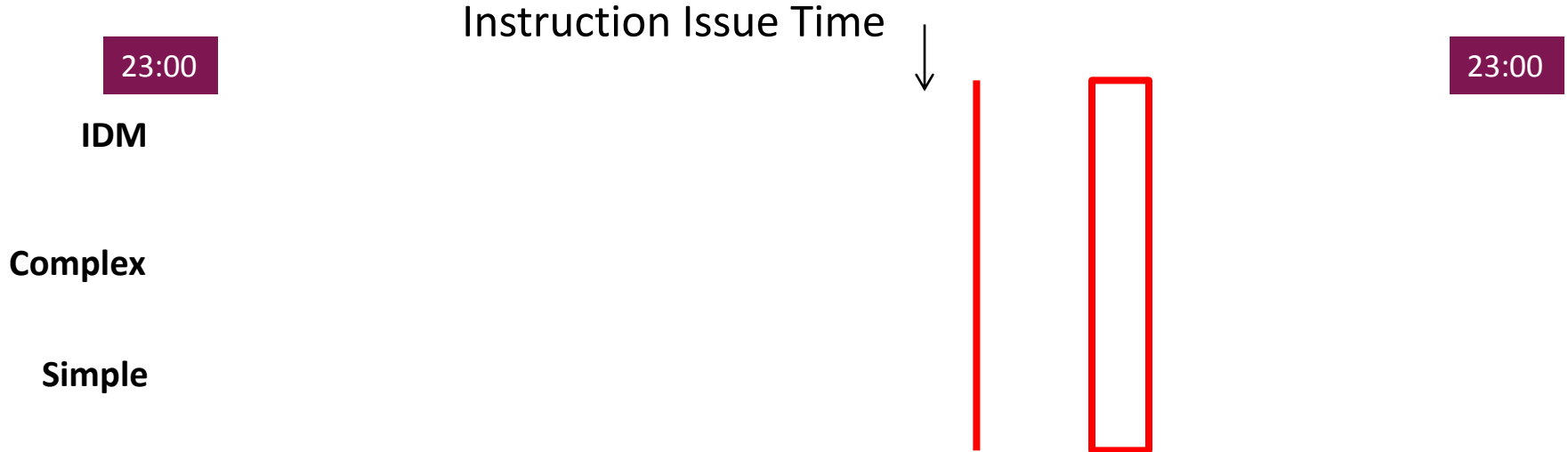
Commercial Offer Data (10/19)

- Using Complex and Simple Formats based on timing:
 - Before BM gate closure, Evergreen Complex and IDM;
 - After BM gate closure, Period Specific Simple only;
 - Highlighted area shows price format which applies in pricing and settlement based on timing of action.



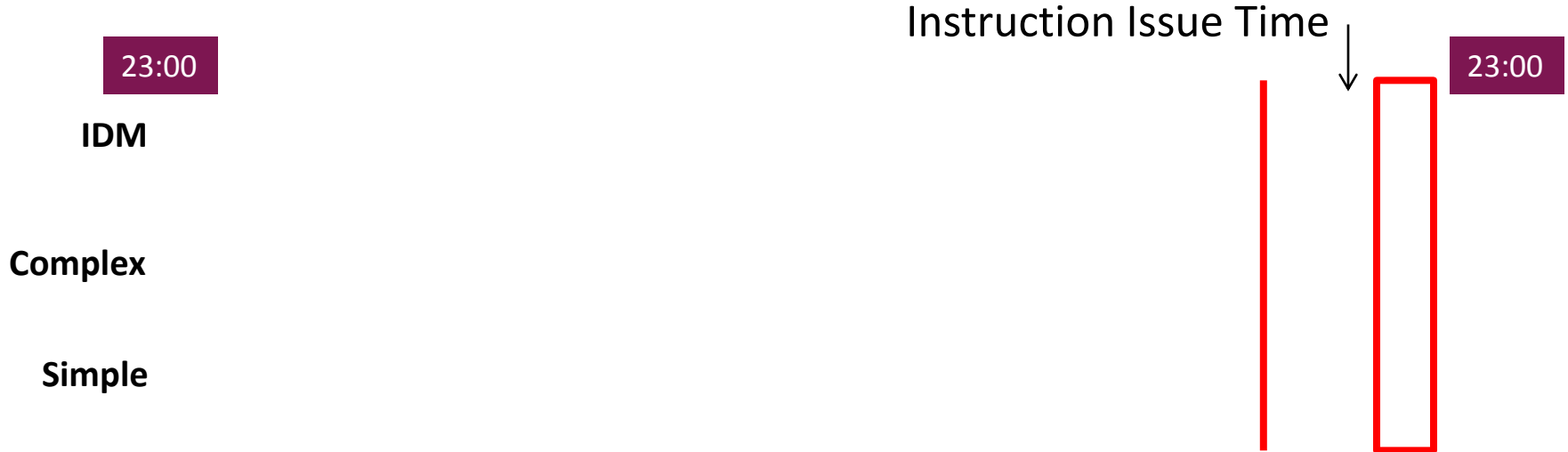
Commercial Offer Data (11/19)

- Using Complex and Simple Formats based on timing:
 - Before BM gate closure, Evergreen Complex and IDM;
 - After BM gate closure, Period Specific Simple only;
 - Highlighted area shows price format which applies in pricing and settlement based on timing of action.



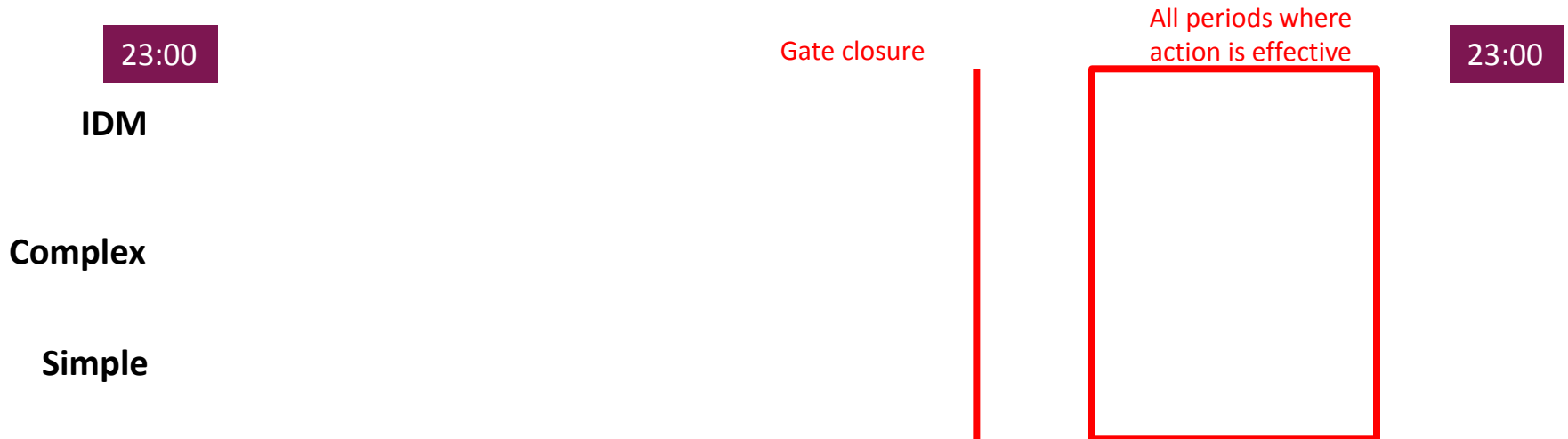
Commercial Offer Data (12/19)

- Using Complex and Simple Formats based on timing:
 - Before BM gate closure, Evergreen Complex and IDM;
 - After BM gate closure, Period Specific Simple only;
 - Highlighted area shows price format which applies in pricing and settlement based on timing of action.



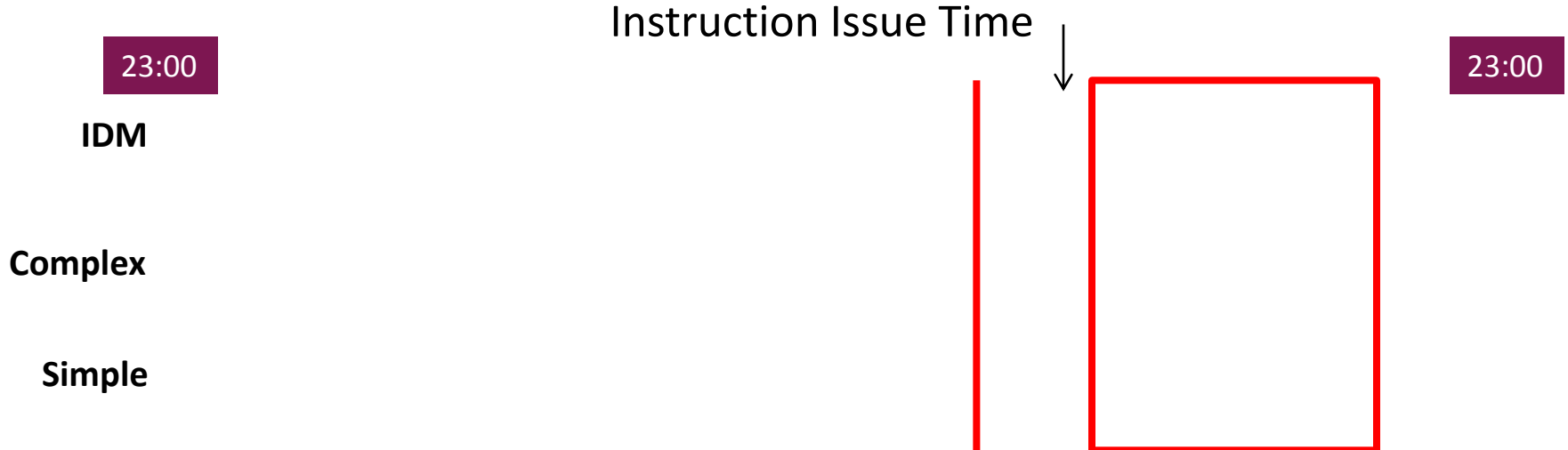
Commercial Offer Data (13/19)

- Using Complex and Simple Formats based on timing:
 - Before BM gate closure, Evergreen Complex and IDM;
 - After BM gate closure, Period Specific Simple only;
 - Highlighted area shows price format which applies in pricing and settlement based on timing of action.



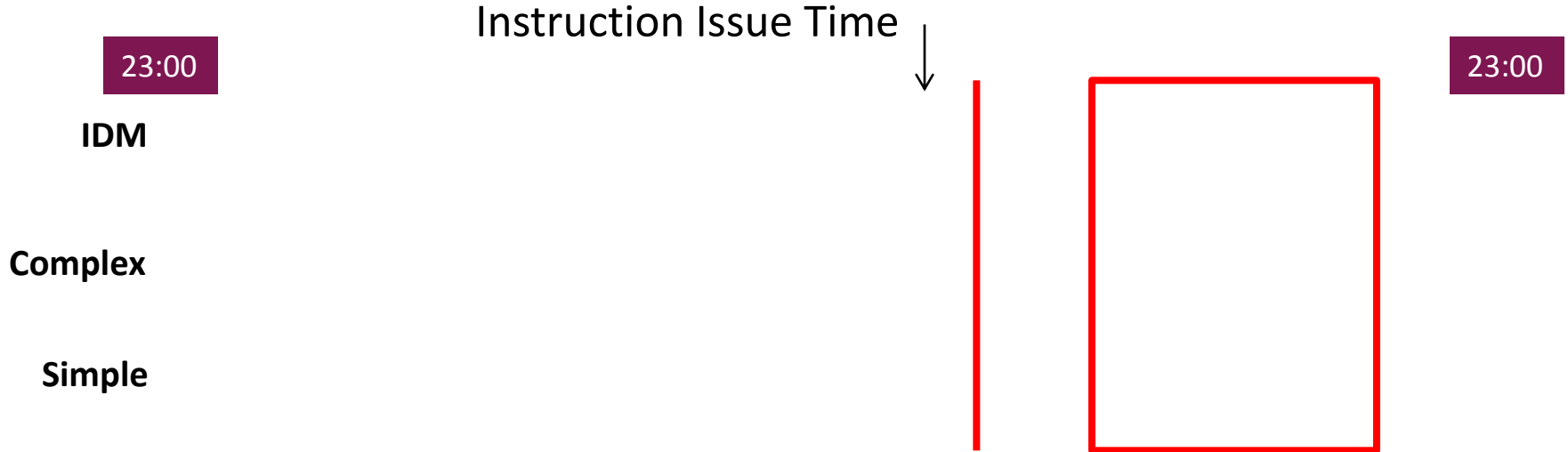
Commercial Offer Data (14/19)

- Using Complex and Simple Formats based on timing:
 - Before BM gate closure, Evergreen Complex and IDM;
 - After BM gate closure, Period Specific Simple only;
 - Highlighted area shows price format which applies in pricing and settlement based on timing of action.



Commercial Offer Data (15/19)

- Using Complex and Simple Formats based on timing:
 - Before BM gate closure, Evergreen Complex and IDM;
 - After BM gate closure, Period Specific Simple only;
 - Highlighted area shows price format which applies in pricing and settlement based on timing of action.

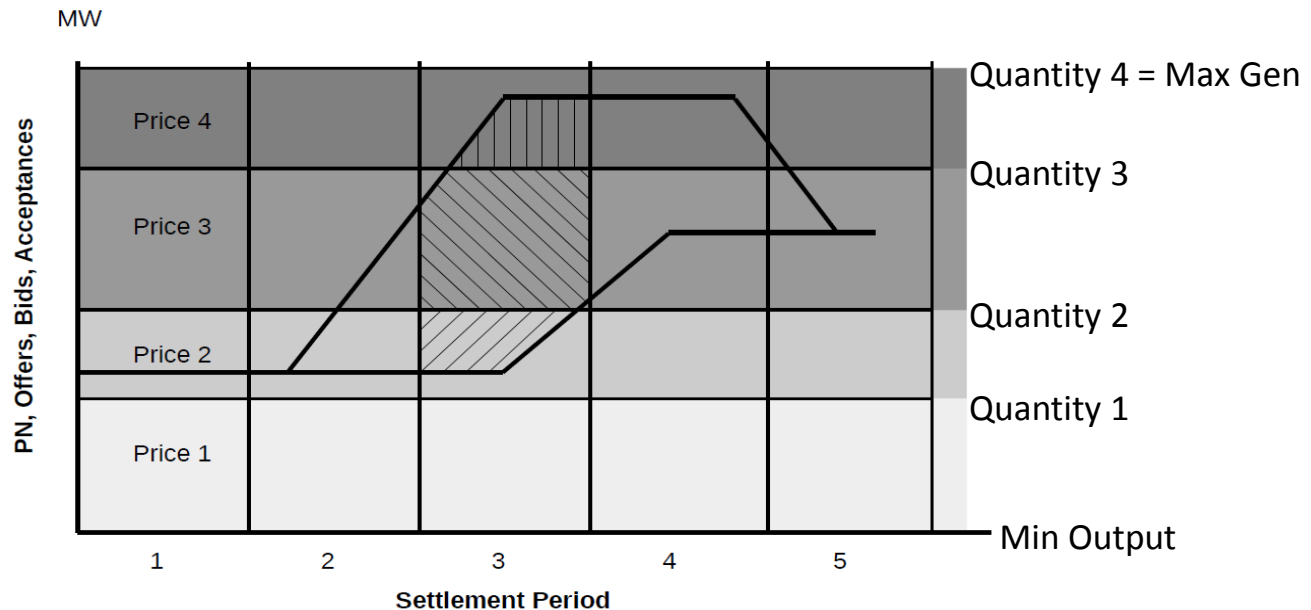


Commercial Offer Data (16/19)

- For the reason for which the action is taken:
 - If unit is deemed to be used for non-energy actions in an Imbalance Settlement Period, its Complex Bid Offer Data is used the calculation of Bid Offer Acceptance quantities and prices in settlement for that period;
 - The Imbalance Pricing training materials contain more information on how it is determined that units were used for non-energy actions;
 - A Balancing Market Principles Code of Practice (BMPCOP) applies to Complex Bid Offer Data:
 - This document is the market power mitigation approach for settlement of non-energy actions decided by RAs, and is enforced through a generation licence condition;
 - The BMPCOP outlines requirements and guidance for the values allowed to be submitted to be reflective of costs;
 - **N.B.** This does not apply for calculation of quantities and prices for the Imbalance Pricing process:
 - Results in different set of BOA quantities and prices in Imbalance Pricing process and Imbalance Settlement process.
 - The BMPCOP does not apply to Simple Bid Offer Data:
 - Participant can submit values not just based on desired value, does not have to be reflective of costs;
 - The Imbalance Pricing process, and settlement of energy actions taken after gate closure, can reflect this value.

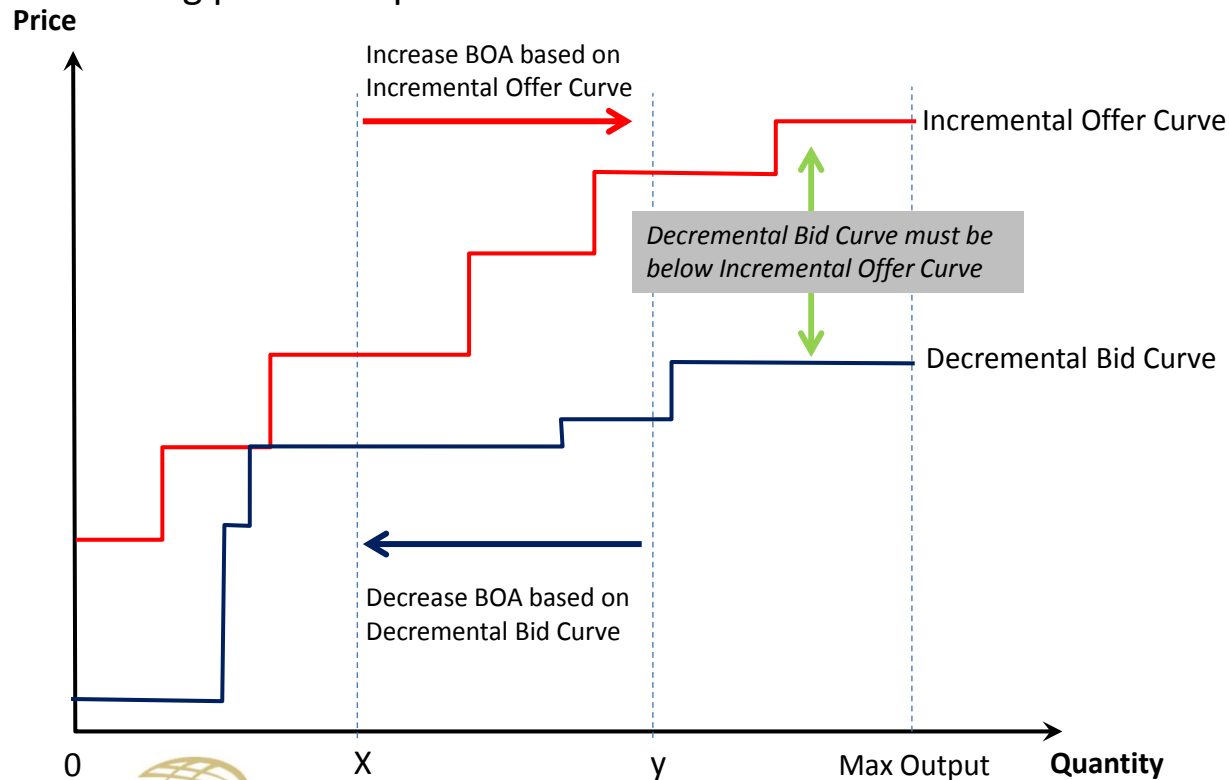
Commercial Offer Data (17/19)

- This figure gives an example of the same COD Price Quantity Pairs applying in multiple periods, and how pricing and Bid Offer Acceptance Quantities could be calculated considering a Final Physical Notification profile (bottom line) and Dispatch Quantity profile (top line);
- The absolute MW quantities submitted (1 to 4) are seen as straight lines representing points on the output range of the unit, covering the whole range. The prices submitted alongside those quantities are applicable for all points below that quantity until the previous quantity. The Bid Offer Acceptance Quantities calculated are split into each PQ band so that the individual price applies.



Commercial Offer Data (18/19)

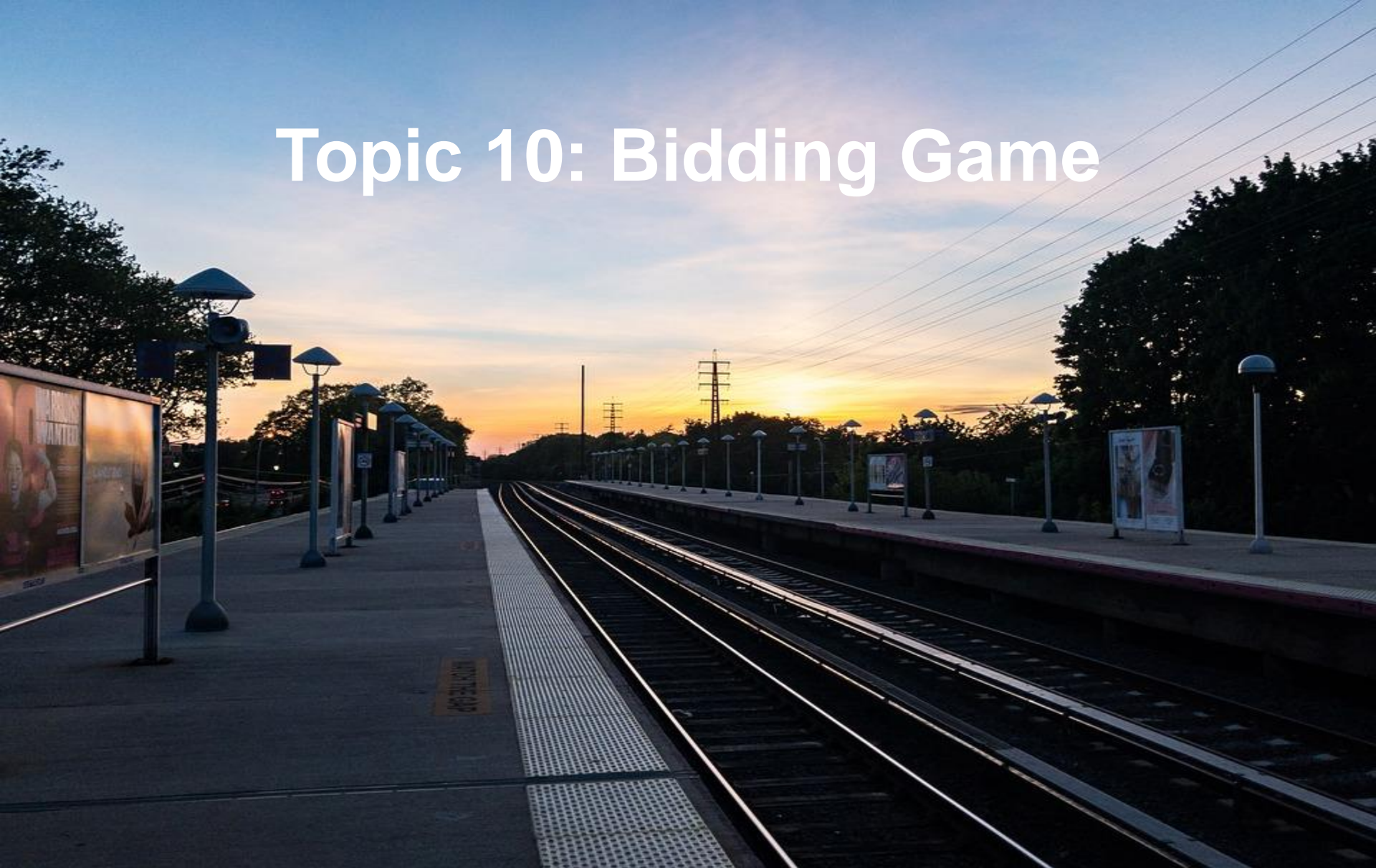
- This figure gives an example of the relationship between the prices in the Inc PQ Pair curve and the Dec PQ Pair curve for a single COD submission;
- The quantities submitted for each curve are different, but for the same output range the price in the Dec curve is always less than or equal to that of the Inc curve. Each curve is used for considering different situations: Inc prices for increasing power output above PN, Dec prices for decreasing power output below PN.



Commercial Offer Data (19/19)

- Prices should generally be positive in both Inc and Dec curve, but are allowed to be negative:
 - Incs are positive quantities (Accepted Offer Quantities), Decs are negative quantities (Accepted Bid Quantities);
 - Positive price in Inc curve: price unit wants to be paid to generate more. Negative price in Inc curve: price unit is willing to pay to generate more;
 - Positive price in Dec curve: price unit is willing to pay to generate less. Negative price in Dec curve: price unit wants to be paid to generate less.
- Prices must be greater than or equal to Price Floor, and greater than or equal to Price Cap:
 - For I-SEM go-live, the values of these parameters will be:
 - PCAP = 10,000€/MWh;
 - PFLOOR = -1,000€/MWh.

Topic 10: Bidding Game



Bidding Game

- 6 groups, one conventional generator per group;
- For simplicity, consider a single period, and considering everything as 1hr (i.e. no difference between MW and MWh);
- Submit trading information:
 - Final Physical Notification Quantity (qFPN) in MW;
 - Bid Offer Price for incs (PBO) in €/MWh or £/MWh;
 - Bid Offer Price for decs (PBO) in €/MWh or £/MWh.
- Goal: to make as much money as possible, while covering costs of generation;
- Winning group makes most money per MW installed capacity;
- Information for whole market is given to everyone, information specific to a generator is known only by that generator;
- After the scenario information has been given, groups have a 15 minutes to decide on trade information to submit;
- The steps of SO scheduling, price calculation and calculation of settlement amounts will be followed on a spreadsheet and briefly explained by the instructor;
- Feel free to ask questions about anything during this time!

Bidding Game

- Some tips for the game:
 - Your task is to submit single values for qFPN, PBO for incs, and PBO for decs;
 - These are “simple” incs and decs, so you can put in whatever price you want;
 - Some of you have already made money because you cleared in the ex-ante market (Ex-Ante Cash Flow);
 - If the money you make doesn’t cover your costs, you could make a loss;
 - Your goal is to make the most money, the SOs’ goal is to minimise cost of deviating from FPNs;
 - If you want to make more money, you should increase your price, but if you increase your price too much someone else who is cheaper might be picked instead of you and you won’t be scheduled to make that money;
 - If a generator is in an area where there is a locational requirement that needs to be fulfilled, they could increase their price even more as there is less choice in who to schedule to fulfil it, but again someone else in that location who is cheaper might be picked instead of you;
 - A crash course in imbalance settlement (enrol in the training module to find out more!):
 - Difference between net traded quantity (Ex-Ante Quantity, QEX) and Metered Quantity (QM) is settled at Imbalance Price (PIMB);
 - Difference between Dispatch Quantity (qD) and Final Physical Notification Quantity (qFPN) is an Accepted Offer (qAO) or Accepted Bid (qAB), which is settled at the better of the Imbalance Price (PIMB) or Bid Offer Price (PBO);
 - Differences between qFPN submitted, and QEX, will be taken into account in settlement.
 - Simplification of Imbalance Pricing (enrol in the training module to find out more!):
 - Price set by the marginal (most expensive) energy action taken.

Bidding Game

- Amount of installed capacity of conventional plants = 2200MW;
- Amount of installed wind = 900MW;
- Volume of peak demand = -2000MW;
- Price Cap is 10,000 €/MWh or £/MWh, Price Floor is -1,000 €/MWh or £/MWh;
- Registered Capacity Quantity (qCR), Minimum Stable Generation Quantity (qMSG) and location of all generators:
 - Group 1: qCR 500MW, qMSG 200MW, Dublin;
 - Group 2: qCR 450MW, qMSG 190MW, Dublin;
 - Group 3: qCR 400MW, qMSG 180MW, Cork;
 - Group 4: qCR 350MW, qMSG 170MW, Belfast;
 - Group 5: qCR 300MW, qMSG 160MW, Galway;
 - Group 6, qCR 200MW, qMSG 100MW, Dublin.

Ex-Ante Cleared Demand	-1800
Forecast Demand	-2000
Forecast Wind	800
Forecast Net Imbalance Volume	300
Ex-Ante Price	50
Location Requirement	Minimum of 1 Unit in Dublin
Other Info	Lightning Storm...someone might trip!

If completely stuck, consider this as a start point:

Submit qFPN = QEX;
Submit PBO for both incs and decs = Cost of running.

Topic 11: Course Summary



Review of Learning Objectives

As a result of this training module, you should understand:

How to access SEMO balancing market (BM) systems



Timelines for data submission for the BM



Process for technical data requirements for the BM



Process for commercial data requirements for the BM



The application of complex and simple commercial offer data in the BM



Default data requirements and how these are used in the BM



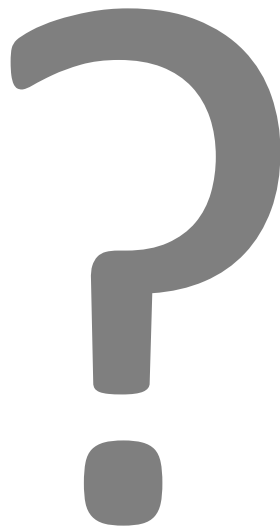
The Validation Technical Offer Data process



How to access data publications



Questions



Thank You!

Thank you for your time and engagement during this session.

Please take the time to share your feedback with us by completing the short feedback survey before you leave.