



INTRA-DAY TRADING DESIGN

Functional Group 2:

*Other Data Transactions, MSP Software Operation,
Reports and Publications, Required Credit Cover Query*

27 September 2011

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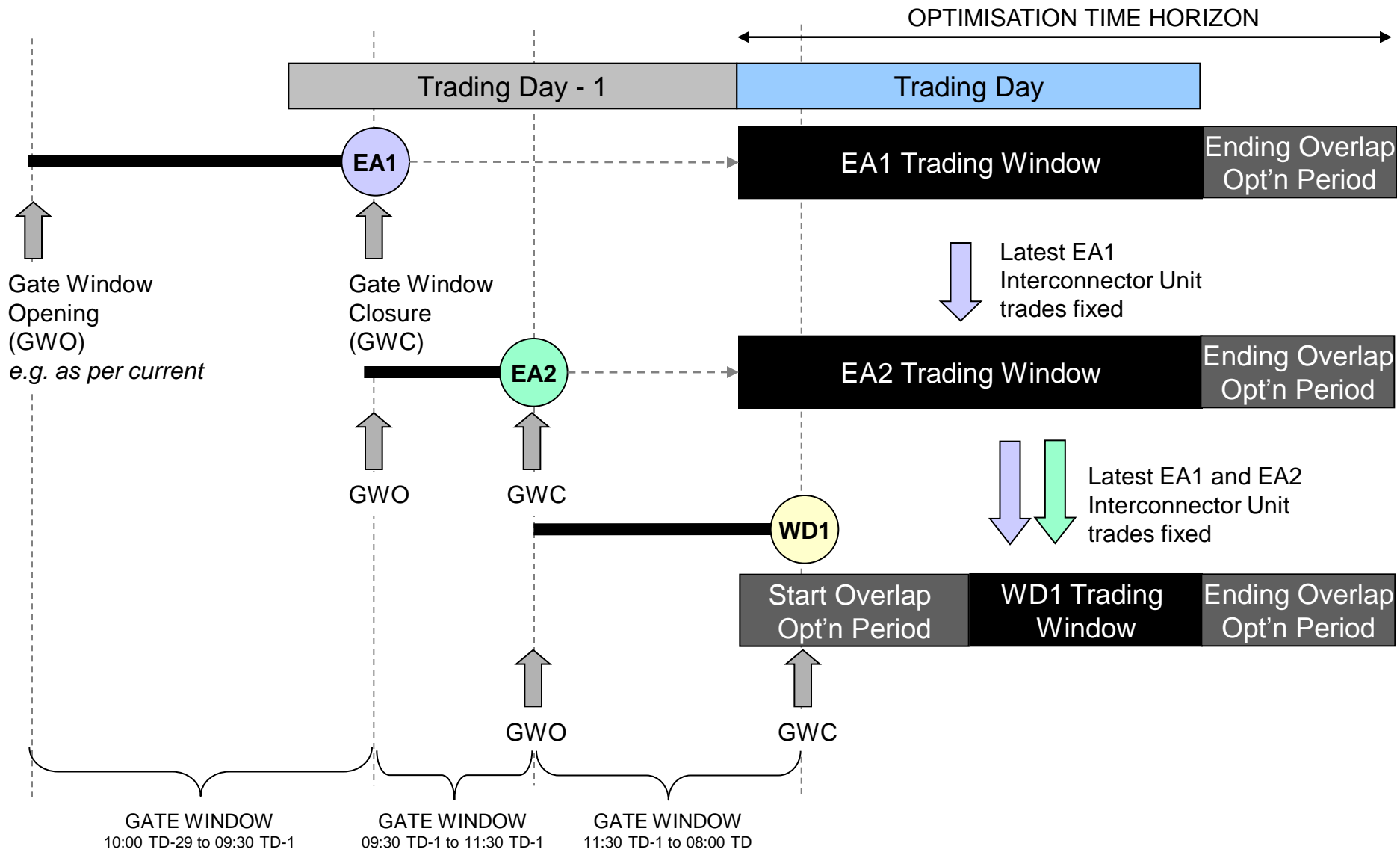
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Recap: SEM Intra-Day Trading Design

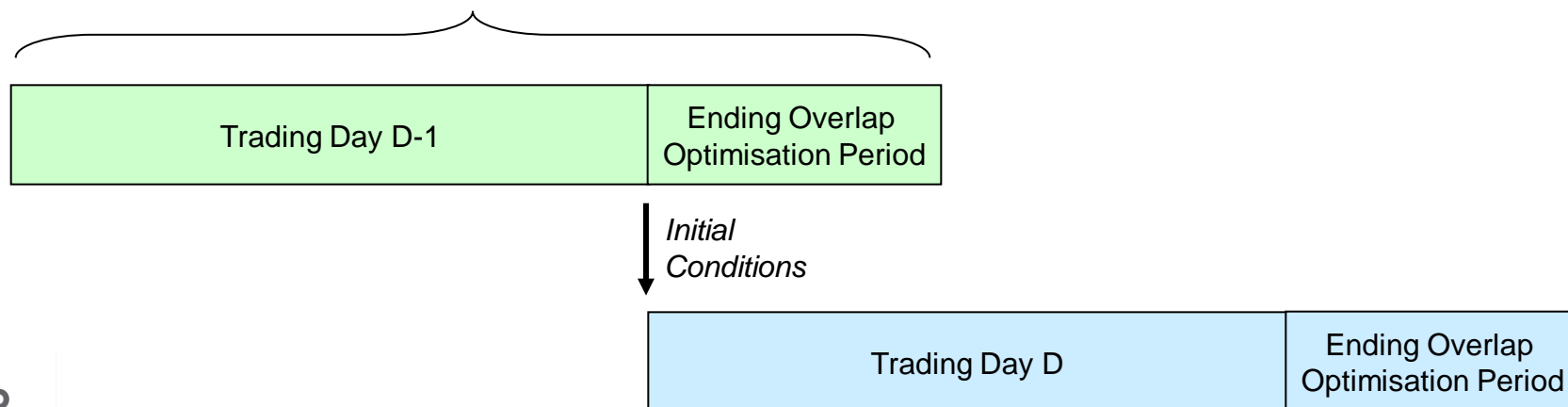


EA1 – Initial Conditions

- Each MSP Software Run needs Initial Conditions at the start of the Optimisation Time Horizon:
 - Initial Status (ON or OFF)
 - Initial MW (MSQ from last Trading Period in the previous Trading Day).
 - Last Status Change Date/Time
 - First Available Time
 - Start Up Cost Carried over
 - Start Up Time Hot/Warm/Cold
- For EA1, the Initial Conditions will be taken from the latest WD1 ,EA2 or EA1 MSP Software Run that covered the end of the Trading Day.

Priority order for Initial Conditions (1 to 3):

- 1. If WD1 MSP Software Run completed for Trading Day D-1, Initial Conditions from WD1*
- 2. If EA2 MSP Software Run completed for Trading Day D-1, Initial Conditions from EA2*
- 3. If EA1 MSP Software Run completed for Trading Day D-1, Initial Conditions from EA1*



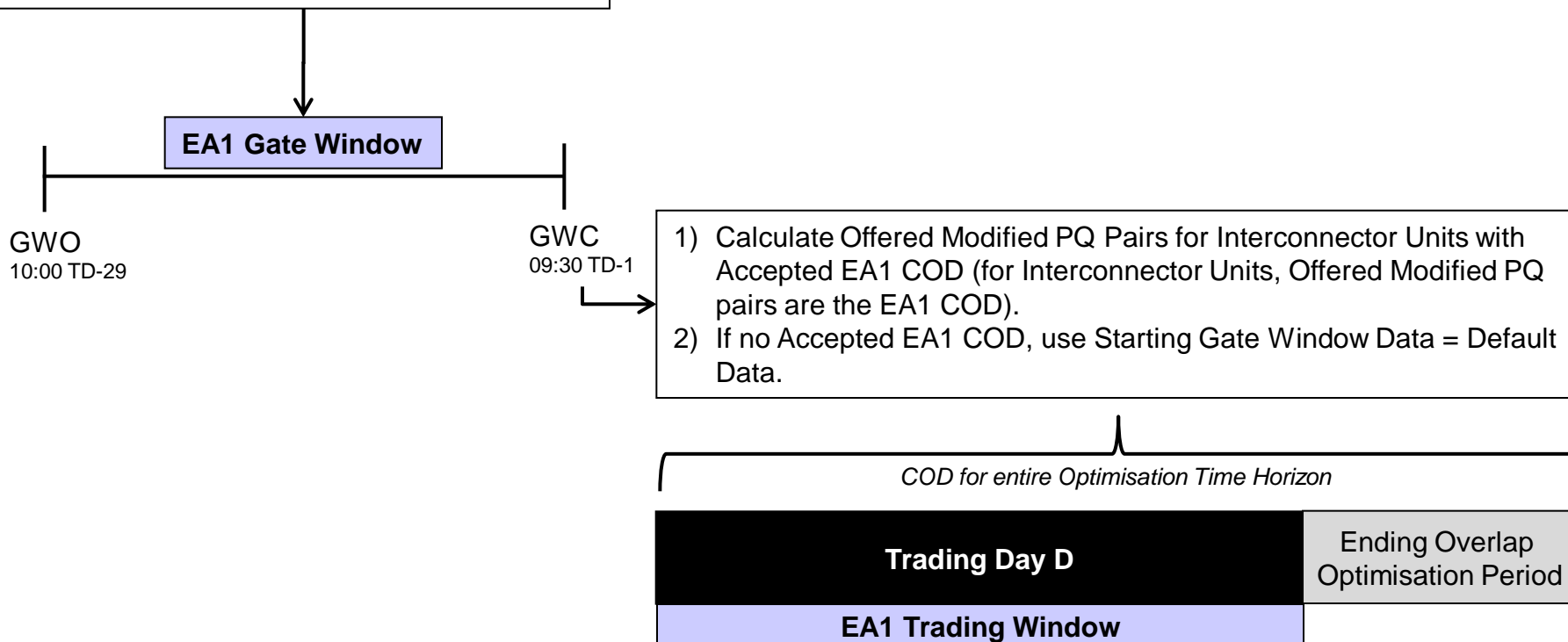
EA1 – Commercial Offer Data

Commercial Offer Data

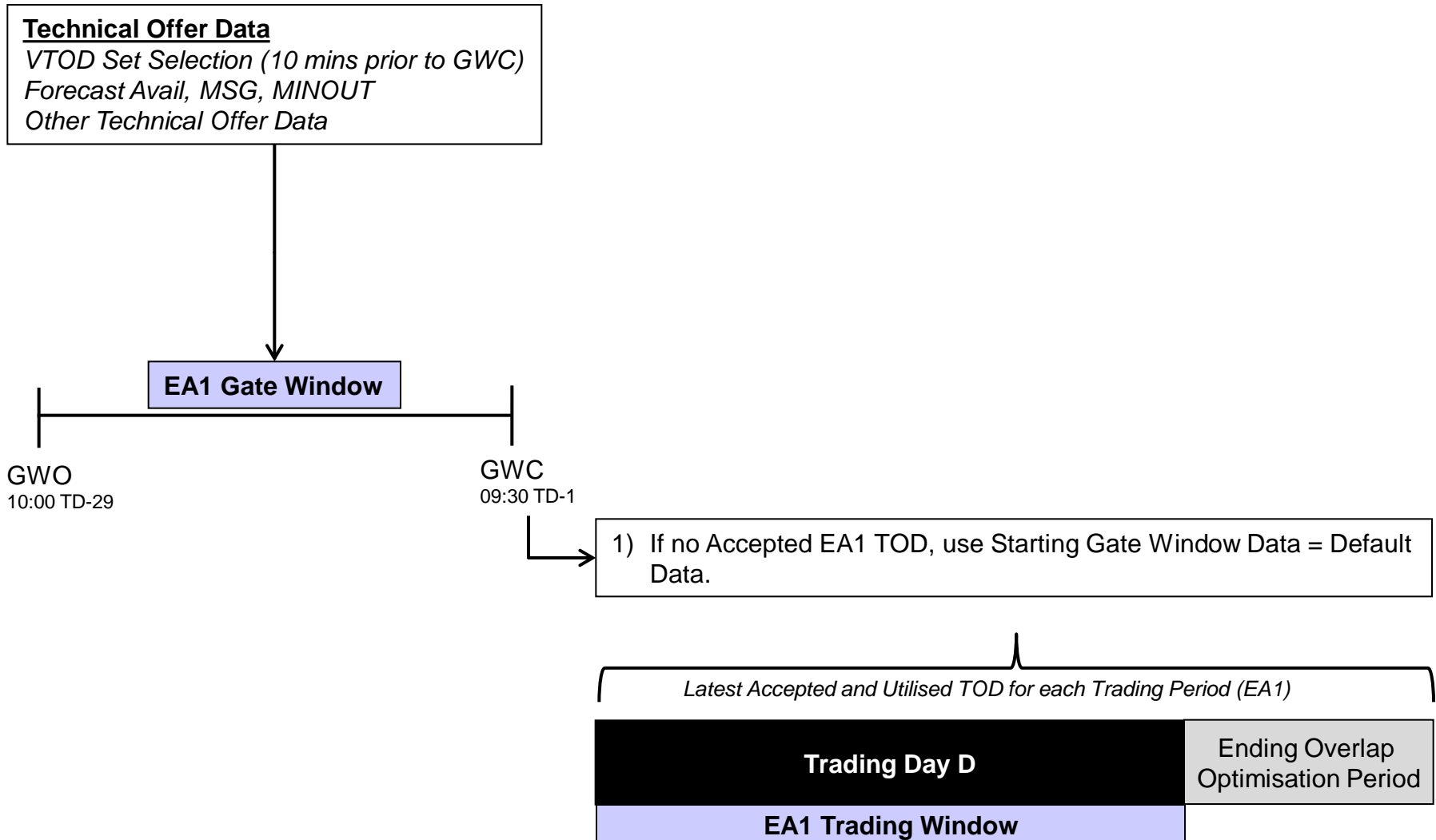
Price Quantity Pairs
No Load Costs
Start Up Costs
Shut Down Costs
Decremental Price
Maximum Interconnector Unit Import Capacity
Maximum Interconnector Unit Export Capacity

Note:

Interconnector Units do not have Default Data and will not be included within the market schedule where COD is not Accepted.



EA1 – Technical Offer Data



EA1 Contingency Data (HLD section 3.5.4)

- The MSP Software pre-processor will identify when sufficient data is not available and Contingency Data needs to be used.
- The Contingency Data is always based on the latest Accepted data.

Data Transaction	EA1 Contingency Data
Four Day Load Forecast	Most recent Four Day Load Forecast Accepted by the relevant Gate Window Closure
Wind Power Unit Forecast	Most recent Wind Forecast Accepted by the relevant Gate Window Closure
Interconnector Available Transfer Capacity	Most recent ATC data Accepted by the relevant Gate Window Closure
Active Interconnector Capacity Holdings	Auction Platform will provide the data prior to the EA1 Gate Window Closure. If not received via the CMS, data shall be faxed and emailed by the IA to SEMO. If not received from the IA by any means, zeros will be used.

Load Forecast is submitted each day for at least the following four Calendar Days.

Wind Forecast is submitted once prior to the EA1 Gate Window Closure and as updated

ATC is submitted each day for the following Trading Day and associated Ending Overlap Optimisation Period.

IA for Moyle/EWIC planning to submit Active Capacity Holdings on D-1, immediately post day ahead auctions.

EA1 – Calculation of Schedule Demand

- No change from the current calculation.
- Will utilise Accepted COD/TOD by the EA1 Gate Window Closure.
- For External Data Providers (e.g. TSOs), latest data received will be used (or Contingency Data, if required).

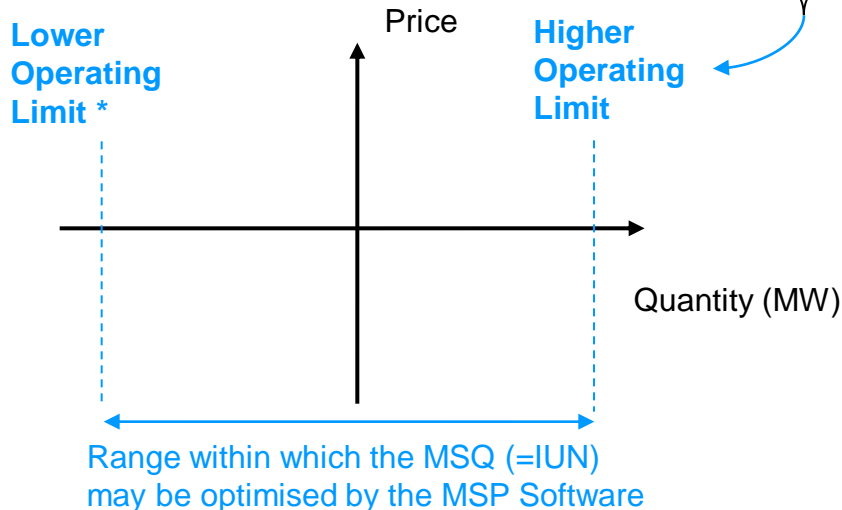
Affected Units	Calculation	Data Source
<i>Demand Forecast, net of Autonomous Non-Wind</i>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> Demand Forecast </div> MINUS	<i>System Operators</i>
<i>PPTG Non-Wind, VPTG Non-Wind, PPMG Under Test Non-Wind, VPMG Under Test Non-Wind</i>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 10px; text-align: center;"> (A) Nominated Quantity </div> <div style="text-align: center;"> \longleftrightarrow $MIN(A,B)$ </div> <div style="border: 1px solid black; padding: 10px; text-align: center;"> (B) Forecast Availability </div> </div> MINUS	<i>Participants via COD/TOD submitted by EA1 Gate Window Closure</i>
<i>VPTG Wind, VPMG Under Test Wind</i>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 10px; text-align: center;"> (A) Wind Forecast </div> <div style="text-align: center;"> \longleftrightarrow $MIN(A,B)$ </div> <div style="border: 1px solid black; padding: 10px; text-align: center;"> (B) Forecast Availability </div> </div> MINUS	<i>Forecast Availability via TOD submitted by EA1 Gate Window Closure</i> <i>Wind Forecast from System Operators</i>
<i>Autonomous Wind</i>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> Wind Forecast </div>	<i>System Operators</i>

EA1 – Interconnector/Interconnector Unit Constraints

- The Interconnector Ramp Rate will continue to be applied in the Ex-Ante One MSP Software Run.
- The same constraints for Interconnector Units will be applied in the Ex-Ante One Market Schedule as currently:

$$\underbrace{MAX(AECH_{uh}, MIUEC_{uh})}_{\text{Lower Operating Limit}} \leq MSQ_{uh} \leq \underbrace{MIN(AICH_{uh}, MIUIC_{uh})}_{\text{Higher Operating Limit}} \forall u, h$$

* May be set to zero where PQ Pairs have been excluded as part of the calculation of Offered Modified PQ Pairs (Appendix P)



Where:

AECH	Active Export Capacity Holding
AICH	Active Import Capacity Holding
MIUEC	Maximum Interconnector Unit Export Capacity
MIUIC	Maximum Interconnector Unit Import Capacity

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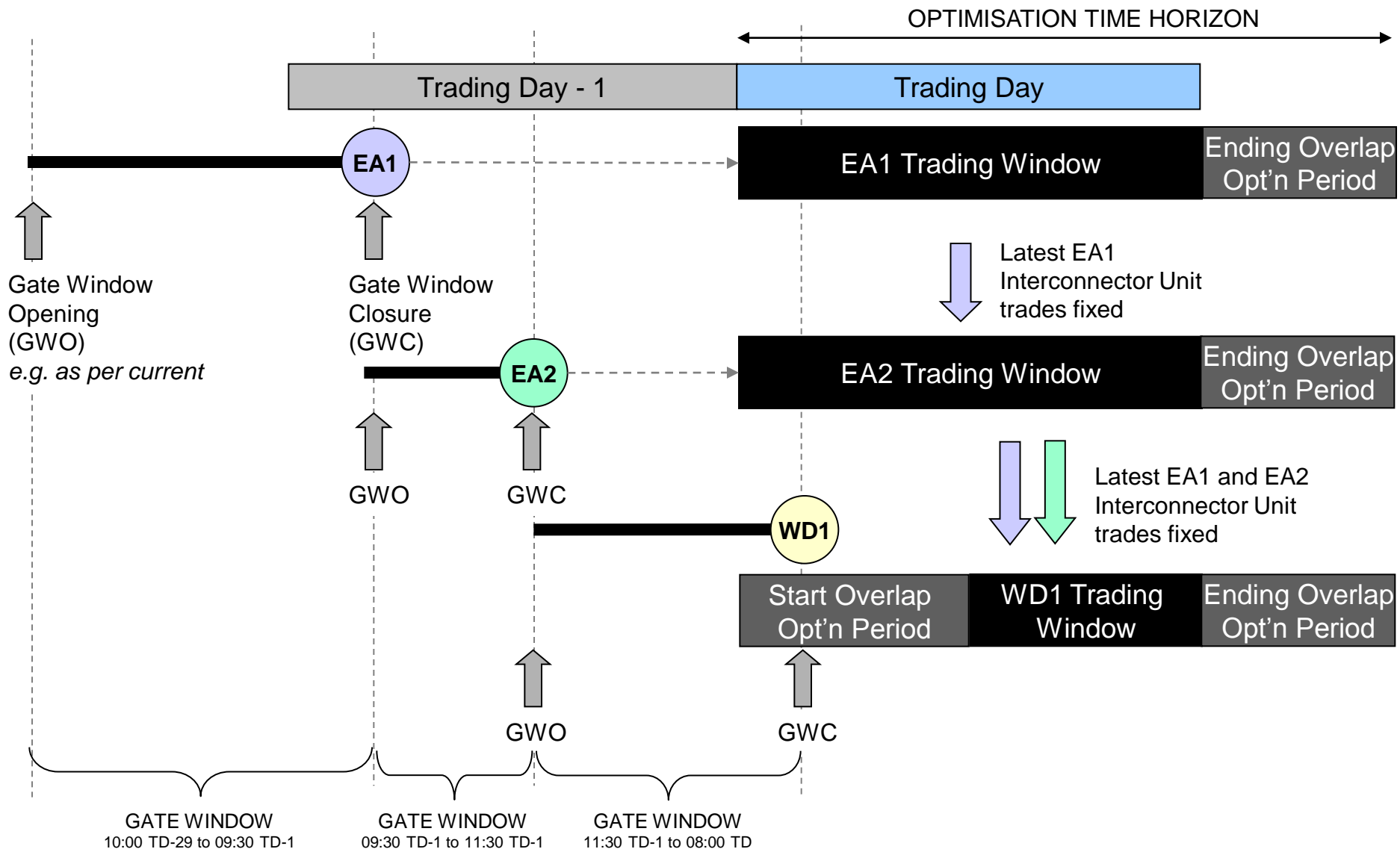
Other Data Transactions

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Recap: SEM Intra-Day Trading Design

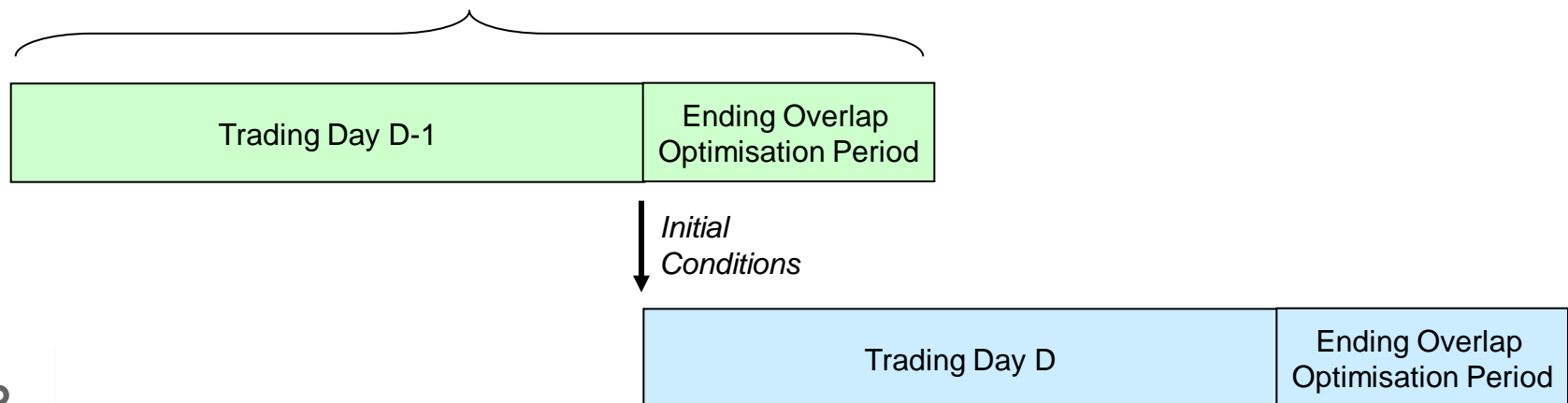


EA2 – Initial Conditions

- Each MSP Software Run needs Initial Conditions at the start of the Optimisation Time Horizon:
 - Initial Status (ON or OFF)
 - Initial MW (MSQ from last Trading Period in the previous Trading Day).
 - Last Status Change Date/Time
 - First Available Time
 - Start Up Cost Carried over
 - Start Up Time Hot/Warm/Cold
- For EA2, the Initial Conditions will be taken from the latest WD1, EA2 or EA1 MSP Software Run that covered the end of the previous Trading Day.

Priority order for Initial Conditions (1 to 3):

- 1. If WD1 MSP Software Run completed for Trading Day D-1, Initial Conditions from WD1*
- 2. If EA2 MSP Software Run completed for Trading Day D-1, Initial Conditions from EA2*
- 3. If EA1 MSP Software Run completed for Trading Day D-1, Initial Conditions from EA1*



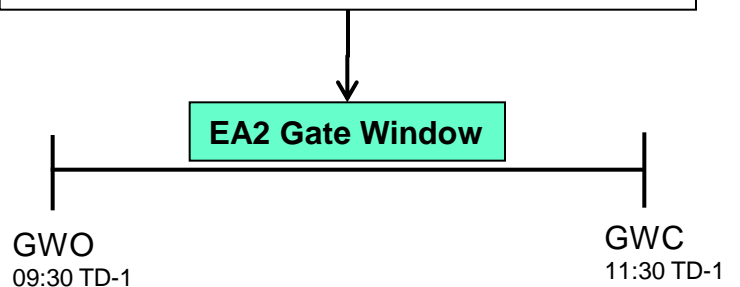
EA2 – Commercial Offer Data

Commercial Offer Data

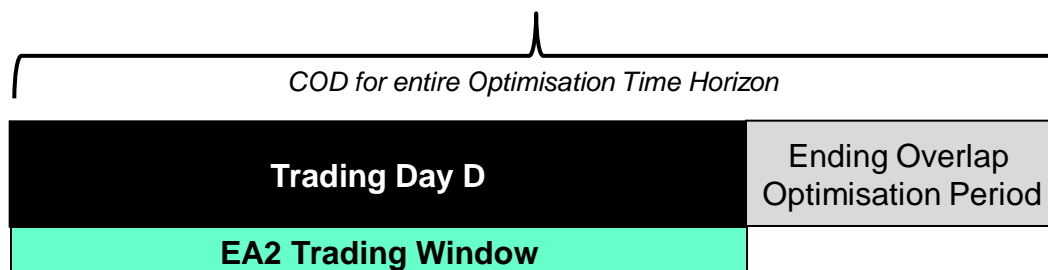
Price Quantity Pairs
 No Load Costs
 Start Up Costs
 Shut Down Costs
 Decremental Price
 Maximum Interconnector Unit Import Capacity
 Maximum Interconnector Unit Export Capacity

Note:

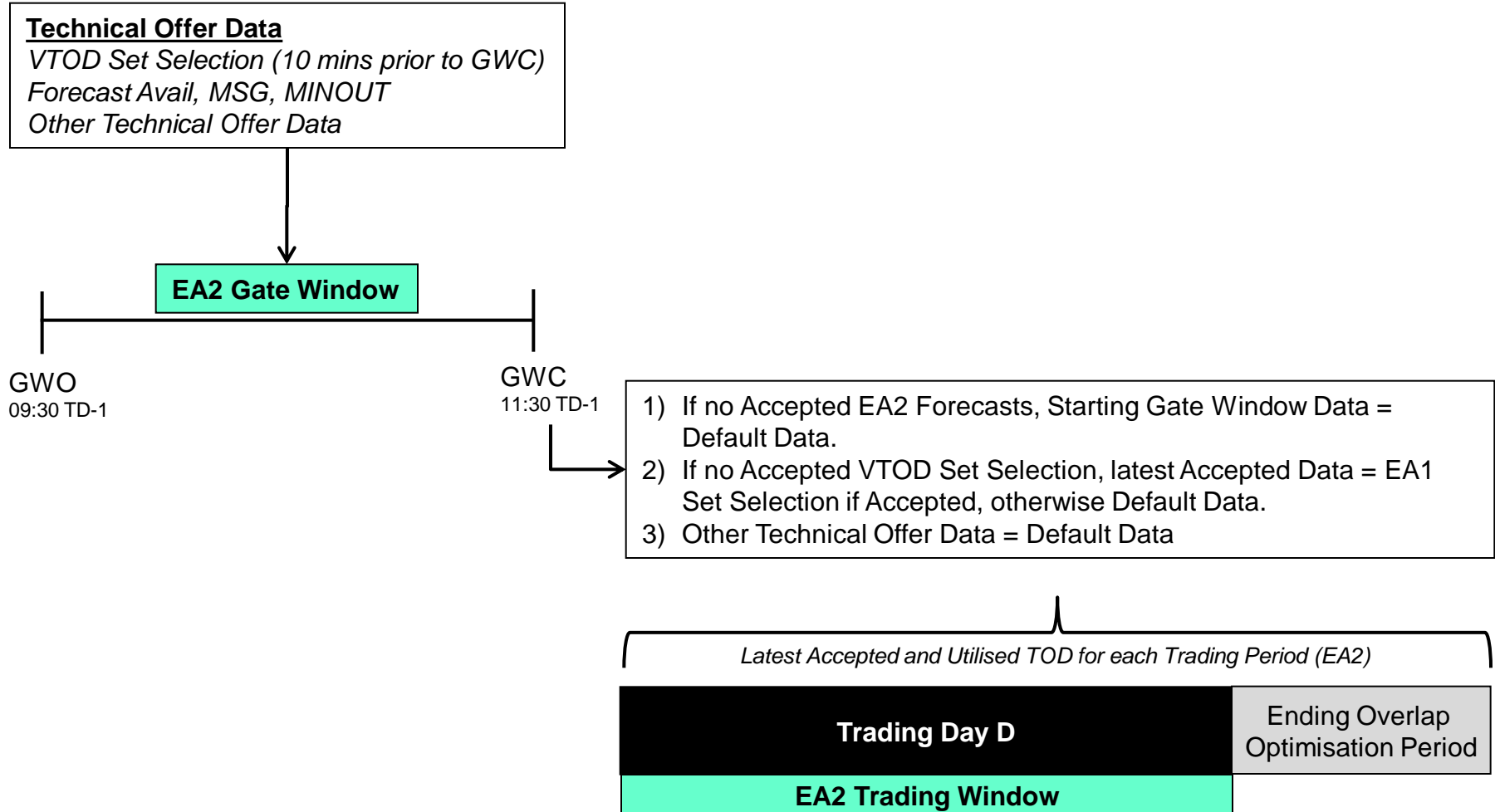
Interconnector Units do not have Default Data and will not be included within the market schedule where COD is not Accepted.



- 1) Calculate Offered Modified PQ Pairs for Interconnector Units with Accepted EA2 COD (for Interconnector Units, Offered Modified PQ pairs are the EA2 COD).
- 2) If no Accepted EA2 COD, use Starting Gate Window Data = Accepted EA1 COD, taking Default Data into account where applicable.
- 3) Latest MIUNs for EA1 Interconnector Unit are treated as fixed in the EA2 market schedule.



EA2 – Technical Offer Data



EA2 Contingency Data (HLD section 3.5.4)

- The MSP Software pre-processor will identify when sufficient data is not available and Contingency Data needs to be used.
- The Contingency Data is always based on the latest Accepted data.

Data Transaction	EA2 Contingency Data
Four Day Load Forecast	Most recent Four Day Load Forecast Accepted by the relevant Gate Window Closure
Wind Power Unit Forecast	Most recent Wind Forecast Accepted by the relevant Gate Window Closure
Interconnector Available Transfer Capacity	Most recent ATC data Accepted by the relevant Gate Window Closure
Modified Interconnector Unit Nominations	IUNs if available from the EA1 MSP Software Run. If not, zeros will be used.

Load Forecast is submitted each day for at least the following four Calendar Days.

Wind Forecast is submitted once prior to the EA1 Gate Window Closure and as updated

ATC is submitted each day for the following Trading Day and associated Ending Overlap Optimisation Period.

IUNs should be available, as EA1 MSP Software Runs cannot be cancelled.

EA2 – Calculation of Schedule Demand

- No change from the current calculation.
- Will utilise Accepted COD/TOD by the EA2 Gate Window Closure.
- For External Data Providers (e.g. TSOs), latest data received will be used.

Affected Units	Calculation	Data Source
<i>Demand Forecast, net of Autonomous Non-Wind</i>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> Demand Forecast </div> MINUS	<i>System Operators</i>
<i>PPTG Non-Wind, VPTG Non-Wind, PPMG Under Test Non-Wind, VPMG Under Test Non-Wind</i>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 10px; text-align: center;"> (A) Nominated Quantity </div> <div style="text-align: center;"> \longleftrightarrow $MIN(A,B)$ </div> <div style="border: 1px solid black; padding: 10px; text-align: center;"> (B) Forecast Availability </div> </div> MINUS	<i>Participants via COD/TOD submitted by EA2 Gate Window Closure</i>
<i>VPTG Wind, VPMG Under Test Wind</i>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 10px; text-align: center;"> (A) Wind Forecast </div> <div style="text-align: center;"> \longleftrightarrow $MIN(A,B)$ </div> <div style="border: 1px solid black; padding: 10px; text-align: center;"> (B) Forecast Availability </div> </div> MINUS	<i>Forecast Availability via TOD submitted by EA2 Gate Window Closure</i> <i>Wind Forecast from System Operators</i>
<i>Autonomous Wind</i>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> Wind Forecast </div>	<i>System Operators</i>

EA2 – Interconnector Constraints

- For the EA2 MSP Software Run, Capacity Holdings are not required.
- Any Interconnector User may trade via an Interconnector on which they have registered.
- For Interconnectors as a whole, MSQs will be limited in aggregate by the Interconnector Ramp Rate and Interconnector Import and Export ATC, treating the EA1 MIUNs as fixed:

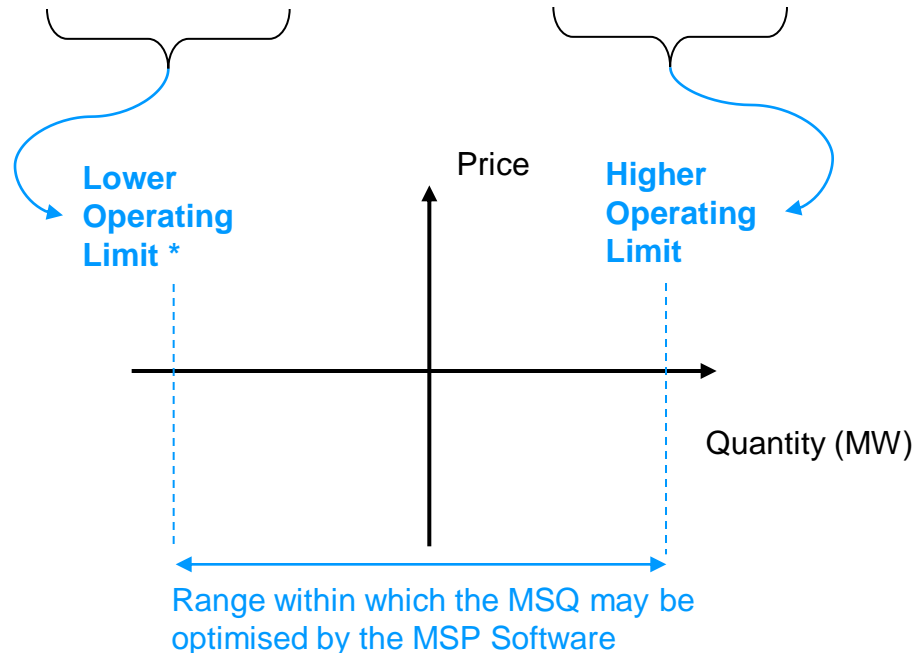
$$\underbrace{MEATC_h}_{\text{The maximum export capacity for the Interconnector}} \leq \underbrace{\sum_u MSQ_{uh}^{EA2}}_{\text{MSQ for the Interconnector Unit that is optimised by the EA2 MSP Software Run}} + \underbrace{\sum_u MIUN_{uh}^{EA1}}_{\text{Latest MIUNs for the Units optimised by the EA1 MSP Software Run treated as fixed}} \leq \underbrace{MIATC_{uh}}_{\text{The maximum import capacity for the Interconnector}}$$

EA2 – Interconnector Unit Constraints

- For Interconnector Units, Active Capacity Holdings are not required.
- Instead, EA2 MSQs are only limited in accordance with the maximum import/export trades as submitted by the Participant in their Commercial Offer Data to the EA2 Gate Window:

$$MIUEC_{uh} \leq MSQ_{uh} \leq MIUIC_{uh} \quad \forall u, h$$

* May be set to zero where PQ Pairs have been excluded as part of the calculation of Offered Modified PQ Pairs (Appendix P)



Where:

MIUEC
MIUIC

Maximum Interconnector Unit Export Capacity
Maximum Interconnector Unit Import Capacity

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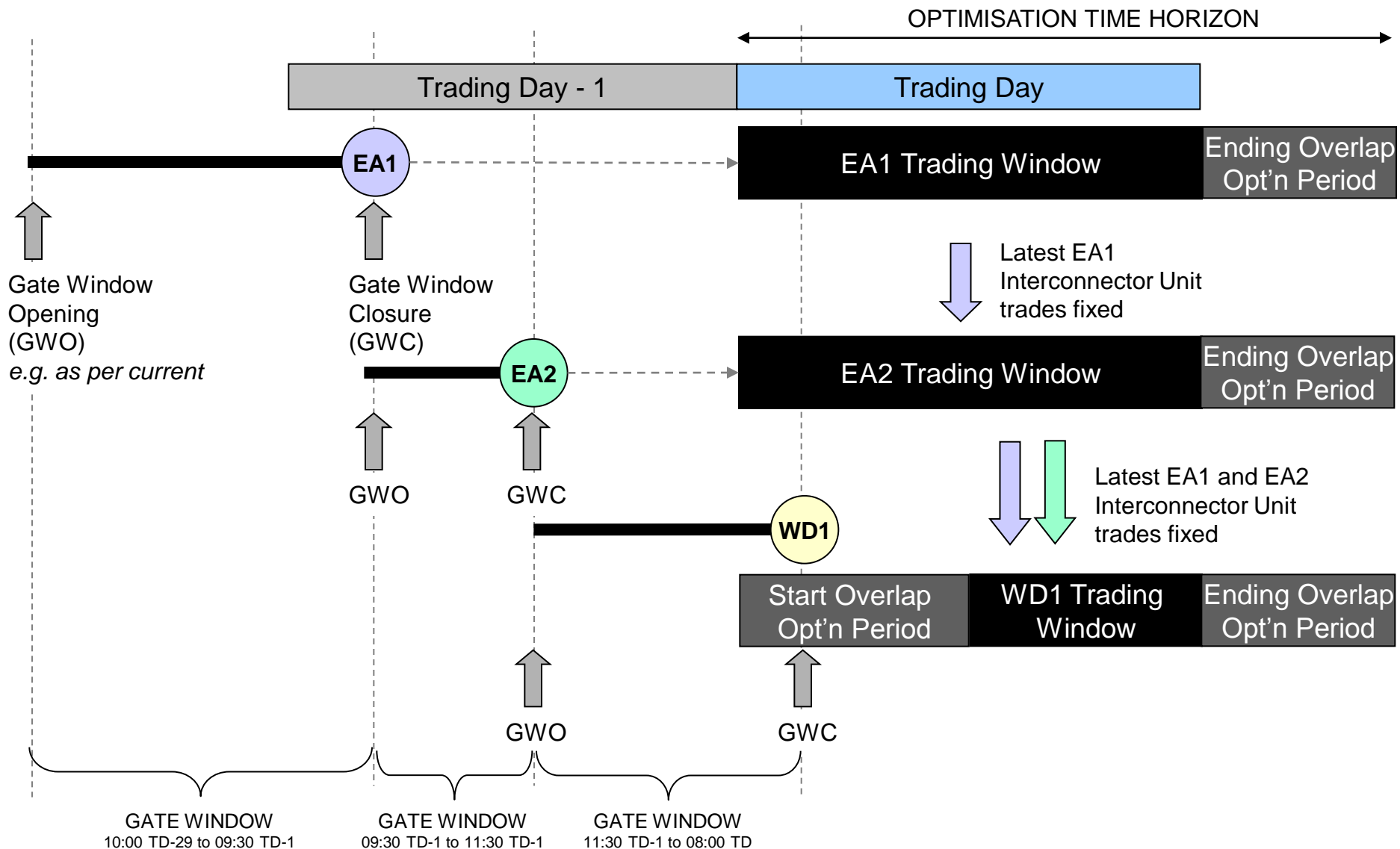
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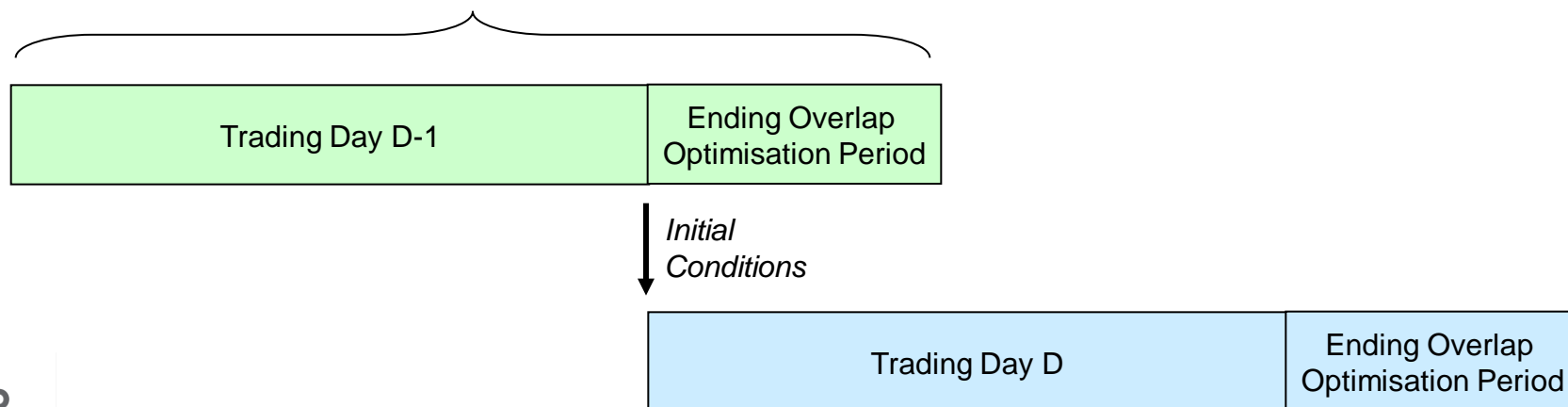


WD1 – Initial Conditions

- Each MSP Software Run needs Initial Conditions at the start of the Optimisation Time Horizon:
 - Initial Status (ON or OFF)
 - Initial MW (MSQ from last Trading Period in the previous Trading Day).
 - Last Status Change Date/Time
 - First Available Time
 - Start Up Cost Carried over
 - Start Up Time Hot/Warm/Cold
- For WD1, the Initial Conditions will be taken from the latest WD1, EA2 or EA1 MSP Software Run that covered the end of the previous Trading Day.

Priority order for Initial Conditions (1 to 3):

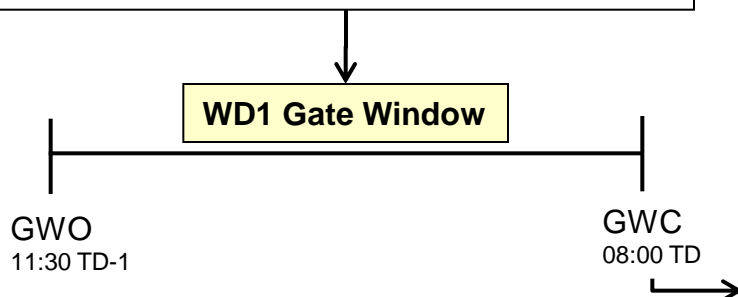
- 1. If WD1 MSP Software Run completed for Trading Day D-1, Initial Conditions from WD1*
- 2. If EA2 MSP Software Run completed for Trading Day D-1, Initial Conditions from EA2*
- 3. If EA1 MSP Software Run completed for Trading Day D-1, Initial Conditions from EA1*



WD1 – Commercial Offer Data

Commercial Offer Data

Price Quantity Pairs
No Load Costs
Start Up Costs
Shut Down Costs
Decremental Price
Maximum Interconnector Unit Import Capacity
Maximum Interconnector Unit Export Capacity

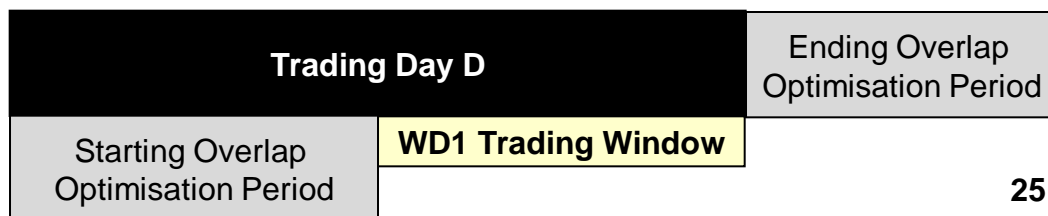


Note:

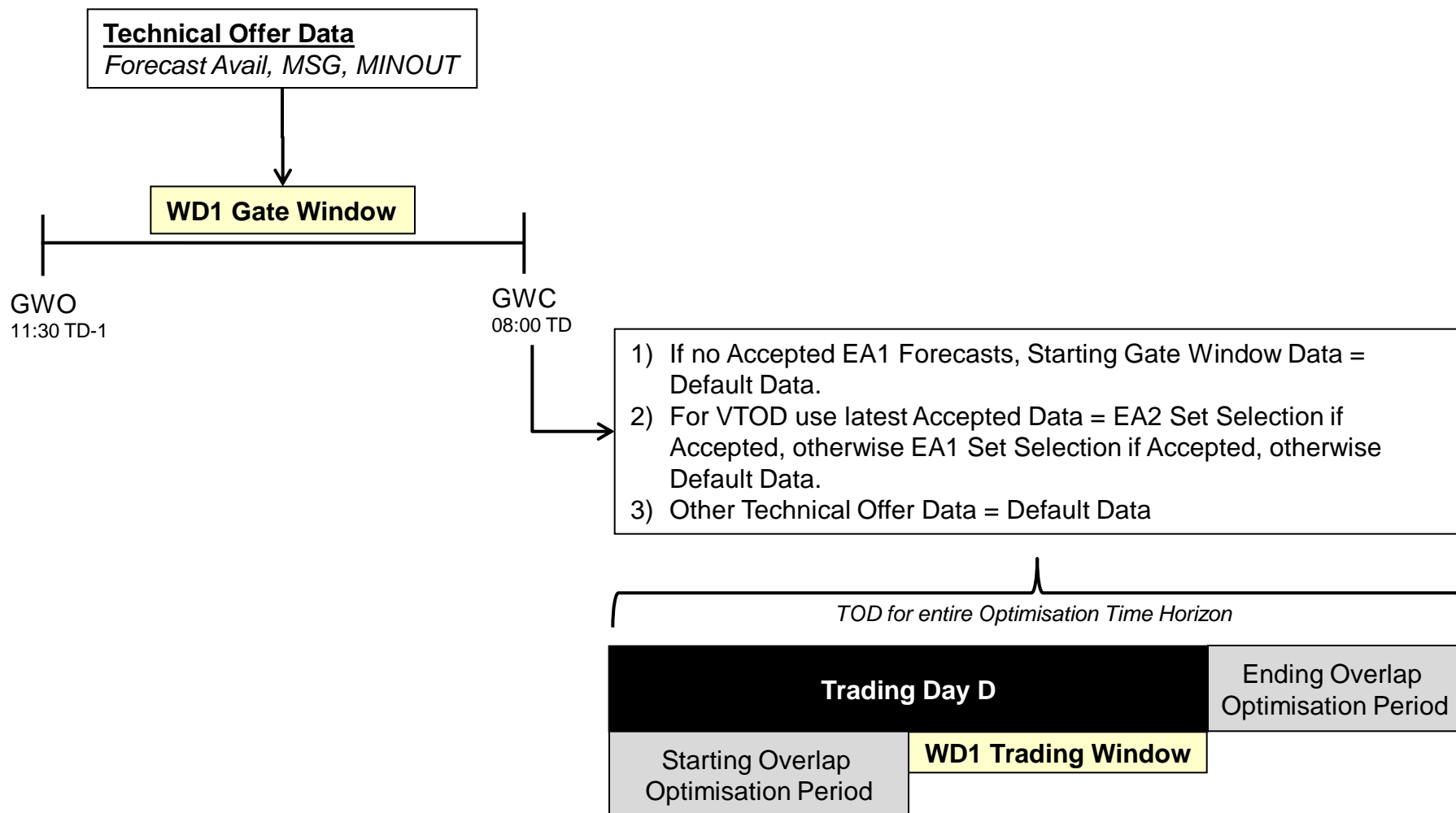
Interconnector Units do not have Default Data and will not be included within the market schedule where COD is not Accepted.

- 1) Calculate Offered Modified PQ Pairs for Interconnector Units with Accepted WD1 COD (for Interconnector Units, Offered Modified PQ pairs are the WD1 COD)
- 2) For other Generator Units, in each Trading Period in the WD1 Trading Window:
 - a. If no Accepted WD1 COD, use Starting Gate Window Data = latest Accepted and Utilised COD (Accepted EA2 COD if EA2 not Cancelled, otherwise Accepted EA1 COD, taking Default Data into account where applicable).
- 3) For other Generator Units, in each Trading Period in the “SOOP”:
 - a. If no Accepted WD1 COD, Use Starting Gate Window Data = latest Accepted and Utilised COD (Accepted EA2 COD if EA2 not Cancelled, otherwise Accepted EA1 COD, taking Default Data into account where applicable).
- 4) Latest MIUNs for EA1 and EA2 Interconnector Units are treated as fixed in the WD1 market schedule.

Latest Accepted and Utilised COD for each Trading Period (EA2/WD1)



WD1 – Technical Offer Data



WD1 Contingency Data (HLD section 3.5.4)

- The MSP Software pre-processor will identify when sufficient data is not available and Contingency Data needs to be used.
- The Contingency Data is always based on the latest Accepted data.

Data Transaction	WD1 Contingency Data
Four Day Load Forecast	Most recent Four Day Load Forecast Accepted by the relevant Gate Window Closure
Wind Power Unit Forecast	Most recent Wind Forecast Accepted by the relevant Gate Window Closure
Interconnector Available Transfer Capacity	Most recent ATC data Accepted by the relevant Gate Window Closure
Modified Interconnector Unit Nominations	MIUNs if available from the EA2 MSP Software Run. If not, IUNs if available from the EA2 MSP Software Run. MIUNs if available from the EA1 MSP Software Run. If not, IUNs if available from the EA1 MSP Software Run. Otherwise, zeros will be used.

Load Forecast is submitted each day for at least the following four Calendar Days.

Wind Forecast is submitted once prior to the EA1 Gate Window Closure and as updated

ATC is submitted each day for the following Trading Day and associated Ending Overlap Optimisation Period.

Various contingencies agreed as part of the High Level Design, to ensure that the best information is used for Interconnector Units in relation to previously traded quantities.

WD1 – Calculation of Schedule Demand

- No change from the current calculation.
- Will utilise Accepted COD/TOD by the WD1 Gate Window Closure.
- For External Data Providers (e.g. TSOs), latest data received will be used.

Affected Units	Calculation	Data Source
<i>Demand Forecast, net of Autonomous Non-Wind</i>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> Demand Forecast </div> MINUS	<i>System Operators</i>
<i>PPTG Non-Wind, VPTG Non-Wind, PPMG Under Test Non-Wind, VPMG Under Test Non-Wind</i>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; text-align: center;"> (A) Nominated Quantity </div> <div style="text-align: center;"> \longleftrightarrow $MIN(A,B)$ </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> (B) Forecast Availability </div> </div> MINUS	<i>Participants via COD/TOD submitted by WD1 Gate Window Closure</i>
<i>VPTG Wind, VPMG Under Test Wind</i>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; text-align: center;"> (A) Wind Forecast </div> <div style="text-align: center;"> \longleftrightarrow $MIN(A,B)$ </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> (B) Forecast Availability </div> </div> MINUS	<i>Forecast Availability via TOD submitted by WD1 Gate Window Closure</i> <i>Wind Forecast from System Operators</i>
<i>Autonomous Wind</i>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> Wind Forecast </div>	<i>System Operators</i>

WD1 – Interconnector Constraints

- For the WD1 MSP Software Run, Capacity Holdings are not required.
- Any Interconnector User may trade via an Interconnector on which they have registered.
- For Interconnectors as a whole, MSQs will be limited in aggregate by the Interconnector Ramp Rate and Interconnector Import and Export ATC, treating both the EA1 and EA2 MIUNs as fixed:

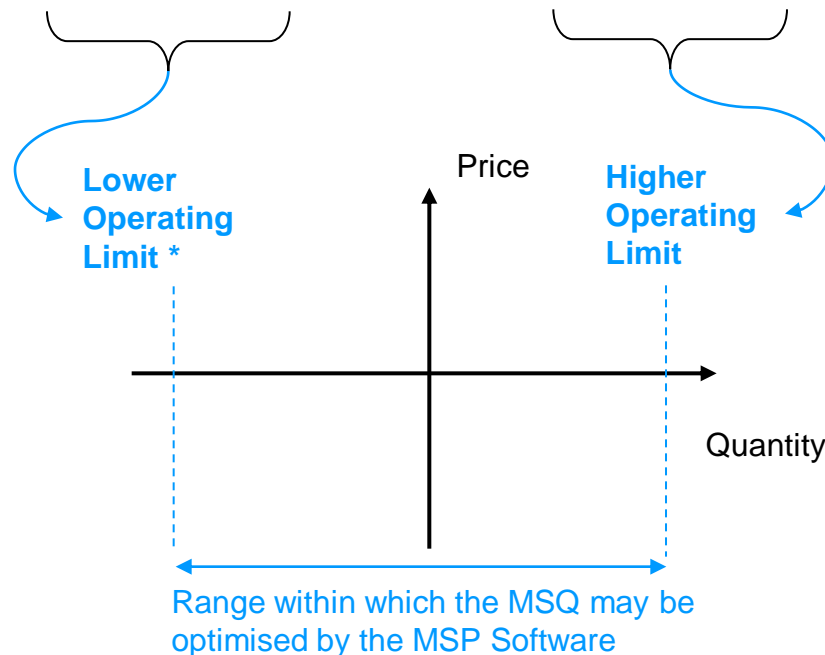
$$\underbrace{MEATC_{uh}}_{\text{The maximum export capacity for the Interconnector}} \leq \underbrace{\sum_u MSQ_{uh}^{WD1}}_{\text{MSQ for the Interconnector Unit that is optimised by the WD1 MSP Software Run}} + \underbrace{\sum_u MIUN_{uh}^{EA1}}_{\text{Latest MIUNs for the Units optimised by the EA1 MSP Software Run treated as fixed}} + \underbrace{\sum_u MIUN_{uh}^{EA2}}_{\text{Latest MIUNs for the Units optimised by the EA2 MSP Software Run treated as fixed}} \leq \underbrace{MIATC_{uh}}_{\text{The maximum import capacity for the Interconnector}}$$

WD1 – Interconnector Unit Constraints

- For Interconnector Units, Active Capacity Holdings are not required.
- Instead, WD1 MSQs are only limited in accordance with the maximum import/export trades as submitted by the Participant in their Commercial Offer Data to the WD1 Gate Window.

$$MIUEC_{uh} \leq MSQ_{uh} \leq MIUIC_{uh} \quad \forall u, h$$

* May be set to zero where PQ Pairs have been excluded as part of the calculation of Offered Modified PQ Pairs (Appendix P)



Where:

MIUEC
 MIUIC

Maximum Interconnector Unit Export Capacity
 Maximum Interconnector Unit Import Capacity

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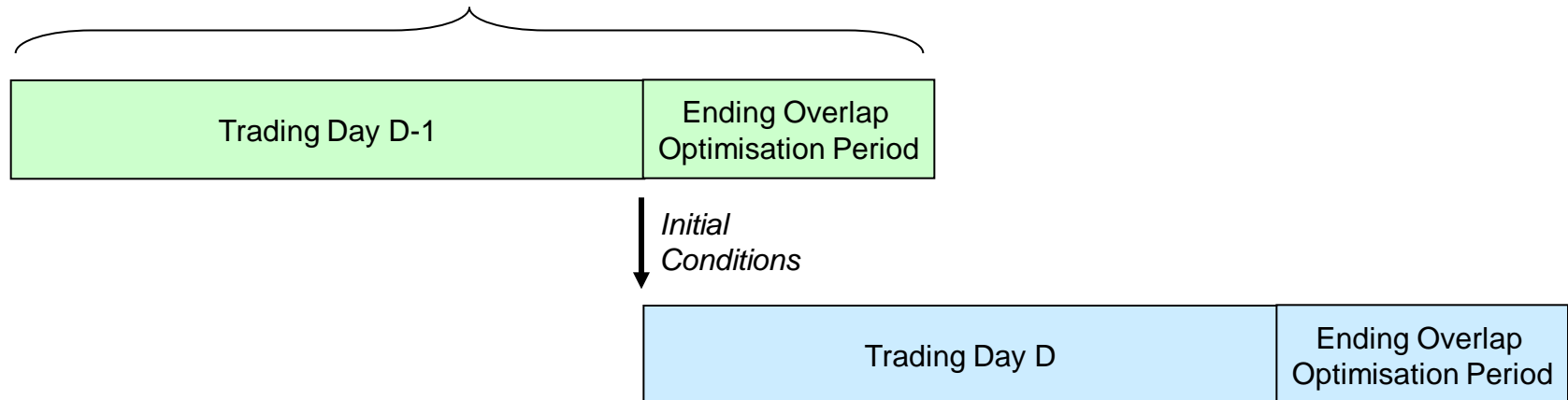
EP1 & EP2 – No significant change

- Highlights:
 - Commercial Offer Data will be the latest Accepted (submitted and validated) and Utilised (used in a completed MSP Software Run). Hence COD may be different for Trading Periods in the first and second portion of the EP1 or EP2 Optimisation Time Horizons.
 - Technical Offer Data will be the latest Accepted (submitted and validated) and Utilised (used in a completed MSP Software Run). The same TOD will apply for the entire EP1 or EP2 Optimisation Time Horizon.
 - Interconnector Users will have Interconnector Units for all Gate Windows to which they submitted COD. For example, if an Interconnector User bids to all of the Gate Windows, there will be three Interconnector Units, for that Interconnector User, for which MSQs are calculated in the EP1 or EP2 runs.

EP1 – Initial Conditions

- Each MSP Software Run needs Initial Conditions at the start of the Optimisation Time Horizon:
 - Initial Status (ON or OFF)
 - Initial MW (MSQ from last Trading Period in the previous Trading Day).
 - Last Status Change Date/Time
 - First Available Time
 - Start Up Cost Carried over
 - Start Up Time Hot/Warm/Cold
- For EP1, the Initial Conditions will be taken from the EP1 MSP Software Run for the previous Trading Day.

Initial Conditions from EP1 for the previous Trading Day



EP1 – Commercial Offer Data

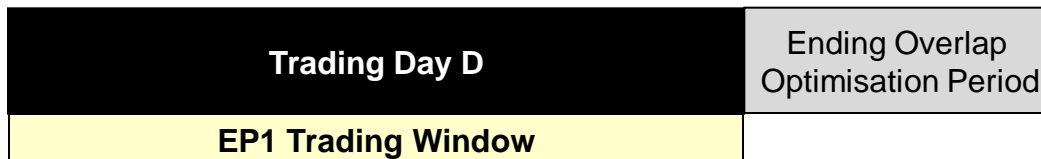
Commercial Offer Data

Price Quantity Pairs
No Load Costs
Start Up Costs
Shut Down Costs
Decremental Price
Maximum Interconnector Unit Import Capacity
Maximum Interconnector Unit Export Capacity

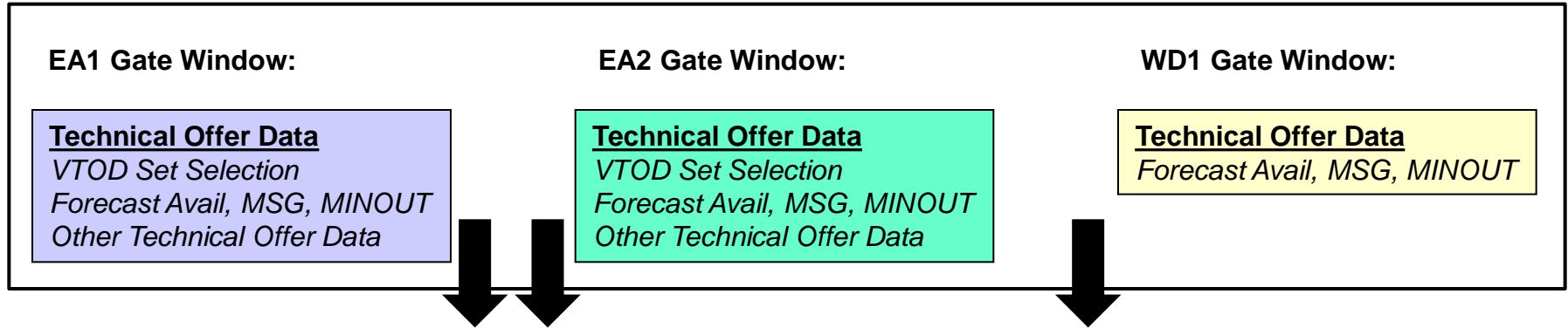
For each Trading Period in the EP1 Trading Window:

- 1) COD for Interconnector Units = Calculated Offered Modified PQ Pairs and Accepted Max Import/Export Capacities.
- 2) For other Generator Units, latest Accepted and Utilised COD
 - *e.g. Accepted EA2 COD for Trading Periods 06:00 to 17:30, where EA2 MSP Software Run is not cancelled.*
 - *e.g. Accepted WD1 COD for Trading Periods 18:00 to 11:30, where WD1 MSP Software Run is not cancelled.*

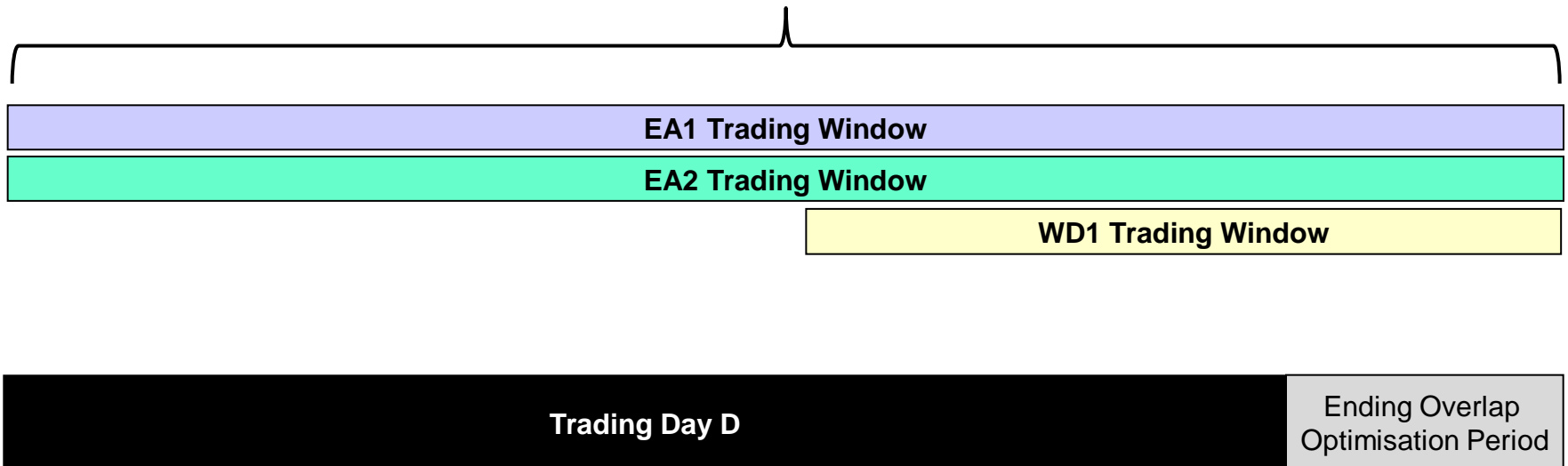
Latest Accepted and Utilised COD for each Trading Period (EA2/WD1)



EP1 – Technical Offer Data



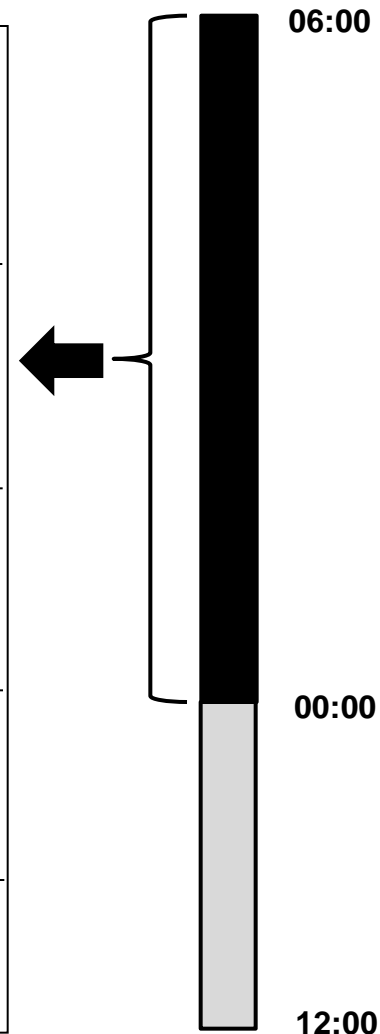
EP1 MSP Software Run uses the latest Accepted and Utilised Technical Offer Data for each Trading Period. This will take account of MSP Software Cancellation.



EP1 – Calculation of Schedule Demand (06:00 to 00:00)

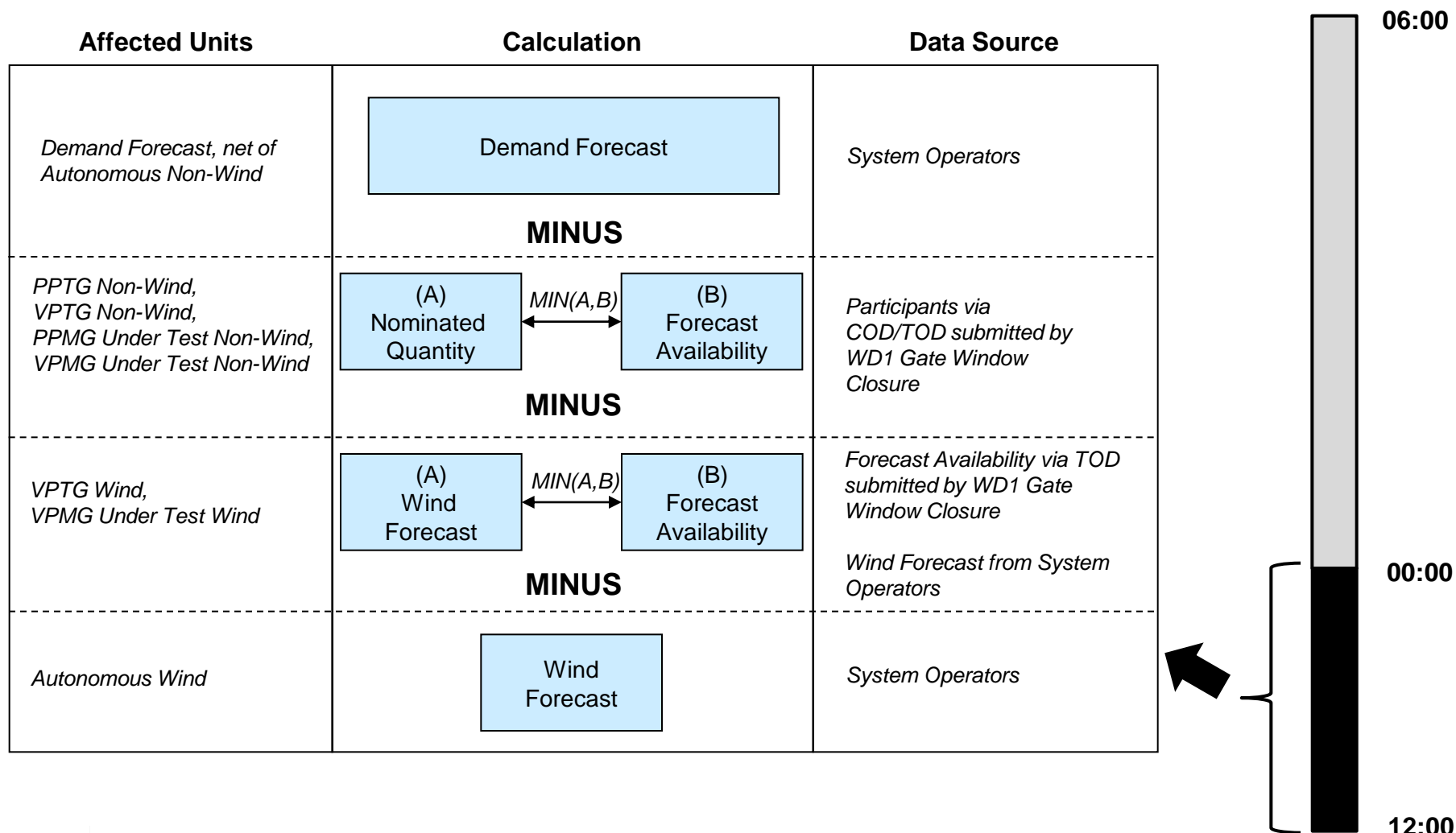
- No change from the current calculation (to midnight on the Trading Day).

Affected Units	Calculation	Data Source
Price Maker Generator Units not Under Test	Actual Output	Meter Data Providers or Market Operator where MGuh defined otherwise
PPTG, PPMG Under Test	<div> <div>(A) min(Nominated Quantity, Availability Profile or Actual Availability)</div> <div>A-B</div> <div>(B) Actual Output</div> </div> <p>MINUS</p>	<p>(A) Participants via COD/TOD-latest Accepted values utilised per Trading Period.</p> <p>(B) Derived by MO from data submitted by TSOs.</p>
VPTG, VPMG Under Test	<div> <div>(A) Availability Profile</div> <div>A-B</div> <div>(B) Actual Output</div> </div> <p>PLUS</p>	<p>(A) Meter Data Providers</p> <p>(B) Derived by MO from data submitted by TSOs.</p>
System-wide	Demand Control	System Operators
Interconnector Residual Capacity Units (IRCU)	DQ for IRCU	System Operators, for SO Interconnector Trades DQ set by Market Operator based on this data



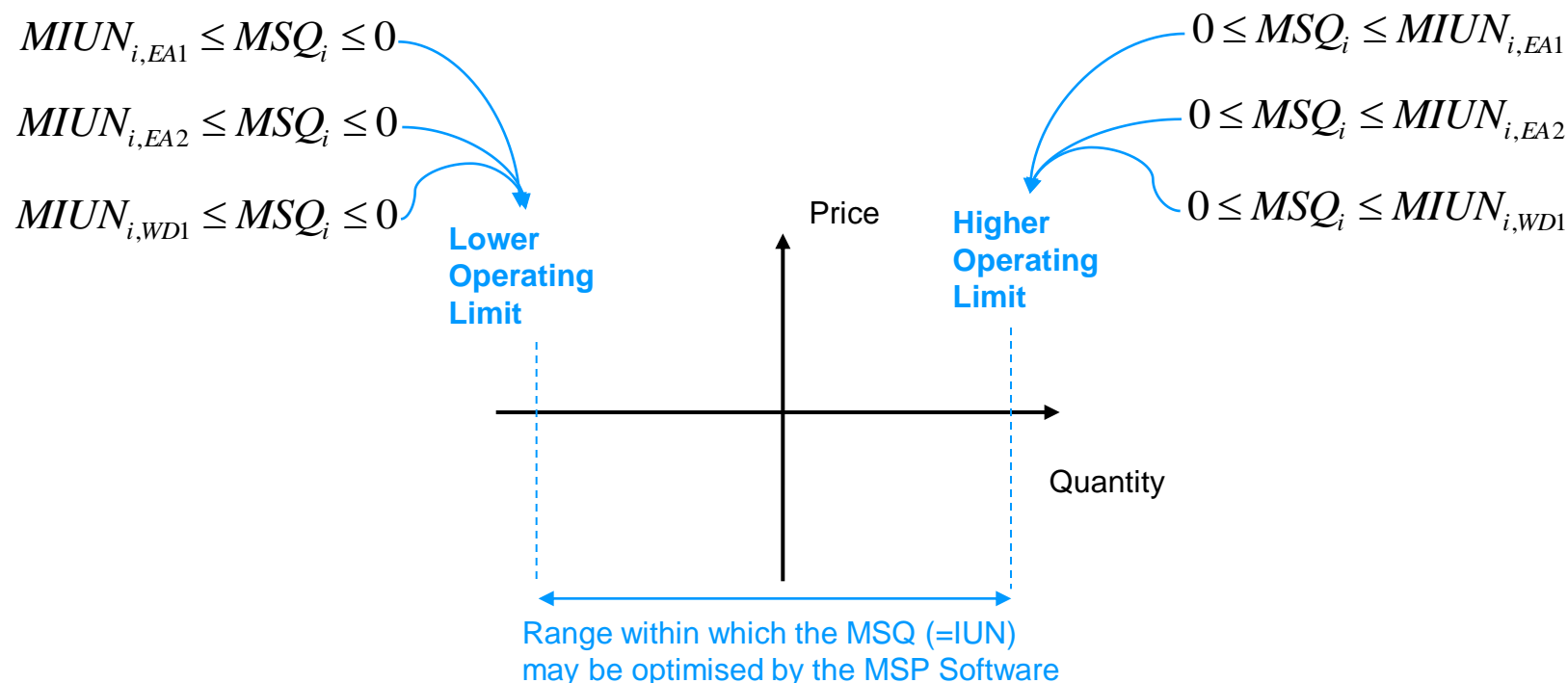
EP1 – Calculation of Schedule Demand (00:00 to 12:00)

- No change from the current calculation (from midnight on the Trading Day).



EP1 – Interconnector/Interconnector Unit Constraints

- As for the current Ex-Post MSP Software Run, there will be no constraints in the MSP Software for EP1 which relate to an Interconnector as a whole.
- Instead, the same constraints will apply for Interconnector Units as are currently applied with the Ex-Ante Market Schedule.
- MSQs will be limited by the MIUNs allocated in EA1, EA2 and WD1 Runs (or as adjusted if ATC changes within day)



Note: MIUNs will not exceed the corresponding IUNs for each Interconnector Unit.

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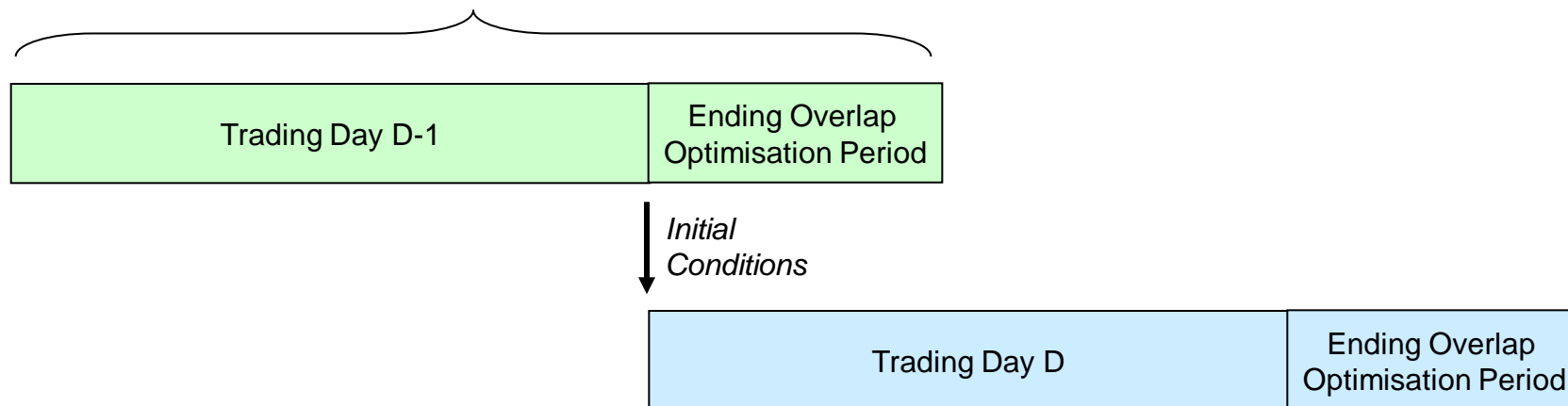
Required Credit Cover Query

Glossary

EP2 – Initial Conditions

- Each MSP Software Run needs Initial Conditions at the start of the Optimisation Time Horizon:
 - Initial Status (ON or OFF)
 - Initial MW (MSQ from last Trading Period in the previous Trading Day).
 - Last Status Change Date/Time
 - First Available Time
 - Start Up Cost Carried over
 - Start Up Time Hot/Warm/Cold
- For EP2, the Initial Conditions will be taken from the EP2 MSP Software Run for the previous Trading Day.

Initial Conditions from EP2 for the previous Trading Day



EP2 – Commercial Offer Data

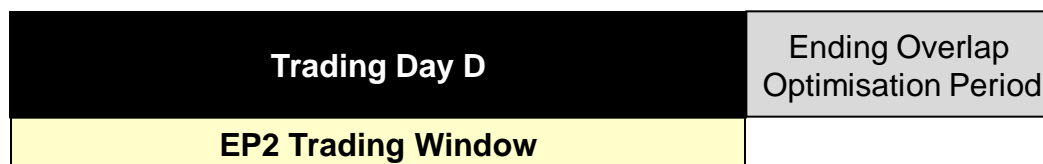
Commercial Offer Data

Price Quantity Pairs
 No Load Costs
 Start Up Costs
 Shut Down Costs
 Decremental Price
 Maximum Interconnector Unit Import Capacity
 Maximum Interconnector Unit Export Capacity

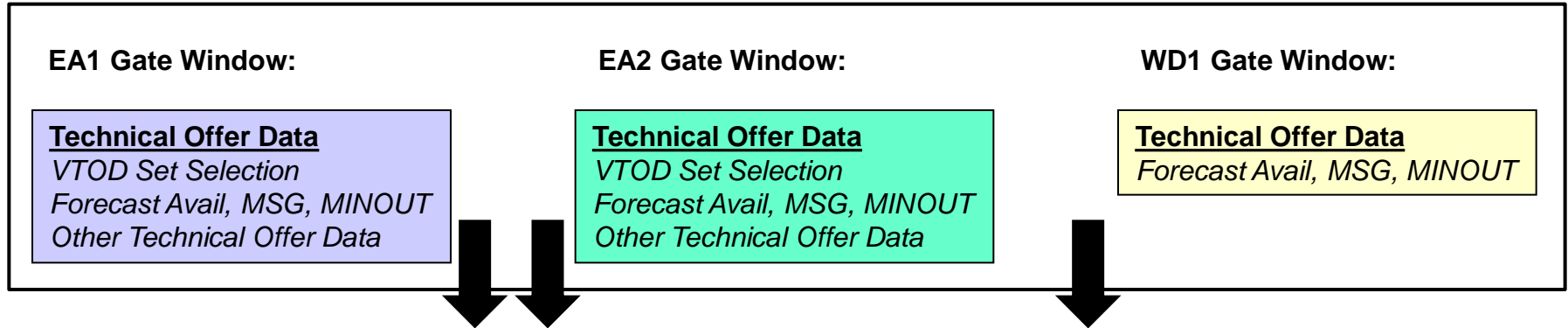
For each Trading Period in the EP2 Trading Window:

- 1) COD for Interconnector Units = Calculated Offered Modified PQ Pairs and Accepted Max Import/Export Capacities.
- 2) For other Generator Units, latest Accepted and Utilised COD
 - e.g. Accepted EA2 COD for Trading Periods 06:00 to 17:30, where EA2 MSP Software Run is not cancelled.
 - e.g. Accepted WD1 COD for Trading Periods 18:00 to 11:30, where WD1 MSP Software Run is not cancelled.

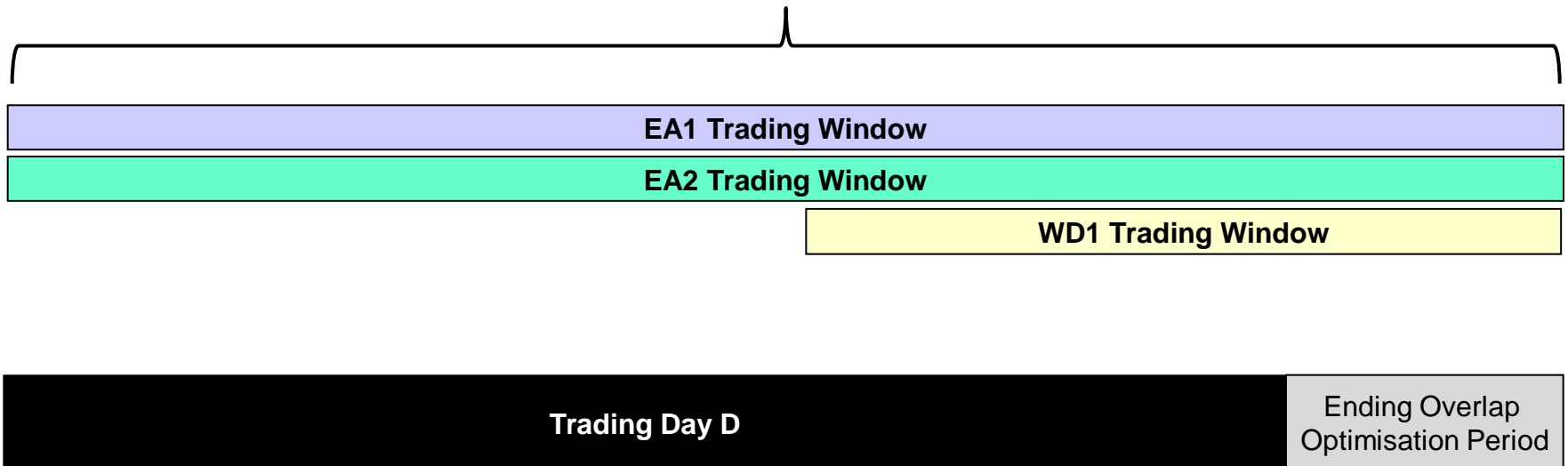
Latest Accepted and Utilised COD for each Trading Period (EA2/WD1)



EP2 – Technical Offer Data



EP2 MSP Software Run uses the latest Accepted and Utilised Technical Offer Data for each Trading Period. This will take account of MSP Software Cancellation.



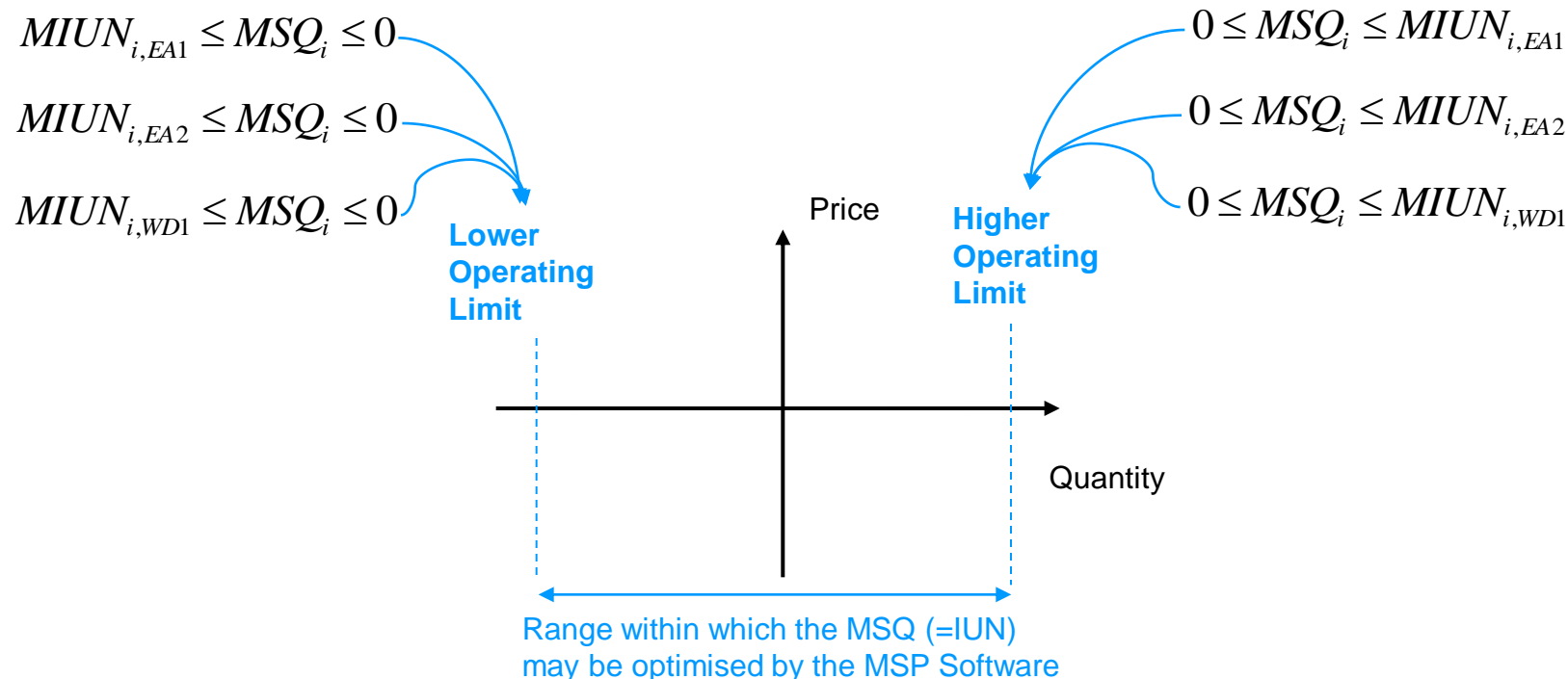
EP2 – Calculation of Schedule Demand

- No change to EP2 calculation of Schedule Demand.

Affected Units	Calculation	Data Source
Price Maker Generator Units not Under Test	<div>Actual Output</div> MINUS	Meter Data Providers or Market Operator where MGuh defined otherwise
PPTG, PPMG Under Test	<div> <div>(A) min(Nominated Quantity, Availability Profile or Actual Availability)</div> <div> \longleftrightarrow A-B </div> <div>(B) Actual Output</div> MINUS </div>	(A) Participants via COD/TOD- latest Accepted values utilised per Trading Period. (B) Derived by MO from data submitted by TSOs.
VPTG, VPMG Under Test	<div> <div>(A) Availability Profile</div> <div> \longleftrightarrow A-B </div> <div>(B) Actual Output</div> PLUS </div>	(A) Meter Data Providers (B) Derived by MO from data submitted by TSOs.
System-wide	<div>Demand Control</div> PLUS	System Operators
Interconnector Residual Capacity Units (IRCU)	<div>DQ for IRCU</div>	System Operators, for SO Interconnector Trades DQ set by Market Operator based on this data

EP2 – Interconnector/Interconnector Unit Constraints

- As for the current Ex-Post MSP Software Run, there will be no constraints in the MSP Software for EP2 which relate to an Interconnector as a whole.
- Instead, the same constraints will apply for Interconnector Units as are currently applied with the Ex-Ante Market Schedule.
- MSQs will be limited by the MIUNs allocated in EA1, EA2 and WD1 Runs (or as adjusted if ATC changes within day)



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MSP Software Run Cancellation

- The Intra-Day Trading High Level Design allows for cancellation of some MSP Software Runs, in the event that the relevant MSP Software Run is delayed beyond 30 minutes after the relevant Gate Window Closure.
- The cancellation of runs will not apply to any EA1 MSP Software Run or Ex-Post MSP Software Run.
- In the event that MSP Software Runs are cancelled the following data is used:
 - External Input data – data received for the relevant MSP Software Run from external parties (e.g. Four Day Load Forecast from System Operators, Commercial Offer Data from Participants).
 - Initial Conditions Data – scheduled quantities and status information (e.g. latest ON or OFF time) from the most recent MSP Software Run that includes the end of the previous Trading Day.
- Cancellation will be initiated by a Market Operator user, via the Market Operator Interface.

MSP Software Run - Cancellation Provisions

- EA1 MSP Software Runs cannot be cancelled under any circumstances
 - Instead, EA1 delays may result in the cancellation of subsequent ex-ante runs (EA2, WD1) for the relevant Trading Day.
- EP1 MSP Software Runs cannot be cancelled under any circumstances
- EP2 MSP Software Runs cannot be cancelled under any circumstances
- As a result, only EA2 and WD1 MSP Software Runs can be cancelled

MSP Software Run – EA2 Cancellation Provisions

- EA2 MSP Software Runs shall be cancelled by the Market Operator if any of the following conditions are met:

#	Cancellation Trigger	Notes
1	EA1 MSQs and SMPs have not been published by 11:00 TD-1 (EA1 publication deadline).	<i>Cancellation avoids EA2 publishing time delays and Interconnector User MIUNs provision delays.</i>
2	ATC data for all Interconnectors in the SEM have not been Accepted by the scheduled EA2 Gate Window Closure time (i.e. not received at all for Trading Day).	<i>No limits on the EA2 IUNs (the MSP Software needs this data for EA2/WD1).</i>
3	EA2 Gate Window is not closed by 30 minutes after the scheduled EA2 Gate Window Closure time.	<i>Cancellation avoids EA2 publishing time delays and Interconnector User MIUNs provision delays. If not cancelled, Operations Schedule (RCUC) would be delayed.</i>
4	Ex-Ante Two MSP Software Run cannot be run as at 30 minutes after the EA2 Gate Window Closure.	<i>Alternative would be Administered Schedule/Prices – no advantage to this.</i>
5	At the time that is 30 minutes after the EA2 Gate Window Closure, the Central Market System is experiencing technical difficulties such that its reporting function is disabled.	<i>If cannot publish, Interconnector Users will not have a known position against which to trade in BETTA and there would be an Operations Schedule (RCUC) delay.</i> <i>Alternative would be Administered Schedule/Prices – no advantage to this (unrealistic RCUC schedule, no Interconnector trades)</i>

MSP Software Run – WD1 Cancellation Provisions

- WD1 MSP Software Runs shall be cancelled by the Market Operator if any of the following conditions are met:

#	Cancellation Trigger	Note
1	EA1 MSP Software Run for the same Trading Day has not been completed by the WD1 Gate Window Closure	<i>Unlikely to happen – Administered Schedule and Prices would occur first.</i>
2	EA2 MSQs and SMPs have not been published by the WD1 Gate Window Closure.	<i>If cannot publish, Interconnector Users will not have a position to trade in BETTA and will not know what remaining capacity is available.</i>
3	ATC data for all Interconnectors in the SEM have not been Accepted by the scheduled WD1 Gate Window Closure time (i.e. not received at all for Trading Day).	<i>No limits on the EA2 IUNs (the MSP Software needs this data for EA2/WD1).</i>
4	WD1 Gate Window is not closed by 30 minutes after the scheduled WD1 Gate Window Closure time.	<i>Cancellation avoids WD1 publishing time delays and Interconnector User MIUNs provision delays.</i>
5	Within Day One MSP Software Run cannot be run as at 30 minutes after the WD1 Gate Window Closure.	<i>Alternative would be Administered Schedule/Prices – no advantage to this.</i>
6	At the time that is 30 minutes after the WD1 Gate Window Closure, the Central Market System is experiencing technical difficulties such that its reporting function is disabled.	<i>If cannot publish, Interconnector Users will not have a known position against which to trade in BETTA. Alternative would be Operations Schedule (RCUC) delay.</i>

MSP Software Run Cancellation Report

- When MSP Software Run Cancellation occurs:
 - An MSP Software Run Cancellation Report will immediately be produced, containing:
 - Run Type
 - Affected Trading Day
 - Date and Time of Cancellation
 - MSP Software Run Cancellation reports will be produced in XML and HTML formats and will be accessible via the MPI and can therefore be:
 - Downloaded via Type 3 (Webservice request)
 - Viewed via Type 2 (MPI)
 - Notification of the production of an MSP Software Run Cancellation report will be accessible via the Market Message Window, as part of the MPI.

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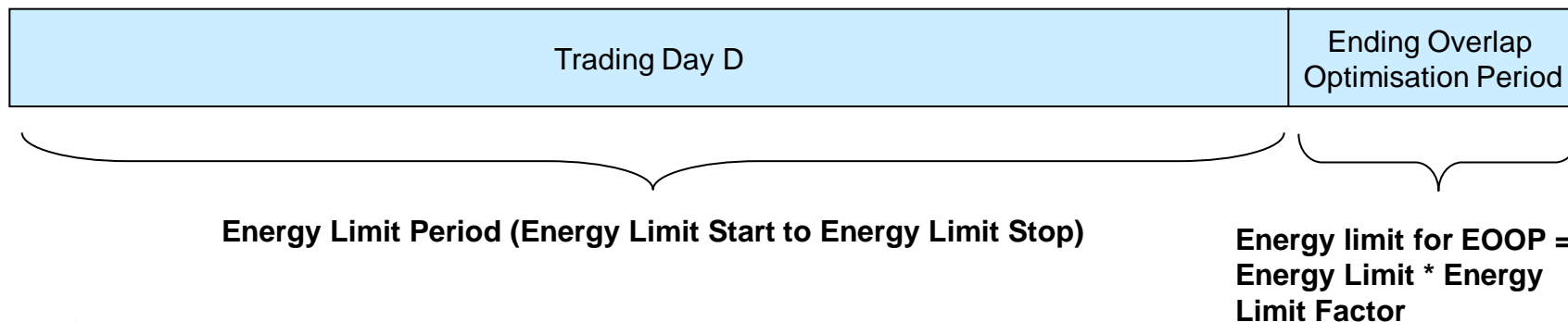
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Treatment of Energy Limited Units

- Technical Offer Data for Energy Limited Units includes the following data:
 - Energy Limit
 - *In MWh for the Trading Day, limiting the MSQ for the Energy Limited Unit in the Trading Day.*
 - Energy Limit Factor
 - *Must be 0.25, multiplied by the Energy Limit to give the energy limit for the Ending Overlap Optimisation Period*
 - Energy Limit Start
 - *Must be the first Trading Period in the Trading Day*
 - Energy Limit Stop
 - *Must be the last Trading Period in the Trading Day*
- There will be no change from the current implementation for Intra-Day Trading (MSP Software will not exceed the Energy Limit for the relevant period).



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Data Transactions (TSO-MO) for Intra-Day Trading

Annually

- TSO** 01) System Parameters
- TSO** 02) Loss Adjustment Factors
- TSO** 03) Ex-Post Loss of Load Probability Table
- TSO** 04) Annual Load Forecast
- TSO** 05) Uninstructed Imbalance Parameters
- TSO** 06) Testing Tariffs

INBOUND

Monthly

- TSO** 07) Loss of Load Probability for the Capacity Period
- TSO** 08) Monthly Load Forecast

INBOUND

Daily

- TSO** 09) Generator Unit Technical Characteristics
- TSO** 10) Demand Control
- TSO** 11) System Characteristics
- TSO** 12) Energy Limited Unit Technical Characteristics
- TSO** 13) Dispatch Instructions
- TSO** 14) SO Interconnector Trades
- TSO** 15) Four Day Load Forecast
- TSO** 16) Wind Power Unit Forecast
- TSO** 17) Forecast Ex-Post Loss of Load Probability

INBOUND

SEMO (MI)

Following each Gate Window Closure

- TSO** 19) Interconnector Unit Bids and Offers
- TSO** 20) Other Generator Bids and Offers
- TSO** 21) Unit Operational Characteristics
- TSO** 22) Interconnector Registration (EA1 only)
- TSO** 23) Interconnector Characteristics (EA1 only)

OUTBOUND

Following MSP Software Run

- TSO** 24) Ex-Ante One Market Schedule
- TSO** 25) Ex-Ante Two Market Schedule
- TSO** 26) Within Day One Market Schedule
- TSO** 27) Ex-Post Indicative Market Schedule
- TSO** 28) Ex-Post Initial Market Schedule

OUTBOUND

Following MIUN Calculation

- TSO** 29) Aggregate Modified Interconnector Unit Nominations

OUTBOUND

Following Trading Day

- TSO** 31) Jurisdiction Error Supplier Unit Volumes
- TSO** 32) Net Demand Adjustment

OUTBOUND

Ad Hoc

- TSO** 33) Commencement Notice
- TSO** 34) Deregistration Notice
- TSO** 35) Available Transfer Capacity

OUTBOUND

Summary of changes for Data Transactions (TSO-MO) for Intra-Day Trading

Data Transaction	Content of File	Timing of Submission
INBOUND: Four Day Load Forecast	Data for each Trading Period in at least four complete Calendar Days for the relevant Jurisdiction.	To be submitted at least once prior to the EA1 Gate Window Closure and will be submitted as updated.
INBOUND: Wind Power Unit Forecast	Data for each Trading Period in the next two complete Trading Days (EA1/EA2) or the current and following Trading Day (WD1) for the relevant Jurisdiction.	To be submitted at least once prior to the EA1 Gate Window Closure and will be submitted as updated.
OUTBOUND: Market Schedules	For all Generator Units included within the MSP Software, for each Trading Period in the Optimisation Time Horizon.	Provided following each MSP Software Run.
OUTBOUND: Bids and Offers, Unit Operational Characteristics	Commercial and Technical Offer Data that is: Accepted for non Interconnector Units, or Offered Modified for Interconnector Units.	Provided following each Gate Window Closure.
OUTBOUND: Interconnector Registration Data, Characteristics	Interconnector Registration Data, plus Active Interconnector Unit Capacity Holdings	Provided following the EA1 Gate Window Closure.
OUTBOUND: Available Transfer Capacity	ATC for the relevant Interconnector for the Optimisation Time Horizon	Provided immediately following receipt from Interconnector Administrator.

Data Transactions (IA-MO) for Intra-Day Trading

Daily

- IA 01) Available Transfer Capacity
- IA 02) Active Capacity Holdings
- IA 03) Ex-Post Interconnector Trades

INBOUND

Following MSP Software Run

- IA 06) Interconnector Unit Nominations

OUTBOUND

Ad Hoc

- IA 04) Available Transfer Capacity
- IA 05) Interconnector Registration Data

INBOUND

Following MIUN Calculation

- IA 07) Modified Interconnector Unit Nominations
- IA 08) Interconnector Dispatch Schedule

OUTBOUND

SEMO
(MI)

Summary of changes for Data Transactions (IA-MO) for Intra-Day Trading

Data Transaction	Content of File	Timing of Submission
INBOUND (Daily): Available Transfer Capacity	Data for each Trading Period in the relevant Optimisation Time Horizon.	To be submitted by 10:00 on TD-2 and as updated.
INBOUND: Active Interconnector Capacity Holdings	Data for each Capacity Holder for the relevant Optimisation Time Horizon.	To be submitted by the EA1 Gate Window Closure.
INBOUND: Ex-Post SO Interconnector Trades	No change	No change
INBOUND (Ad Hoc): Available Transfer Capacity	Maximum Import/Export Available Transfer Capacity Values and associated times for the relevant Optimisation Time Horizon.	Submitted as available, when ATC changes.
INBOUND: Interconnector Registration Data	No change	No change
OUTBOUND: Interconnector Unit Nominations	For all Interconnector Units included within the MSP Software Run, for each Trading Period in the Optimisation Time Horizon.	Provided following each MSP Software Run.
OUTBOUND: Modified Interconnector Unit Nominations	For all Interconnector Units included within the most recent MSP Software Run, for each Trading Period in the Optimisation Time Horizon.	Provided following each calculation of MIUNs.
OUTBOUND: Interconnector Dispatch Schedule	Dispatch schedule for the relevant Interconnector in the Optimisation Time Horizon.	Provided following each calculation of MIUNs.

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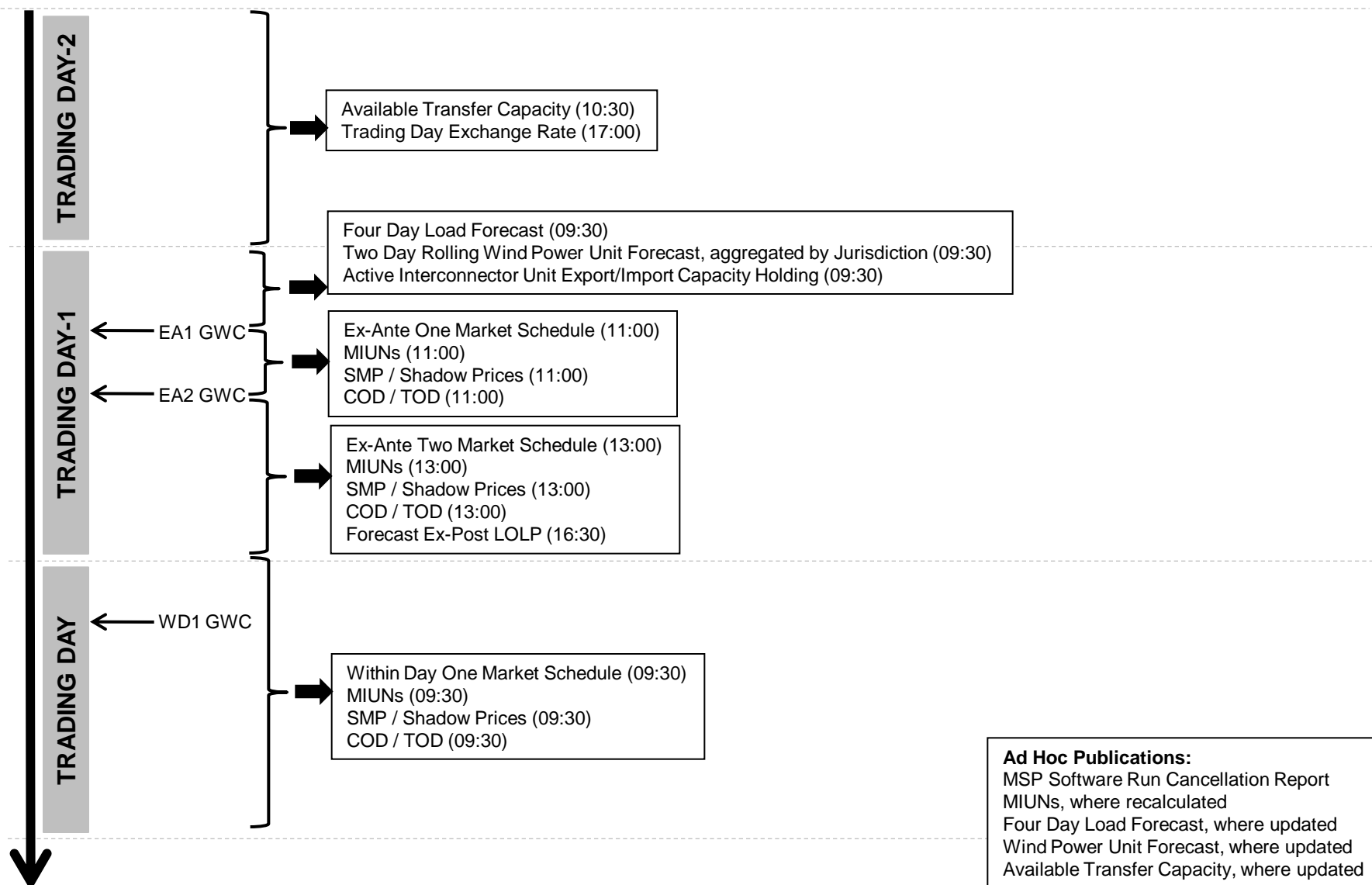
Required Credit Cover Query

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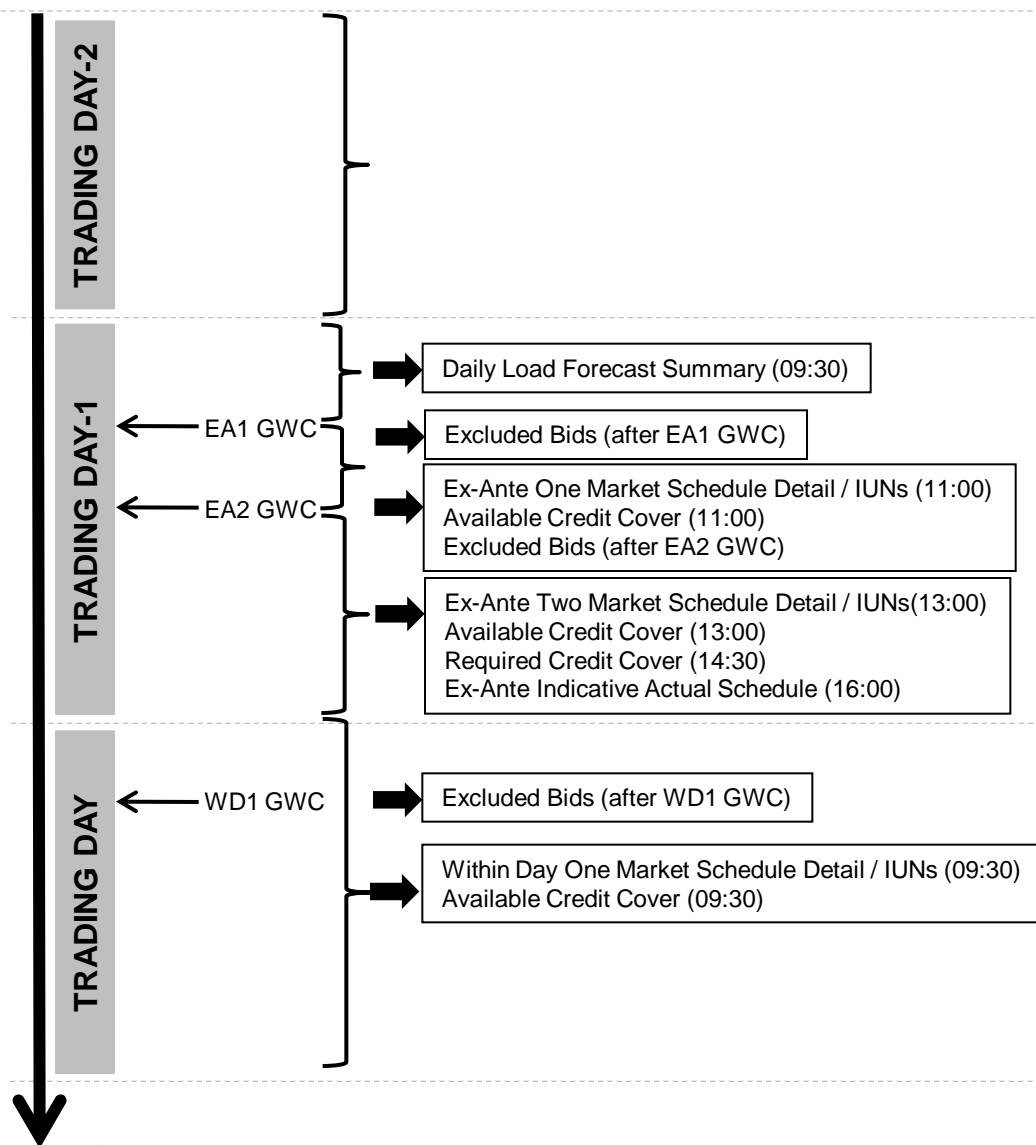
Publication and reporting under Intra-Day Trading

- For the SEM, publication and reporting are interpreted as follows:
 - Publication – publicly available (General Public).
 - Reporting – available to one or all Participants (Member Private or Member Public).
- Following discussion with the Regulatory Authorities, SEMO has drafted the provisions for publication and reporting such that ex-ante and within day data will be published as soon as possible.
 - For example, the publication time for each ex-ante market schedule will be 90 minutes after the associated Gate Window Closure (rather than one day after the Trading Day as currently).
- No change to any publication timings for:
 - Periodic, Annual or Monthly publications/reports.
 - Ex-Post publications/reports.

Summary of IDT publications (*Ex-Ante/Within Day*)



Summary of IDT MPI-only reports (*Ex-Ante/Within Day*)



Ad Hoc Publications:

- List of Active Units
- List of Active Market Participants
- List of Active Market Participants and Units
- List of Suspended/Terminated Participants

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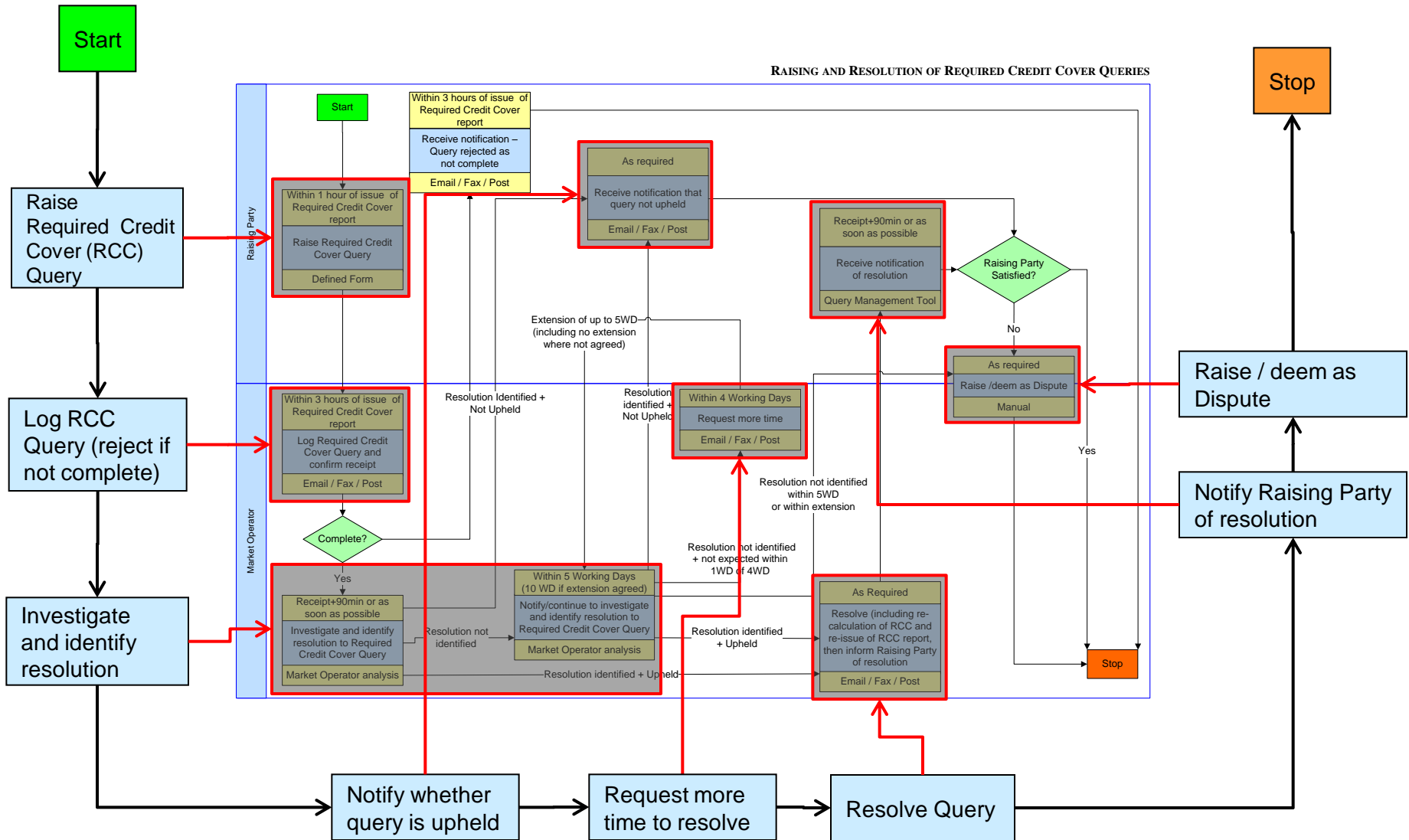
Required Credit Cover Query

Glossary

Required Credit Cover Query

- A new query process is proposed, allowing Participants to query the calculation of Required Credit Cover, as performed by the Market Operator and provided to Participants each Working Day.
- SEMO believes that this additional formal query is required, as Required Credit Cover is used as an input to the Available Credit Cover sufficiency checks for Participants with Interconnector Units.
- The Required Credit Cover Query is similar to that for a Data Query or Settlement Query, with a dedicated form and timelines.
- Where resolution is not identified within the maximum timescales (5WD or up to 10WD by agreement), the Market Operator will deem the issue as a Dispute.
- If a Participant is not satisfied with the resolution of a Required Credit Cover Query, a Dispute may be raised.

Required Credit Cover Query



Query for Excluded Bids calculations

- Since WG9, SEMO has been investigating the possibility of including an Excluded Bids Query in the Code.
- SEMO is conscious that Participants may wish to query the calculation of Excluded Bids (i.e. the application of Appendix P of the Code). However, the calculation of Excluded Bids is an automated process which is based mainly on the RCC.
- A formal Excluded Bids Query process would:
 - require retrospective change to MIUN positions (which is neither practical or desirable).
 - be limited mainly to system defects (which would take time to resolve in any case).
 - only be valuable if it could be resolved and affected data amended by the next Gate Window Closure (which is impractical).
 - require significant additional SEMO resources that would need to be available to address queries immediately following Gate Window Closure.
- SEMO proposes that queries pertaining to excluded bids be raised via the Market Helpdesk as a general query with urgent status.

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Glossary (1)

	Acronym	Description
Actual Output	AO	means the Active Power produced by a Generator Unit at the Export Point.
Contingency Data		means, in respect of certain Data Transactions, the data that is used when a Data Transaction is not Accepted by the Market Operator in accordance with the required submission timescales.
Daylight Saving Conditions		means the practice of temporarily adjusting clocks to be one hour ahead of local standard time during the summer, in order to provide extra daylight in the evenings during such period.
Interconnector Dispatch Schedule		means the set of Output values and associated times for an Interconnector, calculated by the Market Operator in the Modified Interconnector Unit Nominations calculation, in accordance with Agreed Procedure 2 “Interconnector Unit Capacity Right Calculation and Dispatch Notifications”.
Market Operator Performance Report		means a report prepared by the Market Operator and provided to the Regulatory Authorities, in accordance with paragraph 2.144.
MIUN Calculation Batch Identifier		means a unique identifier of a single set of data used as an input to the MIUN Calculator as part of a calculation of Modified Interconnector Unit Nominations for a Trading Day.
MIUN Calculator		means the software used by the Market Operator to determine the Modified Interconnector Unit Nominations, Interconnector Dispatch Schedule, Interconnector Unit Dispatch Schedule and Profiled SO Interconnector Trades.

Glossary (2)

	Acronym	Description
MSP Software Run		means the operation of the MSP Software used by the Market Operator to determine Market Schedule Quantities for each Price Maker Generator Unit and to determine the System Marginal Price for each Trading Period as defined in Appendix N.
MSP Software Run Cancellation		means, in respect of a particular MSP Software Run Type for a specific Trading Day, the determination by the Market Operator that the conditions which require that the MSP Software Run Type shall not be performed are met.
MSP Software Run Type		means one of the following types of run of the MSP Software: Ex-Ante One MSP Software Run, Ex-Ante Two MSP Software Run, Within Day One MSP Software Run, Ex-Post Indicative MSP Software Run or Ex-Post Initial MSP Software Run which are defined within Appendix N: “Operation of the MSP Software”.
Required Credit Cover Query		means a query by a Participant in respect of the inputs to, or calculation of, its Required Credit Cover in accordance with paragraphs 6.234A to 6.234C.
Utilised		means, in respect of a particular MSP Software Run Type for a Trading Day, the data that was used by the Market Operator to produce the associated Market Schedule Quantities, where the particular MSP Software Run was successfully completed and no MSP Software Run Cancellation was applied.