Pipeline Capacity Trading Reference Group

28 March 2018

Agenda

1. Industry reference group meeting
    1. Capacity Trading Platform
        - Recap
        - Order submission
        - Delivery netting
        - Delivery process
        - Contingency arrangements
    2. Day-ahead Auction
        - Recap
        - Auction product components
        - Bidding

Short Break

2. Service provider meeting
    1. Capacity Transfer Interface

Capacity Trading Platform

Capacity Trading Platform

- Exchange trading of capacity products will occur through the Gas Supply Hub (GSH).
- It is proposed that operating hours of GSH to change to 9am to 7pm (AEST).
- Trading platform will operate 7 days a week.
- Market support functions of GSH (settlement, prudential, reporting) will be available for capacity trades.
- Trading on the exchange will be anonymous, and an interface for capacity transfers will be implemented between AEMO and Service Providers to facilitate automatic transfers on traders' behalf.

Details for the Procedures

- The transaction supporting arrangements will be contained in the Capacity Transfer and Auction Procedures and include the:
  - key timings for various activities
  - information required to be provided by traders
  - processing steps for AEMO and Service Providers
  - interface to facilitate capacity transfers
  - what happens when something goes wrong and how is this resolved?

Key times for the CTP on gas day D

Time	Activity
06:00*	Gas day start (D)
09:00	Exchange open for trading
12:30*	Trade close for day ahead products (ie. for capacity applicable to gas day D+1)
12:30-14:30*	Capacity for day ahead products transferred in systems and confirmed to shippers by 14:30. Note, as this is after the STTM ex ante schedule has been published, no adjustments will be made in STTM systems for capacity purchased on a day ahead basis for an STTM hub. Adjustments will be made to associated DWGM accreditation rights.
15:00*	Nomination cut off time for gas day D+1
19:00	Exchange closed
19:00-22:00	Capacity for all products related to D+2 to D+14 other than day ahead products transferred in systems and confirmed to shippers by 22:00 (Forward Trade transfer). This process will also involve AEMO adjusting contract rights in the STTM and DWGM.
06:00*	Gas day start (D+1)

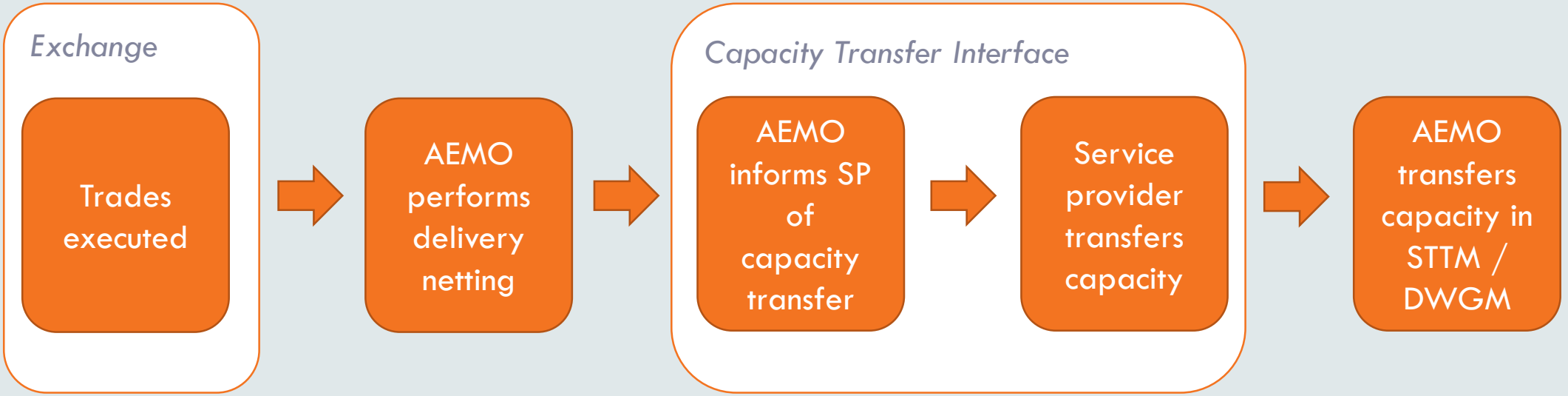
*The times listed are those in effect after the commencement of gas day harmonisation. Prior to these rules coming into effect, gas day start time and nomination time will be facility specific, with trading to close for day ahead products at 11:00 to account for capacity being transferred in systems in time for earlier nomination cut-off times.

Giving effect to the key timings

The harmonised gas day start time and nomination cut-off time will be given effect through the new Part 26 – refer to the GMRG's consultation package.

The rest of the key times, and associated milestones will be given effect through the Capacity Transfer and Auction Procedures.

Trade and transfer process

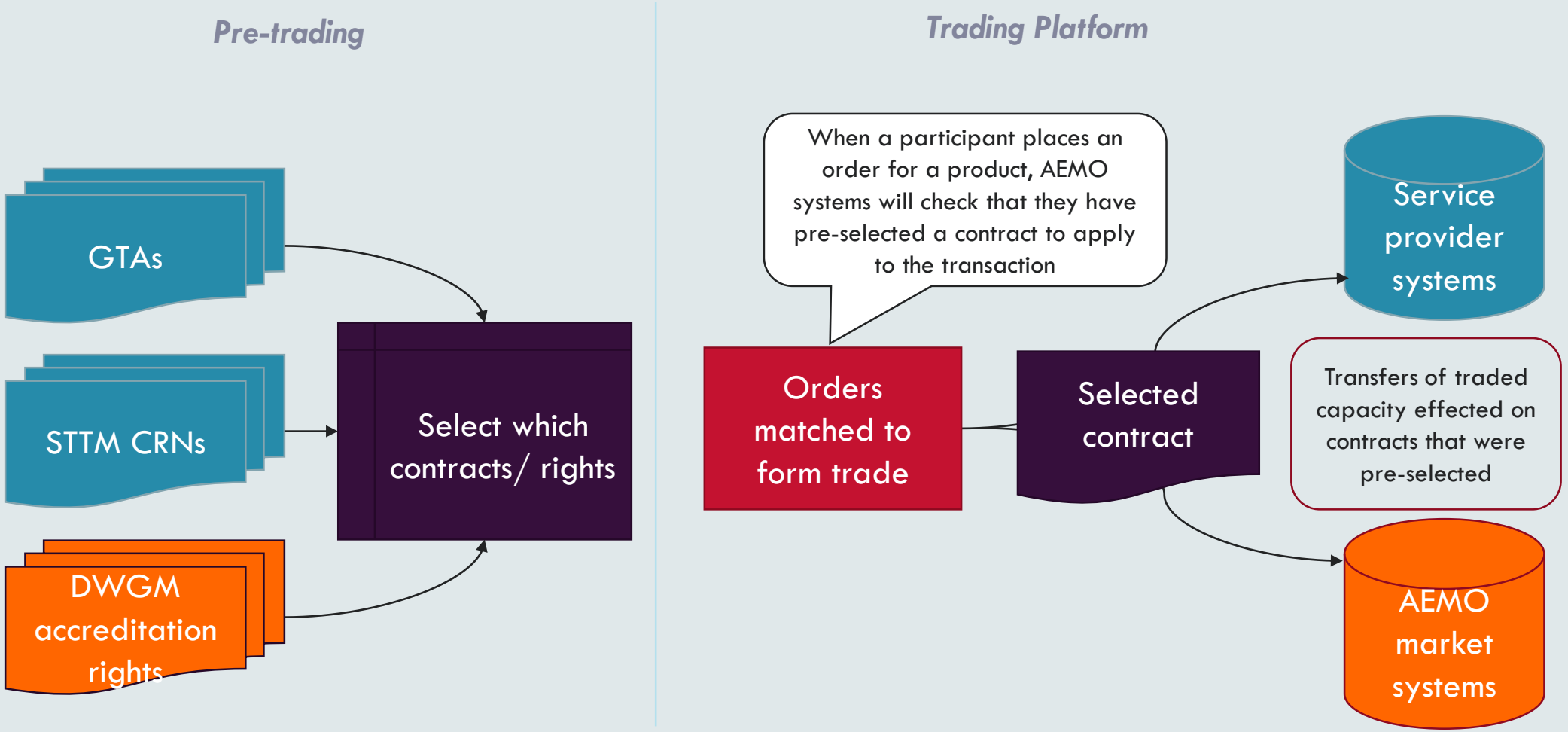


Submission of orders on the exchange:

- Trading participants will need to provide contract reference information prior to trading.
  - AEMO will validate that the trading participant has selected a valid contract reference and that they have sufficient trading margin.
- Trading participants will need to specify receipt and delivery points in their order.

Contract reference information

- In order to implement the capacity trading platform on an ***automatic*** and ***anonymous*** basis, and integrate with the other market systems, exchange participants on the CTP will need to supply ***contract references*** information to AEMO and service providers to be able to effect the capacity transfers.



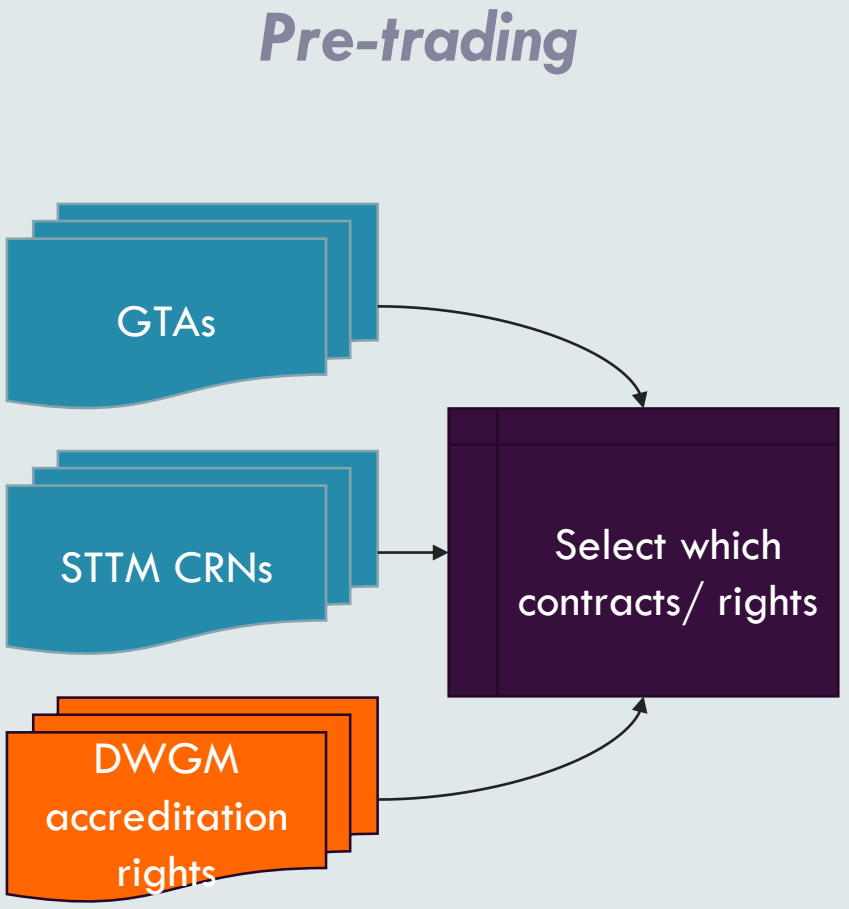
Contract reference information continued

Shippers may have more than one contract on a facility with a service provider, so the service provider needs to know which reference to adjust when a participant trades capacity.

Similarly, AEMO needs to know which rights to (automatically) adjust for STTM and DWGM.

1. Service providers will provide AEMO a list of contract reference IDs associated with each trading participant. For relevant products, these will also be associated with STTM Contract Reference Numbers.
2. Pre-trading, participants will log in to AEMO's Markets Portal and select the contract reference(s) they wish to adjust when they trade.

DWGM accreditation rights will be filled from AEMO's systems. The STTM rights that service providers provide will be validated against AEMO's systems.

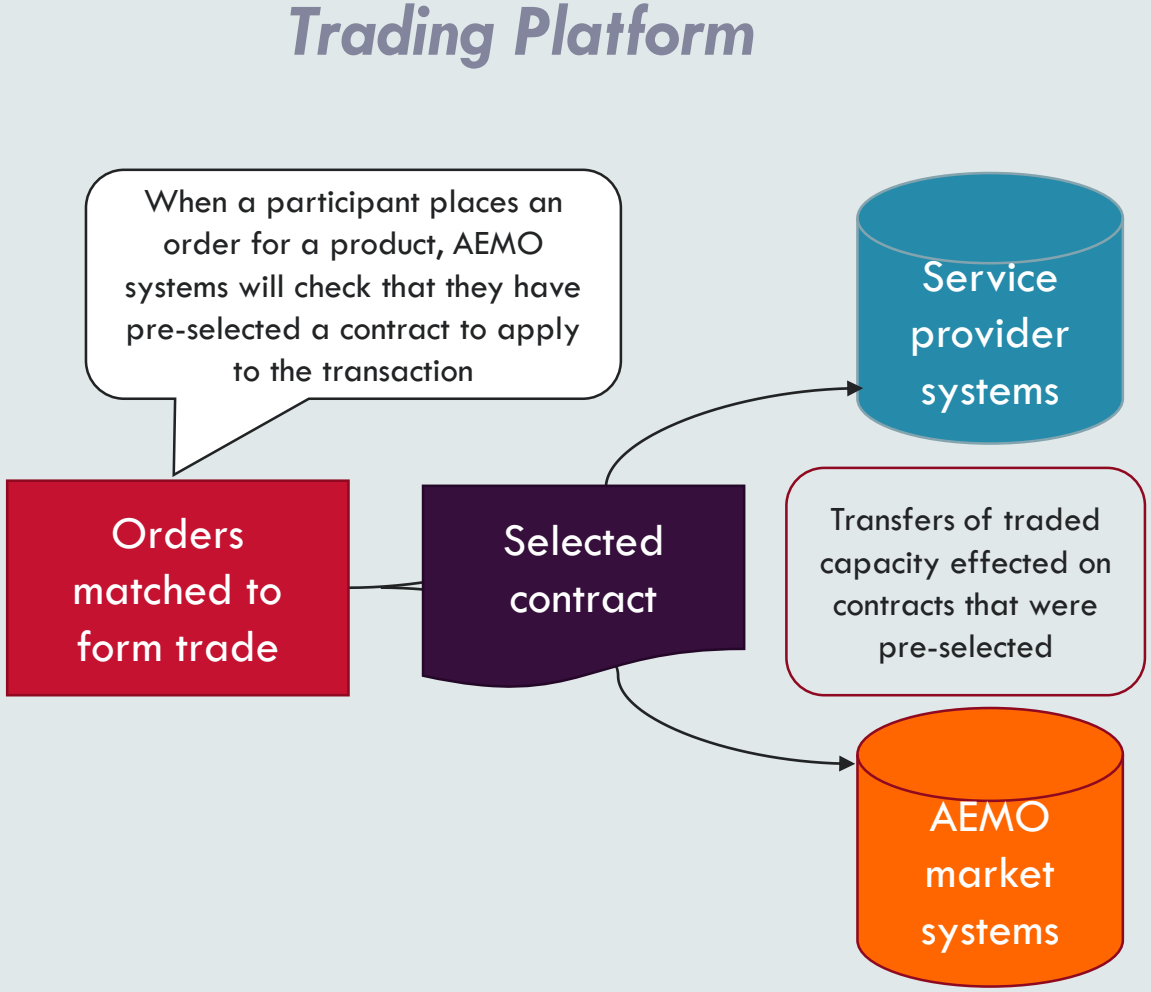


Contract reference information continued

When a participant places an order for a product, AEMO systems will check that they have pre-selected a contract to apply to the transaction on execution.

When AEMO runs the delivery netting process, the reference that participants have selected will be applied to the participant's netted position.

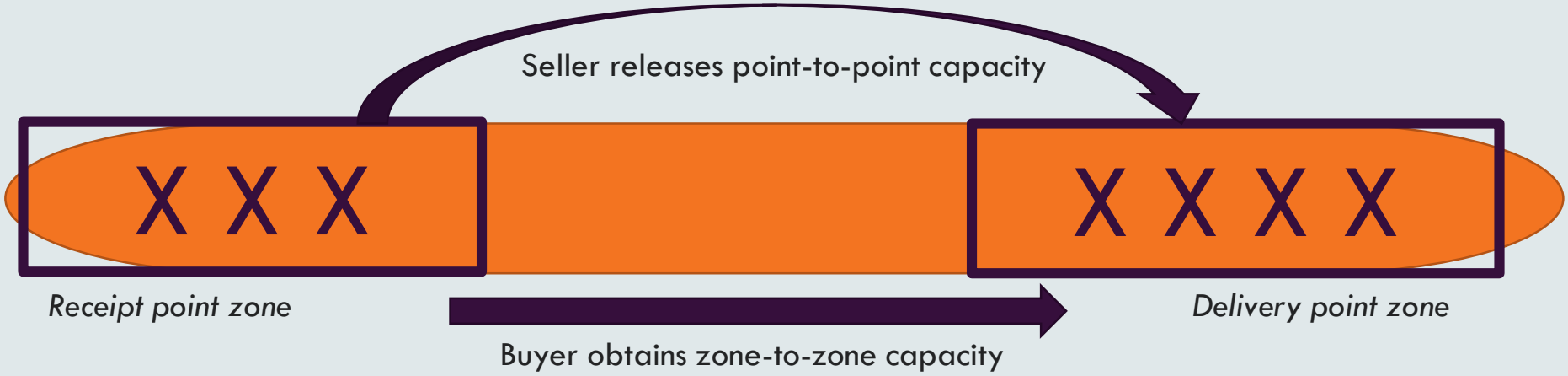
This information will be provided to service providers to execute the transfer in their system, and will be used to make adjustments in AEMO's market systems.



Receipt and delivery point information

Products traded on the exchange will be ***receipt zone to delivery zone on a facility.***

- Primary shippers tend to have rights to point-to-point capacity in their primary GTA with a pipeline operator.
- A primary shipper will place an offer on the exchange for zone-to-zone capacity, and will be releasing their point-to-point capacity.
- Buyers will bid for the zone-to-zone products, and on the day will ship between two points in the respective zones.



Service providers need to know which points to reduce the capacity on for the seller, and which points the buyer intends to use to be able to set up their facility and systems.

Receipt and delivery point information

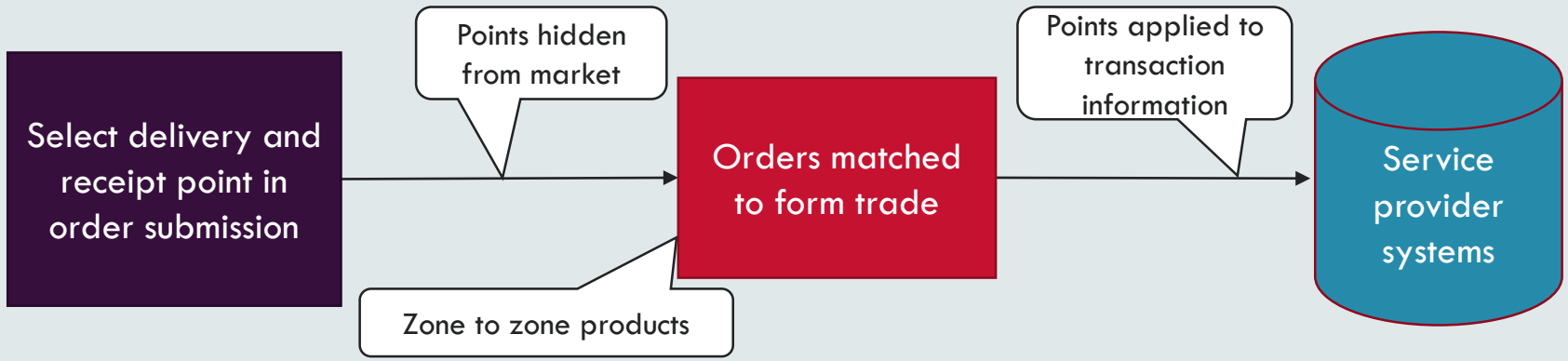
In a bid or offer (an order) for a zone-to-zone product, traders will be able to select the applicable receipt and delivery points between which:

- the seller is releasing capacity; and
- the buyer is intending to use capacity.

These will not be visible to the market because products will be traded on a zonal basis only.

On transferring the trade information to service providers, AEMO will apply the receipt and delivery point information provided in their order to the transfer request.

Service providers will complete the capacity transfers based on the receipt and delivery points provided in the order.



Order submission

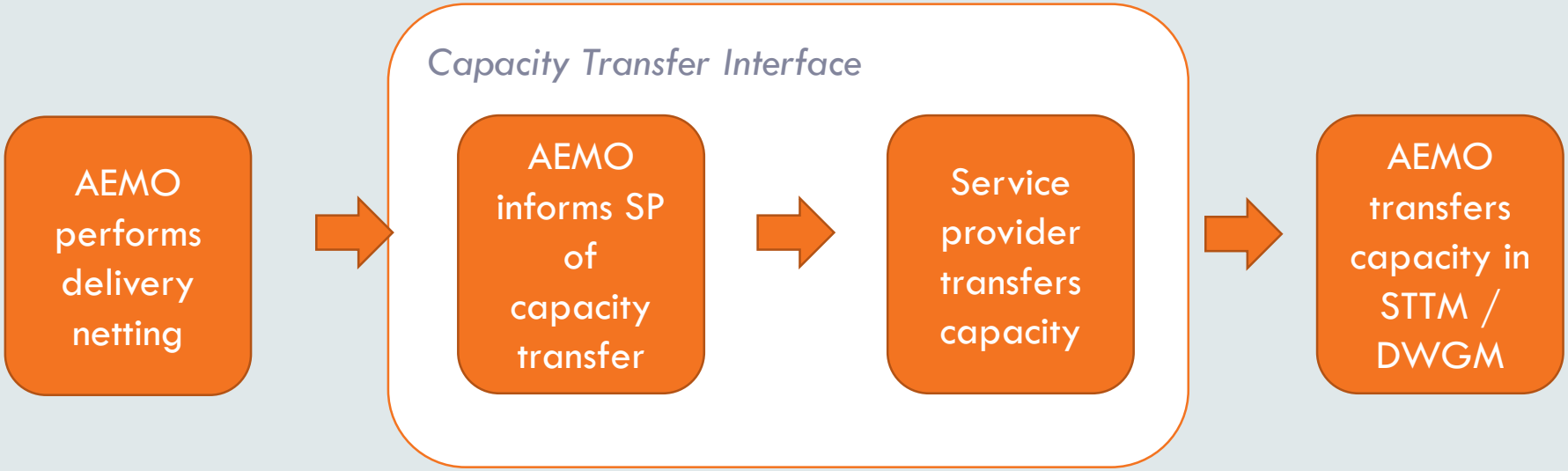
Submission of orders on the exchange:

- Trading participants will need to provide contract reference information prior to trading.
  - AEMO will validate that the trading participant has selected a valid contract reference and that they have sufficient trading margin.
- A trading participant will need to specify receipt and delivery points in their order.

The requirements for trading participants will be specified in the Exchange Agreement and Capacity Transfer and Auction Procedures.

Delivery process for capacity trades

- Delivery of capacity trades will be automatic and fully anonymous.



- AEMO will notify shipper that capacity has been transferred.
- Once capacity has been transferred the transaction has been ***delivered.***
- Shipper will make nominations directly to the pipeline operator to utilise the capacity they have procured.

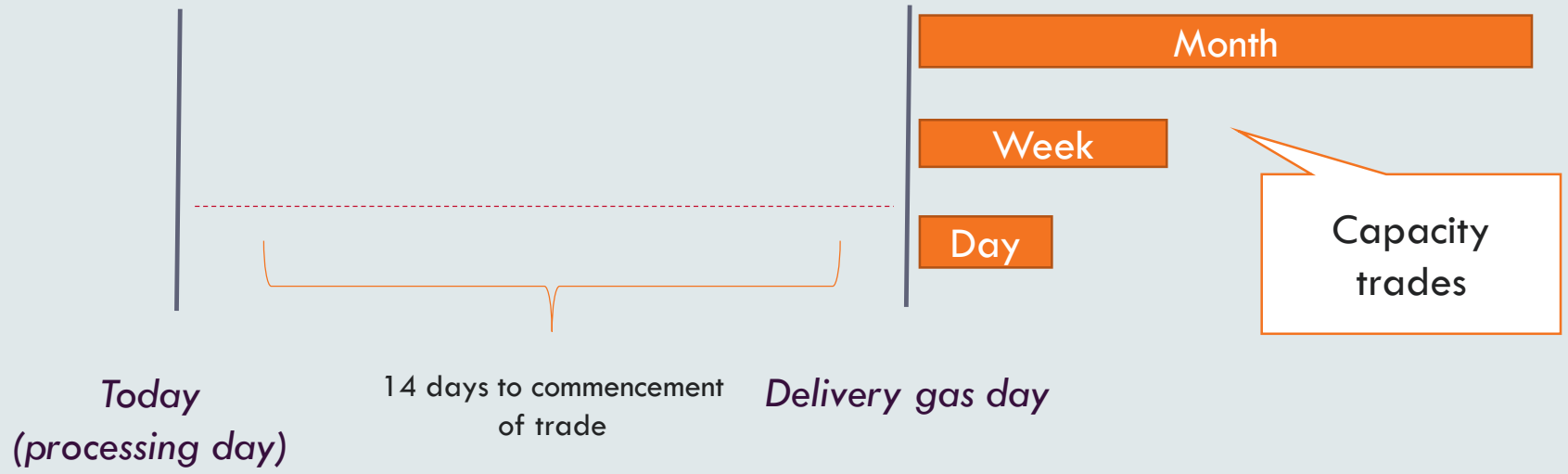
Delivery Netting

- The final recommendations outlined a proposal to carry out netting of capacity trades on a ***trading day*** basis.
  - Under this approach, the delivery netting process runs at the end of each trading day (with an additional DA process during the day) that collects trades since the previous day's netting run.

- Under the proposed legal framework, once capacity has been transferred by the service provider the trade has been delivered.
  - At this point in time the Buyer has an obligation to pay for the capacity transferred.
  - This means that the Buyer would be required to have enough collateral to cover 100% of the value of the capacity trade.

- This approach could result in relatively high levels of collateral requirements for the market. As a consequence, a ***gas day*** approach to the transfer of capacity trades has been developed.

Delivery Netting – Gas Day Approach



Under a ***gas day*** approach the netting process occurs a defined number of days prior to the 'delivery' gas day.

- 14 days has been selected to align with the period for which a transfer must stay on foot if the seller defaults on a primary GTA.

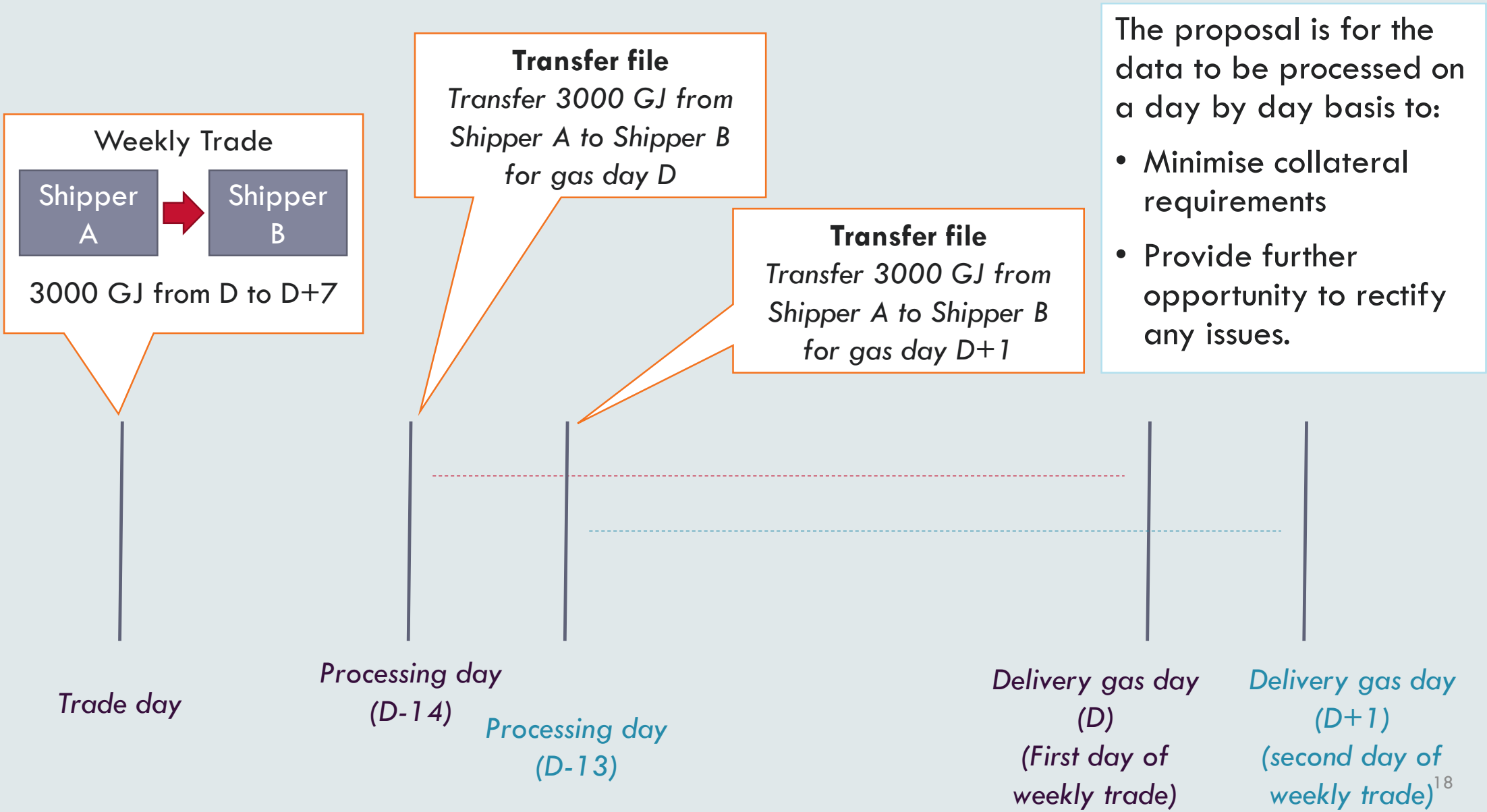
Prior to a capacity transfer:

- The default (and suspension) of a Buyer or Seller would result in the close out of transaction and payment of compensation to non-defaulting party.
- Buyer and Seller provide collateral to cover 25% of transaction value.

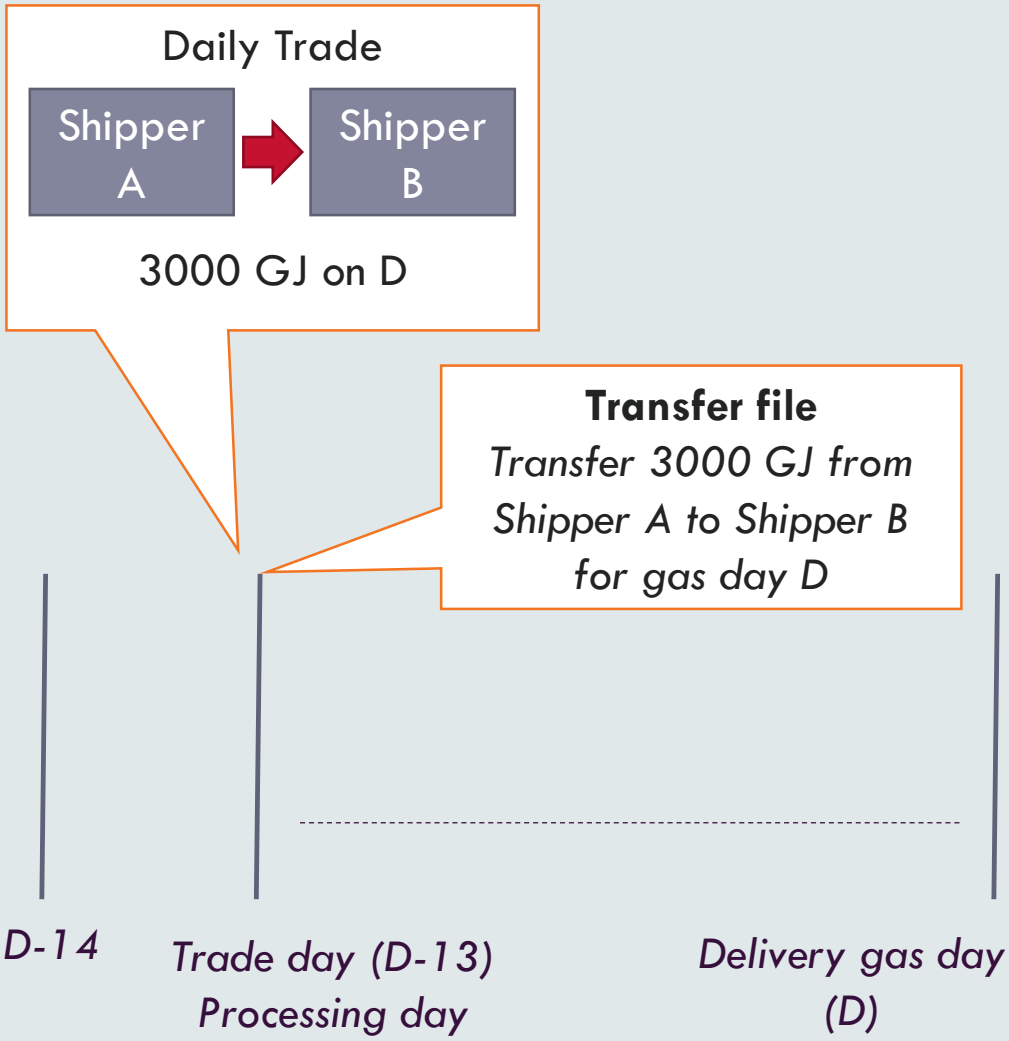
Following the transfer of capacity:

- If Buyer or Seller defaults in the market, transaction and transfer would stay on foot.
- Buyer provides collateral to cover 100% of transaction value.

Delivery Netting – Example One



Delivery Netting – Example Two



The raw data for a netting run will include all trades that are yet to be processed for gas days D-14 to gas day D.

No raw data will be incorporated into a netting run more than once.

Raw data for trades executed on or before D-14 will be processed on D-14, all trades thereafter will be processed the day they occur.

Giving effect to Delivery Netting

- The Exchange Agreement will set out the details of Delivery Netting as applicable to shippers, as per current arrangements for commodity.
- The Capacity Transfer and Auction Procedures will set out the transaction support arrangements for the transfer process between AEMO and Service Providers.

Question

- Do you have any concerns with the timing or processing of the delivery netting and transfer process?

Capacity Transfer Interface

- The capacity trading platform will operate under an automatic and fully anonymous approach to effecting capacity transfers and integrating with other facilitated markets.
- A data interchange will be established (on the GBB link) to facilitate the transfer of information between AEMO and pipeline operators.
  - Shippers do not need to know who their counterparty is (anonymous) and the transfer of capacity occurs within the pipeline operators systems without further information required from shippers (automatic).
- The capacity transfer interface will allow:
  - AEMO to send a capacity transfer request to service providers.
  - Service providers will transfer the capacity between shippers in their systems to effect the trade. Service providers will then confirm back to AEMO that the capacity transfer has been completed.

Market integration

- Following confirmation of a capacity transfer by a service provider, AEMO will make any capacity transfers required for the STTM and DWGM.
- For the trades on the Capacity Trading Platform, updates to capacity rights in the STTM and DWGM will be automated.
  - Service providers will not be required to confirm updates to capacity rights
- Updates to STTM and DWGM rights will be completed on the contract information that was provided pre-trading.

STTM

- Buyer must register contract in the STTM prior to trading.
  - If the contract is an operational service then it will initially have 0 capacity.
- AEMO automatically amends contract and trading right capacity.

DWGM

- Buyer must register accreditation right in the DWGM prior to trading.
- AEMO automatically amends accreditation rights.

Market integration will be effected through the relevant procedures.

What happens when things go wrong?

In the delivery transfer process, it is possible the following could occur:

- Service providers or AEMO identify a seller delivery fault
  - A short-sell is when the shipper does not have rights to the capacity they have sold.
  - This also covers scenarios when they do not have rights to the capacity they have sold in the contract they have nominated or at the receipt and delivery points nominated.
- Service providers or AEMO identify a buyer delivery fault
  - A buyer may cause the capacity transfer to fail if it is not appropriately set up in the systems to accept the capacity they have purchased.
  - For example, this could occur if the shipper has selected a contract reference on which they do not have the right to purchase capacity.
- There is a systems issue that impacts:
  - Service provider processing of capacity transfers.
  - AEMO processing of capacity transfers in integrated markets.
  - The interface between AEMO and Service Providers, or AEMO and shippers.

Seller fault causes transfer to fail

Recall the final recommendations set out the following approach for cases when the service provider identifies that a trader does not have rights to capacity they have sold:

- The service provider will contact the shipper and provide a brief window of time to rectify the situation (for example, nominate a different contract reference on which they do have capacity available).
- Otherwise, the service provider will reduce the amount received by all buyers for that gas day in that processing file, on a pro-rata basis.
- The service provider will confirm to AEMO the reduced amounts.
- The seller will be obliged to pay a charge (known as a delivery variance charge in the GSH settlements) with which the pro-rated buyers will be compensated. *The Final Recommendations outlined a charge equivalent to 25% of the transaction value.*

The payment obligations will be effected in the ***Settlements and Prudential Methodology associated with the Exchange Agreement***, with the details for the service provider's action contained in the ***Capacity Transfer and Auction Procedures***.

Buyer fault causes transfer to fail

When the service provider identifies that a trader does not have the ability to acquire capacity they have purchased, two possible approaches have been identified for resolution:

Under the **first option**, the transfer essentially goes ahead, but the buyer cannot made use of the capacity.

- The service provider will process the trade for the seller (reduce their capacity rights), but will not be able to process the trade for the buyer.
- The buyer will be required to pay for the capacity they have purchased in full. *Effectively a delivery variance charge of 100% of the transaction value.*
- No transfers will occur in the integrated market systems for the non-matched quantity.

Alternatively, the approach could be consistent with the approach for a seller fault:

- The buyer is accorded a brief window of time to rectify the situation.
- Otherwise, the service provider will reduce the amount released by all sellers for that gas day in that processing file, on a pro-rata basis.
- The service provider will confirm to AEMO the reduced amounts.
- The buyer will be obliged to pay a delivery variance charge with which the pro-rated sellers will be compensated. (Sellers will not be paid in full for the capacity sold which the buyer was unable to use).
- Sellers will not release the capacity and if time permits, will be able to offer to sell the capacity again.

Approach for buyer fault

The ***alternative approach*** to resolve a buyer fault keeps AEMO STTM and CTP systems consistent with each other and with service providers' systems, as well as the settlement and systems approach consistent between buyers and sellers.

Under this approach, the seller receives payment based on delivery variance, rather than the full traded amount. As such, sellers will bear the risk of buyers not having the appropriate contract arrangements in place.

This risk is low given the contract reference validation approach whereby to place a bid for capacity on the exchange, buyers will have to verify they have a contract in place, by selecting a reference from a list provided by the service provider.

Question

- Please provide your feedback on the appropriate consequences for a buyer fault.

Systems issue

For a systems issue, the general approach will be to delay all processes associated with transferring capacity purchased in the CTP by a specific amount of time (eg. one hour)

If the issue is not able to be resolved by the delayed timeframe, the trade will be cancelled – shippers will be notified, and no payments would be required (given there is 0 delivered quantity).

Triggers, delay timeframes, and associated actions will be stipulated in the Capacity Transfer and Auction Procedures.

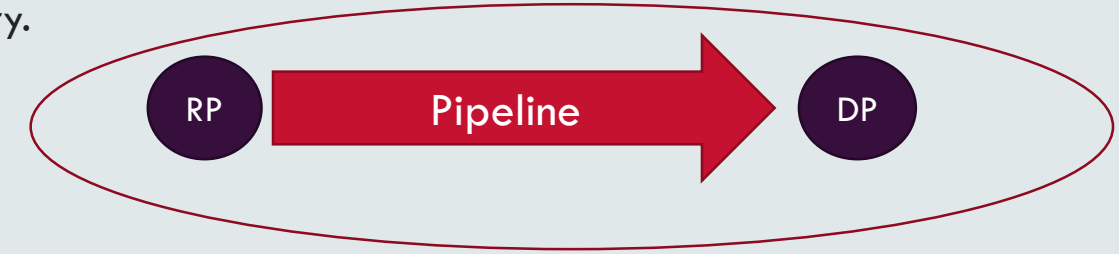
Day Ahead Auction Products

Auction products recap

The day ahead auction will facilitate forward haul, compression and backhaul products. Each product is on a single facility. Each product is between a receipt point and a delivery point

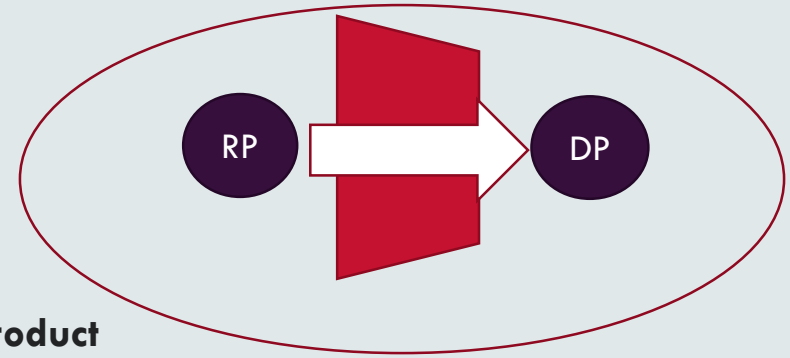
Forward Haul Product

A product for a transportation service of gas on a pipeline between a forward haul receipt point and forward haul delivery.



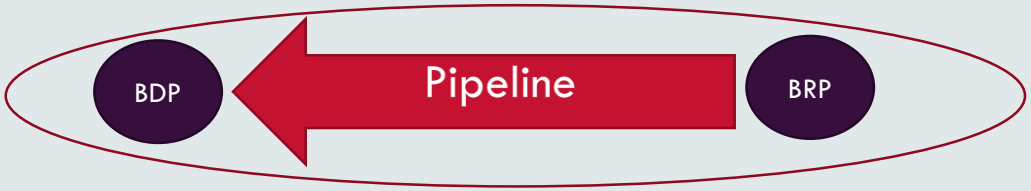
Compression Product

A product for a service to compress gas between one or more compression service points.



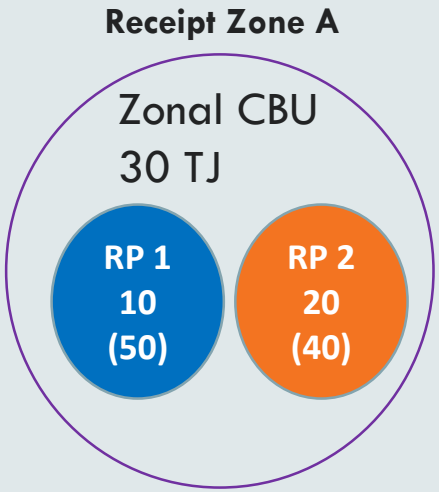
Backhaul Product

A backhaul product is for a transportation service between a backhaul receipt and backhaul delivery point



Hybrid model recap

- The GMRG is proposing a hybrid point-to-point-zonal model for forward haul and compression products on the Day Ahead Auction.
- The hybrid model that has been developed will allow auction participants to bid for any unused capacity at individual receipt or delivery points, but their ability to secure capacity at those points will, in the case of a pipeline, depend on whether there is sufficient:
  - Contracted but un-nominated (CBU) capacity available in the receipt point zone and delivery point zone they wish to use; and
  - CBU capacity on the pipeline segments connecting the receipt point zone and delivery point zone.



- *In this receipt zone there are two receipt points – RP 1 and RP 2. Note that the number in brackets refers to the spare physical capacity and the unbracketed number refers to CBU at each receipt point.*
- *The total zone CBU is 30 TJ made up from 10 TJ of CBU at RP 1 and 20 TJ of CBU at RP 2*
- *The maximum amount of capacity that could be acquired at RP 1 is 30 TJ.*
- *The maximum amount of capacity that could be acquired at RP 2 is 20 TJ, constrained by the spare physical capacity at that point.*

Auction Process

1. Bidders will bid for an auction product by specifying a receipt and a delivery point on an auction facility
    - A receipt and delivery point combination forms a product
2. Bid pre-processing: AEMO will pre-process valid bids for auction products by allocating the bid to relevant bid components
    - For example, a forward haul bid will be allocated to zones, pipeline segments, receipt points and delivery points.
3. The auction solver will take the various bid components across all bids and solve to maximise value
    - Each bid component will have a price associated with it.
4. AEMO will communicate auction results to participants and service providers
    - Auction results will be re-aggregated to a product-level with a product price and quantity provided at each valid receipt and delivery point
    - Disaggregated price and cleared quantity for each bid component will be provided in public reports

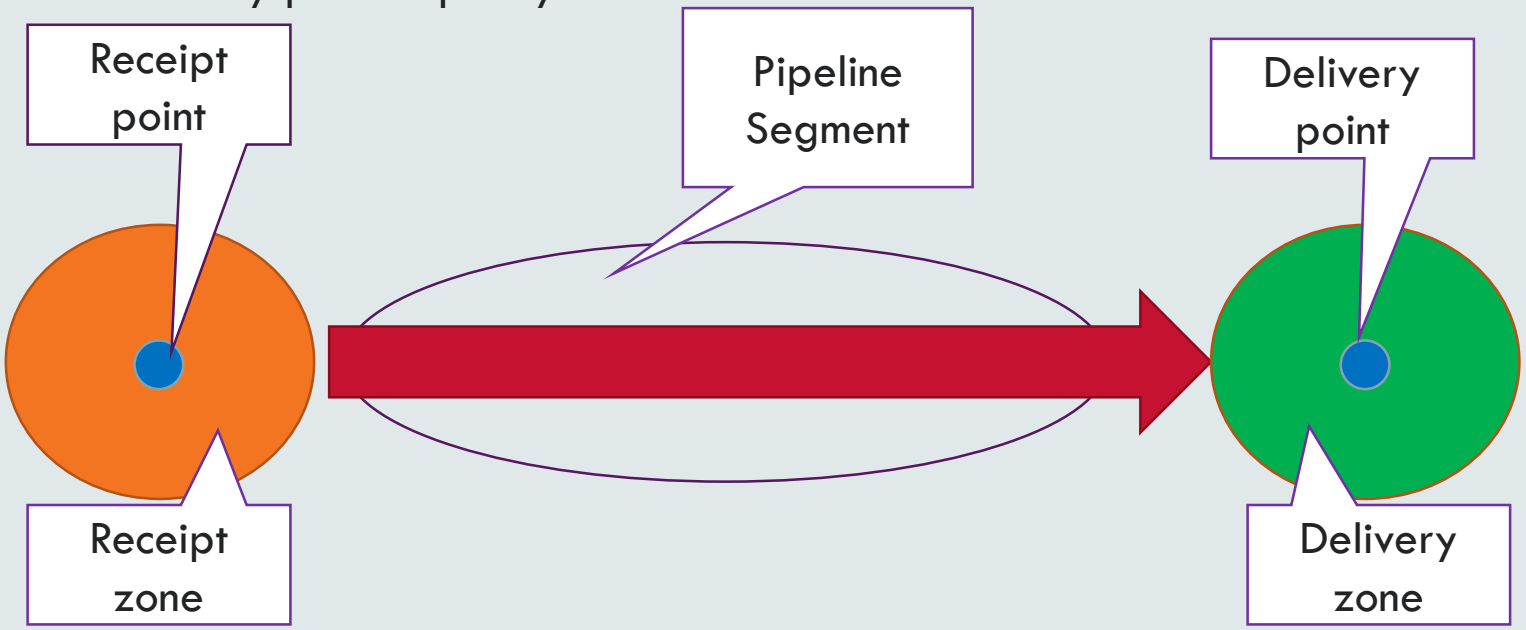
Auction product components

- Auction participants bid on a point-to-point basis – this forms an auction product.
- Each auction product contains a number of capacity components.
- The capacity of each component allocated in the auction is constrained by auction quantity limits
  - Auction quantity limits will be provided by service providers on a daily basis.

Auction Product	Components	Auction Quantity Limits
Forward haul	Receipt point capacity	Unused capacity
	Receipt zone capacity	CBU
	Pipeline segment(s)	CBU
	Delivery zone capacity	CBU
	Delivery point capacity	Unused capacity
Compression	Receipt point capacity	Unused capacity
	Compression receipt zone capacity	CBU
	Delivery point capacity	Unused capacity
	Compression delivery zone capacity	CBU
Backhaul	Backhaul receipt point capacity	Flow or unused capacity depending on type of point
	Pipeline segment(s)	Net scheduled forward haul
	Backhaul delivery point capacity	Flow or unused capacity depending on type of point

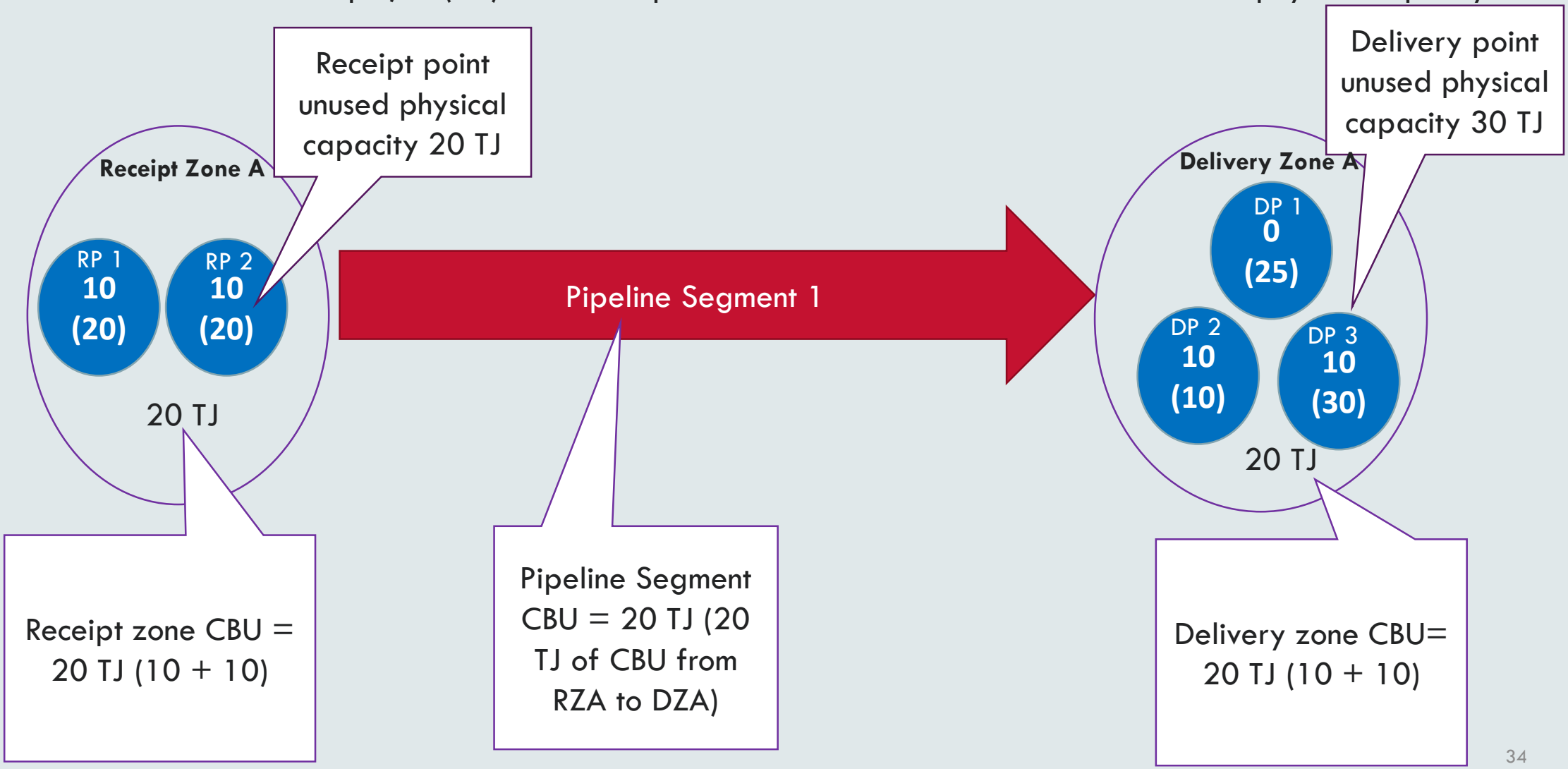
Components of a forward haul product

- A forward haul product gives the participant a right to transport gas between an applicable receipt point and delivery point.
  - The participant will bid for a receipt and delivery point pair.
  - The auction will allocate the participants bid across the various the components that make up the auction product
- Each forward haul product comprises the following components:
  - Receipt point capacity
  - Receipt zone capacity
  - Pipeline segment(s) capacity
  - Delivery zone capacity
  - Delivery point capacity



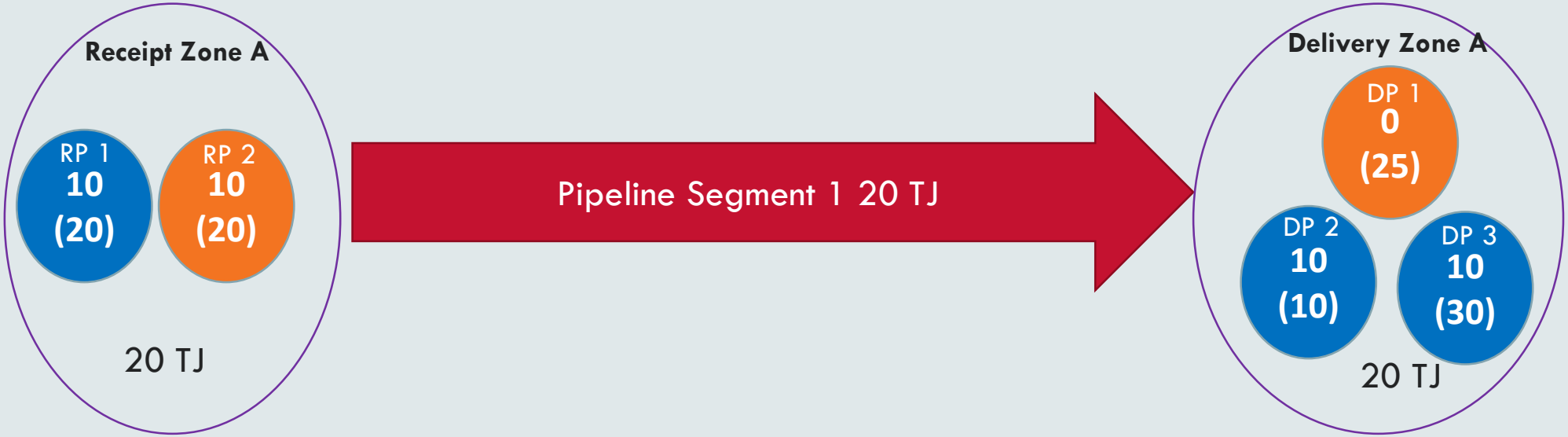
Auction quantity limits

For the receipt and delivery points the numbers in brackets refer to physical capacity the unbracketed numbers refer to CBU. For example, 10(20) means the point has 10 TJ of CBU and 20 TJ of unused physical capacity.



Forward haul product example

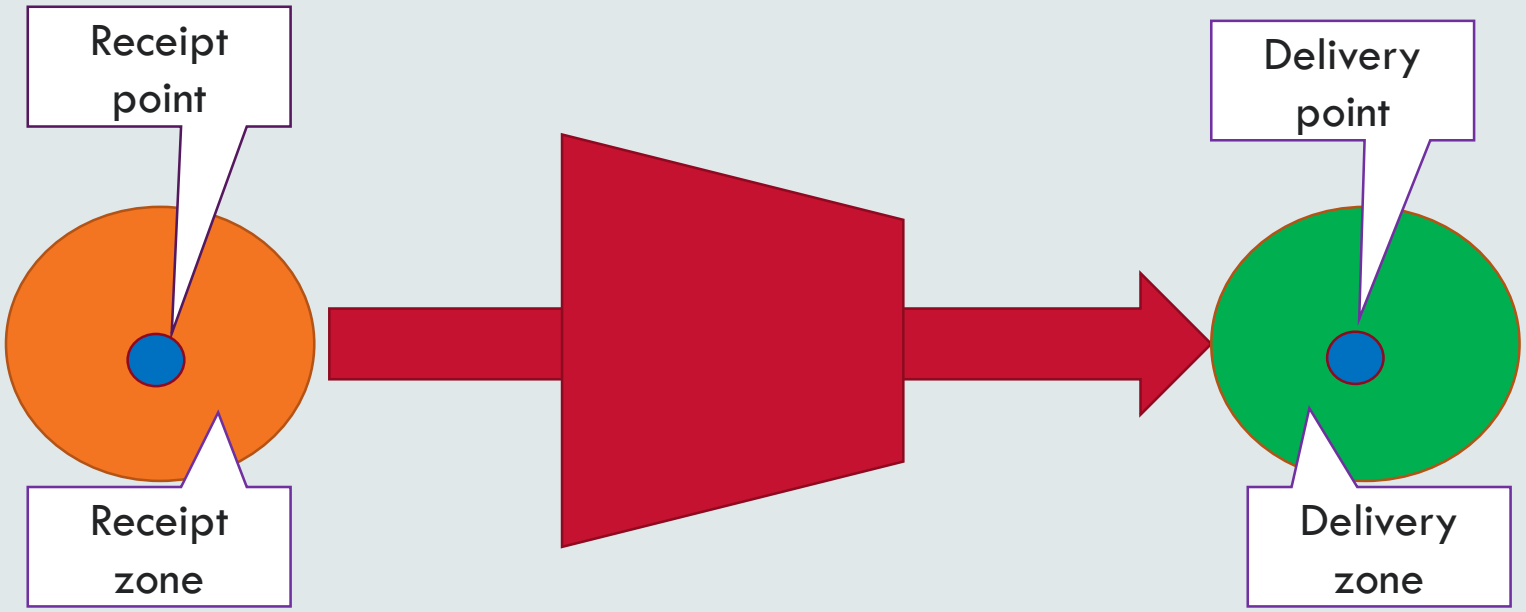
For the receipt and delivery points the numbers in brackets refer to unused physical capacity, the unbracketed numbers refer to CBU.



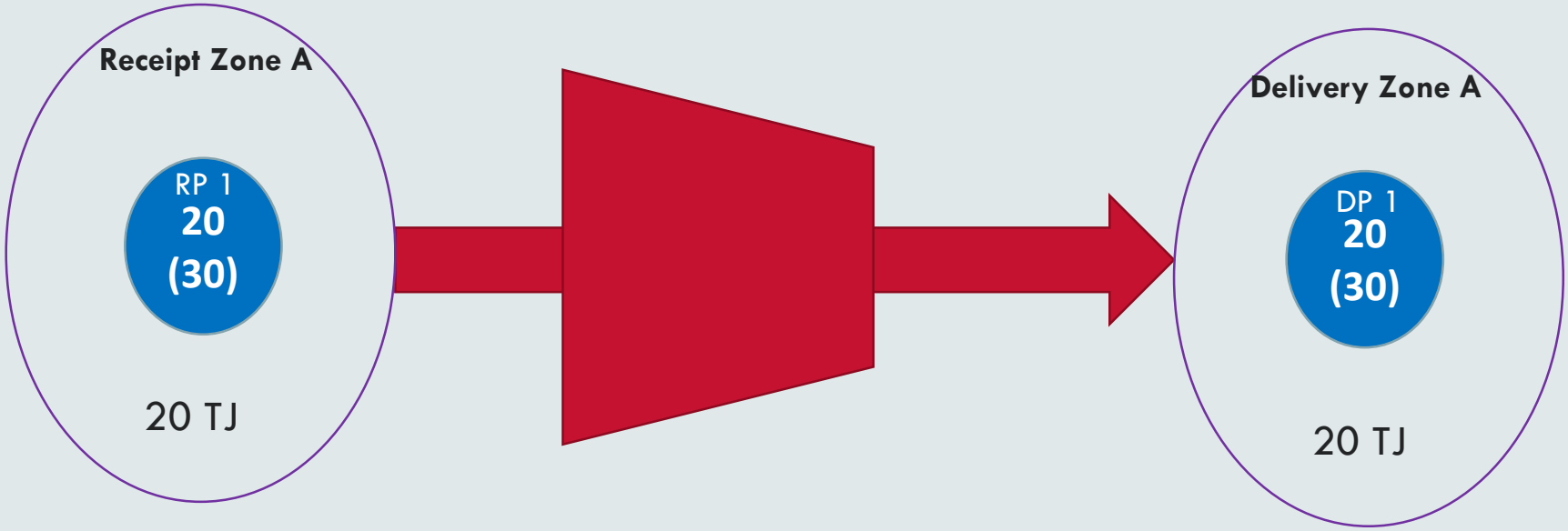
- Bidder submits a bid for **RP 2** and **DP 1** for 15 TJ
- If successful, the bidder would acquire 15 TJ of:
  - unused capacity at RP 2;
  - zonal CBU capacity in Receipt Zone A;
  - pipeline segment 1 CBU capacity;
  - zonal CBU capacity in Delivery Zone A; and
  - unused capacity at DP 1.

Components of a compression product

- Compression products will exist at Wallumbilla, Moomba, Ballera and potentially Iona.
- To acquire a compression product, an auction participant will bid for a relevant compression receipt and delivery point.
- If successful, the compression product will give the auction participant the right to have the gas compressed between the applicable receipt point and delivery point
- The compression product will comprise:
  - Receipt point unused physical capacity
  - Receipt zone CBU capacity,
  - Delivery point unused physical capacity
  - Delivery zone CBU capacity



Compression Example



- In this example, there is 20 TJ of CBU at RP 1 and DP 1 and 30 TJ of unused physical capacity at RP 1 and DP1.
- Auction participants will be able to acquire a maximum of 20 TJ of compression between RP 1 and DP 1 – constrained by the zonal CBU of 20 TJ

Backhaul recap

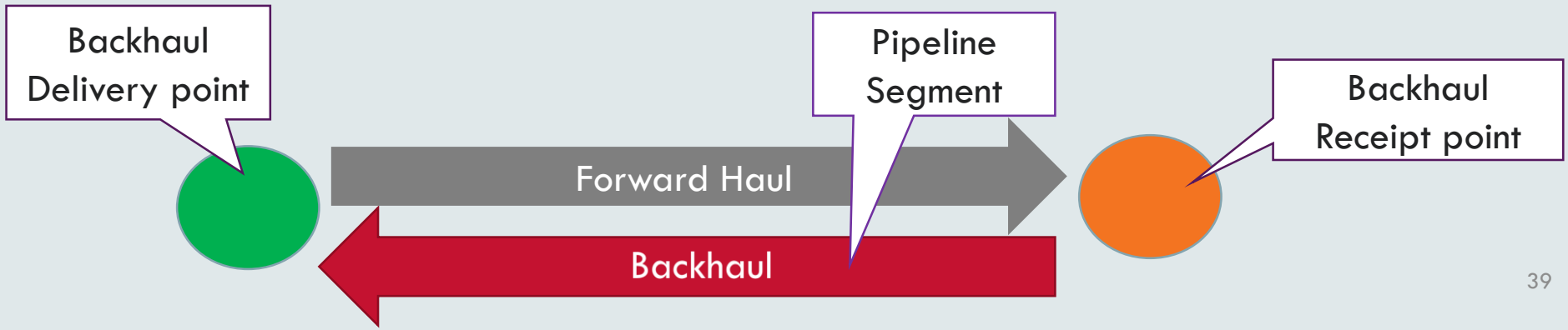
Like forward haul auction services, bids for backhaul auction services will be made on a point-to-point basis.

In contrast to the forward haul auction service, which is supplied from CBU capacity, the backhaul auction service will be allocated in a static manner against the scheduled net forward haul firm flow. If there is sufficient net forward haul flow between the points on the pipeline through which the backhaul service is to be provided and, where relevant, unused capacity at the backhaul receipt and delivery points, then the auction participant will be able to bid for the service.

Given the potential for the users of backhaul and forward haul auction services to compete for access at some points, backhaul auction services will be allocated at the same time as forward haul auction services.

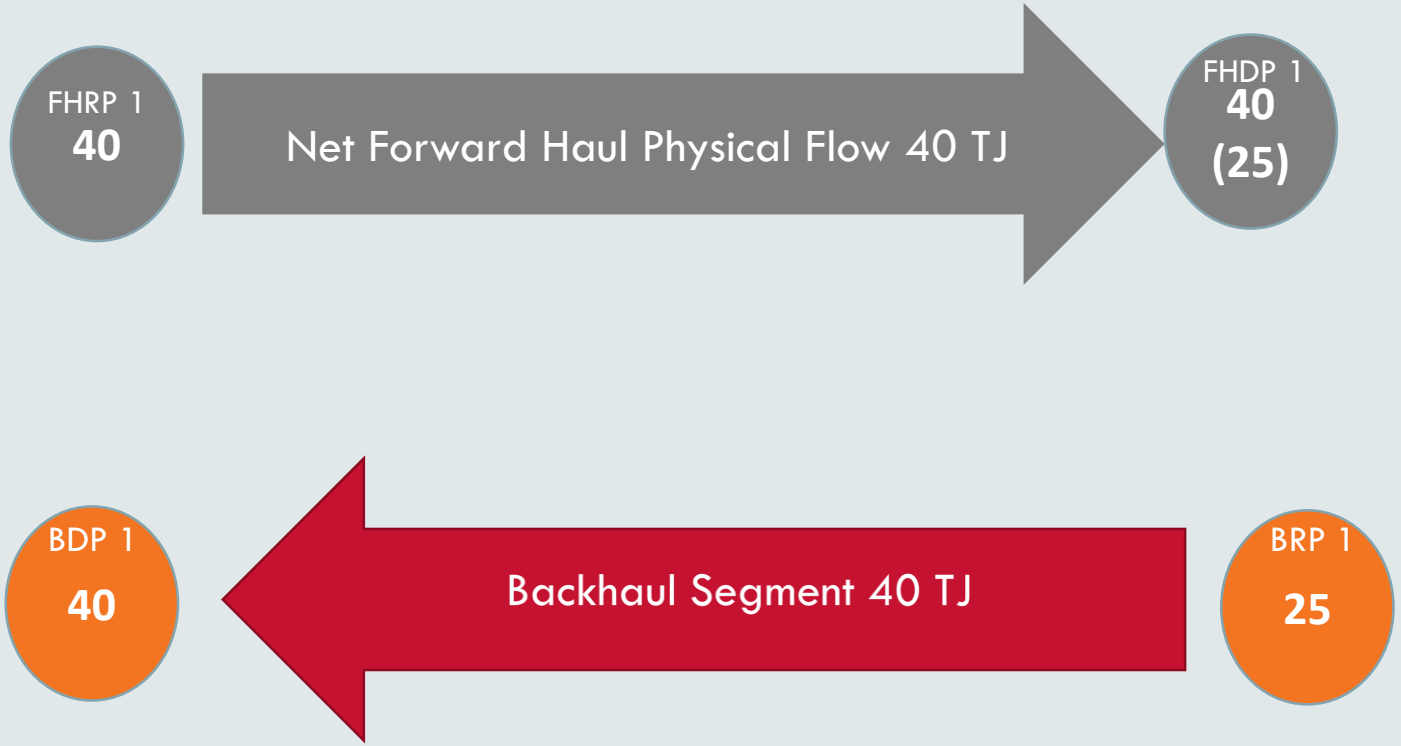
Components of a backhaul product

- A backhaul product gives the participant a right to transport gas between an applicable backhaul receipt point and backhaul delivery point.
  - The participant will bid for a receipt and delivery point pair.
  - Note that a backhaul receipt point is a forward haul delivery point and a backhaul delivery point may be a forward haul delivery point **or** forward haul delivery point where applicable
  - The auction will allocate the participants bid across the various the components that make up the auction product
  - Backhaul requires physical forward haul flow for the relevant pipeline segments and at the backhaul delivery point where it is a forward haul receipt point
- Each backhaul product comprises the following components:
  - Backhaul receipt point capacity
  - Pipeline segment capacity
  - Backhaul delivery point capacity



Backhaul product example

In this example, 40 TJs has been scheduled on a forward haul basis across the pipeline between forward haul receipt point 1 (FHRP1) and forward haul delivery point 1 (FHDP1). Note bracketed numbers refer to unused physical capacity.



In this case where the backhaul receipt point is also a forward haul receipt point, a maximum of 25 TJ can be backhauled between BRP 1 and BDP 1 (i.e. it is constrained by the amount of spare physical capacity at BRP 1 because only 25 TJ of gas can be injected at that point)

Bidding

- Auction participants will bid on a point-to-point basis e.g. for a receipt point and a delivery point
- Each receipt point and delivery point forms an auction product
- Each bid will specify:
  - A quantity
  - A price $/GJ
  - Receipt point/delivery point
- Auction participants will also be required to specify a relevant contract reference for their bids.

- *In the table below, the auction participant provides the items in red*

Bid ID	Contract Reference	Receipt Point	Delivery Point	Product	Components	Price	Quantity
1	SWQP 101	SWQP Moomba Receipt	SWQP Wallumbilla Delivery	SWQP: Moomba to Wallumbilla	• SWQP Moomba Receipt Point • SWQP Moomba Receipt Zone • SWQP Segment(s) • SWQP Wallumbilla delivery zone • SWQP Wallumbilla delivery point	$0.80 /GJ	10 TJ

Linked Products

- The auction will support the ability for participants to link multiple products in a single bid.
- Linked bids are formed by specifying multiple products (receipt and delivery point pairs) in the same bid.
- For a linked bid, a single price and quantity is specified for all products in the bid.
  - The price will be "allocated" to each component in each product in the linked bid.
  - In aggregate, the participant will not pay more than its bid across all components, so the bid price must be sufficiently high enough to win capacity in each product component
- For a linked bid the auction participant will win:
  - the bid's capacity for each included product or;
  - an equal pro-rated quantity for each product in the bid; or
  - no capacity for any product included in the linked bid

Linked Bid Example

Bid id	Contract Reference	Receipt Point	Delivery Point	Product	Components	Price	Quantity
1	SWQP #101	SWQP Wal Receipt #2	SWQP Moo Delivery Point #1	SWQP - Wallumbilla to Moomba	• SWQP Wal Receipt Point #2 • SWQP Wal Receipt Zone • SWQP Segment(s) • SWQP Moo delivery zone • SWQP Moo delivery point #1	$1.50/GJ	20 TJ
	MSP #204	MSP Moo receipt point #1	MSP-Wilton(STTM)	MSP – Moomba to Sydney STTM	• MSP Moo receipt point #1 • MSP Moo receipt zone • MSP Segment(s) • MSP STTM delivery zone • MSP Wilton delivery point		

In this example, the participant has submitted a linked bid of 20 TJ price at $1.50/GJ for capacity from Wallumbilla to the Sydney STTM