

PIPELINE CAPACITY TRADING REFORMS – SCOPING PRESENTATION TO GMRG TECHNICAL WORKING GROUP

4 April 2017

EXCHANGE-BASED CAPACITY TRADING



- List capacity products on **Trayport**, with trading, delivery and settlement rules established through the **GSH Exchange Agreement**
- Leverage AEMO systems:
 - GSH prudential framework: bids/offers validated when entered into Trayport and exposure calculated as part of the GSH framework.
 - Settlement: daily settlement, monthly billing, line item on GSH statement.
 - Reports: trade confirmations and delivery obligations as per GSH.
 - Support: Mature and reliable systems and access to Support Hub.

Integration with pipeline systems:

- Not integrated: after a trade AEMO reveals parties and both send confirmation to the relevant pipeline operator (**partially anonymous**).
- Integrated: AEMO automatically sends trade confirmations to the relevant pipeline operator; pipeline operator confirms with each counterparty separately (**fully anonymous**).

TRAYPORT



- **Trayport** is an off-the-shelf exchange platform that AEMO utilises to run the Gas Supply Hub.
- System is flexible and supports products being added and removed quickly and at low cost.
- Trading is continuous with bids and offers matched on price.

	WAL Min Price -\$100/GJ				SEQ->WAL Min Price -\$100/GJ				SEQ Min Price -\$100/GJ			
	Qty	Bid	Offer	Qty	Qty	Bid	Offer	Qty	Qty	Bid	Offer	Qty
⊕ Tue 28/03/17 Non-Netted	2,000	4.00	12.00	2,000					1,000	7.00	10.00	5,000
									2,000	4.00	12.00	2,000
⊕ DA Wed 29/03/17 Non-Netted	2,000	7.50	10.50	5,000	2,000	-2.00	2.00	2,000	5,000	4.00	12.00	2,000
	2,000	4.00	12.00	4,000								
⊖ DA Wed 29/03/17	3,000	7.50	11.75	1,000	3,000	-2.25	2.00	1,000	1,000	7.00	9.75	4,000
	2,000	4.00	13.00	1,000	2,000	-2.00	6.00	1,000	1,000	5.50	10.00	1,000
			15.01	1,000			2.00	2,000	5,000	4.50	12.00	2,000
			12.00	4,000								
⊕ Thu 30/03/17	2,000	4.00							1,000	7.00	9.65	10,000
									5,000	4.50	10.00	1,000
⊕ Fri 31/03/17	2,000	4.00										
⊕ Sat 01/04/17	2,000	4.00	12.00	2,000								
⊕ Wk 02/04 - 08/04	2,000	2.00	14.00	2,000								
⊕ Wk 09/04 - 15/04												
⊕ Mth 01/04/17 - 30/04/17												
⊕ Mth 01/05/17 - 31/05/17												
⊕ Mth 01/06/17 - 30/06/17												

Capacity products would likely be added to the Service Products tab

Different products and terms can be implemented based on industry needs

LEGAL FRAMEWORK: GSH EXCHANGE AGREEMENT



- The Exchange Agreement is given effect by the NGL and NGR.
- **Gas Trading Exchange** is defined in the NGL to mean: “a facility through which persons may elect to buy and sell natural gas or related goods or services, including pipeline capacity”.
- Benefits of the GSH Exchange Agreement:
 - **Existing multi-lateral contract** – a single agreement that most shippers are already signatories to that creates a relationship with all other participants.
 - **Fungible contract** – framework allows terms of pipeline capacity product to be standardised.
 - **Provides a standardised “building block”** – which allows participants to structure trading strategies within an approved framework.
- Three month process to change Exchange Agreement based on participant feedback with proposals assessed against the NGO.

Exchange-based capacity trading would leverage existing GSH prudential and settlement systems

Settlement

- AEMO calculates settlement amounts and issues statements to participants on a monthly basis.
- AEMO collects funds from buyers and makes payments to sellers.

Credit risk

- Participants post collateral to cover potential settlement exposure.
- Prudential exposure for gas and capacity transactions would be aggregated together → some participants may have sufficient collateral to cover their aggregate exposure, while others may have offsetting exposures that result in a reduction in collateral requirements.
- Real-time prudential assessments: every time a buy order is submitted the estimated impact on a participant's Trading Margin is assessed.

- A **number of options** exist to integrate exchange-based capacity trading into pipeline operator's systems and AEMO's market systems.
- A high level of integration will make trading more seamless, but result in greater one-off system costs for AEMO and pipeline operators during implementation → a **trade-off** required to be considered by this group.
- Key **integration elements** include:
 1. Whether the pipeline operator receives notification of a trade from the shippers (partially anonymous solution) or from AEMO (fully anonymous solution);
 2. STTM trading rights; and
 3. DWGM accreditation at injection point.
- Integration of the STTM and DWGM has not been costed as part of this proposal → there are a number of options for the group to consider and these will depend on the mechanism used to give effect to trades (e.g. operational transfer vs locational swap).

Assumptions:

- Capacity products listed on Trayport under the GSH Exchange Agreement governance framework.
- No law or rule changes required to implement.
- Capacity products developed as part of GMRG process.
- Costs of integration with STTM and DWGM not included at this stage.
- Costs of training, guides and EA changes not included at this stage.
- EBT and DAA implemented concurrently to capture synergies.

Cost and time estimates:

- AEMO costs – **fully anonymous**: \$120,000 - \$140,000
- AEMO costs – **partially anonymous**: \$90,000 - \$110,000
- AEMO implementation timeframe: ~6 months after completion of the final design (inline with the six-monthly EMMS release cycle).

DAY-AHEAD AUCTION



SUMMARY OF OUR PROPOSED APPROACH



- AEMO could facilitate the running of a Day Ahead Capacity Auction by leveraging a number of existing systems.
 - **Auction Algorithm** – the Inter-regional settlements residue auction (SRA) could be augmented to facilitate a capacity auction.
 - **Auction Platform and Interface** – Existing AEMO web-interface and file-exchange for SRA auctions could be re-used to deliver an interface for MP's to submit bids and offers.
 - **Reports and Information** – Gas and electricity market participants already are familiar with AEMO's data model and subscribe to receive files and reports. AEMO would seek to push out any new reports for the auction via the EMMS file server and data interchange.
 - **Settlements and Prudentials** – a settlement and prudentials framework and systems would be included, leveraging experience in other AEMO operated markets.
 - **Support** – Auction system would run on existing NEM infrastructure which have a high level of reliability and support.

Welcome to the Electricity Market Management System (EMMS) Web Portal

To suggest corrections to the EMMS Web Portal, or to request business or technical support, please contact AEMO's Support Hub:
telephone - 1300 236 600 (1300 AEMO 00), e-mail - supporthub@aemo.com.au

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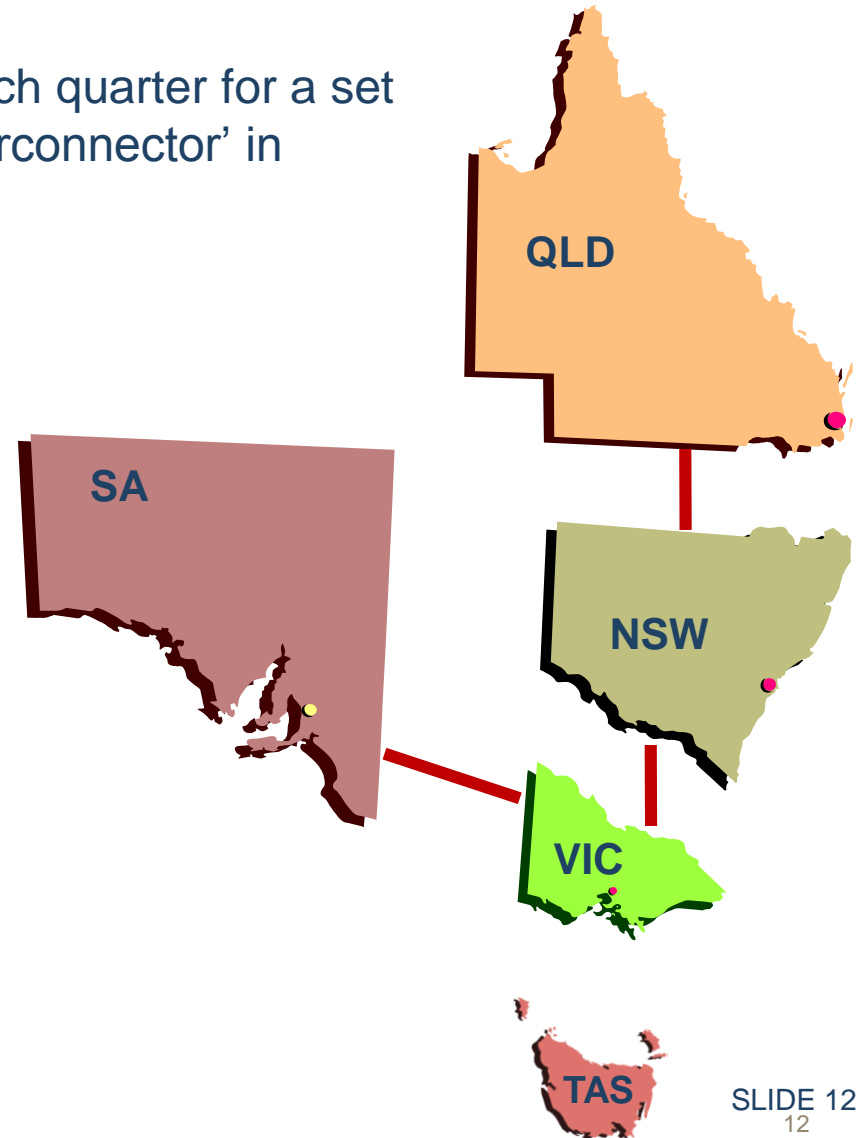
- The auction platform would be an additional tab on the EMMS web portal where participants already access to a number of market systems.
- Leveraging existing AEMO systems reduces implementation costs and timeframes.

OVERVIEW OF SRA AUCTIONS

- Settlement Residue Auctions are run each quarter for a set number of units for each 'directional interconnector' in tranches over 3 years

QLDNSW	NSWQLD
NSWVIC	VICNSW
VICSA	SAVIC

- Bids in the auction are made electronically via AEMO systems
- Bids can be linked across interconnectors (combinatorial) and relevant quarters
- Linear program clears bids to set a price and maximise auction revenue



LEVERAGING THE SRA PROCESS FOR CAPACITY AUCTIONS



- Based on initial analysis, AEMO considers the auction algorithm used for SRAs could be used to facilitate a capacity auction.
- Pipelines are similar to interconnectors in that they are legs between two points and are directional:

Interconnectors	Pipelines
VIC→SA	WAL → MOO (SWQP west)
SA→VIC	MOO → WAL (SWQP east)

- An auction could be established for each transport leg on the pipeline.
- Linked bids would be permitted to facilitate combinatorial auctions (if required), this is already a feature of SRAs.
 - For example: this would enable a participant to bid for capacity from Wallumbilla to Moomba and Moomba to Sydney.
 - The linked bid could be structured as all-or-none to prevent the participant from only acquiring one of the multiple legs it needs and having stranded capacity.
 - Auction is capable of determining a clearing price using a combination of single and linked bids.

- The results from the day ahead capacity auctions will need to be integrated with market and pipeline systems.
- For pipelines auction results could be treated as nominations and feed in directly or as a purchase of capacity, with the purchaser making its own nomination.
 - While a methodology for determining the quantity of capacity to be auctioned needs to be developed, from a system perspective this should just be another input into the auction system.
- Changes could also be made to the DWGM and STTM systems to integrate auction results
 - At this stage, we have not included this integration in our estimate at this stage
- A more integrated solution will be more convenient for participants but may cost more to develop and implement
- For the purpose of this exercise we have assumed that auction results will not be fully integrated with pipeline systems → assessment of integration costs could be made after options are discussed by this group.

Assumptions:

- Single day-ahead auction between key points/zones on the east coast.
- Utilise GSA settlements, invoicing, prudentials and registration framework.
- Bid/offer system adapted from SRA solution.
- Utilising existing SRA solver.
- No integration of auction results with nominations.
- Costs of training, guides and auction procedures not included at this stage.
- EBT and DAA implemented concurrently to capture synergies.

Cost and time estimates:

- AEMO costs: \$350,000 - \$450,000
- AEMO implementation timeframe: ~12 months after completion of the final design (inline with the six-monthly EMMS release cycle).