
Pipeline Capacity Trading: Overview

November 2018

An overview of the principles and processes of pipeline capacity trading



Important notices

AMENDMENTS

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APPLICATION

The pipeline capacity trading reforms described in this guide do not take effect until corresponding changes to National Gas Law and National Gas Regulations are adopted and the supporting market systems and processes are available.

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VERSION CONTROL

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Abbreviations

Abbreviation	Term
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AEST	Australian Eastern Standard Time
AQL	auction quantity limit
BB	Natural Gas Services Bulletin Board
CBU	contracted but unnominated
CTAP	Capacity Transfer and Auction Procedures
CTP	Capacity Trading Platform
DAA	Day-ahead Auction
DTS	Declared Transmission System
DWGM	Declared Wholesale Gas Market
Energy Council	Council of Australian Governments Energy Council
FO	facility operator
GMRG	Gas Market Reform Group
GSH	Gas Supply Hub
MHQ	maximum hourly quantity
MSV	market schedule variation
NGL	National Gas Law
NGR	National Gas Rules
OTSA	Operational Transportation Service Agreement
STTM	Short Term Trading Market

1. Introduction

On 29 June 2018, the Council of Australian Governments Energy Council (Energy Council) agreed to implement the legal and regulatory framework required to give effect to the capacity trading reform package as recommended by the Australian Energy Market Commission (AEMC) as part of its Eastern Australian Wholesale Gas Market and Pipelines Framework Review¹.

The reforms apply to the operators of transmission pipelines and compression facilities operating under the contract carriage model² (collectively referred to as “transportation services”). The objective of the reforms is to encourage and facilitate trading of unutilised capacity on non-exempt transportation facilities. This is achieved by providing shippers with an incentive to trade spare capacity on a secondary capacity market (the Capacity Trading Platform or CTP). If a shipper fails to sell any spare capacity prior to the nomination cut-off time, then its contracted but un-nominated (CBU) capacity is then offered to other participants in an auction conducted a day ahead of the gas day (the Day-ahead Auction or DAA). In contrast to trades conducted by shippers prior to nomination cut-off time, the proceeds from the auction are retained by the service provider, which incentivises shippers to sell their spare capacity ahead of nomination cut-off time.

The CTP, which forms part of the Gas Supply Hub (GSH), provides exchange-based trading of standardised products, including firm forward haul services, firm park services, and firm compression services on stand-alone compressors, and a listing service for more bespoke products. Whereas the DAA allows shippers to procure forward haul transportation services (with separate products offered in both directions on bidirectional pipelines), backhaul services on single direction pipelines that AEMO has specified backhaul service points, and stand-alone compression services. From a scheduling, curtailment and renomination perspective, the auction services ranks below firm transportation services and the renomination rights held by firm capacity holders³ but above lower tier services, such as as-available and interruptible services.

Other measures in the reform package, designed to improve the fungibility of transportation services and thereby facilitate secondary trading and the auction, include:

- Operational transportation service agreements (OTSA) that standardise contract terms between facility operators and shippers for capacity procured through the CTP and DAA.
- A harmonised market timetable that establishes a common gas day start time of 6 am AEST across the east coast⁴, a common nomination cut-off time of 3 pm AEST, and a common auction service nomination cut-off time of 6:45 pm AEST.
- A reporting framework for secondary capacity trades and a number of other market transparency measures, including information relating to allocation agreements.

Together, these reforms are expected⁵ to foster the development of a more liquid secondary capacity market and, in so doing, improve the efficiency with which capacity is allocated and used. These aims are achieved by:

- providing market-based processes to allocate capacity on a non-discriminatory basis,
- increasing incentives for shippers to trade capacity,
- encouraging efficient pricing and allocation of secondary capacity,
- reducing transaction costs through standardisation, and

¹ <https://www.aemc.gov.au/markets-reviews-advice/east-coast-wholesale-gas-market-and-pipeline-frame>

² Excludes the Declared Transmission System (DTS), which operates under the market carriage model.

³ For a transitional period of up to two years, certain as-available and overrun services that were procured prior to 19 March 2018 and are used to supply gas to a gas-fired generator will be treated as “transitional firm services” and rank ahead of the auction.

⁴ And the Northern Territory once connected to the east coast.

⁵ <http://gmrq.coagenergycouncil.gov.au/work-streams/capacity-trading-reform>

- increasing visibility of capacity transaction data.

The Energy Council has stipulated that both the CTP and DAA markets are required to go live at the beginning of March 2019 and timetables are required to be harmonised by the beginning of October 2019.

2. Framework

2.1 Consultation

The Energy Council established the Gas Market Reform Group (GMRG) to lead the design, development and implementation of the capacity trading reform package. The GMRG undertook a public consultation on the legal and regulatory framework required to implement the capacity trading reform package, including amendments required to National Gas Law (NGL), the Regulations made under the NGL, and the National Gas Rules (NGR), and development of a new regulatory instrument, the Operational Transportation Service Code.

Following an extensive consultation process, the GMRG provided its final recommendations to the Energy Council⁶ to:

- adopt the measures required to facilitate capacity trading;
- accord the Australian Energy Market Operator (AEMO) responsibility for operating the CTP and DAA; and
- adopt the proposed design of the CTP and the DAA, the reporting framework for secondary trades, and a standard market timetable.

2.2 Legal, regulatory and procedural framework

The required amendments to the National Gas Law (NGL), Regulations, National Gas Rules (NGR) and related agreements, codes and procedures required to give effect to the reform package are outlined in Figure 1.

Once implemented, amendments to the NGR become the responsibility of the Australian Energy Market Commission (AEMC) in accordance with the rule change procedures defined in the NGL. Compliance with the rules and relevant instruments will be monitored and enforced by the Australian Energy Regulator (AER). The AER will also be responsible for amending the Operational Transportation Services (OTS) Code.

AEMO is responsible for making and administering the market procedures and other subordinate instruments, as required by the NGR, including Capacity Transfer and Auction Procedures (CTAP), Auction Agreements, the Exchange Agreement, and amendments, as required, to Declared Wholesale Gas Market (DWGM), Short-Term Trading Market (STTM) and Bulletin Board (BB) procedures. The process by which AEMO makes and amends the market procedures is set out in the NGR.

⁶ *Final Recommendations on the Operation and Administration of the Transportation Capacity Trading Platform and Day-Ahead Action*, June 2017. GMRG; *Final Recommendations on the Capacity Trading Reform Package (Standardisation, capacity trading platform and reporting framework for secondary trades)*, November 2017. GMRG; *Final Recommendations on the Design of the Day-Ahead Auction of Contracted but Un-Nominated Capacity*, GMRG December 2017.

Figure 1 Legal, regulatory and procedural framework of capacity trading reforms

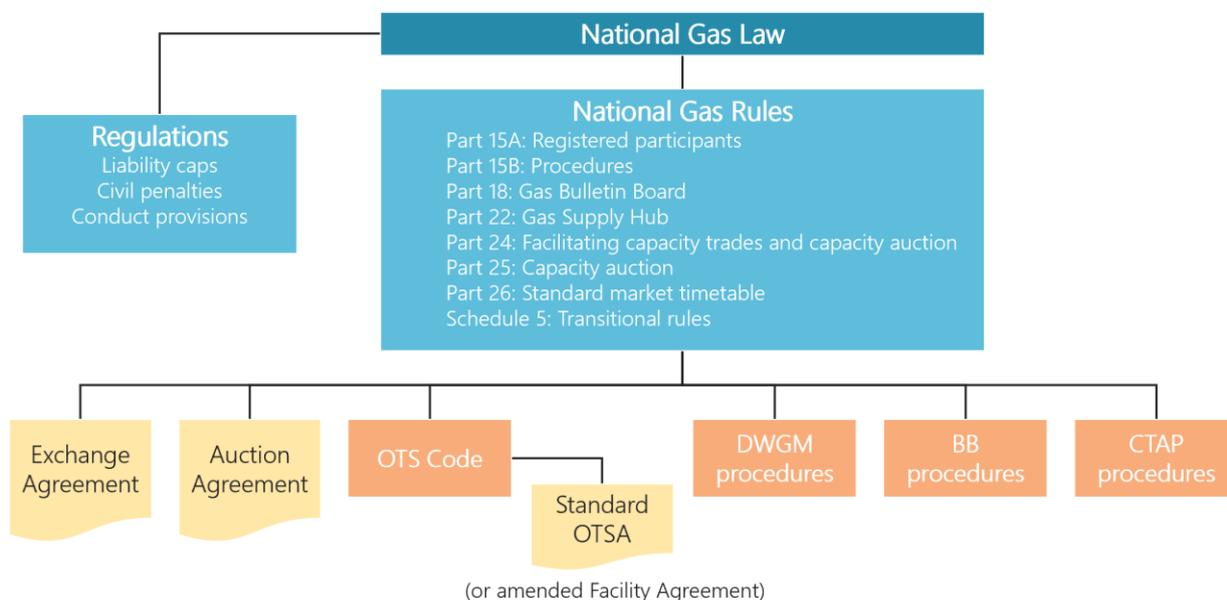


Table 1 Governance responsibilities for pipeline capacity trading

Instrument	Administration	Compliance
National Gas Law (NGL) and Regulations	COAG Energy Council	AER
National Gas Rules (NGR)	AEMC	AER
Operational Transportation Services (OTS) Code	Industry panel chaired by AEMO ^a	AER
GSH Exchange agreements	AEMO	AER
Capacity transfer and auction procedures (CTAP) and auction agreements	AEMO	AER
Procedures (DWGM, STTM, BB and retail)	AEMO	AER

a. Panel assesses proposed changes to the code and provides recommendations to the AER. The AER may confirm, amend or reject the panel's recommendations.

2.3 New or amended instruments

NGL

Changes to the NGL were required to establish the legal framework for the capacity trading reform package; to set out the new functions and powers of AEMO and the AER; to allow AEMO to make the CTAP, and to specify additional obligations of transportation service providers, facility operators and other market participants, and .

Regulations

Changes to the Regulations were required to specify the NGL and NGR provisions for civil penalty or conduct provisions and extend the operation of the liability caps to the new arrangements in the NGL.

NGR

Additions to the NGR were required to give effect to the standardisation related reforms and a number of other measures to facilitate secondary capacity trading and the DAA; to set out the rules pertaining to the DAA; to define harmonisation cut-off times; and to set out transitional arrangements.

Changes to the NGR were also required to set out the scope of the CTAP, to give effect to aspects of the secondary capacity reporting framework and a number of other transparency measures, to give effect to some of the proposed features of the CTP, and to set out how AEMO recovers its costs.

Operational Transportation Service Code

The OTS Code is a new instrument that governs the content of standard operational transportation service agreements (OTSA). The code contains descriptions of each standard OTS, the standard terms and conditions for the provision and use of a standard OTS, requirements for facility-specific terms, and a form of agreement for execution by the parties.

GSH Exchange Agreement

GSH Exchange Agreement outlines the terms for trading physical gas and services through the GSH. The CTP is implemented through the GSH and, as such, amendments to the Exchange Agreement were required to incorporate the capacity products into the existing trading arrangements. Amendments included registration, capacity product specification, delivery arrangements, prudential requirements, and settlement of capacity trades.

Capacity Trading and Auction Procedures (CTAP)

New procedures were needed for the operation of the CTP and DAA, setting out the processes by which AEMO operates the CTP and DAA and interacts with facility operators, shippers and other market participants.

Auction Agreement

This new agreement between AEMO and auction participants sets out the terms for participation in the DAA, and must be executed by auction participants before they can participate in an auction.

Other procedures

Changes were also required to existing AEMO procedures (DWGM, STTM, BB) consequent to the changes in the rules and regulations.

2.4 Coverage

The reform package applies to non-exempted facilities in the Australian Capital Territory (ACT), New South Wales (NSW), Queensland, South Australia, Tasmania and Victoria outside the Declared Transmission System. With the exception of the DAA, the reforms will also apply in the Northern Territory⁷.

Exemptions

Full exemptions⁸ are automatically available to distribution pipelines, transportation facilities that form part of the DTS, compression facilities that are not designated in the Regulations or are not stand-alone facilities, and, on application to the AER, facilities that do not provide third-party access. Operators of facilities that service a single shipper or have a nameplate rating of under 10 TJ per day may also apply to the AER for conditional exemption⁹.

⁷ Subject to commissioning the Northern Gas Pipeline (NGP), which is expected late 2018.

⁸ Excluding the secondary capacity transaction reporting framework.

⁹ Conditional exemption refers to facilities being exempt only from the obligation to publish a standard OTSA but not the obligation to prepare and offer to enter into a standard OTSA nor other measures in the reform package.

3. Capacity transfer

3.1 Capacity trading and transfer process

The reforms enable shippers to procure available capacity on non-exempt transportation facilities on either¹⁰ the Capacity Trading Platform (CTP) or the Day-ahead Auction (DAA). Figure 2 gives an overview of these mechanisms, and Figure 3 shows the contractual arrangements that shippers need to have in place with AEMO and facility operators to trade and transfer capacity.

Figure 2 Overview of the capacity trading and transfer process

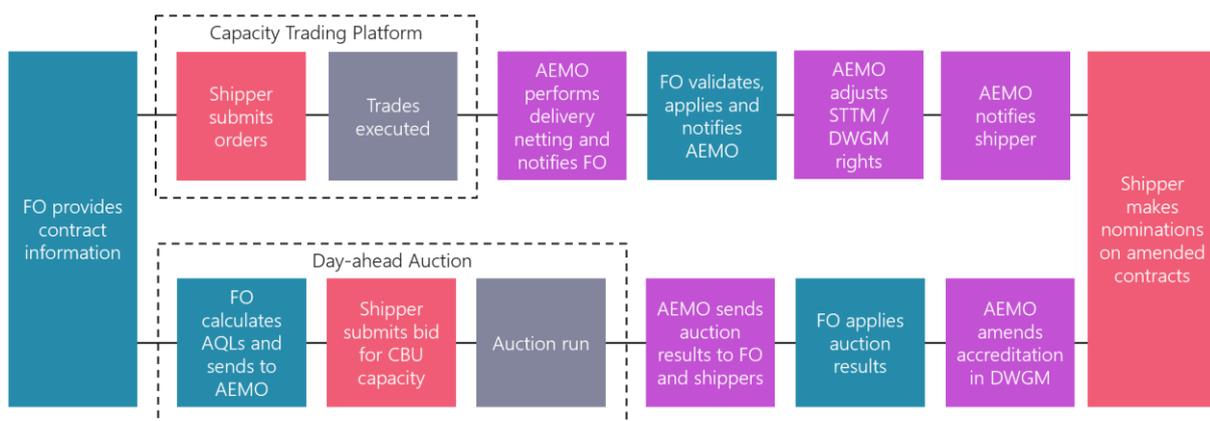
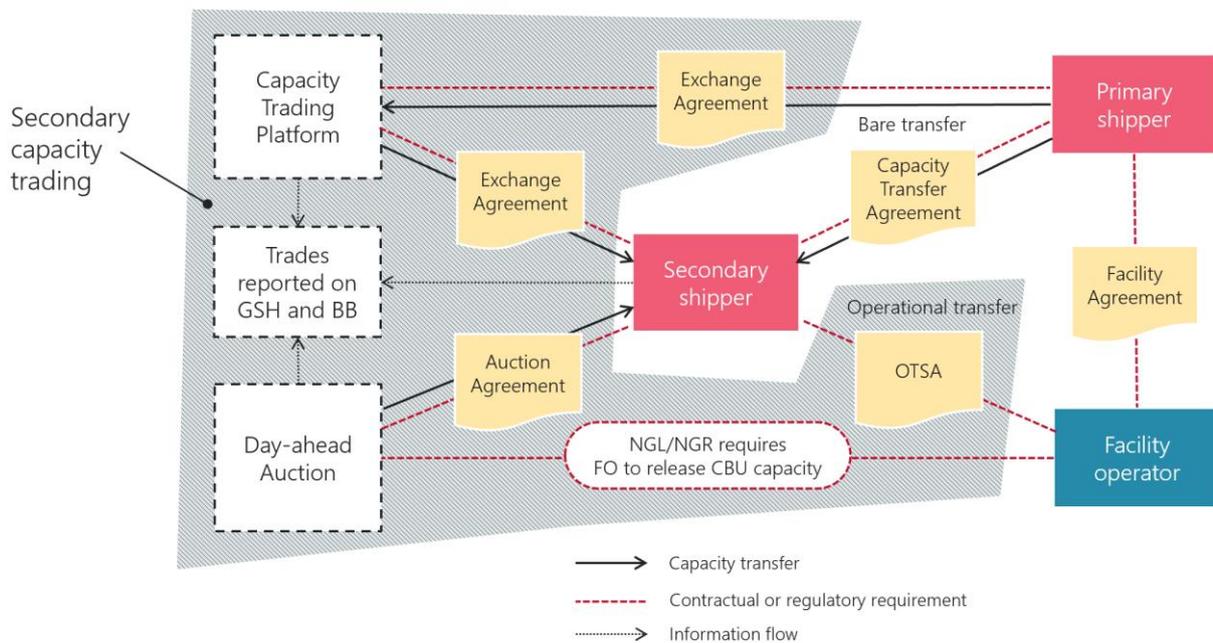


Figure 3 Contractual arrangements for secondary capacity trading and transfer



¹⁰ Shippers may use other means to identify potential counterparties and enter into bilateral trades.

3.2 Zones, service points and segments

Service points, zones and pipeline segments play an important role in defining products in both the CTP and the DAA. Under the legal and regulatory framework, AEMO is responsible for:

- Maintaining and publishing a register (Transportation Service Point Register) of the service points, pipeline segments and zones on each of the transportation facilities covered by the capacity trading reform package, including facilities that are commissioned after the reforms take effect or later become subject to the reforms.
- Determining the backhaul service points between which backhaul auction services are available in the DAA on single direction pipelines (or parts of pipelines).
- Determining the allocation of service points to the zones used for both the CTP and DAA.
- Determining the forward haul pipeline segments (i.e. the part of a pipeline between pipeline zones) and, where relevant, the backhaul pipeline segments used in the DAA.

The operators of non-exempt transportation facilities are required to provide AEMO (and keep up to date) a specification of all pipeline, compression, park and backhaul service points. Where a notional point is used in place of a physical point, the Transportation Service Point Register specifies the physical points that are represented by the notional point.

AEMO publishes information provided by facility operators on the transfer of capacity between service points in a zone, which may assist shippers with gaining a better understanding of the deliverability risks associated with each zone.

To ensure that the receipt and delivery point zones can adapt to changes in the market or the operational or technical characteristics of the transportation facility, facility operators and any other person (including AEMO) may propose a change to the zones.

3.3 Transfers at STTM and DWGM interface points

Capacity procured on the CTP for an STTM interface point

If a shipper procures capacity through the CTP and wants to participate in the STTM in Adelaide, Brisbane or Sydney, then it may be able to participate in the ex ante schedule if the trade is conducted before the close of trade on D-2. Otherwise, shippers can use market schedule variations (MSVs) to manage their market position.

STTM participants can trade their registered contracts (Registered Facility Service) on the CTP. Where a participant has a new operational transportation service (OTS) on an STTM facility, they can register this service as a Registered Facility Service in the STTM with an initial capacity of zero. When the facility operator transfers capacity purchased on the CTP, AEMO automatically increases the participant's nominated trading right to reflect the capacity transfer and reduces the seller's nominated trading right by the equivalent quantity.

Capacity procured on the DAA for an STTM interface point

The DAA runs after the publication of the STTM ex ante schedule. So participants who purchase capacity at an STTM point through the DAA need to manage any changes to their ex ante STTM position through nominations and renominations to the relevant facility operator and MSVs to manage their market position.

Capacity procured on the CTP for an DWGM interface point

The CTP and DAA provide products for delivery and receipt points at the boundary of the DTS. Unlike the STTM, trading rights are not required to access the DTS. Instead, participants need to be accredited at the relevant points that they intend to use for bidding in the DWGM prior to trading. A participant may use an OTS at a DWGM interface point to apply for accreditation.

Bid constraints can be applied to a participant's accreditation right to reflect their ability to respond to scheduling instructions from AEMO e.g. contractual limitations. Participants who have an operational transportation service at a DTS interface point can apply to AEMO for accreditation at the relevant interface point. Participants can also trade using their existing accreditation rights. A participant must have its rights accredited prior to trading a DTS CTP product or purchasing capacity via the DAA at a DTS point.

When a capacity transfer at a DTS transfer point is confirmed, AEMO automatically adjusts the participant's maximum hourly flow (MHQ) constraint against its nominated accreditation right to reflect the capacity transfer. Accreditation adjustments are made to reflect capacity acquired either through the DAA or CTP. Note that capacity released by a firm shipper into the DAA will not result in adjustment to that participant's accreditation as they still retain their firm rights to that capacity.

If the DWGM participant has an accredited controllable quantity at the DWGM interface point, then their accreditation will be adjusted by AEMO in accordance with their capacity trades as validated by the facility operator.

4. Market operation

4.1 Participation

Transportation Service Provider

Under the NGL, a Transportation Service Provider (TSP) owns, operates, or controls a transportation facility. The TSP must register the facility and the facility operator unless exempted from doing so. If the facility has only one TSP, they must register the facility and as the facility operator. If more than one person owns, operates or controls a service, they must jointly appoint a responsible TSP, who must register the facility and as facility operator for the facility.

Facility operator

The facility operator is responsible for all data exchanges with AEMO and is the entity that receives payments from AEMO for auctioned capacity. Their responsibilities include providing and updating AEMO with details of service points and contract details for shippers and agents who are registered to trade capacity or participate in an auction. AEMO updates the market systems with this information, enabling trading participants and auction participants to select which contracts are to be adjusted when entering an order or bid.

Capacity trading participant

Existing GSH trading participants are automatically registered for the CTP. A new category of GSH trading participant is restricted to trading capacity products only.

Auction participant

To participate in the DAA, a trading participant must register as an auction participant by entering into an Auction Agreement with AEMO.

Agent participant

Both the Exchange Agreement and the Auction Agreement allow an agent to be appointed jointly (such as an unincorporated joint venture) or individually (such as under a corporate group). Appointing members are jointly and severally liable for the acts of the agent. AEMO manages the relationship between appointing and agent participants. The agent trades capacity for contracts held by the appointing participants.

4.2 Market timetable

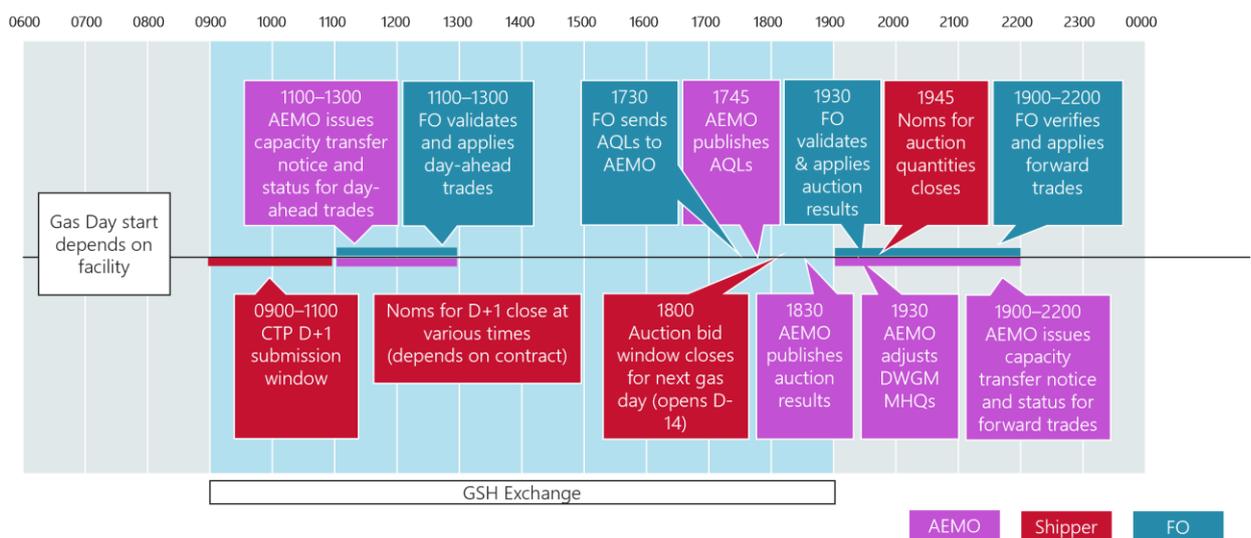
Currently, facilities in the eastern states and the NT operate on separate timetables. Gas days in NSW-ACT, Tasmania and South Australia start at 0630 hrs AEST, in Queensland at 0800, and in the Northern Territory at 0830. Similarly, nomination cut-off times also vary across eastern Australia.

The harmonised market timetable will take effect on 1 October 2019. This will establish a common gas day start time of 0600 hrs AEST across the east coast and the Northern Territory, a common nomination cut-off time of 1500 hrs, and a common auction service nomination cut-off time of 1845 hrs.

Table 2 Transitional and harmonised timetables for capacity trading

Transitional (AEST)	Harmonised (AEST) effective 1 October 2019	Description	Market
Various	0600	Gas Day start (depends on facility)	
0900	0900	GSH Exchange open	CTP
1100	1230	Day-ahead product close	CTP
1100–1300	1230–1430	Capacity transfer of day-ahead trades	CTP
Various	1500	Nomination cut-off time for Gas Day (depends on contract)	DAA
17.30	16.30	Facility operators provide AEMO with AQLs	DAA
17.45 (not later than)	16.45 (not later than)	AEMO publishes AQLs	DAA
18.00	17.00	Bids close for the next day's auction	DAA
18.30 (not later than)	17.30 (not later than)	AEMO determines and publishes auction results	DAA
19.30 (not later than)	18.30 (not later than)	Facility operators validate and give effect to auction results	DAA
19.30	18.30	AEMO makes any adjustments to DWGM quantities	DAA
19.45	18.45	Nomination cut-off time for auction quantities	DAA
1900	1900	GSH Exchange close	CTP
1930–2200	1930–2200	Capacity transfer of forward-traded products (daily, weekly, monthly)	CTP

Figure 4 Transitional market timetable for capacity trading



4.3 Capacity Trading Platform

The CTP is operated by AEMO and forms part of the GSH. The CTP provides exchange-based trading of commonly traded transportation products and a listing service for more bespoke products and imbalance trades. The CTP has the following features:

- Trading of standardised products
- Day-ahead and forward daily, weekly and monthly product timescales (“tenors”)
- Forward haul, compression and park capacity products
- Anonymous trading
- Trades are integrated with pipeline systems to automate transfers of capacity
- Settlement and prudentials centrally managed by AEMO through the GSH

Products

The initial set of products to be sold on the exchange include:

- Firm forward haul services on transmission pipelines (with services offered in both directions if the pipeline is bi-directional)
- Firm compression services on the Wallumbilla, Moomba, Ballera, Iona and other non-exempt stand-alone compression facilities
- Firm park (storage) services on those pipelines that offer this service

These products have a minimum contract size of 500 GJ per day and are available as day-ahead, daily (6-day rolling), weekly (4-week rolling); and monthly products (3-month rolling).

The terms and conditions on which the buyer can use these products are set out in the relevant TSP’s standard OTSA.

Firm forward haul and compression products

To maximise the pool of prospective buyers and sellers of firm forward haul and compression products, these products are sold on the exchange using a zonal model (Figure 5), such that:

- Shippers with firm forward haul or compression capacity can sell their point-to-point capacity on a zone-to-zone basis.
- Secondary shippers can acquire the firm forward haul and/or compression capacity on a zone-to-zone basis and have secondary firm rights¹¹ at each receipt and delivery point in the relevant zone.

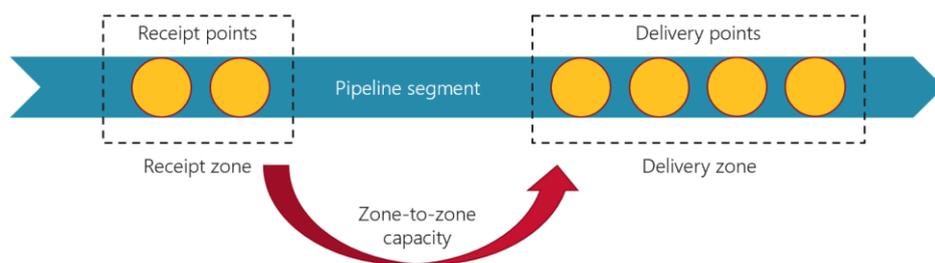
When a firm forward haul or compression product is traded (or when the capacity is transferred by the facility operator), the seller notifies AEMO of the pipeline or compression receipt and delivery points it intends to release its capacity from, the buyer notifies AEMO of the pipeline or compression receipt and delivery points it intends to use in the relevant zones, and AEMO then notifies the facility operator.¹²

The receipt and delivery points that a buyer can use in each zone, which may be physical or notional points, are specified in the Transportation Service Point Register.

¹¹ Secondary shippers can use any receipt or delivery point within a zone but their rights are subordinate to primary shippers with firm rights at those points.

¹² If a secondary shipper procures capacity through the CTP or DAA and wants to use a multi-user receipt or delivery point, it may need to become a party to an allocation agreement at that point. This agreement sets out the rules the allocation agent is required to use to allocate gas between shippers at the receipt or delivery point.

Figure 5 Zonal model for firm forward haul and compression capacity sold in the CTP



Firm park products

In contrast to firm forward haul and compression products, park products are sold at a single physical or notional point on the pipeline (park service point). Like the park products sold by pipeline operators, the exchange traded park product only entitles buyers to store gas on the pipeline. To use this product, a buyer will also need to have access to a transportation service that enables it to:

- supply gas into the pipeline and transport it to the park service point, and
- transport the gas from the park service point to the final delivery point.

This transportation service may be procured through the CTP or DAA, or if the buyer has an existing transportation service on the pipeline, then it may be able to use this service.

Trading and transfer process

The steps involved in the CTP trading and transfer process are illustrated in Figure 6 and further described in Table 3. Trades are conducted by either:

- entering bids or offers on standardised products, which are automatically matched through the exchange, or
- entering bilateral (pre-matched) trades in listed products for settlement through the exchange.

Bids and offers made through the exchange are fully anonymous (i.e. the names of counterparties are not revealed before or after the transaction), with AEMO informing the facility operator of the trade and the facility operator then confirming and giving effect to the trade.

Day ahead products are transferred in the middle of the day (see timetable in Table 2), in time for shippers to make nominations before the cut off time. Forward-traded products (that is, not day-ahead) are transferred at the end of the day, following closure of the GSH.

Figure 6 Capacity trading and transfer process

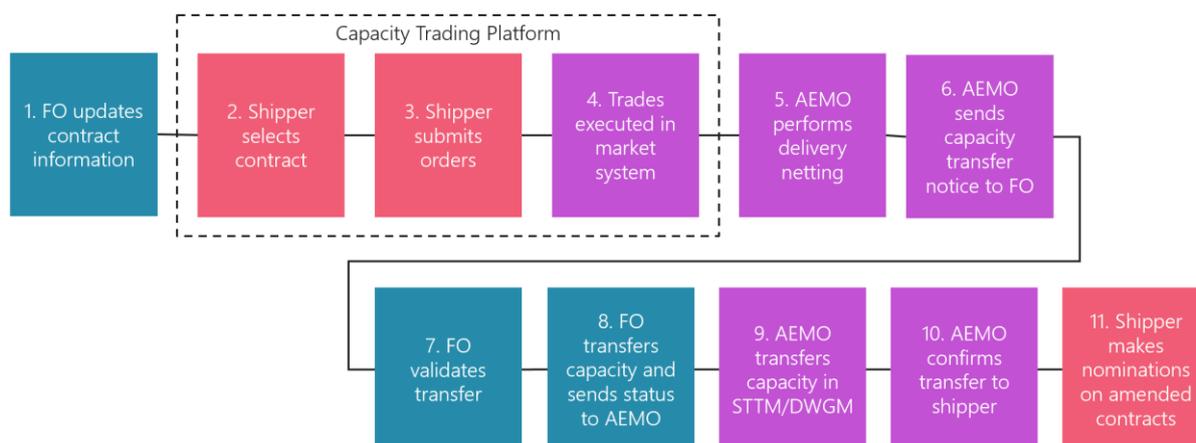


Table 3 Capacity trading and transfer process steps

Step	Description
1	Facility operator updates contract information Facility operator informs AEMO about changes to contracts they have with shippers.
2	Shipper selects contract Participant logs in to AEMO Markets Portal and selects the contracts they wish to be adjusted by a successful trade. A contract is selected for each product they wish to bid for from a list of valid contract references for the facility supplied by the facility operator.
3	Shipper submits orders to the platform (Trayport) AEMO validates that the participant has pre-selected a contract (includes pre-matched trades).
4	Trades are executed on the CTP Bids are matched with offers to form a trade, and traders receive confirmation (includes pre-matched trades).
5	AEMO performs delivery netting AEMO provides the facility operator with the total net capacity each shipper has sold or purchased. The netting process for forward-traded products occurs 14 days prior to the gas day. The netting run looks at each zone-to-zone (or park) product that has been traded for each gas day in the next 14-day delivery window.
6	AEMO sends capacity transfer notice to the facility operator AEMO applies contract and point information to the net position of each participant and packages that up to send to each facility operator in the form of a capacity transfer request. The capacity transfer request informs the facility operator of the transfers of capacity that need to occur, including how much each shipper’s capacity is to be increased or decreased, on which contract, and between which points.
7	Facility operator validates that each transfer is possible If a transfer cannot be validated ¹³ , the facility operator sends a report to AEMO stating that the transfer is pending. AEMO passes this information to the shipper who contacts the facility operator directly to rectify the issue.
8	Facility operator effects transfer and sends capacity transfer status to AEMO Facility operator effects the transfer and confirms with AEMO that the capacity has been transferred (or rejected).
9	AEMO transfers capacity in STTM/DWGM AEMO transfers capacity for delivery and receipt points in the STTM and at the boundary of the DTS.
10	AEMO confirms capacity transfer status to shipper AEMO confirms with shipper that transfer has occurred.

¹³ Buyer or seller records might fail validation because seller does not have enough capacity to meet the transfer, or an invalid contract was referenced, or a contractual restriction.

Step	Description
11	Shipper makes nominations for use of the capacity directly to the facility operator

4.4 Day-ahead Auction

The DAA is run daily for day-ahead contracted but un-nominated (CBU) capacity on non-exempt pipelines and compression facilities. The DAA aims to reallocate unused contracted capacity to the shippers that value it most.

The capacity auction has the following features:

- Single-round, sealed-bid process with a zero reserve price (with compressor fuel provided in-kind or procured from the facility operator).
- Capacity is paid for on a pay-as-cleared basis, determined by the lowest accepted bids in the auction.
- Auction maximises the revenue of bids, and the auction proceeds are allocated to facility operators based on the revenues of the products they provide.
- The auction is integrated with facility operators' systems to automate transfers of capacity.
- Forward haul, backhaul (where specified) and stand-alone auction products.
- Settlements and prudentials centrally managed by AEMO and shared with the GSH.

The DAA is conducted by AEMO shortly after the nomination cut-off time on gas day D-1.

Products

The products offered in the auction can include:

- Forward haul services with separate products offered in both directions on bidirectional pipelines.
- Compression services on the Wallumbilla, Moomba, Ballera, Iona and other non-exempt stand-alone compression facilities.
- Backhaul services on single direction pipelines (or parts of pipelines).

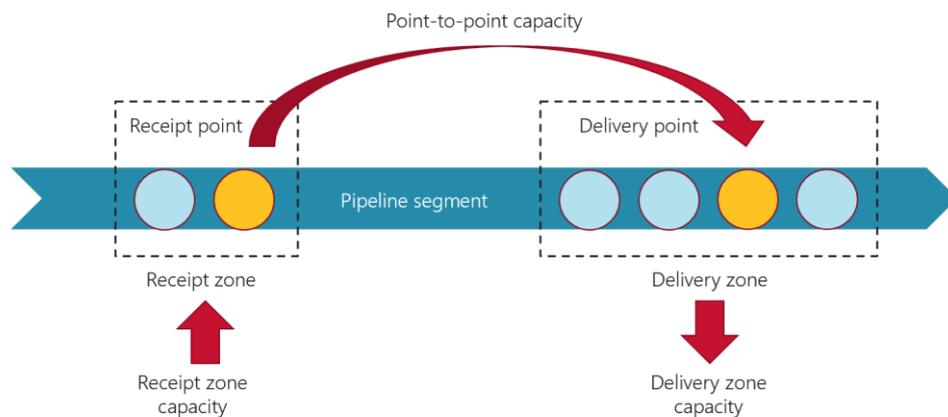
The terms and conditions on which the buyer can use these products are set out in the facility operator's standard OTSA. Among other things, the OTSA specifies the hourly flexibility the shipper has and provides for a reasonable endeavours renomination right and a zero-imbalance allowance. If the shipper requires additional flexibility, it can procure it from facility operators or shippers, where operationally and technically feasible. If the shipper intends to use the forward haul capacity it has procured through the DAA to supply gas into or out of an STTM or the DWGM, then it will also need to ensure the arrangements outlined in Section 3.3 are in place.

Forward haul and compression services

Forward haul and compression auction services are sold using a hybrid point-to-point and zonal model. The hybrid model allows auction participants to bid on a point-to-point basis for any unused physical capacity at individual receipt or delivery points, but their ability to secure capacity at those points depends on whether there is sufficient CBU capacity available in the receipt point zone and delivery point zone they wish to use and along the pipeline segments (or the compression service facility) they wish to use.

The hybrid model allows CBU capacity from individual points to be moved to other points within the zone if there is unused capacity at those points. When a shipper wins capacity, it knows it has secured capacity at the points it requires and will only be curtailed if firm capacity holders renominate on the gas day.

Figure 7 Hybrid model for forward haul and compression capacity sold in the DAA



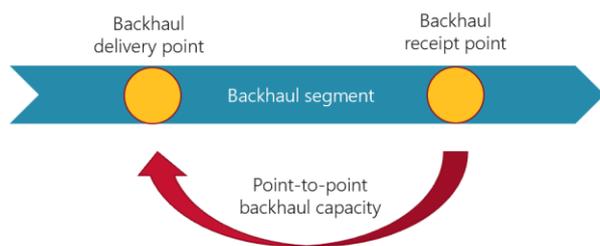
Backhaul services

Backhaul auction services are sold using a point-to-point model between the backhaul receipt points and backhaul delivery points that AEMO determines should be included in the DAA from time to time. In contrast to forward haul and compression services, the availability of backhaul services is not constrained by CBU capacity. The availability of backhaul services instead depends on whether there are sufficient firm net forward haul flows between the points used for the backhaul service. When bidding in the auction for a backhaul auction service, the shipper bids for the backhaul receipt and backhaul delivery point pair that they wish to use.

There are two types of backhaul services in the auction:

- Demand offset where a participant is decreasing demand at one location (the backhaul receipt point) and receiving this gas at another location (the backhaul delivery point).
- Injection offset where a participant is injecting gas at one location (the backhaul receipt point) and receiving it another (the backhaul delivery point), effectively swapping injections between two receipt points on the pipeline.

Figure 8 Point-to-point model for backhaul capacity sold in the DAA



Auction quantity limits

The amount of capacity made available through the capacity auction for each product type is limited by certain constraints specified in the NGR. The auction quantity limits (AQLs) reflect these constraints and restrict the amount of capacity available in any product to auction bidders. Each auction product comprises multiple product components against which auction quantity limits are applied.

Note. The facility operator can provide a lower operational capacity when required, e.g. due to unplanned maintenance, which is reflected in the AQL calculations. Facility operators may also offer additional capacity (beyond what's required in the NGR) to the auction.

Bidding

Bids can be submitted up to 15 days ahead of the gas day and can be for a combination of one or more products or multiple bids may be submitted for single products on a single facility. An auction participant submits a single submission (bid profile) that includes all of its bids for each gas day. When a new submission is made for a gas day, the previous submission for the gas day is overridden. As such, a participant must resubmit the entire bid profile when making amendments to any bids included in that profile.

Steps:

1. Select contract/rights
 - Contract with facility operator that allows auction service
 - DWGM accreditation right
2. Select quantity and price
 - Start and end date (could be single day)
 - Bids can cover multiple gas days.
 - Bids can be submitted up to 15 days into the future.
 - Quantity and price (up to 10 steps per bid)
3. Select points
 - Single point-to-point bid on a facility
 - Linked bid for multiple point-to-point combinations on the same or different facilities

The latest bid for a gas day and auction product (specific receipt point and delivery point combination) is used in the auction.

Solving the auction

AEMO runs the auction once a day to determine clearing prices and allocation of auction products by maximising the total capacity auction revenues for the gas day. AEMO allocates capacity, subject to the AQLs supplied by the facility operators, to the highest priced bids. Winning bids are determined simultaneously so that participants win none or all of the auction products that are linked as part of their bid. If there is more than one combination of winning bids, then AEMO determines the winning allocation at random. The lowest accepted bid for an auction product may be partially filled if necessary.

Auction product pricing

The capacity auction operates on a pay-as-cleared basis. All winners of a particular product component pay the same clearing price. Any product component for which transportation capacity remains partially unsold in the capacity auction for a gas day has a clearing price of \$0 per GJ for that gas day.

The lowest-priced accepted bid sets the clearing price for a product component. And the price of an auction product is the sum of prices across its product components (service points, zones, segments).

AEMO reports the price and quantity of auction product purchased to each winning bidder. And each facility operator is notified of the price and quantity of auction product allocated on their facility (auction products are facility specific). AEMO also publishes the price (and price sensitivity) of all product components following the completion of an auction run.

Auction and capacity transfer process

The steps involved in the auction and capacity transfer process are illustrated in Figure 9 and further described in Table 4.

Figure 9 Day-ahead auction and capacity transfer process

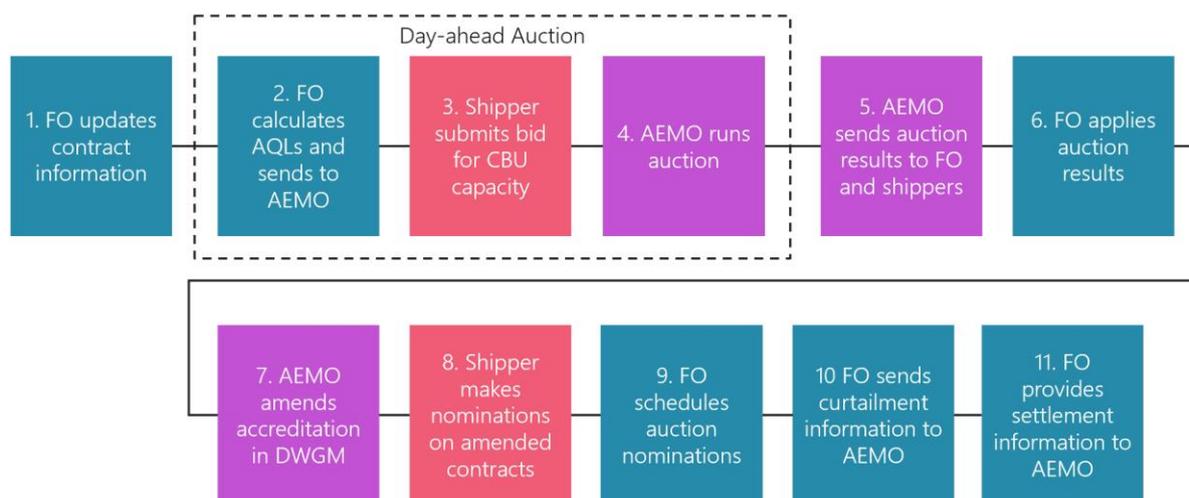


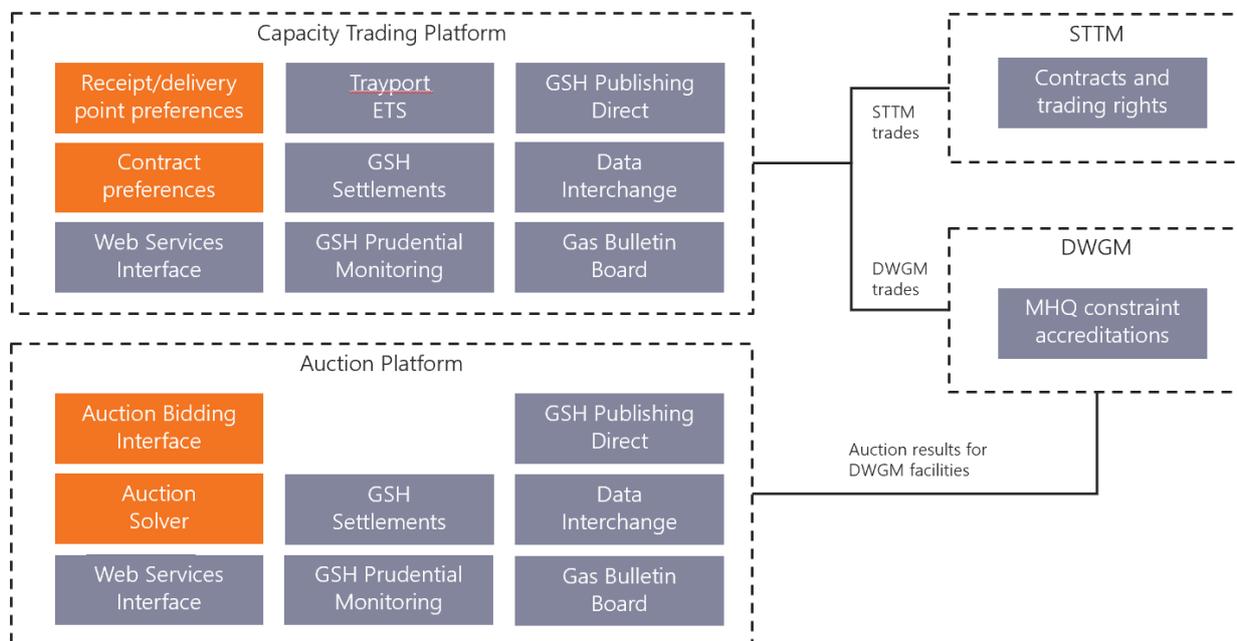
Table 4 Day-ahead auction process steps

Step	Description
1	Facility operator updates contract information Facility operator informs AEMO about changes to contracts they have with shippers.
2	Facility operator calculates AQLs and sends to AEMO Facility operator determines constraints on quantities of each product available in the auction and sends this information to AEMO.
3	Shipper submits bid for CBU capacity Shipper submits a bid (either via the auction interface, CSV submission or API) for an auction service nominating a receipt and delivery point.
4	AEMO runs auction The auction solver clears bids against the CBU quantities made available on each facility..
5	AEMO publishes the auction results AEMO sends auction results to facility operators and shippers.
6	Facility operator applies auction results
7	AEMO amends accreditations in DWGM AEMO amends successful bidders' MDQ, enabling them to use auction capacity in the DWGM.
8	Shipper makes nominations for use of the capacity directly to the facility operator
9	Facility operator schedules auction nominations
10	Facility operator sends curtailment information to AEMO
11	Facility operator sends settlement information to AEMO On the day after the auction, facility operators submit auction settlement information to AEMO for auction quantities reflecting any curtailment of auction volumes that may have occurred.

4.5 Market systems

AEMO, facility operators, trading participants (CTP) and auction participants (DAA) exchange information via the CTP interface and the DAA interface, as defined in the GSH Interface Protocol (published by AEMO).

Figure 10 CTP and DAA market systems



4.6 Settlement

Trades in the CTP and the DAA are settled using the existing GSH processes and procedures. New line items are added to invoices for delivered capacity trades (settled at the clearing price multiplied by the cleared quantity) and any variances (settled at 25% of the cost of the deviation).

When curtailment of an auction product has occurred, the participant pays the clearing price multiplied by the maximum of the revised quantity and nomination quantity for that product. This applies to all products included in a linked bid.

4.7 Prudential arrangements

The exposure of GSH trading participants to capacity trades in the CTP is calculated as 25% of trades ahead of the transfer window and 100% of trades within the transfer window.

AEMO calculates an auction participant's exposure on submission of each bid and again prior to the auction run. The Auction Agreement defines the prudential process applicable to the auction, similar to GSH, where

$$\text{Auction Exposure} = \text{Bid Exposure} + \text{Indicative Settlement} + \text{Invoiced Amounts}$$

Bid Exposure is only measured on bids for the next auction.

Prior to a capacity transfer, default (and suspension) of a buyer or seller results in the close out of the transaction and payment of compensation to the non-defaulting party. The buyer and the seller provide collateral to cover 25% of transaction value.

Following the transfer of capacity, if the buyer or seller defaults in the market, the transaction and transfer stay on foot. The buyer provides collateral to cover 100% of transaction value.

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