Victorian DWGM Review
Working Group Meeting 2

AUSTRALIAN ENERGY MARKET COMMISSION

13 July 2016

Agenda

Time	Topic
10.30	Welcome and recap
11.00	Detailed discussion: capacity allocation and trading • Defining capacity products that are useful • Access to existing capacity
12.30	**Lunch**
1.00	Detailed discussion: capacity access (continued) • Access to new capacity • Economic regulation of the DTS
Time permitting	Detailed discussion: Balancing
3.00	**Close**

Subsequent working group meeting on 10 August will discuss balancing in more detail, and transitional issues relating to the initial liquidity of commodity trading in the Southern Hub.

Recap: rationale for reform and overview of model

DWGM Review is tasked with addressing two main issues

Lack of risk management tools

- MPs only able to hedge short term price risk by taking a physical position through a GSA
  - About 80% of gas traded bilaterally outside of the market
- GSAs have become more expensive and less flexible, and look set to remain so in light of a changed supply/demand balance on the East Coast market
- As an alternative to physical hedges through GSAs, trading through facilitated markets must enable price risk to be hedged. However, the DWGM:
  - Does not support forward trading because gas can only be bought on the day; and
  - Unlike the NEM, has not seen the development of an effective futures market to manage the risk of trading on the day, due to intra-day prices, deviation payments/charges and uplift
- As the East Coast market becomes more dynamic, the development of liquid physical trading and financial risk management products becomes even more important

Limited market signals for investment in pipeline capacity

- Ability of market to signal the need for investment in new pipeline capacity is limited, and most capacity expansions are progressed through the regulatory process
- This places risks on consumers and may threaten the timeliness of investment

Effects of current combined DWGM mechanism

DWGM issues primarily a symptom of bundling 3 elements into 1:

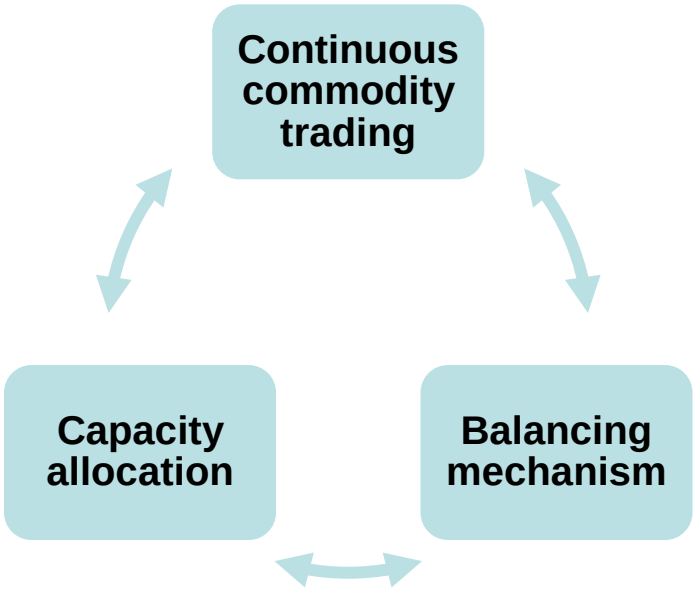
- Regular auction used to manage **balancing**, but its regularity is inflexible for MPs to buy and sell gas other than for the day
- No “clean” price for gas **commodity** or **capacity**
  - Scheduling and pricing subject to actions taken by AEMO to manage system security that are difficult to hedge
  - Commodity bundled with capacity so no explicit price signals for capacity investment: investment regulatory led, with risks borne by consumers
- Auction is compulsory so that AEMO can manage balancing: results in transaction costs for participants not trading

The DWGM was designed to allow the Victorian gas industry to be privatised at a time when there was less international experience of developing gas markets. It has been particularly successful in encouraging retail competition

- While arrangements have been adequate to-date, the likely future changes to the East Coast market and a multi-connected DTS mean these issues are likely to be more costly going forwards

The Southern Hub: unbundling the DWGM auction

- **Virtual hub** – all gas inside the hub is fungible
- Unbundles the three elements of the DWGM auction:
  1. **Continuous commodity trading** inside the hub, replacing existing daily auction
  2. **Capacity allocated** on the basis of entry and exit rights
  3. **Balancing mechanism** on the day guarantees system security and gas delivery
- Takes many elements currently managed by AEMO and AER and puts into hands of MPs
- A **substantial change** to the existing DWGM but:
  - common in European markets
  - better able to accommodate changing demand and supply patterns
  - has the potential to be more efficient



Understanding any one element of the design requires an understanding of all the elements

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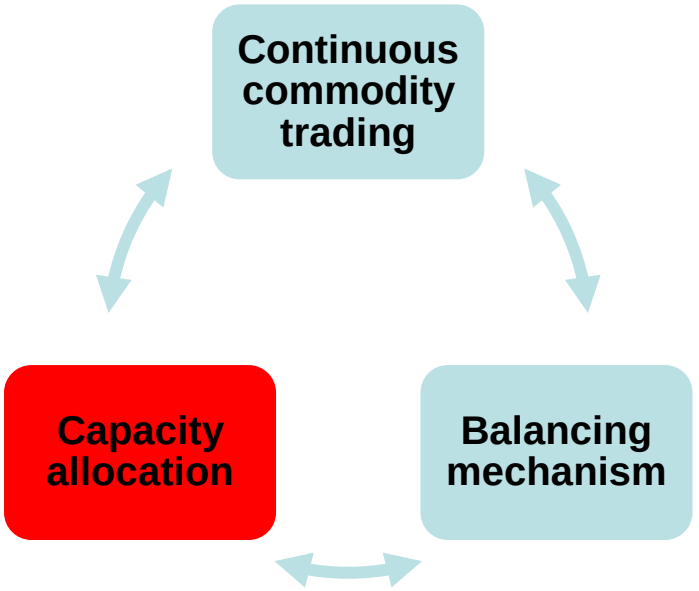

Need useful and accessible capacity
– trade-offs exist between these features

Recap: how the model might address existing issues in the market

DWGM compared with the Southern Hub: Capacity to Iona CPP constrained

DWGM

- MP bid at $800
- Market price set to meet demand that cannot be delivered – likely high
- Constraint applied in operating schedule
  - Iona withdrawals & selected injections reduced
  - Can result in Iona injections being reduced (depends on relative bid price)

Southern Hub

- Exit capacity at Iona limited by conditions
  - Seasonal firm pre-sold
  - Interruptible sold on day/day ahead
  - Counter flow capacity set by withdrawal limits
- MP with capacity can nominate
  - Those who value it the most can obtain it
- MP willing to sell at Iona able to do so
- Commodity price unaffected by capacity constraint

DWGM compared with Entry Exit: Expanding Capacity to Iona CPP

DWGM

- Expansion has to meet AER criteria to be approved
  - If approved, all MP will pay a share (and thus consumers)
- No capacity right can be created under current rules so difficult to justify MP investment
  - ‘Free rider’ can access capacity

Southern Hub

- MP can underwrite expansion resulting in firm exit capacity rights
- MP is better able to manage their own capacity position

DWGM compared with Entry Exit: Managing balancing

DWGM

- AEMO buys/ sells linepack to meet EOD linepack target using bid stack
  - Will influence price
- MP generally forecast high
  - Early injections increase linepack
- MP reduce forecast and/or AEMO sells excess linepack
- Higher initial market prices fall during day
  - Price takers pay higher price
  - Deviation prices affected
  - MP can buy back cheaper gas later
- Prices affected by on the day activities

Southern Hub

- MP manage commodity price risk through GSA / OTC and trading
  - Forward price unaffected by on day activities
  - Causers only pay for residual balancing actions
- EOD positions can be carried through to next day
  - Within limits
  - Allows MP to manage their next day position using forward markets
- System operator manages residual balancing on the day
  - Only causers pay costs

DWGM compared with Entry Exit: Transporting cross system loads

DWGM

- MP manage commodity price risk through GSA or bilateral trade
- MP must bid to inject and withdraw
  - Inject at low price, withdraw at high price
  - Bid strategies important
  - Scheduling may be affected by constraints and tie breaking
- If scheduled, capacity is bundled with commodity
  - But no uplift hedge unless also hold AMDQ
- If surprise event happens, ancillary payments / uplift charges needed
  - With flat injection and withdrawal profiles, MP does not cause linepack depletion
  - But subject to congestion uplift charges

Southern Hub

- MP manage commodity price risk through GSA / OTC / trading
  - Forward price unaffected by on day activities
- MP manage capacity risks by obtaining entry and exit rights
  - Portfolio suited to needs
  - Can contract with for expansion
- Flat profiles mean MP remains in balance
  - POS will be small
  - Causers pay for residual balancing actions
  - Likely no payment for residual balancing
- Greater certainty and ability to control commodity, capacity and balancing risks

Detailed discussion: Capacity allocation and trading

The relationship of capacity to commodity markets

- Market participants are interested in **delivering and trading gas**
  - Efficient access to the DTS is not a goal in and of itself: it is required for efficient gas markets
- The capacity market must meet the needs of the commodity market, which will include long-term GSA, OTC trades and exchange based trading
  - A liquid commodity market requires a correspondingly liquid capacity market
- To support their gas delivery and trading requirements, market participants require capacity access which is:
  - timely to purchase and sell
  - Useful (ie, capacity products which suit market participants' needs)
  - non-discriminatory (and does not result in discrimination in the commodity market)
- Mechanisms are required to allocating existing capacity, trade capacity and develop new capacity to meet the needs of market participants in the commodity market

Topics to be discussed today

Well functioning capacity market

Capacity products that are useful

Capacity concepts
- Firm
- Interruptible
- Counterflow

Standardisation of products
- Long term
- Short term
- Seasonal
- Peak or flat
- Daily or hourly

Access to existing capacity

Determining available capacity

Allocating long-term capacity
- Allocation mechanisms
- Entry / exit allocation
- AMDQ(cc) transition
- Reserve price

Initiatives to improve access to capacity
- Reservation of capacity for shorter term products
- Short term interruptible capacity
- Capacity trading
- Capacity release mechanisms

Access to new capacity

- Negotiation
- Open seasons
- Integrated auctions

Other important considerations:

- Economic regulation

A few concepts

Capacity

- Gives market participants (MP) the entitlement to nominate gas on and off the DTS
- MP needs to buy at least 1 unit of capacity in order to nominate 1 unit of gas on or off the system
- If MP flows more than its capacity rights, then MP will incur overrun charges
  - Other changes may also be incurred relating to the balancing regime, and are not discussed here

Firm capacity

- Transport is financially and contractually guaranteed to be available under all normal operational conditions
- If firm capacity commitments cannot be met the system operator and/or asset owner may compensate market participant

A few concepts

Interruptible capacity

- System operator endeavours to ensure transport as long as technically possible, but is entitled to interrupt nomination if not feasible. Used to maximise system utilisation within a certain day
- Where there is firm but un-nominated capacity, this may also be released as interruptible capacity
- **Interruptible capacity is an important instrument for mitigating contractual congestion**
- Interruptible capacity will always be 'scaled back' before any buy back of firm capacity
- Market participants are not compensated in case of reduction of interruptible capacity

Counterflow capacity

- Counterflow occurs when there is flow in both directions at an entry / exit point
  - Generally this is a virtual flow in one direction and an actual flow in the other
- Some points (SEAGas, Otway and VicHub) can only accommodate virtual exit flows when entry flows occur, and offset the physical flow of gas
- Iona UGS and Culcairn can accommodate flows in both directions
  - Flows in the opposite direction to the physical flow will be counterflow entry or exit
- Counterflow capacity availability is limited to nominated flows in opposite direction

Standardisation of products is an important ingredient of liquid markets

- There is a trade-off between bespoke products and standardised products
  - Bespoke: tailored to the buyer needs, more valuable but low liquidity
  - Standard products: the buyer knows exactly what they are buying, and can see a recent history of prices for identical products, which means that the trade can be undertaken quickly
  - **Solution**: plain vanilla products + standardised add-ons (if required)
- Capacity products will be developed in consultation with industry
- A variety of items need to be thought of when designing a product:
  - Long-term / short-term (annual, quarterly, monthly, daily)
  - Time of booking (when)
  - Peak or flat profile / Daily or hourly product
  - Firm / interruptible
  - Terms and conditions

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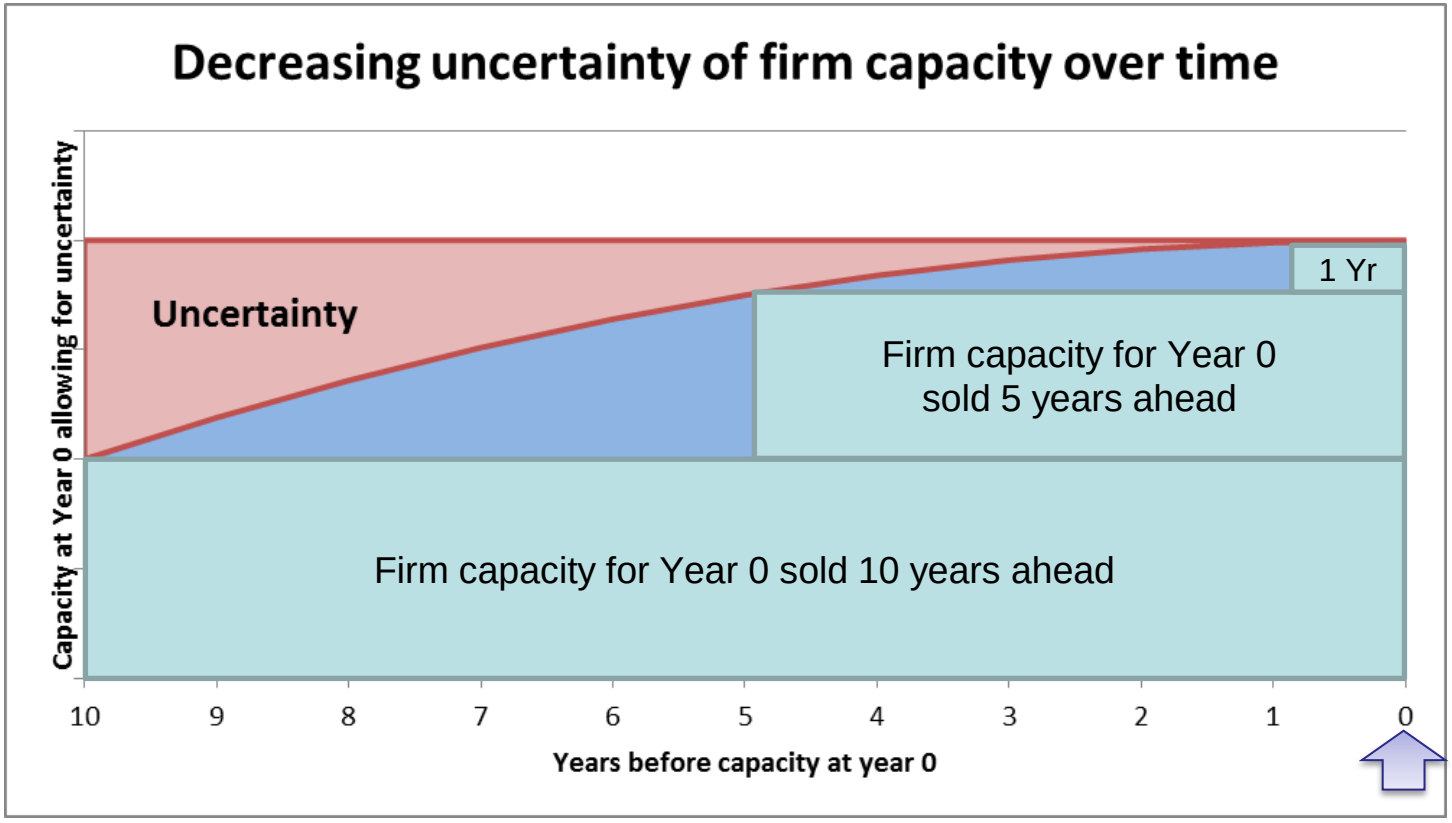
Determining the amount of capacity rights to be made available

- Determining the appropriate amount of capacity to be released is a **trade-off between issuing too many rights** (which risks having to compensate holders if congestion arises) **and issuing too few** (which risks underutilising the network)
- The amount of capacity to be released is calculated using load flow modelling and takes into account the 1 in 20 years forecast demand (similar to how it is done now)
- It may be possible to sculpt firm rights (e.g. by season or by time of day) to maximise their release, similar to what currently occurs
- System operator would also look to release interruptible rights close to gas day to maximise use of the system
  - Congestion risk sits with purchasers of interruptible rights (similar to constraints now)

Uncertainty of setting firm capacity

- Capacity is a function of many factors:
  - Pipeline & connection infrastructure
  - Operating practices & linepack
  - Pressure profiles
  - Demand location and profile
- Can be reasonably certain of capacity today, but the further ahead the capacity is set, the greater the uncertainty
- As the time for the use of the capacity approaches, and certainty in how much capacity is available increases, additional firm capacity might be released to maximise firm capacity availability
- Interruptible capacity can be sold immediately ahead of the gas day, or on the gas day, based on the actual capacity that day and actual nominations of firm capacity that day

Increasing availability of firm capacity



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Long-term capacity allocation mechanisms

First come first served (FCFS)

- Advantage: simplicity
- Disadvantage: not market-based → no scarcity signals, no optimisation of capacity

Pro rata / direct allocation

- Shippers receive a share of available capacity which reflects the level of their requested capacity
- Disadvantage: incentives to request excessive level of capacity

Auctions

- Various possible auction techniques
- Advantage: market-based, provides signals for scarce capacity and ensures market-driven and non-discriminatory allocation
- Disadvantage: more burdensome and complex than FCFS model

Capacity types & locations

Capacity at Southern Hub is allocated by type

Entry capacity
by location
(production, storage, interconnects)

Counter flow capacity
by location where available

- Flow in opposite direction to physical flow
- Entry or exit
- Iona UGS, SEAGas, VicHub, Culcairn

Exit capacity divided into four types:

- **Export** (storage, interconnects) – by location
- **GPG** – by location
- **TC** (transmission connected industrial consumers) – by location
- **DC** (distribution connected consumers) – by zone
- LNG, Non DTS distribution (S Gippsland, Grampians, Walla Walla) treated as distribution connected

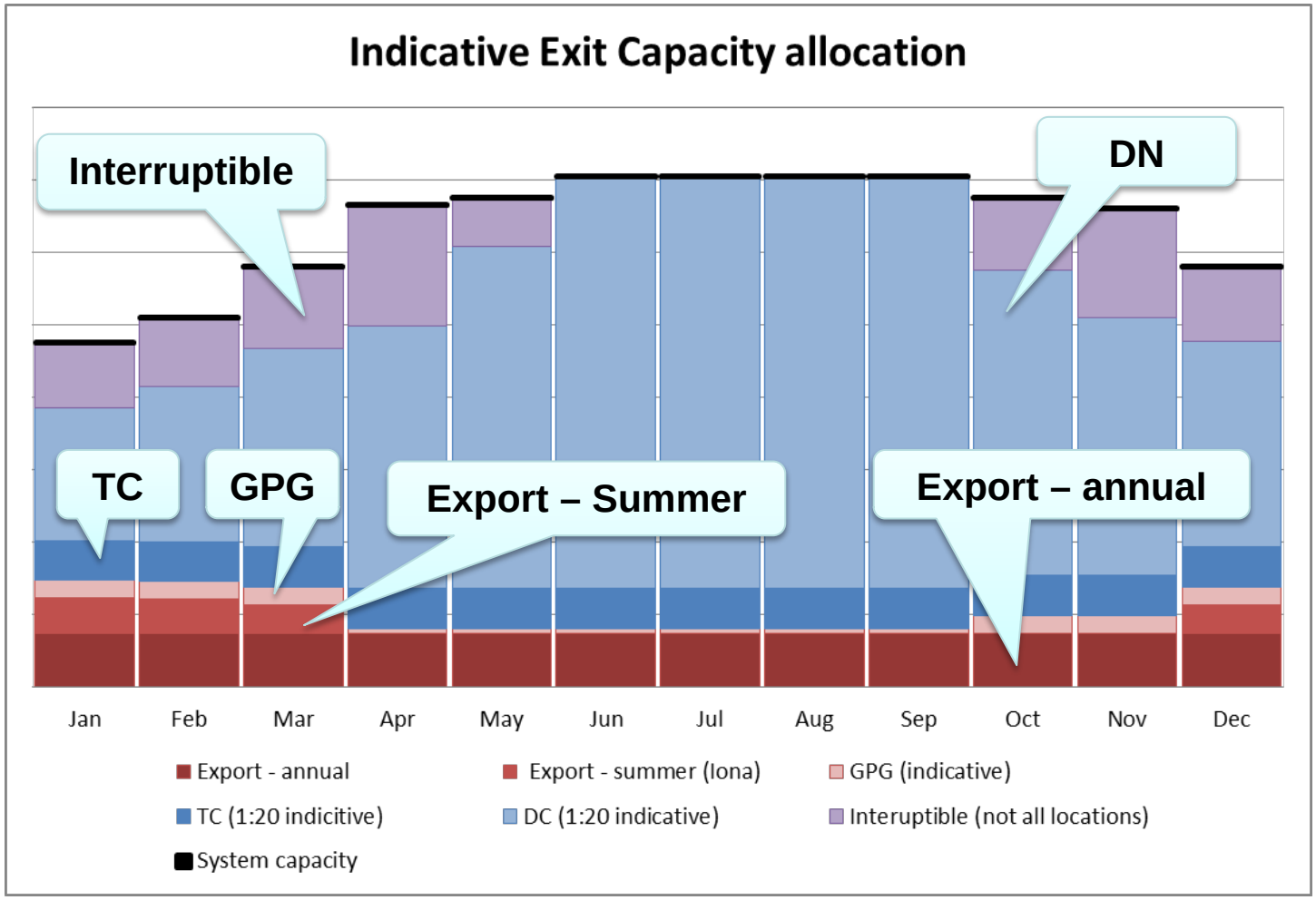
Entry capacity

- **Entry capacity** is located at a specific close proximity point (CPP)
  - Longford (Longford, VicHub (& TasGas))
  - BassGas
  - Culcairn
  - Iona (Iona UGS, SEAGas, Mortlake, Otway)
  - LNG
- Firm entry capacity determined as a function of:
  - Connection point capacities
  - Transport capacities
- Transferable between market participants, but not to another location
  - Downstream entry capacity can be used upstream on same pipeline (e.g. Longford entry capacity used for BassGas injections)
- Price set by auction (or negotiation) and subject to minimum

Exit Capacity types

	Export	GPG	Transmission Customer (TC)	Distribution Networks (DN)
Where	Any system withdrawal point (SWP) at a close proximity point (CPP)	Single SWP connected to GPG	Single SWP connected to transmission customer	All SWP connected to distribution network in a Zone
Capacity	Inputs to setting capacity: • Connection point capacity / Historical and forecast utilisation • Pipeline capacity available / Injection scenarios / AMDQ			1:20 peak day demand forecast
Held by	Help by MP	Held by site customer and assigned to current MP		Allocated based on share of consumption
Transfer	Transferrable at location between MP	NA		
Transfer	Limited transfers to other locations – subject to confirmation			NA
Augmentation	Capacity maintained at firm levels (or bought back) • Changes agreed MP, SO and Asset owner • Payments agreed MP/Asset owner			Maintained at 1:20 DB/SO/Asset owner agree changes
Price	Set by auction (or negotiation) and subject to minimum		Tariffed transmission charge	Tariffed transmission charge
Initial allocation method	Auctioned with probable first right of refusal at reserve price to holders of AMDQ		Allocated at start of Southern Hub to facility owner for use by their MP	Allocated dynamically to MP

Indicative allocation of exit capacity by type



Transitioning AMDQ and AMDQ cc

- The existing quasi capacity rights of current market participants need to be recognised and taken into account in the initial allocation of existing capacity
- Existing holders will be given the option of acquiring an allocation of firm entry/exit capacity based on their current allocation of AMDQ and AMDQ cc, at the relevant entry/exit point
- A number of additional matters to consider when designing the transitional arrangements for AMDQ and AMDQ cc:
  - how price signals would be maintained at entry/exit points where auctions are used to allocate capacity, but where some market participants are eligible for an automatic allocation of capacity based on their AMDQ/AMDQ cc allocation
  - the duration of the automatic allocation of entry-exit capacity rights, noting that AMDQ cc are generally allocated on a five-yearly basis, and AMDQ were allocated on an enduring basis
  - how the existing injection-linked nature of AMDQ should be acknowledged in a system of entry and exit rights

Our preliminary view is that holders of AMDQ(cc) would get priority allocation of entry/exit rights based on their holdings at the reserve price for a defined period

Setting reserve prices at entry and exit points

- Reserve price to be determined through a regulatory process
- Reserve price for each auction is the minimum price at which any market participant must bid in order to obtain capacity
  - when capacity > demand at a certain entry or exit point, bids for capacity will be satisfied at the reserve price
- In case of direct allocation of capacity rights, reserve price is applied as a tariff
- A number of considerations to be taken into account in setting reserve prices:
  - whether multipliers should be applied to standard products with different durations
  - the setting of reserve prices for interruptible capacity products (as opposed to firm capacity products) and how this would be returned to the market
  - whether the zonal nature of tariffs is to be retained, or whether every point will receive a unique tariff
- Further consideration is required on economic regulation

Well functioning capacity market

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Other important considerations:

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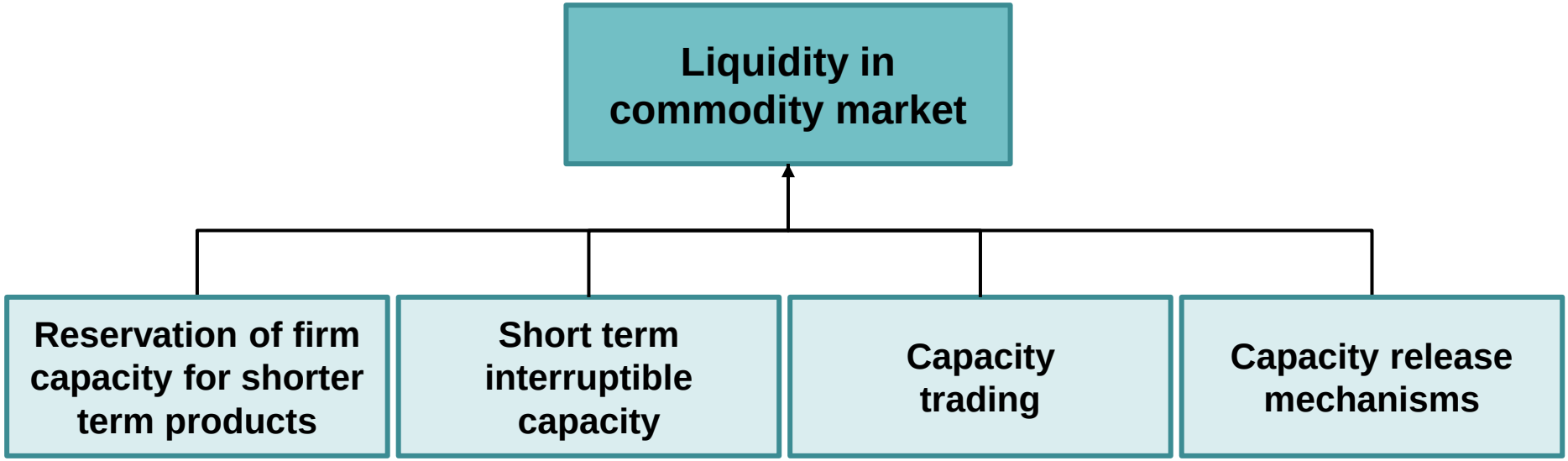
Initiatives to improve access to capacity and achieve a liquid market



- There is a risk that market participants will not on-sell unused capacity to others who might be able to use it, reducing economic efficiency
  - Either due to deliberate hoarding or because there are insufficient incentives to the holder to make the capacity available
- Reservations, short term interruptible capacity trading and capacity release mechanisms attempt to address this risk

Reservation of capacity for shorter term products

- Holding back some capacity for shorter term products ensures capacity is brought onto the market on a regular basis
- Allows new entrants access to capacity
- Reduces the risk of market foreclosure by incumbents
- **BUT** proportion of capacity to be held back for shorter term products is arbitrary and may impact on asset owner cost recovery arrangements (e.g. may increase the price of capacity which is released long term)
- **In Europe** at least 10% of the available firm capacity at each interconnection point is set aside for firm capacity services with a duration of less than one quarter

Short term interruptible capacity

- Capacity determined to be available by system operator using load flow modelling
- Capacity available depends on
  - Nominations across system
  - System conditions at time
- Location specific
- Auctioned by system operator immediately before gas day (e.g. D-1)
- Would only be released when all firm capacity has been issued
- As noted earlier, consideration is required into setting reserve prices for interruptible capacity products and how this would be returned to the market

Capacity trading

- Provides existing market participants with the opportunity to recover costs for contracted but unutilised capacity
- Provides new and smaller organisations with the opportunity to purchase firm capacity on fully contracted assets for set periods of time
- Allows capacity to be allocated to parties that value it the most
- A fully **anonymous** secondary market (cleared, exchange based) would allow MPs to propose capacities without having to disclose their position
  - Incentive to offer more systematically unused capacities, without having to conduct lengthy and costly negotiations
  - Improved liquidity and transparency and lower transaction costs
  - Might be conducted through Trayport or the capacity auction system
- Standardisation of capacity allows for more fungible products
  - But products likely to be locational specific
- AEMC made similar draft recommendations as part of East Coast Gas Review to improve capacity trading outside of the DTS

Capacity release mechanisms

European markets have introduced a number of capacity release mechanisms in order to improve access to capacity:

- ***Firm day-ahead use it or lose it (UIOLI):*** capacity that is not nominated the day before the flow is made available to others on an interruptible basis
- ***Long-term UIOLI:*** obligating market participants to release capacity to TSOs where specific underutilisation criteria are met
- ***Capacity surrender:*** capacity is voluntarily surrendered back to the TSO, with the market participant relieved of its payment obligation if the capacity is re-sold
- ***Overcapacity and buyback:*** incentivising TSOs to sell capacity and buy it back where demand is greater than technical capacity

All these mechanisms were considered during the East Coast gas review, with a draft recommendation to only include Firm day-ahead UIOLI

- The Commission considered that a firm day-ahead UIOLI mechanism would also provide incentives to market participants to trade their unused capacity ahead of time

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Other important considerations:

- Economic regulation

Capacity expansion

- There are currently limited market signals for efficient investment in pipeline capacity at the DWGM
- A process is required to determine when it is efficient to make incremental baseline capacity available, versus when it is efficient to ration demand
- Such a mechanism should trigger and allocate additions to, and expansions of, capacity that enable supply to meet demand while minimising the cost of excess capacity
- The three market-based mechanisms available to do this are:
  1. direct negotiation
  2. open seasons
  3. integrated auctions

Network users are only interested in capacity – they do not care whether it already exists or is incremental. Their concern is availability and price. An integrated approach therefore reflects better the nature of the demand, but is more complex

Negotiation vs. open seasons vs. integrated auctions

Negotiation	Open Seasons	Integrated auction
Description		
• market participants contact pipeline owner directly to inform interest in new capacity	• predefined periods of time when parties can request capacity for future periods	• allocates existing capacity and signals the need for incremental capacity investments
Pros		
• can be initiated at any time	• avoids discrimination • confirms the collective desire of MPs to purchase capacity • well-established method of conducting a market test and of allocating capacity	• avoids discrimination • single price for same product (regardless of whether existing or new) • low administrative burdens once operational
Cons		
• potential for discrimination • risk of inefficient investment due to poor coordination • lengthy process	• potentially unsatisfied demand from existing and potential MPs in intervening period between open seasons	• potentially unsatisfied demand from existing and potential MPs in intervening period between auctions • complex to set up

This topic will be addressed further outside the workshops

Economic regulation

- The regulatory framework that is currently used to determine APA's revenue requirement and prices would be largely unchanged under the entry/exit model
  - Some changes may, however, need to be made to the pricing principles to provide more guidance on how entry and exit reserve prices will be set
- The level of regulatory oversight would remain the same, with the AER retaining responsibility for approving APA's revenue requirement and reserve prices for entry/exit capacity for the regulatory period
- APA would recover its revenue requirement (including the costs of any expansions) through the sale of entry/exit rights. APA will also be subject to the same type of incentive schemes it currently is and so still have an incentive to reduce costs over the regulatory period

This topic will be addressed further outside the workshops