01 April 2016

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Dear Mr Pierce

Australian Energy Market Commission Review of the Victorian Declared Wholesale Gas Market Discussion Paper

AEMO welcomes the opportunity to comment on the Australian Energy Market Commission's (AEMC) Victorian Declared Wholesale Gas Market (DWGM) Discussion Paper.

The Commission's recommendation in the discussion paper is to introduce entry and exit capacity rights as a replacement for AMDQ and a continuous balancing regime underpinned by a voluntary commodity market. The proposed capacity and balancing models have been used in some European jurisdictions and the report largely focusses on how these arrangements work in a European context.

It is important to note that there are some fundamental differences in the supply and demand dynamics and infrastructure characteristics in the Victorian system when compared with European systems that have not yet been accounted for in the design. In addition, Victoria's starting point of having a mandatory market with open access to the transmission system is different from the European markets which were developed alongside active bilateral and over-the-counter commodity markets and generally have lower levels of supply concentration. Ultimately, if this model is to be progressed a further level of detail is required to tailor it to the bespoke requirements of Victoria. In particular, given the extent of the changes proposed, the model's impact on smaller participants and new entrants needs greater analysis. Our responses to the questions posed in the discussion paper provide our view on some areas that will need further consideration.

In addition to the balancing and capacity components of the Southern Hub model, AEMO considers that further detail is required on other aspects of the model to inform its assessment. This should include analysis on:

- The potential impacts of replacing a mandatory commodity with a voluntary commodity on Victorian participants, particularly if the voluntary market is illiquid.
- The drivers and pre-conditions required to develop a forward market.
- Congestion management tools and in particular, the residual congestion management and balancing tools available to the system operator when there are inadequate offers in the voluntary market. This must be considered in light of the impacts on system security. We further elaborate on this matter in our response to Question 11.

AEMO looks forward to engaging further with you during the course of this Review. If you would like to discuss the contents of this submission further, please do not hesitate to contact Violette Mouchaileh, Group Manager Market Enhancement, on 03 9609 8551.

Yours sincerely,

Peter Geers

Executive General Manager, Markets

Attachments: AEMO submission on Victorian Declared Wholesale Gas Market Discussion Paper

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NEW SOUTH WALES QUEENSLAND SOUTH AUSTRALIA VICTORIA AUSTRALIAN CAPITAL TERRITORY TASMANIA

Attachment A
AEMO submission on Victorian Declared Wholesale Gas Market Discussion Paper

General

1. Recognising that the detailed design of the Southern Hub is still to be determined, what are likely to be the key benefits, risks and costs to your business of transitioning to the Southern Hub model? Estimates on the magnitude of these benefits and costs are welcomed.

AEMO considers the key benefits, risks and costs lie in the detail yet to be developed—even without the insight provided by a detailed design, there are further details that should be considered prior to a decision to resource a detailed design, and then to subsequently implement. In this section we provide a brief overview of some of the areas of the design that require further detail in order for industry and AEMO to make an informed assessment.

Impacts of Voluntary Trading

A fundamental issue that merits further exploration and consideration by the AEMC is the impact of a voluntary commodity market on participants. The impact of an illiquid voluntary market needs consideration because:

- A number of participants (particularly smaller participants) use the mandatory market (and have become dependent on it) to purchase gas supplies to manage their portfolio. In Victoria, unlike Europe, there are fewer “alternate sources” of supply outside of the market. In Australia, OTC markets are immature and small in size, further limiting trading options. If the voluntary market is illiquid small participants may find it a challenge to secure a supply contract/bilateral deal for small quantities of gas and this would present a barrier to entry.
- Wholesale and retail competition are intrinsically linked and the current market is broadly seen as having been a successful enabler of retail competition in Victoria. Once implemented, if the proposed model negatively impacts retail competition this would be very challenging to reverse in the medium term.
- The move from a long-established mandatory wholesale gas market to a voluntary wholesale gas market is a substantial and unique undertaking. Australia’s starting point is different from an industry structure and regulatory perspective when compared with Europe and this needs to be considered, particularly if any transitional arrangements are required.
- If the exchange is illiquid the prices may be non-competitive prices provided by those with market power and therefore not cost-reflective. This may undermine price signals, which has flow on implications for allocative efficiency and investment.

In addition to the voluntary commodity market, AEMO is also concerned that without an effective release mechanism, the proposed entry / exit capacity market could also be a barrier to entry compared with the current open access arrangements.

Congestion Management

One of the key functions of an effective wholesale market is managing the various forms of congestion. In the Declared Transmission System (DTS), congestion management is particularly important given that various kinds of congestion can arise as a consequence of the highly variable retail load and physical constraints in the system. Key forms of congestion in the DTS include:

- Pipeline capacity congestion (where pipelines are overbooked)
- Locational and temporal congestion (related to distant supply sources serving distant demand centres and/or locational constraints between the two)
- Surprise congestion (caused by forecast error)
- Linepack capacity congestion caused by extreme demand, where flat profiled injections are insufficient to maintain minimum pressures during peak periods. This typically requires peak shaving gas to be injected, or if possible, the ability to profile injections prior to the peak.

These forms of congestion will be present regardless of the market model adopted. Greater analysis is still required on the end-to-end processes for managing the various forms of congestion, how congestion costs are calculated, and importantly how they are allocated.

Of particular concern to AEMO is defining the residual tools available to the system operator in managing congestion when there are insufficient balancing measures offered through the voluntary market. Residual system balancing tools will be key to securely managing the system and so further detail on this matter is required to prove the viability of the model.

Forward Trading

Greater consideration should be given to the proposed development of a forward market, particularly as this has been highlighted as primary driver for change to the market model.In particular focus should be given to:

- Engaging with industry to understand key market risks and options for managing these risks.
- The pre-conditions required to establish a forward market and any potential risks (e.g. industry participation) in the spot market.
- Consideration of an appropriate reference price for Victorian gas market derivatives. Consider the potential traders of financial products and how they would participate in the market.

Ultimately, AEMO cannot complete a preliminary assessment of the benefits, risks and costs without having the base level of detail to understand how the end-to-end model is going to work.

Chapter 3 – Managing capacity at the Southern Hub (Institutional Roles)

2. Given existing allocation of roles between pipeline owner and system operator in the DTS and DWGM, whether the proposed allocation of system operation functions at the Southern Hub is appropriate and likely to achieve the optimal balance between efficient use and efficient operation of the system

AEMO is broadly supportive of the AEMC's proposed allocation of roles for the entry / exit model with continuous trading proposed for Victoria. However, additional detail about the process for determining baseline capacity and congestion management would help industry assess the proposed model and associated roles.

Baseline Capacity

As highlighted in the discussion paper, determination of baseline capacity is of paramount importance to the success of an entry / exit model. AEMO considers it would be crucial that the system operator is involved in determining and/or approving baseline capacity, similar to the current process as part of the Service Envelope Agreement (SEA) and the Victorian

planning approach[1]. The system operator will be responsible for managing the system with regard to the baseline capacity determination. Baseline capacity will impact what tools are available (and how regularly they will be called) for the system operator to manage congestion and maximise system utilisation, including selling interruptible capacity, (potentially) buying back capacity, and performing residual balancing. As such, the system operator should have a role in determining and/or approving the baseline capacity to ensure it can efficiently manage the system based on the determined levels and the tools available.

The AEMC proposes that the AER will be responsible for managing the trade-off between economic and operational efficiency in determining baseline capacity, through a stakeholder consultation process. This would involve new capability to be developed by both the AER and industry. While AEMO is confident this capability can be developed, an outline of the guidelines (including any tests to be completed) to be used by the AER would be useful. This will assist in assessing if the process is appropriate for the AER to make this determination as the decision-maker on behalf of consumers. AEMO is also cognisant that the incentives of various participants in this process will need to be taken into consideration to ensure capacity is allocated efficiently, both operationally and economically.

Other details to be considered for baseline capacity include:

- Review cycles, and how variances in baseline capacity (eg. seasonal) are to be handled.
- If baseline capacity varies, will this be reflected in both capacity available and tariff structure?
- Capacity at various points in the DTS can also depend on supply and demand conditions at the time (for example, the South West Pipeline[2]), which may mean that a single figure (even a seasonal figure) may not be appropriate.

Congestion Management

Congestion management also requires further consideration as part of the baseline capacity determination within the proposed entry / exit model. Many of the bespoke features of the DWGM have been developed due to the unique operating requirements of the DTS, especially for congestion management. The AEMC's position as stated in the discussion paper that "as long as participants are able to reserve the amount of entry or exit capacity that they expect to use, they will not be exposed to charges caused by congestion on the DTS" appears to overlook cases of unexpected reduction in capacity and/or temporal congestion creating additional costs, and how these are to be allocated. It is entirely plausible a situation arises where everyone is flowing within their rights but congestion still occurs. AEMO would welcome more detail around how the costs of the various forms of congestion would be allocated under different scenarios.

The process (timelines and determination of quantity) for the system operator to sell additional interruptible capacity also merits further consideration. This will impact on the system operator's ability to manage congestion and for participants to manage their positions. The ability to sell interruptible capacity will also be determined by cut-off times for the system owner to sell short-term products, and potentially impacted by nomination times

[1] The SEA currently governs the interactions between the DTS Service Provider (APA) and the System Operator (AEMO). AEMO is responsible under the National Gas Rules for undertaking planning reviews of the Victorian DTS, which include usage forecasts for the total system and by system withdrawal zone.

[2] The South West Pipeline has varying demand and supply conditions depending on demand in the main demand zone in Melbourne, withdrawals or injections from Iona gas supply, and supplying gas for generation.

for flow. Further consideration of baseline capacity and additional capacity determination and allocation is therefore warranted as a priority given the fundamental importance to a working model.

Chapter 4 – Mechanisms for allocating capacity at the Southern Hub

3. Whether integrated auctions are the most appropriate mechanism to allocate existing (and trigger new) baseline capacity at production entry points, interconnection entry / exit points and storage entry / exit points. What are the likely challenges in developing and applying these mechanisms?

Considering whether integrated auctions are the most appropriate mechanism to allocate existing (and trigger new) baseline capacity at production entry points, requires further investigation. In particular, AEMO considers that how integrated auctions are to provide investment signals warrants further explanation. There are also fundamental concerns with the lack of discussion regarding capacity release mechanisms to encourage efficient utilisation.

Investment Signals

Under the entry / exit models in European markets, long term auctions for baseline capacity at these points are intended to provide pricing signals that drive network investment. This is based on the assumption that long term auctions will provide long term signals for investment. However, it should be noted the UK (the most liquid European market) is seeing a reduction in the uptake of long term capacity with the system operator viewing long-term auctions as no longer providing a definitive signal of a shipper's intention to flow. In addition, the Netherlands has had to initiate an additional planning report due to a lack of commitment to book binding long term capacity through auctions. While this may be attributable to the different historical and operational context in these markets, there are also indications that this regional dynamic is due to an uncertain future for long term gas contracts. There are similar parallels in the current Australian context, and given the current issues being experienced in Europe with this model, there is no guarantee that it will work in Australia. Consideration should be given to fall back mechanisms in the proposed entry / exit model if long term auctions are unable to provide adequate pricing signals.

Long term auctions will occur for only entry / exit points, not the system as a whole. As such, there is a concern that this will neglect supply path investment. AEMO would welcome more detail regarding how market and investment tests will be implemented once long term auctions indicate a need to invest to provide additional capacity at an entry or exit point:

- Who will be involved in this process and how will final decisions be reached?
- What assessments will be undertaken to ensure investment at particular points will not lead to adverse physical or market conditions at another point in the system?[3].

AEMO would like further assessment as to how the new process is superior to the current model, given the AEMC's position that the 'recommended model represents a shifting of risk to parties who are best placed to manage it'.

Importantly, capacity secured at an interconnection point will presumably require participants to also have secured (or be able to secure) capacity on the other side. The way this process interfaces with the contract carriage pipeline(s) on the other side of 'an interconnection' therefore requires consideration. Currently, for AMDQ to be allocated at an interconnection point, a participant must be able to prove they can take the gas away (or deliver the gas)—

[3] For example, investment at the Culcairn interconnection point, may necessitate more gas to be delivered at the LNG Dandenong entry point to maintain system security.

that is, they have a contract right on the other side. This also has implications for long-term investment signals at these points as investment will likely be required on both sides of the interconnection, but investment processes will differ. One option would be to have bundled capacity products at cross-border locations but this would require the involvement of connected pipeline operators.

If Open Seasons are to be included as part of the proposed design for encouraging investment signals, consideration should be given to including secondary surrender of capacity, as in the Netherlands. Again, AEMO encourages more detail as to which stakeholders will have a role in this process, including investment tests and who will make the final decision.

Capacity Release

AEMO is also concerned that detail has been limited regarding the capacity release mechanisms for the proposed entry / exit model. Capacity buy back and surrender are an important mechanism to encourage allocative efficiency and efficient asset utilisation in European entry / exit systems.

The AEMC have commented on the potential need for anti-hoarding mechanisms; information about these proposed mechanisms and their potential for implementation is required to enable industry to understand and assess the proposed model. Detail should be provided on the tenors available for auction and if there is to be a proportion of capacity set aside for sale in shorter-term auctions, as is done in the UK market. In the UK, 10% of capacity is reserved for shorter-term (monthly, daily, and on-the-day) auctions to allow participants further flexibility in managing their portfolios and prevent hoarding of capacity that will not be utilised, encouraging liquidity in short term products. A similar process would be beneficial in the Victorian market to support efficient capacity allocation by allowing participants flexibility in managing their portfolios.

The open access market carriage arrangements of the DWGM have been pivotal in developing a strong retail market, providing low barriers to entry. Without an effective capacity release framework there is a potential that that this dynamic will be undermined, with a resultant increase in barriers to entry for the new market. AEMO considers this is a significant consideration for policy makers as the starting point for the Victorian system (open access) is different from the starting point for the European entry / exit markets.

Interruptible Capacity Products

AEMO also questions why interruptible day ahead capacity is proposed only to be sold if firm capacity is sold to baseline. In the UK, unsold and surrendered firm capacity is rolled into interruptible auctions on the day (at a zero reserve price). This appears to be an efficient allocation of capacity as the short-run marginal cost (SRMC) of this unsold capacity is likely to be close to zero. In the Netherlands, interruptible products are sold at a 30% discount allowing participants more choice in how to manage their position. Interruptible products may allow for greater flexibility in managing congestion and retail load. This release and allocation of capacity may be a potential anti-hoarding tool, as discussed in question 2, and consistent with existing AEMC recommendations for the East Coast.

Consideration also needs to be given to interruptible products that could facilitate virtual reverse flows at system interconnection points that can only physically flow gas into the transmission system. Such rights would increase opportunities to trade and market liquidity.

4. ***Whether an auction mechanism, combined with a bilateral planning process between APA and directly connected customers, is the most appropriate mechanism to allocate existing (and trigger new) baseline capacity for exit points relating to large customers directly connected to the DTS. What are the likely challenges in developing and applying these mechanisms?***

AEMO is unclear on the reasoning for having an auction for directly connected customers. The bilateral planning process between APA and the directly connected customers would appear to be adequate for determining baseline capacity allocations (in line with the baseline capacity determination process). Implementing an auction for this type of exit right would therefore seem likely to increase administration costs with additional participation in an auction process (with only one buyer) required.

The discussion paper also speaks to having automatic allocation to a retailer where that retailer procures gas on behalf of a large user. This process appears to be potentially complex when in conjunction with auctions for directly connected customers to secure capacity in the first place.

AEMO suggests approach adopted by the Netherlands may be more appropriate. This approach has large users automatically allocated the capacity bilaterally agreed with the system owner (this should be incorporated in the baseline capacity determination process and include the system operator/AER as appropriate). If needed, the user can then transfer this capacity to the shipper responsible for delivering their gas using secondary processes.

If an auction is progressed for directly connected customers, this will need to be carefully designed, with consideration given to the pre-requisites for participation in an auction. This should include the ability for retailers to secure capacity on the end user's behalf.

5. ***Whether automatic allocation of capacity, combined with a bilateral planning process between APA and distributors / retailers, is the most appropriate mechanism to allocate existing (and trigger new) baseline capacity for distribution exit points. What are the likely challenges in developing and applying these mechanisms?***

AEMO agrees automatic allocation of capacity at distribution exit points is appropriate for the proposed model. There are translational efficiencies to be gained by retaining a process similar to what is currently done for allocating rights for authorised MDQ in the Tariff V block to retailing participants at distribution exits (currently the reference hub). AEMO also agrees that it may be best to allocate distribution exits in zones, given the large number of distribution connection points.

Consideration should be given to how capacity at entry points will be secured by retailers (especially with customer churn). Automatic allocation at distribution points will continue to support the retail market, however, this support will be limited without due consideration to rights at entry points. In the current market design, retailers are guaranteed a proportion of AMDQ at Longford based on their customer base as part of the Tariff V allocation. However, in the proposed design, retailers will not be guaranteed entry capacity and this could limit competition within the retail market. There is the potential for a scenario where a new retailer is exposed to overrun charges, if they have picked up customers but are unable to secure entry capacity and liquidity is not sufficient to purchase gas on the exchange. Reserving 10% of the capacity for short-term tenors may provide an option for participants to secure entry capacity to supply their demand. This and/or alternate mechanisms for the release of entry capacity warrant further consideration.

6. *Having regard to the Commission's preliminary view on options for allocating capacity, how the matter of transitioning the existing, albeit limited, benefits afforded to market participants holding authorise maximum daily quantity (AMDQ) and AMDQ credit certificates (AMDQ cc) could be addressed under the proposed Southern Hub.*

AEMO considers that to decide on the most appropriate approach for transitioning from AMDQ to entry and exit rights, the following must be considered:

- The quantity of AMDQ and how this will translate to baseline capacity at various points is unclear. The process to determine baseline capacity is proposed to be different to that used to determine the quantity of AMDQ available for allocation. As such, comparison between the quantities available currently, and under the new baseline capacity approach, should be considered as part of the transition process.
- AMDQ cc has often been secured by participants via investments they have underwritten. If not, participants will have already committed to paying for their AMDQ cc for an access arrangement period. This capacity could therefore be translated to provide participants with the rights they had secured, or else compensation may be required. The reference price paid in these circumstances may need specific consideration given the historical context.
- As part of the transition process, it should be noted credit certificates are largely assigned to the reference hub, rather than a specific withdrawal point[4]. Therefore, the process for transition to entry and exit baseline capacity at specific points will need careful process design and industry engagement going forward. The aim will be to ensure the appropriate quantity is allocated to the appropriate point in the new entry / exit model, especially where rights have already been committed.
- Authorised MDQ allocated to retailers based on customer numbers also requires consideration prior to translation. As it stands (and as discussed in Question 5) retailers are afforded injection rights as well as withdrawal rights based on their retail load. As such, to translate Authorised MDQ it would appear injection rights should also be transferred. However, in the current design, these are able to change with customer churn. If translated under the new model these would be frozen at a snapshot in time. As was discussed in the previous question, this could lead to limiting competition in the retail market, as a barrier to entry in the wholesale market would exist with participants potentially unable to secure supply, with accompanying rights, for their customer base.
- The translation of AMDQ could mean there is no baseline capacity left to sell and as such consideration should also be given to whether capacity should be released as part of the translation process.

As the AEMC has stated, automatic transition of rights could mean a period where auction prices for capacity (if there is capacity left to be auctioned) may provide market signals with limited value. Therefore transitional arrangements may also be required for planning and investment, and this should be given further consideration.

[4] AMDQ (authorised MDQ in Tariff D or credit certificates) cannot be assigned to all withdrawal points due to technical requirements in managing the system. When AMDQ is nominated to be allocated to a particular point, a technical test is conducted to ensure the supply path is available, and that withdrawals at the point will not be to the detriment of potential withdrawals at the main demand centre.

Finally, curtailment procedures and tables will need to be reviewed with the implementation of any new model.

Chapter 5 – Capacity Pricing and Revenue at the Southern Hub

Further detail is required regarding cost recovery mechanisms for system operations, market operations, and the DTS Service Provider, based on the proposed allocation of roles by the AEMC. This includes over- and/or under-recovery for the system owner and operator, and where this difference is to be distributed. No commentary has been provided regarding cost recovery for the system operator function, including as seller of capacity above baseline, and the residual balancer[5]. More information would be welcomed regarding the guidelines and provisions available to perform these roles, including management of the current linepack account used for system operations.

AEMO highlights the AEMC's statement that the new market will 'eliminate transaction costs for market participants wishing to ship their own gas across the DTS as participation in the gross pool is not mandatory'. This is potentially misleading since transportation costs incurred by the system owner (capital costs) and system operator (operation costs) will still be required to be recovered, and the gas will still need to be managed with respect to congestion and balancing. It would seem to be inequitable to only recover these costs from the commodity market. As such, a commodity tariff on all flows would likely be required in the new model. This is similar to the current model where the DTS SP recovers a large proportion of their costs via the regulated commodity tariff, and AEMO costs are also largely recovered via a set price per gigajoule of gas withdrawn. Market transaction fees are likely to be far smaller than system operater and owner and costs.

The discussion paper also refers to a demand forecast required in order to determine tariffs for baseline capacity allocation by the system owner (APA). Additional information (at least at a high level) should be provided to industry on what methodology would be employed, who would be responsible for completing this forecast, and how costs will be recovered.

The payment structure of the auctions is also unclear; are these to be pay-as-bid or a clearing price mechanism when above baseline capacity is bid for? (AEMO notes the AEMC have stated reserve price will be paid if less than baseline capacity is contracted). More detail could also be provided regarding how the reserve price is to be set and adjusted for different tenors.

7. Whether the pricing and revenue arrangements required by an entry / exit system can be accommodated within the existing framework for the regulation of gas pipelines, or whether changes to that framework need to be considered.

A benefit of the current design is that participants can contract with APA and underwrite an investment in the DTS outside the regulated access arrangement. This generally affords the participant with the corresponding AMDQ cc for the additional capacity generated through this investment. The additional infrastructure sits outside the regulated base, at least initially. When this mechanism is enacted, the investment risk sits with APA and the participant who underwrote the investment. At this stage, it is unclear if this practice will be able to continue under the new model, or if investment decisions are to solely come from the integrated auctions. If bilateral contracting for additional capacity is to continue, consideration should be given to how participants will guarantee the appropriate capacity rights corresponding to their investment.

[5] AEMO is likely to be required to engage in purchasing, and selling gas and potentially capacity in order to fulfil its role as residual balancer.

8. Whether a continuous balancing period, similar to the Dutch system, could be implemented at the Southern Hub. Consideration should be given to the costs and likely benefits of this approach.

The Commission states it favours a continuous balancing period as it:

- Has a cost-to-cause incentive model for intraday balancing;
- Could lower barriers to entry for small retailers and large industrial customers, as they would have greater certainty over the magnitude of imbalance payments on a daily basis (if any are in fact incurred);
- Minimising the role of the system operator is important because shippers have a strong profit incentive to minimise their own balancing costs, which extends to minimising total system costs; and
- Maximises system linepack flexibility.

This section provides some initial thoughts on the drivers put forward by the Commission.

Cost-to-cause balancing

AEMO notes that the causer pays approach under the continuous balancing model is not fundamentally different from the current market. Under the proposed model, if a participant has an unresolved imbalance once a residual balancing action has been undertaken then they pay for the cost of that balancing action. This is very similar to how surprise uplift is allocated under the current market. The earlier stages of this review have called out causer pays allocation of surprise uplift as an “unhedgeable risk” that has negatively impacted trading. It should be noted that the tools to manage on the day risk are largely physical (having access to flexible supply and forecasting accurately) and the ability to manage this risk would seem to be unchanged under this model. This risk may be reflected in the pricing of on-the-day products and any reference price based on-the-day trading would likely have basis risk.

AEMO is not convinced that the cost allocation under this model will be substantially improved. An alternate approach would be to socialise the balancing costs to achieve a “cleaner” market price but this would be traded off against incentives for efficient intraday behaviour.

Barriers to entry

Enabling participants to be aware of their imbalance position in near-real time and being able to choose whether to act on this information is considered a key benefit of this model that may reduce barriers to entry. However, while the discussion paper acknowledges that transparent and accessible real-time information will be required to underpin this, there is a lack of recognition that participants also require the ability through their portfolios or the market to act on this information.

The realisation of this potential benefits and impacts of this balancing model therefore needs further consideration, particularly for smaller participants. Participants with retail customers are unlikely to be able to effect a demand-side response to an imbalance position. This means that any response to a balancing signal needs to be driven by a capability to quickly change the participant’s supply position. Realistically this could be achieved through having access to LNG or perhaps to a flexible supply contract at Longford or a storage contract with flexibility at Iona (assuming hourly balancing gas is not required). However, a small player or new-entrant is unlikely to have access to LNG or a great deal of flexibility through any supply contracts they may have (particularly if they choose to just buy from the spot market). As

such their ability to respond to any balancing signal is likely to be limited. Ultimately such participants can either accept the balancing price (which will be determined by bids in the voluntary commodity market) or attempt to purchase or sell gas through the voluntary market or bilaterally prior to the system operator entering the market. Therefore for a small player, their ability to manage on-the-day risk will largely depend on the liquidity and efficiency of the voluntary market.

It is also worth noting that the continuous nature of the balancing model has the potential to be more administratively burdensome than the current market with participants having to continuously monitor their imbalance position as well as the commodity market. This burden will disproportionately impact small retailers and industrial users. It may be sensible to allow such users to have their balancing requirements managed by a third party (a larger retailer or perhaps an aggregator) through a commercial arrangement.

The additional risk and cost of this balancing model and how it interacts with the voluntary commodity market may be a greater concern (and a potential barrier to entry) than the additional flexibility that the model brings. Further analysis and explanation of the trade-offs is required for assessment of the balancing model.

Maximising linepack flexibility

The balancing model proposed by the AEMC for the Southern Hub uses different classes of balancing zones which reflect linepack flexibility. These zones define when and what system balancing actions are taken by the system operator.

A proposed key benefit of this balancing model by the AEMC is that it maximises system linepack flexibility and minimises the role of the system operator in balancing the market. This assumption needs further analysis and consideration. Indeed, rather than maximising system linepack flexibility this is probably better characterised as maximising the market's ability to use linepack flexibility through indefinitely wearing imbalances until the system operator is required to intervene. This flexibility is represented by the dark green zone in the balancing model which defines the quantity of linepack that can be used by the market without intervention by the system operator. Given that the system operator will be unable to instantly respond to the system balance signal venturing outside of the dark green zone this value cannot equal the entire quantity of useable linepack. A buffer will be required for operational practicalities.

There would be a number of variables to consider in determining what the appropriate size of the dark green zone would be. There is a trade-off between maximising flexibility and minimising risk to system security not dissimilar to the trade-offs that need to be considered in determining the duration for balancing period under a fixed balancing period model. The balancing zones will need to account for the underlying demand, supply and infrastructure dynamics of the transmission system and cannot be determined in isolation.

Preliminary analysis suggests that the characteristics of the DTS when compared with the GTS in the Netherlands is quite different and therefore the size of the zones are likely to be different. This in turn could impact the viability and benefits of the model. For example, when comparing demand on an average winter day between the two systems it is quite clear that the share of retail demand in Victoria is far greater than that in the Netherlands. The diagrams below show the demand mix of the DTS in Victoria and Gas Transmission System (GTS) in the Netherlands in winter 2015.

Figure 1: DTS Exit Flows

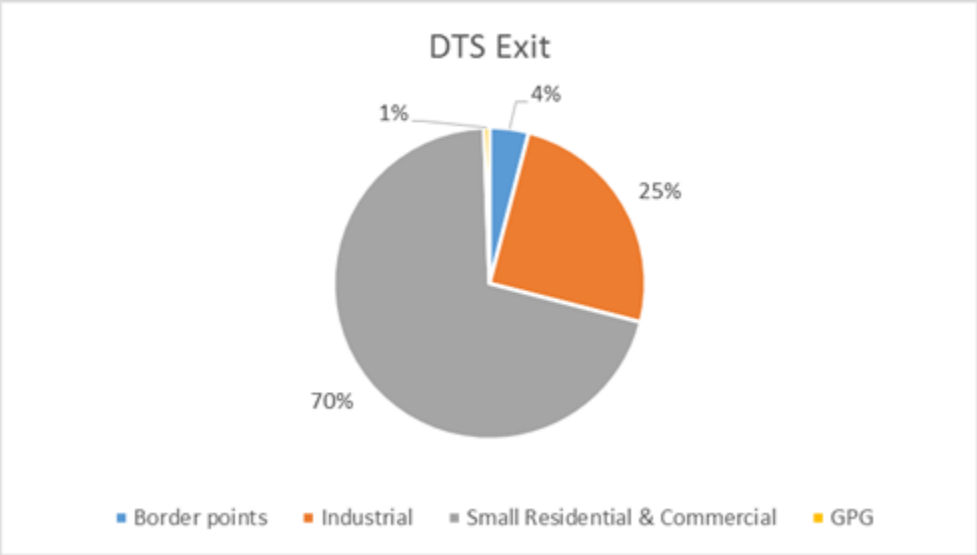
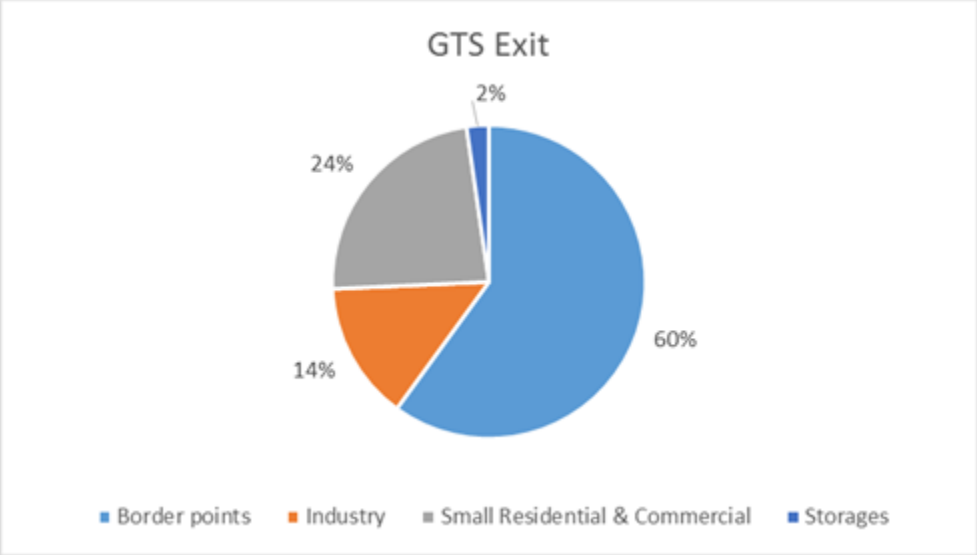


Figure 2: GTS Exit Flows

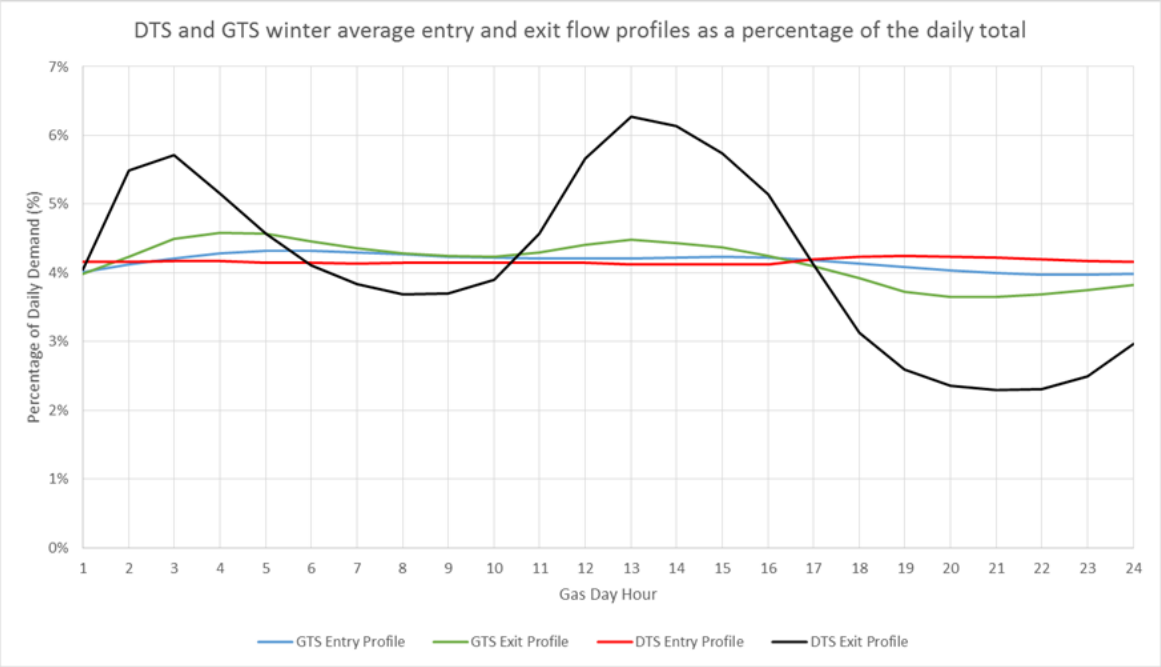


As can be seen in the diagrams above, the demand mix between the two systems is quite different. In Victoria, retail demand in winter can be in excess of 70% of total demand whereas in the GTS this is only around 24% of total demand and on a single day will not exceed 30%. The bulk of GTS demand is typically made up of export demand through system border points. This is a consequence of the Netherlands being a key European gas transit point, with the GTS interconnected with the Belgian, German and UK transmission systems. Annually, around 60% of volume in the GTS is exported to other countries. Gas exported through interconnection points is typically done on a flat delivery profile and so is similar in profile to industrial demand.

The substantial difference in the demand mix of the two systems is reflected in the very different demand profiles of each system. As a percentage of total demand, the DTS has considerably greater peakiness than the GTS – a direct consequence of retail demand in Victoria making up a greater share of the total load. The high share of export demand in the

Netherlands also substantially flattens out the GTS' demand profile. This dynamic is demonstrated in the diagram below where the black line shows the average winter exit profile of the DTS and the green line shows the average winter exit profile of the GTS.

Figure 3: DTS vs GTS Demand Profile



When the very different demand profile of the DTS is considered alongside the system's physical constraints there are implications for the balancing zones in the proposed balancing model. Additional constraints in Victoria include:

- Up to 6 hour lag time between injections at the main supply sources of the DTS and demand at Melbourne;
- Flat profiling of injections;
- Weather-driven surprise demand events; and
- A lack of quick-response storage and limited linepack that can be used to rapidly respond to changes in demand. The LNG storage facility is typically the only balancing tool available for quick response.

Given the peakiness of Victoria's retail load, and the impact that unpredictable surprise weather events can have on this load and the system's physical constraints, the dark green zone will likely need to be smaller as a share of total linepack than the one used in the Netherlands. Indeed, the size of all balancing zones will probably be different. In addition, when compared with the Netherlands, the dark green zone is likely to exhibit a greater degree of intraday change to accommodate peak load and the latency between injections and demand. The dark green zone will also likely exhibit considerable daily and seasonal variation again driven by the level of retail demand.

Seeing as there are significant physical differences between the network in the Netherlands and the DTS, and substantial differences to the demand profiles of each system, a 1 to 1 comparison of the linepack flexibility of the two systems as specified in the report is not appropriate. Further analysis on the size of the zones in the DTS is required and this must

consider the physical characteristics of the system and the underlying demand and supply dynamics.

Finally, if it is determined that the dark green zone is small, then participants' ability to leverage this flexibility will be relatively limited and frequent system operator intervention may be required if imbalances are left unchecked. This would undermine one of core the benefits of the model and would make it inferior to the current arrangements. In such a circumstance, a fixed balancing period may more suitable for reasons of simplicity, cost, and efficiency and this should be given further consideration.

9. Whether the procurement of balancing gas could occur through the purchase of spot products on the Southern Hub exchange at market start, or whether a separate balancing platform is required.

In the existing market, the procurement of balancing gas is integrated with the commodity market. This enables intraday pricing of balancing gas, and importantly does not detract from on-the-day liquidity by having a separate ancillary balancing market. AEMO considers that a separate balancing platform for the Southern Hub would likely negatively impact spot market liquidity and therefore would be a backward step from the current arrangements.

However, it is important to note that under the proposed southern hub model, the voluntary on-the-day commodity market becomes the system operator's primary mechanism by which it acquires balancing gas. This is very different from the current arrangements. As the market is voluntary, the efficiency of balancing actions will be dependent on the liquidity of that market. An illiquid balancing market may result in distressed pricing of balancing gas, with offers of last resort setting the price. This could create considerable on the day risk for market participants particularly for those with a limited ability to manage uncontrollable loads through their gas supply portfolios (smaller retailers or new entrants).

For the system operator, an illiquid voluntary market may mean that it will require other tools/mechanisms that it can call on outside of the market for use at short notice in order to balance the system to maintain minimum pressures and meet demand/supply. However, the means or process by which the system operator would do this are not clear in the paper.

It is AEMO's view that insufficient consideration has been given to the potential market risks and system security concerns that an illiquid voluntary market could present for a decision to be made on the effectiveness of the proposed balancing model. AEMO would particularly welcome further analysis on:

- The residuals (backup) balancing tools that may be required if there are insufficient offers provided on the voluntary market. How would these be accessed by the system operator, and how would they be priced? For example if the LNG tank is fully-contracted, how does the system operator acquire access to this gas?
- Any measures that may be required to encourage liquidity in the voluntary exchange.
- Potential issues for balancing products for which there is limited competition. For example, the hourly product is likely to be limited to LNG and perhaps demand side response. This is of particular concern as this product is the critical product to maintaining system security.

10. In the instance a fixed balancing period was considered appropriate, what an appropriate timeframe would be.

The balancing period should consider the underlying system and its constraints and bespoke requirements. The current four hourly scheduling arrangements are a reflection of these requirements and to date have been successful in securely and efficiently managing extreme demand events.

Regardless of the market and balancing model adopted, the same drivers of demand and supply and infrastructure constraints will exist. As such, if a fixed balancing period is adopted, an intraday balancing period is likely to be more practical and efficient than a daily one. A daily balancing period, which may be seen as more beneficial in encouraging intraday trading, would be likely to require more frequent intervention from the system operator in Victoria. This is because, unlike the current market, participants are only incentivised to correct their imbalances on a daily basis, yet most of the constraints (and therefore balancing requirements) in Victoria occur within the day. Consequently, there would be a misalignment between incentives for participants and the cost of their actions. In addition, the lack of incentives to forecast accurately within the day has the potential to also exacerbate balancing requirements. As a result, if intraday balancing gas is required then the costs of balancing actions may largely be socialised, similar to the ex-post market that existed prior to 2007. Indeed, one of the primary reasons for moving away from the ex-post market in Victoria to the current intra-day arrangements was to improve the cost-to-cause allocation for balancing gas and to improve intraday incentives to forecast accurately and thereby minimise system balancing requirements. Greater socialisation of balancing costs may be the agreed way forward if the aim is to achieve other goals such as a cleaner market price but it needs to be acknowledged that there are trade-offs in this approach. These trade-offs should be assessed against the current market.

AEMO notes that the UK has a daily balancing period, however it should be acknowledged that the UK National Transmission System (NTS) has a number of large storage facilities and greater volumes of line-pack when compared with the DTS. AEMO also understands the typical NTS linepack swing is less than the typical DTS linepack swing. Therefore the NTS is largely able to accommodate intraday swings without frequent intervention from the system operator.

11. Stakeholders views on the role of AEMO as residual balancer and how it should perform this function.

Residual balancing and congestion management tools available to the system operator are paramount to providing secure and reliable gas supply to Victorian consumers. In this section we further elaborate on the relationship between the residual balancer role and system security, and provide our concerns on the potential impact of the proposed balancing model on system security.

Background

Under the current market and operational arrangements, AEMO actively and continuously monitors the system to ensure that it is operating, and will continue to operate, in a secure state. This includes ensuring that:

- System pressures are forecast to be within operational limits;
- Gas flows are occurring as scheduled;
- Supply and demand are balanced – both the total quantity and profiles of demand and supply need to be considered; and
- System and zonal linepack remains within limits.

The DTS is a meshed network of ‘long and skinny’ pipelines, with limited spare capacity and linepack when compared with demand. The DTS’ supply sources are distant from the main demand centre in Melbourne, with gas from Longford and Iona taking up to 8 hours to reach Melbourne from the time it is injected. This dynamic creates the need for the system to be configured in an appropriate way to manage peak periods of demand well ahead of time. In addition, the ability of the system to accommodate unexpected changes in demand and

supply is limited, with the LNG facility at Dandenong potentially the only residual means of balancing supply and demand.

Current operational tools and strategies

AEMO has a number of operational strategies to avert or manage a threat to system security when the system deviates, or is increasingly likely to deviate, from a secure state. Current tools and strategies AEMO has to manage the system include:

- The ability to configure the system ahead of time in a coordinated way to meet peak periods of demand. For example, it is possible for the system to be run in a way where linepack in the Southwest pipeline is used to meet peak demand. This requires adequate linepack to be built up on the Southwest pipeline ahead of the system peak, and in the event that this linepack is depleted to meet peak requirements the system needs to be configured in a way to enable Southwest pipeline linepack to be replenished overnight.
- A voluntary arrangement with Longford gas plant to profile its injections ahead of peak periods. This increases the flexibility of the system and reduces the probability of requiring LNG and pressure breaches.
- Applying a demand forecast override to participants' aggregate demand forecast. AEMO undertakes its own demand forecast and compares this against participant forecasts, bids and offers, and can apply demand overrides in order to maintain system security. This may alter the level of injections scheduled to meet demand.
- Constraining on or off flows at system injection and withdrawal points. This gives AEMO the ability to schedule LNG out-of-merit order if necessary to address a threat to system security.
- Curtailment, where a threat to system security cannot be alleviated through other means.

Potential implications and consequences under the proposed balancing model

Under the proposed balancing model, participants are individually responsible for continuously monitoring and managing their imbalance position. Participants are also the primary agent for undertaking any balancing actions with the system operator only intervening as the residual balancer when the market fails to respond. Preliminary discussions with the AEMC and content in the discussion paper suggest there will be fewer residual balancing tools. The system operator's main balancing tool would be to buy and sell gas from the voluntary market – however it is not clear what the system operator would do if there are inadequate offers provided by participants in this market i.e. what (if any) backup measures there are.

This model represents a fundamental change to the nature of system operation, and AEMO is concerned with the lack of analysis on the potential implications of the new model. A model where participants are primarily responsible for balancing and managing congestion implies that the system operator has less time to act in its capacity as a residual balancer to manage potential threats to system security where the market fails to respond in time. A lack of central coordination by a system operator may also imply that any balancing or congestion management actions required are greater than they otherwise would be. Therefore, inherently, a participant led-model may be less secure than the current arrangements, and while this is being traded off against participants having greater ability and flexibility to manage their intraday positions, greater analysis is required on the pros and cons of each approach to inform the ultimate design.

AEMO's concerns with the model's potential impacts on system security include:

- Whether the system is more or less secure under the proposed model and the associated potential consequences. For example, whether the system will be less secure under the proposed model with an increased frequency of pressure breaches and ultimately curtailment events.
- Whether existing operational strategies and tools are viable under the proposed model and if so how they would work. For example, the Longford profiling strategy requires the system operator in conjunction with facility operators to act ahead of time.
    - It is not clear whether and how such a strategy would work under the proposed balancing model, where participants may act independently from the system operator and are the primary parties responsible for balancing the system.
- The residual congestion management and balancing tools available to the system operator when the voluntary market is inadequate. For example, can the system operator still force in flows? If so how is this done, how are these parties compensated, and at what price?
    - If the only remedy is to force flows in, then this looks very similar to the current market but potentially without the price signals.
- Whether the system operator needs to contract for reserve balancing/congestion management measures. This is a key feature in European entry exit systems. For example, In the UK, National grid has an obligation to meet minimum pressures at certain locations throughout the year (called the safety case). To meet these requirements, National Grid purchases operating margins, essentially storage or LNG capacity or offers to supply or take gas away from the system, from participants.
- Whether further infrastructure is required to safely operate the system under the proposed model.
- The potential economic consequences of the proposed model if the system operator has fewer tools available to securely manage the system and these tools are more expensive. For example, if it is deemed necessary that the system operator requires some of the capacity of the LNG storage facility to be reserved for its use in managing threats to system security. If the total costs of balancing the system are higher, then this cost will be borne by consumers.