

11 September 2015

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Australian Energy Market Commission
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Dear Mr Pierce

Australian Energy Market Commission Wholesale Markets Paper

AEMO welcomes the opportunity to comment on the Australian Energy Market Commission's (AEMC) Wholesale Markets Paper, which forms part of the AEMC's East Coast Wholesale Gas Market and Pipeline Frameworks Review.

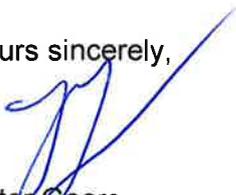
The Review comes at an important time for the gas sector, which is experiencing a large increase in gas production and demand as well as increasingly variable inter-hub gas flows driven by the export of liquefied natural gas. Gas markets can assist participants through this period of rapid change, in which markets will need to respond to more physical trade, new infrastructure, and new and changing patterns of demand.

AEMO believes the Energy Council's vision can be delivered through developments to existing wholesale gas market frameworks if there are effective capacity trading arrangements, enhanced information and commitment from industry. More fundamental change to gas market design may be required in the future if the markets do not evolve to meet the vision of a liquid, efficient wholesale gas market.

AEMO supports the AEMC's approach of considering a spectrum of potential market designs to further industry discussion on the attributes of and the pathway towards a liquid, efficient wholesale gas market. AEMO aims to contribute to the discussion on wholesale market development in this submission by providing a view on wholesale market concepts and the development path. In doing so, AEMO has responded to specific questions posed by the AEMC, with supplementary comments on specific aspects of wholesale market concepts outlined in the discussion paper.

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 Andrew Mann on 03 9609 8833.

Yours sincerely,



Peter Geers

Executive General Manager, Markets

cc:

Attachments: AEMO submission on Wholesale Markets

Attachment A

AEMO submission on Wholesale Markets

1 RESPONSE TO STAKEHOLDER QUESTIONS

Are gas trading markets expected to become more important in ensuring the efficient allocation of gas?

Alongside large increases in gas production and demand, AEMO expects variability in gas production, demand and inter-hub flows to continue as the LNG export facilities are commissioned in Gladstone. As such, AEMO believes east coast gas markets will be increasingly important in ensuring the efficient allocation of gas.

Facilitated gas markets are currently assisting participants through a period of significant change as evidenced by an increase in the use of the markets by participants for managing their physical gas portfolios. However, there are areas of the wholesale market that require attention including competitive hub service development, effective capacity trading arrangements, enhanced information and forward market development.

How many and what type of wholesale gas trading markets are required to meet the Energy Council's Vision and how should this be assessed?

AEMO believes the Energy Council's vision can be delivered through developments to existing wholesale gas market frameworks if there are effective capacity trading arrangements, enhanced information and commitment from industry. However, a more fundamental change to gas market design may be required in the future if the markets do not evolve to meet the vision of a liquid, efficient wholesale market.

The Energy Council's vision is considered in the context of market arrangements below:

- *Establishment of an efficient and transparent reference price for gas.*

The Wallumbilla gas supply hub has the potential to provide industry with an efficient and transparent reference price for gas – an important building block for the development of a forward market.

The Wallumbilla hub is located at the intersection of key gas transmission pipelines, is close to coal seam gas fields and gas powered generation and has the ability to pool together both LNG and domestic market participants.

AEMO is currently reviewing hub services at Wallumbilla with a view to establishing a single Wallumbilla gas market to concentrate liquidity and aid the development of the forward market. The success of Wallumbilla will also rely on the development of effective capacity trading arrangements to provide participants with efficient access to the hub.

Industry's confidence in the market is growing as evidenced by the work that has commenced on the development of forward products based around the Wallumbilla GSH. The trading of forward products, such as the Wallumbilla products established by ASX, would provide industry with a transparent forward curve.

- *Participants able to readily trade gas between hub locations.*

Short-term pipeline services and effective capacity trading arrangements would support the efficient trading of gas between hubs.

- *Investment in infrastructure that responds to market signals and is facilitated by a supportive regulatory framework.*

Locational spot markets across the east coast can signal congestion and the need for investment in infrastructure. Trading of unused pipeline contract capacity would help to reduce contractual congestion – spot prices would then provide a clear signal of physical congestion and investment opportunities.

Does having multiple gas hubs contribute to or detract from the objective of achieving a liquid wholesale gas market and why?

In answering this question it is important to consider the spectrum of requirements for both spot and forward wholesale gas markets.

Multiple spot markets could have the effect of splitting liquidity. However, with effective capacity trading arrangements and enhanced information, spot markets at multiple locations across the network could aid the efficient allocation of gas and may increase the physical trade across the network. Differences in spot prices at hubs signal congestion on the network and aid efficient scheduling decisions. Spot markets at multiple hub locations could also support the trading of pipeline capacity.

In comparison to the spot market, it is important to concentrate potential traders into as few forward markets as possible to support the development of forward market liquidity. In doing so it is important to consider the mechanisms that traders could use to manage basis risk.

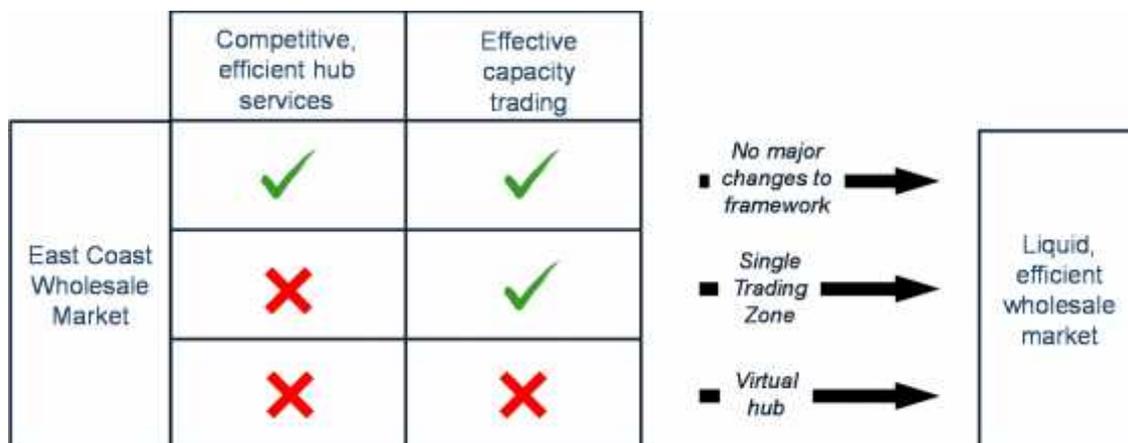
What are the main barriers to achieving a liquid wholesale gas market on the east coast and are regulatory solutions required?

It is important that the following arrangements are in place to achieve a liquid wholesale gas market:

- *Effective pipeline capacity trading arrangements.*
- *Efficient pipeline and storage services* to support short-term trading.
- *Competitive and efficient hub services* to pool together traders and concentrate liquidity.
- *Harmonisation* of participant interfaces to wholesale gas markets.
- *Enhance gas market information.* In particular, it is important to increase transparency for the sections of the network that are overlaid with wholesale gas markets.

Regulated solutions may be required if competition or efficiency hurdles impede the development of a liquid, efficient wholesale market. Potential triggers for regulatory solutions are considered below in the context of the Wallumbilla GSH.

Figure 1: Potential reform triggers



The *Single Trading Zone* model is one of the concepts AEMO, in conjunction with the GSHRG, has developed for the formation of a single Wallumbilla market. Under this mandatory participation model, all gas traded at, or transiting the Wallumbilla hub, would be made through a virtual trading point service. This model, which would require significant changes to regulatory arrangements, could be considered by policy makers further if there is a failure to deliver competitive and efficient hub services at Wallumbilla. With an effective capacity trading mechanism (and enhanced information) the model could help to deliver the key components of the Energy Council's vision.

Virtual hub development would be a significant undertaking in the context of the east coast gas market. However, the implementation of virtual hubs could be considered further if there is a failure to achieve both competitive hub service provision and effective pipeline capacity trading arrangements.

Could the virtual gas hub design concepts set out in section 8 be feasibly implemented on the east coast of Australia? If not, what barriers exist?

The implementation of a virtual hub/s across the east coast of Australia (in particular concept 3) would be a considerable challenge for reasons that include:

- The virtual hub/s would combine transmission systems with different ownership and operations.
- The virtual hub model would be a significant change to the operation, investment framework and regulation of pipelines on the east coast.
- Congestion is likely to be a challenge to manage on the geographically large transmission systems. These constraints may not be observable today as traders generally transport gas along a specific commercial path and operate within the bounds of their contractual arrangements.
- The inclusion of some facilities and not others could impact on trading and balancing outcomes. For example, if participation costs are high then trading may be conducted away from the virtual hub which would undermine the goal of focussing wholesale trading at the hub.

2 WHOLESALE MARKET CONCEPTS

This section outlines specific comments on concepts outlined in the wholesale markets discussion paper.

2.1 Physical hubs

2.1.1 Physical gas trading hubs

AEMO, in conjunction with the GSHRG, is currently considering options to enhance physical trading at Wallumbilla through the establishment of hub service arrangements to support a single commodity market.

2.1.2 Simplification of STTM hubs

During stage 1 of the review a number of stakeholders expressed a desire to consider a simplification of the STTM design. Concepts 1 and 2 contemplate this simplification with the replacement of the STTM hubs with balancing arrangements. If undertaking a change to the STTM then ideally some important roles would be retained including:

- *Support a competitive retail market.* In comparison to individual contract balancing, a market-based balancing mechanism reduces potential hurdles for new entrants and self-contracting users. The wholesale market also provides inputs to facilitate the operation of the retail market (for example, allocations).
- *Support commodity and capacity trading.* Users need to pair commodity and capacity trades at demand hubs to manage their gas supply portfolio around long-term contracts.
- *Provision of information to aid efficient decision making.* The STTM currently provides participants with information in relation to pipeline capacities, scheduled and actual flows, balancing. Real-time information could also aid efficient trading and operational decisions at the hub.
- *Aid efficient scheduling and operations at the hub.*
- *Secure and reliable gas supply.* The contingency gas mechanism within the STTM aids coordination and the ability for market-based response to a gas supply emergency at a hub.

What a simplified STTM could look like

This section outlines high level details for a simplified STTM to aid further discussion on the concept.

In summary, the STTM market schedules (provisional, ex ante and ex post) would be replaced with relatively simple arrangements to support bilateral commodity and capacity trading as well as ex-post balancing.

- Bilateral commodity and pipeline capacity trading.
 - STTM hubs would continue to be notional trading points defined within the National Gas Rules. The defined location of the hub would provide participants with a standard location for gas delivery and trading.
 - Participants would register transactions with the Market Operator to form a trade schedule. The trade schedule would replace the current ex ante market schedule. Transactions could range from imbalance trades, on-the-day and day-ahead trades through to long-term Gas Sales Agreements (GSA)
 - Transactions could be carried out at a trading hub (and then transported to the demand hub) or bilaterally negotiated for delivery to the demand hub.
 - The retail market operator and facility operators would provide allocations to the Market Operator to facilitate title transfer (and settlement of balancing).
- Ex post, market-based balancing mechanism
 - Mechanism (which could be similar to MOS) allows participants to compete to provide balancing gas to hub. The balancing mechanism could move to a daily arrangement.
 - Balancing costs would be paid for by participants that deviate from their trade schedule.
- Reporting, settlement and prudential services provided by the Market Operator.

Pros:

- Simplifies a participant's interaction with the market.
- Utilises existing market rules, processes and systems.

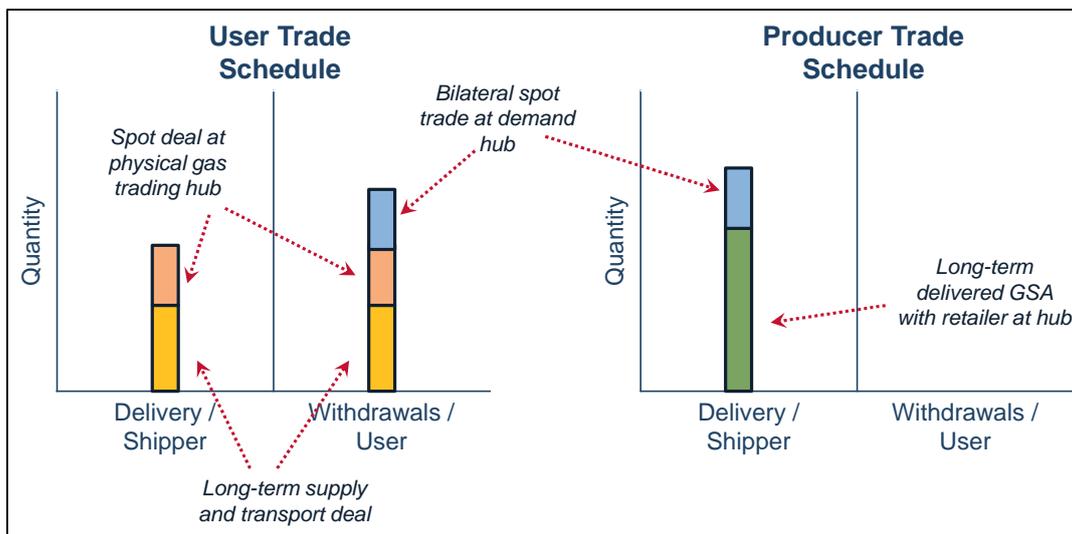
Cons:

- Removes the ex ante market schedule which is used by participants as a tool for managing their gas supplies.
- While adding a layer of complexity, the backhaul, capacity and pipeline flow direction constraint mechanisms increase the level of trading that can be achieved at a hub. This model removes these mechanisms from demand hubs.

Example

The example in Figure 2, shows the trade schedule of a user that withdrawals gas at the hub and that of a gas producer located upstream of the hub.

Figure 2: Example Trade Schedule



The user has long-term deals for gas supply and transportation. It complements these arrangements with spot trades delivered to the gas trading hub (which it pairs with pipeline capacity trades) and the demand hub. The user's deviation is calculated by comparing its retail market allocation to its trade schedule.

The gas producer is located upstream of the hub. The producer delivers gas to a customer at the hub under a long-term GSA. Subject to any spot market trading, the producer would have limited day-to-day involvement in the market.

2.2 Financial Trading

The Wallumbilla GSH provides a focal point for wholesale trading and provides a strong base for financial trading to evolve. While forward market development is in its early stages, industry's confidence in the Wallumbilla GSH is growing as evidenced by:

- Increased trading volume through the GSH. (In August 2015 the total number of GSH trades passed 1,000 and a cumulative trade volume of 5 PJ)
- A reference price used for pricing short-term bilateral physical trades.
- A number of participants have adopted the terms and conditions in the GSH Exchange Agreement in lieu of individual Master Swap Agreements.
- Published Independent Benchmark price acknowledged as being consistent with IOSCO principles. The ASX listed futures product is cash settled against the Wallumbilla benchmark price.
- AFMA is considering development of OTC derivative products referenced to the Wallumbilla GSH.

2.3 Managing Physical Imbalances

The discussion paper outlines general balancing considerations and potential balancing mechanisms. It is also important to consider 'how balancing takes place' in the context of the east coast market. The paper refers to the pipeline operator being responsible for maintaining a balanced hub. A pipeline operator acting in isolation from other pipeline operators and the distributor may not be able to take actions that rectify, or efficiently rectify, residual system balancing.

In international gas markets, residual balancing actions are generally carried out by a central party – a system operator or a hub operator. In comparison, most hubs on the east coast are supplied by multiple pipelines where (outside of Victoria) there is limited coordination between the operators at the hub.

In Adelaide, balancing gas allocated by pipelines (MOS) and paid for by users regularly exceeds the residual balancing requirements of the network (counteracting MOS). Greater coordination between operators at physical hubs could aid efficient balancing outcomes. (The concept of a hub service operator that coordinates operations at physical hubs is outlined in section 2.4)

2.4 Concept 1: Multiple Physical Hub Locations

The concept of multiple physical hub is similar to current market arrangements operating outside of Victoria. However, the proposal presents a significant change to the Declared Wholesale Gas Market.

Concept 1 would provide trading participants with relatively simple market interfaces. The efficiency of the market would depend on the actions of trading participants rather than a central operator. Efficient outcomes would rely upon enhanced information and an effective trading of pipeline capacity.

Managing supply portfolio

Under concept 1 there would be no facilitation of trade at demand hubs. Users would manage their gas supply portfolio by transacting commodity at gas trading hubs, which would be paired with a pipeline capacity trade (as with the option for simplification of the STTM outlined in section 2.1.2).

It is important that arrangements at demand hubs support short-term trading of gas and pipeline capacity. Spread products could help to link trading between the hubs. The design could also be enhanced by catering for the participation of aggregators to act on behalf of users in the wholesale market.

Scheduling and balancing gas at demand hubs

The description of the balancing arrangements at demand hubs as 'low cost, largely automated markets' implies that there would not be coordination between pipeline operators and distributors. In addition to participation costs, efficient scheduling and balancing outcomes should also be important objectives of these markets.

Demand hubs on the east coast have relatively small gas storage capacity – both in storage facilities and in pipelines. Distribution networks have little response (or control) and outside of Victoria there is limited physical coordination between distributors and pipelines other than via pressure-controlled pipelines.

There are potential consequences for balancing outcomes associated with this model – in particular if applied to Victoria. A Melbourne demand hub with the pipelines connected to it working on a contract carriage basis implies a loss of coordination. The core issue in managing the Victorian network is to manage within-day constraints. Under a contract carriage model there is no price basis for managing the trade-off between supply and demand across the day. The Melbourne demand hub would then be the only market for resolving differences between supply and demand, and could mean that demand or LNG at Melbourne could be left to resolve all issues. Further consideration should be given to the coordination of pipeline and network operation under concept 1.

Hub service operator at demand centres

Most metropolitan demand centres are supplied by multiple pipelines. Dynamics between the pipelines and distribution networks can impact upon balancing outcomes at the hub. The replacement of the STTM and DWGM with balancing arrangements (as contemplated by concept 1) implies a less coordinated approach to operations, and with it, less efficient balancing outcomes.

The introduction of hub services – with a party coordinating between pipelines and distribution networks – has the potential to avoid some of these inefficiencies. There are varying levels of sophistication (and hence benefit) that could be developed under a hub service operator model – high level details are included in this section for consideration.

Basic option

Pipeline operators and distributors share information to aid intra-day nominations on the connecting facilities.

Intermediate option

A hub service operator would take a defined role in facility scheduling and allocations. The role could include:

- In response to a constraint, inform a pipeline operator to not flow more gas or to switch between pressure and flow control operation.
- Match changes in demand with changes in flow on pipelines.
- Facilitate the matching of transactions into a hub on one pipeline and out of the hub on another pipeline.

Advanced option

A more advanced option would involve the hub service operator acting directly in both the physical operation of facilities and in trading.

2.5 Concept 2: Northern and southern virtual hub, with balancing at Adelaide and Sydney

Concept 2 involves the establishment of two virtual hubs on the east coast as well as the replacement of the Sydney and Adelaide STTM hubs with balancing platforms.

Location of Northern Hub

The inclusion of the Wallumbilla hub in this model is likely to be a challenge as a relatively large portion of gas transits the APA Wallumbilla compound on the SWQP rather than entering the RBP. However, the exclusion of the Wallumbilla hub would greatly reduce the reach of the hub and its ability to pool together potential buyers and sellers.

SWQP may be a better location as it has the potential to pool together participants trading in the northern and southern markets. The SWQP is one of the key capacity trading links on the east coast. Linepack on the SWQP may also aid the management of constraints within the hub.

Scale of hubs

A key selling point of virtual hubs is that they internalise the complexities, and hence hurdles to efficient trading, associated with the need to pair commodity and capacity transactions in order to pool participants into a single market. However, the virtual hubs proposed in concept 2 would solve only a relatively small component of the capacity trading issue. Further, the relatively small coverage of the virtual hubs means that, depending of participation costs, participants may by-pass the hubs and carry-out wholesale transactions at alternative locations. These considerations may make it preferable to consider the larger virtual hubs discussed in concept 3.

Participation framework

The paper states that the hubs could be voluntary or mandatory. In its simplest, voluntary form, the proposal is equivalent to the existing RBP product listed on the GSH. The current RBP product includes the virtual In-pipe trading (IPT) point as a delivery point that allows gas in the pipeline to be traded with other shippers.

2.6 Concept 3: Two large virtual hubs covering the east coast

This concept is based around large virtual hubs - one North of Moomba, the other to the south. By treating all trades as being at one virtual location the intent is to maximise the number of potential buyers and sellers and hence liquidity. The coverage of the hubs also means that all participants operate under common market arrangements and avoids the risk of by-pass associated with smaller sized hubs.

AEMO agrees that enlarged hubs are a good idea, though only to the extent that the scale does not undermine their goal. AEMO sees a number of aspects of the proposed arrangements which could prove challenging.

Constraints within the proposed hubs are likely to be a challenge to the virtual hub model. The proposed hubs cover a large geographical area and combine multiple pipeline transmission systems – constraints between these systems could impact on the markets ability to match traders operating at different locations within the hub. These constraints may not be observable today as traders operate within the bounds of their contractual arrangements on a specific commercial path. If the current arrangements were to evolve into these large scale hubs, then such constraints would become more apparent than they are today. Hence it is possible that the size of these hubs may make it difficult to maintain a virtual trading point given the level of constraints. Some socialisation of costs are likely to be associated with funding the cost of alleviating congestion if commodity deals are settled at a single price.

A further challenge to the establishment of such large hubs is that they combine transmission pipelines that are currently owned and operated by different entities, cross multiple jurisdictions and are governed by different pipeline regulations.