

The Brattle Group

International Experience In Pipeline Capacity Trading

5 August 2013

Dan Harris
Toby Brown
Alessandro Massolo

Final

Prepared for AEMO

TABLE OF CONTENTS

1.	INTRODUCTION AND SUMMARY	1
1.1.	Summary and Conclusions	1
1.2.	Steps AEMO and other relevant Australian authorities could take to facilitate secondary capacity trading.....	3
1.3.	Organisation of the Report.....	4
2.	THE RELATIONSHIP BETWEEN CAPACITY AND COMMODITY TRADING	4
2.1.	Capacity trading and investment	6
3.	MECHANISMS FOR TRADING CAPACITY	6
3.1.	The development of capacity trading in the EU	6
3.2.	The development of capacity trading in the US	8
3.3.	What is traded –rights, obligations or both?	9
3.4.	Forums for Capacity Trading.....	13
3.5.	Trading Processes	14
3.6.	Standardisation of Capacity Products.....	17
3.7.	Payment for Capacity Trading Services	19
4.	REGULATORY REFORMS AND FRAMEWORKS.....	20
4.1.	Regulation to force capacity sales in the EU	20
4.2.	Regulations in the US	24
	APPENDIX I Information on European Platforms	26

1. INTRODUCTION AND SUMMARY

The Council of Australian Governments' (COAG) Standing Council on Energy and Resources (SCER), has requested the Australian Energy Market Operator (AEMO), in co-operation with other relevant parties, to develop the design for a physical gas trading hub at Wallumbilla, Queensland. The trading hub is planned to be active from March 2014.

AEMO has recognised that more efficient secondary transactions in pipeline capacity services could enhance commodity trading at the new Wallumbilla hub. Moreover, the issues confronting pipeline capacity trading in Australia are consistent with issues experienced by gas markets internationally. Accordingly, a better understanding of overseas models and approaches to capacity trading, including an overview of how these have evolved in practice, and their relative 'successes', could provide a potential roadmap for the evolution of effective short-term trading in pipeline capacity in Australia.

To help in developing this understanding, AEMO has commissioned *The Brattle Group* to undertake a study which summarises experiences with international capacity trading, and measures that have been taken to make unused capacity available for trading.

We have drawn on experience from both the European Union (EU) and the United States (US) in this report. The US gas market is widely thought to be among the most liquid and successful in the world, and reforms in that market are now well established. The EU gas market continues to evolve, and is the subject of active policy development designed to improve liquidity and the prospects for effective competition. Our report puts a greater emphasis on the EU experience, simply because rules associated with secondary markets in pipeline capacity have been of more concern to policy-makers in the EU. In the US, capacity trading has been well established for some time, and more recent emphasis has been on market monitoring and enforcement. However, the focus on Europe should not be misinterpreted as meaning that this experience is somehow more relevant to the Australian market than the US experiences.

1.1. Summary and Conclusions

Capacity trading is particularly important for the development of successful physical hubs, because traders need to be able to transport gas to and from the hub. There should be natural incentives to sell unused capacity, as failing to do so sacrifices revenues. But pipeline users may fail to sell capacity either because the transactions costs are too high – for example finding potential buyers and concluding deals is time consuming and expensive – or because the capacity holder wants to restrict access to the end user markets so as to increase gas commodity prices.

Efficient capacity trading mechanisms reduce transaction costs and overcome the first reason for not selling unused capacity. Trading of pipeline capacity in the US appears generally to function well. The FERC prioritises market monitoring and enforcement (for example, of rules requiring that secondary market transactions be published).

Capacity trading is still relatively immature in the EU. There is not a long history of capacity trading. Nor have several different models been tested that would allow us to determine which is best. Nevertheless, the emerging capacity trading model for the EU involving multiple pipelines or Transmission System Operators (TSOs)¹ can be summarised as follows:

- A capacity trading platform operator offers a relatively simple electronic platform advertising bids and offers for capacity products for multiple pipelines/TSOs;
- Shippers sign separate agreements with the capacity trading platform operator, the pipeline issuing the relevant primary capacity to be traded, and other shippers with which they may trade capacity.
- TSOs/pipelines have agreements with the capacity trading platform to recognise and action capacity trades reported to them by the platform operator.
- Trades are settled bilaterally under a standard shipper-to-shipper agreement – there are no cleared capacity trades. This is most likely because the pool of traders is relatively small, so that it is relatively easy to arrange shipper-to-shipper master trading agreements with a sufficient pool of counter parties. If the number of market participants were much larger, as in a market for shares, it would likely be more efficient to sign a single agreement with the exchange. Bilateral trading also offers the advantage of shippers being able to be more flexible in their credit and collateral requirements. For similar reasons, most gas trading in the EU is carried out bilaterally using Over-the-Counter (OTC) standardised commodity products.

In the US, there are no multi-pipeline trading platforms. Each pipeline has its own Electronic Bulletin Board, and in all cases the contract between the original shipper and the pipeline continues to operate, unless the pipeline agrees otherwise. The new shipper pays the pipeline, and payments from the new shipper are credited against the amounts that are due from the original shipper. In the Australian context, we would recommend the EU model for payments, whereby the pipeline is not involved in receiving payment and making credits. Reducing the role of the pipeline could make it easier to establish capacity trading.

Capacity trading platforms do not generally charge shippers to trade, with the costs of the platform being bundled with other pipeline costs. The Netherlands is an exception, and in the US shippers may pay a fee for a pipeline to actively market capacity.

Overcoming contractual congestion, whereby unused capacity is not released for re-sale, has been a continuing problem in the EU since the start of market liberalisation. Incumbents have found ways around the original UIOLI mechanisms, by for example pretending that capacity was required and then re-nominating downwards just before delivery. To overcome these problems, the EU has imposed stronger UIOLI requirements including the forced release of continually under-used capacity, and restrictions on re-nomination rights for larger capacity holders. In the US, pipelines have long had a UIOLI mechanism, by which pipelines are required to make unused primary

¹ In this report, the terms TSO and ‘pipeline’ are used interchangeably to mean the party that operates the pipeline system, deals with nominations from shippers, sells primary capacity, and collects payments for capacity sold from shippers.

capacity available for purchase as interruptible capacity. Unlike in the EU, this relative simply UIOLI system seems to work well, most likely because the US gas market is structurally more competitive than the EU, and did not have the issue that incumbent gas suppliers were hoarding capacity to prevent market entry.

The ingredients to successful capacity trading can be summarised as follows:

- Ensure fair primary allocation, for example via open seasons or auctions;
- Have effective capacity-release mechanisms in place;
- Make it easy for shippers to trade capacity, by making sufficient capacity-related information available, providing suitable internet-based trading platforms and ensuring active operational co-operation from the pipelines.

Traders we have talked to indicated that the specifics of the trading mechanism are less important than the attitude of the pipelines and TSOs. As long as the pipelines are actively co-operating in capacity trading and looking to find solutions to issues that arise, then capacity trading should go smoothly. In the EU, TSO co-operation has been obtained by a mixture of unbundling and legislative requirements for TSOs to provide the services to facilitate secondary capacity trading.

1.2. Steps AEMO and other relevant Australian authorities could take to facilitate secondary capacity trading

- The relevant authorities could work to standardise terms and conditions for capacity products, especially on the same route. The pipelines could also work to harmonise credit requirements and other conditions required to enter into a capacity agreement with the pipeline;
- The relevant authorities could harmonise the length of the secondary capacity contracts to the gas commodity contracts traded on the new hub, as well as the key terms and conditions of the secondary capacity contracts;
- The relevant authorities could create a capacity trading platform, and develop agreements with the relevant pipelines that they will respect changes in nomination rights that take place as a result of trading, and allow the new users to make direct nominations to the pipelines. This would facilitate ‘operational transfers’ of capacity, where a capacity holder can sell the use of its capacity to a third party but retain responsibility for payment to the pipeline, or complete capacity transfers;
- Transactions involving the sub-letting of capacity should be allowed in Australia, at least until liquidity on the commodity trading hub is established; These transactions could be facilitated via a trading platform;
- The availability of information is a critical ingredient to successful capacity trading, and one of the key functions secondary trading platforms provide is to advertise the demand for and supply of capacity. However, the relevant authorities could also ensure that the pipelines provide information on parameters such as the historic price of recent trades, forecast capacity demand, aggregated nominations, amount of capacity sold and physical gas flows on the key pipeline routes;

- In the EU the interaction between the trading platform and the pipelines has been greatly facilitated because the pipelines/TSOs have been closely involved in the development of the trading platforms. Similarly, in Australia the pipelines should be closely involved in the development of a trading platform and ensure operational ‘buy in’ by the pipelines;
- Assuming that trades would be settled bilaterally, the relevant parties could develop a standard contract for shipper-to-shipper capacity settlement. This could be based either on the EFET agreement or on the PRISMA secondary agreement, subject to the requirements of Australian law;
- The relevant authorities could investigate if stricter UIOLI rules could be developed, that would force re-sale of unused capacity.

1.3. Organisation of the Report

We begin in section 2 with a discussion of the relationship between the trading of capacity and the gas commodity, noting the importance of capacity trading for the development of a liquid physical gas trading hub.

The remainder of the report is organised around the two main ‘market failures’ that can prevent capacity trading. First, the transactions costs of selling capacity could be too large. For example, it could be difficult to find buyers and agree terms in a timely fashion. A related issue is that it might be hard to forecast the demand for capacity, and the capacity holder might worry that once sold, it could be hard to buy the capacity back if circumstances change. This is essentially a liquidity problem. Section 3 of this report deals with the design of markets and mechanisms that should facilitate capacity trading.

Second, the capacity holder may have market power. While the shipper possessing market power sacrifices revenue by withholding unused capacity from the market, this may be more than offset by the increase in the commodity price that results from preventing access to the downstream market. The EU in particular has introduced a number of rules to prevent ‘capacity hoarding’ and force the sale of unused capacity, as well as forcing more disclosure of information concerning available capacity. In the U.S. this has been less of a concern and where it has been experienced it has been dealt with by regulatory intervention after the fact. We discuss these rules in section 4.

2. THE RELATIONSHIP BETWEEN CAPACITY AND COMMODITY TRADING

The definition of gas transport capacity rights, trading of those rights and the trading of gas are closely related. To execute a gas trade, the seller must have gas transport capacity rights to the point of sale, and the buyer must have gas transport capacity rights away from the point of sale. This is the key link between trading of the gas commodity and gas transport capacity rights.

The ability to trade capacity is particularly important for physical gas hubs, like the proposed Wallumbilla hub. By a physical hub, we mean a hub where the gas is traded at a specific physical location in the gas transport system. To trade gas at a physical hub, the seller can only sell to counter parties that have transport capacity from the hub. Other counterparties could also buy the gas at the hub, but they would simultaneously need to acquire gas transport capacity rights from the hub. The

need to acquire transport capacity to be able to buy the gas can increase transaction costs. Accordingly, the use of a physical hub could limit the pool of potential buyers and sellers, making the market less liquid, if capacity cannot be freely traded. The absence of liquidity may also increase the risk of the exercise of market power. As Newbery (2001) notes, *“the tension is between a single wide area pool and nodal pricing [the equivalent of point-to-point transmission rights]the ideal is to have a deep liquid market, but the reality is that gas in different locations, like electricity, may not be easily substitutable at short notice.”*²

The alternative to a physical hub is a ‘virtual trading hub’, which is created by the implementation of a system of ‘entry-exit’ tariffs. Under an entry-exit system, the TSO sells entry capacity – that is capacity to enter the gas transmission system – and exit capacity to leave the gas transmission system. Entry and exit capacity are sold independently from one another, so that there is no concept of a path of the gas flow. In an entry exit system, a holder of entry capacity can inject gas into the system, and trade the gas with *any* party holding capacity at any exit point. The counter party does not have to buy any transport capacity.³ The use of a system of entry-exit tariffs significantly reduces the need to trade pipeline capacity when trading the gas commodity.

In the EU, the issue of capacity trading was felt to be so fundamental to achieving gas market liquidity that the European Commission mandated the use of entry-exit systems, which mitigated the capacity trading issue. In the EU, regulators had started with a market dominated by national incumbent gas suppliers, and accessing transport capacity had not been easy for new entrants, as we discuss below. The 2009 European gas Regulation is explicit that the reason for adopting entry-exit capacity was to encourage liquid trading:

“To enhance competition through liquid wholesale markets for gas, it is vital that gas can be traded independently of its location in the system. The only way to do this is to give network users the freedom to book entry and exit capacity independently, thereby creating gas transport through zones instead of along contractual paths. The preference for entry-exit systems to facilitate the development of competition was already expressed by most stakeholders at the 6th Madrid Forum on 30 and 31 October 2002. Tariffs should not be dependent on the transport route. The tariff set for one or more entry points should therefore not be related to the tariff set for one or more exit points, and vice versa.”⁴

The above discussion does not mean that a system of entry-exit capacity rights is the only way to achieve a liquid gas commodity market. The US has the most liquid gas market in the world without an entry-exit system. The Zeebrugge hub in Europe is also a reasonably liquid physical hub that does not rely on entry-exit capacity contracts. However, the conditions for a liquid physical hub are rather specialised, relative to the conditions for a liquid ‘virtual’ hub at an entry-exit system. The physical trading point or hub must connect a sufficiently large group of potential traders. This either requires

² Newbery, David M., *Privatisation, Restructuring and Regulation of Network Utilities*, MIT Press, Third edition 2001, p.377.

³ Parties only need to acquire more capacity if they want to inject more gas than they currently have a right to do, or withdraw more gas.

⁴ Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005. Recital ¶19.

the hub to connect a group of diverse pipelines and LNG terminals, so that at both physical locations there is a large group of market participants that can trade at that point. Alternatively, or in addition, market participants should be able to easily trade gas transport capacity to accommodate their commodity transactions. Otherwise, the pool of potential market participants will be limited, and it will be difficult for liquid gas commodity trading to develop. That the US has many liquid physical hubs illustrates that secondary capacity trading is working well there.

2.1. Capacity trading and investment

We have heard some concerns that the development of capacity trading could undermine incentives to invest in new pipelines. We have seen no evidence that this is the case in the EU or the US. Rather, secondary capacity trading should reduce the risk of building a new pipeline, because it provides a ready outlet for unneeded capacity. Generally, investors demand a premium for holding an ‘illiquid asset’ – that is, an asset that cannot be sold without significantly depressing its price. This premium increases the cost of making an investment. Accordingly, a secondary capacity market should reduce or eliminate any illiquidity premium which currently applies to new pipeline assets, and make it less expensive to build a new pipeline. If an investor builds more capacity than they need, they can easily sell unwanted capacity on the secondary market.

Perhaps in the past pipelines ‘over invested in capacity’, for example to provide high levels of security of supply, and recovered these costs by limiting the supply of pipeline capacity in the market – though we have seen no evidence of this. Nor would this issue affect new pipeline construction. Nevertheless, if this was an issue, then the solution would be to introduce a stranded cost mechanism, whereby any costs created by a change in the regulatory regime are fully or partially compensated. Similar mechanisms have been applied in the US for example, as a consequence of market reform. The solution is not to continue to prohibit secondary capacity trading.

3. MECHANISMS FOR TRADING CAPACITY

3.1. The development of capacity trading in the EU

Market participants have noted that, in the early days of EU market liberalisation, TSOs were often resistant to co-operating with capacity trading.⁵ For instance, they could be obstructive when a shipper wanted capacity reassigned to another shipper. The reasons for this were likely twofold – first, TSOs had little motivation to provide capacity transfer services, which had never been required in the past. Second, some networks were vertically integrated with gas supply affiliates, and obstructing secondary capacity trading was a way to make life more difficult for new entrants.

Two things changed the attitude of the TSOs to make them more co-operative in the secondary capacity trading process. First, in 2009 the EU imposed stricter ‘unbundling’ requirements, which mean that the networks must either be divested completely, or there are stricter rules in place to separate the network from the supply affiliate. This has meant that the TSOs see their core business

⁵ Based on off the record interviews with market participants and the authors’ own experiences. Such views are not officially documented in a public source.

as selling and managing capacity, rather than blocking market entry for the benefit of the supply affiliate, and so have engaged more enthusiastically with the development of capacity trading mechanisms. Second, new legislation has also required that TSOs develop capacity trading platforms. Specifically, the Capacity Allocation Mechanisms Network Code, or the CAM NC, which is expected to come into force toward the end of 2013,⁶ calls for TSOs to provide a booking platform for allocation of primary capacity by auction and also for trading of secondary capacity for registered shippers.⁷ The CAM NC also calls for a single EU-wide capacity platform, and outlines the process and timetable to achieve this, which would be sometime in 2016.⁸ As we discuss in more detail in section 4, the CAM NC was a response to continuing problems with access to primary capacity and the difficulties of trading secondary capacity in most Member States.

Accordingly, with the exception of the GB market, formal mechanisms for capacity trading in the EU were rare in the early days of market liberalisation. GB was an exception because it the market was liberalised well in advance of other EU markets, and the TSOs license specifically required it to facilitate secondary capacity trading.⁹

This changed in 2005 when the TRAC-X platform was founded as a means to facilitate capacity trading in Germany. Germany is unusual in the EU in having several major TSOs active within the country. In contrast most Member States have only one main TSO, with perhaps one or two much smaller independently owned pipelines. Germany was the first place to develop a capacity trading platform, since the presence of several TSOs within Germany created the need to be able to trade capacity more effectively if a shipper wanted to move gas to all areas of the country. This was largely in response to regulatory pressure.

Other TSOs also offered tools for capacity trading. Gasunie Deutschland Transport Services GmbH (GUD), Energinet.dk and Gas Transport Services B.V (GTS) introduced Link4Hubs, which was the first European ‘hub-to-hub’ service offering firm day-ahead primary capacity. The Belgian and French TSOs, Fluxys and RTE Gaz respectively, also offered a capacity trading platform called Capsquare, which could be used for secondary trading capacity.

Capacity trading arrangements in the EU are currently undergoing significant consolidation, with separate mechanisms now being combined in a single capacity trading platform called PRISMA,¹⁰ which went live on 1 April 2013. PRISMA currently involves 19 TSOs from seven countries, but the majority of the activity is still based on primary allocation. In terms of secondary trading, PRISMA is currently limited to re-packaging the pre-existing TRAC-X (German) and Capsquare (France/Belgium) capacity trading platforms. Link4hubs became inactive as of 1 January 2013.

⁶ CAM Network Code CAP291-12 17 September 2012, hereafter referred to as the CAM NC. Available at http://www.acer.europa.eu/Gas/Framework%20guidelines_and_network%20codes/Pages/Gas-Capacity-Allocation-Mechanisms.aspx

⁷ See CAM NC Section 8 p.28.

⁸ See CAM NC Section 8.5 p.29.

⁹ Special Condition 9A of National Grid NTS’s Transporter’s Licence requires it to develop an ‘Entry Capacity Transfer and Trade Methodology Statement’

¹⁰ Derived somewhat dubiously from ‘Primary and Secondary Market’.

While the TSOs are in essence pre-empting the CAM NC requirements by developing a single EU-wide platform ahead of schedule, a secondary motivation for PRISMA is to reduce costs. Since the IT costs are essentially fixed irrespective of the number of TSOs involved, expanding a single platform makes sense. Apparently traders had complained about high transaction costs with TRAC-X prior to 2012.¹¹

3.2. The development of capacity trading in the US

Before the 1980s, US natural gas pipelines sold gas in downstream markets and third parties had no access rights. Through a series of orders, the Federal Energy Regulatory Commission (FERC) instituted a system of third party access, restrictions on transactions between pipelines and affiliates, and arrangements for capacity trading. The centre-piece of the capacity trading arrangements is the requirement that the pipeline operate an “electronic bulletin board” (EBB), and that all proposed transfers of capacity between shippers be posted on the EBB so that other market participants have the opportunity to match or beat proposed transaction prices.¹²

FERC Order No. 436—the “open access transportation” order—was adopted in 1985. Order 436 established a voluntary program of capacity release and third-party access. An important part of the background to FERC’s action was significant changes to the upstream production industry, including the removal of well-head price controls and expanded development activity, which resulted in new supplies of gas being available at prices below those in the traditional long-term contracts that the pipelines had signed with producers and which were being passed on to end consumers. Order 436 started the process of allowing end users to contract directly with producers, with the pipelines performing a transportation function rather than a bundled transportation and “merchant” function.

In 1988, FERC Order No. 497 established pipeline capacity release reporting requirements, as well as standards of conduct regarding pipeline interactions with their marketing entities. The Order responded to multiple examples of pipeline discriminatory practices. Order 497 prevented discriminatory sales in favour of the pipeline’s marketing affiliates.

FERC Order No. 636 was adopted in 1992. It introduced mandatory “unbundling”, prohibiting pipelines from selling gas (note, however, that Order 636 required “functional” but not “ownership” unbundling: pipeline affiliates were and are permitted to sell gas). Order 636 also effectively created the secondary capacity market by allowing shippers to sell excess pipeline transportation capacity to those who desired to use the extra capacity, on both a short-term and a long-term basis. It also prohibited direct capacity transfer between shippers, instead requiring that capacity release had to be conducted through the pipeline. The pipeline would then be responsible for publishing the availability of the capacity, such that third parties would have the opportunity to obtain the capacity.

¹¹ See for example slide 23, ‘9th Stakeholder Group Meeting of the Gas Regional Initiative North-West Auctioning of primary capacity: results from the platform TRAC-X primary, Rotterdam, 25 November 2011’, which mentions “[c]ontroversy about transaction fees, to be solved in 2012”.

¹² Exceptions are transactions shorter than one month or one year or longer at the maximum tariff. These transactions can be arranged bilaterally with the results posted on the EBB for information only.

FERC Order No. 637 (2000) made an important change to the rules for capacity release instituted by Order 636: under 636 capacity could never be resold at a price greater than the maximum cost-based tariff (set by FERC in the pipeline's rate case). Order 637 removed the cap on transaction prices for short-term capacity release (less than one year).

Since 2000, FERC has not made significant changes to the rules concerning capacity trading. It continues to invest in market oversight and enforcement activities (for example, in respect of "shipper must have title" rules).¹³

3.3. What is traded –rights, obligations or both?

A capacity contract essentially consists of a right and an obligation. First, the contract defines which party holds the capacity and has the right to nominate capacity usage to the TSO/pipeline. Second, the contract defines who has the obligation to pay the TSO/pipeline for the capacity. The right and the obligation can be separated in a market for trading pipeline capacity. This possibility for separation results in several alternative models for capacity trading:

- Complete capacity transfer: under this model, the original capacity holder sells both the right to nominate capacity and the obligation to pay. The original capacity holder has no further involvement in the capacity that has been sold.
- Sub-letting of Capacity: The original capacity holder maintains both the right and the obligation to nominate and pay for the capacity to the pipeline. The original capacity holder signs another contract which allows a third-party to nominate capacity to the original capacity holder, and the original capacity holder in turn makes this nomination to the TSO/pipeline. Similarly, the third-party is obliged to pay the original capacity holder for the capacity, and the original capacity holder then makes payments to the pipeline. Under this model, the pipeline may be unaware of the subletting of the capacity, since it has no direct relationship with the third-party to which the original capacity holder has sub-let capacity.
- Operational Transfer: The original capacity holder transfers the right to nominate capacity to a third party, but maintains the obligation to pay for the capacity. Under this model, the pipeline must be informed of the capacity transfer, so that it can accept nominations from the third party buying the capacity right. However, all payments are still made from the original capacity holder. The third-party cannot re-sell the capacity, and must relinquish their nomination rights once the contract term has ended.

Table 1 summarises some of the main features of these alternative trading models.

¹³ This rule is part of the mechanism for ensuring that all capacity trading goes through the pipeline EBB rather than shipper-to-shipper transactions. See, for example, 138 FERC 61,004 at 12: "These violations of the shipper-must-have-title requirement reduce market transparency in the natural gas transportation market. If ConocoPhillips had followed the capacity release requirements, other market participants would have been fully informed of its activities on the pipelines. Violations of the shipper-must-have-title requirement interfere with the Commission's oversight of the natural gas markets and with the Commission's goal of market transparency."

Table 1: Summary of alternative capacity trading models

	Complete Transfer	Sub-Let	Operational transfer
Credit Requirements	Pipeline must check the credit rating and other financial metrics of the new capacity buyer. Generally, this means that buyers would need to be pre-qualified to trade capacity on a trading platform to avoid delays in executing transactions.	The original capacity holder is responsible for checking the credit quality of the buyer. Typically market players would have a pre-qualified pool of counterparties with whom they will trade. Different traders will apply different credit standards, which may be less strict than the pipeline's, thereby increasing the number of potential trading counterparties.	The credit check would be as for a sub-let, since the pipeline has no exposure to the new capacity holder.
Operational Issues	The new party will make nominations in exactly the same way as the original capacity holder.	The third-party will in effect make nominations to the original capacity holder. This can lead to delays in making nominations, or else a greater lead time required for nominations. For example, the third-party may have to make nominations via email, rather than directly via the pipeline's website. It also creates additional possibilities for errors in nominations, if the original capacity holder makes a mistake in passing on the nomination.	Nominations would be carried out exactly as for a complete capacity transfer.
Role of the Pipeline	Check/approve new capacity holder and register change of capacity ownership.	None.	Register change of capacity ownership.

In Europe, there is a mix of approaches to this issue. Within the Capsquare trading platform, all trades within the Belgian market are operational, meaning that the payment obligation remains with the seller. But for French capacity trades, while short and medium term trades are operation, long-term trades involve a complete title transfer of the capacity. TRAC-X used to offer a similar division using operational trades for short-term capacity, and complete transfers for longer term trades. The standard secondary trading contract for PRISMA also offers an operational transfer, by which the

seller remains responsible for paying for the capacity.¹⁴ However, this contract is described as ‘optional’, implying that complete secondary transfer of capacity may also be possible once PRISMA’s secondary trading capacity is more developed. The Dutch TSO, GTS, offers both operational transfers – called Transfer of Usage Rights – as well as a complete capacity transfer, called Transfer of Capacity Rights.¹⁵ In GB, entry capacity is also sold on an operational basis.¹⁶ However, in all cases shippers are able to ‘surrender’ their capacity for re-sale to the TSO, though they remain obliged to pay for the capacity until the capacity is re-sold.

We have not found evidence of the use of capacity sub-letting on the TSOs’ websites. However, this is likely because the TSOs would not have any knowledge of, and not need to be involved in, sub-letting of capacity. Anecdotally from shippers we understand that capacity holders do sub-let capacity to third-parties.

In the US, short-term capacity release is operational, whereas long-term capacity release is a complete transfer. However, there is no regulatory requirement that the pipeline must permit complete capacity transfers, but the pipeline will not refuse the new shipper as long as it would be “financially indifferent”.¹⁷

In the US there is also the possibility for shippers to cede operational control of their capacity to a third-party manager. Typically, this arrangement might be entered into where an entity such as a local gas distribution utility had contracted for pipeline capacity on a long term basis as part of its gas procurement strategy. If the utility considered that there might be unrealized commercial value in its capacity commitment (for example, the opportunity to make spot sales to industrial users), it might wish to engage a specialized “asset manager” to help make best commercial use of the capacity. Such an arrangement might involve the asset manager agreeing to provide a certain service (for example, delivery of a certain profile of gas) for a fee, with the asset manager free to make use of the capacity also to deliver commercial services to others, perhaps with a profit sharing arrangement with the original capacity holder. These arrangements are exempt from the regular competitive bidding requirements for capacity release.¹⁸

¹⁴ https://secondary.prisma-capacity.eu/prisma/res/tracx/files/prisma_Conditions_for_Capacity_Transfer_en.pdf

¹⁵ See <http://www.gasunietransportservices.nl/en/products-services/entry-exitcapacity/transfer-of-services>

¹⁶ Uniform Network Code Section B System Use and Capacity Section 5.3 p.100.
http://www.gasgovernance.co.uk/sites/default/files/TPD%20Section%20B%20-%20System%20Use%20&%20Capacity_23.pdf

¹⁷ See, for example, the El Paso pipeline tariff, section 4.20: “A Shipper may assign its TSA to: (i) any person, firm, or corporation acquiring all, or substantially all, of the natural gas business of said Party; (ii) an entity that causes Transporter to be financially indifferent to the assignment...”

¹⁸ See CFR18.284.8h3: “A release to an asset manager exempt from bidding requirements under paragraph (h)(1)(i) of this section is any pre-arranged release that contains a condition that the releasing shipper may call upon the replacement shipper to deliver to, or purchase from, the releasing shipper a volume of gas up to 100 percent of the daily contract demand of the released transportation or storage capacity... (i) If the capacity release is for a period of one year or less, the asset manager's delivery or purchase obligation must apply on any day during a minimum period of the lesser of five months (or 155 days) or the term of the release. (ii) If the capacity release is for a period of more than one year, the asset manager's delivery or purchase obligation must apply on any day during a minimum period of five months (or 155 days) of each twelve-month period of the release, and on five-twelfths of the days of any additional period of the release not equal to twelve months. (iii) If the capacity release is a release of

The “sub-letting” model described above is explicitly prohibited in the US, as a result of FERC’s “shipper must have title” rule. A pipeline cannot transport gas nominated by a shipper that does not own the gas. The rationale for this rule seems to be that a sub-letting model would allow shippers effectively to release capacity without publishing the opportunity for third parties to bid for the capacity.

The difference in the approach to sub-letting capacity between the EU and the US raises the question as to what the best approach could be to this issue in the Australian context. The emphasis in the US is on transparency. A sale of capacity via a public platform – such as an EBB – allows others the chance to bid for capacity, and also potentially to gather information on the market price of capacity. The price generated by the transaction is a useful ‘externality’ of the trade, which is lost if the trade is not public. On the other hand, prohibiting sub-letting would restrict the number of parties that could buy capacity. For example, a capacity holder may wish to sub-let capacity to a third-party that has no agreement with the TSO, and so could not undertake a complete or operational transfer of capacity.¹⁹ Under the US model, this party would not be able to obtain capacity.

In Australia, the emphasis should be on maximising the number of potential participants at the commodity trading hub so as to boost liquidity. Therefore, we think that it would be better to allow the sub-letting of capacity. This would sacrifice some transparency in the interests of broadening the pool of market participants as far as possible. At a later date when liquidity at the commodity hub is well established the authorities could consider a prohibition on sub-letting. In any case, if the capacity trading platform is working well, market participants should prefer to advertise operational or complete capacity transfers on the platform to ensure they get the best price possible, rather than use a sub-letting arrangement. Sub-letting arrangements also involve more work for the original capacity holder, as they must pass on nominations from the third party. Hence, we would expect sub-letting to be used only when no other arrangement is possible. In other words, we do not expect that allowing sub-letting would substitute for operational or complete transfers – rather sub-letting transactions would be additional.

Since sub-lets of capacity have no effect on the pipeline, and indeed the pipeline would not know when sub-letting arrangements are in place, pipelines have to date to not facilitated such transactions via their trading platform. However, there is no reason why a trading platform could not also post offers for capacity sub-lets in parallel with offers for operational and complete capacity transfers. As noted above, we do not think that offers of capacity sub-lets would ‘cannibalise’ offers for operational and complete transfers, and sub-lets undertaken via a trading platform would at least add to market transparency. For example, sub-lets could be offered to all potential buyers, whereas operational transfers might be offered to a more limited sub-set of buyers that have a higher credit rating.

storage capacity, the asset manager's delivery or purchase obligation need only be up to 100 percent of the daily contract demand under the release for storage withdrawals or injections, as applicable.

¹⁹ This could be because the potential buyer as a poor credit rating, which the capacity seller is willing to accept, perhaps for a premium on the price of capacity, but the TSO or pipeline would not accept.

3.4. Forums for Capacity Trading

A key choice in the design of a capacity trading mechanisms is whether the trades are bilateral, or cleared through an exchange. Under a bilateral model, bids to buy and offers to sell capacity will typically be posted on an electronic ‘bulletin board’, operated by the pipeline. The bulletin board is a relatively simple internet-based forum where parties post the essential details of the capacity trade such as the location of the capacity – or the route covered – the amount of capacity they want to buy or sell and the price bid or offered. The parties are then responsible for settling the trades financially between themselves, and informing the pipeline operator of the result of the trade. The pipeline will also have the opportunity to reject a trade, for example if the seller is trying to sell more capacity than it holds. Note that PRISMA secondary also offers to possibility for auctions of secondary capacity, whereby a shipper can offer a quantity of capacity, which will be bought by the highest bid made within the auction time window. However, settlement is still bilateral.

Bilateral trading, facilitated by a bulletin board run by the pipeline, is the default method of capacity trading in the EU. For example in the Netherlands, the Dutch TSO (Gasunie Transport Services or GTS) operates a bulletin board, where shippers submit bids and offers. Trades are then settled bilaterally shipper-to-shipper. In the GB market, National Grid also operates a bulletin board, and trades are settled bilaterally. PRISMA secondary and Capsquare are also bilaterally settled, but the capacity trading platform operator i.e. PRISMA or Capsquare, will notify the relevant TSOs that the capacity trade has taken place and of the transfer of capacity rights. The shipper buying the capacity can then make nominations directly to the relevant TSO.

In the US, the prescribed method is bilateral trading with the pipeline as intermediary. Offers to trade must be published on the pipeline’s bulletin board. In the US, there are also commercial websites which provide information about transportation costs for multiple pipeline systems,²⁰ and which also collate information on which shippers hold capacity,²¹ but we are not aware of any possibility for “one stop shopping” for capacity on multiple pipelines.

The alternative to bilateral trading is cleared trading, whereby the exchange is the counterparty to the trade. Cleared, exchange-based trading is anonymous, and the exchange insulates against the credit risk of the counterparty. In return, the parties are required to post collateral to help cover the exchange’s losses in the event of their default. However, we are not aware of any cleared capacity exchanges operating in Europe.

One of the perceived advantages of a cleared exchange is that it offers anonymity. This can be useful if traders do not want others to know if they are long or short on capacity, since this could influence other positions they have in the market. Capsquare offers an interesting contribution in this regard, because while trades are settled bilaterally, bids and offers are anonymous until accepted. Normally this would not be possible, since the counter parties would want to know who they are trading with to control counterparty risk. However, Capsquare allows traders to define a pre-selected group of counterparties, and lets traders know if the offer or bid is from someone inside their pre-

²⁰ See: <http://www.bentekenergy.com/RouteBuilder.aspx>

²¹ See: <http://www.bentekenergy.com/DoNotRemoveCapacityTracker.aspx>

selected group of counterparties. GTS in the Netherlands also allows for parties to submit anonymous bids and offers via email, though an anonymous offer can only be matched with an anonymous bid, thereby restricting the number of potential counterparties.

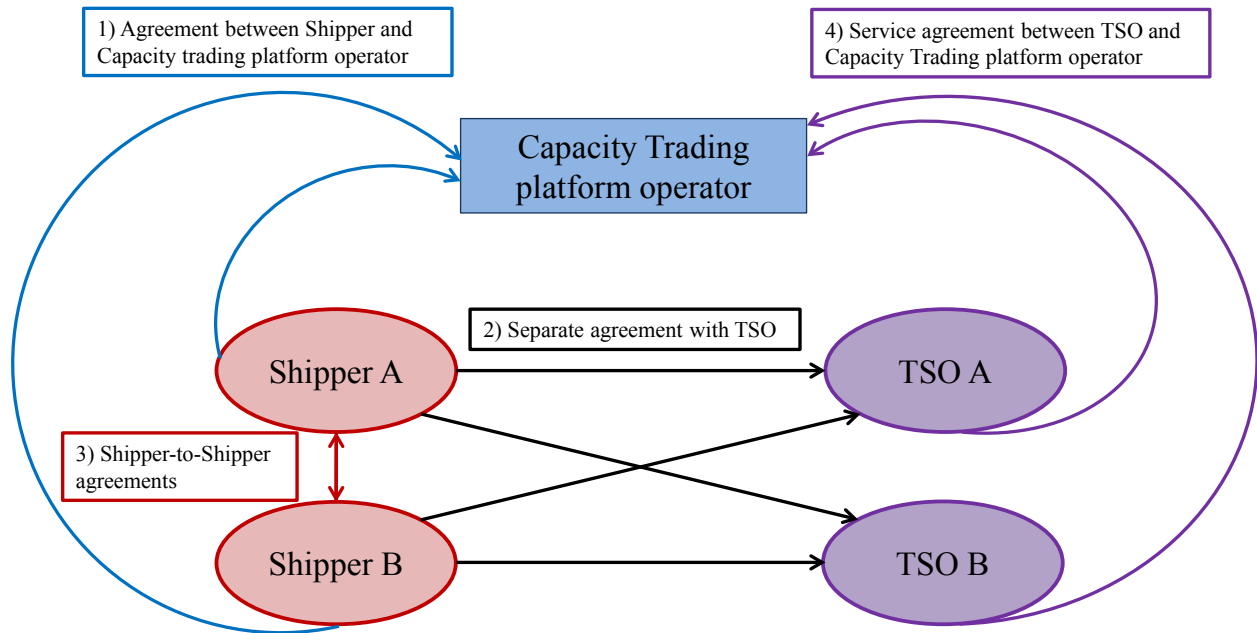
3.5. Trading Processes

Where a capacity trading platform involves multiple TSOs, four main agreements are required:

- The Shipper must sign an agreement with the capacity trading platform operator, which governs the processes for trading and making bids and offers;
- The Shipper signs separate agreements with the TSOs involved in the platform. These are typically the same agreements that would be required to buy primary capacity from the TSO and to use capacity in the system. They cover issues such as credit, collateral, and compliance with the relevant network code.
- Shippers sign bilateral, shipper-to-shipper agreements for the conclusion of capacity trades. These agreements cover payment terms and credit requirements. Shippers will sign multiple agreements with potential counter parties;
- The participating TSOs sign a service agreement with the capacity trading platform operator. These are not public, but presumably commit the TSO to recognise capacity trades that the capacity trading platform operator notifies to the TSO, and to integrate the IT systems of the capacity trading platform operator and the TSO to the extent required to facilitate trading.

Figure 1 illustrates the contractual relationships for a multi-TSO capacity trading platform based on the Capsquare and PRISMA secondary model.

Figure 1: Contractual Relationships for Multi-TSO secondary capacity trading platform



For example, to participate in the Capsquare Platform users must sign the Capacity Platform Services Agreement or CPSA.²² This is essentially an agreement for use of the trading platform. Users must then register with either or both of the TSOs running the platform, by either signing a Standard Transmission Agreement with Fluxys²³ or a Transmission Contract with GRT Gaz.²⁴ These are the same agreements that a shipper would need to buy and use primary capacity, and include credit requirement. For example, GRT Gas specifies that the shipper must pots a guarantee of at least €100,000, or €20,000 if the shipper has a “simplified” gas supply licence, which only authorises them to carry out occasional natural gas purchase and sales transactions.

A standard capacity trading contract developed by the European Federation of Energy Traders (EFET) governs the terms of shipper-to-shipper settlement on Capsquare.²⁵ The EFET capacity contract also covers risk and credit management procedures. The EFET capacity contract is technically an annex the EFET ‘General Agreement Concerning the Delivery and Acceptance of Natural Gas’,²⁶ and modifies certain terms of that contract. Specific credit terms can be agreed bilaterally between shippers.

²² www.capsquare.eu/en/CapsquareParticipation/~/_media/Capsquare/Files/capsquare_ServicesAgreement%20PDF.ashx

²³ <http://www.fluxys.com/belgium/en/Services/Transmission/Contract/contract1>

²⁴ <http://www.grtgaz.com/en/home-page.html>

²⁵ [www.efet.org/Cms_Data/Contents/EFET/Media/Documents/Public%20-%20Standardisation/Dec_31_2008_Gas_Capacity_Appendix_%20\(Fluxys_-_GRTgaz\).pdf](http://www.efet.org/Cms_Data/Contents/EFET/Media/Documents/Public%20-%20Standardisation/Dec_31_2008_Gas_Capacity_Appendix_%20(Fluxys_-_GRTgaz).pdf)

²⁶ [www.efet.org/Cms_Data/Contents/EFET/Media/Documents/Public%20-%20Standardisation/May_11_2007_Genera_%20Agreement_Concerning_the_Delivery_and_Acceptance_of_%20Natural_Gas_Version_2.0\(a\).pdf](http://www.efet.org/Cms_Data/Contents/EFET/Media/Documents/Public%20-%20Standardisation/May_11_2007_Genera_%20Agreement_Concerning_the_Delivery_and_Acceptance_of_%20Natural_Gas_Version_2.0(a).pdf)

As noted above, under the Capsquare system, as with bilateral gas trading, capacity traders form their own ‘pools’ of pre-qualified trading partners, and these are notified to Capsquare. Traders within a pool would have entered into a bilateral EFET agreement and controlled for credit risk.

Similarly under PRISMA, the shipper must sign up to PRISMA’s General Terms and Conditions,²⁷ which cover the procedures for trading secondary capacity. The shipper must select the TSOs in whose capacity it wants to trade, and accept their relevant terms and conditions and supply relevant documentation and credit guarantees to the TSOs. Once accepted by the TSO, the shipper can trade capacity on that TSO’s network.

As with Capsquare, PRISMA secondary allows shippers to form a so-called ‘bidder list’ of pre-approved bidders. Unlike Capsquare, once a bidder list has been formed bids and offers will be restricted to those on the list. PRISMA offers a standard secondary trading contract for determining the conditions of shipper-to-shipper settlement trade, but shippers can also use their own contracts.

The Dutch and GB systems differ from Capsquare and PRISMA in that the capacity trades involve a single TSO, and so the trading platform operator is the TSO. Hence it is sufficient that shippers are registered with the TSO and have signed a transportation agreement for them to trade capacity. No separate capacity trading agreement is required.

In the GB system, trades are notified to the TSO using the ‘Gemini’ IT system. The seller registers details of the trade on Gemini, and the buyer then accepts or rejects the trade within an hour. Since the terms have been agreed before posting on Gemini the buyer would only reject the trade if the agreed details had been entered incorrectly. All registered parties holding a shipper license, and that have agreed to abide by the GB Network Code, can access the Gemini system. We are not aware of a standard shipper-to-shipper capacity contract for the GB system. In practice, we understand that there is relatively little secondary capacity trading in GB, because there is a surplus of primary capacity. Shippers can pick up relatively cheap or even free day-ahead capacity from the TSO in a primary allocation process.

Similarly, in the Netherlands, capacity trades arranged via GTS’s bulletin board must be reported to GTS via its ‘GEA Click & Book’ online system.

In the US, all shippers can, and indeed must, use the pipelines EBB to make capacity trades. In all cases the contract between the original shipper and the pipeline continues to operate, unless the pipeline agrees otherwise. The new shipper pays the pipeline, and payments from the new shipper are credited against the amounts that are due from the original shipper. While the pipeline is an intermediary, in the sense that there is no direct contractual relationship between the two shippers, and all payments are made via the pipeline, the pipeline does not take any risk in connection with secondary market trades.

Hence, one difference between trading processes in the US and the EU is the role of the pipeline with respect to payments. In the US, the pipeline is more involved, because it receives payments from the third-party which has bought the capacity, and credits these against payments owed by the

²⁷ https://secondary.prisma-capacity.eu/prisma/res/tracx/files/prisma_terms_conditions_en.pdf

original capacity holder. In the EU, either the trade would be operation, in which case the original capacity holder continues to make payments, or the transfer is complete, in which case the original capacity holder no longer has payment obligations.

In the Australian context, we would recommend the EU model for payments, whereby the pipeline is not involved in receiving payment and making credits. Reducing the role of the pipeline in transaction settlement could make it easier to establish capacity trading.

3.6. Standardisation of Capacity Products

The standardisation of products is an important ingredient of liquid markets. For example, one author notes that in the GB gas market, “standardised trading in the UK [gas] wholesale market had helped encourage liquidity in the market since 1997”²⁸ which was when the standard contract for trading gas in GB was introduced.

With a standard product, the buyer knows exactly what they are buying, and can see a recent history of prices for identical products. This means that the trade can be undertaken very quickly. In contrast, suppose the terms and conditions differ between products. Before every trade the buyer and the seller will need to understand the exact nature of the product they are buying and its associated risks, and how that risk has changed the value of the product relative to the last trade of a slightly different product. Not only does this take time, but the buyer and seller may disagree on the costs or value of the different terms in the contract. With a standardised product, such discussions are not required, because there is lots of evidence of the value of the product from trades of identical products that occurred in the recent past.

The number of potential trades increases exponentially with the number of shippers active in the market. So with four traders in the market there are 12 possible trading combinations,²⁹ but with eight traders there are 56 potential possible trading combinations. But sufficiently different terms and conditions in effect create many different capacity products for the same route, and only a subset of shippers will be interested in each product. This will reduce the number of potential trading combinations and hence market liquidity.

In the EU, standard terms and conditions for capacity at a given point in the network have arisen by default, since primary capacity and the associated terms and conditions were issued by the same TSO. Hence, parties trading capacity for a given route of entry/exit point will always be trading products with the same terms and conditions.

In the US, industry forums have taken forward initiatives to develop standard approaches to technical and operational issues connected with capacity trading. For example, the Gas Industry Standards Board developed a standard design for pipeline EBBs.

²⁸ Patrick Heather, Oxford Institute for Energy Studies, The Evolution and Functioning of the Traded gas market In Great Britain, NG 44 August 2010, p.11.

²⁹ Suppose we have four traders labeled A, B, C and D. A trading combination would be A trading with B, or A trading with C.

We understand that in Australia primary capacity has been issued by the original investors in the pipeline project – the so-called ‘foundation shippers’. Hence in Australia it is possible that shippers might have to trade capacity products on the same route which have different terms and conditions. This could undermine liquidity, since the traders would in effect be trading different products, reducing the number of potential counterparties. To encourage liquid trading, it should be investigated if terms and conditions for capacity on the same route could be standardised.

While terms and conditions will be the same for primary capacity issues for a particular entry or exit point in the EU, terms and conditions for capacity differ between TSOs. This can create problems for shippers who need to transport gas across multiple networks and face, for example, different force majeure clauses on different parts of the route. Generally, the worst terms and conditions will dictate the risks of the capacity. Notably, the CAM NC has not harmonised the terms and conditions of the capacity contracts. This is most likely because harmonising the terms and conditions of over 40 EU TSOs would have been overly time consuming and contentious, delaying other beneficial aspects of the CAM NC.

While terms and conditions for capacity has not been harmonised, the CAM NC has at least harmonised other aspects of primary capacity products such as their duration. Prior to the CAM NC, differences in the duration of capacity products created additional risks. For example, suppose a shipper could buy quarterly exit capacity on one system, but could only buy entry capacity month-ahead on another system. There would be a risk that the shipper would be unable to buy capacity in the second month, leaving it with exit capacity that it could not use. The CAM NC has addressed this issue, setting out the standard capacity products that TSOs must sell, being yearly, quarterly, monthly, daily and Within-day, and specifying the starting and end dates for these contracts.

The CAM NC also requires that at least 10% of the capacity is sold with duration of one-quarter or less, and that the TSOs must co-operate to sell capacity as a ‘bundled product’. This means that shippers can buy exit capacity and matching entry capacity in a single transaction, and make a single nomination for the capacity. However, the shipper will still need a separate contract with each TSO.

In the US, capacity rights of more than one year, may involve assignment of the original transportation agreement to the new shipper. In this case, the terms and conditions will be the same for the new shipper as for the old one. In principle, terms and conditions in the transportation agreements of different shippers can be different. For trading of short-term capacity, the releasing shipper is able to set terms and conditions under which the capacity is to be released. For example, this can include the possibility for the releasing shipper to “call back” the capacity under certain circumstances. However, any such terms and conditions are expressed as deviations from the pipeline’s standard terms and conditions (the “tariff”), and the new shipper’s contract is with the pipeline.

In practise, we are not aware of liquidity concerns arising out of the possibility that different shippers could hold capacity with different terms and conditions. This could either be because most capacity release postings do not have special terms and conditions, and/or that the variation in terms and conditions do not have a significant impact on the value of the product.

An example of a capacity release that does have different terms and conditions is currently posted on the El Paso pipeline EBB, which states (under the heading “special terms and miscellaneous notes”): “The acquiring shipper may use the alternate receipt and delivery points listed below without incurring additional charges. PG&E will pay the additional charges above the acquiring shipper’s awarded rate up to PG&E’s discounted rate of \$7.9083 when these alternate receipt and delivery points are used:...” A posting from the Kern River pipeline EBB has special terms as follows: “Regardless of the Demand Rate bid, Replacement Shipper acknowledges that the Demand Rate will not apply and Replacement Shipper will pay the maximum recourse rate under Rate Schedule KRF-1 for firm rolled-in rate service for the total DMDQ under Exhibit "RP" to the Released Transportation Service Agreement ("Agreement") for the entire month when one or both of the events described below occur. 1. As a result of segmentation, the total quantity scheduled on any day under this Agreement and any related agreement(s) exceeds the DMDQ under this Agreement; and/or 2. Replacement Shipper schedules any quantity to the Arrolime, Big Horn, Harry Allen, Moapa, Reid Gardner or Silverhawk delivery points in Nevada, or to the Ivanpah or Mountain Pass delivery points in California, and/or Replacement Shipper schedules any quantity to a Pool where any portion of that quantity is then delivered to any of the aforementioned delivery points, and such event was not the result of Replacement Shipper’s oversight or scheduling error. If Transporter constructs new delivery points in Nevada or California where natural gas is delivered to a natural gas consumer connected solely to Transporter’s system, Replacement Shipper and Transporter agree to amend Exhibit "RP" of the Agreement to add the new delivery points to which the discount will not apply.”

We conclude that it could be helpful to the liquidity of the Wallumbilla hub to harmonise the duration of the secondary capacity products and the commodity products being sold on the hub, as well as having a degree of harmonisation off the key terms and conditions of secondary capacity contracts. These measures would help both the liquidity of capacity trading and the liquidity of the Wallumbilla hub.

3.7. Payment for Capacity Trading Services

There are no charges to shippers for use of either the Capsquare or PRISMA trading platforms. The costs of the platform is divided between the participating TSOs, and then recovered from all shippers via regulated capacity charges. Similarly, there are no fees for the GB system, and any costs associated with capacity trading are recovered via general network tariffs.

In the Netherlands, capacity transfers involve a fixed fee which is imposed on the seller. In 2013 this fee was set at €93.21 per transfer, although it is zero for the transfer of day-ahead capacity.

In the US, there may be a “marketing fee” associated with capacity release, at least in circumstances where the releasing shipper requests that the pipeline “actively market” the released capacity rather than merely post it to the EBB. The marketing fee may be negotiated between the pipeline and the releasing shipper.

4. REGULATORY REFORMS AND FRAMEWORKS

4.1. Regulation to force capacity sales in the EU

Section 3 discussed secondary capacity trading mechanisms. In this section, we discuss another key issue – the ability for capacity to be made available for trade in the first place, especially if that capacity is being withheld for strategic reasons.

Problems with access to EU pipeline capacity

Capacity allocation and the management of scarce capacity resources – ‘congestion management’ – have continued to present challenges throughout the EU liberalization process. Almost ten years after the start of the liberalization process, the European Commission’s 2007 sector inquiry identified a number of issues connected with capacity trading that reduced the effectiveness and level of competition in the EU’s gas markets:

“For gas, available capacity on cross-border import pipelines is limited. New entrants are unable to secure transit capacity on key routes and entry capacity into new markets. Very often, the primary capacity on transit pipelines is controlled by incumbents based on pre-liberalisation legacy contracts which are not subjected to normal third party access rules. Incumbents have little incentive to expand capacity to serve the needs of new entrants. This is reinforced by ineffective congestion management mechanisms, which make it difficult to secure even small volumes of short-term, interruptible capacity on the secondary market. In many cases, new entrants have not even been able to obtain a sufficient amount of capacity when there have been expansions of transit pipeline capacity. Expansions have generally been tailored to the needs of the incumbents' own supply businesses.”³⁰

The Commission also noted that:

“There is insufficient co-ordination between national energy networks, in terms of technical standards, balancing rules, gas quality, contract regimes, and congestion management mechanisms, which are necessary to permit cross-border trade to work effectively.”³¹

In an effort to resolve these issues, the third package implemented stronger unbundling requirements between TSOs and affiliated gas marketers, as well as new rules to operate networks and markets on the basis of common principles. The Commission was explicit that the objective was to facilitate cross-border trade and reduce transaction costs.³²

³⁰ DG Competition Report on Energy Sector Inquiry 10 January 2007 p.8.

³¹ Commission Staff Working Document Accompanying the legislative package on the internal market for electricity and gas COM(2007) 528 final COM(2007) 529 final COM(2007) 530 final COM(2007) 531 final COM(2007) 532 final SEC(2007) 1180, Impact Assessment p.15.

³² See European Commission slide presentation on the main novelties of the third package (no date).

While the third package has started the process of resolving the issues which the sector inquiry identified, problems still remain with respect to capacity allocation and cross-border trade. The Commission's most recent 'benchmarking report' published in June 2011 noted that:

"Even if interconnections exist, the absence of harmonisation of market rules in the different Member States leads to market segmentation and higher transaction costs which constitutes a barrier in particular for smaller player. This can even lead to the inefficient situation where gas and electricity flow from high-price areas to low-price areas."³³

The majority of cross-border capacity is still allocated by either a first-come-first-served (FCFS) mechanism, or using a pro-rata allocation method. Neither of these mechanisms is efficient in the sense that they do not allocate capacity to the market parties that value it most. Nor do they reveal the market value of capacity thereby giving useful signals to guide investments.

The ability to obtain gas transport capacity is an essential ingredient for market entry. Therefore the retention of capacity from the market has in the past proved an effective barrier to entry in the gas supply market, and enabled incumbents in some markets to maintain high market shares. The 2009-10 'benchmarking' report noted that "[o]ut of the 21 countries who submitted data only [the] United Kingdom has a concentration ratio for the 3 biggest wholesale companies less than 40%; a couple of countries have almost 70% (Spain, Germany) and the rest of the countries are very close to or above 90%."³⁴

Another report noted that "[s]hippers who own excess long-term capacity may not want to sell on to the secondary market as they may want to use their capacity in the future and may be reluctant to allow new entrants into the market by providing them with capacity"³⁵ And another noted that the problem with access to capacity was due to "privileging access by incumbents' long-term contracts, and sometimes forclos[es] access to markets."³⁶

Though the physical capacity at cross-border connections may be sufficient to allow efficient trading across markets, available, non-booked, capacity is limited. A report for Ofgem on the Gas Target Model noted that "[c]ertain points on the European gas networks suffer from 'contractual congestion' that is where the network capacity is fully booked but not being used and is not made available (or only made available on less commercially attractive terms) for other parties to use."³⁷ This hoarding of unused capacity creates the appearance of network congestion and reduces the ability of firms to trade when in fact additional capacity could be nominated for use. The Third Package for natural gas discussed this issue, noting that "physical congestion is 'rarely' a problem,

³³ Brussels, 9 June 2011 Commission Staff Working Document 2009-2010 Report on progress in creating the internal gas and electricity market p.14.

³⁴ *Ibid.* p.9.

³⁵ "Market design for natural gas: the Target Model for the Internal Market A report for the Office of Gas and Electricity Markets." LECEG. Dr Boaz Moselle and Martin White. March 2011 p. 23 (4.16)

³⁶ "A vision for the EU target model: the MECO-S Model," Glachant, Jean-Michel. EUI Working Papers RSCAS 2011/38. June 2011. p.6

³⁷ LECEG *Op. cit.* p. 12 (2.5)

but may become one in the future. However, there is ‘substantial’ contractual congestion.³⁸ Use it or lose it (UIOLI) rules have attempted to address the problem, by trying to ensure that capacity that is not nominated is made available to others to use. But the existing UIOLI regimes have met with mixed success.

Initiatives to improve access to capacity – the Third Package

In response to the problems identified for pipeline capacity access in the 2007 sector inquiry, the EU revised the key legislation for the gas market, including the Gas Regulation. The 2009 Gas Regulation provided for the development of new network codes that would be:

“based on the freeing-up of unused capacity by enabling network users to sublet or resell their contracted capacities and the obligation of transmission system operators to offer unused capacity to the market, at least on a day-ahead and interruptible basis. Given the large proportion of existing contracts and the need to create a true level playing field between users of new and existing capacity, those principles should be applied to all contracted capacity, including existing contracts.”³⁹

One of the key new pieces of legislation to improve access to capacity in the EU are the Congestion Management Procedures or CMP, which were amended to the 2009 Gas Regulation in August 2012.⁴⁰ The CMP has the same legal effect as the regulation, and becomes law in all EU Member States without the need to transpose the rules into national law.

New rules that the CMP introduced are:

- ‘Firm’ use-it-or-lose-it (UIOLI) rules: the original 2005 Gas Regulation had required UIOLI rules to be in place, whereby un-nominated capacity would be made available to others on an interruptible basis. However, in shippers aiming to withhold capacity could re-nominate downwards at the last possible moment, when there would be little demand for the interruptible capacity that the downward nomination created. Accordingly, the new rules place limits on re-nomination rights, at least for congested points of the network and for users that held more than 10% of the capacity at that point over the last year. The limits on the renomination rights mean that some of the UIOLI capacity becomes firm, and cannot be interrupted by subsequent re-nominations. Note that initial relative strict restrictions on re-nominations were relaxed in the final CMP text, as it was felt that the proposals would excessively constrain shippers’ ability to deal with changing gas demand forecasts, and that the long-term UIOLI rules discussed below would deal with some of the problems identified.
- Capacity surrender: this new rule obliges the TSO/pipeline to accept capacity that a shipper does not require anymore, and to try to re-sell the capacity on behalf of the network user. The idea is to allow shippers to ‘piggy back’ on the TSOs existing primary

³⁸ See Regulation (EC) No 715/2009, Recitals 21 & 22.

³⁹ Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005. Recital ¶21.

⁴⁰ Commission Decision 24 August 2012, 2012/490/EU.

capacity sale mechanisms such as auctions. The TSO will only re-sell the capacity once primary capacity has been sold. The original capacity holder retains all of the obligations of the capacity, including for payment, until the capacity is re-sold. National regulatory authorities are responsible for determining the mechanisms or setting the price for the surrendered capacity.

- Long-term UIOLI: This rule obliges capacity holders that systematically under use their capacity to surrender it to the TSO. Specifically, if the capacity holder has on average used less than 80% of their capacity over a 12 month period, or the capacity holder consistently nominated close to 100% of their capacity and then nominated downward close to delivery, the use will have to surrender the capacity ‘partially or completely’, meaning that even capacity that the shipper was using regulatory could be lost.
- Overcapacity and buyback: In highly meshed networks as in the EU, the amount of capacity that is available at any point is highly dependent on the flows at other points in the system. Accordingly, there is inherent uncertainty as to the amount of capacity that will be available at any point in time. Historically, TSOs tended to be conservative in estimating the amount of capacity that would be available. This rule requires that TSOs estimate the available capacity on a probabilistic basis, and sell more capacity than might actually be available on a given day. If the TSO has sold more capacity than is actually available, then they must buy some capacity back. However, we think that this rule is less likely to be useful in the Australian context, because the layout of the pipelines is more point-to-point, and so available capacity will be less dependent on the flows of other connected pipelines.

Provision of Information

As discussed above, a frequent complaint heard in the sector inquiry, and prior to that, was the lack of information regarding available pipeline capacity. In response to this, the revised 2009 Gas Regulation set out the information that TSOs were obliged to publish regarding capacity. The Gas Regulation states that TSOs must publish information regarding:

- (a) the maximum technical capacity for flows in both directions;
- (b) the total contracted and interruptible capacity; and
- (c) the available capacity.

TSOs have to publish data on the available capacities for a period of at least 18 months ahead and shall update that information at least every month or more frequently. The TSOs also have to provide annual long-term forecasts of available capacities for up to ten years ahead.

As well as publishing forward-looking data, TSOs have to publish historical maximum and minimum monthly capacity utilisation rates and annual average flows at all relevant points for the past three years on a rolling basis.

The Gas Regulation specifies that the data listed above must be published on the internet on a regular basis and in a user-friendly, standardised manner. Typically, users are able to download the

data in an Excel format. TSOs also need to provide user-friendly instruments for calculating tariffs for the services available and for verifying on-line the capacity available.

4.2. Regulations in the US

We described the major regulatory interventions in the US to encourage competition in the gas market, including by facilitating the trading of capacity, in section 3. US reforms were implemented much earlier than those in the EU, and the structure of the industry was different in several respects. US pipelines usually did not own local gas distribution utilities, and therefore did not usually have a “franchise base” of domestic customers. At the same time, there was upstream competition in production. As a result, in the early part of the reform process, regulators had leverage over the pipelines when it became apparent that the pipelines had significant potentially-stranded costs in long-term take-or-pay contracts above market rates. In return for allowing at least partial recovery of stranded costs, regulators were able to give strong encouragement to pipelines to facilitate effective third-party access. In addition to these factors, at least some pipelines appear to have taken a strategic decision to embrace third-party access as a new business model, such that at least part of the industry was in favour of the reform process.

US gas markets have developed to the point where there are many regional hubs at which gas is traded and where price indices are reported. As a result, the availability of pipeline capacity is presumably less important for many industry participants, since gas can in many cases be purchased close to the point of use.

In the US, pipelines are required to sell interruptible capacity, which is equivalent to a UIOLI mechanism (because unused primary capacity is made available to the market if the primary capacity holder is not using it). Pipelines are also required to have a mechanism for shippers to “release” capacity for resale. Capacity release transactions are of two kinds: if capacity is released for less than one year, the capacity must be made available to the highest bidder by posting the capacity on the pipeline’s EBB, and there is no cap on the price.⁴¹ If the capacity is released for more than one year then the price charged cannot be more than the maximum regular (“tariff”) rate, and if the capacity is released at the maximum tariff rate, the transaction is simply published for information (there is no requirement that the capacity be made available generally on the EBB, so in this case shippers can arrange the transfer privately).

The releasing shipper may determine the terms and conditions under which the capacity is released (for example, short-term capacity release could be “recalled”). The pipeline’s “tariff” will contain rules and procedures for capacity release. For example, the tariff will specify how competing bids for released capacity will be assessed, such that there will be certainty of outcome of the bidding process.

In addition to the requirements discussed above that pipelines operate an EBB for capacity release, and that all capacity release transactions be published on the EBB, US pipelines are also

⁴¹ Except that very short-term transactions (less than one month) can be arranged bilaterally between shippers, with the results posted on the EBB for information only (as for transactions longer than one year at the max tariff rate).

required to post various operational data. This includes design capacities, available capacities, and historical flow data has to be made available for all receipt and delivery points and for the various segments of the pipeline. Planned and actual outage data must also be published.⁴²

⁴² The rules on information posting are in CFR 18.284.13d

APPENDIX I :INFORMATION ON EUROPEAN PLATFORMS

	PRISMA	TRAC-X	Capsquare
Description of how the trading facility work	The platform connects 9 European gas hubs in 7 countries (CEGH, Gaspool, NCG, Nord Pool, PEG North, PEG South PSV, TTF and (auctions and first-come-first-served bookings).The Primary capacity products can be bundled products between products traded are Monthly, Quarterly and Yearly checked and registered by Fluxys and GRTgaz, who adjust users' capacity hubs, unbundled products, products as defined in the CAM Network code products. Day-Ahead products are auctioned in a portfolio accordingly. Bids and offers posted on Capsquare are anonymous and are earmarked if they originate from a market participant who does not belong to a user's group of trading partners. The partners are freely chosen, no standards are required to be part of a group. Once an offer or bid is accepted, the identity of the trading partners is disclosed to each other so as to enable the settlement.	The platform offers two different market models (auctions and first-come-first-served bookings).The Fluxys and GRTgaz. All transactions concluded through Capsquare are ZTP).The Primary capacity products can be bundled products between products traded are Monthly, Quarterly and Yearly checked and registered by Fluxys and GRTgaz, who adjust users' capacity hubs, unbundled products, products as defined in the CAM Network code products. Day-Ahead products are auctioned in a portfolio accordingly. Bids and offers posted on Capsquare are anonymous and are earmarked if they originate from a market participant who does not belong to a user's group of trading partners. The partners are freely chosen, no standards are required to be part of a group. Once an offer or bid is accepted, the identity of the trading partners is disclosed to each other so as to enable the settlement.	Capsquare is directly connected to the gas flow management systems of Gaspool, NCG, Nord Pool, PEG North, PEG South PSV, TTF and (auctions and first-come-first-served bookings).The Fluxys and GRTgaz. All transactions concluded through Capsquare are ZTP).The Primary capacity products can be bundled products between products traded are Monthly, Quarterly and Yearly checked and registered by Fluxys and GRTgaz, who adjust users' capacity hubs, unbundled products, products as defined in the CAM Network code products. Day-Ahead products are auctioned in a portfolio accordingly. Bids and offers posted on Capsquare are anonymous and are earmarked if they originate from a market participant who does not belong to a user's group of trading partners. The partners are freely chosen, no standards are required to be part of a group. Once an offer or bid is accepted, the identity of the trading partners is disclosed to each other so as to enable the settlement.
Level of involvement and role of the Pipeline operator/TSO	TSOs comply with gas capacity nominations communicated by the capacity trading platform operator or the traders.	TSOs comply with gas capacity nominations communicated by the capacity trading platform operator or the traders.	TSOs comply with gas capacity nominations communicated by the capacity trading platform operator or the traders.
Type of trades (bilateral or cleared)	Bilateral	Bilateral	Bilateral
Capacity 'sub-let' (bare transfer), transferred permanently or temporarily	The standard trading contract of PRISMA offers operational transfer. Operational payment for short-term capacity and secondary trading capacity will be more developed, complete secondary transfer of capacity may also be possible.	Operational payment for short-term capacity and complete transfers for longer trades.	For the Fluxys market, all secondary capacity trading transactions imply an assignment of all rights and obligations, except for the payment obligation. For the GRTgaz market, the short and medium term segments imply a right of use transfer, whereas the long term segments consist of a title transfer.
Criteria for qualifying to trade on the platform	A single user of a shipper can only acquire transport capacities on the platform and on behalf of their company once they have been activated by the respective TSO. Users of a shipper who would like to join the platform have to pass the registration process. The shipper has to send all required documents to the TSO (e.g mandate/solvency check), signing up to PRISMA's General Terms and Conditions, which cover the procedures for trading secondary capacity. In order to be a member of Prisma no fees are required.	A single user of a shipper can only acquire transport capacities on the platform and on behalf of their membership is available through a Capsquare standard agreement. These agreements are the same of the ones that shippers would need to buy and use primary capacity and include credit requirements. For example, GRT Gas specifies that the shipper must provide a guarantee of at least 100,000 euros or 20,000 euros if the shipper has a "simplified" gas supply licence. The shipper has to send all required documents to the TSO (e.g mandate/solvency check), in order to get registered.	In order to be a member of Capsquare no fees are required. However, the membership is available through a Capsquare standard agreement. These agreements are the same of the ones that shippers would need to buy and use primary capacity and include credit requirements. For example, GRT Gas specifies that the shipper must provide a guarantee of at least 100,000 euros or 20,000 euros if the shipper has a "simplified" gas supply licence. Moreover, a standard capacity trading contract developed by the European Federation of Energy Traders or EFET governs the terms of shipper-to-shipper settlement. The EFET capacity contract also covers risk and credit management procedures. The EFET capacity contract is technically an annex the EFET 'General Agreement Concerning the Delivery and Acceptance of Natural Gas', and modifies certain terms of that contract. Specific credit terms can be agreed bilaterally between shippers. Technical requirements: the customer is responsible of its own ICT facilities needed for access to the platform.

	Bulletin Board (Gasunie Transport service)	GB- Gemini IT system
Description of how the trading facility work	<p>Shippers can trade both entry and exit capacity. The Gasunie Transport Service (GTS) runs a Bulletin Board where every shipper can submit their bids or offers. All payments take place bilaterally between shippers.</p> <p>The actual transfer of capacity it is done through the GEA click & Book or via the GTS's application form. The GTS gives also the possibility to the users to submit their offers and bids through anonymous messages. In this case the GTS will provide the service of matching buyers' anonymous offers with sellers' anonymous bids.</p>	<p>Gemini is a system jointly used by National Grid, Shippers and Traders to commercially manage gas transportation on the (National transmission system) NTS. It is traded secondary entry capacity trading:</p> <p>Users can trade entry capacity at an entry point to another User at the same point. A Bulletin Board provides the facility to advertise or view all posted entry capacity bids or offers on the market. The deals are executed outside of Gemini and only registered on Gemini. The Selling User is required to register details on Gemini and the Buying shipper either confirms acceptance or rejects the trade. Trades must be confirmed by the Buying shipper within an hour of the trade being registered otherwise the trade will be 'Timed Out'. If National Grid does not reject, within 60 minutes of the trade being registered, then the trade is deemed approved. The trade can be notified up to 04.00 on the gas day. National Grid can reject a trade if the trade takes a User into a negative position. Trades cannot be placed historically but can be placed as far in advance as the user wishes. Liability remains with the original User.</p> <p>Shippers (including users) cannot trade exit capacity either between exit points or to another user at the same exit point.</p>
Level of involvement and role of the Pipeline operator/TSO	<p>The TSO holds the platform.</p> <p>TSOs comply with gas capacity nominations communicated by the capacity trading platform operator or the traders.</p>	<p>The TSO is allowed to reject the transaction of secondary entry capacity.</p> <p>TSOs comply with gas capacity nominations communicated by the capacity trading platform operator or the traders.</p>
Type of trades (bilateral or cleared)	Bilateral	Bilateral
Capacity 'sub-let' (bare transfer), transferred permanently or temporarily	<p>GTS provides the possibility to transfer either of capacity rights or of usage capacity rights. In the first case, all rights will be transferred from the seller to the buyer, i.e. the entire contractual position including the usage rights. The capacity becomes part of the portfolio of the buying party. The buying party will receive the invoice for the capacity from GTS.</p> <p>In the second case, the selling party will retain its contractual position and all its rights related to the capacity; only the usage rights and all related agreements will be transferred from the selling party to the buying party. GTS will continue to send the invoice for the capacity to the selling party.</p>	Temporary, in particular it is an operational transfer and the seller can define the period of transfer.
Criteria for qualifying to trade on the platform	<p>In general, every agent that want to use the GTS services has to comply with creditworthiness requirements. The credit limit is determined on the basis of the financial data or on the basis of securities (additional securities). It is set an initial credit limit for each shipper, after performing a financial analysis of the company. The credit limit must always cover the exposure or expected exposure. The credit limit must always at least cover the exposure. It is possible to increase the credit limit by providing additional financial securities.</p> <p>GTS accepts the following additional financial securities: parent company guarantee, security deposit and bank guarantee. The financial securities must be valid for at least 2 months after the end date of the longest transmission contract.</p> <p>In order to get access to the GEA click and book, User certificates are required. It is possible to obtain 8 certificates for free. For additional certificates it is annually charged 100 euros per certificate.</p> <p>In the Netherlands, capacity transfers involve a fixed fee which is imposed on the seller. In 2013 this fee was set at 93.21 euros per transfer, although it is zero for the transfer of day-ahead capacity.</p>	Trade Registration for the selling shipper to register the trade and for the buying shipper to confirm the trade.