AEMC

REVIEW

Australian Energy Market Commission

PIPELINE REGULATION AND CAPACITY TRADING DISCUSSION PAPER

East Coast Wholesale Gas Market and Pipeline Frameworks Review

18 September 2015

Submissions due 16 October 2015. Reference: GPR0003
Pipeline Regulation and Capacity Trading Discussion Paper

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About the AEMC

The AEMC reports to the Council of Australian Governments (COAG) through the COAG Energy Council. We have two functions. We make and amend the national electricity, gas and energy retail rules and conduct independent reviews for the COAG Energy Council.

Foreword

The east coast gas industry is undergoing a period of rapid and substantial change, most notably with the development of a large liquefied natural gas (LNG) export industry in Queensland. While these changes should bring substantial benefits to the Australian community, they may test the appropriateness of current market arrangements, and have therefore attracted significant interest.

In late 2014, the Council of Australian Governments' Energy Council outlined its Vision for the establishment of a liquid wholesale gas market. A market with a transparently traded gas price which is suitably liquid and robust would allow participants to manage risk in an environment where long term bilateral contracts are being supplanted by shorter term trading.

The ability of gas to flow easily across the pipeline system to where it most highly valued is a critical enabler of a liquid gas market. If there are obstacles to participants being able to access transportation capacity, this will inhibit their ability to trade gas. Consequently, efficiency in the use of pipeline capacity will be of fundamental importance in allowing the Vision to be achieved.

The objective of this paper is therefore to prompt a discussion on the appropriate gas transmission arrangements to complement the potential developments to wholesale gas markets on the east coast recently consulted on by the Commission. It provides stakeholders with the opportunity to respond to issues raised with regard to the regulatory framework for transmission pipelines, as well as to a number of other possible approaches to improving the pipeline capacity trading market.

Over the second half of 2015, the Commission will continue to seek input from industry on a number of workstreams associated with this review. We appreciate the time and resources that stakeholders have invested in attending meetings and preparing submissions, particularly over such a short timeframe, and thank you for engaging with the Commission throughout the review process.

John Pierce

Chairman

Executive summary

This objective of this paper is to stimulate discussion around the arrangements for pipeline regulation and capacity trading in the context of the Council of Australian Governments' Energy Council Vision for Australia's future gas market.

The achievement of the Council's Vision of a liquid wholesale gas market depends critically upon the ability of participants to access pipelines to readily transport gas between trading locations. In Stage 1 of the review, the Commission highlighted the general acceptance that the pipeline arrangements applying outside of Victoria - referred to as "contract carriage" - have delivered timely and efficient investment. However, we also raised concerns that difficulties in the processes for reallocating rights to use pipelines might impede the ability of the market to reach efficient outcomes.

Issues of capacity allocation[1] are likely to be exacerbated by structural changes in the gas sector that are leading to more volatile gas transportation requirements for shippers. Given the inconsistency between the potentially dynamic nature of shippers' transportation requirements and the long-term allocation of capacity typical under the contract carriage model, there may be a need to reconsider regulatory frameworks to facilitate greater liquidity in the trading of capacity.

In this context, the focus of the Commission's work in Stage 2 of the review has been to consider the potential for the following factors to impede the achievement of efficient outcomes:

1. high search and transaction costs in the market for transmission capacity, particularly for shorter-term trades;

2. the lack of incentives to provide access by shippers that hold capacity; and

3. the lack of incentives to facilitate access by pipeline owners.

The Commission is concerned that these issues may be resulting in existing capacity not being held by the parties that value it the highest.

The Commission is working with the Australian Competition and Consumer Commission (ACCC) which is currently undertaking an inquiry into the east coast gas market to, amongst other things, get a better understanding of these (and any other potential) impediments and the extent to which they may be affecting the efficiency of the transmission sector and, importantly, prices in downstream gas markets.[2]

In light of these three issues, the Commission has developed three broad approaches to how changes in the market might be implemented.

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1 In this paper, capacity allocation refers to the commercial processes through which shippers obtain capacity rights.

2 ACCC, *Inquiry into competitiveness of the wholesale gas industry,* 2015

These approaches are not mutually exclusive of each other. Equally however, it may not be necessary to implement all of the approaches, or all of the elements of each approach.

Approach A – Facilitate trading between parties

High search and transaction costs in the market for transmission capacity, particularly for shorter-term trades, may represent a cause of inefficient allocation of pipeline capacity, as transaction costs limit trading liquidity.

Approach A presents a number of possible ways to address these costs by facilitating trade between parties, on the assumption that shippers and pipeline owners have incentives to trade capacity and that transaction costs are the primary barrier to these trades occurring.

Approach B – Improve the incentives of capacity holders in the provision of capacity

While capacity holders may derive option value from retaining pipeline capacity that is unlikely to be used, they may also have an incentive not to sell capacity, or to price it very highly, because they want to gain a competitive advantage in an upstream or downstream market, in a practice known as "hoarding".

By hoarding capacity, shippers may preclude their competitors from upstream or downstream markets.

There may additionally be provisions in the contracts between the holders of capacity and pipeline owners that may be further limiting either party's ability or incentive to trade capacity.

Approach B presents a number of possible elements that address potential market power held by shippers, including compulsory capacity reallocation from shippers holding but not using capacity to prospective shippers.

Approach C – Improve the incentives of pipeline owners in facilitating access to capacity

The Commission is considering whether the current transmission pipeline regulatory framework (the gas third party access regime) has the potential to lead to inefficient outcomes by not allowing for the appropriate level of regulation for pipeline owners that might be exercising market power in the provision of capacity.

The gas third party access regime, in keeping with the National Access Regime, is a tool targeted at enabling third parties to use existing bottleneck infrastructure in

circumstances where the owner of the infrastructure does not wish to make it available, and where such use would promote competition in other markets.[3]

The third party access regime is not, therefore, a comprehensive regulatory instrument designed to solve a broader range of problems that might affect markets such as the gas market. In particular, it may not specifically be designed to address instances of monopoly power on the part of a pipeline owner in the transmission sector, implying that if such instances existed, either now or in the future, pipelines may not be subject to the appropriate level of regulation.

Unconstrained by competition or regulation, pipeline owners may be able to price capacity at a level higher, or offer a level of service lower, than that which would be expected to prevail in a workably competitive market. Amongst other things, this could have a detrimental effect on competition in the wholesale market, through the potential for the inefficient under-utilisation of pipelines.

Approach C presents ways to improve the incentives of pipeline owners to facilitate access to capacity, including changes to the economic regulatory regime such that the test for regulatory coverage would directly consider whether a transmission infrastructure owner is, or could be, exercising market power in the capacity market.

Feedback

The appropriate regulatory response to any of the identified issues not only depends on their current and likely future materiality, but also on the ability and likelihood of the market to respond in a timely manner without intervention. As a result, the Commission seeks feedback on:

- the nature and extent of the issues identified, and any other potential issues; and
- the market's likely ability to respond to these issues in a timely manner absent of regulation, and so the appropriateness of any of the approaches identified.

In addition, the Commission is particularly interested in stakeholder views on its analysis of the coverage test, which implies that changes should be considered so that the regulatory regime is more directly targeted at the potential sources of market failure in the gas transmission sector. Even if such a change resulted in no variation to pipelines' current regulatory status, this would reduce the potential for market power issues arising in the future. The Commission welcomes feedback on whether it would be appropriate to further progress work in this area regardless of any market power currently being exercised in the sector.

The closing date for submissions is **16 October 2015.**

3 National Competition Council, *Declaration of the shipping channel service at the Port of Newcastle*, Draft Recommendation, 30 July 2015, at 3.16 to 3.19.

Contents

1 Introduction

1.1 Context

On 20 February 2015, the Council of Australian Governments' (COAG) Energy Council directed the Australian Energy Market Commission (AEMC or Commission) to review the design, function and roles of facilitated gas markets and gas transportation arrangements on the east coast of Australia ("the east coast review"). This followed the publication of the Energy Council's Vision for Australia's future gas market:[4]

> "The Council's vision is for the establishment of a liquid wholesale gas market that provides market signals for investment and supply, where responses to those signals are facilitated by a supportive investment and regulatory environment, where trade is focused at a point that best serves the needs of participants, where an efficient reference price is established, and producers, consumers and trading markets are connected to infrastructure that enables participants the opportunity to readily trade between locations and arbitrage trading opportunities."

The Council's Vision can be broken into three outcomes:

- Establishment of an efficient and transparent reference price for gas.
- Participants able to readily trade gas between hub locations.
- Investment in infrastructure that responds to market signals and is facilitated by a supportive regulatory framework.

The achievement of the Vision depends critically upon a well-functioning gas transmission sector.[5] More efficient outcomes in the transmission sector will reduce costs and facilitate more efficient outcomes in the gas wholesale market – including the establishment of a liquid market with an efficient reference price.

Amongst other things, efficiency in the transmission sector entails the allocation of existing capacity to those parties that value it most highly.[6] Historically, market fundamentals were more predictable and long-term, point-to-point contracts were relatively effective in allocating capacity rights under the contract carriage model.[7]

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4 COAG Energy Council, *Australian Gas Market Vision*, December 2014, p. 1.

5 The subject of this paper is the efficient use of capacity on both transmission pipelines and infrastructure which provides hub services (eg, compression and redirection services). Each make up a part of the total gas transmission infrastructure, and so consideration of both is required to meet the Council's Vision of allowing gas to be readily traded between hub locations.

6 Typically, this allocation is achieved through market mechanisms.

7 There are currently two different models used to allocate and manage pipeline capacity in eastern Australia. These are generally referred to as "market carriage", which provides open access to the Victorian Declared Transmission System (DTS) and uses outcomes from the operation of the Declared Wholesale Gas Market (DWGM) to schedule injections and withdrawals from the

However there have been, and may continue to be, a number of structural changes underway in the eastern Australian gas market which call into question the adequacy of the current arrangements:

- drivers for greater variability in shippers' transportation requirements, including the emergence of the LNG export industry in Queensland;
- the increasingly interconnected nature of transmission pipelines, which can lead to shippers requiring gas transportation on multiple pipelines; and
- increased concentration in the ownership of transmission assets.

1.2 This discussion paper

In light of these changes, the focus of the Commission's work in Stage 2 of the review has been to consider the potential for the following factors to impede the achievement of efficient capacity allocation:

1. high search and transaction costs in the market for transmission capacity, particularly for shorter-term trades;
2. lack of incentives to provide access by shippers that hold capacity; and
3. lack of incentives to facilitate access by pipeline owners.

The Commission is working with the ACCC, which is currently undertaking an inquiry into the east coast gas market to, amongst other things, get a better understanding of these impediments and the extent to which they may be affecting the efficiency of the transmission sector and, importantly, prices in downstream gas markets.[8]

In parallel to this, the Commission has developed this paper to consider the appropriateness of three approaches to addressing these three issues. Under each approach, the Commission has outlined a number of elements consistent with addressing the respective issue.

While the approaches presented in this paper have been identified with the Energy Council's Vision in mind, they have not yet been tested against the assessment framework developed during Stage 1 of the review and set out in Appendix A. The assessment framework is structured so that the single overarching objective guiding the Commission is the National Gas Objective (NGO), although we will also have regard to other factors, including the Energy Council's Vision, the Gas Market Development Plan, and the characteristics of a well-functioning gas market outlined in Appendix A.

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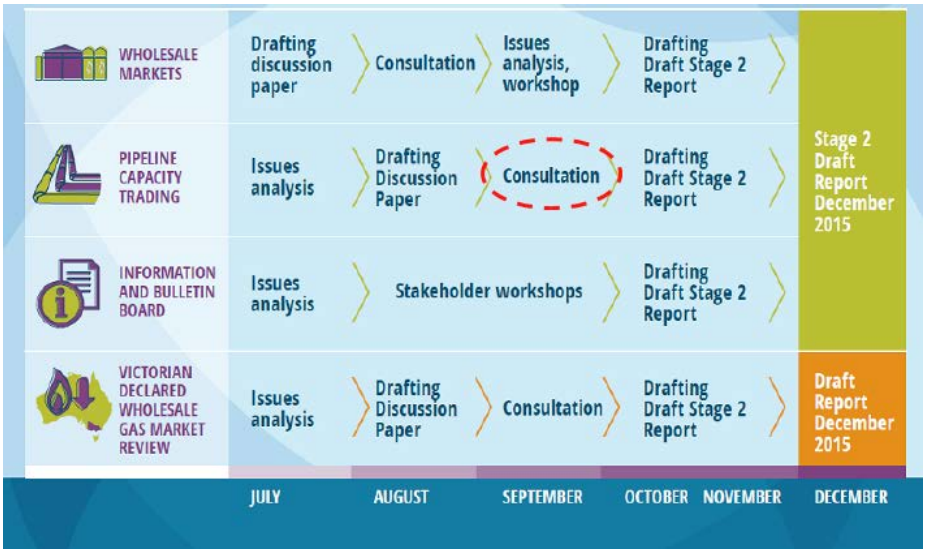
pipeline, and "contract carriage", which is in use on all other pipelines and relies on bilateral contracts between the pipeline owner and shippers to allocate pipeline capacity.

8 See: Australian Government, *Inquiry into competitiveness of the wholesale gas industry*, Terms of Reference, 8 April 2015.

1.3 How this discussion paper fits into the wider review

As outlined in the Stage 1 Final Report, there are four workstreams being progressed by the Commission as part of Stage 2 of the review. These are illustrated in Figure 1.1 below. This discussion paper relates to the Pipeline Capacity Trading workstream.

Figure 1.1 Stage 2 workstreams



1.3.1 Interaction with the wholesale markets workstream

In early August, the Commission released a discussion paper on wholesale gas markets, which outlined three high level wholesale gas market design concepts:[9]

- Concept 1: multiple physical hub locations;
- Concept 2: northern and southern virtual hubs, with balancing markets at demand centres; and
- Concept 3: two large virtual hubs covering the east coast.

While some of these concepts may require changes to the existing transportation arrangements *within* the hubs, they will also rely upon the efficiency of transportation arrangements *between* the hubs.

It is relevant therefore to consider whether any measures need to be put in place to facilitate efficiency in gas transportation between hubs under both the current market design and the three other potential market designs outlined in the wholesale gas markets discussion paper. Consideration of the requirements to transport gas between physical or virtual trading hubs is the focus of this paper.

9 AEMC, *East Coast Wholesale Gas Markets and Pipeline Frameworks Review*, Wholesale Gas Markets Discussion Paper, 6 August 2015.

The operation of, and investment in, gas transportation infrastructure within virtual hubs will be developed as an integral feature of these designs. We intend to consult with stakeholders on this matter, including at a public forum to be held in Sydney on 30 September 2015.

The Commission recognises that there are interactions between the policy considerations for the design of wholesale gas markets and the transmission sector. In particular, potential improvements to the efficiency by which capacity is allocated may contribute to improvements in the wholesale market. The nature and extent of required changes to the regulation of the wholesale market may be impacted as a result.

The Commission will be cognisant of these interactions as it develops an integrated set of recommendations across all the workstreams of this review.

1.3.2 Interaction with the information and Bulletin Board workstream

As noted above, efficiency in the transmission capacity market may be improved by lower search and transaction costs, which may include better information being provided to the market.

The information and Bulletin Board workstream for this review is considering improvements to information in the wholesale gas market and transmission sector generally, while this paper considers potential options to specifically address transaction cost issues in the market for transmission capacity.

The Commission is also currently considering the COAG Energy Council's Enhanced Information for Gas Transmission Pipeline Capacity Trading rule change, which is designed to reduce the search related costs that may otherwise limit capacity trading.[10] The Commission is considering how the approaches presented in this paper may interact with that rule change.

1.3.3 Next steps for the review

Feedback from stakeholders through the consultation process for this discussion paper, as well as work being undertaken by the Commission to inform the nature and magnitude of the problem with transmission arrangements, will inform the Commission's recommendations in the Stage 2 Draft Report. The Commission will also be working closely with the Australian Energy Market Operator (AEMO), the Australian Energy Regulator (AER) and the ACCC throughout all elements of this Stage 2 analysis to draw on their operational and regulatory expertise as we develop our advice.

Work to finalise Stage 2 will be informed by direction from the COAG Energy Council.

10 Enhanced Information for Gas Transmission Pipeline Capacity Trading rule change. See http://www.aemc.gov.au/Rule-Changes/Gas-Transmission-Pipeline-Capacity-Trading-Enhance

1.4 Responding to this paper

The Commission welcomes submissions on any of the issues raised in this discussion paper. Requests for feedback on specific issues raised in this paper are made in chapters 2 and 4.

The closing date for submissions is **16 October 2015.**

Submissions should quote project number "GPR0003" and may be lodged online at www.aemc.gov.au or by mail to: Australian Energy Market Commission PO Box A2449 Sydney South NSW 1235.

1.5 Structure of this paper

The remainder of this paper is structured as follows:

- Chapter 2 provides an overview of the existing gas transmission arrangements, and assesses possible impediments to efficient outcomes and the effectiveness of the existing regulatory regime;
- Chapter 3 outlines why and how measures have been undertaken overseas to address potential impediments to efficient outcomes;
- Chapter 4 presents three broad approaches that might be implemented in Australia, and provides possible elements that might be introduced as part of each approach;
- Appendix A outlines our assessment framework; and
- Appendix B presents a case study on the implementation of an Oversell and Buyback scheme in Europe.

2 Assessment of existing gas transmission arrangements

Under the contract carriage model, shippers are typically required to obtain gas transportation requirements independent of their purchase of the gas commodity. To do so, they must either purchase existing capacity directly from a pipeline owner, purchase existing capacity from another shipper that already has capacity, or underwrite the creation of new capacity.

To be efficient across all shippers in the market, this would entail:

- the creation of new capacity where and when the net present cost of new capacity is less than the net present cost of congestion. This recognises the potentially high cost of creating new capacity (eg, building a new compressor), and therefore that the efficient level of pipeline congestion is not zero;
- existing capacity being allocated to the parties that value it the highest; and
- new and existing capacity being built and operated at efficient cost.

The contract carriage model has been generally considered to-date to have resulted in timely and efficient investment in new capacity.[11] Instead of concerns about the efficiency of investment, stakeholders' focus has been on issues regarding the purchasing and subsequent allocation between shippers of existing capacity.

This chapter explores these issues as follows:

- section 2.1 describes how the east coast transmission sector (outside of the Declared Transmission System (DTS) in Victoria) operates;
- section 2.2 discusses potential impediments to efficient outcomes arising under these arrangements; and
- section 2.3 assesses the effectiveness of the current regulatory regime in addressing these issues.

2.1 How the east coast transmission sector operates

2.1.1 How new capacity is created

Transmission infrastructure investments are typically underwritten by one or more shippers (known as foundation shippers) in return for long-term firm access to that infrastructure's capacity. As a result, the majority of transmission infrastructure capacity is held on a "take-or-pay" basis under the Gas Transportation Agreement (GTA) between the foundation shipper and infrastructure owner, under which the

11 K Lowe Consulting, *Gas Market Scoping Study*, A report for the AEMC, 2013, p. 92.

shipper will pay the infrastructure owner in full or in large part regardless of the quantity of gas transported.

This approach allows for the management of risk in investment in a large, long-lived asset. For the infrastructure owner, the take-or-pay provisions offset the risk that demand for the infrastructure is less than forecast, as through the take-or-pay provisions its income is largely independent of subsequent utilisation. For the foundation shipper, the approach guarantees access to the infrastructure at an agreed price, typically over a long time period.

While GTAs are negotiated bilaterally, we understand that APA, the major pipeline owner on the east coast, has more recently been making use of a public "open season"[12] process to gauge the level of interest in proposed capacity expansions across all existing and potential shippers.[13]

Terms and conditions in the GTA are set between the infrastructure owner and shipper, and can vary from case-to-case.[14] Amongst other things, terms and conditions contained in GTAs will specify where gas can be injected and withdrawn from a pipeline.

Market based commercial decision making by individual pipeline owners (typically contracting with shippers) determines investment. There are no regulatory requirements for a pipeline owner to invest.

2.1.2 How existing capacity is allocated through the market

In addition to underwriting the development of new capacity, shippers can obtain pre-existing capacity in a number of ways. This can be from:

- another shipper which already holds spare capacity;
- a pipeline owner who has spare unallocated capacity; or
- a pipeline owner who sells capacity that has already been allocated to a shipper but that is not being used by that shipper.

Purchase from a shipper which already holds spare capacity

A capacity holder's gas transportation requirements may vary in any given time period compared to the level of firm capacity it holds on transmission infrastructure. If a

12 Open seasons are set periods of time when shippers can signal to pipeline owners their interest in capacity expansions. At the end of an open season, a pipeline owner is able to assess the total interest across all shippers.

13 APA, *East Coast Gas Inquiry*, APA Group submission responding to the ACCC issues paper, 2 July 2015, p. 16.

14 APA has developed a GTA with standardised terms and conditions, which it considers will enable shippers to trade capacity more readily. See: APA, Stage 1 Discussion Paper submission, p. 23.

capacity holder has any spare capacity it may decide to on-sell it to another shipper that is in a position to utilise the capacity.[15] This trade may take the form of either:

- a bare transfer, which results in the contract holder's rights (or part thereof) being temporarily transferred to the counterparty but the contract holder remaining responsible for the financial and operational obligations in the GTA (such as pipeline nominations);
- a novation, which results in the contract holder's rights and obligations under the GTA being permanently transferred to the counterparty; or
- an operational capacity transfer, which provides for the temporary transfer of the contract holder's operational rights and obligations under the GTA.

These forms of trading have different obligations and risks for both the holder of the capacity and the buyer of the capacity.

The capacity holder's willingness to enter into such a trade will depend on:

- whether its GTA with a pipeline owner allows for such a trade;
- how much spare capacity it has and the period over which it is available;
- the opportunity costs of not entering into the transaction;
- the impact on its ability to manage its obligations under its existing GTA;
- commercial considerations, such as the effect the transaction may have on the buyer's competitive position in an upstream or downstream market;
- the value it places on the option to use the capacity (known as "option value"), given that it is required to decide whether or not to sell its capacity some time prior to knowing whether that capacity will be required; and
- the transaction costs associated with entering into such an arrangement (ie, negotiation and contracting costs and ongoing contract management costs).

The buyer's willingness, on the other hand, will depend on whether the:

- counterparty is able to make use of the pipeline capacity, which will depend on its end-use requirements and contractual position;
- period over which the capacity is to be supplied corresponds with the period over which the counterparty can use the capacity;
- firmness of the capacity meets the counterparty's requirement; and

15 A capacity holder with excess capacity may also enable other parties to use its capacity through a swap or option.

- total cost of entering into the transaction (including price and any transaction costs) is less than the cost of any substitute service, if available.

Due to the confidential nature of these agreements, it is not possible to determine how frequently these types of transactions are used. Anecdotal evidence, however, suggests these transactions do occur but are infrequent.

Box 2.1 Capacity trading websites

To facilitate trades, both APA and Jemena have established capacity listing websites, wherein participants can find one another through listing capacity bids and offers, and can thereafter perform capacity trades over the counter.[16]

APA's platform currently allows capacity on the South West Queensland, Carpentaria, Moomba to Sydney and Roma to Brisbane pipelines to be listed. Jemena's platform allows capacity on the Queensland Gas Pipeline to be listed, and is expected to be expanded to include the Eastern Gas Pipeline.

APA's website includes summary trading information, which suggests that a limited amount of capacity has been traded to-date on the Roma to Brisbane pipeline.

Purchase of unallocated capacity from a pipeline owner

Pipeline owners may have spare capacity which they have not sold to foundation shippers. This may arise because they chose to construct assets with capacity greater than that required by (and paid for by) the foundation shippers, or because a foundation shipper's contract for firm capacity has expired, freeing up capacity. In either case, this unallocated capacity can be sold to shippers, generally through bilateral contract negotiations.

Purchase of unutilised contracted capacity from a pipeline owner

A prospective shipper may also be able to enter a contract with the pipeline owner for any unutilised contracted capacity, typically on a non-firm basis. To the extent that this capacity has already been paid for by the contracting shipper (ie, because transportation charges are largely fixed and are payable irrespective of the volumes transported), then the pipeline owner should have an incentive to enter into such transactions because it will derive additional revenue from the sale.

Compared to a capacity holder, a pipeline owner may also be better placed to offer the service required by the buyer because it can aggregate spare capacity across multiple users.

16 These websites can be accessed via the AEMO gas Bulletin Board or directly via http://capacitytrading.apa.com.au/ and http://jemena.com.au/industry/pipelines/capacity-trading, respectively.

Whether or not a buyer will view a non-firm transportation service as a substitute for a firm capacity transfer will depend on:[17]

- whether the buyer requires a firm service; and
- the price and other terms and conditions proposed by the pipeline owner.

2.2 Potential impediments to efficient outcomes

Although it is difficult to obtain firm evidence, given the confidential nature of the transactions, it appears that the trading of pipeline capacity under contract carriage arrangements on the east coast of Australia outside of Victoria has been illiquid to date.

As discussed at the start of this chapter, to be efficient, capacity should be allocated to the parties that value it most highly, suggesting that liquidity may be an indicator of efficient outcomes. On the other hand, illiquidity may be because the incumbent capacity holder values the capacity most highly (eg, a lack of demand for trade in pipeline capacity or the holder derives option value from unutilised capacity) or because of technical limitations on pipelines.

Nevertheless, in response to both this review and the ACCC Inquiry, stakeholders have identified a number of potential issues which may be impeding the efficient allocation of capacity between shippers, and resulting in either:

- capacity going unused despite being of value to a shipper, in an outcome known as contractual congestion; or
- in the case that a pipeline is fully utilised and there is physical congestion, the allocation not going to the shippers that value it the highest.

A description of each of the identified potential issues is given below.

2.2.1 Restrictive provisions in Gas Transportation Agreements

Shippers purchase capacity from pipeline owners under GTAs, which typically are of a long-term duration. Terms and conditions in the agreements are set between the infrastructure owner and shipper, and vary from case-to-case.

For example, GTAs are usually structured around specific receipt and delivery points. Matching contractual and physical flows so tightly minimises the costs incurred by pipeline owner in managing the system. However, such a level of prescription is also

17 Unutilised contracted capacity can be purchased from the pipeline owner as firm capacity once the pipeline owner has scheduled nomination, which occurs on the day before the gas day. See: APA, *East Coast Gas Inquiry*, APA Group submission responding to the ACCC issues paper, 2 July 2015, p. 6.

likely to limit trading, as it is unlikely that any two shippers will have precisely the same requirements.[18]

Stakeholders have noted that there may be provisions in GTAs that limit either:

- the capacity holders' incentive and/or ability or compete with the pipeline owner for the provision of capacity, examples being:
    - nomination cut-off times in GTAs that favour capacity sales by pipeline owners compared to sales by shippers that hold capacity;[19]
    - restrictions on a shipper's ability to change receipt and delivery points in GTAs (or to move maximum daily quantity (MDQ) (or maximum hourly quantity (MHQ)) between points) without renegotiation of the GTA. This means that a prospective shipper would need to find an existing shipper with the right combination of receipt and delivery points for the capacity trade to proceed;[20]
    - the requirement to negotiate allocation agreements at delivery/receipt points;[21] and
    - other fees and charges levied by pipeline owners that limit capacity trading;[22] and
- the pipeline owner's incentive and/or ability to compete with capacity holders for the provision of capacity, examples being:
    - a direct prohibition on the pipeline owner selling capacity to another party;[23]

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18 This issue most affects industrial customers and gas fired generators because they have traditionally only sought to have gas transported from a receipt point to their facilities. Larger retailers tend to enter into contracts that provide for the use of multiple delivery and receipt points, although they may be limited in their ability to add further delivery (or receipt) points to accommodate a capacity trade if they haven't already specified those points in their GTA. They may also be constrained in their ability to transfer the capacity that they have reserved for a particular delivery (receipt) point to another point delivery (receipt) point even if the delivery (receipt) point they want to transfer the capacity to is already specified in their GTA.

19 In particular, nomination times may be too early for capacity holders to assess whether they will require the capacity. See, for example: AGL, Stage 1 Discussion Paper submission, pp. 5-6.

20 See, for example: AGL, Stage 1 Discussion Paper submission, pp. 5-6; Stanwell, Stage 1 Discussion Paper submission, p. 7.

21 See, for example: AGL, Stage 1 Discussion Paper submission, pp. 5-6. Allocation agreements are agreements made between two shippers trading capacity which determine the priority of gas delivery at specific delivery points.

22 AGL, Stage 1 Discussion Paper submission, p. 6; Santos, Stage 1 Discussion Paper submission, p. 7; Alinta Energy suggested that exposure to unknown additional pipeline charges can be difficult to manage (Stage 1 Discussion Paper submission, p. 8); Stanwell considered that excessive fees are often charged on intraday nominations by pipelines (Stage 1 Discussion Paper submission, p. 3).

23 MEU, Stage 1 Discussion Paper submission, p. 8

- most favoured nation provisions, whereby foundation shippers are entitled to the prices offered by the pipeline owner to other shippers;[24] or
- provisions that require the pipeline owner to rebate some or all of the revenue it receives from the sale of capacity to third parties back to the capacity holders.[25]

These provisions may have arisen for historic reasons – many GTAs were entered into some time ago when there was less need to trade capacity, and so contractual terms and conditions were not considered in this light.

Nevertheless, these clauses may be enabled by market power, particularly on the part of the pipeline owner, as it may be better able to dictate favourable provisions for itself given the lack of alternative transportation arrangements for shippers. Furthermore, the provisions may then subsequently be perpetuating market power by prohibiting or reducing incentives for shippers or pipeline owners to compete in the capacity market.

2.2.2 High prices for unutilised contracted capacity or uncontracted capacity

A number of parties have argued that the price for unutilised contracted capacity offered by pipeline owners on a non-firm basis is higher than would be expected in a workably competitive market, owing to market power on the part of the pipeline owner arising because competition between shippers and the pipeline owner is not effective.[26]

Determining what the price of non-firm capacity should be relative to that of firm capacity in a workably competitive market is challenging. The Commission has been presented with a number of separate arguments suggesting that prices for non-firm capacity in a competitive market should be on a spectrum from near zero to higher than the price of firm capacity:

- On the one hand, the short-run marginal cost of providing non-firm capacity to the market is very low, and the pipeline owner is recovering its sunk costs through firm capacity charges, implying that charges should be very low. Furthermore, a non-firm capacity product could be considered less valuable than a firm product, given that it is interruptible.[27]

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24 Adelaide Brighton Cement Limited, Submission to the ACCC East Coast Gas Inquiry Issues Paper, pp. 11-12; GDFSAE, Submission to the ACCC East Coast Gas Inquiry Issues Paper, p. 4. The Commission understands that most favoured nation provisions typically only apply when an equivalent service to that in the GTA is offered to other shippers. This may limit the extent to which these provisions act as barriers to capacity trading.

25 GDFSAE, Stage 1 Discussion Paper submission, p. 7.

26 MEU, Stage 1 Discussion Paper Submission, p. 8; Adelaide Brighton Cement Limited, Submission to the ACCC East Coast Gas Inquiry Issues Paper, pp. 11-13; QGC, Submission to the ACCC East Coast Gas Inquiry Issues Paper, pp. 23-24.

27 APLNG, Stage 1 Discussion Paper submission, p. 2; Adelaide Brighton Cement Limited, Submission to the ACCC East Coast Gas Inquiry Issues Paper, pp. 11-13; QGC, Submission to the ACCC East Coast Gas Inquiry Issues Paper, pp. 23-24.

- On the other hand, non-firm capacity does not require a long term commitment from a shipper on a take-or-pay basis. Were non-firm capacity priced too low, this may undermine the incentives to invest in new capacity as shippers free-ride on capacity underwritten by other shippers.[28]

If present, the consequence of monopoly prices for unutilised contracted capacity would be that some shippers that value the capacity are priced out of the market, meaning that the capacity is under-utilised. Similarly, spare unallocated capacity may also be being offered for sale by pipeline owners at monopoly prices, again resulting in inefficient under-utilisation of capacity if not all capacity is sold.

2.2.3 Low levels of service

Stakeholders have suggested that some pipeline owners are not providing a level of service to shippers that would be expected in a workably competitive market. For example, negotiations to changes of provisions in GTAs can take a long time and may negate the commercial value from any prospective trade.[29] It has also been suggested that there is a lack of flexibility and lack of innovation on the part of certain pipeline owners.[30]

These issues of high prices and low service levels are consistent with the exercise of market power. Box 2.2 discusses the drivers of potential market power in the gas pipeline sector.

Box 2.2 Sources of market power in the gas transmission sector

The gas transmission sector exhibits natural monopoly characteristics. The technology used in the sector (eg, pipelines) are typically capital intensive (with high fixed costs) while the marginal cost of transporting a unit of gas is very low. These characteristics lead to substantial economies of scale in the provision of transmission services – the average cost of gas transportation decreases as the amount of gas transported increases. This means that it is typically more efficient for one pipeline (or network) to supply gas to a market, rather than two or more.

These natural monopoly characteristics are consistent with the recently observed increase of market concentration in the sector. As east coast pipelines have become more interlinked, there may be increased economies of scale in the provision of transportation services by fewer market players across the newly created network.

The characteristics also confer high barriers for entry to the market, as to compete would require high levels of initial investment on the part of a competitor. This

28 APGA, Submission to the ACCC East Coast Gas Inquiry Issues Paper, pp. 41-46; Epic Energy, Stage 1 Discussion Paper submission, p. 3.

29 AGL, Stage 1 Discussion Paper submission, p. 5; QGC, Stage 1 Discussion Paper submission, p. 2.

30 Adelaide Brighton Cement, Submission to the ACCC East Coast Gas Inquiry Issues Paper, p. 3.

has the potential to confer market power on an incumbent.

As with all monopolies, a monopolist who has gained their position through natural monopoly effects may engage in behaviour that takes advantage of, or results from, their market position.

The natural monopoly characteristics of the pipeline sector may also provide incumbent shippers which own capacity with the ability to restrict the supply of that capacity to their competitors in other markets. Shippers would be unable to protect their competitive advantage in related markets through hoarding capacity if there were low barriers to entry for prospective competitors in these markets to purchase new capacity.

2.2.4 Hoarding

In addition to incentives acting on pipeline owners, the efficient allocation of capacity may also be impeded due to shippers that hold capacity refusing to sell it, or pricing it very highly, because the capacity holder wants to gain a competitive advantage in an upstream or downstream market, in a practice referred to as "hoarding". In these cases, while the capacity holder would forego some profit by not trading the capacity it holds, this is more than compensated by the competitive advantage it is able to gain in upstream or downstream markets.

Shippers may have an incentive to hoard because of the advantages it provides them in upstream or downstream markets. By hoarding capacity, shippers may preclude their competitors from these markets, thereby limiting the number of gas suppliers able to compete effectively in the market for gas.

For a shipper to have an incentive to hoard and for it to be effective, a range of other conditions may be required, such as:

- natural monopoly characteristics of the transmission service. Shippers would be unable to protect their competitive advantage in related markets through hoarding capacity if there were low barriers to entry for prospective competitors in these markets to purchase new capacity;
- the incumbency position held by only one, or very few, shippers that own most or all the capacity on the pipeline, conferring them a degree of market power in the re-provision of capacity;
- terms and conditions in a shipper's contract with the pipeline owner which either prohibits or dis-incentivises the pipeline owner from competing in the provision of capacity; and
- the pipeline owner having the ability to price capacity at monopoly prices and hence not effectively compete with the shipper.

The extent to which capacity trading occurs in practice, including hoarding and shippers' ability and incentives to sell, is being considered by the ACCC in its inquiry.

However, some stakeholders have provided evidence to suggest that hoarding is an issue.[31]

2.2.5 Search and transaction costs

Markets operate well when parties have sufficient information to make informed decisions. In the case of capacity trading, there may be a lack of information on the existence of prospective buyers and sellers of capacity. Buyers and sellers are unable to find each other, and so trades that would otherwise occur do not.

Additionally, both buyers and sellers may have limited information on the market value of capacity (that is, the historic price at which similar trades occurred). This may lead to additional costs as the parties attempt to understand the market value, or a reluctance to enter into trades. The information deficit issue may be particularly problematic for trades of capacity in the immediate future – where parties need to find each other and agree to make a trade quickly.

Transaction costs may also be being caused by a range of other factors. GTAs are typically customised, which may be resulting in difficulties in quickly and inexpensively determining the value of the capacity rights being sold in order to make a trade.

Capacity rights are typically also specified with regard to the injection and withdrawal locations, reducing potential trading partners, reducing liquidity and increasing search costs.[32] In particular, stakeholders have commented that there can be technical impediments to trading capacity on pipelines with multiple injection and withdrawal points - for example, the Roma to Brisbane pipeline - because the capacity on one part of the pipeline may depend on what is being injected and withdrawn on another part of the pipeline.[33]

2.2.6 Feedback

The previous sections suggest that there may be a range of potential impediments to the efficient allocation of capacity. Some of these may well be due to historic practices that effectively managed the point-to-point delivery of relatively stable volumes to a predictable set of customers. With low gas prices, some of the additional costs of doing business on the rare occasion that services such as capacity trades were required may not have been material.

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31 See, for example: Adelaide Brighton Cement Limited, Submission to the ACCC East Coast Gas Inquiry Issues Paper, pp. 2-3; Energy & Management Services, Submission to the ACCC East Coast Gas Inquiry Issues Paper, pp. 2-5; MEU, Submission to the ACCC East Coast Gas Inquiry Issues Paper, pp. 11-12; QGC; Submission to the ACCC East Coast Gas Inquiry Issues Paper, p. 22; Manufacturing Australia, Submission to the ACCC East Coast Gas Inquiry Issues Paper, p. 5.

32 AGL, Stage 1 Discussion Paper submission, p. 5; QGC, Stage 1 Discussion Paper submission, p. 2.

33 K Lowe Consulting, *Gas Market Scoping Study*, A report for the AEMC, 2013, p. 124.

The gas market of today, and in the coming years, will require much more flexibility. The ability to quickly trade gas, and hence access markets over pipeline infrastructure, will become increasingly necessary with the increased volatility brought about by LNG exports. Inefficiencies such as barriers to entry and high transaction costs may no longer be immaterial. Instead, they may become increasingly costly to both buyers and sellers of gas.

The Commission has outlined above a range of potential issues. At best, these issues appear to have resulted from an industry that has been perhaps slow to evolve to the changing circumstances impacting its customers. At worst, there may be significant barriers to efficient capacity trading caused by incumbency advantages and control of monopoly infrastructure.

Any responses to these issues therefore depend on the degree to which the Commission could anticipate the market might adapt quickly enough to address the inefficiencies and achieve the Energy Council's Vision. If that is not likely given the structural impediments to such change and the continued concentration of shippers with access to firm pipeline capacity, then a regulatory solution may be required, in keeping with the National Gas Objective.

The Commission is therefore seeking feedback from stakeholders on:

- whether it has correctly identified the issues and their causes;
- any evidence of their materiality; and
- whether the issues could be addressed without regulatory intervention and, if so, over what timeframe this might occur.

The Commission is mindful of the importance of efficient capacity allocation to facilitate the Council's Vision of a liquid wholesale gas market. It considers that it is appropriate to contemplate regulatory approaches in light of the substantial economic costs that may otherwise arise in the event that industry initiatives are unable to address the potential issues present, or to do so in a sufficiently timely way.

2.3 How successful is the current regulatory regime in addressing these issues?

2.3.1 Overview of the current regulatory framework

The regulatory framework for gas transmission pipelines, generally referred to as the third party access regime, is set out in the National Gas Law (NGL) and National Gas Rules (NGR). However, the extent to which the majority of provisions are applied to a given pipeline is determined by a coverage test, with the criteria for coverage set out in the NGL.[34]

34 Section 15.

Currently, relatively few pipelines are covered. Instead, a variety of other constraints on market power in the provision of capacity are relied upon:

- competition from other pipelines in the provision of gas transportation services;
- the existence of competitive markets upstream or downstream from the pipeline which would price many shippers out of the market were they charged monopoly prices, imposing an indirect price constraint on the pipeline owner;
- countervailing negotiating power on the part of the shippers, because they are typically few in number and well-resourced; and
- the threat of economic regulation under the access regime, present because the regulatory status of pipelines can be changed over time.

Of the four and a half pipelines that are covered on the east coast of east coast of Australia,[35] two are subject to full regulation and two and a half to light regulation.[36] The main differences between these two forms of regulation are:

- Under full regulation, the pipeline operator is required to obtain the AER's approval for the price and non-price terms and conditions of access to the reference service(s) set out in the proposed access arrangement.[37] Although AER approval is required, the pipeline operator and users (or prospective users) are free to enter into a commercial agreement that differs from the access arrangement. If a dispute about access arises, however, an arbitrator is required to give effect to the approved access arrangement.
- Under light regulation, greater emphasis is placed on commercial negotiation and information disclosure, but provision has been made for parties to have recourse to a dispute resolution mechanism if negotiations fail. The pipeline owner is also prohibited under this form of regulation from engaging in conduct that may adversely affect access and/or competition in upstream or downstream markets.

35 The Victorian DTS is also covered, but is not a contract carriage pipeline and is therefore out of the scope of this discussion paper.

36 The Roma to Brisbane Pipeline and the Central Ranges Pipeline are subject to full regulation. The Carpentaria Gas Pipeline, the Central West Pipeline and the Moomba to Sydney Pipeline from Marsden to Sydney (the remaining half of the Moomba to Sydney Pipeline is unregulated) are subject to light regulation.

37 A reference service is defined in the rules as a service likely to be sought by a significant portion of the market. On the Roma Brisbane Pipeline (RBP), the reference services are firm transportation service from Wallumbilla or Peat to Brisbane. If it could be shown that the 'as available' service was sought by a large proportion of the users of the RBP then it could be classified as a reference service too but that is not currently the case.

Box 2.3 Non-price regulation applying to covered pipelines

In addition to being subject to price and revenue regulation under the NGR,[38] covered pipelines are also subject to various non-price regulations. These include the following:[39]

- Queuing requirements (Rule 103): The service provider must establish a process or mechanism (or both) for establishing an order of priority between prospective users of spare or developable capacity (or both) in which all prospective users (whether associates of, or unrelated to, the service provider) are treated on a fair and equal basis.
- Capacity trading requirements (Rule 105): The trading of capacity must be provided for:
  - by way of bare transfer, without the need to seek the service provider's consent; and
  - by way of assignment or other mechanism, with the service provider's consent, which cannot be unreasonably withheld by the pipeline owner.
- Change of receipt or delivery point by user (Rule 106): The change of receipt or delivery point by a user must be provided for, consent for which cannot be unreasonably withheld by the pipeline owner.
- Availability of applicable access arrangement and other information (Rule 107): The applicable access arrangement must be accessible on the service provider's website and meet certain requirements when responding to prospective pipeline user's access inquiries.
- Information about tariffs (Rule 108): Specifies the requirements that a pipeline service provider must adhere to in responding to a request from a prospective pipeline user for information on tariffs.
- Provision of bundling services (Rule 109): A pipeline service provider must not make it a condition of the provision of a particular pipeline service to a prospective user that the prospective user accept another non-gratuitous service from the service provider unless the bundling of the services is reasonably necessary.
- Public registers of spare capacity (Rule 111): A service provider must publish a register of spare capacity that sets out:
  - information about available spare capacity now and in the future; and
  - information provided to the service provider by a user on available unutilised contracted spare capacity.

38 See Part 9 (price and revenue regulation) of the NGR.

39 See Part 10 (other provisions of and concerning access arrangement) and Part 11 (facilitation of, and request for, access) of the NGR. Pipelines subject to light regulation do not have to comply with the provisions of Part 10 (which includes rules 103, 105 and 106) but may opt to do so.

The main way in which a pipeline could become covered is if a coverage application is made to the National Competition Council (NCC) and the relevant Minister, having regard to advice from the NCC, is satisfied the pipeline meets all the coverage criteria.

The access regime also provides for coverage to be removed (if it is determined that all the coverage criteria are no longer met) and for the form of regulation to change. In addition, 15 year coverage exemptions for greenfield pipelines can be granted, with this assessment also based on the coverage criteria.[40]

2.3.2 Analysis of the current regulatory framework

As discussed in the Stage 1 Final Report to this review, we consider that the current regulatory framework warrants closer attention, particularly given the changes underway in the market and the increasing interconnectedness and concentration in this segment of the supply chain.[41]

The Commission has therefore undertaken preliminary analysis of the current regulatory framework, drawing upon the advice of two separate consultants (Incenta[42] and Castalia[43]) who were engaged to independently consider the current and possible future appropriateness of the gas third party access regime. This is outlined below.

The rationale for the third party access regime for gas

The gas third party access regime under the NGL, and the national access regime under Part IIIA of the *Competition and Consumer Act 2010* (Cth) upon which the gas regime is based, are narrowly targeted tools for enabling third parties to use existing bottleneck infrastructure in those circumstances where the owner of the infrastructure does not wish to make it available, and where such use would promote competition *in other markets*. The access regimes are not comprehensive regulatory instruments designed to solve a broad range of problems that might affect markets, including monopoly power held by infrastructure owners or market coordination issues.

This interpretation of the rationale for the access regimes is consistent with their drafting. Under both regimes, coverage is determined with regard to coverage criteria (which are largely the same between the two regimes), all of which must be met simultaneously for coverage to be applied.

40 Greenfield pipeline projects are defined under the National Gas Law, and include new pipelines, and some major extensions to existing pipelines.

41 AEMC, *East Coast Wholesale Gas Market and Pipeline Frameworks Review*, Stage 1 Final Report, 23 July 2015, pp. 78-86.

42 Incenta Economic Consulting, *Assessment of the coverage criteria for the gas pipeline access regime*, September 2015.

43 Castalia Strategic Advisors, *AEMC Gas Access Regime Advice*, 10 August 2015.

Coverage criteria (a) and (b) of the gas access regime[44] are particularly relevant for the purposes of this discussion.[45]

Criterion (a) is "that access (or increased access) to pipeline services provided by means of the pipeline would promote a material increase in competition in at least 1 market (whether or not in Australia), *other than the market for the pipeline services provided by means of the pipeline*" (AEMC emphasis added). To meet this criterion, access to a pipeline needs to be pivotal to competition in dependent (upstream or downstream) markets. Although the criterion considers competition in related markets, it does not directly consider competition in the market in which the pipeline sits. That is it does not ask the direct question of the extent to which the pipeline provider has market power in the provision of pipeline services themselves.[46]

Criterion (b) is "that it would be uneconomic for anyone to develop another pipeline to provide the pipeline services provided by means of the pipeline". There has been recent debate around the interpretation of this criterion.[47] In 2012 the High Court found that a "privately profitable test" should apply, as opposed to considering whether the development of an additional pipeline is economic from a society wide perspective.[48]That is, if it is profitable for anyone to develop another pipeline, then this criterion will not be met. Interpreted this way, the criterion meant that the access regime is only relevant for a small subset of situations where national resources could be used more efficiently.

This interpretation of the rationale for the national access regime as a narrowly targeted tool for enabling access to bottleneck infrastructure was supported by the NCC in its recent draft decision on the application for the declaration of the Port of Newcastle under Part IIIA:[49]

> "*3.16. Declaration under the National Access Regime is not a mechanism for imposition of price regulation and was never intended to be such. "Excessive", "monopolistic" or "gouging" pricing per se is not the focus of Part IIIA. Where such pricing in one market merely transfers income or value from one party in a*

44 Sections 15(a) and (b) of the NGL.

45 Criteria (a) and (b) of the national access regime are substantially the same as those in the gas regime.

46 Interpretation of this criterion has been subject to debate which may have a material impact on whether pipelines are covered. See Incenta Economic Consulting, *Assessment of the coverage criteria for the gas pipeline access regime*, pp. 19-23, September 2015, for a detailed discussion.

47 For example, see: The Australian Government; *Competition Policy Review*, Final Report, March 2015, pp. 73-74; Productivity Commission, *National Access Regime*, Inquiry Report, 2013, pp. 151-167.

48 Pilbara Infrastructure Pty Ltd v Australian Competition Tribunal, at 77, considered under the National Access Regime under Part IIIA of the Competition and Consumer Act 2010 (Cth). As the gas access regime largely mirrors the National Access Regime, the Court's findings with regard to this case may apply equally to the gas regime.

49 National Competition Council, *Declaration of the shipping channel service at the Port of Newcastle*, Draft Recommendation, 30 July 2015. As the gas access regime largely mirrors the National Access Regime, the NCC's comments with regard to the Port of Newcastle might be considered to apply equally to the gas regime.

supply chain to another without materially impacting competition in any other market, Part IIIA does not provide a remedy. The focus of the Regime is on promotion of competition in markets where the lack or restriction of access to infrastructure services provided by facilities that cannot be economically duplicated would otherwise limit competition.

3.18. Not all, indeed possibly only a small subset of, price disputes or situations where prices may appear or be "excessive", "monopolistic" or "gouging" will fall within the ambit of Part IIIA. The declaration criteria, in particular criteria (a) and (b), limit the ambit of the National Access Regime to situations where services are provided by facilities that are uneconomic to duplicate and where the price or other terms and conditions of access are such that competition is restricted in a market other than the market for the infrastructure service.

3.19. A classic example of such a situation is where a vertically integrated business controls a monopoly facility as well as competing in a dependent market which is otherwise open to competition. Where such a business tries to advantage its position in the dependent market through how it prices access to the monopoly facility, regulatory intervention may be necessary to promote competition in the dependent market."

Is the third party access regime addressing the relevant issues in the transmission sector?

On the basis of the interpretation for the rationale for the third party access regime for gas given above, the regime is focussed on addressing misuses of market power that may adversely affect competition in markets upstream or downstream of the transmission infrastructure. However, gas transmission pipeline owners in Australia are (in almost all cases) vertically disaggregated and do not compete in upstream or downstream markets. As noted by the Independent Committee of Inquiry on the National Competition Policy (the Hilmer Review, 1993):[50]

"*where the owner of an essential facility is not competing in upstream or downstream markets, the owner of the facility will usually have little incentive to deny access, for maximising competition in vertically related markets maximises its own profits.*"

Consequently, the test for regulation provided under the national gas access regime may be directed towards a problem that may be unlikely to exist in the gas transmission sector, and not directed towards potentially more relevant problems.

A particularly relevant problem may be the potential for market power in the transmission sector, stemming from the natural monopoly characteristics of transmission assets. Unconstrained by competition or regulation, pipeline owners may be able to price capacity at a level higher, or offer a level of service lower, than that which would be expected to prevail in a workably competitive market. Amongst other

50 *Independent Committee of Inquiry on the National Competition Policy*, 1993, p. 240.

things, this could have a detrimental effect on competition in the wholesale market, through the potential for the inefficient under-utilisation of pipelines.

Recent policy debate regarding the drafting and interpretation of Part IIIA of the Competition and Consumer Act appears to have been focussed on refining the national access regime – that is, refining regulation to address the issue of denied access to infrastructure reducing competition in markets up or downstream from that infrastructure. As far as we are aware, the debate surrounding the access regime has not focussed on the appropriate purposes of regulation (in gas transmission), and whether the access regime fully addresses those purposes.

Indeed, the Hilmer review appears to have separated the concepts of the access problem that derives from vertical integration from the pricing problem that arises from monopoly power more generally, and considers the issues in two different chapters. Continuing the above quote:[51]

> "*Like other monopolists, however, the owner of the [essential] facility is able to use its monopoly position to charge higher prices and derive monopoly profits at the expense of consumers and economic efficiency. In these circumstances, the question of "access pricing" is substantially similar to other monopoly pricing issues, and may be subject, where appropriate, to the prices monitoring or surveillance process outlined in Chapter 12 [of the Hilmer Review]. Whether the issues arising in relation to a particular facility would be best addressed under the access regime or prices oversight process would be considered on a case-by-case basis.*"

The regulatory tools that the AER applies (eg, price regulation) to regulate pipeline owners under the third party access regime for gas are substantially similar to the tools it and other Australian economic regulators use to regulate against monopoly power in other sectors.[52] Nevertheless, the underlying rationale for applying these tools is different.[53]

2.3.3 Feedback

While regulation under the gas access regime may provide some discipline on pipeline owners, the above analysis suggests that the conditions on which that regulation is imposed might not be based on their ability to exercise market power in the capacity market. Regulatory coverage is instead primarily based on the degree to which conditions of access impact on the level of competition in downstream or upstream markets, a much higher threshold.

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51 *Independent Committee of Inquiry on the National Competition Policy*, 1993, p. 240.

52 For example, the price regulation of electricity networks.

53 The Productivity Commission further notes a rationale for price regulation under full regulation in the gas access regime as being to reduce transactions costs for the multiple third party access seekers present in the gas industry. See: Productivity Commission, *National Access Regime*, Inquiry Report, 2013, p. 268.

A possible consequence of this is that, in circumstances where the other constraints described in section 2.3.1 do not apply, pipeline owners may have the opportunity to price capacity above, and provide service levels below, that which would be expected in a workably competitive market.

The Commission would therefore welcome stakeholder feedback on whether the current regulatory regime is resulting in the appropriate level of regulation or addressing the most relevant market failures in the gas transmission sector.

3 Overseas approaches

This chapter provides an overview of measures that have been used in the United States (US) and European Union (EU) to address issues regarding the efficient allocation of gas transmission capacity. It discusses what regulations have been introduced in these jurisdictions, and the rationale for these approaches.

Box 3.1 provides an overview of capacity trading arrangements in the US and EU. The remainder of the chapter discusses how and why these jurisdictions have taken measures to:

- define and standardise the capacity right product, in order to reduce transaction costs (section 3.1);
- improve the procedures by which capacity is provided to the market, so that the information available to the market is increased and to improve the ability of shippers that value capacity to obtain it (section 3.2);
- compulsorily reallocate capacity where it is being underutilised, to address potential hoarding behaviour (section 3.3); and
- regulate the price of capacity, to reduce the market power of pipeline owners (section 3.4).

Box 3.1 Capacity trading arrangements in the US and EU

Both the EU and US have implemented reforms to facilitate liquid trading of capacity on gas pipelines. The US has a history of liquid and successful gas supply and capacity markets, while in the EU there have been successive reforms aimed at addressing contractual congestion and removing barriers to cross-border capacity flows.

While the primary intentions of these reforms were similar – to reduce transaction costs and to improve the level of competition in the capacity market in order to increase liquidity of gas supply markets – these jurisdictions have applied very different approaches to achieve this goal. The differences in approaches have, to a large extent, been driven by prevailing market, and political and geographic histories of the jurisdictions, including their approaches to privatisation and unbundling (ie, vertical separation of production, transportation and retail).

There are a number of common themes to both the US and EU approaches that are relevant to this review:

- clear definitions of what **capacity rights** are being traded eg, long or short term capacity products, firm or non-firm, at what locations, and under what conditions;

- clearly defined market **trading rules**, contract terms and open trading platforms to enable price discovery for trading;
- **transparent, adequate and relevant information** to support both trading and infrastructure investment; and
- **regulatory predictability and stability** - effective regulators and a clear regulatory framework for both infrastructure investment and capacity market operation.

In the EU, EU-wide rules, procedures and policies have been introduced by the European Commission, which National Regulatory Authorities (NRAs) in each jurisdiction are obliged to follow. NRAs usually have some discretion in the application of these regulations.

In the US, the Federal Energy Regulatory Commission (FERC) is responsible for making both company-specific and industry-wide decisions. Industry-wide decisions are typically executed under "orders" issued by FERC.

While eastern Australia's current arrangements (outside of the DTS in Victoria) are more similar to the US 'point to point' pipeline network, a number of the regulatory features from the EU to enhance market liquidity and prevent hoarding may also be relevant.

3.1 Defining a capacity right

Capacity trading is facilitated by both counterparties to the trade being clear as to the terms and conditions of the trade, and what exact rights (and associated obligations) are being traded (eg, long or short term capacity products, firm or non-firm, at what locations, and under what conditions).

With a relatively standardised product, the buyer and seller are better able to understand exactly what is being traded, and may be able to see a recent history of prices for identical or similar products. This means that the trade may be able to be undertaken more quickly than would otherwise be the case.

On the other hand, customisation of terms and conditions provides value to at least one or the other of the capacity holder or pipeline owner (or else these parties would not agree to them in GTA).

Standardisation may be particularly valuable in facilitating lower value trades (such as short term trades) where transactions costs may currently be prohibitively high. It may also be valuable for reducing transaction costs for shippers who transport across multiple pipelines.

Standardisation may occur with regard to the terms and conditions associated with the capacity right, the duration of that right and its locational characteristics.

3.1.1 Standardisation of terms and conditions

In the EU, some terms and conditions of capacity sold by pipeline owners have been standardised within individual EU member states. However, standardisation between member states has not occurred. This is most likely because harmonising the terms and conditions of over 40 pipelines would have been overly time consuming and contentious, delaying other beneficial aspects of the capacity trading arrangements.[54]

In the US, each pipeline will have its own transportation agreement, although there is a degree of standardisation in these agreements due to the need to comply with the same regulatory requirements.

3.1.2 Duration of Capacity Product

The right to firm capacity on a pipeline is specified for a period of time. This means capacity products can differ by duration—eg, a daily, monthly, quarterly, a year, or many years. For example, a shipper may hold the right to transport gas on a single day, or the right to transport gas every day of a year.

The duration of the capacity product is relevant to a shipper because the value of the capacity will differ across different periods of the year and the needs of the end-user.

In the EU and US, the duration of capacity products has been standardised. The EU regulations set out the standard capacity products that pipelines must sell, being yearly, quarterly, monthly, daily and within-day, and specifies the starting and end dates for these contracts.

3.1.3 Locational characteristics of capacity right

Capacity rights typically conform to one of two different locational systems:

1. **Point to Point Contract Path**: The shipper purchases capacity from a designated point of injection ('source') to point of withdrawal ('sink'), along a designated 'contract path'. Some limited reassignment of source and sink may be allowed (as is the case in the US). This model is most commonly used on long distance pipelines.

2. **Entry/Exit**: The shipper purchases 'entry capacity' from a point of entry into a virtual hub and separately purchases exit capacity from the virtual hub to a point of exit. Entry and exit capacity are sold independently from one another, thus, a holder of entry capacity can inject gas into the system, and trade the gas with any party holding capacity at any exit point, increasing gas commodity trading liquidity. Delivery throughout the virtual hub is managed by the pipeline owner(s) or operator(s). This model is commonly used on meshed transmission networks.

54 Brattle report to AEMO, *International Experience In Pipeline Capacity Trading*, August 2013, p. 18.

These two approaches to the locational characteristic of the capacity right go hand-in-hand with the arrangements for the trading of gas, as demonstrated by the differences between the EU and US markets.

In the EU, a 'virtual trading hub' approach to gas commodity trading is typically used alongside a system of 'entry and exit' capacity trading. Because delivery within the virtual hub is managed by the pipeline owner(s)/operator(s), this approach obviates the need for mechanisms to trade pipeline capacity within the virtual hub, although capacity rights are still required to enter and exit the virtual hub.

The US (and, currently the east coast of Australia outside the DTS in Victoria), on the other hand, uses a 'physical hub' approach for gas commodity trading. In the US, producers, pipeline companies, marketers, distribution companies,[55] and large consumers' trade gas via a number of regional markets based around physical hubs situated typically at the intersection of interstate pipelines.

Crucially, counterparties need mechanisms to trade point to point pipeline capacity rights alongside their supply trades. Other counterparties could also acquire the gas at the physical hub, but they would simultaneously be required to purchase transport capacity from the physical hub (if they wish to transport gas away from the hub). Thus, the use of physical hubs has the potential to limit the pool of potential buyers and sellers and reduce liquidity if capacity cannot be freely traded.

The locational characteristics of the entry/exit system are inherently more standardised than the point-to-point contract path system, with the potential for enhanced liquidity in the trade of entry rights and exit rights compared to point-to-point rights. However, this model requires a mechanism for the pipeline operator to resolve contractual flows within the network that exceed its physical capacity.

Introducing an entry/exit capacity regime would represent a fundamental change to the current arrangements, potentially requiring changes to existing GTAs. For the purpose of this review, the Commission will consider this approach in conjunction with the design concepts raised for the wholesale gas markets. The merits of an entry/exit approach for capacity rights should be assessed in parallel to considering entry/exit virtual hubs for wholesale trading.

3.2 Capacity provision mechanisms

Both the EU and US have regulations relating to the method by which capacity is allocated.

In the US, each pipeline must maintain a 'bulletin board' where it (amongst other things) posts any existing 'unsubscribed' and 'operationally available' capacity for purchase.[56] As discussed in section 3.4 this capacity may be purchased at a regulated

55 Unlike in Australia, in the US, distribution companies generally also retail gas.

56 U.S. Energy Information Administration, FERC Order 636, The Restructuring rule (1992).

'recourse' rate, or the parties may agree a negotiated rate – though to ensure transparency, pipelines are required to publish details of all negotiated contracts in their tariffs.

FERC Orders enable capacity holders to trade capacity to other parties through either an open bid or bilateral arrangement with all details to be posted on an Electronic Bulletin Board (EBB).[57] This provides a mechanism for those wanting to sell their capacity to find and trade bilaterally with each other.

All sales of capacity must be reported by the pipeline on its bulletin board, including the purchaser, duration, receipt and delivery points, contract quantity, and price charged. Sub-letting of capacity is prohibited, as a result of FERC's "shipper must have title" rule. This means that 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 to release capacity without publishing the opportunity for third parties to bid for the capacity.

The holder of the capacity can divide their holdings down into time periods as small as a day and sell these off individually. In the case of capacity using a 'contract path', it can also sell locational segments, provided it is operationally feasible on the pipeline's system (with operational feasibility determined independently). Pipelines will also typically allow some reassignment of injection and/or withdrawal points, subject to operational evaluation, in order to facilitate trading.

The pipeline receives payments from the capacity buyer and credits these against obligations from the capacity seller. Thus, in the US, the pipeline is (and must be) an intermediary, but the original shipper bears credit risk, analogous to bare transfer arrangements in Australia.

In the EU, the Network Code on Capacity Allocation Mechanisms (CAM) requires that cross-border firm capacity is allocated at interconnection points via auctions (with separate auctions being conducted for each capacity product at each interconnection point).[58] A standardised auction structure is applied to each auction and, as far as reasonably possible, auction processes are be concurrent for all interconnection points.[59] The CAM requires Transmission System Operators (TSOs)[60] to offer five firm capacity products at interconnection points through the auctions: yearly, quarterly, monthly, daily and within-day.

57 FERC Orders 636 (1992) and 637 (2000).

58 Exception in situations of 'competing capacities' where there is a relationship between the availability of capacity in two or more concurrent auctions.

59 European network of transmission system operators (entsog) Capacity Market Allocation (CAM) http://www.entsog.eu/publications/capacity-allocation-cam#1-CAM-NETWORK-CODE-DOCUMENTS-AND-CONSULTATIONS-

60 Equivalent to pipeline owners in the context of the eastern Australian transmission industry outside of the DTS.

Within an EU member state, each National Regulatory Authority has its own rules or code to govern transportation for intra-state capacity allocation.[61] While individual states' approaches vary, some utilise similar approaches as the CAM. For example, in Great Britain, entry capacity and short-term exit capacity is allocated in much the same way as inter-state capacity under CAM, using auctions. Long-term exit capacity, however, is purchased by the shipper making an application to the TSO.[62]

3.3 Capacity reallocation mechanisms

While bulletin board mechanisms are also utilised for trading in some EU states, the focus of the regulations relating to trading in the EU focus mostly on addressing the issue of capacity hoarding.

There are four measures in the EU regulations, under the Congestion Management Procedures (CMP):[63]

1. Surrender of Capacity (SoC): Capacity is voluntarily surrendered back to the TSO, with the shipper relieved of its payment obligation if the capacity is re-sold.

2. Over-sell & Buy Back (OS&BB): The TSO releases additional firm capacity above the technical capacity limit of a pipeline.

3. Firm Day-Ahead Use-It-or-Lose-It (FDA UIOLI): Capacity that is not nominated the day before the flow is made available to others.

4. Long-Term Use-It-Or-Lose-It (LT UIOLI): Capacity with less than 80% utilisation in a 12-month period may be forced to be surrendered partially or completely.

The EU considers that situations where network users do not have the possibility to obtain transmission capacity (in spite of its physical availability) are best addressed through the combination of these four mechanisms and not solely through one mechanism.

The regulations also provide guidance on the interrelationships between these four mechanisms. For example, additional capacity under the OS&BB mechanism should only be offered to the market after all surrendered capacity and capacity derived from the application of use-it-or-lose-it mechanisms has already been allocated. Individual countries are allowed some flexibility in deciding how to implement and combine these mechanisms. For example, member states are not required to implement an

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61 ACER Framework Guidelines and Network codes available at: http://www.acer.europa.eu/Gas/Framework%20guidelines_and_network%20codes/Pages/default.aspx

62 Ofgem, Facilitating the implementation of aspects of the Capacity Allocation Mechanisms Network Code in Great Britain available at: https://www.ofgem.gov.uk/sites/default/files/docs/2014/06/implementation_of_cam_in_great_britain_final_130614.pdf

63 The EU Third Energy Package, adopted in 2009, includes Regulation (EC) No 715/2009 which contains Congestion Management Procedures.

OS&BB mechanism if they have opted to directly apply the firm day-ahead use-it-or-lose-it mechanism.

These measures can be characterised by the extent to which they offer unutilised capacity to the market without the capacity holder's consent, and also whether this transfer of the capacity right is done on a permanent or a temporary basis. In section 4.2, we provide a more detailed description of these mechanisms and consider how such mechanisms could be adapted to the Australian contract carriage pipelines.

3.4 Price regulation

In the US, the Federal Energy Regulatory Commission (FERC) regulates the prices, terms and conditions of service on gas transmission pipelines, in recognition that pipeline owners may have market power.[64]

Prices are set on a pipeline-by-pipeline basis. With limited exceptions, one of three methods is employed:

- **The cost-of-service method** requires that a pipeline owner submit to FERC cost and revenue data supporting proposed prices. Having considered these submissions, FERC sets prices in a manner such that the pipeline owner is provided the opportunity to recover its cost of providing services and earn a reasonable return on its investment.[65]

- **The negotiated rate method** allows a pipeline owner to charge a price that is agreed upon by the pipeline owner and a shipper. To safeguard against unequal bargaining power, the shipper must have the option to select a service under the pipeline owner's "recourse rate" as determined by FERC, based on the pipeline's cost of service.[66]

- **The market-based rate method** may be employed when a pipeline owner can demonstrate that it lacks market power. In these circumstances, an operator is authorised to charge prices consistent with market conditions.

Shippers can contest pipeline rates by filing a complaint with the FERC challenging a pipeline owner's prices.

Of these methods, the market-based rate method is most instructive for the discussion on the third party access regime for gas transmission in Australia. In order for this method to be employed, "the Commission [FERC] must find that the applicant [pipeline owner] lacks significant market power, i.e., that the market is sufficiently

64 American Gas Association Ratemaking for Energy Pipelines, 2011, see https://opsweb.phmsa.dot.gov/pipelineforum/docs/Ratemaking%20for%20Energy%20Pipelines%20071111.pdf, accessed 03/09/2015.

65 This method bears some similarities with the method of price regulation employed in the Australian electricity transmission and distribution sectors.

66 This method bears some similarities with full regulation in the Australian gas transmission sector.

competitive to preclude the pipeline from profitably maintaining prices above competitive levels for a prolonged period of time".[67]

While the market-based rate method bears some resemblance to the pricing of Australian pipelines that are uncovered, the test for whether a pipeline is regulated under the Australian regime (as per the discussion in section 2.3) appears to differ from that employed in the US, with the test in the US being directed specifically towards the issue of market power within the pipeline sector itself, as opposed to related markets.

Furthermore, FERC (Order 636) required pipeline owners to redesign their transportation tariff rates so that the majority of fixed costs would be recovered through the capacity charged to firm customers. This eliminated any price distortions inherent in the previously used tariff design where non-firm customers were contributing to the fixed costs.

All TSOs in the EU are subject to direct price controls. These are administered by each of the National Regulatory Authorities rather than at an EU level, and so exactly how tariffs are set will vary between member states. In general, TSOs are set an allowed revenue from which the capacity charges or tariffs will be derived. Generally, these regulated tariffs form the reserve price in auctions for capacity.

Under EU Directive No 715/2009, pipelines must provide both firm and non-firm third party access services. The price of non-firm capacity is required to reflect the probability of interruption, with less firm capacity priced at a discount to firm capacity.

67 FERC website, at: https://www.ferc.gov/industries/gas/gen-info/intrastate-trans/tariff/preparation.asp#mbr, accessed 03/09/2015.

4 Potential reforms for eastern Australia

Chapter 2 outlined various potential impediments to efficiency in the allocation of capacity. These impediments broadly fall into three areas:

- high transaction costs;
- lack of incentives to provide access by shippers that hold capacity; and
- lack of incentives to facilitate access by pipeline owners.

The Commission has identified three broad approaches that could address the issues identified:

- Approach A – Facilitate trading between parties, which primarily addresses transaction cost issues;
- Approach B – Improve the incentives of capacity holders in the provision of capacity; and
- Approach C – Improve the incentives of pipeline owners in facilitating access to capacity.

These approaches are designed to help stakeholders assess the range of possible solutions. This chapter outlines each of the approaches and discusses various specific elements that might be introduced under each. It further identifies how each might address the issues, examples of how they have been used elsewhere, and considerations in the context of the eastern Australian contract carriage regime.

These approaches are not mutually exclusive of each other. Equally however, it may not be necessary to implement all of the approaches, or all of the elements of each approach discussed in the chapter.

The Commission is particularly interested whether the market will respond in a timely manner to address issues relating to transaction costs, or whether regulatory intervention, such as Approach A, is warranted. The Commission is also interested in whether other regulatory interventions, such as approaches B or C, are necessary to address structural barriers to the efficient allocation of capacity.

It should be noted that considerable further thought would need to be given to the implementation of these approaches. In particular, under the current regulatory framework, it is the coverage test which determines whether price and much of the current non-price regulation is applied to pipelines.

Implementing these approaches through regulatory intervention would therefore be likely to imply a much greater application of regulation across the pipeline sector. A test as to whether price regulation should be applied, such as that contemplated under approach C, would then be likely to represent only one element of the regulation

applied, rather than determining whether or not any regulation should be applied at all, as is essentially the case at present.

Potential elements of each approach are outlined in Table 4.1.

Table 4.1 Approaches to address inefficiencies in the allocation of capacity

Approach A – Facilitate trading between parties	Approach B – Improve the incentives of capacity holders in the provision of capacity	Approach C – Improve the incentives of pipeline owners in facilitating access to capacity
Standardisation of capacity rights	Compulsory capacity reallocation mechanisms	Changes to the economic regulation of pipelines
Pipeline owners required to offer spare firm capacity in a transparent, open process	Prohibit contractual provisions in GTAs which limit capacity trading by pipeline owners	Prohibit contractual provisions in GTAs which limit capacity trading by shippers
Information about available capacity and trades to be published through a bulletin board	Reserve capacity for short term trades	
Voluntary surrender of capacity mechanism		

In general, there are a number of overarching trade-offs between the approaches. On the one hand, the larger the magnitude of change, the more substantial the impact might be in addressing potential issues in the efficient allocation of capacity. On the other hand, the larger the magnitude of change, the greater the potential for:

- impacts on incentives for investment;
- transitional issues, particularly where the approach involves the imposition of regulation that would otherwise be contrary to existing contracts or property rights;[68]and
- direct cost of regulation.

These trade-offs are discussed in more detail in sections 4.1 to 4.3.

4.1 Approach A – Facilitate trading between parties

The underlying basis of this approach is that shippers and pipeline owners have incentives to trade capacity but that transaction costs are the primary barrier to such trades. The approach suggests that by facilitating trade and reducing transaction costs,

68 For example, consideration would need to be given to the operation of Section 51(xxxi) of the Australian Constitution.

a more efficient allocation of capacity will result, without the need for other more significant regulatory measures.

Individual measures (described below) that might be applied as part of this approach might entail significant change from the status quo, and the regulatory costs, potential impacts on investment, transitional issues and any other potential drawbacks would have to be carefully considered. Nevertheless, this approach may be less of a significant change than either approaches B or C.

Given that the approach primarily addresses issues of information deficiency and transaction costs, it may not, on its own, change the incentives of shippers or pipeline owners in providing or facilitating access to capacity.

Potentially, this approach could be applied in the first instance, with more significant regulatory changes (such as approaches B and C) being applied upon further review were the level of liquidity in the capacity trading market less than that expected in a workably functioning competitive market.

Elements under this approach might include:

- standardised terms and conditions for capacity contracts;
- a standardised process by which pipeline owners would offer existing spare firm capacity in a transparent, open process (for example through an auction);
- a requirement for information about available capacity and trades to be published through a bulletin board, including the price at which trades occur; and
- a voluntary surrender of capacity mechanism.

These elements are in many cases addressing similar or identical issues – a lack of information in the market and transaction costs. As such, it is likely that only some of these measures would need to be implemented were approach A considered preferable.

The Commission recognises that there has been recent industry initiatives seeking to reduce search and transaction costs associated with trading. Both APA and Jemena have established capacity listing websites, wherein participants can find one another through listing capacity bids and offers, and can thereafter perform capacity trades over the counter. In addition, pipeline owners have reportedly developed standardised contract terms and conditions to enable shippers to trade capacity more readily. The Commission is interested in whether these approaches, and possible other approaches that might be introduced by industry, may avoid the need for regulatory intervention.

4.1.1 Standardisation of capacity rights

As noted in section 3.1, standardisation of capacity rights can serve to increase liquidity and reduce transaction costs, both of which might be particularly important to facilitate short term, low value trades.

Furthermore, with a relatively standardised product, the buyer and seller may (with other information regulations such as the publication of trades) be able to see a recent history of prices for identical or similar products. This means that the trade may be able to be undertaken more quickly than would otherwise be the case.

Overseas experience

Section 3.1 outlines that in both the EU and US, some degree of standardisation of terms and conditions and capacity duration has occurred.

In the US the holder of capacity can sell that capacity in locational segments, provided it is operationally feasible on the pipeline's system (with operational feasibility determined independently).

In the EU, the locational characteristics of the capacity products are inherently standardised – entry and exit rights may be obtained separately from one another, meaning that there is no 'contract path', although this would entail significant change for Australia, given the current point-to-point nature of capacity under the contract carriage model.

Considerations in applying this element to East Coast contract carriage pipelines

In Australia, capacity is held under a variety of terms and conditions, agreed between pipeline owners and individual shippers. While this suggests that such differences in contracts could be contributing to difficulties in trading, it also indicates that standardisation of contracts is likely to be an administratively complicated task. It also suggests that customisation of contracts is (or at least was) valued by at least one or the other of capacity holder or pipeline owner (or else these parties would not have agree to them), and that the regulation of customisation may therefore diminish value.

A number of questions would need to be considered in evaluating the suitability of introducing this element in eastern Australia:

- Should standardisation apply to contracts between pipeline owners and shippers, between two shippers, or both?
- Would the terms and conditions of existing GTAs be grandfathered or allowed a transitional period to move towards the standard terms? How, practically, would this take effect? Are there any legal implications to this approach?
- Standardisation could impact on the commercial risks between pipeline owners and shippers that are counterparties to existing GTAs. Is there is a need to compensate these parties if they are required to take on more risk, and if so how?

- Are there specific parts of a GTA where the benefits of standardisation are material (eg, credit requirements, locational characteristics or capacity timing)? Similarly, are there any specific parts of GTAs where the benefits of customisation is material?

- How would standardisation be achieved? Would this require regulation, or could it be facilitated voluntarily by shippers and pipeline owners?

Compared to the standardisation of GTAs between pipeline owners and shippers, the standardisation of contracts between shippers may be less complicated to instigate where those contracts are shorter in length.

4.1.2 Pipeline owners required to offer spare firm capacity in a transparent, open process

An auction, open season or other process would be used to offer spare firm capacity to the market. Information regarding any trades would be made public. This may require the locational segments or time periods of the capacity rights to be defined or standardised in order for the process to proceed.

A well designed auction or other procurement mechanism would allow for spare firm capacity to be allocated to shippers that value it the most. This contrasts with, for example, first-come-first-served allocations of capacity, whereby the criterion for capacity allocation is not the value that shippers place on the capacity.

In a well-functioning capacity market with low transaction costs, this would not be an issue with regard to economic efficiency – trades in the market would be used to reallocate capacity to those that value it most highly. However, given the possibility that the capacity market is not well-functioning, initially allocating spare capacity to those that value it the highest (at that time) through an open and transparent process such as an auction may reduce the need for subsequent trades.

Overseas experience

Section 3.2 discussed that EU arrangements utilise auctions for the sale of some capacity. The US approach goes further than this element, requiring *all* trades (not just those trades where the seller is the pipeline owner) to be conducted in an open and transparent process.

Considerations in applying this element to East Coast contract carriage pipelines

Pipeline owners should already have an incentive to offer existing spare capacity to the shipper that values it the most – as this increases the revenue generated.

To the extent that this is not occurring already, this may be because of the costs to implement an auction or other system to allocate existing capacity are too high, and the pool of prospective shippers too small, to warrant such an approach.

Consideration would need to be given as to whether the process by which spare firm capacity is offered to the market is run by the pipeline owner or some other independent body such as AEMO, in order to improve coordination across pipelines.

4.1.3 Information about available capacity and trades to be published through a bulletin board

Pipeline owners would be required to publish the quantity, price and terms and conditions of all firm and non-firm capacity available on their pipelines with the intention of reducing search and transaction costs for shippers, facilitating capacity trade.

Shippers would be required to inform pipeline owners of all capacity trades between shippers, and the terms and conditions associated with the trades, including the price.

Increasing transparency about the quantity of available capacity, and purchase price and terms of capacity that is sold, could result in prospective buyers and sellers of capacity being better informed and more able to assess the market value of the product, reducing transaction costs. Buyers and sellers would also be able to compare the price of capacity offered by shippers with that of non-firm capacity offered by pipeline owners.

Overseas experience

As discussed in section 3.2, FERC Orders require information on available capacity and capacity trades to be published on an Electronic Bulletin Board.[69] The bulletin boards also provide a mechanism for those wanting to sell their capacity to find and trade bilaterally with each other. In order to facilitate the provision of information to the pipeline operator, the pipeline operator acts as an intermediary for any trades between shippers.

Considerations in applying this element to East Coast contract carriage pipelines

Information relating to capacity trades may be commercial-in-confidence to either buyer or seller – for example, it might be useful for third parties in deducing important information regarding related markets, such as the National Electricity Market. Requiring publication of information may result in disincentives to trade, as either party does not wish to release such information, potentially reducing their profitability in these related markets.

Furthermore, a number of questions would need to be considered in evaluating the suitability of introducing this element in Eastern Australia, including:

- Which information (eg, price, duration, location, terms and conditions) relating to the trade is valuable to prospective trading partners, and so would be valuable to publish? Similarly, which information is legitimately confidential and so should not be published?

69 FERC Orders 636 (1992) and 637 (2000).

- When should this information be published? For example, either in near real-time, or delayed, in order to protect against the dissemination of commercial-in-confidence information.

- Whether pipeline owners would only be required to publish information regarding offered trades, or also information regarding the actual GTA agreed between the pipeline owner and shipper after negotiations are complete.

4.1.4 Voluntary surrender of capacity mechanism

Pipeline owners would be obliged to accept capacity that a shipper does not require anymore, and to try to re-sell the capacity on behalf of the capacity holder. The original capacity holder retains all of the obligations of the capacity, including for payment, until the capacity is re-sold. For shippers, capacity surrender is an entirely voluntary measure and it is an alternative to offering capacity directly to the market.

The rationale for capacity surrender is that by involving the pipeline owner's centralised procedures and systems it should make it easier to re-sell the capacity to the market compared to the capacity holder seeking to sell the capacity directly.

Capacity surrender can also differ from bilateral transactions if the pipeline owner is able to re-package and offer the surrendered capacity in the manner in which it can satisfy existing demand in the most effective way (eg, by altering the timing or locational characteristics of the capacity right).

Overseas experience

The voluntary surrender of capacity mechanism is one of four measures in the EU regulations, under the Congestion Management Procedures. Being a voluntary measure (for the shipper), this approach appears to be more directed at transaction cost issues than the issue of hoarding (which the other three approaches address, as discussed in sections 4.2.1 to 4.2.3).

Considerations in applying this element to East Coast contract carriage pipelines

The effectiveness of voluntary capacity surrender depends on both the pipeline owner's ability and incentive to sell surrendered capacity on the shipper's behalf. This mechanism would therefore require either:

- robust requirements on a pipeline owner to attempt to re-sell the capacity, while allowing the pipeline owner to recover costs incurred; or

- the pipeline owner to be incentivised to re-sell the capacity, noting that it is already receiving revenue for the capacity from the shipper that is surrendering it (for example, through a revenue sharing mechanism between the shipper and pipeline owner). These incentives might be regulated, or agreed in negotiation between the shipper and pipeline owner.

A pipeline owner's incentive to sell a shipper's surrendered capacity ahead of any unallocated capacity it already owns may be particularly limited, implying that surrendered capacity might only be required to be offered to the market after all unallocated capacity has been sold.

On the other hand, the mechanism should not be designed in a way that perversely incentivises shippers to first book more capacity than necessary only to easily hand it back to the pipeline owners.

4.2 Approach B – Improve the incentives of capacity holders in the provision of capacity

This approach seeks to address the issue of shippers having insufficient incentives to trade contracted but unutilised capacity.

Elements of this approach could include:

- the compulsory acquisition of capacity, and its reallocation through a commercial process, via one or more of the three other mechanisms utilised by the EU under its Congestion Management Procedures:
  - oversell and buy back mechanism;
  - firm day-ahead use-it-or-lose-it; and
  - long term use-it-or-lose-it.
- reserving firm capacity to be traded in the short term; and
- removing any identified contractual provisions in GTAs which confer monopoly power onto the shipper.

Compulsory reallocation of capacity and capacity reservations both seek to improve trading by either allowing shippers to access unutilised firm capacity held by shippers without the need to enter into trading contracts with those shippers, or by restricting shippers from buying up all firm capacity in the first place. By reducing the ability to hoard capacity, capacity holders may seek to trade their capacity in order to receive some revenue, rather than inactively foregoing their capacity. This may further increase market liquidity.

While this approach may directly address the issue of hoarding by capacity holders, it is also relatively intrusive:

- By compulsorily reallocating capacity, a free-rider problem may be inadvertently created. Prospective shippers may be better able to access capacity on a pipeline without the long term commitment of a take-or-pay contract used to underwrite investment. This may undermine incentives to underwrite new additional capacity, as each prospective shipper seeks to use the capacity created by another shipper's investment.

- The measures may be costly and complex to implement, and involve a number of difficult design decisions.

- These measures often impact on property rights as defined under existing GTAs, which have typically been used to underwrite sunk investments. Altering such capacity rights may be both legally challenging and result in an increase in sovereign risk, further hampering incentives for investment. This transitional problem may be avoided by only applying the approach to any capacity under new capacity contracts, but, given the typically long-term nature of existing contracts, this might significantly reduce the scope and effectiveness of this approach.

4.2.1 Oversell and buyback

This mechanism would provide pipeline owners with an incentive or requirement to make available to any shippers additional firm capacity above the technical capacity limit of a pipeline.

This could lead to a situation where capacity is over-subscribed (ie, estimated nominated flows are more than the technical capability of the pipeline). In such a situation, the pipeline owner would be required to buy back capacity from shippers.

The buy-back procedure put in place would be market-based, where all shippers have the opportunity to participate and indicate at what price they would be willing to waive their capacity rights. Examples of market based procedures include auctions or capacity tenders. The price at which a pipeline owner has to buy-back capacity might be capped, beyond which capacity might be curtailed for shippers who own firm capacity. Curtailment might be applied only to those shippers which purchased capacity through the OS&BB mechanism, or to all shippers, including the original firm capacity holders.

The net of the revenues from selling additional capacity and costs arising from the buy-backs would be shared between the pipeline owner and shippers.

The mechanism addresses hoarding behaviour by making available firm capacity to all shippers irrespective of the nominated capacity and potentially more than the level of technically available capacity.

The buy-back procedure provides a means for shippers to signal the value of their capacity and in theory should ensure that capacity is allocated to those shippers who value the capacity the most.

Compared to some other compulsory capacity mechanisms (described in sections 4.2.2 and 4.2.3 below):

- applying a market approach to the rationing of capacity when physical constraints occur should promote efficient utilisation of capacity;

- existing property rights are unaffected;[70] and
- existing capacity holders are able to re-nominate upwards on the day.

Considerations in applying this element to East Coast contract carriage pipelines

The mechanism inherently entails the risk that all capacity is sold and nominated for a flow that cannot be physically realised. Under this mechanism, a pipeline owner will either be required to sell additional capacity (potentially at a regulated price) or incentivised to take this calculated risk. Therefore a key task for any design of this mechanism is to ensure an appropriate balance so that the pipeline owner is required or incentivised to:

- release sufficient additional capacity to allow for the benefits of the mechanism to be realised; but
- not to release so much capacity that there is excessive or frequent curtailment of capacity.

The OS&BB mechanism may also:

- result in free-riding problem in the development of new infrastructure. Through this mechanism, prospective shippers would be able to access firm capacity on a pipeline without the long term commitment of a take-or-pay contract used to underwrite investment; and
- be costly and complex to implemented.

There would be a high level of regulatory involvement in the implementation and application of the mechanism, with the following design features requiring consideration:

- The methodology for determining pipeline technical capacity (baseline capacity) and the frequency by which the baseline capacity is recalculated.
- The trigger events to determine when the OS&BB mechanism should be applied. For example, whether OS&BB should only be applied if all firm capacity has been contracted, to avoid creating an incentive for shippers to access firm capacity cheaply through this mechanism.
- Whether pipeline owners should be required to release additional capacity or incentivised to do so.
- How to design the incentive scheme to provide incentives for pipeline owners to release additional capacity. This would include:

70 Existing property rights might be affected if curtailment was applied to all shippers. However, it would seem likely that curtailment would be applied to only those shippers purchasing capacity through the OS&BB mechanism in order to avoid this issue arising.

  - how the price for additional capacity is set (either by the pipeline owner or regulated, to ensure that pipeline owners do not exercise market power in the provision of additional capacity); and
  - how additional revenue earned or losses incurred is shared between the pipeline owner and shippers.

- The design of the market-based mechanism to provide appropriate price signals to allow for capacity to be allocated to the shippers who value it most highly.
- The design of the curtailment mechanism, including whether curtailment should apply to all shippers, or only those shippers that purchased additional capacity through the OS&BB mechanism.
- Which capacity products would the mechanism apply to (e.g., daily, monthly, quarterly).
- Whether there would need to be coordination in the OS&BB mechanisms across multiple pipelines for the implementation of this element to be effective.

Appendix B provides a case study of the implementation of an OS&BB mechanism by Interconnector UK, illustrating how these design features have been resolved in this example.

4.2.2 Firm day-ahead use-it-or-lose-it

Under this mechanism a shipper which holds capacity would be required to nominate capacity to be used on a day, before a defined cut off time. After that time, restrictions would be placed on how much capacity can be re-nominated for that day. All unused capacity of the shipper would be offered for sale in the market. The degree of the restrictions on re-nominations would determine whether the unused capacity is sold as firm or non-firm capacity.

Proceeds from the sale would be assigned to the pipeline owner for possible re-distribution to all shippers on the pipeline. The shipper that originally held the capacity would remain liable for the fees under the existing GTAs.

This mechanism seeks to improve trading by allowing prospective shippers to access unutilised firm capacity held by incumbent shippers on a daily basis without the need to enter into trading contracts with incumbent shippers. By reducing the ability to hoard capacity, incumbent shippers may seek to trade capacity in order to receive some revenue, rather than inactively foregoing the capacity.

In addition, such a mechanism may provide more flexibility to the pipeline owner to sell firm capacity on a daily basis as it is not constrained by the terms and conditions of the existing GTAs.

Considerations in applying this element to East Coast contract carriage pipelines

A key consideration regarding this mechanism is how this would interact with existing nomination and re-nominations procedures in GTAs. If existing GTAs prevent capacity holders from re-nominating on a firm basis, then it would be no worse off under this mechanism. If, however, this mechanism places new restrictions on re-nomination rights, this could undermine existing capacity rights and reduce the flexibility of shippers, particular in their balancing needs.

As with other capacity reallocation mechanisms, this mechanism could also undermine incentives to underwrite new additional capacity. Through this mechanism, prospective shippers would be better able to access capacity on a pipeline without the long term commitment of a take-or-pay contract used to underwrite investment.

The amount of UIOLI capacity to be made available to the market would need to be determined. This might be calculated by the pipeline owner with reference to the difference between total available capacity and total nominations by the capacity holders.

Another consideration is how the revenue earned under this UIOLI service would be distributed. On pipelines subject to full regulation, the revenue might be shared between the pipeline owner and other shippers on the network. Further consideration is needed on whether for non-regulated pipelines it is appropriate for the pipeline owner to retain all the revenue from this mechanism, given that it may be able to price the released capacity higher than that expected in a workably competitive market. Typically, the capacity holder would not receive any share of the revenue. The capacity holder could either have used the capacity or sold it on to another user, but has chosen not to and therefore would not be rewarded for such inaction.

How the pipeline owner makes available any returned capacity (eg, through a bulletin board) will determine the effectiveness of this mechanism. Therefore this mechanism should be considered alongside other solutions aimed at regulating pipeline owners capacity allocation procedures (for example, as discussed in section 4.1.2).

4.2.3 Long-term use-it-or-lose-it

Shippers who systematically underutilise their contracted capacity would be required to surrender a defined proportion of firm capacity back to the pipeline owner for resale to another shipper.

The capacity product relates to medium or long-term firm contracted capacity that is unused by the capacity holder and therefore is different to day ahead UIOLI. The underutilised capacity is generally determined through a retrospective review of flow and usage patterns, often on an annual or seasonal basis. Proceeds from the sale would be assigned to the pipeline owner for possible re-distribution to all shippers on the pipeline.

The long term use-it-or-lose-it mechanism therefore attempts to free up contracted and unutilised capacity that shippers fail to release, enabling existing infrastructure to be better utilised.

This mechanism might also provide an incentive for capacity holders to attempt to sell any unused capacity before they potentially lose the capacity under such a mechanism, stimulating further liquidity in the capacity market.

Considerations in applying this element to East Coast contract carriage pipelines

There are a number of questions to address when considering how to design a potential longer term use-it-or-lose-it mechanism for eastern Australian pipelines. These include:

- How to measure under-utilisation of capacity and at what threshold should trigger this mechanism. In the EU, this mechanism is triggered when the shipper's average deliveries are less than 80 per cent of their capacity over a 12 month period.
- Whether the surrender of the capacity is automatic if the threshold is triggered or where there is an assessment process to determine whether it is reasonable to require the holder to surrender the capacity (for example, for risk management purposes).
- The governance around any assessment.
- Whether the capacity holder would only be required to surrender the capacity if there is demand for firm capacity from other shippers.
- How the pipeline owner would make available any returned capacity to the market (for example, through the mechanism discussed in section 4.1.2), and whether the price of that capacity would need to be regulated.
- If the funds from reselling the capacity are returned to all shippers, there is the possibility that a material share of the revenue would be returned to the original holder if that holder accounts for a large share of volumes on the pipeline. In such circumstances, it may be sensible for the rules to prevent any distribution of revenue to the original capacity holder.

An effective monitoring and reporting framework would be essential in order to ensure that any long term use-it-or-lose-it scheme can function effectively. Pipeline owners would need to continuously assess the capacity usage by capacity holders and report the information to regulatory authorities.

As with other mechanisms which involve the compulsory redistribution of capacity, there may be investment incentive implications, as discussed in sections 4.2.1 and 4.2.2.

4.2.4 Prohibit contractual provisions in GTAs which limit capacity trading by pipeline owners

As discussed in section 2.2.1, contractual provisions in contracts may be limiting pipeline owners' ability or incentive to enter into capacity trades.[71] We understand that such provisions can include:

- a direct prohibition on the pipeline owner selling capacity to another party;
- most favoured nation provisions, whereby foundation shippers are entitled to the prices offered by the pipeline owner to other shippers; and
- provisions that require the pipeline owner to rebate some or all of the revenue it receives from the sale of capacity to third parties back to the capacity holders.

Prohibiting these provisions may help make 'as available' capacity available to the market, but would not necessarily alter the availability of unallocated, firm capacity offered by pipeline owners.

Considerations in applying this element to East Coast contract carriage pipelines

Similarly to standardising GTA contracts, the issue of how to address provisions in existing long term contracts may be challenging. Altering existing contracts affects the risk and value to the counter-parties. Possible approaches to address this issue include:

- allowing a transitional period to remove any prohibited provisions; and
- grandfathering existing arrangements, but prohibiting any newly entered into contracts from containing such provisions.

4.2.5 Reserve capacity for short term trades

A fixed proportion of the total capacity on a pipeline (for example, 10 per cent) would not be allowed to be sold as medium or long term firm capacity (for example, greater than six months) and must instead be reserved for sale in the short term.

By requiring pipeline owners to hold back some capacity that would be utilised to provide short term firm capacity, more competitive tension would be introduced between pipeline owners and shippers. This would limit the ability of capacity holders to hoard capacity. Capacity holders may then seek to sell their capacity (at a price competitive with the price of the reserved capacity) in order to recoup some value, further facilitating liquidity and competitiveness in the capacity market.

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71 It should be noted that many of the provisions in question may have been entered into at a time when capacity trading was not seen as a high priority for the shippers or pipeline owners. The contractual provisions may therefore not be an indication of market power on the part of either counter-party at the time of the capacity trade, but might just represent a historic feature of long-term capacity contracting.

Considerations in applying this element to East Coast contract carriage pipelines

There are a number of potential issues with regard to this element which would have to be considered:

- Under the current contract carriage arrangements, pipeline owners underwrite pipeline capacity through take-or-pay contracts. Under this element, only a proportion of capacity could be underwritten in this manner, with the remainder having to be funded by the pipeline owner, who then would seek to recover its costs through the sale of short term capacity under the proposed mechanism. This creates a risk for the pipeline owner that it is unable to recover its costs, and may undermine incentives for efficient investment.

- The impact of this risk on the regulated risk allowance used by the AER to determine prices for reference services on some covered pipelines.

- The effectiveness of the element, and possible negative consequences (such as for incentives for investment) may be highly dependent on the mechanism's parameters (eg, percentage and timeframe of reserved capacity) which would therefore have to be carefully chosen.

- Whether this element would apply only to yet-to-be developed capacity, or also to existing pipelines (which would entail changes to capacity holders' and pipeline owners' property rights).

4.3 Approach C – Improve the incentives of pipeline owners in facilitating access to capacity

This approach seeks to address the issue of pipeline owners having insufficient incentives to facilitate access to capacity.

As discussed in Box 2.2, pipeline owners may have market power in the provision of both firm and as-available capacity. This has the potential to result in higher prices or poorer levels of service than would be expected in workably competitive markets.

Potential elements to address this issue are:

- changes to the economic regulation of pipelines; and

- prohibitions on contractual provisions in GTAs which limit capacity trading by shippers.

4.3.1 Changes to the economic regulation of pipelines

As noted in section 2.3.1, pipelines are currently subject to the gas third party access regime, which determines which pipelines are subject to economic regulation.

Section 2.3 outlined the Commission's preliminary analysis with regard to the gas third party access regime, and noted that while the regime may be fit for the purpose for which it was designed, it might not be targeted at other potential market failures in the gas transmission sector.

Amongst other things, these market failures can lead to the inefficient under-utilisation of transmission capacity if it is being offered for sale at monopoly prices. This can have detrimental effects on competition in the wholesale market.

These issues could be addressed by a regulatory regime that more directly considers whether a pipeline owner is, or could be, exercising market power in the provision of capacity. This might also improve the credibility of the threat of regulation on other pipeline owners.

Additional changes may also be warranted to the nature of economic regulation once this is applied to a pipeline. For example, currently, price regulation is typically only applied to a limited number of services (known as 'reference services') on covered pipelines. Expanding the number of services that price regulation applies to, so that non-firm services are also reference services for example, may better constrain pipeline owners' market power.

Furthermore, the economic regulation of prices may increase competitive tension between pipeline owners and shippers, reducing shippers' ability to hoard capacity. As noted in section 2.2.4, hoarding is facilitated by the pipeline owner having the ability, conferred by market power, to price capacity at monopoly prices, and hence not effectively compete with the shipper. Shippers engaged in hoarding may no longer be able to limit their competitors from entering upstream or downstream markets, as those competitors would be able to buy capacity at a regulated price.

Overseas experience

As noted in section 3.4, both the US and EU regulate the prices, terms and conditions of service on gas transmission pipelines. In the US, in instances where pipeline owners can demonstrate to FERC that it lacks market power, price regulation is not applied.

Considerations in applying this element to East Coast contract carriage pipelines

This regulatory change would be significant, and would require careful consideration.

Economic regulation is neither perfect at addressing the problems it is designed to address, nor costless. The extent to which efficiency losses would be remedied through the imposition of economic regulation on currently uncovered pipelines would need to be carefully considered, as would the costs of economic regulation, which include:

- the direct costs of regulation, such as administrative costs for both the regulator and regulated entity;
- the potential to alter the decision making of a regulated firm so that efficiency is compromised;

- the potential to dissuade efficient investment or incentivise inefficient investment; and

- the potential to stifle innovation and competition where this is feasible.

Were changes to the test considered appropriate, a number of design features to the regulatory regime would also have to be considered:

- the specific design of the test, so that it appropriately balanced the benefits and costs of economic regulation;

- implementation and transitional issues, particularly with regard to greenfield pipelines which have already been granted 15 year coverage exemption determinations and existing contractual arrangements where prices have already been agreed by pipeline and shipper (and, typically, sunk investment made as a result);

- whether the ability to gain coverage exemption for 15 years remains appropriate;

- whether the changes to the coverage test would apply only to the transmission sector in eastern Australia (the focus of this review), given that the coverage test currently applies to both gas transmission and distribution pipelines across all of Australia;

- the governance of any new test; and

- whether the existing test, which focuses on the adverse effects that any misuse of market power by a pipeline owner may have on competition in markets upstream or downstream of the transmission infrastructure, rather than economic efficiency more generally, should remain in place in addition to the "new" test (eg, regulation could be applied to pipelines if they either meet the existing coverage criteria or the new criteria with regard to market power in the capacity market).

Furthermore, changes to the test may not necessarily imply a different outcome – any alternative test focussed more directly on market power mitigation may still result in a relatively low proportion of pipeline coverage, if actual instances of market power being exercised by pipeline owners are rare. In its Inquiry, the ACCC is considering whether there are instances of market power being exercised by pipeline owners.

While any change to the test would result in a divergence between the national access regime under Part IIIA of the *Competition and Consumer Act 2010* and the regulatory regime for the gas transmission sector, this may be appropriate given that the purposes of the two instruments would be different.[72]

72 The fact that the gas access regime was established separately to Part IIIA suggests that such divergences were contemplated, and that it was not considered appropriate to use Part IIIA directly.

Further consideration would also need to be given to whether other changes to the regulatory regime are appropriate, such as:

- whether the current use of either light or full regulation (as currently conceived) once a pipeline is covered is appropriate, or whether alternative regulatory approaches may be more appropriate; and
- which services should be reference services (including firm and non-firm capacity services), and under what terms and conditions for both pipeline and shipper.

4.3.2 Prohibit contractual provisions in GTAs which limit capacity trading by shippers

Similarly to the discussion in section 4.2.4, this would involve prohibiting any identified contractual provisions in GTAs, this time with a focus on those conferring market power to pipeline owners. These include:

- nomination cut-off times in GTAs that favour capacity sales by pipeline owners compared to sales by shippers that hold capacity;
- restrictions on a shipper's ability to change receipt and delivery points in GTAs (or to move MDQ or MHQ) between points);
- the requirement to negotiate allocation agreements at delivery/receipt points; and
- other fees and charges levied by pipeline owners that limit capacity trading.

Removing these provisions may also increase the value of the capacity product to prospective shippers, increasing the demand for the product, and hence facilitating trade. This may particularly be the case for provisions which limit the flexibility of receipt and delivery points for gas.

Considerations in applying this element to East Coast contract carriage pipelines

The most substantial consideration for this issue is that these provisions might be included in existing long term contracts. Again, possible approaches might include transitional periods or grandfathering.

A number of the existing provisions, such as restrictions on a shipper's ability to change receipt and delivery points in GTAs, may be based on technical requirements of the pipelines. As undertaken in the US, limiting these provisions may require independent arbitration of:

- whether such provisions are required or preferable for the operational management of the pipeline; or

- the appropriateness of alternative clauses or arrangements (such as grouping capacity into delivery zones or allowing shippers to offer point to point capacity on a segmented basis).

4.4 Feedback

The appropriate regulatory response to any of the identified issues not only depends on their current and likely future materiality, but also on the ability and likelihood of the market to respond in a timely manner without intervention. As a result, the Commission seeks feedback on

- whether the market is likely to respond to potential issues of transaction costs, or whether regulatory intervention such as Approach A (ie, facilitating trade) is warranted;

- whether approaches B and/or C are warranted in addition to, or instead of, Approach A in order to address issues in the incentives of incumbent shippers and pipeline owners to provide access; and

- specific elements within each approach, as well as any other suggested elements.

The Commission is particularly interested in stakeholder views on the potential for revising the regulatory regime so that this is more directly targeted at the potential sources of market failure in the gas transmission sector. Even if such a change resulted in no variation to pipelines' current coverage status, this would reduce the potential for market power issues arising in the future. The Commission welcomes feedback on whether it would be appropriate to further progress work in this area regardless of any market power currently being exercised in the sector.

Abbreviations

ACCC	Australian Competition and Consumer Commission
AEMC or Commission	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
CAM	Capacity Allocation Mechanisms
CMP	Congestion Management Procedures
COAG	Council of Australian Governments
DTS	Declared Transmission System
DWGM	Declared Wholesale Gas Market
EBB	Electronic Bulletin Board
EU	European Union
FDA UIOLI	Firm Day-Ahead Use-It-or-Lose-It
GTA	Gas Transportation Agreement
IAA	IUK Access Agreement
IAC	IUK Access Code
IUK	Interconnector UK
LNG	liquefied natural gas
LT UIOLI	Long-Term Use-It-Or-Lose-It
MDQ	maximum daily quantity
MHQ	maximum hourly quantity
National Gas Law	NGL
National Gas Rules	NGR
NCC	National Competition Council

NGO	National Gas Objective
OS&BB	Over-sell & Buy Back
RBP	Roma Brisbane Pipeline
TSO	Transmission System Operator
United States	US

A Assessment Framework

The purpose of this appendix is to outline the assessment framework that the Commission will use for both the East Coast and DWGM reviews. In providing advice to the Energy Council and Victorian Government, we will explain how our recommendations meet the assessment framework.

The assessment framework integrates the factors set out in both terms of reference that the AEMC must have regard to and articulates the relationship between them. High level principles that guide our market development and rule making work are also outlined, along with attributes that we consider are associated with a well-functioning, workably competitive gas market.

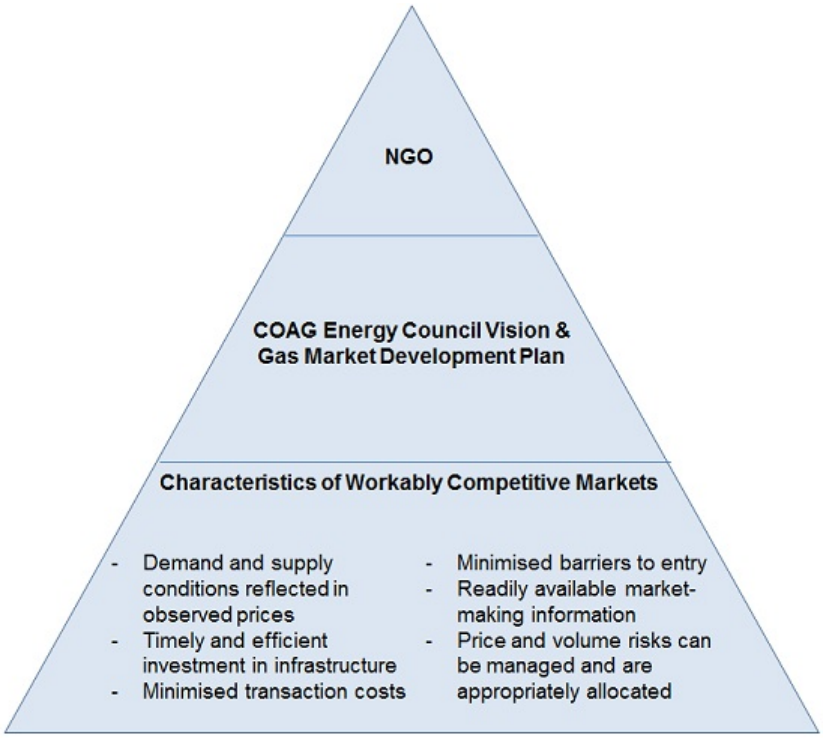
A.1 Assessment framework structure

In accordance with the terms of reference, the assessment framework is structured so that the single overarching objective guiding the AEMC is the National Gas Objective (NGO).

In applying the NGO, the AEMC will have regard to the Energy Council's Vision and Gas Market Development Plan. The Vision is a statement agreed by the Commonwealth, state and territory energy ministers setting out the high level direction that gas market development should take in Australia for the NGO to be achieved. The Gas Market Development Plan is a program of work currently underway that supports the Vision.

Sitting below the NGO and Vision are high level attributes that the Commission considers support the development of well-functioning, workably competitive markets and that are generally required for the NGO and Vision to be achieved. The relationship between the three aspects of the assessment framework is illustrated in Figure A.1, and each is discussed below.

Figure A.1 Assessment framework



A.2 National Gas Objective

In accordance with the two terms of reference, the AEMC must have regard to the NGO in undertaking these reviews. The NGO is set out in section 23 of the National Gas Law and states:

> "The objective of this Law is to promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas."

The NGO is structured to encourage energy market development in a way that supports the:[73]

1. efficient allocation of natural gas and transportation services to market participants who value them the most, typically through price signals that reflect underlying costs;

2. provision of, and investment in, physical gas and transportation services at lowest possible cost through employing the least-cost combination of inputs; and

3. ability of the market to readily adapt to changing supply and demand conditions over the long-term by achieving outcomes 1 and 2 over time.

73 These three outcomes are commonly referred to as allocative, productive and dynamic efficiency, respectively.

The three limbs of efficiency described above are generally observable in a well-functioning, workably competitive market and together work to promote the long-term interests of consumers of natural gas.

In accordance with the NGO, the AEMC will take into account the long term interests of all consumers of natural gas throughout this review. The AEMC notes that there are numerous types of consumers of natural gas in the Australian economy, including: residential and commercial users; industrial and manufacturing users; gas fired generators; and LNG producers.

As with all rule changes and reviews, when applying the NGO we will have regard to the following set of high-level principles:

- competition and market signals will generally lead to better outcomes than centralised planning and regulation, as competing energy businesses have an incentive to meet consumers' needs efficiently;
- where it is required, regulation should be targeted, fit-for-purpose, provide incentives that attempt to imitate the outcomes of a workably competitive market, and involve regulatory costs proportionate to the materiality of issue that the regulation seeks to address;
- risk allocation and the accountability for investment decisions should rest with those parties best placed to manage them; and
- market and regulatory frameworks should be flexible and provide firms with a clear and consistent set of rules that allow them to independently develop business strategies and adjust to changes in the market. Frameworks should be resilient to changing supply and demand conditions, and patterns of flow, over the long-term.

These principles guide the direction of the recommendations stemming from these reviews towards achieving the NGO.

A.3 Energy Council Vision and Gas Market Development Plan

In accordance with the terms of reference, the AEMC must also have regard to the Energy Council's Vision for Australia's future gas market and Gas Market Development Plan. Specifically, the Energy Council has requested that this review consider the role and objectives of the facilitated gas markets on the east coast, and set out a road map for their continued development in order to meet the Energy Council's Vision for Australia's future gas market, which is as follows:[74]

> "The Council's vision is for the establishment of a liquid wholesale gas market that provides market signals for investment and supply, where responses to those signals are facilitated by a supportive investment and

74 COAG Energy Council, *Australian Gas Market Vision*, December 2014, p. 1.

regulatory environment, where trade is focused at a point that best serves the needs of participants, where an efficient reference price is established, and producers, consumers and trading markets are connected to infrastructure that enables participants the opportunity to readily trade between locations and arbitrage trading opportunities."

The Vision is underpinned by four broad policy work streams and related outcomes:[75]

1. **Encouraging competitive supply:**

   (a) Improvements to the regulatory and investment environment so that gas supply is able to respond flexibly to changes in market conditions.

   (b) A "social licence" for onshore natural gas development achieved through inclusion, consultation, improving the availability and accessibility of factual information relating to resources projects, and rigorous science to ensure that communities concerns are addressed.

2. **Enhancing transparency and price discovery**:

   (a) Increased flexibility and opportunity for trade in pipeline capacity.

   (b) Competitive retail markets that will provide customers with greater choice and large users with enhanced options for self-supply and shipment.

   (c) Provision of accurate and transparent market making information on pipeline and large storage facilities operations and capacity, upstream resources, and the actions of producers, export facilities, large consumers and traders.

3. **Improving risk management:**

   (a) Liquid and competitive wholesale spot and forward markets for gas that provide tools for participants to price and hedge risk.

   (b) Access to regional demand markets through more harmonised pipeline capacity contracting arrangements which are flexible, comparable, transparent on price, and non-discriminatory in terms of shippers' rights, in order to accommodate evolving market structures.

   (c) Harmonised market interfaces that enable participants to readily trade between locations and find opportunities for arbitrage and trade.

   (d) Identified development pathways to improve interconnectivity between supply and demand centres, and existing facilitated gas markets, which enable the enhanced trading of gas.

75 COAG Energy Council, *Australian Gas Market Vision*, December 2014, pp. 2-5. We note that these four work streams are also stated in the *Gas Market Development Plan*, available at: http://www.scer.gov.au/workstreams/energy-market-reform/gas-market-development/

4. **Removing unnecessary regulatory barriers:**

    (a) Regulation of gas supply and infrastructure is appropriate and enables participants to pursue investment opportunities, in response to market signals, in an efficient and timely manner.

While stream 1, "encouraging competitive supply," is largely outside the scope of the AEMC's reviews, it provides necessary context to our more thorough consideration of issues relating to streams 2 to 4.

Overall, the Vision provides the Commission with a high level policy statement to guide its analysis through the review. It does this by setting out the broad direction that gas market development should take in order to meet the NGO. The elements that make up the Vision can be considered the "means" of promoting the overarching objective – the NGO – through increasing the efficiency of the gas market, for the long term benefit of consumers of natural gas services.

A.4 Characteristics of a well-functioning gas market

While the NGO serves as the overarching objective and the Vision provides the high level policy direction, the AEMC is also guided by a number of attributes that represent well-functioning, workably competitive markets.[76] These are:[77]

1. Demand and supply conditions reflected in prices: markets participants should have access to a credible reference price reflective of underlying supply and demand conditions that usefully aids commercial decision making.

2. Timely and efficient investment in infrastructure: efficient additions to, and expansions of, infrastructure enable supply to meet demand while minimising the cost of excess capacity.

3. Readily available market information: efficient outcomes are likely to be achieved when participants (current and potential) have access to clear, timely and accurate information about prices and factors driving prices, such as supply and demand conditions.

4. Price and volume risks can be managed and are appropriately allocated: participants being able to manage operational risks to delivery of physical gas

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76 Application by Chime Communications Pty Ltd (No 2) [2009] ACompT 2, offers a "shorthand" description of workable competition which is "...a market with a sufficient number of firms (at least four or more), where there is no significant concentration, where all firms are constrained by their rivals from exercising any market power, where pricing is flexible, where barriers to entry and expansion are low, where there is no collusion, and where profit rates reflect risk and efficiency."

77 We note that these build on factors previously identified and used by the AEMC and others. See, for example: K Lowe Consulting, *Gas Market Scoping Study*, A report for the AEMC, July 2013, p. 86; and: ESAA, *Assessment of the East Coast gas market and opportunities for long-term strategic reform*, Final Report, May 2013, p. 37.

while maintaining safe operating parameters, as well as being able to insure themselves adequately against financial risks.

5. Minimised barriers to entry: barriers to entry (and exit) can be a function of market structure, government regulation, industry-specific sunk costs or geography, and certain barriers have the potential to detract from the ability of markets to deliver efficient outcomes.

6. Minimised transaction costs: efficient transaction costs support timely and efficient investments in infrastructure and encourage competition.

These characteristics, if in place, would form a strong foundation for facilitated gas markets and transportation arrangements in eastern and southern Australia to promote the NGO and achieve the Energy Council's Vision.

B Case study – Implementation of an Oversell and Buy Back mechanism by Interconnector UK

Interconnector UK (IUK) owns and operates a gas transmission pipeline between Bacton (UK) and Zeebrugge (Belgium). The IUK pipeline therefore runs on a point-to-point basis, and unlike most gas transmission system operators (TSOs) in Europe, IUK is not subject to economic regulation. Consequently, IUK is more similar to most pipelines on the east coast of Australia than other European TSOs, which operate meshed networks with regulated entry and exit tariffs.

The IUK system, which commenced operations in 1998, comprises:

- a compression/reception terminal at Bacton in the UK with connections to the National Grid Gas transmission system (ie, the British TSO) and a major pipeline delivering gas from production facilities in the North Sea;
- a compression/reception terminal at Zeebrugge in Belgium with a connection to the Fluxys transmission system (ie, the Belgian TSO); and
- a 235 kilometre pipeline between the two terminals.

All of IUK's capacity is held by foundation shippers on 20 year agreements entered into in 1998. During the course of its operation, IUK has developed a number of mechanisms that make interruptible (non-firm) capacity available and enable parties other than the foundation shippers to access capacity via the secondary market.[78]

Despite not being subject to economic regulation, IUK was additionally required by Ofgem and CREG (the UK and Belgian regulators, respectively) to implement the EU Congestion Management Procedures (CMP).[79]

New arrangements for accessing additional capacity

In order to implement CMP, IUK introduced a new contractual framework, the IUK Access Agreement (IAA) and associated IUK Access Code (IAC). Under these arrangements, IUK can make additional capacity available on a day-ahead basis.[80] This capacity stems from the application of three CMP mechanisms: Surrender of Capacity, Long-term Use It or Lose It and Oversell and Buy-back.[81]

78 Interconnector UK, *Consultation on the implementation of Congestion Management Procedures*, 30 April 2013, p. 2.

79 The EU Third Energy Package, adopted in 2009, includes Regulation (EC) No 715/2009 which contains Congestion Management Procedures to be implemented by TSOs by 1 October 2013.

80 As such, these arrangements operate in addition to, and separate from, the existing secondary market mechanisms which aim to allow parties to acquire capacity directly from existing shippers.

81 IUK will implement the final element of CMP, the Firm Day-Ahead Use It or Lose It provisions, in July 2016. See: Interconnector UK, *Consultation on the new IUK Access Agreement and IUK Access Code for selling capacity made available through new congestion management procedures*, 10 October 2013, p. 4.

Under the IAA, any party can become a shipper on the pipeline and seek to obtain the additional firm capacity available as the result of the application of these mechanisms. The resulting capacity product sold is for one day duration, purchased day-ahead via a pay-as-bid auction.[82]

Release of OS&BB capacity

The OS&BB mechanism acts to make more capacity available (on a firm basis) than is technically available in the system, on the basis that aggregate nominations are unlikely to reach the physical capacity of the system.[83] Consequently, a key element of the mechanism is the decision as to how much additional capacity should be released.

Under the IAA (which is approved by Ofgem and CREG), IUK determines if, and how much, OS&BB capacity is to be made available on a day-ahead basis. To do so, IUK uses a statistical scenario model which aims to "minimise the need for buy-back".[84] When determining the day-ahead capacity, flow rates from the current day are used to forecast nominations.

As can be seen in Figure B.1, the amount of additional capacity released by IUK under the OS&BB mechanism is set in a way such that utilisation is forecast to still be less than 100 per cent. When day-ahead utilisation is forecast to be above 74 per cent, no additional capacity is released. Even where day-ahead utilisation is forecast to be less than 60 per cent, no more than 15 per cent additional capacity is released. IUK justifies not releasing capacity in excess of 75 per cent forecast utilisation on the basis that "shippers' nominations can change considerably within-day in response to events and/or pricing signals".[85]

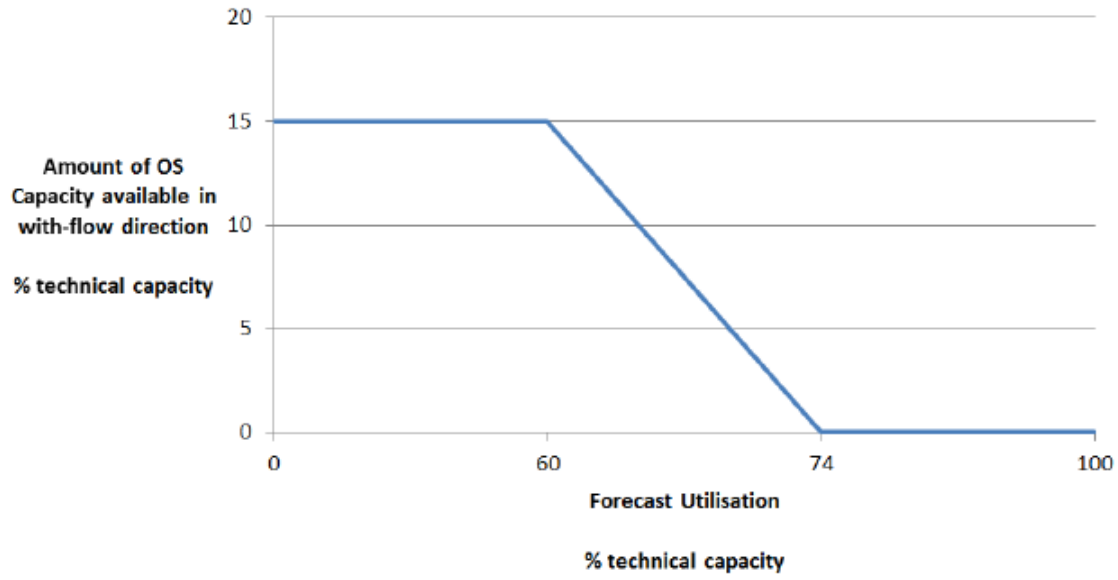
82 Interconnector UK, *IUK Access Agreement Summary*, 10 October 2013, p. 6.

83 Being a simple point-to-point pipeline, it is relatively straightforward to define capacity.

84 Interconnector UK, *IUK Access Agreement Summary*, 10 October 2013, p. 6.

85 Interconnector UK, *IUK Access Agreement Summary*, 10 October 2013, p. 6.

Figure B.1 Determination of capacity released under OS&BB



Source: Interconnector UK, *IUK Access Agreement Summary*, 10 October 2013, p. 7.

The additional capacity made available under the OS&BB scheme is sold through a pay-as-bid auction, with the highest bids being accepted first. In the case of over-demand with bids at the same price, then quantities are pro-rated.[86]

Bids at the auction are subject to a reserve price set by IUK in accordance with its charging methodology. Although not subject to economic regulation, the charging methodology is transparent and approved by Ofgem and CREG. The reserve price is calculated from the average cost of capacity derived from IUK's financial statement.[87]

Operation of buy-back mechanism

If aggregate nominations on the day exceed (or are predicted to exceed) the physical capacity of the system, and capacity has been sold through the OS&BB scheme, IUK initiates a buy-back process.[88] IUK determines the quantity of capacity to be bought back to reduce aggregate nominations to within physical capacity, and publishes a notification of the buy-back required.

Under the buy-back process, all shippers (not just those purchasing capacity under the OS&BB scheme) are invited to offer capacity, which is bought by IUK through a pay-as-bid auction. IUK accepts offers of capacity in order of price, starting with the lowest offer until the required buy-back volume is met. A maximum price is applied to

86 Interconnector UK, *IUK Access Agreement Summary*, 10 October 2013, p. 13.

87 Essentially the sum of construction and operating costs, divided by capacity. See: Interconnector UK, *Charging Methodology Statement related to the IUK Access Agreement and IUK Access Code for Gas Year Starting 1 October 2014*, Issue 1 - Sep 2014, p. 4.

88 Interconnector UK, *IUK Access Agreement Summary*, 10 October 2013, p. 10.

offers, equal to the average price paid for that day's capacity, plus a premium equal to the reserve price for day-ahead sales under the scheme.[89]

If insufficient capacity is offered below the maximum price to satisfy the buy-back requirement or the buy-back requirement occurs late in the date (after 10pm, UK time), a "forced buy-back" process will be triggered. The forced buy-back process will also be triggered if a cap on buy-back costs is reached.[90] Under the forced buy-back process, the amount of capacity purchased by shippers through the IAA (ie that resulting from the OS&BB, Surrender and LT UIOLI mechanisms) is reduced on a pro-rata basis, with the relevant shippers reimbursed the price originally paid for the reduced capacity plus a premium equal to five per cent of the average price paid for that day's capacity.[91]

The cap on buy-back payments is derived from the amount of revenue raised from selling capacity through the OS&BB mechanism over the course of the year, less the cumulative buy-back payments over that time. The net amount is allowed to go negative to up to a limit (currently £100,000) but beyond that limit no further buy-back payments are made, and the forced buy-back process is used instead.[92]

At the end of the year, if the net balance of revenue and payments is positive, then 75 per cent of this amount is distributed to all shippers based on their allocated flow over the year. This reflects the fact that, under the OS&BB scheme, it is essentially capacity already paid for by shippers that is being resold. The remaining 25 per cent of the net revenue is retained by IUK, which IUK suggests represents "an incentive to offer OS [oversell] Capacity and minimise buy-back costs".[93]

89 Interconnector UK, *Charging Methodology Statement related to the IUK Access Agreement and IUK Access Code for Gas Year Starting 1 October 2014*, Issue 1 - Sep 2014, p. 2.

90 Interconnector UK, *IUK Access Code*, Issue 1 - Sep 2014, p. 13.

91 Interconnector UK, *Charging Methodology Statement related to the IUK Access Agreement and IUK Access Code for Gas Year Starting 1 October 2014*, Issue 1 - Sep 2014, p. 2.

92 Interconnector UK, *Charging Methodology Statement related to the IUK Access Agreement and IUK Access Code for Gas Year Starting 1 October 2014*, Issue 1 - Sep 2014, p. 2.

93 Interconnector UK, *Consultation on the implementation of Congestion Management Procedures*, 30 April 2013, p. 7.