



New South Wales Government
ENERGY REFORM STRATEGY

**Submission in response to ACCC draft determination
on the co-insurance arrangement
for the Energy Reform Strategy**

Submission in response to ACCC draft determination on application for authorisation

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1 Executive summary

NSW Government committed to protecting competitive markets

The NSW Government is firmly committed to the operation of competitive energy markets, particularly in the face of continuing cost pressures resulting from customer demands for improved service reliability and upward pressure on fuel and generation costs arising from the need to reduce greenhouse gas emissions.

The NSW Government's Energy Reform Strategy is a key plank in its response to improving reliability and efficiency in the power sector. The Energy Reform Strategy comprises a carefully designed, integrated suite of reform measures designed to encourage timely and efficient private sector investment in the electricity sector and in generation more particularly. The NSW Government is doing all that is reasonable to encourage new entrants into the NSW power sector and the National Electricity Market (NEM) more generally. This is crucial to lock in the gains from years of energy reform achieved by the NSW Government.

The co-insurance arrangement proposed by the NSW Government is an important element in this integrated suite of reform measures. It is not possible to remove this reform measure without requiring adjustment in other aspects of the NSW Government's reform strategy.

The underlying policy problems co-insurance addresses

Generators face large fixed costs in a market where the spot price varies considerably through time. In this environment there is a strong risk that a generator's fixed costs will be higher than its revenues. This increases the risk for financiers of power stations.

Generators seek to manage this risk by signing hedging contracts against the spot electricity price. By far the most popular contracts are known as *financially firm swap contracts*. In general, a swap contract involves a seller (usually, but not always, a generator), paying back the *difference* between the prevailing spot price and the agreed contract price (the strike price) to the buyer (usually, but not always, a retailer) when the spot price is *above* than the contract strike price. On the other side of the contract, the buyer pays back the seller the *difference* between the spot price and the strike price when the spot price is *below* the strike price.

Swap contracts are also known as *two-way contracts for differences*. The effect of a *swap contract* is that a generator (seller) and the buyer (usually, but not always, a retailer) fix a price that will be received/paid, irrespective of the spot price. This

secures the generator's revenues and makes it easier and cheaper to secure financing to buy or build a power station.

The buyer of this style of contract places value on these contracts because it protects them against the risk of paying high spot prices. For this reason buyers really only place value on these contracts when they are financially firm – that is, they are active all the time over the life of the contract.

Some contracts are financially *non-firm*. In the context of the NEM, non-firm contracts tend to only be active when the seller's power station is running. In effect, the buyer of non-firm contracts has no protection against spot price spikes when the contract seller has a failure of the power station. Retailers have little opportunity to lay off this risk to consumers, because contracts with consumers are almost always fixed. As a result, there is a significant business risk for a retailer relying on non-firm contracts. Unsurprisingly retailers therefore place little value on these non-firm contracts and there is little if, any demand, for them. For this reason the State owned generators in NSW have no non-firm contracts on their books.

However, there is a risk for a generator selling financially firm contracts. If their power station fails they will have to make contract difference payments to the retailer even if they are not earning any offsetting revenue in the spot market. This is known as an unfunded difference payment risk.

Generators can manage this unfunded difference payment risk a number of ways. By far, the most common method used by generators to manage this is to limit the quantity of contracts to the reliable capacity of the power station. Typically generators operate what is known as an N-1 rule where generators will contract the quantity of capacity of their power station minus the single largest unit in their portfolio. That is, generators self insure. This approach means that the generators with the largest portfolio of generating units can contract the largest proportion of their capacity and they will have an advantage over any company with a small number of units, such as new entrants. In the NEM the generators with the largest portfolio of generating units include TRUenergy and Snowy Hydro. These two companies have objected to the NSW Government's co-insurance arrangements.

Since new entrants will not be able to contract as high a proportion of their capacity as larger incumbents, this will put them at a competitive disadvantage as a larger share of their revenues will be exposed to volatile spot prices. Alternatively a new entrant will have to buy insurance products from their competitors who are large enough to self insure. It would be irrational for incumbents to sell these insurance products for anything less than the opportunity cost of the buyer. In terms of a new entrant the only other choice would be to buy a new peaking plant to *firm up* the output of their other plant. This is very expensive as this means that a new entrant has to effectively buy more capacity than an incumbent to enter the market. Indeed, it is more likely

that incumbents would not sell any insurance products to a new entrant as this will only ease the conditions for a competitor and make it more difficult for them to raise prices in the future.

The reason that co-insurance is an integral part of the NSW Government's reform package is because the Government wishes to break-up the three large generators into a larger number of smaller generators. This will provide opportunities for some smaller players to come into NSW and will also provide opportunities for incumbents to acquire these smaller generators without creating competition problems.

However, the very process of creating a larger number of smaller generators, reduces the ability for these businesses to self insure – the key method generators use to manage unfunded difference payment risks. If the NSW Government only structurally separated the three generators and did nothing else, this would have two direct effects:

- New entrants (in both generation and retail) would find it more difficult and costly to enter the market
- The quantity of firm contracts being offered to retailers would dry up and this would make it more difficult for new retailers to enter the market

Co-insurance will provide all participants in the scheme, and particularly new entrants, the benefits of the State's portfolio of generators to encourage more competition and lower prices through being able to contract a higher proportion of capacity firmly. For this reason incumbents will not be supportive of co-insurance, particularly those who will not acquire the trading rights of the State's generators and who will not benefit from the scheme but will have to face the increased competition that it produces.

Co-insurance is superior to alternatives

The NSW Government's analysis shows that not only is co-insurance net beneficial it is also a more effective and efficient means of managing firmness risk to the alternatives proposed by the ACCC in the Draft Determination. As the analysis contained in this submission shows, these alternative means of managing firmness risk suffer from a number of important limitations and do not achieve the same benefits as co-insurance. These alternatives are sub-optimal from both a private and public policy point of view when compared to co-insurance and, as such, do not achieve the same level of public benefit.

The NSW Government's analysis presented in this submission shows that co-insurance outperforms alternative approaches in terms of risk reduction (i.e. has a

lower degree of risk for a given return) to the tune of 14% to 24% per year across the GenTraders.¹

These modelling results are important because the greater efficiency in risk management that results from co-insurance will, all else being equal, increase the amount of firm contracting capacity, which in turn results in pro-competitive effects in wholesale and retail markets. The private risk management efficiencies are thus translated into public policy benefits.

Theoretically, alternative multi-lateral arrangements negotiated by market participants could be superior to the NSW co-insurance arrangement but they would need to cover more capacity than included in the NSW proposal, which seems extremely doubtful. More fundamentally, multilateral co-insurance arrangements suffer from a collective action problem – any one participant has incentives to defect from the agreement in order to reap its benefits while avoiding the costs. And as evidence by the positions taken by some 3rd parties, there is an inherent disincentive for incumbents to accept new entrants into the arrangements.

No public detriment from co-insurance

Finally, co-insurance has no public detriment. It does not interfere with the supposed market in non-firm contracts, as this barely exists, for the reasons described above. In any case, GenTraders who are unwilling to forego non-firm revenues can continue to sign their own co-insurance arrangements. Finally, the scheme is not mandatory. If the (super) majority of the participants don't want the scheme, they can terminate it.

Problems with the ACCC's approach to co-insurance

The ACCC asserts that the reforms could proceed without co-insurance. This approach is incorrect as a matter of law. The relevant question is whether the reforms would be *likely* to proceed in the absence of co insurance. Nonetheless, for the reasons set out in this submission, the NSW Government does not in any event accept the ACCC's view that the reforms under the proposed structure could proceed without the co-insurance arrangement. In the view of the NSW Government this would be neither feasible nor desirable. Therefore the NSW Government does not accept that the relevant counterfactual is one where the proposed Energy Reform Strategy proceeded without co-insurance.² Rather the counterfactual must take into account the likely changes to the Energy Reform Strategy that would be made by the Government in the event that the ACCC

¹ This is based on the realistic assumption that Gentraders are not able to exactly predict the pattern of outages.

denies authorisation for the co-insurance. Possible changes to the Strategy include the Government re-aggregating the GenTrader bundles and offering four bundles instead of five.

As such, the ACCC's Draft Determination suffers from the misconception that the acknowledged benefits flowing from the implementation of the reforms when taken as a whole can be realised in the absence of co insurance. Put simply, the benefits flowing from reforms cannot be considered in isolation from co-insurance. The converse of this also true, namely that the net public benefits of co-insurance cannot be considered separately from the reforms which the co-insurance would facilitate.

The ACCC cannot de-couple co-insurance from the reforms as it is an essential element of them. At the threshold level of the Draft Determination, the ACCC has therefore embarked on an artificial analysis in applying the net public benefit test. It assesses the public benefits of the reforms as a whole against the detriments of co-insurance taken in isolation. Whilst this misconception is fundamentally in error, the NSW Government has nonetheless addressed the issues in this submission at the secondary level and also demonstrated the relative merits of co-insurance versus alternative forms of risk management.

In contrast, no evidence has been put forward to support the assertion that the reforms could and would be likely to proceed in the absence of co-insurance. Specifically, there is an absence of any objective verification as to the availability of alternative market based mechanisms and their relative efficiency or superiority when compared to co-insurance. In such circumstances, the draft view that co-insurance would generate limited public benefit and some public detriment when compared to alternatives cannot be maintained.

2 Introduction

2.1 Context

2.1.1 The NSW Government's application for authorisation

On 27 November 2009, the NSW Government lodged an application to the ACCC for authorisation of the co-insurance arrangement. The NSW Government lodged the application because it considered the co-insurance arrangement to be an integral part of the NSW electricity reform process, and in particular the structural reforms contemplated in the wholesale market. The main purpose of the arrangement is for the NSW Government to optimally manage trade-offs between various public policy objectives, notably:

- Increasing competition in wholesale electricity, which is achieved through the disaggregation of generation portfolios, as well as the promotion of new entry;
- Ensuring that the costs of managing outage risk (which are expected to increase as a consequence of disaggregating existing generation portfolios) do not reduce liquidity in markets for contracts, given the adverse effects this is likely to have on competition in retail activities (and particularly the prospect of independent entry into retail activities).

The public policy rationale for co-insurance is explained in greater detail in Section 3.1. In pursuing its reform strategy, the NSW Government is also obliged to meet statutory obligations that require it achieve, on behalf of the NSW taxpayer, fair value for money for the sale of the generation trading rights. This is separate to the efficiency based arguments captured by the two points above, though it represents a specific constraint of which the NSW Government must be mindful in maximising the efficiency gains from the transaction.

It follows from the above that in the absence of co-insurance, the NSW Government will need to find alternative ways of managing the policy trade-offs while meeting its statutory obligations. Given the underlying issue – outage risks stemming from the disaggregation of generation assets – this is likely to involve changes to the configuration of the reform process, and more specifically the number of GenTrader ‘bundles’ that are offered by the NSW Government. We discuss more fully the relationship between co-insurance and the implementation of the reform process in Section 3.2.

From the ACCC's Draft Determination, it is apparent that there is a difference of view between the ACCC and the NSW Government as to whether there are viable alternatives to co-insurance that would enable the NSW Government to

manage the trade-offs set out above in the absence of co-insurance. This issue is fundamental to how one views the magnitude of public benefits that are likely to accrue from the co-insurance arrangement, and the policy consequences of having the arrangement authorised or not. The NSW Government addresses this issue in, respectively, Sections 3.1.1 and 4.3.1 of the submission.

2.2 Structure of this submission

This submission consists of the following sections:

- Section 3 sets out the NSW Government's approach to mandated co-insurance and the public policy rational for mandated co-insurance
- Section 4 responds in detail to the points raised by the ACCC in its Draft Determination
- An appendix that describes the modelling methodology and results

3 The NSW Government's approach to co-insurance

3.1 Public policy rationale for co-insurance

This section sets out the public policy objectives that are sought to be achieved by the NSW Government through the mandated co-insurance arrangement. As observed by the NSW Government in past submissions to the ACCC, on co-insurance and on the reform process more generally, the principal objective of the reform process is to further the public interest by securing greater economic efficiencies in energy markets. Because the reforms are of a wide ranging character, encompassing a range of different markets and activities, the interaction between these various elements needs to be carefully managed. Moreover, while the NSW Government believes that trading of electricity by private businesses will promote public benefits, there are circumstances where these efficiencies may not be achieved.

The problem of increased outage risk and availability of firm capacity, as a result of structural disaggregation, is one that has the potential to create sub-optimal trade-offs between efficiencies in different markets, and a misalignment of private and public benefits. A resolution of the problem of outage risks and its implications for firm capacity is thus a key determinant of public benefits. In this respect, the NSW Government for the most part agrees with the ACCC that:

... a central consideration in assessing these public benefits is whether the co-insurance arrangement is better able to manage risks and will result in greater levels of firm capacity being available than would otherwise be the case.³

The NSW Government maintains that the proposed co-insurance arrangement provides considerable public benefit by resulting in greater levels of firm capacity being available and therefore greater levels of firm contracts being offered, or could be offered by the market. All else being equal this will provide greater competition in the price and terms of firm contracts offered to electricity retailers in NSW, and ease entry conditions for retailers.

There are two broad points that need to be addressed at this juncture:

- How would disaggregation of the generation portfolios, in the absence of co-insurance, create sub-optimal trade-offs between various aspects of the reform process, and a misalignment of private and public interests?

³ Draft Determination, paragraph 4.65

- What is the particular value of mandated co-insurance, relative to other options that do not require specific government intervention, in managing these trade-offs and in aligning private and public interests?

The first of these points serves to set the specific context within which the public benefits of co-insurance need to be understood. The second point is one regarding which there appears to be disagreement between the NSW Government and the ACCC. In recognition of this, the NSW Government has set out the broad reasons of principle that explain why mandated co-insurance is a necessary policy instrument in the context of the NSW reforms in Section 3.1.1. The NSW Government then sets out in Section 4 more detailed arguments addressing the specific points made by the ACCC's claim that alternatives to co-insurance that do not require government intervention would provide equivalent public benefit.

3.1.1 The management of trade offs and the alignment of private and public benefits

The NSW Government considers that the co-insurance arrangement is a more feasible and appropriate response to managing outage risk than alternative approaches.

In considering the case for the co-insurance proposal, it is necessary to consider

- Coordination failures that preclude parties from privately entering into such arrangements
- Why other options, including negotiated contractual mechanisms (derivatives and insurance products) and physical mechanisms (investment in and acquisition of generation plant), do not constitute adequate substitutes, in the context of the NSW reform process.

The second issue is central to the ACCC's reasoning in the Draft Determination because it considers that there are, in fact, other alternatives that provide adequate, or superior substitutes to mandated co-insurance. This submission focuses in greater detail on the question of whether, in fact, there are as efficient and effective alternatives to co-insurance.

Coordination failures

Coordination failure between private parties attempting to establish co-insurance arrangements arises because any one party could secure benefits from such arrangements if it were to defect from the arrangement and the other parties went ahead. The benefits it would secure stem from the greater liquidity of the contract market that occur when other parties have entered into co-insurance arrangements. However if each potential party to co-insurance arrangements is aware of this incentive to defect, the arrangements can become unstable and very

costly to enforce. Moreover, as generators opt out of co-insurance arrangements, these arrangements become less efficient because their coverage is more limited. As generators opt out, this increases the incentives for others to do so as the (private) benefits of defection begin to exceed the (private) benefits of participation.

Availability of other options

The relative merits of co-insurance and other options is heavily dependent on context.

The NSW Government notes that:

The ACCC considers that the GenTrader model can be implemented without the proposed co-insurance arrangement. Specifically, the ACCC considers that, absent co-insurance, there would be other options available to GenTrader to manage the risk of unfunded difference payments.⁴

The suggestion that there are other options to mandated co-insurance is also found in the submissions made by 3rd parties. Such options essentially amount to self-insurance through the existing ownership of generation plant, investment in new generation plant or the use of market based contractual instruments. The latter include agreements with fast-starting peaking generators, traded derivatives such as swaptions (which is the product co-insurance is based upon), or other insurance-type products.

The NSW Government accepts that such alternatives can help to manage outage risks and will need to be used by GenTraders to assist in managing this risk. However, it does not consider that they are viable substitutes for the mandated co-insurance arrangements in NSW at this time.

The ACCC, for its part, states in the Draft Determination that:

...the ACCC has been provided with no information to suggest that the experience of other generators in the NEM that operate without a co-insurance arrangement find these alternative methods of managing risk somehow lacking or are unable to fulfil their risk mitigation requirements⁵

This approach is problematic by reason of its limited focus and is inconsistent with the broad public benefit analysis prescribed by section 90. The issue is not the general superiority, or otherwise, of mandated co-insurance versus other alternatives. Rather, the issue is whether, given the context of the NSW Energy Reforms, and the assets that are part of these reforms, mandated co-insurance is required because other alternatives are (i) not feasible from the private (i.e. self –

⁴ Draft Determination, paragraph 4.189.

⁵ Draft Determination, paragraph 4.50

interested) perspective of market participants; and/or (ii) are not efficient from a public policy point of view. In this context, the socially optimal mechanisms for mitigating risk are those that are consistent with the wider public policy objectives of the Energy Reform Strategy, notably securing increased competition at the wholesale and retail levels through structural reform, and incentives for efficient investment over time.

Consequently, the NSW Government is of the view that the ACCC's approach to assessing alternatives to co-insurance, as captured in the passage quoted above, runs the risk of having too narrow a focus. Searching for information suggesting that alternative mechanisms are lacking or that generators are unable to fulfil *their* risk mitigation requirements, focuses on the private benefits of these instruments. Even if a particular approach to risk mitigation is privately beneficial, it may be socially sub-optimal in the context of the NSW Energy Reform process and the policy objectives set for it.

In the context of the NSW Government's continuing electricity reforms, managing the internal coordination of outage risks through reducing the number of firm contracts offered to the market or aggregation under existing portfolios is not a desirable option (from a public policy perspective) because of the likely implications for wholesale competition and the price and terms of contracts offered to electricity retailers in NSW. Placing further upward pressure on the cost of securing firm contracts is likely to place additional burdens on retail customers given an environment of increases in network prices and the potential effects of the CPRS on wholesale electricity prices.⁶

For the same reason, it is not desirable to proceed on the basis that outage risks can be managed if GenTrader portfolios can be aggregated with plant elsewhere in the NEM – for that would limit the scope for new entry and hence one driver of wholesale competition.

Investment in physical plant for the purposes of managing outage risks is a very costly form of insurance, from a private point of view, and is likely to represent a wasteful allocation of resources from a social point of view by bringing forward investment in generation that would otherwise have been incurred later if outage risks were adequately managed. These costs ultimately flow through to end-use customers.

Market-based arrangements are unlikely to work from a private point of view, because of the onerous informational requirements that are required ex-ante relating to the nature and timing of outages, and because of the coordination failures that make multilateral arrangements difficult to sustain. It is also likely that market based instruments will not be a viable option for new entrants,

⁶ IPART recently announced increases in regulated retail tariffs of 46-64 per cent from 2010/11 – 2012/13.

essentially because of their disadvantageous bargaining position relative to incumbents (the parties that are most likely to offer the type of contract aimed at managing outage risks).⁷ The bias against new entrants is not desirable from the point of view of achieving wholesale market outcomes. In the Draft Determination, the ACCC recognises the benefits of securing new entry in the NEM.⁸

Section 4.3.1 of the submission develops in greater detail the specific points raised in the preceding paragraphs. At this juncture, the NSW Government observes that the importance of the specific context within which reforms are implemented has been recognised in past decisions made by the ACCC in relation to co-insurance. This was seen, for example, in the case of South Australia, where co-insurance arrangements were part of the vesting contracts established by the State Government during the reform process initiated in 1997. The ACCC granted authorisation for these arrangements in 1999, until 2002.

In its submissions to the ACCC, the South Australian Government emphasised the tight supply/demand balance.⁹ In such conditions, the costs to firms of writing firm contracts would be high (relative to a situation of excess capacity); and a further reduction in their willingness to write such contracts on account of outage risks would be undesirable given the effects on final customers. In particular, the South Australian Government argued that co-insurance arrangements had increased the amount of contract capacity.

The ACCC largely agreed with the views of the South Australian Government, finding that:

...[co-insurance] arrangements replicate the self insurance available to generators elsewhere in the NEM due to the size of their portfolio and the existence of excess capacity... It would be inconsistent for the Commission to abolish the co-insurance arrangements in SA (which arise because of a lack of excess capacity) thus exposing these generators in a tight market to a greater level of risk, than is borne by other generators endowed with excess capacity and stranded assets (...) In addition, the Commission is unwilling to cancel these arrangements when they have been instrumental in making extra contract capacity (...) available to contestable customers. These contracts may not be sustainable if the co-insurance ends without any additional capacity coming into the market¹⁰

⁷ That is, new entrants may not be able to obtain these market based instruments at a cost that would allow them to effectively compete in the wholesale market.

⁸ Draft Determination, page iii

⁹ See ACCC (1999), *Applications for Authorisation, South Australian Vesting Contracts*, Final Determination pp10-15.

¹⁰ ACCC (1999), op.cit p44.

The ACCC's decision underlined the importance of context when considering the desirability of coinsurance arrangements. In particular, the question of supply/demand balance was central in determining whether the public benefits of authorising co-insurance were sufficiently large to outweigh the effect of any anti-competitive detriment that might arise as a consequence of these arrangements.

Past experience and the context for the NSW reforms suggests that mandated co-insurance is required and that market based alternatives will be insufficient.

Past practice suggests that market based contractual mechanisms to manage the costs of outage risks associated with the NSW generators have not proved viable. In particular, voluntary arrangements between generators (such as that between Macquarie and Delta) have been of very limited efficacy. Had market based alternatives proved viable it is likely that the NSW Government would have split up the assets into smaller units and managed the change in outage risks through contractual means. Rather, the NSW Government considered it more efficient to manage these risks through internal coordination i.e. the aggregation of generation plant into the three generation portfolios (Macquarie, Delta and Eraring) that currently operate. The need to manage outage risks is of particular importance at the current juncture, both in NSW and across the NEM more widely, because of the tightening of the supply/demand balance.

This is very different from when NSW first embarked on reforms in the early 1990's. When the NSW Government first disaggregated the vertically and horizontally integrated monopoly, Pacific Power, the Reserve Plant Margin (RPM) exceeded 35%, with an average capacity factor of only 55%.¹¹ With this level of idle capacity it was little trouble for the three new generation businesses (Macquarie Generation, Delta and Eraring) to manage their risk of outages. By contrast, the 2009 Electricity Statement of Opportunities (ESOO) indicates that the RPM is expected to be around 15%.¹² With such a supply/demand balance it is difficult for five smaller GenTraders to manage the risk of outages, particularly for those older stand alone plants with low levels of reliability.

In Victoria, even with a large RPM,¹³ the Victorian Government designed and the ACCC authorised a co-insurance arrangement in the mid-1990s. The Victorian Government considered that the co-insurance arrangement was necessary to

¹¹ Electricity Supply Association of Australia (1993), *Measuring the Efficiency of the Australian Electricity Supply Industry*, p56.

¹² Australian Energy Markets Operator (2009), *Electricity Statement of Opportunities for the National Electricity Market*, Supply/Demand Balance Calculator (includes Murray).

¹³ Electricity Supply Association of Australia, *Electricity Australia 1996*, page 53.

manage the contracting risk of the generators, and that the co-insurance arrangement would encourage generators to continue offering firm contracts.

Term of the co-insurance arrangement

As set out in the NSW Government's submission, new entrant generators will not value a co-insurance arrangement that only survives for a few years. The reasons for this are obvious. The co-insurance arrangement needs to support the new entrants long enough to allow them to make efficient investments in the market and for those investments to operate in the market for a period. This is critical for new entrants to obtain the necessary financing to acquire one of the GenTrader contracts.

The 2009 ESOO indicates that NSW requires additional capacity from 2014/15, and every year thereafter.¹⁴ This means that if the co-insurance arrangement was 5 years or less, then it would not be effective in supporting new generation investment by a new entrant.¹⁵ If the co-insurance arrangement continued the full term that the NSW Government has proposed (10 years), it would provide a maximum of 5 years of support for any investment expected in NSW. The NSW Government therefore contends that the 10 year term of the co-insurance arrangement is critical in supporting its policy aims of maximising the opportunities for new entrants, particularly in the context of the tight balance of supply and demand in NSW.

3.2 Implementation of co-insurance and the reform process

3.2.1 Public benefits and sales revenue

The main source of public benefits from mandated multi-lateral co-insurance arrangements are those set out above. That is, co-insurance helps to manage the trade off between ensuring a competitive wholesale market while helping to manage costs associated with outage risks. This has desirable consequences in terms of hedge contract availability, and the price and terms of contracts offered to electricity retailers in NSW, which eases entry conditions for retailers. In those cases in which it may be privately optimal to achieve a greater degree of aggregation, it also helps to reconcile the misalignment between acquirers' private interests and public interests that would derive from less aggregation.

¹⁴ AEMO (2009), op cit p2-9

¹⁵ It is important that the co-insurance arrangements are put in place immediately to support a new entrant generators ability to sell as many firm hedges as possible. This will assist the new entrant secure financing terms competitive with incumbent portfolio generation, all other things being equal.

The other main source of public benefit is the divestment of the State's energy retail assets and generation trading rights. As already explained in the NSW Government's previous submissions, this is expected to generate benefits through a better allocation of risk between State and private sector.

Third party submissions to the ACCC downplay the importance of these benefits, and instead incline toward the belief that the receipts from the sale of assets constitute the main benefit from the implementation of mandated co-insurance arrangements. It is true that the NSW Government expects that the implementation of co-insurance would facilitate the participation of new entrants in the sales process, and that that increase in competitive tension would (all else being equal) increase receipts from the sales. But the prime motivation, as explained above, in facilitating wider participation is to secure more competition in the wholesale and retail markets following the sales process and ultimately lower wholesale and retail electricity prices than would otherwise be the case.

The appropriate way to view the issue of revenue raised by the sales process is in terms of the extent to which the State is able to capture a share of the value created by the transaction. The NSW Government is obligated to taxpayers to obtain fair value for money; in that sense, the objective of achieving an acceptable financial return from the sales is a threshold condition that the NSW Government is required to achieve.

Whilst achieving fair value for NSW taxpayers' assets is a distributional question, there are important efficiency matters for consideration. The sale revenues support the State's spending on infrastructure and services, which affects the efficient functioning of the economy.

3.2.2 Links between co-insurance and structuring of GenTrader process

As already observed, the implementation of the co-insurance arrangement is closely linked to the degree of disaggregation that the NSW Government could realistically pursue in regard to generation activities. This follows logically from the rationale for the co-insurance arrangement: i.e. that they are necessary in order to manage the costs associated with outage risks, and the effects of these costs, as a result of disaggregation.

If the NSW Government is unable to implement the co-insurance arrangement as planned, it will consider reducing the number of GenTrader portfolios offered to bidders to allow the GenTraders to self insure so that they can effectively compete with incumbents and so the supply of financial firm contracts is not adversely affected to ensure the ongoing orderly operation of the market. Though final decisions as to the structure of GenTrader portfolios have not yet been made, consideration will be given to grouping together the Liddell and Bayswater power stations (currently they are part of different GenTrader portfolios). This would be expected to achieve a significant reduction in outage

risk. This is because Liddell is one of the State's oldest power stations and, as a result, is one of the less reliable generators. In the absence of co-insurance, it would be inefficient and involve greater risk to operate Liddell as a stand-alone business, particularly as the balance of supply and demand continues to tighten.

4 Response to matters raised in the Draft Determination

4.1 Market definition

The NSW Government submitted that the relevant markets are:

- The NEM wide wholesale market for the supply of electricity, including the physical and financial elements of the wholesale electricity market and
- The retail market for the supply of electricity, being either an inter-regional market or a NSW wide market

The ACCC's definition of the retail market is consistent with that adopted by the NSW Government. The ACCC however defined the wholesale market as:

The wholesale market for the supply of electricity in the NSW NEM region and the supply of products to mitigate against the risk of unfunded difference payments.¹⁶

The NSW Government does not agree with the ACCC's geographic definition of the wholesale market. The NSW Government is of the view that while there are incidences of price separation between NEM regions, these incidences are largely confined to low differentials, and the absolute price levels in the NEM regions are consistent with average pool prices. The NSW Government's view on market definition is consistent with the leading authority on this issue, Justice French's decision in *Australian Gas Light Company v Australian Competition and Consumer Commission (No.3)* [2003] FCA 1525.¹⁷ However, the NSW Government does not consider that the issue of geographic market definition is central to the purpose of assessing the competitive effects of co-insurance.

The NSW Government agrees that the wholesale products that mitigate the risk of unfunded difference payments are part of the wholesale market for the supply of energy. This includes the co-insurance products. However, endorsing this finding does not entail accepting that different assets and products within the wholesale market are necessarily substitutes for one another in any given circumstance. Indeed, a simple observation of the practices of generators in the NEM shows that not to be the case. For example, most generators use a mix of strategies based on physical generation assets and contractual mechanisms to manage various types of risks, including the risk of unfunded difference

¹⁶ Draft Determination, paragraph 4.28.

¹⁷ At [387].

payments as a consequence of outages. In that sense, different assets and products within the wholesale market can be complements to each other as well as substitutes, with the degree of complementarity varying according to the characteristics of the market participant, and the circumstance of the market. In short, the fact that various risk mitigation products, including co-insurance arrangements, co-exist in the same market does not preclude the possibility that some such products (e.g. co-insurance arrangements) may be superior to others in certain circumstances, and (a fortiori) that they may produce socially preferable outcomes in certain circumstances.

4.2 Counterfactual

In the Draft Determination the ACCC states that it is satisfied that the Energy Reform Strategy *could* proceed absent the co-insurance arrangement. On this basis, the Commission concludes that the relevant counterfactual is one where the proposed Energy Reform Strategy proceeded without co-insurance.¹⁸ Given this counterfactual, the ACCC then states that the relevant question for the ACCC is the balance of public benefits and detriments that the co-insurance arrangement will generate compared to the situation where the Energy Reform Strategy proceeded without co-insurance.

This approach is not correct as a matter of law. The relevant counterfactual is not the position that *could* exist without authorisation. The relevant counterfactual is the position that would be *likely to exist* without co-insurance. As set out in the leading Tribunal decision in *Australasian Performing Rights Association*, weighing the public benefits and detriments involves comparing the position which *would or would be likely to exist* in the future if authorisation were to be granted and the position if authorisation were absent.¹⁹ Further, as the Tribunal held in that case, it is the wrong approach for the ACCC, when assessing public benefits and detriments, to merely focus on those flowing from the particular conduct sought to be authorised, it must take into account the broader public benefits that are supported by the conduct for which authorisation is sought.

For the reasons set out in Section 3 of this submission, co-insurance is an integral part of the Energy Reform Strategy that enables the NSW Government to meet its various public policy objectives.

As such, in the context of the current authorisation application, the counterfactual must take into account the likely changes to the Energy Reform

¹⁸ Paragraph 4.62

¹⁹ *Australian Performing Rights Association* (1999) ATPR 41-701 at 42,973; see also *G & M Stephens Cartage Contractors Pty Ltd on behalf of the Members of the Concrete Carters Association (Vic)* [1977] ATPR ¶40-042 at 17,453 where the Tribunal stated that the relevant analysis "must involve consideration of the circumstances which are likely to prevail in the absence of such conduct".

Strategy that would be made by the NSW Government in the event that the ACCC denies authorisation for co-insurance. As discussed further in Section 4.5 of this submission, these changes to the Strategy may include the NSW Government not undertaking as much structural separation (such as leaving Bayswater and Liddell aggregated and offered as a single bundle) instead of the five GenTrader bundles originally planned. Further, in assessing the public benefits and detriments, the ACCC must take into account the broader public benefits of the Energy Reform Strategy (in its current form) that are supported by co-insurance.

Notwithstanding the above, whilst the NSW Government maintains that the relevant legal authorities require the benefits flowing from the overall reform package not to be de-coupled, or viewed separately from the co-insurance which supports the reforms, it is also the case that the co-insurance arrangement itself and viewed in isolation, delivers substantial public benefits and represents a superior form of risk management to other potential alternatives.

4.3 ACCC draft findings on public benefits

This section responds to the specific points raised by the ACCC under the main headings of the Draft Determination. In some instances, these points are already addressed in substance in the material set out in Section 2 of this submission.

Before turning to the specific public benefits, it is important to set out the relevant principles governing the approach to be taken to analysing public benefits under section 90 of the Act. In particular, in focusing its analysis on whether the co-insurance arrangement is a more effective and efficient way of managing risk for the GenTraders compared to alternative mechanisms, the ACCC has taken a too narrow approach to the consideration of the public benefits flowing from the co-insurance arrangement.

First, efficiencies must be considered in terms of the public as a whole, not just the GenTraders. As noted by the Commission in the Draft Determination, in *Re 7-Eleven Stores Pty Ltd* (1994) ATPR 41-357, the Tribunal citing QCMA stated that public benefit has been given a wide meaning as:

*anything of value to the community generally, any contribution to the aims pursued by the society including as one of its principal elements (in the context of trade practices legislation) the achievement of the economic goals of efficiency and progress.*²⁰

It is however important to note that that the Tribunal then went on to state that:

²⁰ At 17,242

Plainly the assessment of efficiency and progress must be from the perspective of society as a whole; the best use of society's resources. We bear in mind that (in the language of economics today) efficiency is a concept that is usually taken to encompass 'progress'; and that commonly efficiency is said to encompass allocative efficiency, productive efficiency and dynamic efficiency.²¹

Second, it is important not to limit consideration of the public benefits to those arising from economic efficiency. In *Re Qantas Airways Limited* [2004] ACompT 9 the Tribunal further explored the concept of public benefit and its relationship with economic efficiency observing that:

it does not necessarily follow that the net public benefit test for authorisation in s 90 of the Act also has as its sole objective the unconstrained promotion of efficient resource allocation. The authorisation provisions of the Act, unlike those of Pt IV, are not solely concerned with the promotion of competition or the achievement of a socially efficient allocation of resources. The test for authorisation does, after all, provide for a balancing of public benefit against anti-competitive detriment, which necessarily calls on us to consider policy imperatives and broader social values, and balance those against competition concerns.²²

The Tribunal cited with approval the statement in *Re 7-Eleven Stores Pty Ltd* at 42,677 that:

We cannot rely upon the functioning of competitive markets to deliver everything 'of value to the community generally.'²³

Similarly in *Re VFFF Chicken Meat Growers Boycott Authorisation* [2006] ACompT 2, the Tribunal while noting the importance of considering productive, allocative and dynamic efficiencies, stated that:

the potential benefits and detriments that appropriately should be taken into account are not limited to those that involve direct implications of, or consequences for, the efficiency of market outcomes.²⁴

4.3.1 Co-insurance compared to other means of managing firmness risk

Consistent with the above principles, the central question is whether, within the context of the NSW Energy Reform process, the co-insurance is desirable, in terms of risk management, both from a private point of view, as well as from a

²¹ At 17,242.

²² At [180]

²³ At [180]

²⁴ At [79]

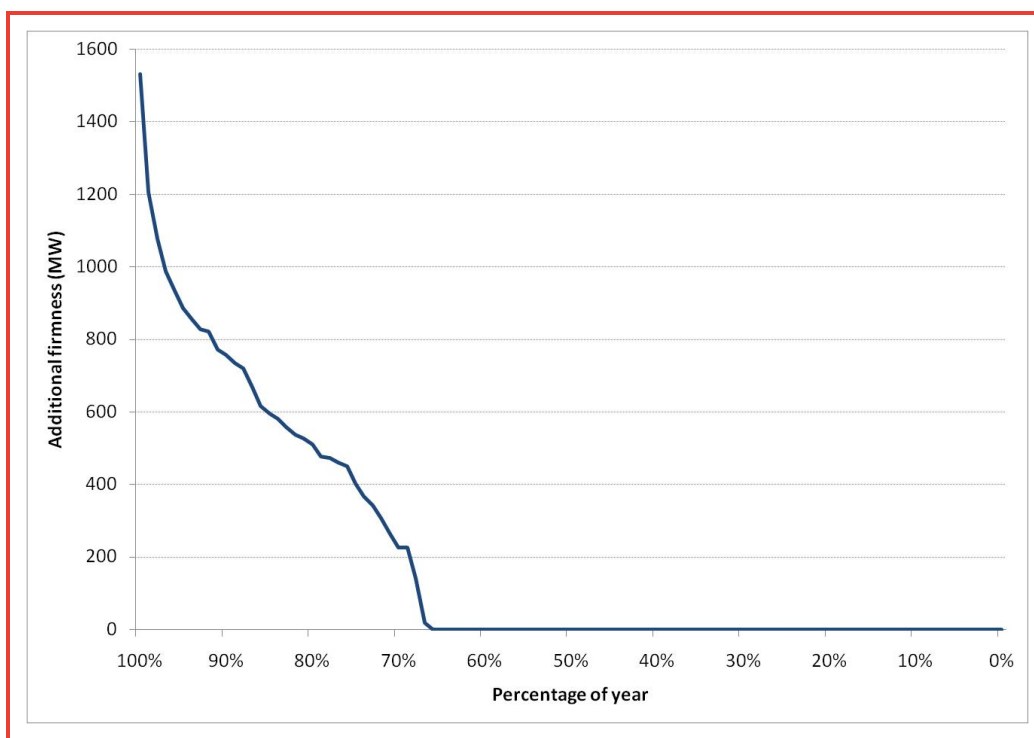
social point of view in light of the NSW Government's objectives, when compared to alternative means of managing firmness risk. The social (i.e. public policy) benefits of co-insurance depend principally on whether it allows for a greater level of contracting against firm capacity, compared to alternatives, and the flow through effects of this on wholesale and retail markets; and also the extent to which it is more conducive to new entry.

The NSW Government maintains that the proposed co-insurance arrangement provides considerable public benefit by resulting in greater levels of firm capacity being available and therefore greater levels of firm contracts being offered to the market. All else being equal this should provide greater competition in the price and terms of firm contracts offered to electricity retailers in NSW, and ease entry conditions for retailers.

That co-insurance does increase the level of firm capacity available, compared to a situation in which no other mechanism for managing outage risk is available, can be seen by considering the example in Figure 1 below. This figure shows the MW's of supplied co-insurance as a percentage of the year for 2008/09. For this example it was assumed that 80% of the of the NSW SOC baseload units (excluding Munmorah) were co-insured, with co-insurance allocated to particular stations on the basis of reliability. Calls on co-insurance were determined using this allocation and availability data from AEMO's dispatch files.

Figure 1 shows that the co-insurance arrangement creates over 1,500MW of additional firm capacity, relative to no other mechanism for managing outage risk being available. This is equivalent to more than two and half times the capacity of a new peaking plant such as Uranquinty or two and half 660 MW baseload units. Importantly, the only cost of this additional firmness is the variable costs associated with the supplying station as compared to the millions of dollars per annum that would be need to build 1,500 MW's of new capacity.

Figure 1: Total additional firm capacity as a result of the proposed co-insurance arrangement for 2008/09



The ACCC does not dispute that co-insurance in and of itself can increase levels of firm capacity. However, its key draft finding is that there are a number of market based risk mitigation measures within the NEM that would allow GenTraders to manage the risk of unfunded difference payments ('firmness or outage risk') i.e. that would more effectively and efficiently achieve the result depicted above. These include GenTraders:

- Using physical plant in the GenTrader bundle
- Integrating GenTrader contracts into wider generation portfolios across both in NSW and across the NEM
- Entering into agreements with fast-starting peaking generators, traded derivatives such as swaptions or other insurance type products
- Investing in physical plant

The NSW Government accepts that such alternatives can help to manage outage risks and will need to be used by GenTraders to assist in managing this risk. However, it does not consider that they are viable substitutes for the mandated co-insurance arrangement, in terms of effectiveness and efficiency, in NSW at this time. In the following section we explain in detail why these options are likely to be privately sub-optimal and/ or sub-optimal from a public policy view point.

Using physical plant in the GenTrader bundle

In the past the NSW generators have been able to manage outage risk by limiting contracting to a 'safe level' over their entire portfolios. However this has been assisted by the considerable excess capacity in NSW; that is, demand being significantly less than available supply.²⁵ As previously mentioned NSW has experienced a significant tightening of the supply-demand balance with the 2009 SOO concluding that additional capacity is needed by 2014/15.

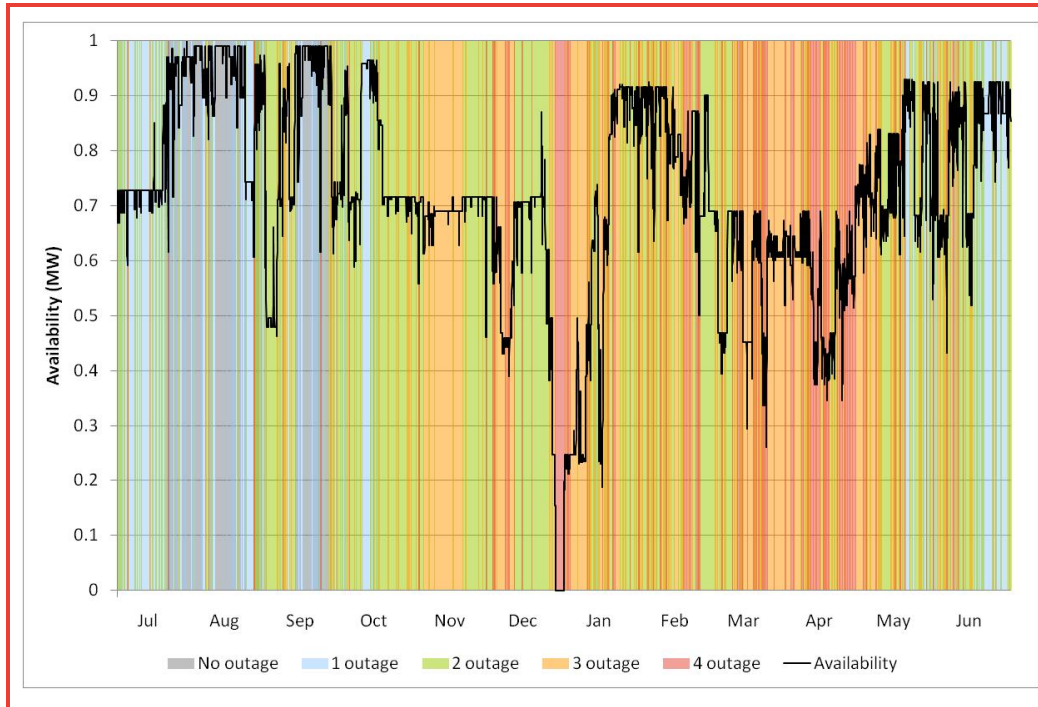
The NSW Government recognises that the ACCC is not suggesting that this option alone would be capable of addressing the outage risk resulting from the disaggregation of three generator portfolios into five GenTrader bundles in the context of a tight supply-demand balance. However there are a number of points worth noting in considering the effectiveness of using physical plant to manage this risk.

First, if a contracting strategy of $N - 1$ is adopted by the five GenTrader bundles compared to such a strategy being adopted by the three existing generation portfolios there will be, by definition, a reduction in firm capacity as additional units will need to be set aside to allow for outages.

Second, in practice, using physical plant to manage outage risk is unlikely to be an option for the majority of the GenTrader bundles, unless they offer a very low level of firm capacity to the market. This is particularly the case for the older stand-alone generators with low levels of reliability such as Liddell, and for those GenTrader bundles without any peaking assets. Figure 2 shows the proportion of maximum available capacity on a half-hourly basis across all of the Liddell units during 2008/09. It shows that the average annual availability for 2008/09 was around 72 per cent. This suggests that Liddell would not be financially viable if it were operated as a stand-alone plant and offered firm contracts equivalent to 75 per cent of its capacity ($N-1$ approach).

²⁵ When the NSW Government first disaggregated the vertically and horizontally integrated monopoly, Pacific Power, the Reserve Plant Margin (RPM) exceeded 35%, with an average capacity factor of only 55% Electricity Supply Association of Australia (1993), *Measuring the Efficiency of the Australian Electricity Supply Industry*, p56.

Figure 2: Liddell Station availability for 2008/09 (with colour coded outages)



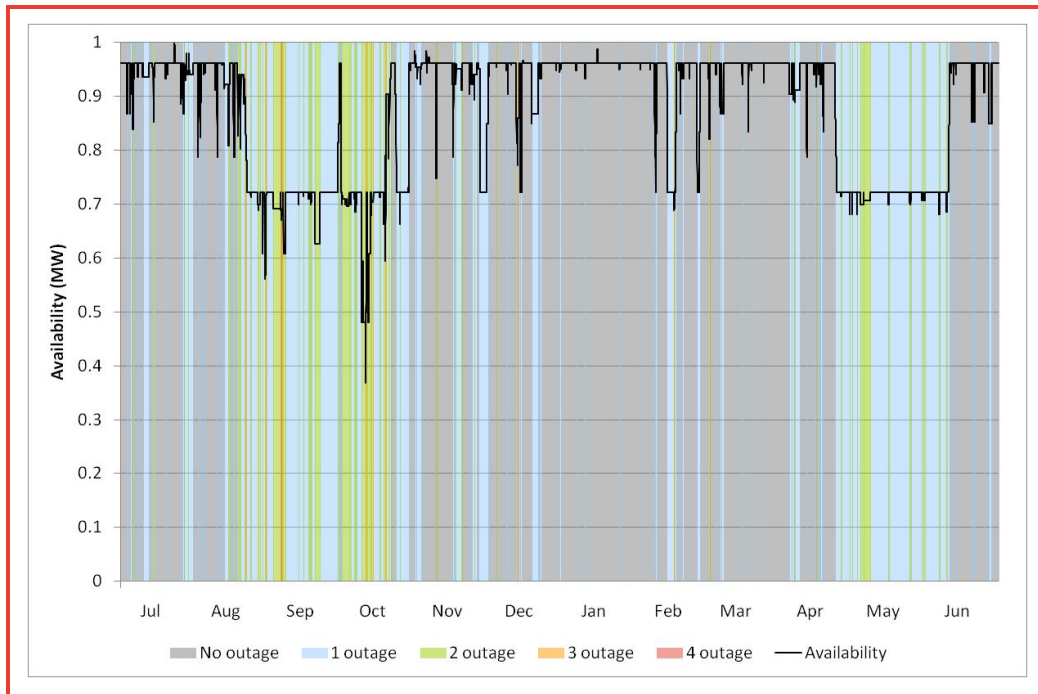
Source: AEMO MAXAVAIL data

However not only is Liddell's average annual availability low, it also experiences a relatively volatile pattern of outages. Liddell experienced outages at 1 to 2 units for around 83% of 2008/09, with an outage defined as the available capacity on a given unit falling below 480 MW.

This suggests that if Liddell were operated as a stand-alone plant it would expose itself to significant risk of unfunded difference payments if it offered a high level of firm contracts. For Liddell to manage this risk on a stand-alone basis by using a physical plant approach would require them to offer a low level of firm contracts to the market (equivalent to an N-2 or N-3 approach). Macquarie Generation has previously been able to manage this outage risk largely by limiting contracting to a 'safe level' over its entire portfolio (including the more reliable Bayswater plant).

Figure 3 shows the proportion of maximum available capacity on a half-hourly basis across all of the Bayswater units during 2008/09. In contrast to Liddell, the Bayswater plant has a significantly higher level of average annual availability for 2008/09 (around 87 per cent) and also experiences a less volatile pattern of outages. The data shows that Bayswater rarely experiences an outage at two units (with an outage defined as the available capacity on a given unit falling below 660 MW)

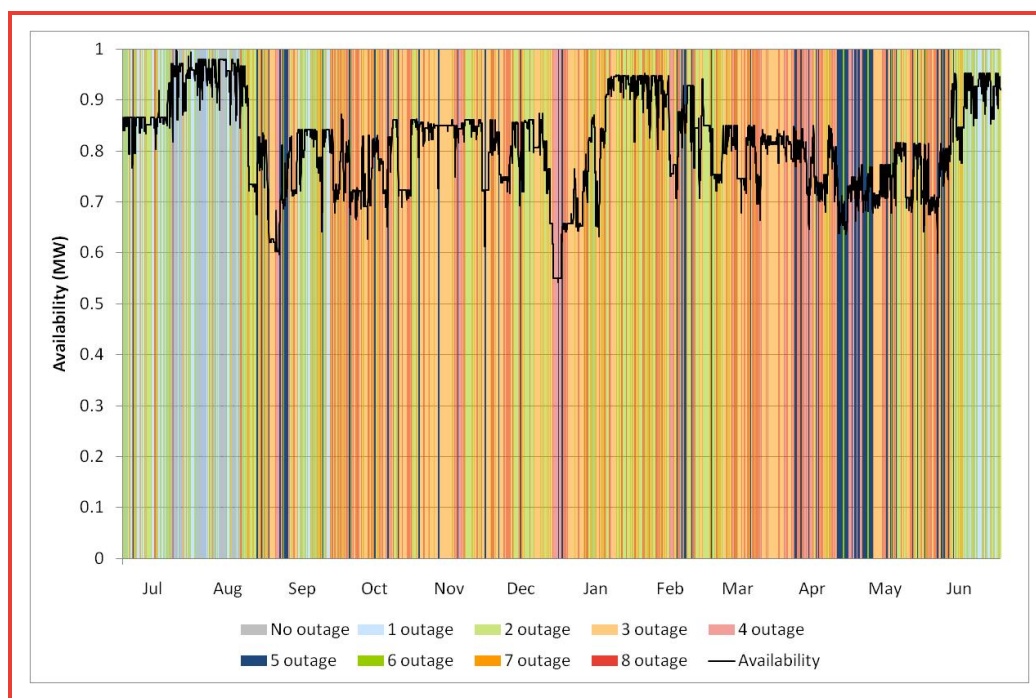
Figure 3: Bayswater Station availability for 2008/09 (with colour coded outages)



Source: AEMO MAXAVAIL data

Figure 4 demonstrates the portfolio benefits available to Macquarie Generation in being able to manage this outage risk across the Liddell and Bayswater plants. It shows that the average annual availability for 2008/09 was around 81 per cent with a less volatile pattern of outages, relative to a stand-alone Liddell.

Figure 4: Bayswater and Liddell Station availability for 2008/09 (with colour coded outages)



Source: AEMO MAXAVAIL data

However in the absence of co-insurance a GenTrader with only the Liddell bundle in its portfolio may seek to manage this considerable outage risk by offering a low level of firm contracts to the market (an N-2 or N-3 approach) given that in the NSW Government's view there are no viable alternatives to effectively manage this considerable outage risk (the following section examines whether financial arrangements provide a more effective and efficient alternative for managing this risk). Offering a low level of firm contracts to the market is unlikely to provide revenue certainty for a GenTrader and reduces the ability to secure funding for an acquisition. This would make it difficult for a new entrant to bid for these assets, removing an important source of competitive tension and the reducing the possibility of a new entrant entering the market.

The ACCC recognises that in this context the co-insurance scheme provides certainty around managing this risk, and this certainty is likely to be:

..of some value and assistance...for those GenTrader bundles that are not large enough to effectively self-insure or are not purchased by bidders with other portfolio assets in NSW.²⁶

Third, for those larger bundles including those with peaking assets, self-managing these risks entirely is unlikely to be effective. The ACCC notes that two of the

²⁶ Draft Determination, paragraph 4.87.

GenTrader portfolios, Delta Coastal and Eraring Energy contain peaking generators that would assist in managing the firmness risk. It argues that new entrants, who by definition do not have an existing portfolio in NSW, may be able to acquire the GenTraders bundles that in its view are more capable of self-managing risk.

The NSW Government recognises that the Delta Coastal and Eraring Energy bundles may be better placed than the other GenTrader bundles in managing this risk. However, their ability to manage this risk and offer firm contracts to the market is less than at present with three large portfolios. While the Eraring portfolio has the relatively reliable Eraring Power Station, it is worth noting that the Shoalhaven hydro-electric system does not significantly assist the Eraring portfolio in managing this firmness risk. This is because the Shoalhaven hydro-electric system has a capacity of only 240MW (compared to a single 720MW unit at the Eraring power station) and is energy constrained as a result of a very limited supply of water.

Additionally, the pattern of outages on a baseload power station is fundamentally different to the pattern of operation of a peaking facility. Whilst the combination of a baseload station with a peaking station can help to manage the risk of baseload outages this arrangement is sub-optimal when compared with mandated co-insurance as:

- peaking plant may not be available to operate when required due to their own outages or the fact that pool prices do not justify switching the plant on
- using a peaking plant to 'firm up' a baseload plant degrades the firmness of the peaking facility. Peaking generators recover their costs in large part through the sale of cap contracts into the market. Pool revenue earned by peaking plant can either be used to support these contracts or to support outages at another plant within the portfolio but cannot do both simultaneously. As such, a peaking plant that was used to firm up another plant would reduce its own contract volume and financial viability

Therefore, to ensure that sufficient firm contracts are offered to the market to provide revenue certainty (and an ability to secure funding for the acquisition), in the absence of co-insurance it is likely that a new entrant acquirer of any of these bundles, would still need alternative options to manage this outage risk.²⁷ That is, 'self-managing' these risks entirely through by using physical plant is unlikely to be effective. This is particularly the case for the older stand-alone generators with low levels of reliability, and for those GenTrader bundles without any peaking assets. Therefore the NSW Government does not accept that the co-insurance is

²⁷ In contrast to managing this risk by limiting the number of firm contracts offered to the market. As stated early, one of the fundamental aims of the co-insurance arrangement is to ensure GenTraders can manage outage risk without reducing the number of firm contracts offered to the market.

of value to only the GenTrader bundles that in the ACCC's view are not large enough to effectively self-insure.

Fourth, it is important to note that using physical plant in the GenTrader bundle to manage outage risk (for example, by each bundle offering an N-1 approach) would not result overall in a sufficient level of firm contracts being offered by GenTraders to meet the demand for firm contracts by NSW retailers, even assuming that:

- no generator requires planned maintenance over the period
- all plants (including Liddell) would be able to offer firm contracts equivalent to an n-1 approach level of capacity even with no planned outages
- all peak generations offered contracts into the market including Snowy Hydro

While using physical plant may have been an appropriate way to manage outage risk in other NEM regions in the past, this is not particularly relevant to NSW in coming years given that:

- these assumptions are not consistent with past experience (for example, Liddell has rarely operated at a maximum availability equivalent to N-1 of capacity)
- NSW is experiencing a tightening of supply and demand in which retailers are even more likely to value firm contracts than in the past due to their concerns about being exposed to increasingly volatile pool prices (ie, there is likely to be increased demand for firm contracts)
- with further disaggregation and without other effective and efficient means of managing this risk it is even less likely that a sufficient level of firm contracts will be offered by GenTraders to meet the demand for firm contracts by NSW retailers.

Therefore the NSW Government does not consider that using physical plant is an effective and economic means of managing outage risk in NSW for all of the GenTrader bundles in the coming years, particularly for Liddell. Importantly, the proposed co-insurance arrangement allows the GenTraders to collectively offer more financial firm contracts into the market for a lower level of risk than if each offer the same quantity of contracts independently. This is likely to have positive effects on the wholesale and retail markets in terms of ease of new entry, as well as beneficial effects for end use electricity customers.

Integrating GenTrader contracts into wider portfolios

The ACCC also notes that some GenTraders will have the option of managing risk through combining their GenTrader rights with other portfolio assets in NSW and across the NEM. TRUenergy submits that it is likely that most of the GenTraders bundles will be acquired by incumbent participants in the NEM,

enabling the acquirer to integrate the GenTrader assets as part of a portfolio which may provide firm capacity in excess of an 'N-1' approach.²⁸

The NSW Government has previously noted that there are limited opportunities in the NSW region for GenTraders to combine their bundles with other generating assets as a means of self-insuring. TRUenergy and Origin Energy, through their ownership of the Tallawarra and Uranquinty peaking power stations in NSW, have the potential to manage outage risk through a portfolio approach.

However a new entrant, by definition, does not have an existing generation portfolio of sufficient size to self-insure against this risk. Therefore integrating GenTraders into a wider generation portfolio cannot be considered an effective means of managing this risk for new entrants, which is a focus of the NSW Government. In this context the NSW Government considers that the co-insurance arrangement is particularly valuable to new entrants that do not have the advantage of an existing portfolio of generation plant. The co-insurance arrangement is thus consistent with the NSW Government's desire to actively encourage new generation (and retail entrants) to the NEM. As already observed, a central policy objective of the NSW Government is to secure allocative efficiency gains through disaggregation – which will be more realistically achievable if new entrants are not deterred from bidding for assets.

Entering into agreements with fast-starting peaking generators, traded derivatives such as swaptions or other insurance type products

The ACCC notes that GenTraders have the option of utilising financially based risk mitigation products such as arrangements with fast start peaking generators, traded derivatives or where available insurance products as a means of managing risk.²⁹ It also notes that risk mitigation measures could be built into contracts with electricity purchasers.

Financial arrangements are important mechanisms for managing risk in the electricity market, and therefore play an important role in promoting competition at both the wholesale level and retail level. These financial arrangements include over-the-counter (OTC) contracts which involve direct transactions between counterparties, as well as exchange traded derivatives such as price cap contracts or weather and insurance based derivatives. As acknowledged by the ACCC in the Draft Determination, the co-insurance arrangement does not prevent

²⁸ TRUenergy submission in ACCC, Draft Determination, March 2010, p iii.

²⁹ ACCC, Draft Determination, March 2010, p iii.

GenTraders from entering into financial arrangements with other market participants.³⁰

The important issue for consideration however is whether these financial products are effective at managing the costs associated with outage risks and unfunded difference payments in a manner that is consistent with the public policy objectives sought. That is, would these financial arrangements result in greater levels of firm capacity being available.

One way of establishing whether this is the case is to examine the relative costs of managing a given level of risk by means of co-insurance compared to alternative means. This can be done by using a portfolio optimisation approach that estimates optimal combinations of contract cover and spot price exposure for given levels of risk. These optimal contracting choices can be represented by efficient frontier curves in terms a portfolio's risk and reward. These curves compare the risk (in terms of standard deviation) and return (in terms of dollars) under co-insurance to other financial market instruments that can assist in managing the risk of unfunded difference payments.

On behalf of the NSW Government Frontier Economics has performed this analysis using historic data for 2008/09, the framework, assumptions and results are discussed in detail in the Appendix. Two main results can be drawn from this analysis.

First, the presence of co-insurance results in the GenTraders being able to construct a contract book that is less risky than how they would contract in the absence of co-insurance. From a risk perspective, co-insurance is also preferable to having access to the pool profit of the 664 MW Uranquinty peaking plant. The costs associated with such a plant also make it an undesirable option.

Second, there are significant reductions in risk across the combined GenTrader bundles, consistent with the objectives of the reform process. Frontier Economics has investigated a number of different scenarios to assess the effectiveness of co-insurance. These include looking at whether GenTraders have perfect foresight regarding the pattern of outages, whether they can increase their output in response to being called on to supply co-insurance and whether the generic contracts available are annual flat swaps and caps or quarterly peak and offpeak contracts. If it is assumed that GenTraders have perfect foresight of outages, no ability to respond to being called on for co-insurance and complete freedom to contract on a quarterly, peak/offpeak basis then co-insurance should still be more effective in reducing portfolio risk relative to generic swaps and caps. In practice, whilst GenTraders may be able to sculpt their contract positions on a quarterly, peak/offpeak basis, they do not have perfect foresight

³⁰ NSW Government, Further submission in response to the ACCC questions and third party submissions – in relation to the coinsurance arrangement for the Energy Reform Strategy, 2010, p 2.

regarding patterns of outages and they would have the ability to respond to co-insurance calls, so it is difficult to sustain an argument that unilateral or bilaterally negotiated arrangements could be superior to products almost universally used in the NEM.

Table 1 summarises the results of Frontier Economics' analysis. The magnitude of risk reduction ranges from \$2.20m to \$67.04m per annum. These risk reductions can also be expressed in terms of the percentage reduction in risk across the five GenTrader bundles, giving a range of 7% to 24%.

Table 1: Risk reductions due to co-insurance

Foresight	Supply response	Contracts	Risk reduction (\$m)	% reduction
Perfect	None	Quarterly PK/OP	\$2.20	7%
		Flat	\$26.47	20%
	Response	Quarterly PK/OP	\$3.71	12%
		Flat	\$24.66	19%
Imperfect	None	Quarterly PK/OP	\$34.97	14%
		Flat	\$53.70	20%
	Response	Quarterly PK/OP	\$47.11	18%
		Flat	\$67.04	24%

These results show that not only is co-insurance extremely effective at reducing outage risk but that this is the case even when participants have perfect information regarding the pattern of outages. This reflects the fact that co-insurance, by its very nature, is a close match when compared to either financial products or peaking plant.

These results highlight several difficulties that market based mechanisms are likely to encounter in achieving the same results as co-insurance in terms of managing outage risks more effectively and efficiently.

First, financial contracts such as swaps and caps are static with respect to outages whereas co-insurance adjusts dynamically. Even when assuming that there is perfect information about the outage pattern for the full financial year in advance, this modelling show that using a basic range of financial instruments is inferior in terms of being less effective and efficient in managing outage risk than the proposed co-insurance arrangement. All else being equal, relying on financial

market instruments will result in a lower level of firm contracts being available to the market for a given level of risk.

Therefore the NSW Government does not agree with the ACCC's view that there is no evidence to demonstrate that co-insurance will result in a higher level of firm contracting.

The NSW Government recognises that adding in more sophisticated or customised instruments may reduce this risk and increase returns, and result in a higher level of firm contracting than a basic range of financial instruments; however no market participant has perfect information about the plant outage pattern for the full financial year in advance. The results presented above show that if the inherent uncertainty of future outage patterns is incorporated in the modelling then co-insurance becomes a more effective risk management tool compared to alternative arrangements.

The results reported in this section highlight that co-insurance is a more cost-effective way of managing outage risks. All else being equal, in competitive wholesale and retail markets this will lead to an increased level of firm contracting. This is the mechanism through which the private benefits of co-insurance (as measured by the monetary value of risk reduction) translates into public benefits. These benefits are primarily those associated with the pro-competitive effect that greater levels of firm contracting will have in both wholesale and retail markets (see Sections 4.3.3 and 4.3.4 respectively)

Second, the modelling highlights that having access to a fast start peaking generator is unlikely to assist in managing the considerable outage risk of a base load generator. This is due to the profile and cost structure of a peaking plant relative to a base load plant.

To the extent that a GenTrader could enter into a financial agreement with a peaking plant to provide some marginal improvements in firm availability, this is likely to be at a cost that would not allow a GenTrader to effectively compete in the market ie, the benefits (in terms of revenue) from firming up capacity are unlikely to exceed the costs. Peaking plants are more likely to better manage the risk facing an energy retailer. This is reflected in the vertical integration in the NEM with incumbent retailers investing in peaking plant.

Third, it is unlikely that the management of outage risks can be achieved through effective voluntary co-insurance arrangements between generators, even between two equal sized State owned incumbent generators. This view stems from the fact that two generation portfolios, even two large generation portfolios, can never provide a level of co-insurance equivalent to the entire stock of NSW baseload generating units.

A further issue of particular interest is therefore the extent to which more effective and efficient means of managing this risk are likely to emerge in NSW over the coming period, and the extent to which new entrants would be able to

access the necessary instruments. Any difficulty for new entrants in doing so would act as a significant barrier to entry and in turn would have deleterious effects on the competition goals sought by the NSW Government. While it is not possible to offer firm conclusions on the extent to which more effective and efficient market based products will become available to new entrants in NSW in the future, there are a number of important points to consider.

First, the NSW Government is of the view that voluntary multi-lateral arrangements between generators that deliver similar outcomes to mandated co-insurance are unlikely to arise. As already mentioned in Section 3.1.1, this is largely explained by a collective action problems surrounding the conclusion of such arrangements. As a matter of practice, there has been only one instance of a voluntary arrangement in NSW, which is between Macquarie Generation and Delta Electricity, two equal sized State owned generators. However, this does not provide the same level of firm cover as the proposed co-insurance arrangement and is not a lower cost option.

With the disaggregation of three generation portfolios into five bundles, some of which will be held by incumbents with portfolios in NSW and other parts of the NEM, it is likely that the potential for developing a voluntary multi-lateral, long-term, co-insurance arrangement will diminish. That is, co-ordination failure is likely to be a major factor in limiting the potential for a multi-lateral market based instrument to manage outage risk to develop.

Second, the NSW Government has previously noted that new entrants are unlikely to be in a sound position, relative to incumbent generators in any bi-lateral negotiation to develop financial arrangements following the competition of the transaction. Incumbent generators are unlikely to have an interest in providing new entrants with financial arrangements that would allow them to manage this outage risk at a cost that would allow them to effectively compete in the wholesale market. The ACCC concede this point noting that a GenTrader with a larger portfolio of generating assets in NSW, and therefore greater outside options for managing risk, may be at an advantage compared to a GenTrader who did not have assets outside of the bundle.³¹ By contrast, the mandatory nature of co-insurance prevents incumbents from hoarding spare capacity, increasing risks and deterring new entrants. This suggests that a new entrant GenTrader without a portfolio of generating assets in NSW would find it difficult to negotiate a financial product with an incumbent generator that allows it to effectively compete in the wholesale market in the coming years.

TRUenergy notes that new entrants may be able to access financial products from non-market participants such as insurance and customised derivatives

³¹ ACCC, Draft Determination, March 2010, p 31.

(including weather based derivatives) products.³² However, the information available suggests that these products from non-market participants price in a significant ‘uncertainty premium’ reflecting an insurers relative lack of experience in the energy market. As such are these products for managing outage risk are unlikely to be obtainable at a price that allows new entrants to effectively compete in the wholesale market.

Third, the ACCC has previously accepted that co-insurance in other jurisdictions would provide public benefit through its provision of a risk management tool at lower costs than alternative options.³³ However the ACCC itself recognises that the availability of these alternative mechanisms may be more limited in NSW than has been the case in other regions in the past if the supply/demand balance in NSW continues to tighten as is expected.³⁴ These points are therefore liable to apply with special force in the context of a tightening supply and demand balance across the NEM, and in NSW in particular. It is worth noting that the uncertainty surrounding the CPRS and the resulting unwillingness of market participants to offer risk management products exacerbates the difficulty of new entrants managing this risk through alternative market mechanisms.

For the reasons set out above, the NSW Government does not agree with the ACCC’s view that many of the risk mitigation measures it refers to would be available to a new entrant, or at least not available at a cost that would allow them to effectively compete in, or enter the market.³⁵ Therefore the NSW Government does not agree that market based arrangement are more effectively and efficiently able to manage outage risk than the proposed co-insurance arrangement.

However as discussed in Section 3.3.1 the proposed co-insurance arrangement does not eliminate the need for GenTraders to seek alternative strategies to manage outage risk, nor prevent GenTraders from seeking out alternative strategies. If the obstacles outlined above are avoided and market instruments emerge that allow GenTraders to more effectively and efficiently manage this risk, GenTraders can decide never to call on co-insurance and manage its risk through alternative means. If the GenTraders do not consider there to be sufficient benefit, such that they could be better off with alternative means of managing this risk, then they can choose to terminate the arrangement.

Investing in physical plant

Throughout the NEM investing in physical plant has been an option for a number of participants to manage the risk of unfunded difference payments, and

³² TRUenergy submission in ACCC, Draft Determination, March 2010, p 25.

³³ Draft Determination, paragraph 2.66.

³⁴ Draft Determination, paragraph 4.68

³⁵ Draft Determination, paragraph 4.56.

to supplement base-load generation at times when prices are high. In addition there has been a trend in Victoria and South Australia towards vertical integration of electricity generators with retailers or vice-versa.³⁶

While investing in physical plant in NSW may be a privately viable option for some GenTraders, particular a GenTrader with sizable retail customer base, there are a number of points to consider that suggest it is unlikely to be a more effective and efficient response to managing outage risk than co-insurance.

First, investing in physical plant to provide a self-insuring portfolio is an extremely costly option for managing outage risk. The cost of building the Tallawarra (435 MW CCGT) and Uranquinty (648MW OCGT) peaking plants were estimated at around \$350m and \$700m respectively.³⁷ Therefore the NSW Government does not accept Snowy Hydro's proposition that GenTraders could build 'low cost standby generation'.³⁸

Securing the necessary funding to invest in physical plant in the current financial climate is likely to be challenging, particularly for a new entrant. Therefore relying on investment in physical plant to manage outage risk is likely to act as a barrier to entry for any potential new entrant, and may reduce the number of interested parties in the transaction. Securing an acceptable competitive outcome in wholesale generation is reliant on at least one new entrant acquiring a GenTrader contract.

Second, even if that were a privately viable option for some GenTraders, it would represent a socially wasteful allocation of resources that in effect responds to a problem that could be solved by other means. As already observed, one of the central objectives of the NSW Government's reform process is to create incentives for socially efficient investment in generation capacity and to ensure retail prices for end use customers reflect the efficient cost of supplying electricity, including efficient management of outage risk.

The previous section highlighted that having access to a fast start peaking generator is unlikely to assist in managing the considerable outage risk of a base load generator. The modelling showed that due to the profile and cost structure of a stand-by peaking plant relative to a base load plant, there was in most cases no reduction in risk but significant increases in costs (or reductions in the return). This shows that investing in peaking plant to provide stand-by generation for a base load plant is an inferior way of managing outage risk. Figures 2 to 4 show that Liddell's outages are managed through a portfolio approach with Bayswater.

³⁶ In Victoria, AGL Energy and TRUenergy are key players in both generation and retail. In South Australia, AGL Energy has the largest generation capacity and the largest retail market share. AER, State of the Energy Market 2009, p57.

³⁷ AER, State of the Energy Market 2009, p 63.

³⁸ Draft Determination, paragraph 4.45.

As a combined portfolio they are able to offer a sufficient level of firm capacity. Building a stand-by generation plant the size of Bayswater to support Liddell however would cost at least \$3 billion and is unlikely to represent an efficient response to managing this risk, with consequences for retail prices for end use customers, particularly having regard to the conclusions from Figure 1 that co-insurance will deliver up to 1,500 MW of firm capacity without requiring the sinking of *any* new capital.

Third, new generation plant is not a short to medium term solution. The NSW Government has previously noted that it will be a number of years before the generation sites that are being sold as part of the Energy Reform Strategy will be able to be utilised for electricity generation. Therefore the development of new generation capacity is unlikely to provide GenTraders that have no existing plant, such as new entrants, with an effective self-insurance mechanism in the medium term but is more likely to be a longer term option. As already indicated in Section 3.1.1, the term of the co-insurance arrangements needs to be long enough to allow them to make investments in the market and for those investments to operate in the market for a reasonable period to be viable.

Therefore the NSW Government does not accept the ACCC's view that in the short to medium term, investing in physical plant is a more effective and cost efficient response than the proposed co-insurance to managing outage risk. Based on the modelling results reported previously in this section, the NSW Government considers that relative to investing in physical plant, co-insurance is likely to provide for significant reductions in and to facilitate more efficient generation investment decisions than would otherwise be the case. This is likely to provide benefits for end use electricity customers.

4.3.2 Encouraging new entry and greater competition

One of the NSW Government's key policy objectives is encouraging new entry and greater competition in the wholesale electricity market. The ACCC has recognised the importance of a new entrant in producing greater competition on the price and conditions of contracts offered to retailers in NSW.³⁹

Section 3.1.1 examined the adequacy in terms of effectiveness and cost efficiency of alternative market based methods for new entrants of managing the considerable outage risk. It concluded that in the absence of co-insurance it is unlikely that these alternative risk mitigation measures would allow new entrant GenTraders with no existing generation portfolio or retail customer base (who provide relatively stable retail revenues) to offer:

- Firm capacity at a price that allows it to effectively compete in the wholesale market

³⁹ Draft Determination, paragraph 4.82.

- A level of firm capacity that provides sufficient revenue certainty in a market where the spot price is highly volatile, and is consistent with the successful commercial operation of the retail market

The ACCC itself recognises that the availability of these alternative mechanisms may be more limited in NSW than has been the case in other regions in the past if the supply/demand balance in NSW continues to tighten as is expected.⁴⁰

Therefore in the absence of co-insurance, new entrants will have limited and more costly options to manage outage and firmness risks, which will reduce the likelihood that they will enter the market. Given this, the NSW Government maintains that a mandated co-insurance arrangement is of significant value to all GenTraders, particularly those without existing generation portfolios or a retail customer base. The NSW Government does not accept the ACCC's finding that the certainty the co-insurance provides is of short-term limited value given the inadequacy of alternative risk mitigation measures in NSW in coming years. The NSW Government considers that co-insurance arrangement is necessary to encourage new entrants in the NEM and therefore to the extent that new entry facilitates greater wholesale market competition provides significant public benefit. It is therefore important not to prejudice the ability of new entrants to compete, on an equal basis for such contracts.

4.3.3 Improved wholesale market outcomes

As observed by the ACCC, the wholesale market outcomes that are sought are an increased level of allocative efficiency through the pro-competitive effects of disaggregation; and dynamic efficiencies through socially optimal investment decisions. Co-insurance arrangements aim, amongst other things, to:

- Improve the prospects for competition by encouraging new entry
- Manage the possible trade-offs between competitive and dynamic efficiency, notably the possibility that in the absence of co-insurance arrangements, investment in new generation may be brought forward on the grounds of managing the effect of disaggregation on the management of outage risks.

Ensuring retail prices reflect the efficient cost of supplying electricity including the efficient management of outage risk. A key element of the ACCC's finding that the proposed co-insurance arrangement provides only marginal public benefits is its belief that co-insurance arrangements do not provide a more cost effective way of managing outage risks than alternatives, including investment in physical plant. This belief shapes the ACCC's views that a future in which the reforms are implemented with co-insurance will not be any more supportive of

⁴⁰ Draft Determination, paragraph 4.68

the beneficial outcomes set out above than a future in which the reforms take place without co-insurance.

The NSW Government disagrees with this view. As already documented in Section 4.3.1, there are strong empirical grounds to suggest that co-insurance arrangements do, in-fact, enable generators to offer a greater quantity of firm contracts when compared to alternatives, for a given level of risk (or equivalently, to offer the same level of contracting at lower level of risks). Moreover, as documented in Section 4.3.2, there are strong grounds to suggest that co-insurance will favour new entry. This in turn demonstrates that co-insurance will facilitate the outcomes that are sought by the NSW Government for the wholesale market, and to a greater extent than would be possible in its absence.

4.3.4 Improved retail market outcomes

The NSW Government seeks to secure effective competition in wholesale and retail markets through the reform process. As explained in its initial submission and in Section 3.1 of this submission, co-insurance arrangements are needed to safeguard against a drop in contract levels as a consequence of disaggregation, and the effects such a drop would have on competition in the retail market. In effect, co-insurance is required as a policy instrument to manage the possible trade-offs between competition at wholesale and retail levels.

While the ACCC is supportive of the NSW Government's overall objectives, it does not accept that co-insurance will increase the likelihood of achieving these objectives, and particularly managing trade-offs between wholesale and retail level objectives. As previously noted, the NSW Government does not share the ACCC's views that the availability of other risk management instruments imply that the objectives of the reform can be achieved without co-insurance. In particular, for reasons set out in Section 3.1.1, the evidence suggests that these alternatives are not as efficient or efficient at managing risk when compared to co-insurance. Consequently, the NSW Government retains the view that competitive retail market outcomes would be jeopardised in a future without co-insurance.

4.3.5 Value enhancement for the NSW Government

As observed in Section 3.2.1, the NSW Government has obligations to the NSW taxpayer to receive fair value for money from the sale of assets and contracts that will occur through the reform process. The NSW Government agrees with the ACCC when it finds that the efficiency effect of co-insurance, in terms of managing risk, will be reflected in the value of the GenTrader bundles. The ACCC furthermore alleges that the NSW Government double counts these efficiency gains by considering them and the possibility of increased sales value as public benefits.

This view misrepresents the NSW Government's position. The NSW Government agrees that the price paid for the retailers and generation trading rights sold through the transaction aspect of the Energy Reform Strategy apportions the value created by, amongst other things, co-insurance, between the State of NSW, on one hand, and bidders on the other. The price is thus a distributional issue rather than an efficiency issue *per se*. It does not reflect the size of the public benefit from the sales process, but rather the apportioning of it between the State and private entities. However, the point of concern for the NSW Government is that it must meet its obligations in regards to value for money. Should it be unable to do so, the viability of the reform process as a whole would be compromised. In that sense, value enhancement is a threshold condition that the NSW Government must meet. More specifically, the execution of the reform process and all the attendant benefits of the process are contingent on the satisfaction of this threshold requirement.

In general, the prospects of the NSW Government meeting its value objectives will be greater the more intense is the competition for assets and contracts sold through the reform process. The ability to ensure such competition, while pursuing the level of pro-competitive disaggregation it would like to achieve in wholesale activities, is contingent on attracting the interest of new entrant bidders. For reasons set out in Sections 4.3.1 and 4.3.2 of this submission, co-insurance is an essential element in attracting new entrants.

4.4 ACCC draft findings on public detriment

In the Draft Determination the ACCC states that it considers that the co-insurance will also generate some public detriment.

Consistent with its approach to the assessment of the public benefits, the public detriments are considered against the counter-factual that the Energy Reform Strategy proceeded without the co-insurance arrangement.

The ACCC notes that these public detriments include:

- The foreclosure of opportunities for other providers of risk management products (although it considers this to be limited given the structure of the co-insurance and the nature of the GenTrader bundles)
- The effect on some GenTraders in terms of foregone non-firm pool operating profit to compensate other GenTraders
- The effect on GenTraders bidding behaviour in terms of offering non-firm capacity to the market
- The potential for a negative effect on generator reliability

This section responds to the specific points raised by the ACCC in the Draft Determination in relation to the public detriments of the proposed co-insurance arrangements, and concludes that:

- the co-insurance does not eliminate the need for GenTraders to seek alternative strategies to manage outage risk and certainly does not prevent GenTraders from seeking out ‘alternative’ strategies if they provide a more effective and efficient means of managing risk
- both GenTraders and retailers are unlikely to value the market for non-firm contracts in NSW in the future
- reducing the NSW Government’s exposure to plant outage and market risk will ultimately benefit the public of NSW but will not reduce the incentives for individual generators to improve reliability

The NSW Government maintains that the co-insurance arrangement does not create any public detriment so that, when weighed against the public benefits, the Energy Reform Strategy is significantly enhanced by the proposed arrangement.

4.4.1 Supply of risk management products and investment signals

The ACCC notes that by reducing the need for GenTraders to individually manage risk mitigation products, the proposed co-insurance, in effect, forecloses some opportunities for other providers of these services. The ACCC notes that the co-insurance is likely to create a reduced number of potential customers for financial products offered by fast start peaking plants such as callable caps and swaptions. The ACCC is however of the view that any such effects are likely to be limited.⁴¹

In considering the ACCC’s draft findings it is worth noting that there are a number of factors that limit any potential effect that the co-insurance arrangement may have on the market for risk mitigation products including:

- the co-insurance arrangement does not eliminate the need for GenTraders to seek alternative strategies to manage outage risk
- the co-insurance arrangement does not prevent GenTraders from seeking out alternative strategies
- a number of GenTraders may not source these risk management products even absent the co-insurance arrangement

The NSW Government agrees with the ACCC that co-insurance does not eliminate the need for GenTraders to seek alternative strategies to manage outage risk. The ACCC acknowledges that GenTraders will still need to adopt other strategies to manage risk associated:

⁴¹ Draft Determination, paragraph 4.146

- with outages in the first two trading intervals after an outage when the co-insurance arrangement does not apply
- when there is not sufficient non-firm capacity from other generators to make up the difference between the calling GenTraders' firm capacity and actual capacity

In addition, it is important to note that not only does the co-insurance not eliminate the need for GenTraders to seek alternative strategies to manage outage risk; it certainly does not prevent GenTraders from seeking out 'alternative' strategies. If a GenTrader considers that the co-insurance price is higher than the GenTrader's expectation of the spot market price, or the GenTrader can access some other cheaper form of insurance and wants to reduce the likelihood that it is called on to supply co-insurance, then a GenTrader can decide never to call on co-insurance and manage its risk through alternative means. If the GenTraders do not consider there to be sufficient benefit, such that they could be better off with alternative means of managing this risk, then they can choose to dissolve the arrangement.

For these reasons the NSW Government does not consider that the co-insurance arrangement has any material effect on the market for risk management products by foreclosing some opportunities for other providers.

4.4.2 Effect on participating GenTraders, other generators and potential new entrants

The ACCC considered two potential areas of public detriment including:

- Co-insurance provides incumbent GenTraders with a means of managing risk that would not be available to any potential new generation capacity
- The effect on some GenTraders in terms of foregone non-firm pool operating profit to compensate other GenTraders

The ACCC notes that the co-insurance arrangement will not apply to any new investment, regardless of source. On this basis the ACCC maintains that the co-insurance arrangement provides incumbent Generators with a means of managing risk that would not be available to any potential new generation capacity.

The NSW Government recognises that there would be benefits to including new generation capacity in the co-insurance scheme, namely that it would provide a bigger pool of firm capacity for GenTraders and new generators to call on. Adding new generation capacity to the scheme would increase the level of firm capacity that could be offered to each party under the arrangement.

However there are number of difficulties in incorporating new generation capacity in the co-insurance scheme:

- Including new generation capacity would require updating the compensation deed to specify new levels of firm capacity for each participant whenever generation capacity enters or exits the scheme
- This would reduce the certainty available to GenTraders, and potentially some of the benefits of the scheme
- New generation capacity is likely to be better placed to manage non-planned outage risk than the older base-load plants which experience low levels of reliability. To this extent it may have less incentive to be part of the co-insurance arrangement.

Therefore the NSW Government does not consider that excluding new generation capacity from the co-insurance scheme to have any material public detriment.

The ACCC also notes that some GenTraders with a portfolio of assets capable of acting as a natural hedge, or who chose to engage in other strategies to mitigate risk, will be forced to forgo a proportion of their non-firm pool operating profit to compensate GenTraders who do not. However it is important to note that this will be limited to:

- the initial period after the arrangement commences, when no GenTrader has a sufficient 'deficit' to be called on; or
- when co-insurance is called on and GenTraders with a deficit are not able to supply all the co-insurance that is called on

The NSW Government considers this potential loss of operating profit for GenTraders to be immaterial. In this regard, it is important to note (as has been explained above) that those public benefits are not limited to benefits to the GenTraders, but extend to society as a whole.

4.4.3 Information exchange and GenTrader bidding strategies

The ACCC considered two potential areas of public detriment including:

- information exchange between GenTrader participants that could result in co-ordinated bidding behaviour
- the effect on GenTraders' bidding behaviour in contracting their non-firm capacity

The NSW Government agrees with the ACCC's draft finding that the co-insurance arrangement has the necessary features to prevent co-ordinated bidding behaviour between the GenTrader participants. However in relation to the potential effect on bidding behaviour it is important to note that even in the absence of co-insurance both GenTraders and retailers are unlikely to value non-firm contracts given that they are not an effective risk management instrument. That is, generators and retailers rarely enter into non-firm contracts. For

example, the NSW generators have no non-firm contracts. It is therefore difficult to see how the ACCC could maintain a view that co-insurance adversely affects this ‘market’.

Retailers are unlikely to increase their demand for non-firm contracts in NSW in the coming years. As NSW experiences a tightening of supply and demand over the coming years, retailers are likely to value firm contracts due to their concerns about being exposed to increasingly volatile pool prices.

Therefore the NSW Government does not agree with the ACCC’s draft finding the co-insurance arrangement creates public detriment by adversely affecting the market for non-firm contracts.

4.4.4 Generator incentives to maintain reliability

The NSW Government agrees with the ACCC’s draft finding that the co-insurance arrangement provides incentives for both the GenTraders and Generators to maintain or increase the reliability of the respective generation assets.

However the ACCC notes that without co-insurance, GenTraders and generators would likely have as much, or more, incentive to maintain or increase the reliability of the assets.⁴² The ACCC notes that in the absence of co-insurance generators may be more exposed to the payment of liquidated damages, providing a greater incentive for reliability.

One of the key objectives of the Energy Reform Strategy is to reduce the NSW Government’s, and therefore NSW taxpayer’s, exposure to plant outages and market risk. However, reducing the NSW Government’s exposure to this risk does not mean that any individual generator is necessarily less exposed to this risk. Not only is an individual generator still exposed to this market risk under the co-insurance arrangement, it may also be required to pay a series of penalty payments to the extent that it is not able to meet its availability targets set out in the Gentrader contracts. Therefore an individual generator faces the same or greater incentives for reliability as it would without co-insurance. However across all the State-owned generators the NSW Government is less exposed to this risk, as the payments made to the GenTrader by the generator experiencing the outage is ‘cancelled out’ by the payment made to the generator supplying the co-insurance by its respective GenTrader.

Therefore it is not correct that the co-insurance arrangement will reduce generators’ incentive for reliability. This potential public detriment does not arise given the structure of the co-insurance arrangement.

⁴² Draft Determination, paragraph 4.182

4.5 Options for the NSW Government and implications for the reform process

The NSW Government remains firmly of the view that mandated co-insurance arrangements are a necessary condition for the reform process to be implemented successfully under its proposed structure. The arguments set out in this submission demonstrate that alternatives to mandated co-insurance arrangements are not likely to be viable options for investors in NSW energy assets, and are not likely to represent the most effective and efficient way of managing this risk. In particular, these other options are unlikely to lead to the same or greater levels of firm contracting. This, along with their problematic implications for new entrants, means that these options are unlikely to secure the public policy objectives sought by the reforms.

On this basis, the NSW Government does not accept the ACCC's view that the reforms under the proposed structure could proceed without co-insurance arrangements. In the view of the NSW Government this would be neither feasible nor desirable.

In the absence of co-insurance the NSW Government may reduce the number of GenTrader portfolios to fewer than five. This would resolve issues relating to the management of outage risk, at the cost of foregoing some degree of structural reform. From the perspective of the NSW Government, this is a sub-optimal option. It is however preferable to a situation in which 5 bundles are offered without co-insurance and in which:

- There would be a drop in firm contracting, with flow through effects on wholesale and retail competition and ultimately on the prices paid by end use electricity customers
- There would be higher barriers to new entry, and hence limits to competition in the market post-transaction, and competition for assets as part of the sales process (and hence adverse effects on the NSW Government's ability to meet statutory obligations relating to revenue)

It is also likely that, in the absence of co-insurance, the need to manage outage risk will give rise to pressures for holders of GenTrader contracts to seek portfolio re-aggregation anyway. In those circumstances, it would make little sense for the NSW Government to incur the expenses, and the risk of value leakage, associated with offering 5 GenTrader bundles.

The NSW Government would have to consider ways in which the competitive effect of offering fewer bundles could be managed, subject to meeting its obligation to achieve fair value for money.

Appendix – Modelling methods and results

Frontier Economics has conducted a modelling exercise in order to quantify the effect of co-insurance on the risk and reward position of generators. Frontier's portfolio optimisation model has been used to determine optimal contracting positions with and without the co-insurance arrangement. Frontier Economics has also looked at the alternative of including a peaking plant in the portfolio.

This appendix summarises the analytical framework and assumptions behind Frontier Economics' approach and then discusses the empirical model used and results of the modelling.

Risk reward framework and STRIKE

Portfolio theory

Standard portfolio theory provides a robust framework for evaluating the trade-off between risk and return. Portfolio theory was developed as a response to the adage that “putting all your eggs in one basket” is not a sensible investment strategy in a risky environment. However, since the returns on different assets are correlated in various ways, it is not obvious how a business might best diversify its assets when attempting to balance risk and return. In a paper published in 1952, Markowitz solved this problem for assets that have normally distributed returns.⁴³ Markowitz's solution has become known as the minimum variance portfolio (MVP).

To understand Markowitz's approach to obtaining the minimum variance portfolio (MVP), consider a collection of n possible assets. We assume that we can characterise each asset by two measures:

- **Expected return:** the average level of return expected from the asset
- **Variance:** a measure of risk that captures how much actual returns might deviate from the expected return in any period

In addition, we require information on the correlations between the returns.

In the electricity industry, values for all these measures are typically estimated using historical data, calculated via simulations of systems operation, based on expert judgement, or a combination of the above.

Given information on the expected returns of the n assets, the variances of the returns and the correlations between the returns, it is possible to calculate the expected return and variance for any portfolio consisting of a mix of the assets. By varying the mix of assets, one obtains portfolios with different expected returns and variances (risk levels).

⁴³ Markowitz, H. (1952), “Portfolio selection”, *Journal of Finance*, 7, 77-91.

In general, a portfolio with a higher expected return also involves greater risk, so that expected return needs to be traded off against risk. Markowitz showed how, for any desired level of expected return, we can construct the mix of the n assets that has the least risk as measured by the variance.

By solving this problem for different expected returns, and graphing the solutions, we can map out a so-called MVP frontier. It has become common to plot the MVP frontier by placing the standard deviation of the portfolio returns on the X-axis,⁴⁴ and the expected return on the Y-axis.

Figure 5 shows such a frontier for combinations of two assets, A and B. Portfolio R is obtained by having a mix of 67.5% of asset A and 32.5% of asset B, while portfolio C has a mix of 35% of asset A and 65% of asset B. Note that for any portfolio on the lower (red) arm of the MVP frontier, there is a corresponding portfolio with exactly the same risk on the top (blue) arm that has a higher expected return. Thus, even though points on the lower branch of the frontier are minimum variance portfolios for their specified level of expected return, there is always a preferable portfolio with a higher return and the same risk. For this reason, the top branch of the frontier, starting at portfolio C, is called the ‘efficient’ portfolio frontier.

Figure 5: MVP frontier for investment in assets A and B for correlation coefficient, $\rho = 0$

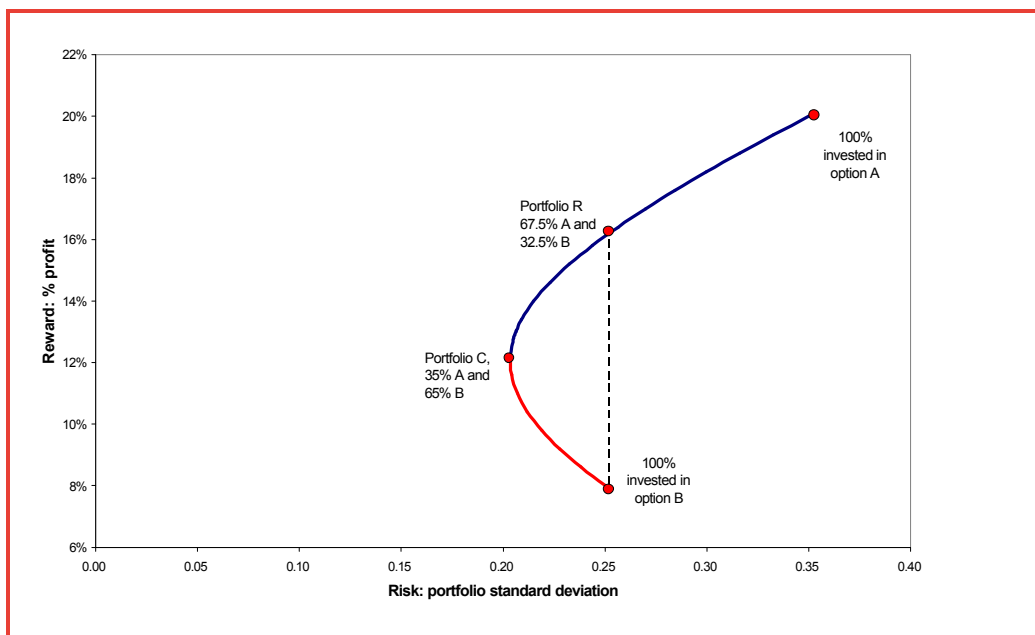
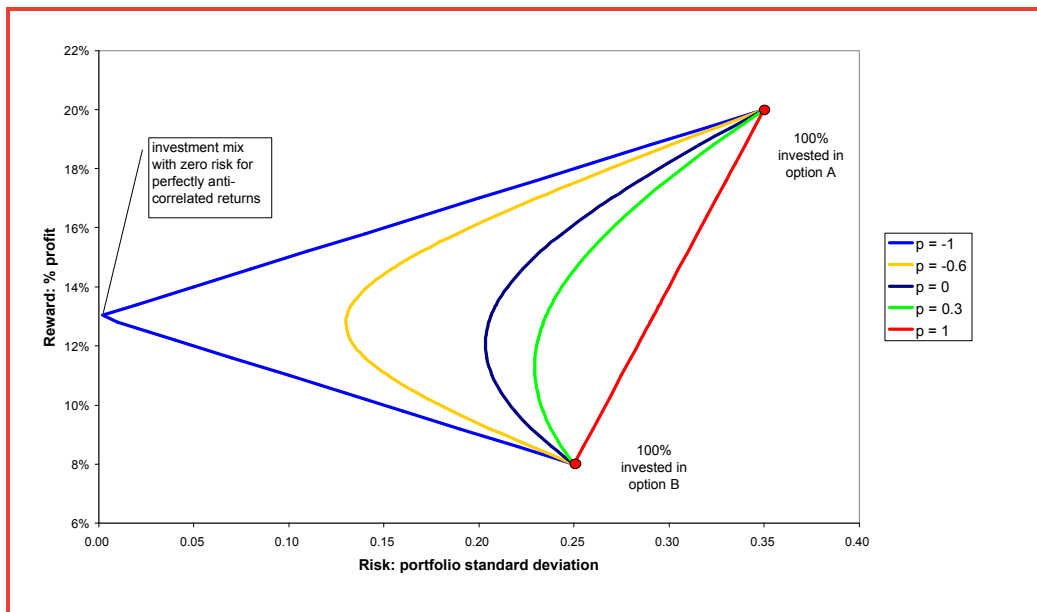


Figure 5 assumes that there is no correlation between the returns on the two assets, A and B. Figure 6 shows a number of MVP frontiers for different levels

⁴⁴ Using the standard deviation as the risk measure, instead of the variance, leads to algebraically identical solutions, and is easier to interpret.

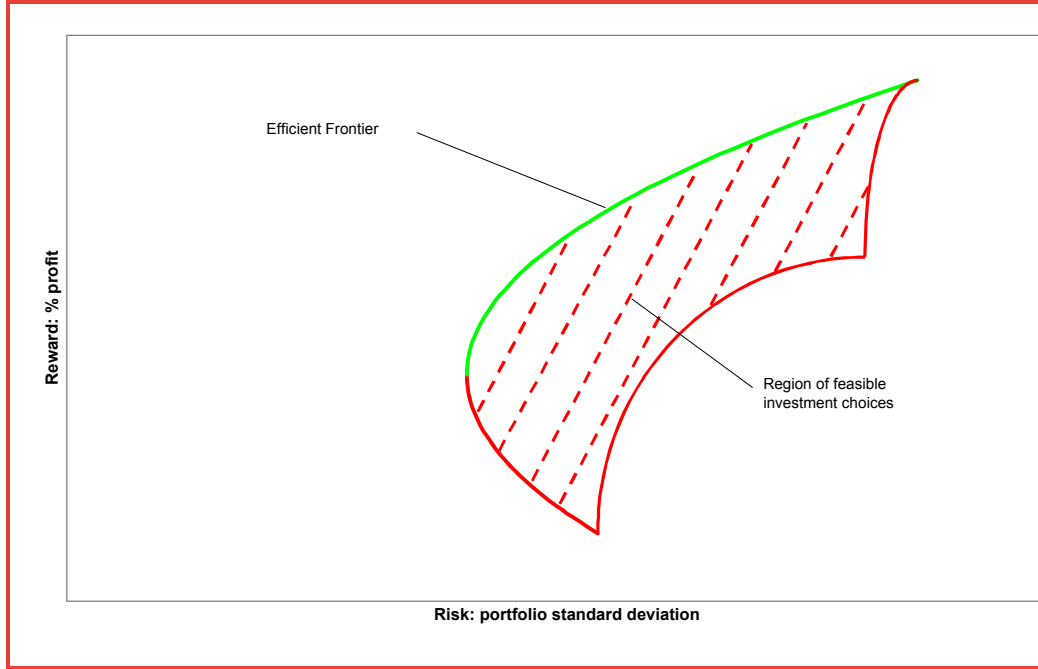
of correlation between the two assets. We can see that as the correlation between the returns on assets A and B becomes more negative, the risk associated with a portfolio of these assets becomes smaller. Hence the benefits associated with diversification, called the portfolio effect, increases as the correlation between the assets decreases.

Figure 6: MVP frontiers for investment in assets A and B with different levels of correlation



The situation illustrated in Figure 5 and Figure 6, with only two assets, is in fact somewhat artificial, since every mix of the two assets lies on the MVP frontier. The situation with more than two assets is illustrated in Figure 7. By plotting the expected return against the standard deviation for all the possible portfolios of the assets, we obtain the so-called feasible region. The left-hand edge of that region is the MVP frontier. As before, the upper arm (green in this case) represents the ‘efficient’ portfolio frontier.

Figure 7: Feasible region and efficient frontier with more than two assets



Algebraically, we can formulate the MVP portfolio problem as follows using matrix notation. Let the vector \mathbf{w} denote the set of proportions that each of the n assets constitutes within the portfolio (these must add up to 1); let μ denote the vector of n expected returns, and let Σ denote the n by n matrix of the variances and covariances of the returns.

Then for a specified level of expected return for the portfolio as a whole, say r , the minimum variance portfolio with expected return r can be found by solving the following constrained minimisation problem:

$$(1) \quad \min \{ \mathbf{w}' \Sigma \mathbf{w} \} \quad \text{w.r.t the } \mathbf{w} \text{ vector. (i.e. find the } \mathbf{w} \text{ that minimises } \mathbf{w}' \Sigma \mathbf{w})$$

subject to:

$$\mathbf{w}' \mu = r$$

$$\text{and } \mathbf{w}' \iota = 1$$

$$\text{where } \iota = (1, 1, \dots, 1)'$$

The MVP frontier is obtained by solving this problem for different levels of expected return r . The vector \mathbf{w} associated with the solution for any given expected return r , tells us how to construct the portfolio on the frontier that has that expected return. If there are no other constraints on the \mathbf{w} the above optimisation problem has a closed-form solution.⁴⁵

⁴⁵ See Campbell, Lo and McKinley (1997), *The Econometrics of Financial Markets*, p. 184

STRIKE

STRIKE determines the efficient mix of hedging products to meet a particular load profile, and the cost of that mix of hedging products. Instead of assessing the expected return and associated risk for each asset in isolation, *STRIKE* applies the concepts of portfolio theory to evaluate the contribution of each asset to the risk of the portfolio as a whole.

STRIKE adopts the basic structure of the MVP approach, but has adapted it to incorporate the types of assets that are typical in the electricity industry, rather than just shares. Electricity industry assets are more varied and include physical assets such as generating plant, different classes of customers with particular load characteristics, short and long-term supply contracts, and hedging contracts. Many of these assets involve quantity constraints.

STRIKE also generalises the MVP approach by allowing for different measures of risk, in addition to variance, and by allowing for arbitrary distributions of returns, in addition to normality.

STRIKE uses a slightly different, but equivalent, formulation of the optimisation problem. For any value of k , the ‘risk-adjusted’ expected return of the portfolio can be defined as:

$$(2) \quad r_A = r - k\gamma$$

where γ is the chosen risk criterion, such as variance, or the value-at-risk, or the profit-at-risk, and k is an indicator of the level of risk. If γ is equal to the variance then maximisation of (2) is equivalent to the minimisation problem in (1).⁴⁶

In practice, given the nature of the assets and the quantity constraints, there is no closed solution to this maximisation problem. Hence *STRIKE* solves the problem using quadratic mixed integer programming (QMIP) techniques. By maximising (2) for different values of k , *STRIKE* is able to map out the ‘expected-return risk’ frontier. This can be done not only when γ is the portfolio variance, but also for other measures of risk.

When variance is used as the measure of risk, the distributions of the returns on all the potential assets in the portfolio do not affect the determination of the optimal portfolio. However, with other measure of risk this is not the case. For non-normal returns simulation methods are used to determine the risk associated with any portfolio of assets.

⁴⁶ This formulation is equivalent to the Lagrangian formulation of the minimisation problem in (1).

Using STRIKE to assess the effect of co-insurance

Frontier Economics has used *STRIKE* to determine optimal contracting decisions for each of the proposed GenTrader bundles both with and without co-insurance. This allows an assessment of the effect of co-insurance on risk and reward given the historic revenues and operation patterns of the plant.

Assumptions

This analysis has been undertaken using publically available half hourly historic data on the NSW pool price and generator output and availability. This data was sourced from AEMO's nemweb archive.⁴⁷ Frontier Economics has obtained a complete data set from 2000/01 to 2008/09.

Additional to the historic data Frontier Economics has determined a pattern of co-insurance usage that would have been plausible if the arrangement had been in place from 200/01 to 2008/09. To do this Frontier Economics set an aggregate level of co-insurance based on the likely ability of the participating generators to supply co-insurance. This decision was informed by data provided by the businesses regarding availability levels for each station. For the purpose of this analysis Frontier set the aggregate co-insurance level at 80% of the nameplate capacity of the participating units. This aggregate level was then allocated to the different stations on the basis of availability such that more reliable stations received a higher co-insurance levels compared to less reliable stations.

Once the allocation was determined Frontier Economics used an algorithm to determine if co-insurance would be called for every half hour in the historic period. This algorithm accounted for the characteristics of the arrangement. For example, it was assumed that co-insurance would only be called if the pool price exceeded the co-insurance price (P_{CI}) of \$30/MWh. The algorithm also accounted for the two trading interval delay on co-insurance coming into effect and the supply/deficit order.

The only additional assumptions that went into the modelling regarding generator and contract costs. NSW generators were assumed to have variable costs (fuel and variable operating and maintenance) consistent with ACIL's 2009 report to AEMO.⁴⁸ Uranquinty was also included in the analysis for some scenarios, it's costs were also taken from ACIL's report including additional assumptions around fixed costs (capital, tax and fixed operating and maintenance).

Contracts were always assumed to be sold at a premium to the relevant NSW pool price. The premium chosen was 5%.

⁴⁷ Please see <http://nemweb.com.au/preprod/reports/archive>.

⁴⁸ ACIL Tasman, "Fuel resource, new entry and generation costs in the NEM," Final Report, Prepared for the Inter-regional Planning Committee, April 2009. (ACIL 2009 Report)

Scenarios

For each scenario Frontier Economics has determined an optimal mix of swap and cap products to produce an efficient frontier. This has been done for two main cases - both with and without co-insurance. Frontier Economics has also modelled a case where a given GenTrader receive the pool profit of the 664 MW Uranquinty station and pays the amortised fixed costs of the plant for the year.

This gives the following cases:

- **Base case** - under which five GenTraders can earn pool profit and sell contracts to the market using the range of financial instruments currently available in the NEM (including the co-insurance scheme between Macquarie Generation and Delta Electricity⁴⁹)
- **Co-insurance case** - as Base but with the addition of the co-insurance scheme and their payments
- **Uranquinty** - as Base but including having access to the pool profits of Uranquinty, a fast start peaking generator in NSW. The pool profits are the pool revenues net of fuel, variable operating and maintenance costs and amortised fixed costs including capital, fixed operating and maintenance costs and tax.⁵⁰ This case does not include having access to the co-insurance scheme

In choosing scenarios Frontier Economics has investigated several factors that are important determinates of the extent to which co-insurance helps to mitigate risk.

This gives the following cases:

- **Perfect and Imperfect information regarding outages.** Frontier Economics has modelled where the outage pattern of the NSW Generators is a known quantity ex-ante. This case serves to demonstrate that even when the pattern of outages is known in advance (which is impossible) co-insurance stills delivers a benefit when compared to a world absent co-insurance. Frontier Economics has also constructed a more realistic case where the modelling has been undertaken by considering the optimal portfolio of market instruments to manage the outage risk or availability as observed over the 8 year period 2000/01 – 2007/08 in order to determine what to do for the 'unknown' year of 2008/09. This approach attempts to replicate how market participants make contracting decisions. That is, decisions about the optimal position to take in the coming (uncertain) year

⁴⁹ The inclusion of the existing co-insurance arrangement between Macquarie Generation and Delta in 2008/09 is a moot point. This arrangement is very limited and conditions under which it could be called did not arise over the 2008/09 period.

⁵⁰ The fixed and variable operating costs are sourced from ACIL 2009 report on new entrant OCGT costs.

are made on the basis of past experience and expectations about the coming year

- **Responding or not responding to a co-insurance call.** When a GenTrader is called on to supply co-insurance it has two trading periods before the payments become active. During this time the GenTrader could choose to increase output (if not already outputting at maximum levels) in order to offset the co-insurance payments. The historic data that Frontier Economics has used does not include any response to being called on to supply co-insurance (as co-insurance was not in place). Using the data 'as is' overestimates the financial and risk effect of co-insurance on GenTraders when they are supplying co-insurance. Frontier Economics have also modelled a case where the historic data has been altered to assume that GenTraders do increase dispatch (if possible) in line with obligations to supply co-insurance. In this case the NSW pool price has not been altered. In practice, all other things being equal, an increase in supply should result in a reduction in price
- **Resolution of generic contracts.** Frontier Economics has included generic swap and cap contracts in all cases. This has included two levels of resolution regarding the level of sculpting that can be achieved. Frontier has modelled flat annual products and also quarterly peak/offpeak. The latter has been included to demonstrate that even if the GenTraders could sculpt contract position peak and offpeak for each quarter of the year, that co-insurance would still represent a superior product

Results

This presents some example efficient frontiers from the analysis and discusses the summary risk results presented in Table 1. Efficient frontiers are presented for the case where participants have perfect foresight regarding outages, no ability to respond to co-insurance calls and where flat annual swaps and caps are available as alternatives. Figure 8 to Figure 12 present the efficient frontiers for each GenTrader respectively. Each figure shows three efficient frontiers - one for each of the Base, Co-insurance and Uranquinty cases as defined earlier.

Focusing on the left-most point on the efficient frontiers, corresponding to the minimum portfolio risk, it is clear that co-insurance allows lower risk portfolios to be obtained for all of the GenTraders. For all, except Delta West, this risk reduction is on the order of millions of dollars for the modelled year.

It is also clear from these charts that co-insurance is a better risk mitigation measure than having access to the Uranquinty peaking plant. In many cases Uranquinty adds risk to the portfolio relative to the Base case. This reflects the relatively poor correlation between the pattern of outages and operation at baseload and peaking facilities.

Figure 8: Efficient frontier for 2008/09 - Bayswater

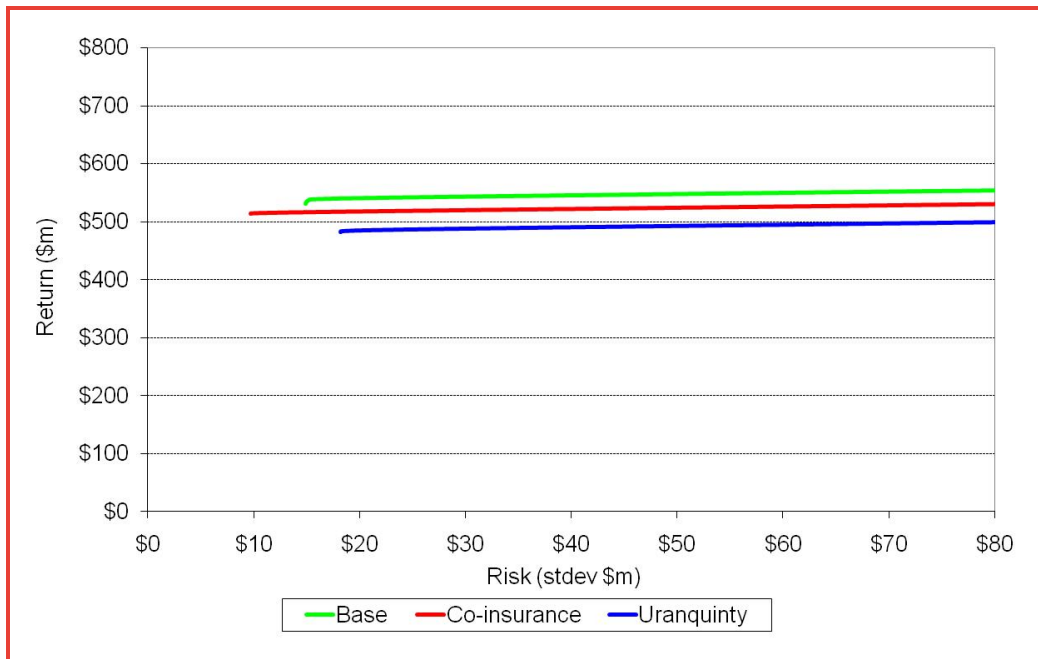


Figure 9: Efficient frontier for 2008/09 - Liddell

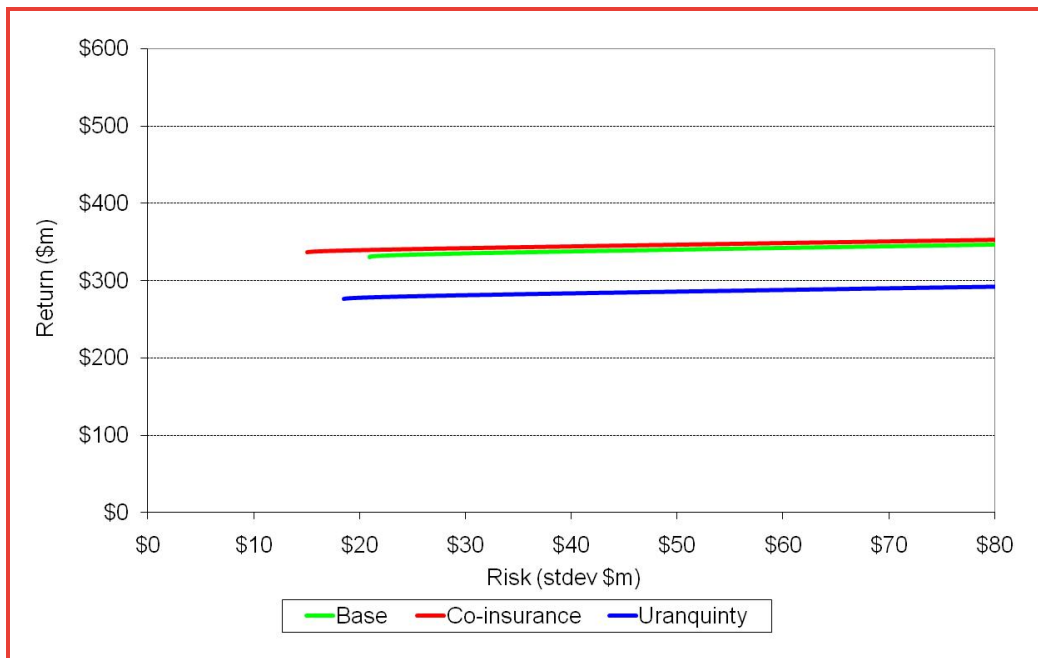
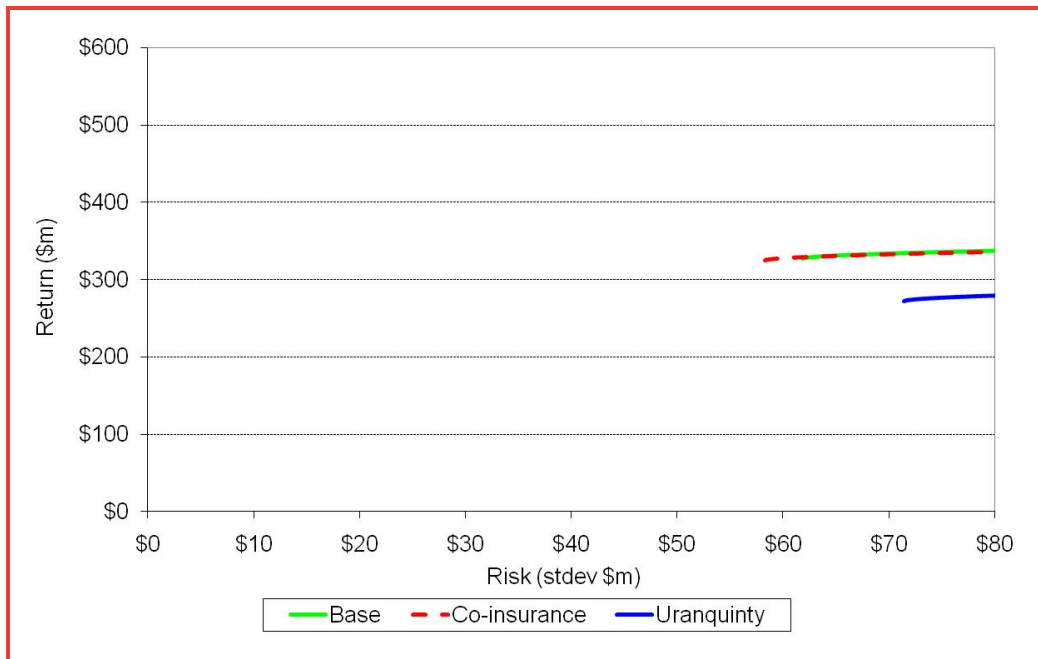


Figure 10: Efficient frontier for 2008/09 - Eraring



Note: Co-insurance curve is shown as a dashed line to enable comparison to the Base case.

Figure 11: Efficient frontier for 2008/09 - Delta Central

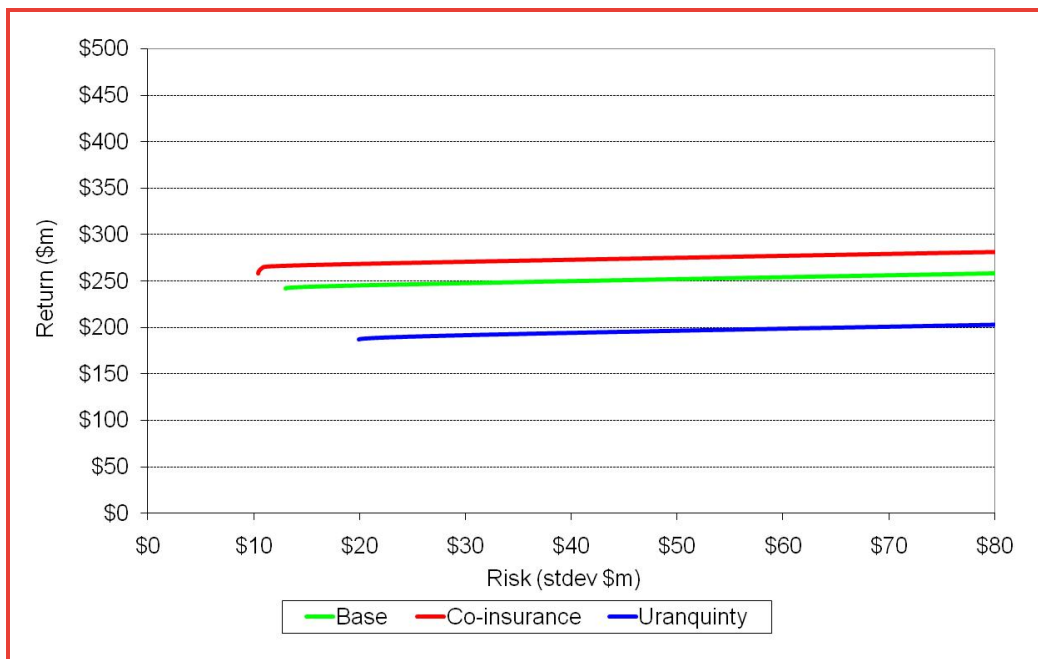
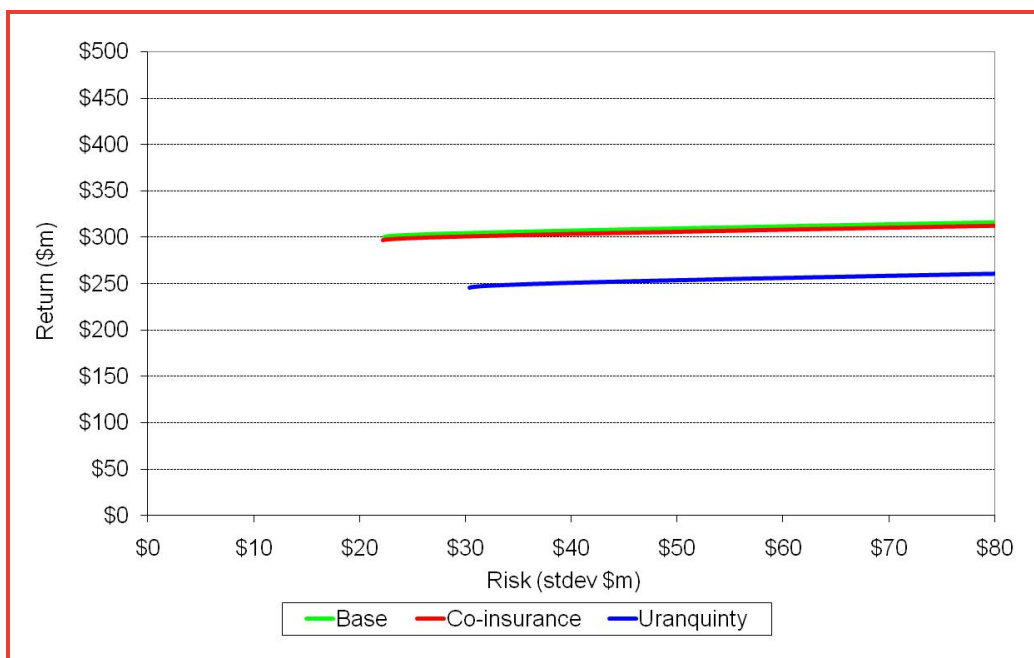


Figure 12: Efficient frontier for 2008/09 - Delta West



It is possible to look at aggregate changes in risk across the five GenTraders at the conservative point on the efficient frontiers. This data is presented in the main text in Table 1 for each of the scenarios that were modelled. In all cases, co-insurance allowed GenTraders to construct lower risk positions, from 7% to 24% lower than in the absence of co-insurance. This outcome is precisely what the NSW Government is seeking to achieve with co-insurance.