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TRANSCRIPT
OF PROCEEDINGS

AUSTRALIAN ENERGY MARKET COMMISSION

CONSULTATION FORUM

RULE CHANGE - ABOLITION OF SNOWY REGION

DR J. TAMBLYN, Chairman
MS L. CARVER, Commissioner
MR I. WOODWARD, Commissioner

TRANSCRIPT OF PROCEEDINGS

AT MELBOURNE ON THURSDAY, 22 FEBRUARY 2007, AT 9.30 AM

CHAIRMAN: Ladies and gentlemen, my apologies for the late start, but we had to wait till we had a quorum, and I think we do have one. We'll now get the proceedings under way. Can I just welcome you to this AEMC public forum. Our subject matter today is to discuss the last determination we released on the proposal to abolish the Snowy region, put forward by Snowy Hydro.

The purpose of the forum is to allow the AEMC to briefly explain the basis of our draft determination but, most importantly, to give you, the interested stakeholders, a chance to comment critically, and hopefully constructively, on the draft determination that we've put down. So today is the first step in consultation on the draft determination, but formal written submissions on the draft determination are due by 9 March and we're looking forward to some thoughtful submissions from you on that matter.

Can I just make a few comments on the boundary change context in the national electricity market in which this proposal is being considered. As you all would be aware, this is the first time a substantial boundary change has been considered in the NEM in its first 10 years of operation. So this is path-breaking analysis and decision-making, and for that reason it's very, very important that we work this through carefully.

You're also very aware that this proposal, and other such proposals, raise very complex market design and market performance questions, and they also have important implications and impacts on market participants and on users of energy. So this is very important work that we're engaged on.

Having said that, you're aware that the AEMC's decision criterion is the national electricity market objective: does the proposal and will the proposal improve efficiency in the performance of the market? That's the test that we have to apply.

We've undertaken very detailed consultation and analysis in getting to this draft determination stage. Initially we have tried to make a statement of what the problem is that is being sought to be addressed. We've sought to specify a clear analytical framework within which to analyse the problem and the options for addressing it. We've subjected it to conceptual or theoretical first principles reasoning and also to detailed quantitative market modelling where the theoretical reasoning leaves ambiguities which can't be sorted out from first principles.

So, drawing on that framework, we've then come down to the very important need for commissioners to exercise judgment about the decision on the basis of that analytical framework. The reasoning that we have gone through, the analysis that we've relied on and the basis of our decision are not laid out in

this draft determination. As I say, we're looking forward to your comments on what we have done at this draft determination stage.

Can I also comment on the wider congestion management context in which we are conducting this rule change piece of work. You're aware that we have a number of important projects before us, two from the MCE, the Ministerial Council on Energy, to conduct a review of actions for more effective and efficient management of network congest in the NEM, but also a rule change proposal to improve the principles and procedures for handling boundary change in the future. Those two matters are being handled in parallel and we'll have, we believe, final answers on those later in 2007.

We've also had a quite important package of work dealing with the Snowy region itself. We've dealt with, late in 2006, the proposal from the Southern Generators for a more effective approach to managing negative settlement residues that occur in the region. That decision has been finalised, and we have before us two more change proposals, one from Snowy Hydro to abolish the Snowy region, the subject of today's forum; and another from Macquarie Generation to create two new regions, one in southern New South Wales and one in northern Victoria, both seeking to address the levels of issues and problems in the Snowy region.

We've also mentioned in our draft determination that an option was put forward by Eraring for a split region; in other words, to maintain the current Snowy region boundaries, but to also put a new interconnector between Tumut and Murray. We have looked at that particular proposal as a comparator for the Snowy Hydro matter that we're considering today.

I should also mention that yesterday - and some of you might have picked this up - we received a further submission from Macquarie Generation dealing with aspects of their proposal under consideration by us at the moment. That proposal was for us to consider the split region option which we had analysed already in the Snowy Hydro matter in the context of further progression the Macquarie Generation rule change proposal. Macquarie in that letter made the comment that they felt that the essential issues of dispatch efficiency and implications for the hedge market that they were concerned to progress in their proposal appeared to be largely dealt with in the split region proposal, and they were asking us to consider having regard to that formally in the context of their proposal.

We will consider that. We haven't made any decisions in relation to that. It was received only late last night. We'll also take views from the marketplace stakeholders in coming to a view on how to respond to that submission. Doubtless Macquarie Generation in their presentation this morning will comment further on the thinking behind that particular submission.

Going then to consultation on the Snowy Hydro draft decision, as I've said, we've put out a very detailed draft determination, and our purpose in this forum is now to hear your comments, your critical views, on the analysis, the reasoning and the conclusions that we've reached. Any views that we receive today of substance and any propositions put forward in written submissions we will give careful consideration to in the lead-up to making a final determination on this matter, and we are prepared to adjust our analysis and to review our reasoning and, if necessary, our conclusions, on the basis of further analysis, evidence and substantive submissions that we receive. So today is the first opportunity to review the analysis that we put forward.

The agenda for today is broken into three segments. First of all, in the first session we will explain the background to and the analysis and reasoning underlying our draft determination. In particular, there will be presentation by Frontier Economics, laying out the framework, findings and use that was made of the modelling that we used for our draft determination.

In the second session we'll have a series of presentations from a cross-section of stakeholders from different parts of the market. They will be short 15-minute presentations and, with your forbearance, I would ask that only clarifying questions from Liza or myself be made after those presentations.

Then in the last session we'll have open questions, comment and discussion from the floor, including any questions or comments that you might want to make on the presentations that you've heard both from the commission but also from the stakeholder presentations. I'll then ask for your forbearance in addressing your comments or questions through the chair so that we can maintain good management of the forum.

Just a few matters of administration: we will break for morning tea at 10.40, and the forum will conclude at 1.30 pm today. We will provide a light lunch for those of you that can stay and have a bite to eat. Our proceedings are being recorded, so we would ask you when you speak to state your name and the organisation that you represent, and also to wait for the microphones that are available so that the recording can be clear on who you are. Toilets are out to the left down by the lift wells. That's all I want to say by way of introduction.

Can we move then to the first presentation. That's going to be a series of two interrelated presentations by Tendai Gregan, the first giving some relevant background on the Snowy region and the issues that arise in the Snowy region, but also commenting on implementation of this rule change proposal should the final decision decide it should go ahead. There are actual complexities in the physical and operational implementation which Tendai will outline for you. So, Tendai, could you make your presentation, please.

MR GREGAN: Good morning. I'll begin with a review of the original NEM regions. The original NEM region boundaries were determined by technical criteria of the then code in section 3.5, and those boundaries were generally located at the border of state based transmission networks, where connection was generally limited.

The Snowy region, as you're aware, forms a link between the two major demand centres of the NEM, Victoria and New South Wales. The transmission network there was designed back in the 1950s and 60s, and it was designed really to transfer power in accordance with the energy and water entitlements of the Snowy Mountains scheme and those negotiated between the governments.

At the beginning of the NEM, a separate generation-only Snowy region was created for a number of reasons. They included the tidal flows in and out of the Snowy area, so flows switching north and south through the course of the day; dispatch inefficiencies that could arise if static loss factors were used; and the fact that a generation-only region was allowed for in the code.

Looking at the physical network in the Snowy region, that partly also reflects the sort of legacy. You have a greater transfer capacity from Snowy into New South Wales than from Snowy into Victoria. Transfers north are about 3100 megawatts, transfers south into Victoria are about 1900 at a maximum, and between Murray and Tumut nodes there's a limited capacity of about 1350.

The other feature that arises in the Snowy region is it straddles an electrical loop, and this is what creates a lot of the issues relating to some of the congestion and the consequential effects that has. The electrical loop there you can see, and this is referred to in our determination, so I'll touch on it only briefly. You've got three regions, an electrical loop. You have a transfer limit between the cut-set between Murray and Tumut, and obviously the cut-set also incorporates Wodonga to Jindera.

When there's congestion, that is, the flow across that cut-set approaches its limit, then what's called a spring washer effect arises, and the prices start to diverge around that loop. That, in the context of the region pricing that we have, can present risk and it has implications for generation incentives at Murray and Tumut. That also can contribute to negative residues, and those negative residues have led to NEMMCO intervening in the market to restrict the accumulation of those negative residues in order to manage NEMMCO's financial risk. That's led to a number of interim arrangements that have been put in place to manage that.

The first one was the Tumut CSP-CSC trial which was introduced in October

of 2005, and that was designed to address the incentives around Tumut generation and to make some of that more available at times when there's congestion; and then in November last year a rule was made at the suggestion of a group called the Southern Generators, and that was designed to address NEMMCO's intervention because if provided a means of funding the negative residues on the Vic Snowy interconnector using positive residues on the Snowy-New South Wales interconnector. That's by way of background on that.

Those rule changes that were put in were derogations, so they're temporary measures. The commission has received two proposals that suggest more permanent changes. The commission has received two proposals that suggest more permanent changes to the Snowy boundary that are aimed at addressing some of these issues. So that's the Snowy proposal and the MacGen proposal, the nature of which John has just outlined for you, so I won't repeat that.

Turning now to the draft rule and implementation issues, as you're aware, the draft determination favours the abolition of the Snowy region proposal Arising from that there are a number of implementation issues, which I'll touch on now. First of all, the structure of the draft rule: it's divided into four parts. Schedule 1 is a stand-alone power to NEMMCO to publish information on the current regions and for abolishing the Snowy region. It also flags consequential amendments to clause 3.18.2 of the rules.

Schedule 2 separates the original NEMMCO network constraint formulation, which deals with NEMMCO's ability to formulate constraints in a fully-optimised form and also to use different types of constraints to manage the accumulation of negative residues. It moves that into a separate part called part 4. Schedule 2 also separates out the specific pricing arrangements for the Snowy region. They're the Tumut CSP-CSC trial and the Southern Generators. They remain in part 8.

Schedule 3 of the draft rule is just a glossary of items, and that is to go into chapter 10 of the rules; and schedule 4 enable NEMMCO to do all that is necessary to implement the abolition of the Snowy region by 4 November this year.

I'll skip two slides. A lot of the detail of that is set out in the draft rule in chapter 6 of the determination. The commission is looking for specific views on the following technical issues that relate to implementation. Revenue metering: there the commission is looking for views on whether appropriate revenue metering facilities are required, including the potential for using SCADA data as a substitute for revenue quality metering. There are some questions relating to region boundary detail, for example, which end of the transmission line forms a region boundary; and there are also some issues that

we're wanting to talk about with NEMMCO and others.

There's also a question about the location of the Guthega power station and Jindabyne pumping stations. Snowy Hydro have proposed that Guthega be placed into New South Wales, whereas Jindabyne pumps will stay in Victoria. There are some issues about that, which are discussed in chapter 7 of the determination. Both of those two assets are normally linked to Victoria via the 300-kilovolt Murray node, which would be located in Victoria. So you'd have a potential issue of the Jindabyne pumps being an islanded part of Victoria.

There's also an issue of time. One of the detailed things that came up was the need to precisely define the time of commencement of the change of regions, so we made a consequential change to the definition of "time" used in the code. The other thing we're looking for comments from people on is any sort of residual issues relating to implementation, matters relating to a technical nature that would impede the implementation by 4 November.

CHAIRMAN: Thanks very much, Tendai. As Tendai indicated, we will consult on those implementation matters between draft and final. Can I now introduce Liza Carver, my fellow commissioner. Liza will take you through the reasoning and analysis which led to our draft determination. Thanks, Liza.

MS CARVER: Thanks, John. Good morning, everyone. I'm going to move reasonably quickly through this presentation. Some of the key points have already been touched on by John and Tendai, and I'm actually going to assume that the vast majority of you have read the draft determination.

As John indicated, Snowy has put forward its boundary change proposal as a permanent solution to an enduring transmission constraint. As John also indicated, for the purposes of analysing that in the draft determination, you will have seen that we contrasted it principally against a base case, which I'll come back to in a minute, but also to enhance the robustness of the analysis, we chose what we're describing as a potential counterfactual, which is the split region counterfactual. It was the concept you find in the submissions that we received from Eraring, but of course Eraring did not put a rule change proposal to us, so it is not, strictly speaking, an alternative to the Snowy proposal. But for the purposes of a fulsome exercise in analysing the Snowy proposal, we chose it as a conceptual counterfactual.

You will have also seen that there is in the draft determination the identification on a preliminary basis of some of the issues associated with the Macquarie Generation proposal, but you will have also noted that we've made it very clear that we had at that time not commenced a substantive analysis of the Macquarie Generation proposal.

Now, what did the submissions say to us? It seems a long time ago now, but we did receive a large volume of mostly very high-quality submissions. If there is a consistent theme in them, it is that there is a persistent and enduring problem in the Snowy region that was giving rise to dispatch and pricing inefficiency, with consequential implications for investment efficiency. It was also put to us that the constraint between Murray and Tumut was unlikely to be built out. That was something that we understood some inquiry into, because we thought it a significant question, particularly in the context of the boundary rule change proposal we had before us from the MCE, where the question of whether one takes a phased approach to boundary change, where one looks to investment first as a solution potentially then to interim measures, prior to a boundary change that should only occur in circumstances where there's an enduring material constraint that is unlikely to be solved through transmission investment.

So, given that policy context that's been given to us by the MCE, that was something that, you will see from the draft determination, we turned our mind to, and it's fair to say we're satisfied, subject to any compelling contrary material being put to us, that the constraint between Murray and Tumut is unlikely to be built out in the short to medium term.

As I've indicated and John did, we assessed a range of alternatives to the Snowy proposal, the base case and a counterfactual. I just want to say something about the base case we selected. It has been the subject of some of the commentary we've already received on our draft determination. We chose, as I'm sure you're all aware, as our base case a world in which the CSC-CSP trial, modified by the Southern Generators proposal, was not in operation. Why did we do that? Because we think that Snowy is correct when they characterise their proposal as a long-term solution to congestion in the Snowy region, and as the trial is a trial and modified in a time-limited manner through a derogation, we did not regard what is currently the status quo as in a legal and regulatory sense the appropriate base case.

A number of things flow from that observation. One of the obvious observations is: what if the current status quo delivers superior outcomes for the market, including in respect of dispatch efficiency and interregional trading? That is a very legitimate question to ask, but we formed a fairly clear view that the assessment of congestion management measures in a regional market of the kind that is currently the subject of the trial is something that we must fully and properly assess in the context or the congestion management review.

As will be apparent in a couple of weeks, when we release a directions paper, we are embarking on a thorough analysis of a range of alternative congestion management tools, only one of which is a CSP-CSC regime. We are looking at

things such as constrained-on, constrained-off payments for generation. We are also looking at the proposal put forward by Dr Biggar for a constrained payment regime, and those will be assessed in the context of the congestion management regime.

That process, our process, as John indicated, is unlikely to be completed before the third quarter of this year, and you have to remember that the congestion management reference is a reference for a report to the MCE. Our role is to report to the MCE on these matters, and the extent to which any rule changes arise from that report is a matter for the MCE. In the event the MCE did think it was appropriate to put rule changes to us a consequence of the congestion management review, one would assume that would occur sometime in 2008.

So the likely time frame for resolution of the broader question of the appropriate congestion management regime for the NEM is something that is going to take at least 18 months to work its way through. That begs the obvious question: why didn't we wait in respect of the Snowy proposal? In large part we didn't wait because of the submissions we received. As I indicated a few moments ago, a fairly overwhelming theme of the responses we received was that (a) congestion in the Snowy region is material; (b) it's enduring; (c) it's unlikely to be built out; and (d) absent some form of intervention, it was going to give rise to, as history has shown us, quite material dispatch inefficiencies.

So we formed the view it was important to deal with the Snowy region sooner rather than later. We then also formed the view that it was potentially inappropriate for us to pre-empt our congestion management review by taking as the alternative option to the Snowy proposal the permanent entrenchment of the trial. Now, quite aside from what I hope I've just explained is reasonably sensible reasoning we went through in selecting our base case, as a lawyer I can't help myself but make the obvious observation that the current status quo is not something that we can legally implement in any event in the absence of a rule change proposal before us, or in the absence of the completion of our congestion management review and the consideration of our report in that respect by the MCE.

I appreciate that the issue of the selection of the base case is something that many of you will wish to comment on. I hope I have just given a reasonably clear explanation of the reasoning process we went through and I will now move on, but we certainly look forward to your comments and observations on that matter as the day progresses. As you will all be aware, I suspect, what our role is is to assess a rule change proposal, and we are only empowered to adopt it in the event that we form the view that the rule change proposal will promote the NEM objective, which I think all of you will be familiar with.

As to the decision-making criteria we adopted for the draft, for those of you who worked through our decision on the Southern Generators' proposal for the modification to the Snowy trial, the decision-maker criteria will be familiar to you. They are essentially the same. We look to what are the implications of the proposal for the efficiency of dispatch; we look at the pricing outcomes, not because we're interested in lower prices per se - that would be a foolish way of analysing these matters - but understanding pricing outcomes tells us something about how both end users and suppliers respond to different scenarios. We look very carefully at the implications of rule change proposals for risk management in the NEM, we look at power system security, we look at good regulatory practice, and we look at whether the proposal is broadly consistent with what we see as the public policy settings that we're to have regard to, and those are principally the positions taken by the MCE over time.

Essentially incentives in the base case: as Tendai explained, there are incentives for Snowy to bid in a manner to induce NEMMCO intervention with the result of reducing competition between the regions, higher prices and a relative inefficiency of dispatch. Our assessment in the draft is that the abolition of the Snowy region will lead to a more efficient pattern of dispatch, with a consequential positive influence on the longer-term development of the NEM, and, as many of you have observed in the presentations you're going to make after, the results are broadly similar for the split region counterfactual that we analysed.

Non-economic assessment criteria: we did not identify any power system security or supply reliability issues in the proposal as compared to the alternatives. In respect of good regulatory practice, we did see that as a significant criterion us. All other things being equal, rule change proposals that minimise the potentially unpredictable intervention by NEMMCO in the dispatch process will be preferred over those that are likely to result in unpredictable interventions by NEMMCO in the dispatch process.

Consequently, our draft decision concludes that the Snowy proposal will promote the NEM objective. I'm not dwelling on the quantitative analysis that led to some of those conclusions, because I think that's more fully ventilated in the presentation that Danny Price is about to give, but I'll just conclude now with a quick observation on what we see as the broader policy context. I mentioned that we will be releasing a directions paper on the congestion management review in a few weeks, which is intended to give stakeholders a clear understanding of what we see our forward work program to be and identifies those options that we intend to analyse and consider.

We're releasing a directions paper because we think it would be timely at this stage to have additional feedback. As some of you will be aware, in the context of the congestion management review late last year, we received a

proposal for a tool of congestion management by the self-described Latin group. As I indicated, we are looking at the regime posited by Dr Biggar, which is set out in some detail in a paper that's published on the web site, and we are inevitably looking at CSC-CSP type models and other forms of rule change, including those that may provide the market with a better information base or investment decisions, and rule changes that directly affect incentives for investment both in generation and transmission. Given the breadth and complexity of those matters, we think it's timely that we issue a directions paper which will give stakeholders the opportunity to tell us whether we're heading in the wrong direction.

The other matter that John referred to, of course, is the boundary change proposal we've received from the MCE. I think that concludes my comments. Thanks, John.

CHAIRMAN: Thanks, Liza. We've got a very important presentation now for half an hour. We'll ask Danny Price to describe the modelling framework, the modelling results and their implications, and we'll provide 10 minutes after that for questions directed particularly to Danny where you want to clarify the modelling approach, but also any questions you might want to direct to Liza and myself about the commission's approach. Over to you, Danny. Thank you very much.

MR PRICE: Thanks, John, and thanks for the offer to ventilate the modelling results. I don't often get that invitation. My name is Danny Price, managing director of Frontier Economics. Today what I'd like to do is just briefly go over the modelling results, the basis for that, and give you towards the end an opportunity to ask some questions about that. I'm presuming that everyone has read the report, so what I'm presenting today probably isn't particularly new to you, but one part that I'd like to spend a bit more time explaining is the risk management side, because I think a lot of people have drawn perhaps too much from that and I'd just like to put that into context.

Our analytical framework really started with three key steps. One is clear problem definition. Tendai went through that, and that's in the report. The second stage was really just to see what economics could tell us in principle about what may arise from each of the change cases, the Snowy Hydro proposal and the split region option or split region counterfactual. I don't know if anyone has ever attempted to do such a thing but, given the complex interactions that exist in the market, that proved an extraordinarily difficult task that was led by Darryl Biggar but, unsurprisingly almost, it didn't take us too far because of the sheer complexity of trying to understand all of those interactions in the market.

That really required some form of empirical to try and tease all of those

interactions out. As you know, as soon as you model the national electricity market on a forward-looking basis, and given the sort of sheer complexity of this, it's a very big exercise indeed. The things that we were looking at in that modelling exercise were two keys things. One was the so-called dispatch efficiency, the productive efficiency changes, and to the extent that there was an improvement in dispatch efficiency in terms of lower-cost dispatch across the national electricity market, generally that would lead you to believe that there would be a more efficient pattern of investment that may follow, because more efficient dispatch quite often follows a more competitive market, and a more competitive market produces a more efficient market.

So, whilst we didn't directly look at dynamic efficiency, which is an order of magnitude more complex than what we've already done, it's a sort of directional indicator.

The second key element which is going to take on a potentially new complexion if the commission decides to accept the Macquarie Generation adoption of the split region option formally is the risk management issues associated with a change. What has been done I'd regard as perhaps a first step. There's a lot more to consider in terms of appropriately managing risk or examining risk in these markets. What we've sought to do is to develop the beginnings of a framework. As you will all appreciate, this hasn't been done before, as far as we can tell from the literature, anywhere in the world. So I'd like to talk about the limitations of that and just how much you can draw from it.

But, as Liza has already indicated, the efficiency effects are only part of a suite of indicators or criteria that the commission used to come to a draft view about the Snowy Hydro proposal, so please don't think that this is the be-all and end-all of the way the commission thinks about it. As Liza I think has convincingly argued, this was assessed against a pretty sensible sort of base case.

Let me just step you the three modelling steps here with this graph. Importantly at a very high level, this modelling exercise is a forward looking analysis. There are three parts to it. The first part is using a model called WHIRLYGIG. Basically all that is is a tool to help us understand what the supply and demand balance might look in the market over the modelling period, and the modelling period that we're talking about here is 07-08 to 09-10. But, given that short period, we already know pretty much what the market is going to look like. We've got the existing stock of plant, and any new plant coming in in that period is reasonably well known and you're all familiar with that. I won't go through that.

The output from that model then becomes an input to the next model, which is

a really critical model. What's happening here is that the rule change is by design attempting to alter people's behaviour in the market, trying to make them behave more efficiently. So what you need is some way of understanding what the consequences of those rule changes might be on people's behaviour, and that's an extraordinarily difficult thing to do. I wouldn't like to suggest that this is the end of the story. These models are extraordinarily complex and still being developed around the world, but this is our attempt to capture those sorts of behavioural effects. It's based upon, as you've seen in the report, game theoretic model, which is a reasonably well developed technique for looking at the strategic interaction between participants in any sort of game. Given the sheer number of potential participants and players in that market, it's a gigantic computational problem.

This model sits over the top of a very detailed description of the national electricity market, the constraints, including all the constraint formulations and all the loss factors. As I'll go on to describe later on, we have in the change cases looked at the effect of the redefinition of the boundaries and the effect that has had on constraint formulation losses in accounting for that sort of behavioural change. That was a modelling exercise that NEMMCO has done for us.

Once we've got that model functioning, it produces a whole range of output which are important in determining the efficiency gains. Of course, it looks at the dispatch efficiency changes, changes in output and costs of the generation system. We look at that to see if there's any improvement in costs. We also look at prices, the extent to which prices better reflect those costs. To the extent that they better reflect costs there are going to be more efficient patterns of consumption of electricity. That's our efficiency interest in prices, not lower prices per se.

Once we've got those changes in prices, that obviously provides us with a basis for looking at the extent to which inter-regional trading may be affected by the rule change proposals. We use those changes in prices to run an experiment. It's a reasonably simple experiment but using a fairly sophisticated approach, but still limited, and that's the so-called STRIKE model. We'll talk about that again a bit later.

Just a bit about the process that we went through in terms of stakeholder consultation: the AEMC formulated a technical reference group, or the TRG, to talk about the assumptions we were to use in our modelling. Obviously the technical reference group drew from a wide range of interests but, perhaps surprisingly, we got agreement from the TRG on the assumptions we adopted by the modelling, which are reflected in the report and documented. That was also disclosed in the AEMC's web site.

The next stage was the work that the AEMC did with NEMMCO to formulate all the constraint formulation loss factors for the purposes of analysing the Snowy Hydro proposal and the split region option, and that was based upon the 2005 figures.

As I've suggested, the modelling periods are three years, so post 2009-10 the market roughly coming into a balance of supply and demand. This should sort of stabilise after that - don't quote me on that. In terms of the assumptions on bidding, which is crucial, remember in this type of model we're not trying to guess what people are bidding. The basis of a game theoretic model is to give people a range of bidding choices and for the model to compute an equilibrium set of bids, and an equilibrium set of bids is not necessarily the set of bids that produce the highest profits for everyone; the equilibrium set of bids are those that cause people not to want to deviate lest they just cause a round of competition to bring them back to that point. We use the concept of a Nash equilibrium to identify those equilibrium bidding strategies. We then use those equilibrium bidding strategies to compute a price, and that's the basis on which we produced prices for this exercise.

The thing about game theory - there's not necessarily a single equilibrium. In fact, there could be and usually is a multiple set of equilibria. We don't try and select out a particular equilibrium out of that; we in fact formulate a distribution of all the equilibria so that when we present distribution of prices in the report, it's a distribution of equilibrium prices and therefore a distribution of likely prices.

A key input in the modelling, of course, is the choice of the strategies. We of course would like to give everyone an infinite range of strategies. We can't. Each year, for example, we've already calculated half a million different bidding combinations for each year of analysis. That's half a million dispatch or pool runs for each year. That, as you could appreciate, if anyone has done that, is a lot. We used that half a million runs to detect Nash equilibria. So what we do is try and contain the computation problem, because it goes exponentially as the number of strategies and strategic players increases, so we have to choose who are the strategic players and what strategies they have.

In the case of the major base-load power stations, our observation here and around the world is that rarely will they withdraw. I should have said that the strategies in this case are capacity games, withdrawing capacity to try and raise the price. We rarely see them withdraw beyond 30 per cent of their capacity for base-load generators, although it has happened, of course. In particular we gave Snowy lots and lots of room to move, with multiple combinations going down to withdrawing all of their capacity in 12 and a half per cent increments. So that's a lot of choices for them. The remainder of the capacity has been at marginal cost. In the case of a hydro plant, in the case of Snowy Hydro they

were given a short run marginal cost of $1, so you can simply compute an operating pay-off, the basis on which we calculate the Nash equilibrium.

Other hydro generators are dispatched what we call optimally. What that means is that they're obviously energy constrained, and the way the model works is it dispatches those hydro generators at the sort of peak so they're optimising their revenue. In that sense they're not unstrategic, but they're not strategic in the sense that they're trying to actively support bidding in the market, but they're not going out of their way either to try and undermine or increase competition in the market, so it's probably erring on the side of high prices.

There are some peaking plants around the market which we didn't include, as agreed with the TRG, as strategic, but we did think that it was important to reflect their higher bidding practices. The number that was selected was a fixed, but it was a fixed bid at five times short-run marginal cost, and that varies, as you'll probably appreciate, between about 150, 200 to up to about 1500 dollars a megawatt hour, which is a reasonably high price.

The next set of assumptions that we have to make are the contracting assumptions. In our model the Nash equilibria is affected, at least in the short run, by the level of contracting. So to the extent that generators are risk-adverse and don't like the prospect of unfunded difference payments, we're trying to capture that through the interaction between their spot market bidding behaviour and their contracting level. So we have to include, to reflect some reality in the market, different levels of contracts. Of course, we don't know what everyone's contracts are, so we have to run a few scenarios to test what the sensitivities of those are. In the case of Snowy, we had both high and low contracting strategies.

Obviously there's an arrangement in New South Wales called ETEF, a fine instrument from the Hunter, and that's going to alter behaviour allegedly in the market, so what we have to do is reflect the change in behaviour that may occur in moving from lower levels of contract to higher levels of contract. That actually has an effect on future prices for the short term.

Another aspect to the contracting assumptions is the extent to which Snowy to different nodes. That actually has an impact on their behaviour with respect to constraints and prices. We've followed the same practice that we did in the case of Southern Generators. I'll note that Southern Generators' support was fifty-fifty.

Let me briefly summarise the key findings. I think everyone knows that the change produced a production cost saving. It varied from year to year in different scenarios from about 1.8 to about 3 and a half million dollars

per annum. You might regard that as modest. In fact, when you look at dispatch efficiency savings across the market, you can move from anything from a very large number of regions to a very small number of regions, even a single region, and get very small dispatch efficiency savings. That number doesn't surprise me in the least bit. You have to have a monumental change to the way in which the price-setting works and dispatch works to get a bigger number, so that's pretty much the sort of order of magnitude we see for these types of analyses.

I'll go on to talk a bit how they arise, but let me just summarise the results first. Primarily those cost savings come from the change in incentives facing Snowy Hydro, in particular their willingness to offer capacity in the market. In the modelling approach we use, Snowy Hydro is given an energy budget which it must use in a year, and that makes commercial sense. If they've got only a limited amount of water, they'll use it to make as much money as they can and they'll tend to want to generate at times where that supports their contract position and produces the highest revenue in terms of spot prices, and they will adjust that according to changes in market rules and incentives.

What we find here is that the Snowy Hydro rule change alters the pattern of production throughout the year, and that alteration to pattern production gives rise to these production cost savings. Like I said, I'll go through that and you can see those slides a bit further on.

Fundamentally, the reason for the change is that, in separating the pricing points of its portfolio into effectively two, under some circumstances it makes it harder for Snowy Hydro to get pay-offs for engaging in strategic behaviour because it's more difficult to import that higher price to all of its portfolios, because those portfolios are now split between two regions, the equivalent to any other generator - for example, Macquarie Generation, having a region drawn down the New England Highway. It would under some circumstances make it more difficult to engage in the same pattern of behaviour.

It just so happens that the times at which Snowy Hydro's incentives substantially change coincides with a very important period in the national electricity market - high demand. That has quite a big effect on competition at those times, and that competition effects are positive in terms of causing people to bid more frequently towards their costs. Numerous people have contacted me and told me, of course, that we've got it all wrong, that there's a particular scenario that they have in mind where this doesn't arise, and in fact we've found that in all of those cases that people have presented; indeed, our modelling finds those cases. It's just that what we're doing here is not black and white. There are some circumstances where these things happen and some circumstances where they don't, and generally what we're finding is that there are more circumstances where there is more competitive behaviour, and that

increased competitive behaviour relates in lower prices, and I'll talk about that a bit.

This is a very summarised form of the production cost savings. If you have a look - it's a bit of a busy graph. We've basically split the data in terms of contracting high and contracting low. Anything the zero dollar line in terms of millions of dollars of cost savings are cost savings; anything below the line are cost increases. So when people have told us that there are potential cost increases, indeed there are. In this case there's a trade-off between cost increases and cost savings.

What we have here is a contracting high, 2008, 09, 10; Snowy split region option; Snowy split region option; and so on and so forth. We've split off the cost savings in terms of summer peak and winter peak because, as I've suggested, these gains tend to come at a particular time in a year, which is unsurprising. I think one thing to note from here immediately is that the cost savings tend to be higher in contracting high. What's happening there is that high contracting is causing people to bid more closely to their costs, at least in the short-term period. What that means is that in part the assumption about high contracting is driving these cost savings, whereas in low contracting obviously there are still cost savings but you can see the pro-competitive effect in the short term of some of these contracts.

As I've suggested, a large proportion of those cost savings come through these high summer demand periods, but especially associated with high Vic-SA, where the flows are southward. The other type of comment I've got is that the scenarios that have been constructed to show that we're wrong have quite often fallen into the category of those people considering a base case that we haven't modelled here. As Liza said, our base case doesn't include CSP-CSCs, the Southern Generators rule change or the reorientation. So you have to put your mind in that world to understand what we're modelling here.

In our base case, what's happening in these high demand periods and high Vic-SA periods is that Snowy Hydro is engaging in strategic behaviour that involves Murray Generation withdrawing quite large a mounts of capacity to ensure that they're not uncoupled from the high Victorian price. Those withdrawal strategies by Snowy are causing other more expensive generators in Victoria to operate more frequently. The Snowy Hydro change and the split region options changes that incentive, in both cases because Snowy now doesn't have to as frequently engage in withdrawal strategies to keep itself as a Victorian region, because it's in the Victorian region. So it tends to produce more at those times. When it produces more, those high-cost generation facilities that were running before are no longer running.

But remember our modelling approach assumes that Snowy Hydro uses all of

its energy budget, so if it's running more in summer times, it's running less in winter times. It just so happens that the times that it's running less, the plant that's running more in that place is in fact the cheaper plant. That's the trade-off between the green plant, that plant that has to run more at those lower demand period times, versus the plant that they've offset at the high demand period times.

I mentioned that the model doesn't produce a single equilibrium; it produced multiple equilibria. What this presents is the pattern of equilibria in terms of output on the horizontal access and the pay-offs that Snowy earns for this demand point. This is demand point 29, where more than half the cost savings come from. Having said that, where you see those cost savings at a lower level the same thing happens but at a sort of lower level, but demand point 29 is quite instructive here.

You can see that BAU is the blue dots, the Snowy and the split region option are the red and green dots, and you can see that once we've changed the region we find these more competitive equilibria. They're producing a lot more output, at full output, at these times that didn't exist before.

So when people come and talk to us and say, "You've got it wrong. That doesn't happen," we find that in fact they still tend to withdraw but there are now instances where they don't. There's an increased probability of that happening. So if you observe that it still happens, we're predicting that as well, but there will be instances where that doesn't happen.

The things that produce those dispatch efficiency gains are the exact same factors that drive the price reductions, and those price reductions are important for an efficiency perspective because they yield prices much closer to costs and, as I said, the efficiency notion there is more efficient consumption. Those price changes are associated with the same extreme heat and winter demand periods. The impacts in Victoria, as you'll see from the report, are smaller as compared to those in New South Wales. What I've presented here is just for illustration - the effect that the rule change proposal in terms of the split region option and the Snowy Hydro has on prices.

You'll see in the case of high contracting again the same story. High contracting tends to lead to generally lower prices because you've got incentives to bid closer to costs in higher contracts as compared to lower contract periods. You can see that prices are generally falling anyway, so you really only have to look at this point here. Part of the reason why prices are falling in 2009-10 anyway is because of the combination of the new plant that goes in, things like Tallawarra and I think Munmorah GT and a few other plants around, and also the effect of the potential roll-off, or the roll-off, of ETEF, which will change contracting behaviour. So there's a few things going

on there which are constant for all cases. The thing that changes, the difference between them, is the rule change proposal.

Let me finally turn to risk modelling. What are we interested in here? We're really interested in understanding the extent to which these changes are likely to promote or encourage greater inter-regional trading. Why are we interested in that? To the extent that the availability and choice of hedging partners is important in terms of competitiveness in the market and the ability to basically tailor your requirements, that could have an efficiency consequences. We haven't sought to try and directly link it, so what we've tried to do is at this stage demonstrate the direction of change.

The way that we have tried to demonstrate the direction of change is looking at whether inter-regional trading has become more or less risky, the implication being that if it's become less risky, people would probably be more encouraged to enter into inter-regional trading and expand their choices of hedging products, which is particularly important for retailers, and that could promote retail competition. So that's the linkage between what we've done and efficiency. You might argue about that; we can talk about that later.

I really want to emphasise that what we've done is incomplete in terms of understanding the relationship between these changes and risk, and potentially misleading. In fact, given the comments I received, I'm absolutely sure it's misleading. Our modelling is based on system normal conditions. We don't factor any unexpected or abnormal outages, which almost certainly affect people's incentive to engage in inter-regional trading, and it assumes that all participants can accurately predict that price and they can buy as many IRSRs at the expected value as they need to find their optimal position.

So what we've done here is apply a modern portfolio to try and work out the least risky optimal position for a trader trading inter-regionally. The way that we've done that is that, in the case of say a New South Wales generator or participant hedging into Victoria, we've said that they have a 100-megawatt position in Victoria and they can optimise that position either by relying purely on spot or IRSRs. Then we've measured the different combinations of those and, using portfolio optimisation techniques, we've then taken the least risky point on that efficient frontier which is formed through that technique and then we've looked at the risk associated with that least risky point. We've measured that risk according to the variants that surround that point, but making these very strict assumption about people's ability to gain access to all the desires risk management tool at the optimal price.

Our guess our point is that one of the few things that we haven't taken into account is what happens when in practice people can't get access to the products they want at the price they want, even if it's possible to bid for

combinations of IRSRs. I understand that, we understood that, but in this case the model is saying that things can happen in a very optimal way and obviously that's not the case.

The reason for the superior risk outcomes under the split region option is that under those very sort of strict assumptions, if you give a portfolio optimisation tool an extra instrument to play with, it's going to find even more efficiencies, but for that to be actually realised, you have to be able to acquire those instruments at the price that we've predicts, and obviously that gets harder and harder the more regions you have to go through. We haven't taken into account those extra difficulties. So you need to modify your thought about what the meaning of that result is in that light.

I might just skip to that result. What this graph has shown is the experiment of 100 megawatts in hedging from New South Wales into Victoria, from Murray-Tumut, the Murray Tumut region in the case of Snowy Hydro, into Vic or New South Wales, remembering it's split fifty-fifty in this case, or alternatively from Vic into New South Wales.

So the sort of lavender bar is the base case; the maroon one is the Snowy Hydro proposal and the split region option. People have taken a lot of heart in the reduction, split region options. As I've said, keep in mind the limitations of that model. Obviously, this is something that will have to be addressed if, as I suggest, it becomes front and centre with the Macquarie Generation new rule change proposal if it's accepted. But, as you can see here, there's most certainly a reduction in risk as compared to the base case for Snowy Hydro. The split region option shows more reduction in risk and similarly in the case of Vic to New South Wales. But in the case of - and this is absolutely logical - Murray-Tumut into Vic-New South Wales, given that their generation is priced at those nodes, obviously it's the least risky position of all. Unsurprisingly, you might see that Snowy Hydro prefers its options and that Vic and New South Wales prefer the split region options.

That was pretty much what I was going to say, John.

CHAIRMAN: Okay, can you stay here. I might just use that and direct traffic. As Liza said, we looked to a range of information, the submissions, analytical work and modelling, to inform our judgment, but we wanted to spend a fair bit of time today on the modelling background so that you would understand the context in which that was done. So that was quite a long presentation. Now there's opportunity for questions of Danny and also questions of Liza or myself on the approach. So over to you to raise any issues you'd like to with Danny on the material he's just presented.

MR WATERWORTH: I'm just wondering - with hedging normally the

expected pay-off is always going to equal the set-up cost, so you have never have an expected return if the market is operating efficiency and correctly and everything has been correctly prices. I'm just wondering how you went about creating an efficient frontier when you shouldn't ever have an expected return from an instrument; it should only ever have volatility around it in the pay-off.

MR STEINKE: Tony Steinke, Frontier Economics. I was responsible for a lot of the modelling undertaken in the analysis. The experiment we've done in this case was a simple experiment, as Danny mentioned, and we were focused on the lowest risk, or just the risk minimising portfolio. Whilst the model does produce a frontier, we assume that the settlement residue units were available at their expected value, but it wouldn't have really mattered in this case what we assumed about the costs of those units, we were really just looking at their impact on the risk of your portfolio, and to that extent whether we assumed a kind of break-even cost or there's a premium to them or whatever, it wouldn't change the risk results we came up with.

MR WATERWORTH: So basically did you run your model to get the expected pay-off of an SRA and then use that as the hedge instrument? I would presume that if you were expected a gatekeeper generator to have very little flow on the interconnector, you'd expect the SRA to pay off.

CHAIRMAN: Can I just intrude. We do want you to understand the details of the modelling approach, and I think perhaps quite technical questions you could take up separately. We do want to get to the implications of this approach for our reasoning and our decision, so I don't want to get into too much technical debate. So could we move on to perhaps more general questions and you can take that up with Tony at your leisure.

MR WATERWORTH: Yes, sure.

CHAIRMAN: Other questions, please?

MR CARSTAIRS: Jamie Carstairs from Firecone. I wanted to ask a question of Danny about the modelling. My impression is that your portfolio model determines the optimal way of managing risk for a particular market participant and the degree of contracting. There might also be a question whether with an increased number of regions you've got an increase in transaction costs in the contract market, so there would be a small numbers problem of price discovery, higher margins and so on. Could your modelling tool be used to address what's really a policy question about the impact of alternative regional structures on change in transaction costs in the market?

MR PRICE: Not without these limitations that I talked about being rectified, which we're working on now, looking at the risk characteristics of these sorts

of things that we haven't accounted for. Once we've completed that, most certainly, yes.

MR SKINNER: Thanks, Danny. I'm just intrigued that of course the original 1997 decision by NEMMCO to create the Snowy region was entirely based on the efficiency benefits that were expected through the use of dynamic loss factors rather than anything to do with constraints. I was just wondering if you could reflect for us on perhaps that decision was made 10 years ago and the differences that you might be seeing with respect to that issue with these current analyses. Ben Skinner, TRUenergy.

MR PRICE: I'm familiar with that. I guess the big difference between what we've done and what NEMMCO did then was that NEMMCO, from recollection, was more a sort of economic dispatch type measure, and the big difference between what we've done and they've done is that ours is not just based on economic dispatch; it's trying to sort of capture the incentive properties created by these rule arrangements. That's the big distinction and obviously the big challenge.

CHAIRMAN: Russell, I think you've got a question.

MR SKELTON: Just to clarify, you made the comment that using that graph that we've all loved to look at about the shifts in risk is misleading. Can you just clarify, to make sure I get the message, in what respects you're taking that to literally. My name is Russell Skelton from Macquarie Generation.

MR PRICE: The key problem here, Russell, is that there's a whole bunch of risks that we haven't accounted for. We've broadly defined it as execution risk, and that captures a lot of things in that sort of term, and I note people have said, "Well, there's no executive risk because you can buy pairs or any combinations of IRSRs." That's true, we understood that, but it really relates the additional complexity and risk of (1) being able to predict the appropriate price and (2) being able to secure the quantity so you can achieve that risk position. It becomes harder and harder every time you have to go through an additional region to do that, which is why nodally-price markets are so illiquid generally. It's because people can't predict once you go through to our three regions.

It would be like, for example, South Australian generators selling into New South Wales or Queensland into Victoria. I'm sure it happens, and I know that it does happen, but it's actually pretty rare, because of the difficulties of trying to predict the price differences and secure the appropriate pairs quantities of IRSRs.

CHAIRMAN: That is an issue that will crop up during the discussion for the

rest of the day. It's been raised by others. It will be germane for us to understand and analyse in the context of the Macquarie Generation proposal. It will be a relevant consideration for our congestion management review as well. So this issue is a current issue which we need to understand and analyse.

MR SKELTON: Am I allowed to ask one other dumb question? The variance on the graph is dollars per megawatt hour. What's varying? What's the variance? Is it the expected variations in profits of generation under the megawatts?

MR STEINKE: If you had a portfolio and all you had in your portfolio was a 100-megawatt generator say in New South Wales and a 100-megawatt hedge position in Victoria, it's measuring the variance of the net kind of pay-off for that portfolio. So you earn spot generation in New South Wales, you have to make difference payments on your contract position in Victoria. You can buy a certain volume of SRAs, but it's measuring the variance per megawatt for that portfolio.

DR MACAULAY: Charlie Macaulay, NEMMCO. Danny, you indicated the dispatch costs savings, the underlying economic benefits out of the order of about 1.8 to 3.5 million per year. Have you any thought of what the cost of actually implementing this change would be across the NEM? We've had a look at what it would actually take to change our systems. It ain't trivial, and every participant's systems will have to change to actually accommodate this. That could cost many, many millions of dollars - just a comment.

MR PRICE: I think that's something that the commission would like to hear. Similarly, I think the same would apply for the split region option presumably as well.

DR MACAULAY: Of any change.

MR PRICE: Yes.

MS CARVER: I just make the obvious point, of course, Charlie, that we're not just concerned with dispatch efficiency.

DR MACAULAY: I'm aware of that.

MS CARVER: We're concerned with regulatory design and inter-regional trading.

DR MACAULAY: But don't underestimate the cost - - -

MR PRICE: No, I wouldn't be surprised.

MR SMITH: Dave Smith from Creative Energy Consulting. According to your modelling results, just looking at the drafts in the draft determination, of the three options you looked at, the split region option comes out best against dispatch efficiency, best against price outcomes and best against inter-regional trading risks. Is it reasonable for the reader to conclude that's the best option, and if not, why not?

MR PRICE: Sorry, that Snowy Hydro is the best option?

MR SMITH: That the split region comes out best?

MR PRICE: No, I don't think it's reasonable to conclude that at all. In fact, as I've been saying the aspect, for example, on risk - and we made it pretty plain at I think the end of page 6 in the report that it's ambiguous in terms of whether it's better or worse, and that could outweigh any advantage it might have, slight as it is, on the production cost savings. I think that's probably the key determining factor as between split region and Snowy Hydro at least in respect of those narrow economic efficiency measures. As Liza has just reiterated, there are other aspects to their considerations in terms of the criteria they use to decide the most appropriate. So without a complete analysis of the split region, at least the economic efficiency aspects, I think it's unclear.

MS CARVER: I'd also like to make the point that if people assumed that we made decisions solely on the basis of modelling results, they'd be very wrong, and it would be unwise if that was the course we were to take. For some of the reasons I think Danny in the first part of his presentation started to hint at, the complexity of these modelling exercises, their dependence on the assumptions, the time and expense involved in undertaking them - they are necessarily partial, indicative but partial analysis. We certainly give the modelling results great weight, but they're far from determinative in what decision we ultimately reach.

MR PRICE: Partial in the sense of incomplete though.

CHAIRMAN: Thanks, Liza. Any further questions or comments? If there are not, let's break for morning tea. We'll take 15 minutes and be back at 11.15 for the presentations. Thank you.

ADJOURNED **[10.56 am]**

RESUMED **[11.21 am]**

CHAIRMAN: Ladies and gentlemen, I think we'll get under way. A good way to get people to return to the room is to start the presentation, so we are

about to do that. Can I just introduce this session. We have five presentations. We've also asked the Energy Users Association of Australia to present and they were unable to do so, so we don't have an end user perspective, which we intended to have. This session we'll have the presentations. They'll take about 10 to 15 minutes each. Liza and I will have any quick questions or clarifications, and we'll hold your questions of the presentations until the last session. The first presentation is Roger Whitby, executive officer, trading from Snowy Hydro.

MR WHITBY: Thanks, John. Firstly, thanks to the commission for the opportunity to talk on this subject. No surprise really - Snowy Hydro welcomes the draft determination and endorses it. From our perspective the Snowy region has been inconsistent with the market design since the market start, and probably evidenced by the people here today, I think there is a general consensus there is a significant problem.

There have been to date numerous short-term patches. First of all, we had the Snowy CSP-CSE trial for Tumut; we had at one stage reorientation of constraints, at least in a southerly direction; and more recently we've had the netting off proposal of the residues of the Southern Generators' rule. Increasingly we've had patches upon patches.

Snowy believes that the commission has correctly framed the short-term issues versus the longer-term issues. Ourselves, Southern Generators and the commission all acknowledge that the Southern Generators' rule was a short-term fix. In assessing longer-term proposals such as the regional boundary change, in our view it's important to clearly compare it to the alternative, and that is not against the short-term patches.

Our view is that continual reliance on short-term patches will not work, and I'll talk about that more in the next slide, but significantly, following the Southern Generators' rule implementation, we see significant problems in other locations, in south-eastern South Australia, in the Latrobe Valley, Hydro Tassie and for hedging for Murray. The most urgent and pressing problem, which I'll talk about in the next slide, is the need for a CSP price for the Latrobe Valley.

Patches are unsustainable going forward, as I'll get to. Relying upon patched upon patches in our view creates substantial regulatory uncertainty. That's not to say that there's not a time and a place for short-term fixes. Clearly, there are in defined and limited circumstances. However, when you start to get patch upon patch, it's simply increasing regulatory uncertainty for all.

Furthermore, the Snowy region is basically a central element of market design. Currently it is one of the six regions and, to be quite frank, it's got a completely different approach to sport market pricing and has a completely different

approach to contract market. By that I mean the treatment of residues.

In short, we believe abolition of the Snowy region will result in efficiency improvements and is in the long-term interests of consumers. We support the modelling that the commission has done. We believe the methodology was well-articulated and articulated in advance. It is absolutely consistent, from what we can see, with the modelling that was done on the Southern Generators. It's consistent with the modelling, albeit it much less sophisticated, that we've done ourselves. Importantly, previous to this date I haven't heard any grumblings on the modelling, and I think at the end of the day it needs to be recognised that this is a regulatory test which is based on efficiency. It should not be a popularity vote.

In our view the abolition of the Snowy region needs to be done as soon as possible. Why is that? The very first occasions that the Southern Generators' rule proposal came into effect, when there was a binding constraint with northerly flows between Murray and Tumut, some very unusual things happened. I think from memory that was on 12 January. Just a reminder for the audience what the circumstances were: high demand, high price in New South Wales; relatively low demand in Victoria. There was a simultaneous binding of the Murray-Tumut constraint and the South Morang constraint.

The net effect of the constraint equations is that the Victorian price is approximately defined by constraint equations which boil down to 10 per cent New South Wales price, approximately 40 per cent Murray price and approximately 40 per cent Tasmanian price. Effectively in those circumstances, given the price in New South Wales and the price in Tasmania, Murray dials in a price for Victoria. In the circumstances, the Victorian generators don't directly influence the price but they settle against a very high Victorian price as a result of that bidding arrangement.

No surprise - they do what any self-respecting commercial generator will do against a high price: they maximise volume, bid to minus $1000. However, we have a situation where there is far more generation than there is demand in Victoria, so it starts to roll back the interconnectors into South Australia and back off Basslink.

A few interesting things flow out of that. Firstly, negative residues were generated on the Vic to SA link, a direct result of Murray-Tumut constraint. In fact, we've subsequently seen on 30 January NEMMCO intervened in the market to prevent those negative residues between Vic and South Australia, a direct result of the Southern Generators' proposal. We were told that we wouldn't see intervention under the Southern Generators.

The result of the bidding war: we've actually seen reduced interconnector

flows. With that export of high-price generation from Victoria, obviously that has implications in South Australia and Tasmania. A bidding war in the circumstances erupts between the South Australian generators and Hydro Tassie. What we've seen at least to date is in the circumstances Hydro Tassie has been prepared to bid to minus $1000 and actually posted minus $1000 prices. To date we haven't seen a situation where the South Australians have been prepared to follow suit, so consequently Hydro Tassie wins the bidding war.

But if you look at the South Morang constraint, exports from Basslink are much less effective in supporting the interconnector flow from Victoria to Snowy than exports to Victoria are, hence the interconnector flow from Victoria to Snowy reduces. We were told the Southern Generators' rule proposal would increase exports from Victoria in the circumstances. It is pretty interesting bidding behaviour in the circumstances. I guess you can make your own judgment how efficient it is and how efficient the prices are, but I'll make an observation in a second.

The Southern Generators in relation to the Southern Generators' rule proposal made much of the issue of mispricing for Murray. When that constraint binds, under our counterproposal there would have been approximately a 20 per cent mispricing of Murray. We had, as everybody is aware, bid at approximately zero dollars and been settled against zero dollars for Murray output.

Let me tell you, though, that pales into insignificance compared to what's happening in the Latrobe Valley. In the Latrobe Valley the generators there, including ourselves on our Valley power plant, are bidding minus $1000 while getting paid many thousands of dollars at the same time. When I compare what's happening with our Murray plant versus what's happening with the Valley power plant, the mispricing of Murray is absolutely orders of magnitude less, and I must say even within our own portfolio is causing serious inefficiency issues in terms of how we utilise our own resources.

We were told that the Southern Generators would increase hedging ability. Let me tell you, I don't believe that's been the case. Certainly for ourselves, it's dramatically reduced our ability to hedge. What we've seen is the problem has simply been relocated away from the Snowy region, as a direct result, to other locations. In short, Snowy believes implementation of our proposal, that is the regional boundary, needs to be achieved before next summer.

I'll draw an interesting point here. To date we haven't seen an extreme demand day in New South Wales this summer on a working week day. If we see that occurrence going forward in combination with relatively low demand in Victoria, I have to say it's going to be very, very interesting. I think also there's a few other things that could happen. If we have significantly changed

positions in South Australia contractually, it could be that the South Australians would be prepared to win that bidding war with Hydro Tassie, in which case we may - I speculate - potentially see minus $1000 prices in South Australia. It could be going forward that Jeeralang in the Latrobe Valley decides to run to capture some of those high prices and itself bids in at minus $1000. In those circumstances it may not be possible for Hydro Tassie to export against those prices. It actually might be forced to import those high prices.

I want to touch briefly on what we see as the advantages of abolishing the Snowy region. Abolition of the Snowy region won't be a perfect fix, but it will significantly reduce all the problems. The remaining problems in our view will be second order and, importantly, they'll be second order to the similar sorts of problems that exist in numerous other locations around the NEM. That then becomes a question, in our view, of whether the costs and benefits of resolving those issues apply more generally.

Under system normal conditions it removes negative residues full stop. It removes the need for NEMMCO intervention full stop. It introduced competitive discipline on all generators - in New South Wales, on the Snowy generators, on the Victorian generators. In our view it significantly increases the transparency and firmness of inter-regional trading. Inter-regional hedging will be much firmer than what's happening at present. With the recent transmission upgrades in a northerly direction, SRAs under the Snowy proposal, system normal, will be 100 per cent firm. In a southerly direction, they'll be at least 60 per cent firm. You compare that with what's happening at the moment, particularly with respect to Snowy into New South Wales, they'll be much, much firmer. Importantly, as I said before, they'll be firmer than other links around the NEM.

I believe the solution is consistent with the policy settings that we have with respect to the current regional market design. It does in our view lay the foundation for further broad based reforms on the regional structure and congestion management if deemed appropriate, and I acknowledge the process, which obviously has been spoken about today, that's examining that more general issue. In short, we believe it will provide more competitive and more efficient outcomes.

There does seem to be a little bit of confusion - or uncertainty, should I say - about the status of the MacGen proposal, so I'll address my comments a little bit more broadly considering the counterfactual and split region proposal. I think in general it applies both to the MacGen proposal and the split region counterfactual. We do not believe that is appropriate. At least the MacGen proposal materially disrupts the contract market. It does disrupt retail load in those locations. It would be a material trigger for instant market disruption.

On the other hand, the Snowy proposal we don't believe is material in that regard. In fact, the recent ATMA electricity committee believes the change to the Snowy region boundary wouldn't be a material trigger for contract disruption, albeit it, though, it may be technically one.

When I sit back and reflect what the split region proposal is, it's fundamentally applying a nodally-priced Murray and a nodally-priced Tumut in the regional market design without any sort of contractual or financial transmission right. In their own way, the Victorian generators and the MacGen proposal seek to impose that on Snowy, yet if you look at the positioning of those particular generators more generally with respect to the recent MCE review of the regional structure, they fought significantly hard against full nodal pricing. So you have to question why they want full nodal pricing for Snowy without any contractual protection, yet presumably they don't want it for themselves. I put it to you, the audience, and particularly the commission, to consider what the motivation is, but I suspect it's more about the contract market than the spot market.

In terms of the MacGen proposal or the Eraring proposal, it does pre-empt real network upgrades that are potentially on the cards. We've seen the recent upgrade of the Tumut to New South Wales link. Tumut is now fully firmly in New South Wales, in fact more firmly arguably in New South Wales than the western ring generators and potentially the Hunter Valley generators. The split region proposal materially increases the complexity of trading between Sydney and Melbourne.

Now, we've heard the modelling, given the assumption set that Danny went through, about the theoretical results. I want to talk about the practical results here. Traders trading between those locations will have to contend with two generation-rich regions under the control of Snowy, with three instruments at least between them, in a very imperfectly informed market with a commercially motivated Snowy which is very flexible in between. That has to be a recipe for very significant transaction costs in the contract and I think needs to be examined thoroughly if that proposal is to be considered seriously.

Quite simply, it doesn't remove the incentives for Tumut or, for that matter, Murray in order to align their prices to the neighbouring regions' prices. The net result of that is reduced competition in the neighbouring regions. As I mentioned before, the boundaries are technically incorrect. They're located across network constraints that can't constrain in some instances - in our view inadequate unnecessary and a less competitive long-term solution.

I'll basically skip over this, John, but just a very quick explanation of Guthega and Jindabyne. I'll detail this in our submission, of course. Jindabyne Pumps and Guthega generation are physically decoupled. Fundamentally Jindabyne

Pumps can only be fully supplied from the Murray switching station. On the other hand, Guthega can only effectively supply south-east New South Wales, and I'll define what I mean by that. A closed loop can be formed, we believe, if you draw the boundary basically at the Guthega 132 KV bus section isolator, but I'll go into that in detail.

CHAIRMAN: Thanks, Roger. We'll move straight to the next presentation, Russell Skelton from Macquarie Generation, and Russell might touch upon the submission they sent to us last evening.

MR SKELTON: Good morning and thank you for the opportunity to probably more briefly talk to you about our views on the draft determination that the AEMC has published. Firstly, I'd like to make some general observations about what the AEMC has done. From our perspective, we're very pleased with the way the AEMC has undertaken this whole process. It's much better than some of the processes that we've been exposed to as a market before, and I think the AEMC needs to be complimented for doing that. They've done the work on the basis of some detailed assessment, and it's quantitative to the extent possible. It's forward looking, tries to incorporate data that most of us wouldn't have available to us as a result of getting the NEMMCO changes to the loss factors, and I think most importantly, it looks at what happens when people's incentives are changed as a result of the changed environment. So our view is that we're very pleased to see that happen.

I would also like to endorse Roger's comments on the business as usual case that's been chosen. Our view is that that's the only appropriate business as usual choice to be made, because clearly the other options are temporary. The only other observation I'd make in general terms is that maybe we should have thought a little more of what would happen when we developed a collective enthusiasm to move away from option 1 constraint equations to option 4.

Just in terms of the modelling, I think, as Danny has shown the numbers, there are modest improvements under each option. It at least gives you some confidence that the direction that the AEMC is proposing we move into is sensible, and the differences between the options are small in terms of the productive efficiency movements. The benefits are also potentially on that basis small, but I think it at least gives some comfort that directionally it's all fairly sensible.

The Macquarie Generation proposal: it's probably worth our explaining what we are trying to achieve. The view that we've taken is that the split region option that was examined as a sort of a comparator by the AEMC and in the modelling in our view is effectively equivalent in terms of the likely productive efficiency effects. Therefore we didn't think there was any merit in compelling the AEMC and someone to pay for whatever additional modelling would be

involved in order to learn potentially very little additional new and useful information, particularly given the direction of the efficiency changes. So what we thought we would do is change our proposal to match the split region proposal in an attempt to not require the AEMC to undertake all that modelling potentially unnecessarily.

I'm not sure that you should conclude just yet that MacGen has been converted to the wonders of nodal pricing, although some people may be wondering, but our view is that we are trying to examine what's the best range of solutions available to a particularly problem. I think Roger has made the point correctly that Snowy region, by the way it is put together, is a bit unique, and we're trying to find what we think is the most useful solution to a particular problem.

I agree that the key issue really between separating the split region proposal, or our proposal, and the Snowy proposal is all to do with inter-regional trade. Just to reinforce what Roger was saying, I think I agree to just about everything Roger said, except for a few important differences probably. It's really about the merits of trading across one regional boundary versus three, and I guess the key question really is the trade-offs. The trade-off as I see it is the risks of doing that, which appear to be from the modelling maybe better, but there are obviously transaction costs and risks associated with trying to put those inter-regional hedges in place.

My view is that at this point in time that's a useful thing for us to collectively discuss and debate, and we're very happy if the conclusion is that the answer is that the trade-offs fall in favour of the Snowy proposal. We're not necessarily here to say, "Let's kill the Snowy proposal." We're saying, "But let's examine that on its merits. In our view that's the key issue."

We've probably been misled, I think, Danny, by reading your - that's because we're a bit slower than you are. We've tried to describe what we believed was a way of thinking about that variance of inter-regional risk, but I think we've probably misunderstood it. We were basically saying that there's a fair bit of difference between someone's willingness to contract across those three regions if the variance - if say we went to three standard deviations, a very conservative generator like Macquarie Generation, then there's a fair bit of money potentially available in terms of us moving to the three-region proposal. But I think the thing that that doesn't take into account - and I think Danny has appropriately pointed it out - is that there are difficult to quantify and understand transaction costs and risks associated with our ability to achieve that, and I think, as Roger points out in his comments that your modelling assumed perfect foresight and the ability to get those hedges there, they're assumptions that we do need to be examined.

In looking at the modelling we acknowledge that, as Danny has pointed out, he

doesn't want to be modelling this problem for the next three and so he'd probably like to limit the range of scenarios and assumptions that we need to make, but in our view there's potential merit in examining at least three other plausible assumptions. One is that we note that some of the strategic bidding of some of the Victorian gas plant was limited in the price that it was prepared to do, and this might be worth examining.

We think it's probably worth examining the prospect of what would happen if Snowy was prepared to contract more. The maximum was 80 per cent, I think, but that's worth thinking about. The other one potentially, in terms of the effect of the efficiency shifts, is that we're aware that the modelling assumes perfect clamping by NEMMCO - in other words, they clamp at zero megawatts - and our observation is that that's not what actually happens. They actually clamp at a different number, and it might be worth seeing whether that's worth some further examination in the modelling.

Our view is not that we think it's going to reveal something very different, but it may help better differentiate between the choices that we have. So that's the reason we're suggesting some of that.

Again we're agreeing with Roger: the Snowy clearly needs a long-term solution and we absolutely support the removal of - we don't call them fixes; we call them bandaids. I think the productive efficiency shifts are not terribly significant, but at least they're all in the right direction. However, the price effects that were observed are material.

I guess, though, we must conclude from our perspective that the prospects of further regional boundary changes, you'd have to say, are fairly limited given the materiality of the issues. As Danny has pointed out, it's unlikely that you'll be able to discover huge improvements in efficiency, and I note with interest this is the only regional boundary that people actually think needs to get sorted. Everyone else argues about all the others. We all agree on this one, and with the one we agree one there's no much up for grabs.

Our final comment is: I'm not sure how much effort we need to expend in terms of considering a major congestion management review to remove congestion where, when you discover that it's there and you plan to remove it, nothing much happens. But I guess you've got to do what you've got to do. Thank you.

CHAIRMAN: Thank you very much, Russell. Anything to raise with Russell? Okay, let's keep moving through these presentations. Our next one is Roger Oakley, manager market development from NEMMCO, speaking for the Southern Generators group.

MR OAKLEY: Thanks for the opportunity to present. As John mentioned, I'm present on behalf of a group of generators whose logos appear on the bottom of the slides. Also, thank you, Russell, for your lead-in. We see the inter-regional trading issue as a significant issue, and that's what we're going to focus on in this presentation. But before that, we have a number of concerns with the draft determination, far more than can be covered in this brief presentation, but I just want to run through them quickly.

Lessons learned: the Snowy trial has shown that many of the problems seen in the business as usual case can be fixed cheaply and effectively with CSPs and the Southern Generators' rule change. The business as usual case, or the base case, is a straw man. It's not a true counterfactual, as it doesn't reflect the current situation. It appears that the current derogation has been dismissed on the basis of some sort of technicality.

Importantly, region change is not a rule change. In our view it is bad regulatory practice to effect region change through the rule change process. The original NEM design has included a region change process, the MCE requires a region change process, hence the region boundary rule change process. Effecting region change through a rule change appears to limit the ability you can consider. It doesn't allow you to consider all your available options properly.

What is the hurry in implementing the region change? We had that explained earlier, but in our view the Snowy trial can continue as long as it is needed. Nobody except Snowy has objected to extensions to the trial to date, and I'd like to point out that a lot of the angst expressed in the submissions on this draft rule determination occurred prior to the implementation of the Southern Generators rule change. So largely we think we have a window of opportunity to consider the boundary change process correctly.

But even leaving aside these process concerns, Snowy abolition is not justified. All you have to do is look at the graphs in the draft determination and compare the Snowy abolition with the split region alternatives. I've listed there under the heading Factual Errors where the modelling shows in all cases dispatch efficiency, prices and inter-regional trading risks. The split region is better than the Snowy region boundary change.

From that view the draft determination appears to be at odds with the consultants' analysis. The Frontier modelling in our view does not support abolition of the Snowy region. Darryl Biggar's analysis is consistent with the Frontier modelling; ie the split region is better than the Snowy proposal, it's better than the base case.

For the remainder of the presentation we're going to focus on one issue where

we think arguments against the Snowy abolition are straightforward and unassailable; that is, the impact on the inter-regional trading and hedging through the SRA process. The first of the key points being made here is that there are three material congestion locations between Sydney and Melbourne - north of Tumut, Tumut and Murray, and south of Murray.

The key determinant for inter-regional hedging is the number of notional interconnectors between Melbourne and Sydney. The status quo is two; Snowy gives one; the split region gives three. Secondly, because of the influence of Snowy Hydro output, on which constraint will bind, we argue that for effective hedging through the SRA - ie, to firm up the SRA instruments - you need one interconnector for each of the three main constraint sets.

Lastly, the point we're going to make is having to purchase three SRAs for interconnectors versus one or two interconnectors does not imply any material impact on transaction costs for inter-regional trading. The AEMC is wrong in considering this is a material issue, let alone a dominant consideration.

These conclusions are all predicated on there being no CSP-CSCs in the region, since this appears to be the assumption underlying the AEMC's analysis. Whether or not this is an appropriate assumption will be covered in our submission but is not discussed in this presentation. As we know from the Snowy trial, CSP-CSCs are an alternative approach to firming up the SRA instruments.

In this diagram we have simplified the Sydney to Melbourne interconnector by removing the Snowy loop and making Melbourne to Sydney linear. We've also assumed the capacity of individual circuits is firmed. So any hedging difficulties arise from the financial design of the NEM SRA, not from physical problems, and this is similar to the Darryl Biggar approach.

First we assume that the only material constraint is Tumut to Murray. With these assumptions, a single interconnector is sufficient to provide firm inter regional hedging. So you can see from the diagram there if you have only one constraint, which coincides with the regional boundary, prices only diverge when the interconnector flow is 1350 megawatts or greater, in this example. Therefore the inter-regional settlement residue is 1350 times the price difference between Melbourne and Sydney. If NEM issues 1350 SRA units, each unit provides one megawatt of inter-regional hedge.

If constraints were that simple, then of course a single interconnector would be the preferred approach. However, we don't have a single constraint. We know that constraints north of Tumut are also material. Here we assume that there is a single linear constraint north of Tumut of 800 megawatts. Of course, again these constraints are also complex and involve loop flows, but we've just

simplified it for the purposes of this analysis.

So prices can now diverge with interconnector flows as low as 800 megawatts. In this case, if you assume zero output at Tumut and zero output at Murray, the flow in the interconnector is reduced to 800 megawatts. That's the limit between Sydney and Tumut, so each SRA unit now only hedges .6 of a megawatt. So, depending on the output of Tumut, one SRA unit may hedge anywhere between .6 of a megawatt and one megawatt. That's what you'd call a non-firm hedge, or the firmness of the hedge has been reduced.

A third constraint: we also know that we have constraints south of Murray, which with high Murray output, 1500 megawatts, can bind when inter-regional flows are between 400 and 1350 megawatts. So in the diagram there, if Murray is producing 1500 megawatts, we have a 1900 megawatts constraint into Melbourne, and the flow across the interconnector will be 400 megawatts. So now each SRA unit hedges only .3 of a megawatt, so there's further lack of firmness in the hedge available.

These are purely mechanical outcomes resulting from the region definition and the physical capacity of the network. It does not require any behavioural assumptions, particularly on how generators will behave when they are mispriced, ie constrained on or off in dispatch. Generally behavioural impacts will exacerbate the problem by increasing the impact on inter-regional constraints.

If you had three constraints and three interconnectors, we would have three separate inter-regional settlement residue streams and three SRA instruments corresponding to each of the three constraints. Again, NEMMCO will calibrate the SRA units to mean that each gives a megawatt hedge against the corresponding constraint. In the first constraint between Sydney and Tumut, there will be 800 units issued; the second one, between Tumut and Murray, 1350 units will be measured to match the 1350 megawatts; and 1900 units issued in the constraint between Murray and Melbourne.

Most players except Snowy Hydro will seek to hedge Melbourne to Sydney and will be indifferent to the Murray or Tumut price outcomes. They can do this by buying one unit of all three SRA instruments, or a strip of SRAs. This combination gives a firm Melbourne-Sydney hedge irrespective of which constraint binds and irrespective of Snowy Hydro output. So you can see that the split region option allows you to firm up the inter-regional hedge.

Without looking at the detail of the Frontier modelling, their results seem to support the view that three interconnectors allow a much better inter-regional hedging arrangement compared to the two interconnector or single interconnector alternatives. Notwithstanding the unreliability of the Frontier

model, our analysis shows that it's consistent with the Frontier modelling in that the split region option gives you the lowest risk, and that's what the purchase of a strip of three SRAs will give you too. So it's consistent.

In relation to the previous slide, I should say there may be several contributing factors to the lower risk levels, as seen in the data produced by Frontier and the improved technical firmness of the SRAs may only be one of these. Sorry, I need to go back. So, in buying a strip of SRAs, the execution risk which has been raised is an issue in previous presentations.

In the draft determination the AEMC accepts that conceptually more interconnectors gives improved hedging, but considers that in an imperfect world these theoretical benefits are more than likely offset by risks and costs arising from higher execution risk, increased pricing complexity and reduced trading liquidity.

The execution risk is removed in the SRA by the link bidding facility incorporated in the NEMMCO auction process. You can just place a bid for a strip of units between Sydney and Melbourne and name the aggregate price you want to pay. The execution risk or complexity is no different from that for a single interconnector. So you simply purchase a strip of SRAs by placing a single linked bid, two units at a price, P. Depending on the clearing price, you either receive a strip or you receive nothing. Many bidders do this already with the current regions, for a strip of SRAs, without trouble. Execution costs and risks are the same for a single interconnector or two interconnectors.

Pricing complexity: with a linked bid you only need to price Sydney-Melbourne price separation, the same as with a single interconnector. Whether one, two or three interconnectors, a bidder just needs to decide what maximum price to pay for an SRA strip. The bidder doesn't need to worry about the pricing of individual components; he just needs to analyse price differentials between Sydney and Melbourne. This is the case whether there are one, two or three interconnectors. So in our view complexity is not an issue.

Conclusions: in summary, as far as SRA firmness is concerned, three interconnectors are better than two and are better than one. The AEMC's modelling supports this conclusion, as it shows the split region gives the lowest trading risks. The AEMC rejection of the split region because of higher transaction costs ignored the linked bidding facility.

Abolishing the Snowy region implies increased non-firmness of SRA instruments and therefore increased inter-regional trading risks compared with either the current regions or the split region option. So far as inter-regional trading is concerned, the abolition of the Snowy region is inconsistent with the

NEM objective on that basis.

Where does this leave us? If there really were no mechanisms for managing congestion apart from region change, the split region option with three interconnectors would be best for inter-regional trading, not Snowy abolition. However, alternatives do exist, and we have conceptual and empirical understanding of them, for example, through the Snowy trial. What we don't yet know is the best combination of region change and these alternatives. We certainly don't know, and neither can the AEMC know, whether Snowy abolition is part of this best combination, and we won't know until the congestion management review is complete, by which time we might find out that the AEMC's hasty decision to abolish Snowy was a mistake.

There is no hurry. The current arrangements operate satisfactorily. We can wait a few months and make a considered and optimal decision rather than a hasty decision which is likely to be wrong. That is the end of the presentation. I got there more quickly than I thought.

CHAIRMAN: Roger, thanks very much for that. You made a couple of observations of our process, and I think we've dealt with those in what Liza in particular has said, so I won't address those.

MS CARVER: There's one additional thing I would say. The question of the incidence or materiality of constraints binding north and south of Snowy was actually something in our deliberations and analysis we did focus on at some length, because we were keenly aware, and really the split region counterfactual required us to interrogate that question pretty thorough. I think it's fair to say that the modelling of the Snowy proposal indicated that the incidence of those constraints binding north and south of Snowy was not material. What I think the AEMC might do is, after today, consider the way in which we may make more data available of the results of that modelling analysis, because obviously that would be crucial.

If the modelling analysis is correct, then it suggests your concern perhaps is a largely theoretical one, Roger. If the modelling is wrong, then by making available more of the results, others can try to replicate it and test the results and we will have a more informed process as a consequence. But don't be mistaken: We spent a great deal of time on, and I think we drove NEMMCO to distraction with requests and information requests about, the operation of constraints and how they operated so that we were able to turn our minds to that question.

MR OAKLEY: I would have to disagree. The fact that a constraint can occur, whether it's occurred or not in the past - there is a constraint and it does bind. If you don't address it, there is uncertainty. There's uncertainty in a

participant's mind as to what is going to happen, and if there's no facility for managing that, participants will say, "I can see there's a risk there. That constraint might bind, and it's more likely to bind in the future than the past," and so they'll say, "Right, I won't take the risk." So you're increasing the risk of inter-regional hedging. So I don't think the history is right.

MS CARVER: I wasn't referring to the history. I was talking about the modelling results which look to the future incidence of those constraints binding in the event that the Snowy proposal is implemented.

MR OAKLEY: As Danny pointed out, his modelling results aren't, if you like, comprehensive and they're not going to capture all behavioural situations.

MS CARVER: Roger, we're in complete agreement. That's why I made the observation that we will now look to the extent to which more of that information can be made available so that interested parties can undertake their own analysis to potentially put different perspectives to us.

MR OAKLEY: All right, thank you.

CHAIRMAN: Thank you, Roger. We very much look forward to the Southern Generators group's detailed submission. I would also just emphasise that we haven't rejected the split region. It wasn't formally under consideration; it was a point of reference. But your submission on these matters we would very much welcome.

Our next presentation is from Origin. Con van Kemenade is going to present for Origin. Thank you.

MR VAN KEMENADE: Thank you very much for giving me this opportunity to speak. It was unexpected.

MS CARVER: He's the only retailer prepared to turn up with all these generators today.

MR VAN KEMENADE: Exactly, so I'll make a good fist of it. Origin has a geographically dispersed portfolio when generation and retail load spread across the regions of the NEM. Importantly, however, we have significant retail load in regions other than those in which we have generation. It is therefore critical for us that the financial costs of trading are therefore minimised. We believe the abolition of the Snowy region will facilitate this outcome by removing unnecessary inter-regional basis risk, improving dispatch efficiency, and increasing competition in the spot and contract markets. We will hope that this will deliver value to our customers, and indeed we think this will. I will discuss each of these issues briefly in turn.

As a general rule Origin does not support regional boundary change, because it imposes substantial disruption to contract markets and systems and creates uncertainty with regard to future market prices for contracts. However, changing the boundaries in the Snowy region is an exception, in our view, because having almost 400 megawatts of supply owned by one participant in its own reason with no demand appears to make little sense to us. We think this significantly enhances the scope for price volatility and distortion and adds unnecessary basis risk.

The removal of this region would mean substantial additional generation in our contract directly with retailers in Victoria and New South Wales without this basis risk. This should increase the liquidity of the contract market as well as exert competitive pressure on wholesale pool and contract prices. In addition, participants in New South Wales and Victoria - and I note this is a bone of some contention - would also be able to trade directly with one another without needing to further manage the basis risk of two additional links between them. I note here that uncertainty is very improvement for participants.

So, even though in a theoretical sense you might be able to perfectly hedge this risk, in the real world, where it's very hard to predict the interactions on the transmission system, this will be much more difficult. So simplicity is important for us.

Thus we think inter-regional trade and competition will be encouraged with the abolition of the Snowy region. We also think that regional prices, reflecting more liquid trade around them, are likely to be less volatile and therefore more predictable. In this regard we support a regional structure defined by NEM states, as this provides the best balance between broad locational signals and the price stability and predictability we require for a liquid contract market and to encourage future investment.

We support the findings of the AEMC that the removal of the Snowy region will improve the efficiency of dispatch relative to the base case scenario, since the Murray-Tumut constraint will now be reflected by more efficient price signals on either side of that constraint. It is therefore likely - and the modelling shows this - that this will translate into reduced duration and frequency of the Murray-Tumut constraint. As well as that, the modelling also snows that Snowy Hydro is likely to have less of an incentive and an ability to influence the Victorian and New South Wales regional prices when compared to its own price in the Snowy region. Thus more competitive bidding from Snowy Hydro can be expected after the regional boundary change.

As we noted earlier, additional generation now explicitly within New South Wales and Victoria should encourage more cost-reflective bidding from other

generators in these regions, as more generation now observes the same price signals and the removal of some basis risk lowers the costs of contracting. It gives us some encouragement in this regard that both Southern Generators and New South Wales generators have been heavily opposed to this proposal. Removing the Snowy region would therefore appear to us to provide substantial dispatch and other efficiency benefits.

Perhaps a key argument against the abolition of the Snowy region is that Murray generation will see the Victorian price rather than its own nodal price, so there will be a reduction in precision with regard to the pricing of Murray generation. We agree that a competitive nodal price at Murray could in theory lead to great dispatch efficiency, but the same can also be said for nodally pricing generators anywhere else in the NEM. In this regard Darryl Biggar recently noted in a paper that to remove dispatch inefficiency from all generators in the market would require the creation of at least 70 more regions.

However, as a matter of MCE policy, which has recently been confirmed in ERIG report, the wider application of nodal pricing has been rejected due to its complexity and the inability of participants to fully hedge the substantial basis risk that such a widely applied mechanism would impose on the market. So we do not think it is appropriate in this context that of itself the Snowy region should be retained simply because it offers Murray generation a more precise price.

We do think that a more compelling case could have been mounted for this if it had been demonstrated, by the modelling or otherwise, that a Victorian price for Murray generation would distort competition relative to the base case, but we don't think this has been done. In any case, as with most things in economics and policy, important trade-offs need to be considered. In this case it's a trade-off between pricing precision and more a liquid and effective contract market. We think it is worth giving up some of this precision for a more liquid contract market that encourages inter-regional trade and competition.

Nevertheless, we also recognise that a competitive neutrality between generators can be distorted within regions as a consequence of persistent inter-regional constraints. We do acknowledge that this issue needs to be addressed. In this context, we know that the abolition of the Snowy region will not resolve potential constraints, and we note they are potential, within New South Wales and Victoria, but again we highlight the fact that the case for addressing the competitive impacts of these constraints has not yet been demonstrated.

We also do not consider that, accepting the current proposal before us, changing the regional boundaries is the best way of addressing congestion in

the NEM. As I noted earlier, this is because of the volatility and uncertainty this creates with regard to future contract prices. Rather, we think that congestion is better handled in the first instance through transmission investment or, where this is unfeasible or takes too long, the targeted and spare application of CSP-CSC arrangements.

We see the application of this latter arrangements to serious inter-regional constraints as a potentially good way to manage congestion and restore competitive neutrality between generators around such constraints, where it is warranted, while at the same time minimising disruption to the liquidity of contract markets.

The key point for us as retailers is that a few state based regional prices will still provide the essential reference point for all contracting, but with financial penalties and rewards applied to generators around constraints to ensure those regional prices remain cost reflective and competitive.

Just as a final point, we think these are issues that are better addressed by the congestion management review, and we think that at the moment the key issue is for us to get the regional boundary structure right. When these equivalent to NEM states, I think we can really start addressing congestion on a more direct basis. That's it, thank you.

CHAIRMAN: Con, thanks very much for that perspective. Any comments to make? No. Thank you, Con. Our last presentation is from David Waterworth, manager market analytics from Westpac.

MR WATERWORTH: Thank you very much for giving us the opportunity to talk. It's quite an interesting area and there's obviously been a lot of analysis done into it, and I think the state or the art analysis has moved forward a lot because of this debate. Westpac's position: basically we see forward markets as being a function of the spot market, because obviously derivatives by definition are functions of the spot market and the spot price. Therefore you've got to get the design of the spot market correct and then the forward market should just follow from there. We don't think there needs to be any particular analysis into forward markets, but the spot market design must be as good as possible. Any problems in the spot design will then flow into efficiency problems in the forward markets.

What we see as an ideal spot market design would be locational marginal pricing to provide the most efficient signals, and a proper point-to-point basis hedging instrument to allow anyone to trade the basis between any two points. That's why we support the CSP scheme trial: because it does provide some form of locational pricing, and that's also why we support the Southern Generators' enhancement or addition, because it allowed negative residues to

accrue but for those residues not to affect the SRA pay-off.

Now I'll look at some of the specific problems. There are physical limits, and there are three physical limits; it's not just the Snowy loop. Basically what we have on our market with SRAs and regional pricing is a contract path type market like they use in North America between different RTA zones. That's why when you get to a three-node proposal you have three interconnectors and you can use linked bids to buy the three of them, et cetera.

There are only three problems. With the first cut-set in and out of New South Wales we've got Tumut involved, New South Wales generators involved, so effectively what you've got in a regional market of generators in that location and notional interconnector is basically some form of property right that those generators have, and that property right in some way can affect how much capacity is available on that cut set. So we've got that problem into New South Wales and out of it, but it's not such as issue because the line ratings into New South Wales have been increased, so we're comfortable in that area.

The second cut-set, the Snowy loop, is unusual because the actual available transfer capacity of the loop varies with Murray's generation. It's not just a fact that Murray's gatekeeping will stop and that there will be better access to a firm amount of capacity. In the north direction, if Murray generates more, less total capacity goes across the loop; and opposite, in the south direction, Murray can actually increase the available transfer capacity. Looking at the constraints and actually taking Darryl Biggar's work and reformulating them, it's not such an issue. Snowy has some impact on the capacity but not a huge impact.

The third cut-set is a more problematic one. That's where we've got all sorts of generators. We've got Basslink, we've got Murraylink. Everything is involved there, so that's where we're more concerned, and that's where we think some of the focus has to be. The problem with a contract path type market is that you just don't know in advance what the transfer capacity is, so it's very difficult to put together a proper hedge. Each of these different contract paths affects the other, and in a general market, if we went to more regions with more contract paths, you almost certainly couldn't put together a link between two different areas, because what we do will affect someone else and vice versa.

The depth of trading and how these different proposals affect it: it's very hard to analyse. Each region has an inherent amount of depth by the generators in that region. There's some more depth when you take generators from other regions who have access to hedging instruments such as SRAs so they can then compete in that marketplace. Then you have other participants who might take inter-regional possession that's unhedged or partially hedged, so they're willing to take on some of the inter-regional risk, and that increases the size of the market.

When you have basically lots of generators sitting on the import of the interconnector you have the gatekeeper effect, so what we have with the proposal to move Murray into Victoria is essentially, and that we have the Latrobe generators with basically a similar price to Murray, as Roger pointed out earlier. So they're all effectively doing the same thing. So by moving a generator into that region you've got a much bigger market depth because that generator is obviously in the region now, but you've also got less access from other regions. It's very hard to quantify whether the size of the market is going to increase, decrease, stay the same. We just can't really tell. With a gatekeeper there, it's likely that there would be less hedging from other regions, so possibly less import, possibly less trading. That's not something that we can really quantify.

What we started looking at is basically efficient markets, what is an efficient market. We looked at the efficient market hypothesis and the relationship between the efficient market hypothesis and gatekeeping generation. Basically markets need to be as efficient as possible, and efficiency is defined in a trading perspective as information - inside information, public information, what have you. The efficient market hypothesis is that on average the market is correct even though individuals within the market may be wrong. Because of that, we can price derivatives in that framework, because we know that everyone has the same information available, so they'll agree on the price. So the price for a derivative therefore must be fair because everyone has agreed on it.

What that means basically is generators can't assume when they're doing their optimisation and their hedging that they can affect the price, because therefore they are taking on some additional information that no-one else has. The same thing happens with the SRA market. If a generator has better access to the interconnector than others, then that generator has more information, so the market price of an SRA is no longer known. That's why we believe that the inter-regional hedging could reduce if there is gatekeeping.

That leads on to how you manage risk. All derivative prices, if they're fairly priced, contain information on the risk, because you can extract all the various information out of the derivative, such as the volatility, the expectation, et cetera. You can't do that if the prices aren't correct, obviously, so having an efficient market is required in order for you to manage risk. But the problem is because SRAs can be affected by what various generators do, the price of them therefore is not correct, so you can't really use them to estimate what the future expected flows on the interconnectors are.

I think the AEMC asked whether generators should be excluded from the SRAs, and the outcome was from a gatekeeping point of view it doesn't matter

either way. The gatekeeper is participating in the market. They have more information, so the signals are distorted if the gatekeeper is excluded from the market. There's no information, so prices are distorted.

If you can't quantify your risk, you're not going to take it on. You don't need to trade inter-regionally; you do so because you're looking at accessing larger markets. If you to trade inter-regionally and hedge, effectively all you're doing is locking in your local region's price. You'd expect that the cost of a hedge between two regions would be exactly equal to the price differential between those two regions, so therefore you end up synthesising a swap in your own region - other than, of course, Snowy, because Snowy is forced to.

When we looked at the modelling, it wasn't entirely clear, but it appeared that there was a conclusion that the prices being closer together implied there would be more inter-regional trading. Prices can be close together because the two markets just happen to have the same cost structure and they just happen to have a lot of competition, so they'll sit together, but if there's inter-regional trading going on, forward prices will move up and down together, because traders are obviously sitting out there and trying to hedge an inter-regional exposure. Every time the price of one region moves up, they'll buy or sell in the other region to try to keep the spread at the level that they'd hedged at, or they'll have to close out the hedge and then the price will start moving separately. So inter-regional trading in a forward market is when there's a relationship between the two prices, not necessarily just that they happen to be at the same level.

Getting on to the other proposals, as we mentioned earlier, with the contract model, regardless of how you set up the market and regardless of which constraint form you use - if you use constraint formulation 1 you're effectively ignoring the fact that you've granted some sort of right to the generators, because that market power still exists and they still have some sort of ability to reduce import or export.

No scheme prevent negative residue. It's not necessarily a problem. In fact, it's not a problem because negative residue maximises the utilisation of the network. But with a contract path market, where you get negative residue on one contract path and not on another, NEMMCO is exposed, so they have to manage that. The CSP scheme doesn't provide any mechanism to allocate residue between multiple interconnectors, so it's not a great scheme; it's better than nothing. It also doesn't do anything in the case where there's one interconnector on the left-hand side if NEMMCO makes the right-hand side negative, which they've done in northern New South Wales to manage outages around that area.

The Southern Generators' scheme is just a one-off for a specific case because

flow generally goes in one direction or another and the relative size of the interconnectors means that it works in that case, but not in others. It certainly doesn't work in the Latrobe Valley, for instance, where you've got three interconnectors. I don't see the Snowy loop at the moment as being the worst constraint. There certainly the Victorian export limit. The joint constraint between the Latrobe Valley is significant, and the import limit with Murray being able to use most of the 1900 megawatts is another issue.

We really don't see any of these options as being good options. We really think that market design and the congestion management review hopefully will address these in a more sustainable manner. We don't see the Snowy proposal certainly as a long-term solution. We see every proposal as short-term. Probably the existing CSP scheme with the Southern Generators' enhancement is our preferred option, but it certainly doesn't give us a huge amount of confidence that inter-regional trade is low-risk. That's it, I guess.

CHAIRMAN: David, thank you for those perspectives from Westpac. That concludes the formal presentations. Any points to raise with David? Thank you, David. What we'll now do is go straight to the open question and comment session. Any questions you have of the presenters that have just presented or of Danny on the modelling or Liza or myself on the approach, we'd like to have that kind of discussion. Do it through the chair, if I could ask you to do it in that way. Who would like to open up with any comments, questions or issues?

MR O'GRADY: Tim O'Grady from Energy Australia. Would it be possible to make another brief comment on a retailer's perspective, since I think you commented that the retail and customer side was a little but underrepresented?

CHAIRMAN: Yes, it would, so please go ahead.

MR O'GRADY: Just a few points. Energy Australia supports the commission's draft determination to abolish the Snowy region, and we'll be putting the reasons why in our submission that we'll put in next week. But, just briefly, a couple of observations: we all acknowledge that there is a problem with the constraint within the Snowy region between Murray and Tumut and that that does lead to some perverse market drivers and some inefficient market outcomes. I think there's also an issue with the broader design of the NEM. Again, I think most people around the room would acknowledge that we're fairly comfortable with the regional pricing model that we have. We whinge from time to time, but then when we consider the implications of a different model, such as full nodal pricing, we tend to revert back to the regional pricing model that we have.

So I think the Snowy region in itself has been a bit of anomaly, and the

commissioners might be surprised, but there's been a fair degree of self-interest around the room today. No, it's true, Liza. I know you're surprised at that. I'm also talking here from self-interest, but my self-interest is to hedge my large customer exposure in New South Wales. From that point of view, I'm quite certain that abolishing the Snowy region would allow Snowy to write a greater volume of firmer hedges off the New South Wales node, and I'm quite certain that that would lead to less market power from other generators in New South Wales and lead to more efficient and lower pricing outcomes in New South Wales.

In terms of the split region proposal, I'm uncertain and concerned about what the outcomes of that will be. I think a lot of the perverse drivers that we've created in having a region with 3800 megawatts and no load have been difficult to predict, and I'm concerned that if we put in two regions there, it's going to be more difficult in terms of inter-regional trading and we're going to get more perverse drivers and more inefficient outcomes. They're the reasons why we support the abolition of the Snowy region.

CHAIRMAN: Tim, thanks for that. That's a very useful perspective. If there are comments, general comments, of that kind from anybody in the room on the draft determination and the draft decision, we'd certainly welcome those. Who would like to go next?

MR OAKLEY: Roger Oakley from Loy Yang. It's in relation to the constraints north and south of Snowy. If those constraints aren't material in the AEMC's view, why are there material differences in the model results between abolition of the Snowy region and the split region option?

CHAIRMAN: Can I just comment that we're not saying those constraints don't exist; we're simply saying the behaviour that came out in the modelling indicated they were less likely to bind and with less frequency. But can I ask perhaps Danny to respond to that.

MR PRICE: Sorry, Roger, did I hear you correctly, the material difference between Snowy Hydro and split region? I wouldn't define that as material. It's in the order of hundreds of thousands of dollars maybe. That's material to me personally, but not to the market.

While I'm here, John, the scenario that you put up - you might remember that when I was speaking I said that since the draft determination has come out we've seen people with particular examples. That example you've presented, we model that and we find that, but we model a whole range of other conditions as well, and we have to take all of those conditions into account when we make that assessment.

MR OAKLEY: No, the presentation we put forward wasn't a particular condition. It was just a general presentation on firming up the inter-regional settlement residues. So we weren't assuming any particular behaviour by anybody.

MR PRICE: Certainly I got from it the implications that those were the conditions that prevails and it implied a certain pattern of behaviour that prevailed all the time. In fact, I've presented some results where exactly that did occur. So we do capture that.

CHAIRMAN: Without going on with this debate, can I just reiterate what Liza said: yes, we did model this particular issue, but the modelling results we are prepared to put out for scrutiny, and if there is a basis or a reason for further examination of this issue, we will certainly do so. So let's not just have the side debate on this. It can be further examined and it will be clarified. Can I open up to any other comments or questions.

MR ARNEAUD: John Arneaud from Hydro Tasmania. We're talking about modelling under system normal conditions, but for a fair bit of the time the system isn't normal. The market is most interesting when the system isn't normal, and I wondered, if you exclude those interesting non-normal cases, whether you're in fact giving a full picture of reality. Would you like to answer that, Danny, perhaps?

CHAIRMAN: Would you be able to comment on that, Danny?

MR PRICE: Normally I'd agree. No, you're dead right. In fact, people often, when they talk about the operation of these arrangements, will talk about system non-normal conditions. I guess it's an issue of balance between how much of the time it's system normal. We could perhaps Charlie or Murray, who is not here, I don't think, about the relative times at which systems operate at normal conditions versus abnormal. I guessed we haven't analysed system abnormal conditions. We weren't asked to; we were in fact asked to look at non-normal conditions, which are the majority of the time, and I don't know from principle whether for abnormal the results would be substantially different. I can't really say what the contribution would be. Perhaps Charlie. It's a really difficult question. I just thought I'd put you on the spot.

DR MACAULAY: Charlie Macaulay, NEMMCO. I think the issue is not the fact that it's non-normal at times; it's the predictability as to when the outages are actually taken and it actually impacts on risk. If you know a year ahead that a transmission line is coming out, you can hedge around it. If it comes out next week and you didn't know about it and it's a hot day, that's when you get caught.

CHAIRMAN: Other comments or questions from the floor?

MR THOMPSON: Ken Thompson from Loy Yang Marketing. I've got a question in regard to timing, but I just wanted to make an observation. It seems to me there's obviously a disconnect between what the Southern Generators have said, where I think we're trying to actually improve the efficiency of the forward market and inter-regional trading, and the proposition we put forward when you look at others, particularly the retailers, who are suggesting that we get rid of some regions, we get rid of that inter-regional risk, "Why don't we just have one price for the whole market and get rid of all of the regions?" Then you've got to say, "Hang on, that doesn't work?" "Why?" So you start to come back to degrees of, "Well, we want to actually have some constraints but not all."

Somehow I think we haven't really got to the nub of the issue, or at least a consensus or agreement, as to what really drives inter-regional hedging and trying to perceive those risks, because at the end of the day I know my traders are not going to sit down and look at the modelling that's been done; they're just going to look at the flows across the interconnectors and have a view as to the firmness and put in some bids. It's that simple.

Just in regard to that, if the urgency that Snowy has indicated today is agreed to by the AEMC, what happens to settlement residue units that have already been bought and sold, positions that we've taken when we're trading out three years, have positions across a number of nodes? Is that just tough luck or do you get your money back on your SRAs and have another crack at it? Do we have an idea as to what those processes might look like?

CHAIRMAN: On the question of transition and timing, any need to adjust market contract positions is certainly a consideration that we would have in mind in terms of the timing. We haven't got a direct, an immediate, answer to that, but that is certainly one of the transitional issues that we will have to deal with. So we take the point and we will have it in mind. Yes, Ben.

MR SKINNER: Ben Skinner, TRUenergy. This question does come back to the choice of the counterfactual, which was discussed a fair bit earlier. I must admit I found it a little bit puzzling as to why the split region option was considered I guess for a matter of fullness but the arrangements that are presently in place and are actually operating in demonstration mode were not considered necessary to consider in terms of fullness.

I would have thought that that is actually a crucial consideration with regard to the question of the urgency of the change, so it strikes me that the conclusions you reached are that the problems with the base case are so severe that we need to implement this in a very urgent sense, quite different to what I've understood

the MCE policy to be regarding the implementation time frames of regional boundary change, and indeed quite disruptive in terms of things like the settlement residue option.

That's understandable if the present temporary arrangements are intolerable, but one couldn't imagine that you could make that conclusion unless you properly assessed those things.

CHAIRMAN: Again, Liza explained the basis of our choice of the base case, and that's been elaborated. As to the question of any further scenario analysis that might be sensible for us to do between draft and final, we can certainly look at that. We used the split region as a counterfactual further point of reference. It may be that there is an argument for analysing the status quo to look at the dispatch efficiency and other implications of that. We would certainly have regard to any submissions that were put in on the base case matter and any suggestions about further analysis that might improve or inform our final decision.

On the question, though, of timing I think Liza has already gone through the point that the congestion management review and the longer-term approach to boundary change are going to take some time to work through. We've had very strong submissions from many stakeholders that a solution to the Snowy region is an immediate issue that can't await, or shouldn't await, a two-year process to see what tools come out of that review process. So that's the position that we've taken in our draft. We're very, very prepared to listen to arguments that you might put forward in your submissions as to how we might proceed going forward. Anything to add?

MS CARVER: Just on the point, Ben, about whether there's a logical inconsistency in us having a split region counterfactual but not modelling, let's call it, the status quo, the split region counterfactual is a boundary change counterfactual; the status quo is not. The status quo is an intervention through a derogation into system normal dispatch processes. We have a lot to learn from it; I want to pick up one of the points that Roger made. We are not ignoring the lessons of the trial, far from it. We intend to analyse the experience of the trial as modified by the Southern Generators' proposal very closely, in the context the CMR process, the congestion management review, because we want to thoroughly test a CSC-CSP type intervention against other forms of intervention that the MCE has asked us to look at, which is interventions of a locational or time-limited context as a management tool prior to an assessment of a potential boundary change.

That is the context in which we are going to look at the matter, appropriately so in my view. In fact I think, it's demonstrable from the references that we've been given by the MCE that that is what the MCE is expecting us to do, and we

will be doing that. But the current formulation of the trial is not the only congestion management intervention we could consider. You know that, I know that. We need to look at other models. We need to look at the proposal that the Latin group put to us; we need to look at Darryl Biggar's formulation. Those things are going to be thoroughly tested and weighed against each other in the context of the congestion management review.

Now, as to the question of whether we should continue to extend the trial to await the completion of those processes, yes, we will look at that again and we will read and consider all submissions that are put to us. But those submissions are going to need to take into account two things if they're going to advocate the proposition that we should cease this process that we are now midway through in relation to the Snowy boundary and wait for the outcome of the congestion management review.

The first of those two things is the question of timing. The congestion management review is a report to the MCE. It will not lead immediately to anything other than, I hope, the edification of the MCE. The process that the MCE may then follow and what rule proposals it may then put to us is a matter for the MCE, and I would not like to predict or pre-empt what they'll do or how long they'll take to do it. So you need to consider the uncertainty around where that congestion management review may ultimately conclude. As I indicated earlier, I think the reasoning we went through is a sensible one.

The next thing that submissions to us will need to take into account is that the MCE has put a rule proposal to us in respect of boundary change. That gives a reasonably clear policy direction that boundary change is to be considered in a staged context. One looks to whether constraints are material, whether there are opportunities for investment to address those constraints. If investment has not come into play, constraints are enduring, then you look to interventions, and it is in that staged context that one finally gets to a boundary change, which is not dissimilar to history we are now living with regard to the Snowy region.

Now, the MCE rule proposal is just a rule proposal, but when the MCE speaks with one voice, when all the jurisdictions agree and put a rule proposal to us, we take it fairly seriously. We are in the process of analysing it. We will be consulting on it, and it may be that you persuade us that the direction the MCE has given us is wrong. But that process is yet to unfold, and I am very cautious about pre-empting those processes we have under way in the context of this Snowy proposal.

So I think the message is: if you wish us to pre-empt those other processes, very compelling arguments are going to need to be put to us as to why we should do that now.

CHAIRMAN: Thank you, Liza. Let's go on. Before we go back to you, Roger, let's see if there are others. Are there any other points? Jamie and then David.

MR CARSTAIRS: Jamie Carstairs from Firecone again. I just wanted to comment on the issue of the base case and going back to the original decision on the CSP-CSC trial in the dying days of NECA, when I was still on the NECA board. Firstly, a general comment: I agree strongly with Russell that the level of analysis being undertaken is much, much improved compared with where it was two or three years ago, so I think these issues are getting a much better analysis. I think that's generally very widely appreciated.

But looking at how they were considered then, when the board in its final days was looking at the proposal for trial, my personal observation would be that firstly I don't think we felt that there was a clear trial being proposed in the sense there was not a proposal that let us test, "If we find that (a) demonstrates something, then let's proceed to (b)." There was not a long-term pathway put forward to use this trial to implement changes to the market, so it felt short term - "Let's just try this and see if it works" - rather than any long-term pathway for change.

Secondly, from memory, the board considered and reflected in its decision that it would have been easier and simpler to make a regional boundary change, and so the decision on the trial indicated that a boundary change would have achieved many of the objectives of the trial, but in the absence of a boundary change, which for some time seemed to be effectively off the table, a trial addressed some of those objectives. So it seems to me that if the AEMC is now able again to consider a boundary change, that puts a trial back as being a short-term measure.

I guess my conclusion would be that your position on the base case is very consistent with the earlier regulatory position.

CHAIRMAN: Thanks, Jamie, for that observation. David.

MR HOCH: David Hoch, International Power. I'd just like to put a couple of other dimensions to this discussion that we're having that haven't been mentioned, that have been touched on. If we're looking at benefits essentially - and clearly the change that's been contemplated needs to be demonstrated as beneficial - it needs to capture all of the costs to participants as well as NEMMCO in terms of implementation. There are also the issues of time frame, and the proposed date does not really seem feasible in terms of developing all the IT systems both on the participants' side and NEMMCO's side.

Clearly, the very fact that we're sitting here and a change is being contemplated has real impact on the market in terms of what's happening on the SRAs. NEMMCO and participants are faced with a dilemma: what to do going forward, because we're not really sure what Christmas will hold. It is a volatile period. Ken Thompson mentioned our existing commercial positions, so this is quite detrimental. Again, what are the costs of this additional sort of regulatory uncertainty burden on the market? I'd suggest that sort of rushed regulation is quite bad for business, and I urge you to take that on board in terms of the timing.

CHAIRMAN: Thanks for that. It goes with Ken's comments and Charlie Macaulay's comments, and those matters in terms of both timing and the materiality of those costs, and the transition and adjustment measures that will be needed to give effect to this change, if it is finally decided, we will very much have in mind. But thanks for reinforcing that point. Any further points and comments?

MR OAKLEY: A point of clarification.

CHAIRMAN: Okay, a point of clarification and then Macquarie.

MR OAKLEY: Just based on the comments that have been made, I think my presentation may have been unclear. It's been pointed out that the examples I put up on the slide gave extreme cases in regard to Murray and Tumut output, and that was done on purpose. It's been suggested they hardly ever occur, and that's correct; they probably hardly ever do. But the reason for choosing the extreme cases was to demonstrate that linked bids will be stable under a wide set of conditions. So we weren't choosing those particular cases except because they were extreme and the arrangement would be robust under all conditions.

Furthermore, the other thing to point out is that it works in the opposite direction as well. For the purposes of saving time we didn't go through that exercise either.

CHAIRMAN: Thanks, Roger. As we've said, that whole question must be given further analysis but us, and it will, and your submission elaborating your views we'll very much welcome. Russell from Macquarie.

MR SKELTON: I'd just like to respond to a couple of comments made by Ken and also the retailers in our midst. I think in modifying our rule change proposal to you, the point of that really is to examine the sorts of issues that Ken was raising in terms of the desire to have fewer regions for the ease of contract trading versus the risks and ease of executing across multiple regions. I think that's the whole point of what we're trying to do: to put that issue into

relief so that it gets examined and debated in a constructive and sound way. I think that is a fairly substantial issue. I agree with Ken and the others that have raised that.

CHAIRMAN: Thanks very much for that. We will have that very much in mind. Other comments and questions?

SPEAKER: I have a question. Danny mentioned that Frontier is doing some more modelling trying to get a better handle on transaction costs associated with inter-regional trading under different region boundary options. Will the AEMC be releasing those results and giving stakeholders a chance to view and comment on those prior to the final determination?

CHAIRMAN: Let me just take that point on board. What we are going to do in terms of further modelling we'll want to be very transparent about, so let's just consider how we'll deal with the debate between draft and final in the light of issues that have been raised and further work that we do. It's a fair point to raise, and we'll be very transparent about how we'll respond.

MS CARVER: I might just make an observation as well. With all due respect to Danny's modelling, the question of appetite for trading these sorts of instruments across one boundary or three I think is something we will strongly consider going out specifically to market participants to get a broader spectrum of views on, because I suspect that the appetite for that sort of trading and the understanding of the risks involved will vary. There are varying degrees of sophistication across the market, there are varying approaches to risk management, and I suspect Danny's modelling might give us the theoretically optimal answer. Whether that reflects what a range of businesses may achieve would be something we'd like to hear from the businesses about.

CHAIRMAN: Thanks, Liza.

MS CARVER: Did want to make any comment, Danny?

MR PRICE: I don't want to mislead anyone again, but I didn't say that we were actually doing this modelling for the AEMC. This is our own, as a consequence of this thinking about what the limitations were and our own analysis in developing that sort of approach. We're doing that on our own behalf; it's not something for the AEMC.

CHAIRMAN: However, we will be considering as well how we analyse and come to grips with that question, possibly drawing on Danny's work and, as Liza said, consulting with the marketplace. Other points to raise around the room? If there are not, I think we can start to draw proceedings to a close. It simply remains for me, I think, to thank you all for your participation today and

the comments that you've made, and particularly the presenters, who've put time and effort into putting their views forward.

I'd just make a few quick comments on the process going forward. We will now consider quickly the submission we've had from Macquarie Generation. We'll also consider giving market participants an opportunity to comment quickly on that submission. We'll want to move quickly to move ahead with the Macquarie Generation proposal, including the approach we take to this further submission they put to us. We will want to ensure that, as we move towards a final determination on the Snowy Hydro proposal, we are well advanced, to the draft stage at least, with the Macquarie Generation proposal so that these two approaches to dealing with the Snowy region issue can be fairly and squarely put alongside each other with the appropriate decision being made.

So there's quite a bit of work to be done to bring those two strands of analysis on two rule changes into line. We'll consult with you in doing that and keep you fully informed of that process. I'd also just like to say, if I could, that a great deal of work has been put into taking this matter to the draft determination stage, certainly by our own staff and particularly Tendai Gregan and Hannah Cole. I'd like to thank them both for their efforts, and our consultants at Frontier have put in a very significant effort on our behalf. We appreciate that effort and the significant contravention we've had from Darryl Biggar, seconded to us very generously from the AER. Darryl has put in some very significant work as well. That work will continue. I'm simply making the point that the very significant analysis that has been put in so far those people have contributed very strongly to, so the AEMC thanks you all. Thank you.

That was all we have to do today. Watch our web site for further developments, and we look forward to your submissions by 9 March. I also had to indicate that a copy of these presentations will be on our web site by the end of the week, and last of all, if you can join us for a sandwich for lunch in the next room, we'd like to do that. Thanks again for your time.

MATTER ADJOURNED AT 1.08 PM ACCORDINGLY