

1 27 JULY 2004

2 PRESENTATION BY NGC (CONTINUED)

3

4 [8.05 am]

5 **CHAIR:** Okay, good morning, I'd like to begin the session for
6 today and welcome everyone to the third day of the
7 Commerce Commission's conference on the Draft Report on
8 the gas pipeline inquiry.

9 When we finished yesterday we had not completed the
10 session with NGC and Professor Evans, so we'll continue
11 with that this morning, and I think we'll go straight into
12 it. I'm not going to repeat the preliminary comments
13 because I believe everyone in the room was here yesterday,
14 so we'll proceed straight away, thank you very much.

15 **PROF EVANS:** Thank you. The next section will be presented by
16 Nathan Strong.

17 **MR STRONG:** At this point we thought that it would be a
18 natural break for me to take over from Lew; he's the big
19 picture man and I'm the numbers guy.

20 Just to foreshadow what I'm going to talk about;
21 firstly I'm going to address some of the impacts of
22 uncertainty on the estimates of benefits and costs of
23 control. I'm going to look at the basis for the model of
24 price control in the Commission's draft recommendation.
25 I'll look at the dynamic efficiency estimates and then
26 I'll draw together in a summary table the quantification
27 of how the various recommendations that we suggest come
28 together. I'll then describe a modeling alternative
29 before handing back to Lew, who will present the results
30 and conclusions.

31 The first point that I would like to make, it's a

1 rather obvious point I guess, but the model is used to
2 estimate the benefits and costs of control should reflect
3 the qualitative descriptions of the factual and
4 counterfactual. In your Draft Report you very clearly
5 suggested that the factual would consist of a one year
6 period over which the fine details of the price control
7 arrangement would be determined, with price control
8 implemented in 2006 for a five year period with a reset
9 in year 2011 with a further price path for five years. So
10 the model design in our opinion should reflect that.

11 What we know about price control is that Regulators
12 are unable to perfectly forecast the future, and so, even
13 though the objective of setting a price path is to equate
14 expected revenues with expected costs, it will inevitably
15 misforecast the future, which is why regulatory periods
16 are generally restricted to a five year period, so the
17 prices can be recalibrated to the so-called efficient
18 level at regular intervals. There's obviously a trade-off
19 involved. The longer the period, the stronger the
20 incentives to improve efficiency but, the shorter the
21 period, the more that price cap regulation becomes rate of
22 return.

23 We also know that, if the level of returns are
24 suppressed by low business's hurdle rates for investment
25 or that regulation truncates the expected returns, then
26 this will reduce the level of investment and this is a
27 real concern with gas pipelines since there's significant
28 investment discretion.

29 What we observe with the Commission's model is that it
30 doesn't recognise some of these key aspects of price
31 regulation. In fact, as I will shortly demonstrate, the

1 model of price setting is more akin to rate of return
2 regulation where prices go up and down with changes in
3 costs or demand. We also note that the model is
4 deterministic; it does not examine any uncertainty in some
5 of the building blocks components such as operating costs,
6 the level of demand, capital expenditure and so forth.
7 And yet, risk is paramount.

8 We also note that the Commission's model is internally
9 inconsistent. The draft recommendation states that the
10 pipeline businesses will reduce investment, but the model
11 does not actually reflect this. The capital expenditure
12 is held constant in the model regardless of the WACC and
13 regardless of the fact that missing markets are assumed to
14 emerge. We also note that there are a very narrow range
15 of quality effects of control where the model is based on
16 a voluntary adoption of interruptible tariffs, and in fact
17 there will be a wider range of quality effects.

18 So, if I turn to this slide, there's a number of
19 points that I'd like to make. What this slide depicts is
20 the three revenue variables that appear in the
21 Commission's model of NGC distribution at the 75th WACC
22 percentile. What the top line shows is the counterfactual
23 revenues over the period 1997 to 2008 in nominal terms.
24 The bottom line shows the hypothetical efficient revenues
25 where returns are exactly equal to the WACC.

26 The middle grey line shows the expected revenues after
27 making an allowance for the fact that 20 percent of the
28 excess profits may not be removed from price control. So
29 the first point that I would make is that the model, and I
30 guess I made this before, but the model appears to be more
31 like rate of return regulation where every year we observe

1 in the model that prices go up and down according to
2 changes in costs.

3 What we also observe is that the assumption that -- I
4 guess this is really what I want to focus on -- the
5 assumption that 20 percent of the transfer benefits of
6 control may not be realised, is actually a really
7 conservative assumption; or, to put it another way, it is
8 a really optimistic view on how accurate a Regulator would
9 be in forecasting the future.

10 To put it in context, if you look at the difference
11 between the solid grey line and the dashed line, that's
12 equivalent to 2 percent on average of revenues per year.
13 So, it's a 2 percent error, and it's also equivalent to
14 making an error of 2 percent in the prices.

15 To put it another way, it's also assuming that a
16 Regulator would be able to keep the returns earned within
17 0.25 percent of the estimated WACC used to set the price
18 path, and it's my submission that this is actually a
19 really optimistic view of the ability to forecast the
20 future.

21 I'd now contrast the approach that the Commission has
22 taken with the model that we develop, of price control
23 which exactly replicates the process of setting a price
24 path and allows us to consider a range of potential
25 revenue outcomes. At time zero the Regulator will set a
26 price path based on its expectations of costs over the
27 five year period. So, the white line shows the
28 Regulator's forecasts of the efficient revenues. Actual
29 revenues will turn out to be different to this and that's
30 shown by the red line. When you get to the end of the
31 first price path period a P0 adjustment is made and that's

1 shown by the vertical step in the white line.

2 Looking forward, that red line is only one of a
3 number, any number of potential revenue outcomes, so what
4 we've shown on this diagram is that there's a confidence
5 interval around the forecasts that make up the building
6 blocks revenues. The further away that you get from the
7 mean estimate, the lower the probability that those
8 outcomes might occur, but those outcomes still have some
9 positive probability attached to them, so it's necessary
10 to look at the entire range of potential outcomes.

11 The confidence intervals will depend on variability
12 and the ability to predict accurately the future. So, the
13 more uncertain we are about the potential future outcomes,
14 the wider these confidence intervals. So, this is the key
15 dimension captured in our Monte Carlo simulation analysis
16 which I'm going to describe in more detail later on.

17 So, to calibrate our model we looked for evidence of
18 volatility and the key variables that the Commission would
19 need to forecast, or a Regulator would need to forecast in
20 coming up with the building blocks revenues. You can see
21 from this diagram that there is just extreme volatility in
22 this market. The grey line shows the year on year changes
23 in revenue for NGC distribution. The diagram also shows
24 the change in throughput, which is similarly volatile and
25 would also need to be forecast in setting a price path.
26 The dashed line shows the changes in operating cost, which
27 again is highly volatile, and to just give you a sense of
28 the annual percentage change in some of these variables,
29 the revenue line there has changes of up to 15 percent
30 plus minus 15 percent year on year, so these are the
31 variables that a Regulator would have to forecast.

1 What we also know is that, looking forward, the market
2 is going through a period of structural adjustment with
3 the doubling in the wholesale gas prices. So, this
4 information which ordinarily might be able to be used in
5 terms of forecasting the future, you might have
6 econometric models that use the data to try and predict
7 the future is going to be almost irrelevant because the
8 future is just going to be so different.

9 **CHAIR:** This data here is where you've introduced the
10 variation yourself on what happened in history, or is this
11 just the --

12 **MR STRONG:** This is just reporting exactly what has happened.

13 **CHAIR:** What has happened; this isn't doing any...

14 **MR STRONG:** No, this is just reporting the data from 1997 to
15 2003 that is in your models. The solid white line that
16 goes across from about 460,000 shows the 20 percent of
17 the transfer benefits of control that the Commission
18 estimates may not be achieved. As I mentioned before,
19 that's equivalent to 2 percent of revenues.

20 So, over a regulatory period of five years, say, what
21 you're saying is that the biggest error that you'll make
22 is around two and a half million. As you can see, the
23 change year on year in revenues just completely dwarfs
24 that, so we are very strongly suggesting that the 20
25 percent assumption that you have made is very optimistic
26 about the ability to forecast the future.

27 Just to add some further context to this, I point out
28 some of the P0 adjustments that have been made in other
29 regulatory jurisdictions; these are reported for
30 electricity distribution. In OFGEM we've seen P0
31 adjustments of 4 to 33 percent, and I think perhaps we

1 should place less weight on that because I do understand
2 there was some structural changes in the market at that
3 point, the splitting of the distribution and retail, so
4 that may have affected the size of the adjustments. But,
5 if we look to Australia we've just seen IPART release its
6 recent decision where it has made price adjustments to
7 increase the prices for New South Wales distributors with
8 P0 adjustments of 5 to 7 percent with further price
9 increases over the regulatory period to avoid rate shock
10 essentially.

11 If the P0 adjustment was made to exactly re-equate
12 revenues with costs, those would have been substantially
13 higher. In 1999 the Essential Services Commission in
14 Victoria made P0 adjustments of 12.4 to 21.8 percent. In
15 Queensland, again there were P0 adjustments because the
16 Regulator had misforecast in the past and had to increase
17 the level of charges to get back to what it considered was
18 a normal rate of return. So, even though the best
19 informed and best intentioned forecasts of the future have
20 been made by these Regulators, there's still a substantial
21 element of -- a substantial potential to make forecast
22 errors, and we would suggest that the 2 percent
23 effectively that the Commission has assumed is just far
24 too optimistic.

25 As we'll come to later on, the variability that has
26 been experienced in NGC's past data, if that was to
27 continue into the future, would really generate quite an
28 extreme range of potential outcomes and that will affect
29 the risks faced by NGC and would presumably affect its
30 willingness to invest and may affect the cost of capital.

31 **CHAIR:** What's the reset period for those determinations?

1 **MR STRONG:** They're all five years.

2 **CHAIR:** For the latter three?

3 **MR STRONG:** All five years. Actually, the Queensland one may
4 have been three years.

5 **MS BATES:** This may be my understanding of graphs, but I'm
6 just looking at the graph that NGC gave us about its
7 throughput between 1997 and 2008. It doesn't look quite
8 the same as your red line; that is, on page 8 of the
9 submissions.

10 **MR STRONG:** Right. That is the change year on year in
11 throughput, so it's not the level but it's the change.

12 **MR STEVENS:** What were the main reasons for the revenue
13 changes over that period from your analysis?

14 **MR STRONG:** It would be a combination -- I didn't specifically
15 look at the causes of those revenue changes, but it will
16 be a combination of the changes in throughput that have
17 been experienced, the changes in the customer numbers that
18 have connected to NGC's networks, there may have been some
19 pricing adjustments, there were some pricing adjustments
20 as was discussed yesterday, and I guess there will also
21 have been customer churn so that there will have been
22 different types of customers who will be paying different
23 charges according to the different types of connections.

24 **MR STEVENS:** I note you've been talking about this 20 percent
25 adjustment and, in your view, how it's graphed by these
26 other changes here.

27 I presume that you were here when the Chair on the
28 first day was reading out all the other areas of
29 conservatism which the Commission has adopted in its model
30 and that this is just one area that you seem to be
31 focusing on. What comments have you got on that?

1 **MR STRONG:** The list addressed, I guess -- well, a number of
2 those concerns seem to stem from the fact that the
3 Commission had adopted data that had been provided by the
4 businesses; so the model included the forecast provided by
5 each of the businesses, and I note the comment made by
6 Mr Horton that a Regulator will generally not accept, or
7 will probe and test the forecasts that have been provided
8 by the businesses, and I completely accept that that is
9 the Commission's role in this hearing.

10 I would, however, have thought in NGC's case that the
11 forecasts provided by it were based on the information
12 that NGC's management had provided to its board. I have
13 seen that information as well and actually my own view on
14 that information is that actually I think NGC's being
15 overly optimistic.

16 **MR STEVENS:** I guess what confuses me, and you might be able
17 to help me with this, is that you're taking the snapshot
18 of five years previously and commenting that in your view
19 one of the areas of our conservatism isn't sufficient to
20 be able to compensate for the vagaries of the revenue and
21 cost structure here.

22 I presume though, in our looking at the periods going
23 forward though, that we would be matching -- basing our
24 view on the periods going forward on the forecasts in any
25 event, so we'll be fairly matching those going forward, so
26 I don't see -- if we had this information provided to us
27 as a forecast for the five years going forward, and if we
28 change 1997 to 2004 for example, then I'm failing to see
29 how it would vary in the model as opposed to the actual.

30 **MR STRONG:** The point that I'm really making is that, when you
31 set prices under a price cap you're basing that on a point

1 forecast of the future; so you'll see, we think, that
2 demand will grow by on average 2 percent per annum over
3 the next five years and the reality, or the actual
4 experience may differ quite wildly from that, and that's
5 what this data is showing.

6 **MR STEVENS:** Or it may not.

7 **MR STRONG:** Or it may not, absolutely, but there's a
8 probability attached to whether the forecast will turn out
9 to be accurate.

10 What we're saying is that we really need to consider
11 the full change of potential outcomes. It may be the case
12 that the future is just so unpredictable that there would
13 be a real danger in setting in stone -- which is what you
14 have to do with a price path -- a fixed period, or a fixed
15 path of prices where the actual experience may deviate
16 quite substantially from that forecast.

17 **MR STEVENS:** We heard in the presentation from Mr James from
18 NGC yesterday his view that we're now entering a period
19 of -- that the period that we are seeing here was a period
20 of volatility and change and that we're now entering a new
21 period.

22 Would your view be that this volatility would now keep
23 going forward or -- I'm trying to measure this against the
24 view that was put by Mr James in that we're going into a
25 period of stability in a different period now and we seem
26 to be focusing on this period of, what he termed
27 instability and change, and predicting that this may well
28 happen into the future it's a bit difficult to marry the
29 two.

30 **MR STRONG:** I think we also heard from Mr Wilson that NGC
31 expects there to be a reduction in demand, that customers

1 will react to the doubling in the wholesale energy price,
2 and what will be really unpredictable is the timing of how
3 customers will react to that. There's still going to be a
4 lot of uncertainty about how customers react to that and
5 that's something that, under price cap regulation, you
6 have to take a single view on in setting the prices.

7 So even -- yeah, I mean in a period of structural
8 adjustment it's really difficult to forecast. We don't
9 know how long that period of structural adjustment will
10 be, and so there's not going to be a lot of solid
11 information on which to base a forecast for the future.
12 NGC will take one view on what it thinks the future will
13 be and the Regulator would take its view on what the
14 future might be, but given structural adjustment in a
15 market, I would suggest that it's going to be really
16 really difficult to forecast the future.

17 **MR STEVENS:** I guess to a certain extent that lends weight to
18 the Commission's taking account of the past history in its
19 analysis and not merely relying on future predictions, as
20 has been suggested by NGC in its presentation yesterday?

21 **PROF EVANS:** Can I comment on that?

22 When we look at this graph we have before us we're
23 doing exactly as you suggest; we're taking account of the
24 past. We're not just drawing a line through the past and
25 saying, there is one scenario, this is possible, it is
26 quite plain from this that various possibilities were
27 possible in the past, very likely in the past. What we
28 want to do is draw all that together and use it to inform
29 the forecast of the future.

30 Looking back in time, to use just exactly what took
31 place in the past is almost certainly not going to occur

1 in the future. It will occur perhaps close; there might
2 be some deviations from it. The question is, how big are
3 the deviation? You can actually incorporate that in your
4 analysis.

5 So, what we would like to suggest is that you take the
6 variation from the past and we take the actual values from
7 the past and put those two things together and make much
8 better forecasts, but also get the shape of the
9 possibilities into the future. Even if one was doing
10 incentive regulation, one could still do that; one could
11 simulate this and take all this information together and
12 say this is my forecast in the future and that's what I'm
13 going to set the prices at, so we are doing that. The
14 only thing that is a little bit different is that we're
15 taking the variation of the past as well as the actual
16 values of the past in terms of the track record; that's
17 the only distinction.

18 The other point about conservatism is that we would
19 argue -- and it is implicit in our submissions on various
20 issues -- that the effect of certain adjustments and so on
21 have made it not conservative in a number of respects. We
22 spoke yesterday of adjustments that are implied by the
23 discounting and compounding; that makes a significant
24 effect for example. Going through the process here of
25 looking at the inclusions and exclusions and certain of
26 the issues in looking at the price modeling, there are
27 those which we would not argue are conservative at all.
28 At the end of the day, it's what the outcome would be from
29 a forward-looking model, and that's what we are going to
30 suggest at the end is the way to bring all these things
31 together and ask whether or not the overall outcome is

1 conservative or optimistic.

2 **MR STEVENS:** I'll look forward with interest to the rest of
3 the presentations.

4 **MS BATES:** Professor Evans, could I just ask you this: At
5 what point in your graph did the prices double for
6 wholesale gas? Can we see that?

7 **PROF EVANS:** Towards the end, but...

8 **MR BIELBY:** Very recent. It's effectively this year. Some of
9 that is future gas as well, so we're sort of still in an
10 upward adjustment phase.

11 **MS BATES:** I'm just asking you because that seems to me to be
12 quite an important variable going in, or have I got that
13 wrong?

14 **MR BIELBY:** I think it equates to Mr James' evidence, we're in
15 this transition phase, and you will recall he talked about
16 the old Maui prices, that they've then gone up almost
17 double already and we're facing another step change going
18 forward.

19 **MS BATES:** Yeah, but they doubled in, what, 2002 or 2003 or
20 over a period?

21 **MR BIELBY:** 2003-ish, yeah 2003, 2004 you're talking, that
22 upward swing. As I say, it's ongoing through 2004.

23 **MS BATES:** So, you're not yet able to say what impact it's had
24 on the revenue?

25 **MR BIELBY:** No, because what's happening is, there's a dual
26 adjustment between the prices we are paying and also the
27 prices through to consumers which are adjusting gradually
28 but not necessarily at the same rate, because of course as
29 contracts come off and we recontract, so that's not a
30 simple equation to describe.

31 **MS BATES:** I understand, thank you.

1 **CHAIR:** Just to follow-up.

2 I know we're looking at volatility here and not how
3 much conservatism is or isn't in the approach we take, but
4 one of the things when I look at this and I see the
5 volatility, and not surprising I don't think you'd find --
6 doesn't strike me as that exceptional really. I mean, in
7 a lot of industries you'll see volatility of all sorts.

8 If I think of our experience in electricity with the
9 threshold regime, in the first two rounds of assessments
10 we had a large number of breaches and those breaches were
11 primarily due to forecast errors affecting the result.
12 Looking at those forecast errors we were basically able to
13 simply clear those threshold assessments for not needing
14 any further notice but then looking in the next period
15 what happened, and it turned out to -- initially when we
16 saw the first round of threshold breaches I was a bit
17 taken aback by the number of them, and the same thing in
18 the second period, but it's actually turned out to be
19 quite easy to deal with and we are left with three
20 companies where we have some concern, but it has nothing
21 to do with this, it has to do with some more fundamental
22 issues sitting underneath it but needs to be addressed,
23 and the regime has a means to do that in the case where
24 the issue of something clearly other than forecast errors,
25 and that regime has proven quite able to deal with these
26 issues, it seems to me.

27 We've talked about this many times in the context of
28 this, we have assumed a regulatory approach which is
29 typical overseas but it's not typical in New Zealand, and
30 I guess it just makes me think even more about what sort
31 of approach we should be thinking about when we think of

1 what the comparator should be. Mind you, we can't decide
2 now what approach we might take should regulation be
3 required, but it seems to me the regulatory approach that
4 we've actually put in the Draft Determination is a fairly
5 strong one; far likely to have all sorts of problems that
6 we simply might not encounter once we put our minds to
7 what we should do.

8 We heard from Contact the other day that they would
9 prefer a regulatory approach in this area consistent with
10 what we're doing in electricity, and I can see merits to
11 that argument, but it's not clear to me that some of these
12 issues can't be dealt to through the design of the regime.
13 You'll never deal with all of them, and Regulators end up
14 having wide discretion in order to deal with it, but this
15 is certainly an issue that we've had to deal with in
16 electricity and I don't think it was overly difficult to
17 deal with; it has not been so far anyway, and so I think
18 you can look at these things and accept that there are
19 these issues, but I'm not sure that we aren't getting a
20 little bit better at finding more innovative ways to go
21 about regulation that helps deal with some of these
22 difficulties, especially if you're in a much lighter ended
23 approach to the regulation than simply putting in place a
24 control regime from the beginning for a five year period.

25 So I don't know, professor, if you have any comments
26 on that, but I don't know how familiar you are with the
27 threshold regime, but...

28 **PROF EVANS:** Just a couple of comments.

29 The volatility that's represented here goes to more
30 than just the regulatory regime. I'll just turn to that
31 in a minute.

1 Given that these networks consist largely of fixed
2 costs and stranding and all that, the volatility that they
3 face does determine the sort of threshold they require for
4 investment and so on; it just is a fact that that's an
5 input to that. In this sense gas, having a large fraction
6 of larger customers, has more volatility in that respect.
7 Lines companies have volatility as well, and when you look
8 at electricity fluctuations you find it's largely from the
9 large customers, it's not from the small customers.

10 The other thing, getting back to the question about
11 linking it to regulation; it is clear that regulatory
12 regimes exist in circumstances like this and that's why we
13 see the very large unplanned price adjustments that we've
14 just seen, and so, that would be part and parcel of some
15 sort of regime that was put in place, and that's what this
16 data suggests.

17 **CHAIR:** It's part and parcel of a particular approach, isn't
18 it?

19 **PROF EVANS:** That's right.

20 **CHAIR:** We see large fluctuations, say, in demand forecasts
21 for Transpower transmission services which may not be
22 dissimilar to what we have here, but it hasn't proved to
23 be insurmountable. Because we're looking at these
24 thresholds outside a control regime, it doesn't trigger --
25 it's a question should it trigger control; we can deal
26 with that, in a way you can't within a full building block
27 CPI-X control regime.

28 So what I'm saying to you is, yes, if you confine
29 yourself to that approach you may face these large
30 adjustments. If you look outside of that approach you may
31 find ways to deal with some of these issues; not all of

1 them.

2 **PROF EVANS:** I think that's right, but the Transpower case is
3 an interesting one because that is ex-post pricing, and
4 that is a case, or it has been, where at the end of the
5 day Transpower can recover from its customers overs and
6 unders of past years, and that's not the operating
7 environment, outside of a very specified regulatory
8 setting such as that that Transpower faces.

9 **CHAIR:** I'm talking about the impact of their volatility on
10 the lines companies.

11 **PROF EVANS:** I understand that, I'm just saying that is an
12 alternative way and that would address this, but it
13 doesn't actually fit the circumstance.

14 The other point I would make is, we weren't quite sure
15 what this 20 percent cost involved, whether it was a
16 forecast error, whether it was a cost of and some other
17 sort of indirect costs associated with regulation and it
18 was just sort of an estimate of that cost, or quite what
19 it was. We've here just used it as being the cost and we
20 would compare it to the volatility in the system as a
21 whole; yes, I'd leave it at that.

22 The costs of the regulation, of course, go to the
23 indirect effects as much as the direct effects, which I
24 know the Commission is really very well aware of. That is
25 the effect on demand and supply now and into the future of
26 pipeline services.

27 **CHAIR:** We'll just take you to the end of slide 28, please,
28 and then I'd like to ask our experts and our professional
29 staff if they have questions, thanks.

30 **MR STRONG:** Can I just also add; we're obviously at a
31 disadvantage because we don't know what has happened with

1 how you've addressed these issues under the thresholds
2 regime, but I think you can't assume that, if businesses
3 have to constantly interact with the Commission, that
4 there's not behaviours that are induced by that.

5 **CHAIR:** The regime is intended to affect behaviour actually,
6 so we certainly don't assume that; but you're absolutely
7 right, some of the behaviour may be what we want and some
8 of it may be undesirable things, so we certainly wouldn't
9 expect that.

10 **MR STRONG:** I guess, if what you're assuming is that, if NGC
11 felt that its revenues were insufficient and had to breach
12 some sort of price path, and every time that happened it
13 had to come to the Commission for approval to raise its
14 prices, then actually that really looks quite like the
15 situation in the United States with rate-based regulation.

16 **CHAIR:** That's not the way the regime is working. We have a
17 situation we're looking at where a company may have that
18 difficulty, and while they seem to think they might want
19 to come to us each year, or the whole reset period, we've
20 said to them, no, we're not going to do that, we'll look
21 at your situation now and we'll make a desired adjustment
22 and it should be an adjustment that will take you through
23 the rest of the reset period. Those things can be dealt
24 with.

25 Something unforeseen may happen again, but it's -- the
26 likelihood of something like that happening must also bear
27 some relationship to the approach you take, and if you
28 take large P0 adjustments at particular points in time,
29 I'd say you've increased the probability quite
30 significantly that you're going to find yourself having to
31 make large adjustments. If you don't take that approach

1 and you use long glide paths, if issues come up they can
2 be much more readily addressed in a timely way and
3 unlikely to get so far out of hand.

4 So, there are regulatory approaches to help minimise
5 some of these effects, they don't remove them and they may
6 still be very significant but I simply, from our own
7 experience here, don't think we're in any too big of a
8 rush to move to that particular approach.

9 I take the point that for this comparison we have
10 taken that as the scenario, but that in itself to me
11 suggests that we've taken a very conservative approach
12 because we've assumed the approach that is possibly one
13 that we'd be fairly reluctant to take for all of the
14 reasons that you've said.

15 But, let's continue with the further slides please.

16 **PROF EVANS:** Can I just make one additional comment.

17 That is, that there are a lot of regulatory regimes
18 that one could think of and the question is how you go
19 about designing them. The one the Commission has proposed
20 is really just a broad incentive regulation approach over
21 a specified period of time; it has certain advantages and
22 certain disadvantages as we all know.

23 The problem is that, if you wind back from that
24 anything that -- or you depart from that in some way, that
25 will also have advantages and disadvantages and the
26 incentive regulation bit may -- the incentive to be able
27 to do your thing for five years might actually be placed
28 in jeopardy because of that, as we all know, so there's
29 trade-offs in all these things.

30 **CHAIR:** Sure; transaction.

31 **MR STRONG:** I now turn to the Commission's estimates of

1 dynamic efficiency.

2 **CHAIR:** Sorry, we covered 28 completely, did we, slide 28?

3 **MR STRONG:** I believe we did.

4 **CHAIR:** We did. Okay.

5 **MR STRONG:** I could also observe that this is electricity
6 distribution that we're looking at the P0 adjustments
7 with, where generally the markets are much thicker, more
8 stable and so naturally you would expect the P0
9 adjustments to be smaller than potentially what you might
10 observe with gas pipelines.

11 **CHAIR:** I just would like to check with staff -- first our
12 experts and then staff about questions on that part of the
13 presentation, if I can.

14 **MR SELL:** I have a couple of points to follow-up on.

15 Do you mind just going back to the volatility graph.
16 Could you just clarify that what you've described as
17 revenue there, is that income as the Commission has
18 defined it including the revaluation adjustments?

19 **MR STRONG:** Yes, that's the sum of -- it's basically the
20 building block revenue that you've got with the net
21 earnings plus revaluation spread.

22 **MR SELL:** It would be interesting, I think, to recast that
23 graph to show the volatility and revenue alone and the
24 volatility that's caused by those ex-post adjustments,
25 because I think those are two different aspects which the
26 Commission may choose to deal with differently, if that
27 was possible?

28 **PROF EVANS:** Agreed.

29 **MR SELL:** My next question was going to be why the throughput
30 increased in 2001 and the revenue dropped, but I will
31 hazard a guess that that could have to do with those

1 adjustments, because the only other explanation is that
2 NGC lowered its prices drastically or there was a major
3 change in the mix of sales in that year, both of which
4 seem a bit unlikely.

5 **MR STRONG:** Sure.

6 **MR SELL:** The other question I have is about the assumptions
7 you've made in the graph; you didn't put in your slides I
8 don't think, but it's on page 87, it's figure 10 of your
9 submission which is the equivalent under your scenario, if
10 you like, of the forecasting error graph that you had
11 immediately before this, if you've got that in front of
12 you there?

13 **MR STRONG:** This is...?

14 **MR SELL:** Figure 10 of your submission.

15 **MR STRONG:** Oh, yes.

16 **MR SELL:** Because, it seems to me that that assumes that NGC
17 makes annual price adjustments in response to changes in
18 its volumes. Is that your interpretation as well?

19 **MR STRONG:** That is correct, so that each year NGC is making
20 an updating adjustment to its prices based on what it's
21 observed in the past, but only forecasting the future.

22 **MR SELL:** I know this is just an indicative example, but in
23 the last period there it seems to imply a price reduction;
24 in fact in the last three periods it seems to imply they
25 put their prices up one year and then they put them back
26 down again the following year.

27 I wonder how realistic that really is.

28 **PROF EVANS:** This we constructed not to represent exactly what
29 NGC does, because it has a mix of long-term contracts and
30 shorter term arrangements, so this is an example where the
31 firm sets the price at the beginning of the year and then

1 wears the outcome or whatever, and then at the end of
2 the year sets the price forward-looking for the next year;
3 so it is an abstraction in that sense, it is not
4 attempting to mimic the price setting of NGC, which will
5 be some amalgam of this and longer term price setting for
6 three years up to whatever their long-term contracts exist
7 for. So, it certainly does not purport to represent the
8 way it's being done except for a small, I imagine, small
9 set of arrangements that NGC has.

10 **MR SELL:** I guess the difficulty I have is that this part of
11 the submission is, I guess, trying to demonstrate that
12 under control the errors will be greater than if you don't
13 have control, and the suggestion I'd like to put to you is
14 that first of all under control there may be mechanisms
15 which the Commission hasn't set forth at the moment
16 because its mandate at the moment is not to design that
17 control regime, but there may be mechanisms that it could
18 introduce to reduce the error that would appear by the end
19 of a regulatory period, so that would reduce the issues
20 that we see with the graph that was immediately before
21 this on the board.

22 Equally I guess what I'm seeing is that NGC would be
23 constrained in ways such that there could be greater error
24 than is shown on the graph in your figure 10.

25 Is that a reasonable sort of set of logic?

26 **PROF EVANS:** It certainly is. It also goes to the required
27 rate of return to carry the risk. If we compare those two
28 graphs and we, say, have NGC fixing its prices for five
29 years, it's facing a greater volatility looking forward
30 than it would be if it was setting it just for the
31 one year. So, the risk of stranding and all that would

1 suggest that, to make an investment which ex-ante had an
2 expected value of 0, would be at a different level of a
3 WACC than that which would have emanated from figure 10
4 where the prices were set more frequently.

5 **MR SELL:** Volatility is a difficult area particularly for
6 Regulators, and uncertainty generally, but I don't think
7 the difficulties are insurmountable; I guess that's my
8 feeling.

9 **PROF EVANS:** I think that's right. Obviously we see schemes
10 that are there; the question is what their effect is. The
11 question is also the interaction between all these things,
12 such as the level of the WACC and the regulatory resets
13 and the criteria for them.

14 **MR SELL:** Okay, thank you.

15 **MR STRONG:** We now move to some considerations about the
16 Commission's model of dynamic inefficiency of control.

17 The first thing that I would note is that we certainly
18 think that it's been a valuable movement from the
19 Commission going away from the previous scaling approach
20 to directly quantifying the dynamic inefficiency costs of
21 regulation. The real value there is that we can now
22 consider this issue with respect to actual investment
23 behaviour, and allow models to be calibrated with actual
24 experience and data.

25 But what we would say, however, is that again we
26 consider that the Commission has been very conservative in
27 its modeling of dynamic inefficiency. The Commission has
28 advanced a number of reasons why it considers that dynamic
29 inefficiency is so small and I'll address those reasons in
30 the next few slides.

31 You will recall from our report that we presented 16

1 charts of changes and gate station demand in each of NGC's
2 16 regions. What that data showed was that there is
3 substantial variation at the gate stations, well in excess
4 of the 50 TJs constant that the Commission uses to
5 calibrate the model of missing markets that might emerge,
6 that NGC in reducing investment would lead to some
7 customers not being served.

8 You can see from those charts that there's a
9 persistence of some of the changes in demand which is
10 consistent with the idea that customers are connecting and
11 disconnecting over time, and that essentially means two
12 things; that NGC is having to invest in connecting new
13 customers, and that some customers are exiting,
14 potentially leaving some stranded assets.

15 The assumption that there's a constant 0.5 percent of
16 demand not served per year effectively means that you're
17 assuming NGC curtails investment for one year and then
18 resumes at previous levels. In fact, regulation will
19 affect NGC's investment incentives in every year, so the
20 affect will be cumulative in terms of the number of
21 subdivisions not served or the commercial/industrial
22 customers that are forced to use other fuels or just may
23 not enter business.

24 So, in a sensitivity testing scenario we assume that
25 the size of the missing market grows by 0.5 percent per
26 annum, and so this reduces the acquirers and net public
27 benefits in NGC distribution's case by around \$1.3 million
28 per annum on average, which is sufficient to change the
29 benefits of control to a negative number.

30 I'd just like to highlight the missing markets. The
31 first thing that I would note is that the Commission's

1 model shows across the industrial that there would be
2 dynamic inefficiency of control of \$1 million per annum,
3 which is equivalent to 0.1 percent of market turnover in
4 a market of roughly \$1 billion per annum, so the missing
5 markets is really quite conservative.

6 If we just bring on those missing markets, the red
7 line just illustrates graphically how small the assumption
8 of missing markets is. You've got 50 TJs per annum out of
9 a market of around 10,000 TJs, and so the grey line which
10 shows what we consider is still a very conservative
11 assumption about the size of the missing market, if we
12 implement that change in the Commission's model the
13 dynamic inefficiency costs eliminate the benefits of
14 control.

15 This is an illustration of one of NGC's regions where
16 you've got a number of gate stations. I would at this
17 point note that there are some errors in the 16 charts
18 that we have presented to the Commission, and we will
19 provide the Commission with an update of that. It doesn't
20 really affect the broad conclusions that we draw from
21 those gate station demands.

22 I've chosen this one because it highlights a bit of
23 everything really. The red line illustrates the high
24 level of volatility that can be experienced. The solid
25 white line, which I'm pointing to, shows it is sort of
26 consistent with the idea that there is a customer there
27 that is relatively stable then drops off and by 2000 is no
28 longer consuming. So, there's probably -- there's
29 obviously a revenue risk associated with that
30 potentiality, but also there may be some partly stranded
31 assets left. There may be also -- and the diagram also

1 shows that there are customers connecting all the time,
2 the purple and blue lines illustrating that you've got
3 growth in some gate stations of 200 to 300 TJs, so
4 relative to the Commission's assumption you've got a
5 constant 50 TJs that might be missing, it's just
6 illustrating that that is a very conservative assumption.

7 I note that the Commission observes that if NGC or the
8 other pipeline providers reduce investment, that customers
9 or other pipeline businesses that are unregulated would
10 simply invest in their place, so I'd like to just address
11 those two points before I leave this section.

12 I think we discussed yesterday that in terms of
13 customer sensitivity to customer capital contributions, we
14 asked NGC to provide us with a sample of its investment
15 projects made in recent times where the capital
16 contribution was required, and we observed in that sample
17 that 50 percent of the projects of the residential
18 subdivision projects where the contribution was required
19 did not proceed; the developer simply did not want to pay
20 the contribution. At a threshold of somewhere between
21 \$320 to \$360 per subdivision, the capital contributions
22 deterred connections completely. So, we would submit that
23 it is not reasonable to assume that customers themselves
24 would want to invest in the specific pipeline assets or
25 take on the stranding risks themselves.

26 The other proposition, that other pipeline providers
27 would invest in NGC's place, is, we would also suggest,
28 dynamically inconsistent. NGC has stated to the
29 investment community at its 2003 investor conference that
30 it has investment hurdle rates of 8.5 to 10 percent. So
31 if other pipeline providers had similar hurdle rates which

1 we would expect, then -- sorry, if other pipeline
2 providers had lower hurdle rates than NGC, then we would
3 already expect them to be investing in NGC's place since
4 the market is open access. But, more generally, we would
5 expect that other pipeline providers would have the same
6 investment hurdle rates to NGC. So, if regulation is
7 triggered at NGC's investment hurdle rates, then it would
8 be unlikely for any other pipeline provider to invest in
9 NGC's place since they will face the same threat of
10 regulation, and the same threat that returns would be
11 suppressed below the levels required to justify
12 investment.

13 Finally, we would also make the point that if NGC is
14 regulated out of competing in the new investment market
15 because its returns are suppressed, then competition will
16 be adversely affected. Given that there are likely to be
17 network synergies associated with NGC continuing to invest
18 in expanding its own network, one would expect that NGC
19 would be an efficient competitor in the new investment
20 market. So, a loss of efficiency and network expansions
21 would also be expected, and this effect might be
22 considered to be a substantial lessening of competition in
23 the market for new pipeline investment.

24 If I now move on to the modeling of the quality
25 effects of control: As with the model of missing markets,
26 the Commission's model of quality effects is again very
27 conservative. The model is based on the welfare losses of
28 customers moving from fixed supply tariffs to
29 interruptible supply contracts, and so the Commission
30 assumes that the reduction in the value of the service
31 would be equivalent to 10 percent of the current pipeline

1 charges. Across the industry this effect is of the order
2 of \$1 million per annum. Again, compared to turnover of
3 \$1 billion in the industry, this effect is very small. So
4 the assumption that only quality loss is associated with
5 voluntary interruptions is likely to significantly
6 understate the loss of quality.

7 We appreciate that there's the obvious difficulty that
8 there's no value of loss load for gas, but we would
9 expect, as with electricity, that the cost of
10 interruptions would be at multiples of the gas price
11 rather than a fraction of the price. One might assume, in
12 calibrating a model of involuntary interruptions, that
13 some proportion of the value of lost load for electricity
14 might be a reasonable substitute for the value of lost
15 load for gas. But regardless, if these effects cannot be
16 quantified, then at the very least we would expect that
17 the Commission would need to note in the final conclusions
18 that there is the omission of the empirical estimate of
19 this impact.

20 I note that also the Commission has suggested that
21 quality may be regulated under price control and we would
22 agree that, of course, the Commission can regulate some
23 aspects of quality, but quality is inherently difficult to
24 measure. For example, in the electricity lines sector you
25 have set thresholds for SAIDI and SAIFI, but these are
26 only average measures and quality is something that is
27 idiosyncratic to the customer. There may be some
28 customers that have particular requirements for different
29 pipeline pressures or different back-up arrangements and
30 so regulation can never replicate that sort of micro
31 decision-making process that is made in the pipeline

1 businesses.

2 **CHAIR:** I thought it was interesting that some of these gas
3 pipeline companies' customers seem to think that one of
4 the biggest benefits that comes from regulation has to do
5 with quality, and they urged us to give more weight to
6 that in terms of the benefits of regulation, and I'm sure
7 there is overs and unders, there's both negatives and
8 there's positives, but it was a major theme really of the
9 Contact submission and I just wonder, Nathan, if you can
10 comment on that; I don't know if you've had a look at that
11 submission?

12 **MR STRONG:** I can't say that I have looked at that particular
13 submission in detail, but my understanding is that there
14 is to be a new gas governance arrangement which will
15 substantially address a lot of the issues that were raised
16 in the Contact submission?

17 **CHAIR:** That's unclear that it will. That's not clear at all
18 at this point in time; in fact, I think it's why they
19 covered their bases and raised it in the context of this
20 inquiry as well.

21 **MR STRONG:** I guess it's quite a different proposition to be
22 starting to consider the specific governance arrangements
23 for access to pipelines.

24 **CHAIR:** I find it an interesting area myself after our
25 experience in electricity, because while we hear that we
26 might damage companies' incentive to invest in quality
27 through regulation, we've had extensive submissions that
28 they've under-invested in quality in the past and there's
29 a wall of investment needed in the future to deal with the
30 lack of investment in the past. Certainly it looks like
31 there's some merit to that argument.

1 It has also occurred to me that the threshold regime
2 has actually allowed some companies who find it hard to
3 increase their prices to increase their prices in order to
4 earn a return sufficient to invest in their networks.

5 So how these things play out at the end of the day, it
6 seems to me, is highly uncertain and a lot depends on how
7 you do it, but I was a bit taken back by the focus on the
8 quality aspect of this by the acquirers of these services,
9 and in some respects you get the impression that it's more
10 important to them that regulation addresses some of those
11 issues for them rather than the price issue.

12 **PROF EVANS:** I think what tends to happen with quality is that
13 those indicators which the Regulator deems are the
14 important indicators get the focus often at the expense of
15 other elements of quality. There are some examples of
16 that, I think.

17 **MR STRONG:** I'd now like to draw together in a quantitative
18 way the variations that we consider are needed to correct
19 the limitations in the Commission's model that both Lew
20 and I have outlined. We haven't been through everything
21 in this table; I think Maui Gas probably would have long
22 since run out if we had, but we have discussed the issues
23 that we think are the important changes that need to be
24 made, so I'll just quickly run through the net acquirers
25 benefits.

26 As Paul mentioned, the baseline differs from that in
27 the Commission's 75th WACC percentile, which is what this
28 table is based on, based on the change in the ODV that has
29 been provided to the Commission and also correcting for a
30 mistake that was made in the calculation of the slope of
31 the demand curve in the missing markets.

1 So, taking the baseline of benefits to acquirers of
2 \$1.07 million, we exclude the gain on the sale of the
3 Taranaki assets which reduces the benefits by about
4 \$450,000. The more realistic dynamic efficiency loss
5 individually reduces the benefits by \$1.3 million. We've
6 got a new version of the forward-looking characterisation
7 which is based on the model that I think we outlined
8 yesterday, where it should be forward-looking and based on
9 an average that is discounted back and so that reduces the
10 benefits by another \$500,000. We consider that the
11 Commission has underestimated the direct cost of control
12 and that has a small effect of \$80,000.

13 We consider that producer surplus assumption, the
14 model, the long-run model that the Commission has adopted,
15 doesn't really square with the nature of the gas pipeline
16 market where you've got sunk assets with spare capacity,
17 so we consider a short-run model is more appropriate
18 there, but that doesn't enter into the net acquirers
19 benefit calculation; though you'll see in the net public
20 benefits calculations that increases the benefits of
21 control by adopting that assumption.

22 If we take what we consider a more realistic
23 productive efficiency approach where the level of
24 productivity is the same between the factual and
25 counterfactual, except in years 4 and 5 where NGC is
26 assumed to save up the efficiency gains until year 6 of
27 the new price path period, and also making a correction
28 for the new tax data that NGC has supplied to the
29 Commission, there's an individual reduction of \$195,000.

30 The cumulative --

31 **CHAIR:** Which tax is that exactly?

1 **DR HODGSON:** On distribution it was an underestimation looking
2 forward of the tax that came to light when we were doing
3 the reconciliation.

4 **MR NICHOLLS:** It's not the interest in the tax shield.

5 **MR STRONG:** The combined affect of those -- and I just note
6 that individually they don't sum because there are
7 interactions between the variations -- in our view renders
8 the net acquirers benefit test negative, and if we insert
9 a more realistic WACC estimate then the combined effect
10 is, the net acquirers benefits is further reduced by
11 around \$1 million and the net acquirers benefits is
12 negative \$2 million. I won't go through the other
13 aspects of the table, but they all show a similar net
14 impact on the various tests.

15 I would note that the combined effects do not include
16 that forward-looking characterisation, and if you were to
17 put that through, then the net acquirers net public
18 benefits test actually would be smaller than what is shown
19 here, probably by about 40 percent or 50 percent, but the
20 result is that across all tests the benefits are negative.

21 **CHAIR:** We need to speed up a little bit Nathan, because I'd
22 really like to have a substantial amount of time at the
23 end for questions from our experts, I just ask you to move
24 a little bit more quickly if you can.

25 **MR STRONG:** Okay, I won't read through this table then, but
26 just note that the really big change that we suggest needs
27 to be made to the Commission's model is to exclude the
28 revaluation of the unstranding of the Kapuni North line
29 that by itself reduces the net acquirers benefits to a
30 negative number.

31 Now, moving to describing the modeling strategy that

1 we adopted in putting together our Monte Carlo simulation
2 analysis. The variations that I suggested in those
3 previous slides, we consider, are based on more realistic
4 data and assumptions but we consider that the model
5 framework itself does not capture the key elements of
6 price cap regulation where there is uncertainty about the
7 future and that there needs to be a more solid behavioural
8 model of how investment would be affected by regulation.

9 So, we suggest that the model of price control needs
10 to reflect the actual process of setting prices with
11 uncertainty specifically modeled.

12 As I suggested before, implementing price control is
13 essentially a year long forecasting exercise which is
14 designed to equate revenues with expected costs for the
15 following five years. So, our model is developed on that
16 basis. The model should also be based on an internally
17 consistent view of likely behaviours with and without
18 price control, and the model must be forward-looking.

19 You've seen this slide before, so I'll try and run
20 through it very quickly, but what the model does is, it
21 takes the building blocks approach to setting the expected
22 revenues or expected required revenues over the five year
23 period of the price path. The model takes as a baseline
24 the historic levels of operating costs, the asset base,
25 the customer numbers and demand, and it extrapolates a
26 baseline trend for the future. It does this in both the
27 price control model and the light-handed regulation model.

28 So, in terms of how the model comes together
29 there's -- actually, between the two scenarios the input
30 assumptions are very similar; the differences really only
31 occur with the behavioural assumptions and in terms of the

1 price setting process. To build up the building blocks
2 costs, we forecast the asset base by taking the current
3 ODV as the starting point and driving capital expenditure
4 growth off growth and customer numbers. We assume that
5 customer numbers grow at the historic growth rate in the
6 forecast and that the capital expenditure is assumed to be
7 \$3,100 per new customer.

8 A price path is then determined by taking the relevant
9 building blocks forecast costs -- which determines the
10 required revenues -- and calculating the revenue shares
11 that are required from variable charges, which is 70
12 percent for NGC distribution and revenue shares for the
13 fixed charges, which is 30 percent, and dividing those
14 revenue requirements by the respective forecasts of
15 customer numbers and throughput. The actual revenues will
16 be determined by the out-turned growth in the customer
17 numbers and throughput, and we take a probability
18 distribution of those; the actual experience -- sorry. We
19 use probability distributions around the growth in
20 customer numbers and throughput to determine the
21 confidence intervals around the forecasts of revenues --
22 around the forecasts of required revenues.

23 At the end of the first five year price path the model
24 then makes any necessary P0 adjustment to re-establish
25 prices at a level where expected revenues are equal to
26 costs. Again, through the second price path period actual
27 revenues may turn out to be different from those that are
28 forecast, just depending on how throughput and customer
29 demand changes relative to the forecasts.

30 Just quickly noting that the investment behaviours in
31 the model that Lew's going to present the results for in a

1 few moments, is based on the investment hurdle rates that
2 NGC has supplied to its investors of 8.5 to 10 percent,
3 and so the model can be estimated for each of the WACC
4 levels that the Commission has used in its report. So
5 that then drives a wedge between the growth in customer
6 numbers in the factual of control and the counterfactual,
7 so that we assume that 50 percent of the growth in
8 customer numbers that would have occurred absent
9 regulation is achieved under the price control scenario.

10 In terms of the model for what happens under light-
11 handed regulation, the price setting process as we
12 discussed before is annual so that prices are set to
13 equate expected revenues with expected costs. The price
14 setting behaviour is ex-ante which reflects the price
15 setting described by Mr Wilson yesterday, so that any
16 under-recoveries or over-recoveries experienced in the
17 previous period does not affect future prices.

18 The model is forward-looking from 2006 and we run 2000
19 scenarios based on the counterfactual behaviour and the
20 history of variation in the throughput and -- the growth
21 and throughput and the growth in customer numbers. In the
22 model that Lew's about to present, the result for the
23 hurdle rate for investment is 9.5 percent which is
24 consistent with the range that NGC has provided to its
25 investors and consistent also with what the Commission
26 found with its model, excluding the gain in sale of the
27 Taranaki assets.

28 So if I now pass to Lew.

29 **CHAIR:** We don't actually have that slide, do we, the last
30 one?

31 **MR STRONG:** No, we thought it probably would be better to

1 explain it rather than -- yeah.

2 **PROF EVANS:** I'll just start by indicating where we think --
3 what the role of the model is.

4 The role of the model is to combine all the useful
5 information of the past about trends, actual outcomes and
6 volatility, together with assumptions about the effects of
7 the behaviour under the factual and the counterfactual to
8 construct forward-looking scenarios that enables us to
9 calculate, quite robustly, the net present value today,
10 the day of the decision to be taken about recommending
11 price control, of the effect of price control.

12 The model, as we've already indicated, we have not
13 sought to fit exactly the scenarios that are proposed by
14 NGC. For example, we have not sought to mimic their
15 contract structures with their customers, as has already
16 been noted. What we have basically done is taken the
17 public information that's available to the Commission and
18 to the hearing in general and just applied what we've been
19 told.

20 This particular graph indicates the economic profit
21 outcomes of price control for the factual of price
22 control. The white line here describes -- we have along
23 the bottom the levels of profit that are produced as the
24 outcome of this model; the outcome is produced as the
25 outcome of this model and he is the distribution, if you
26 like, of the particular levels of -- along the bottom here
27 we have the economic profit that's produced and the range
28 of economic profit that's produced ranges from minus \$4
29 million up to \$3 million positive profit that's
30 generated.

31 Here we have a WACC that has been set at 8.5 and a

1 pricing mechanism that we have described that relates to
2 this WACC. This graph describes the likelihood of getting
3 these particular levels of profit. So, if we look at this
4 point here we see there's about, looking at the left-hand
5 side, about a 10 percent chance that profit will be less
6 than \$2 million. If we go to here, we see that there is
7 something like a 40 percent chance that the profit will
8 be less than \$1 million, and here we jump to this point,
9 which is the zero profit point along here, we will see
10 that that is indicating that to obtain a profit that's
11 less than zero under this regime has a probability of 0.8.

12 Above the regime, above this point, we have obviously
13 the positive profits and so we have a 20 percent
14 likelihood of there being positive profits as a
15 consequence of all these simulations. So, this depicts
16 for us the effect of the price control regime simulated
17 over historical volatility in the data and in which we
18 incorporate the fact that investment in new customers will
19 be roughly half that of what it would be under the
20 existing regime where NGC operates on the basis of having
21 a threshold of 9.5. So this red line is the assumption of
22 regulatory error, just to indicate the magnitude of it,
23 the one that the Commission has adopted.

24 If we turn to the next slide we will add there the
25 effect of the counterfactual. The white line is exactly
26 the same as the line we had before. This is exactly our
27 distribution at a WACC, at a price setting based on the
28 WACC of the factual. Over here we have, in a dirtier
29 colour, the light-handed regulation at which is being
30 evaluated also at the same WACC as the Commission, which
31 is that of 8.5. Actually though, it assumes that NGC's

1 investment hurdle rates, and therefore we've assumed in
2 this case the WACC, they needn't coincide for. NGC is
3 9.5, but in evaluating this graph we've assumed the
4 Commission WACC should be applied to NGC.

5 We see that what this highlights is that NGC is making
6 a profit at the Commission's WACC. The lowest profit it
7 makes is 0, that's by chance, but we see that if we look
8 here, that about half -- there's a probability of about a
9 half or 55 percent that NGC will make more than
10 \$1 million over and above the Commission's WACC
11 calculation, which is to say it will make \$1 million
12 excess profits on the definition of the Commission.

13 Of course, if we were to evaluate this line at the
14 WACC of the -- of NGC of 9.5, then we would shift that
15 whole thing to the left and we would have -- this would be
16 the break even point, the zero point for NGC. In other
17 words, this is the point which, at NGC's WACC of 9.5, it
18 would be 0; there would be no excess profits. However,
19 we've depicted it here as one in which we're evaluating
20 excess profits as the Commission has, at its WACC, and so
21 we see there's definitely excess profits on that
22 definition being made.

23 The difference then between these two lines is that
24 there's more profit being made under light-handed
25 regulation in this simulation. The distribution is
26 narrower, if you like, in scope. There is a significant
27 difference between the two of these in terms of their
28 effect on the excess profits. If we look at the -- this
29 white line just for a moment, return to that, that depicts
30 the probability of obtaining excess profits, if you like,
31 in the situation of regulation. We see that, on this

1 case, that the average level of profits will be actually
2 negative. We haven't actually sought to adjust this model
3 for the desirable regulatory regime because what we're
4 really trying to do is illustrate the role of a model of
5 this kind of informing us about the likely and possible
6 outcomes.

7 We see that on this yardstick the average profit here
8 would be -- or the expected excess profit would be
9 something of the order of minus \$1.2 million or
10 something, and that comes about because of the behaviour
11 that's in the model itself. It comes about to some extent
12 because at a WACC of 8.5 percent it's been designed to cut
13 off the higher outcomes but, more importantly, it's the
14 effect on investment and numbers of customers that drive
15 this effect.

16 The other thing to note about this is effectively when
17 you take just one level of excess profit, then you're just
18 picking a point on this whole curve and it is of
19 considerable interest to know whether there's much
20 variation or there's no variation. We see there's little
21 variation here, but there's a lot of variation here and it
22 might well be that one would think that excess profits
23 might be suggested for a firm if, on looking at the
24 distribution of outcomes as we have here, that very
25 frequently they're making very large profits. It turns
26 out under this set-up of ours that the price regulation
27 that's embodied in here means that very infrequently will
28 NGC actually be making a profit at all -- or excess profit
29 at all under this regime; rather, it will be making excess
30 profit losses.

31 Lying behind these are the assumptions that we used in

1 order to construct the model, and used the data of the
2 past and so on. If we move on to consider that, we can
3 now use this to --

4 **CHAIR:** I'd like you to try to finish the summary in five
5 minutes, because it's really important we have time for
6 questions.

7 **PROF EVANS:** Done. The other welfare impacts.

8 We have calculated the welfare impacts associated with
9 the outcomes in the simulations. The welfare calculations
10 in the model generally reproduce the Commission's method,
11 except we adopt a different method of productive
12 efficiency effects of control. We say that productive
13 efficiency is constant each year in both the factual and
14 counterfactual, except that in years 4 and 5 prior to the
15 price path reset efficiency gains are saved up until year
16 6, the first year, so that's the only departure we make in
17 that respect from the Commission's assumptions.

18 The effect on investment is to mean that the benefits
19 to acquirers and the net public benefits associated with
20 price control on our assumptions and the data of the past
21 are that these things are negative. This describes the
22 cumulative probability, just as in the first graph, so
23 this is just the probability of the net acquirers benefits
24 being -- or the present value of them being less than
25 \$4,000, which is this figure up here. This says that
26 roughly there's a 50 percent chance that the net acquirers
27 benefits will be less than \$4 million; net public
28 benefits, sorry.

29 These arise largely because of the assumptions about
30 the investment of NGC under the two scenarios, and they
31 arise because of the small -- relatively small change to

1 say that the growth -- that NGC will accept only half the
2 growth in customers that it would under the light-handed
3 regulatory regime.

4 So, the average net benefits of control from these
5 graphs are minus \$3.7 million; the average net benefits
6 to acquirers are \$2.1 million. What these graphs tell us
7 is the net present value of the difference between them.
8 The darker colour indicates the net present value of
9 public benefits compared under the two regimes, so it's
10 the factual compared to the counterfactual, and the net
11 present value of the net acquirers test, again, the
12 factual versus the counterfactual, is also described there
13 this time with the white line.

14 In short, those lines give us the difference between
15 the factials and the counterfactuals and they suggest
16 that, because of the investment issue, that the net
17 acquirers benefit and the net public benefit is not
18 positive.

19 The results adopt the Commission's approach to quality
20 effects; we don't model any involuntary interruptions or
21 restrictions on appliance pressures. No account is taken
22 of potential stranding, so those expected returns could
23 actually be lower if we were to properly incorporate
24 downside revenue profit risk from stranding. The model is
25 likely to be too optimistic on upside growth potential;
26 that just goes to the final point, which is, structural
27 change is likely to increase volatility. These are the
28 sorts of things that one could use this model to play with
29 and examine the implications of; we haven't.

30 Summary: The risk, behaviour and dynamic response can
31 be modeled in a way that's germane to the decision. The

1 counterfactual and the factual behaviours should be
2 specified. Decisions affect welfare and benefits to
3 acquirers over time in ways that static calculations
4 cannot measure. Price caps may reduce welfare even to
5 acquirers.

6 Finally, that excess profit is the outcome of a
7 factual/counterfactual comparison. It must be simulated -
8 - should be simulated if the factual is negative. In our
9 case there, as I showed, the expected net present value
10 under regulation there is negative, so regulation in that
11 case is not sustainable. We're not pretending this is the
12 optimal scheme that we are presenting here.

13 Finally, under the current regulation the Commission's
14 excess profit is not functionless. It is not functionless
15 because it drives investment, affects investment at the
16 margin, and considerably. If we look at performance over
17 time, it is investment that really drives the outcome. It
18 may be good investment, it may be growth investment, it
19 may be disinvestment, but it's the effect on the
20 management of the assets and investment in assets that
21 drives these outcomes. Because, these are driven by
22 profit considerations, even if we deem something to be
23 excess in the previous slide I showed, that NGC was making
24 excess profit on the calculation of our model, but it was
25 also generating larger markets and more customers on those
26 markets.

27 Concluding comment: Regulation imposes restriction
28 on the rewards from investing in gas pipelines which has
29 important implications for behaviour that may run counter
30 to the long-term consumers.

31 The models used to evaluate the policy decision should

1 be conceptually well specified and address key issues to
2 the extent possible. What we're really advocating here is
3 an approach. In general, the Commission should adopt a
4 high standard on robust evidence for concluding that
5 regulation would improve long-term outcomes.

6 Thank you very much, Commission.

7 **CHAIR:** Thank you for that. I apologise for having to rush
8 you a little bit, but it is really important you have a
9 chance to answer questions that we might have.

10 If my colleagues agree, I'll go straight to our
11 external expert and we might come back here if there's
12 time at the end.

13 **DR LAWRENCE:** Lew, the model you've presented is quite
14 interesting, but I think when it comes down to it it's
15 basically telling us, if I can sort of quote another
16 common saying to match the one you've got up the top
17 there, that the future is uncertain, and we all know that,
18 but I'm just concerned whether your model really provides
19 a Regulator with a practical way forward.

20 The Regulator has a responsibility to come up with a
21 decision based on the information that it has at hand, and
22 it seems to me that drawing to a large extent on the best
23 estimate of the company's expert or the company's
24 management about what they think the future is going to
25 entail, presumably they're in the best position to
26 incorporate all the probabilities and so forth that you're
27 trying to capture here using a fairly mechanistic model in
28 the Monte Carlo technique, which doesn't really involve
29 any optimisation, it's just purely a mechanical
30 statistical procedure.

31 It seems to me that in terms of a practical way

1 forward it's better for a Regulator to use information
2 based on the best forecasts available which take in the
3 information provided by the company, plus its own research
4 if you like, rather than using a fairly complicated model
5 that is in turn based on very limited data and which is in
6 a sense itself quite arbitrary in the sense that you're
7 only using, what, 7 years data to come up with key
8 parameters of this fairly mechanistic statistical
9 procedure that you're implementing, and we're not sure
10 whether those 7 years are representative in any way.

11 Indeed, from the earlier discussion, a case could be
12 made that they were probably unusually volatile compared
13 to what we're likely to expect going forward. So, I just
14 put to you that it's an interesting procedure but I'm not
15 sure that it's really a practical option to use in a
16 regulatory decision-making process.

17 **PROF EVANS:** Several points have been raised here; one is that
18 the model is telling us that the world is uncertain. I
19 think that that's the world we live in; I don't think the
20 model's doing anything about that, it's trying to
21 summarise it in a way that informs us better about the
22 effects of that.

23 Secondly, Denis suggested that, statistics versus
24 optimisation, that it is a mechanical model for examining
25 these questions. I'd just like to say that Monte Carlo is
26 a routine operation now, it is used extremely widely, I'm
27 involved in another project in which Monte Carlo's being
28 used to summarise all sorts of information that is going
29 to be examined by a court and considered, and it's the
30 only way in which we can draw all these things together in
31 a coherent way.

1 Secondly, it can include optimisation if you like,
2 it's got behaviour in there, so there's no reason why we
3 can't include optimisation. We haven't done so because
4 we've just specified the most simple form of it.

5 Thirdly is that the comment's been made that we have a
6 limited data set from the past; I agree, we do have a
7 limited data set but there's a whole lot more information
8 in it than just looking at what the data says themselves
9 and mechanically cranking that through.

10 The variability of the data is absolutely critical.
11 It's been common in the past for the Commission to spend
12 most of their time thinking about the mean, but the
13 variation is what actually drives decision-making; affects
14 risk and all of those things and that information is
15 present in the past. Admittedly, I would like a lot more
16 of it but the past is the past. Actually, I'm not sure I
17 would like more of it because it's a changing scene that
18 we face. So, I have no apologies about the data
19 limitations. The model is much richer and uses much more
20 of the information of the past than does using a single
21 drawing, if you like, a single drawing from the past and
22 sought exactly what occurred.

23 The real question is what is the role of this model
24 for a Regulator. It seems to me that where you're looking
25 forward and doing a cost-benefit analysis of an issue like
26 this, which is absolutely very very important for the
27 economy as a whole, that it behooves us to use cost-
28 benefit analysis appropriately and to use techniques that
29 enable us to facilitate the decision-making process.

30 It took Nathan hardly any time at all to put this
31 model together, and it is much much more informative than

1 it would have been just to take NGC's forecasts. I have
2 no idea about how NGC got to its forecasts, I recognise
3 that the board has accepted it and that certainly a lot of
4 thought went into putting them together, but had I been
5 involved in that process there's no doubt I would have run
6 a simulation model to check out scenarios, and perhaps NGC
7 did, I honestly don't know, and picked out the mean. But
8 this does give you a feel for the risks of the upsides and
9 the downsides and it allows you to incorporate behaviour
10 in ways that, in this case, enable a clean comparison of
11 the factual and the counterfactual on the issues that
12 really matter. So, I think this is more than a feasible
13 model for a Regulator.

14 We think that the hours taken to construct this are
15 absolutely minimal compared to any other activity
16 associated with the inquiry.

17 Can you tell us how long it took you to put this
18 together?

19 **MR STRONG:** It took me about four days to put together a
20 simple model that looked really ugly and about two days
21 for another colleague of mine to make it look pretty and
22 run much more smoothly, but it's a week's work really.
23 This is actually the fourth time that, to my knowledge,
24 that CRA has put together such a model.

25 I have been involved in one other exercise directly
26 last year; we spent about three months really trying to
27 come up with a good forecasting framework for a utility in
28 Australia, because their board was really interested in
29 the range of revenue outcomes that they were exposed to
30 under regulation, and so this is a management tool that we
31 have used in much greater detail and the forecasting

1 process was incredibly much more complex, but this is a
2 simple version; more complex versions can be created. But
3 I think they're really valuable for businesses to
4 understand risks.

5 **DR LAWRENCE:** Just to follow-up on that: I appreciate Monte
6 Carlo is a widely used technique, but so is econometrics
7 and I guess over the years I've become more of an
8 econometrics skeptic, and a colleague of mine makes the
9 comment about econometric hocus pocus, and in some ways
10 you can make the same comments, statistical hocus pocus.

11 I guess the point is, once you get into this line of
12 analysis then a good analyst can basically use these tools
13 to show just about any outcome, because there is a large
14 element of subjectivity that goes into these things.
15 That's what concerns me about using these sorts of
16 techniques in that particularly the Regulator has to make
17 a call on what is likely to be the most probable outcome,
18 and it needs to take actual hard information instead of a
19 wrapping of soft information into account in coming up
20 with that call, and the sort of things that can draw on to
21 do that is past experience where we've got actual hard
22 data and I guess forecasts of management where presumably
23 they analyse the available information in the most
24 appropriate commercial manner and its own information that
25 obviously provide a check on that.

26 So, it just seems to me that -- I'm not convinced that
27 this provides a practical way forward.

28 **PROF EVANS:** I think that in a few years time this will just
29 be -- should be a few months time -- will just be a
30 routine thing. What's nice about it actually is, it can
31 present to people who don't know anything about the

1 techniques at all, nice summaries, accurate summaries of
2 the variations as well as the possibilities.

3 It's not an econometric technique; econometric
4 techniques go to the behaviour, they don't go to the
5 simulation of the outcomes. In fact, I could think of
6 doing a total factor productivity study and being quite
7 concerned about whether I've actually measured some inputs
8 properly, in which case I could simulate across the
9 measurement error and get a distribution of total factor
10 productivity outcomes which would be extremely useful, I
11 think, in some circumstances.

12 I think that the same criticism that's been made of
13 going back and taking a single set of figures and applying
14 them and just looking at those can be applied to
15 situations in which you use index numbers as total factor
16 productivity methodologies do in order to come up with a
17 single estimate. We know that the variations in those are
18 intrinsically there because of the difficulty of
19 measurement and so on.

20 The other point that was made was that there are
21 subjective inputs to this model. There is no more
22 subjective inputs to this model than are being made by the
23 Commission now in generating its recommendations, and it
24 seems to me it behooves the professionals that supply the
25 Commission with the information to utilise any subjective
26 information that they might have in a transparent way, and
27 the additional subjectivity associated with this technique
28 is 0; there is no more subjectivity associated with this
29 than there is the speculative subjectivity of taking one
30 price, one quantity series and talking about it.

31 Secondly, I just reiterate that it uses the past in a

1 much richer way than does the past that is being used
2 presently to look at the net benefits of control. It
3 allows the variation of the past which is intrinsic to
4 industries of this kind to actually reflect and inform the
5 Commissioners about the possibilities of their outcomes.
6 At the end of the day the Commissioners have to make a
7 decision, a recommendation that should be based on our
8 best information that we have that can be economically put
9 together and presented to them. This technique, which is
10 now so common, is a really excellent way to do that.

11 **DR LAWRENCE:** I think that's an area that we probably have to
12 agree to disagree on. I just quickly follow-up two
13 specific aspects of other parts of your model.

14 Firstly, these are both things that are raised with
15 NGC yesterday, but I'd like to get your opinion on them as
16 well. Firstly, you've included the assumption of saving
17 up of gains in years 4 and 5 of your simulations. While
18 the Commission has not made any decisions or assumptions,
19 predictions, whatever, on the actual form of regulation
20 that it might adopt going forward, if that was to occur,
21 you'd be aware that in most jurisdictions they have
22 addressed this problem by the equivalent of efficiency
23 carry-over mechanisms whereby they attempt to give the
24 utilities credit for those efficiency gains that are
25 achieved in the final year or two years of the regulatory
26 period.

27 So, I would suggest to you that it's probably a more
28 accurate assumption to have an even achievement of
29 productivity gains in there rather than this saving up
30 method that you've got at the moment, characteristic.

31 **MR STRONG:** If we were to put that into the model it would

1 have almost no impact, it's such a small number.

2 **PROF EVANS:** That is correct. Also, I'd like to add a point
3 that these mechanisms are all to do with trying to
4 replicate letting the firms have the benefits of
5 productivity gains so we actually get the productivity
6 gains. When the excess profit calculation does not allow
7 for productivity gains to be -- includes them in the
8 excess profit component, one wonders what the Regulator is
9 actually going to do in the future; whether they're --
10 what fraction if any gains are going to be allowed.

11 So, I think our assumption on the factual versus the
12 counterfactual is conservative in this respect, but I do
13 take Commissioner Rebstock's comment that the regulatory
14 regime is not yet -- no firm regime is designed but that
15 would be an issue looking forward.

16 **DR LAWRENCE:** Just briefly one other question, again relating
17 to your assumptions about factual versus counterfactual:
18 I think I'm correct in saying that you assume there are no
19 differences in productivity improvement between those two
20 scenarios?

21 **PROF EVANS:** That's right.

22 **DR LAWRENCE:** I just wanted to put to you that, as I suggested
23 to NGC yesterday, that given the history of the company in
24 the overall scheme of things it doesn't have a long
25 history and is not in an industry that's characterised by
26 intense competition, but it doesn't have a long history of
27 fully commercial operation, so it seems likely that
28 there's going to be scope there for additional
29 productivity improvement. In other words, it's probably
30 not a lean, mean firm as it currently stands, and I would
31 suggest that some form of regulation is likely to provide

1 an extra incentive to achieve the available efficiency
2 improvements.

3 **PROF EVANS:** I think this is an area that you and I will just
4 simply have to disagree on. If you look at what happened
5 with the State Owned Enterprises when they were
6 corporatised, they made huge productivity gains and it
7 happened really quickly in a study by Alan Bollard, and
8 others and myself indicated that those gains have not been
9 maintained; in a sense, the rate of productivity growth
10 was fast initially and slowed right down.

11 It seems to me that NGC has well gone through that
12 process. It seems to me also that there is competition
13 for NGC in all sorts of ways. It's already been described
14 that they think it's difficult to -- that they're facing
15 inter-fuel competition and various other sorts of
16 competition in the product markets, which has already been
17 discussed, but they're also facing competition in the
18 ownership in the management markets in the sense that it's
19 owned by a private firm. If some other firm bowled up to
20 the owner of NGC and said, excuse me, I'm willing to pay
21 you over the odds for this because I can generate some
22 more efficiency out of it, because they would; we see that
23 happening. So there is competition in the ownership and
24 management market.

25 The other point I would make is that I'm yet to
26 understand how increasing price cap regulation on a firm
27 is going to make it more productively efficient. The
28 incentives associated with being able to retain the
29 profits are affected even if the regulatory regime is
30 specified clearly, and we do our best to design one which
31 enables them to retain some incentive for this process,

1 the ability to retain the benefits of such gains cannot be
2 as they are under the current regime. Any additional
3 price cap will raise the uncertainty about whether or not
4 such gains are likely to accrue to the shareholders and,
5 therefore, affect the incentives by which they are
6 pursued.

7 **DR LAWRENCE:** I think that's another area we'll disagree on,
8 because I think there's a fair amount of evidence that in
9 most firms operating in markets with essentially monopoly
10 type characteristics there's a fair degree of X
11 inefficiency that can usually be eliminated from the
12 system. Given the limited time for questions, perhaps I
13 should hand over to my colleagues.

14 **PROF EVANS:** There have been a whole range of studies of
15 privatisation and deregulation, and very few of them have
16 found that productivity has declined because of it.

17 **MR SELL:** First, just a question of clarification. On the
18 slides that you present from your Monte Carlo analysis, is
19 that distribution or transmission, or is it some of the
20 two?

21 **MR STRONG:** Distribution.

22 **MR SELL:** It's all distribution?

23 **MR STRONG:** Yes.

24 **MR SELL:** I apologise, my years in an accounting firm are
25 probably leading me to the next question, but I believe
26 you've used the same means in your probability analysis as
27 you've used in your deterministic adjustments to the
28 Commission's analysis; would that be correct?

29 I didn't hear you say that you had actually changed
30 assumptions as you went from the deterministic to the
31 probabilistic analysis, just that you had put probability

1 distributions around them.

2 **MR STRONG:** The only difference emerges with the growth in
3 throughput, the mean growth in throughput. We retain the
4 same standard deviation for that, but we reduce the growth
5 in throughput to reflect what is in NGC's forecasts for
6 the future, which basically it just reduces the mean
7 growth rate taking into account that there are constraints
8 in the gas production market; that's really the only
9 difference.

10 **MR SELL:** Because, I guess I figure that, if the means were
11 the same, then there should be a simple reconciliation
12 between your table on slide 36, for example, and your page
13 45 and I couldn't see it there.

14 **MR STRONG:** There will be no reconciliation to that because
15 it's a forward-looking model only.

16 **MR SELL:** I see, okay, so there's -- well, your slide 36
17 though also makes an adjustment to take it onto a forward-
18 looking basis. Is that not correct?

19 **MR STRONG:** That's right, but that table is based on the
20 forecasts that are provided by NGC for the period 2005 to
21 2008. We ignore those forecasts in the Monte Carlo
22 analysis, we drive the model from the historic data
23 essentially.

24 **MR SELL:** So, if you were to put NGC's forecast in as your
25 mean in the probabilistic analysis, then would --

26 **PROF EVANS:** Almost certainly not because the mean will not be
27 probability one and their forecast. The mean of our
28 distribution -- with probability one will not be their
29 forecasts.

30 **MR SELL:** Unless you did it for a long time.

31 **PROF EVANS:** Even then it wouldn't work, we'd have to actually

1 fix it, we'd have to say we'll take deviations about their
2 forecast. We didn't do that, we just took the history.

3 **MR BIELBY:** Which is why Professor Evans would like to address
4 my board on the next occasion.

5 **MR SELL:** The point I would like to make there is, Monte Carlo
6 has been around for a long time and it used to be that I
7 guess only the high priest statisticians were able to use
8 it; but now, thanks to Bill Gates, we've all got it on our
9 computer and that can be a danger.

10 Generally, I'd have to say I'm very supportive of
11 doing probabilistic analysis in situations where you've
12 got a lot of uncertainty. It's not always necessary, and
13 sometimes it can be overused, but I think one of the big
14 concerns I would have is around transparency, because the
15 more buried assumptions you have in an analysis, the
16 harder it is to figure out whether you've actually got a
17 commonsense outcome, and so I would suggest that that
18 ability to reconcile -- and it doesn't need to be to an
19 accountant's standard but at least to broadly reconcile
20 outcomes with simplistic models -- can still be quite a
21 useful thing.

22 **MR STRONG:** I'd make the offer that we're happy to pass the
23 model over to the Commission and you can explore it in
24 detail yourself.

25 I spoke to David Peters, one of the Commission's
26 economists yesterday, and he seemed excited by the Monte
27 Carlo analysis. I know he's a modeling guru, but we'd be
28 very happy to sit down with someone and run through
29 exactly how the model works and demonstrate all of the
30 assumptions and take questions and so forth.

31 **CHAIR:** I think you should provide that, if you would, please.

1 **PROF EVANS:** I think you've raised a really important point,
2 though, and I think actually the assumptions and their
3 effect are more transparent bringing them all together in
4 a modeling of this kind, because you have all sorts of
5 assumptions that you make about this; that and the other
6 as you go through, and subjectively you have to think
7 about how they all fit together and what they mean at the
8 end of the day unless you put them together in a framework
9 like this and actually work them through.

10 I was always amused by some people at the Reserve Bank
11 who estimate these equations, 200 equation models and then
12 say, we've got to understand why it goes from here to
13 here. The point of a model is that it brings together
14 things that are very hard to comprehend simultaneously in
15 your brain when you're looking at different parts of the
16 picture, and so, the way to check it of course is to look
17 at, are the outcomes sensible and make it absolutely
18 transparent as to what the input processes are, so we're
19 happy to make the whole thing available.

20 **MR SELL:** I just have one other question, if that's all right.
21 That is, just going back to the deterministic analysis or
22 your adjustments to it, slide 36, the dynamic efficiency
23 loss is the major item I guess in that -- I'd just like to
24 explore for a minute what's leading to that.

25 I'd like to put the suggestion to you that it may be
26 that the hurdle rates that the Commission's using and
27 the -- or the WACC the Commission's using and the hurdle
28 rate that NGC uses may not be that different, because my
29 understanding from what Mr Wilson said yesterday was that
30 the hurdle rate that NGC uses on its investment analysis
31 is used over a 20 year time period for example, and the

1 Commission is effectively adopting a model where it has a
2 lower WACC than NGC's hurdle rate, but it's implicitly
3 endorsing, I guess, return of revenue over a 60 year
4 period and a very different risk model in which risk
5 adjustments are effectively neutralised or risks on the
6 company are effectively neutralised. And, without getting
7 too analytical about it, I'm just wanting to put the
8 position that conceptually those aren't too different,
9 therefore, we may not get the dynamic efficiency losses
10 that you have estimated.

11 **PROF EVANS:** I'm not sure about them being different or not
12 different, not being present at that discussion, but in
13 general terms the required rate of return will increase
14 the longer the pricing contracts that are in place are in
15 order for the firm to manage the risk itself rather than
16 slough the risk off on to its customers.

17 So if the question relates to the different pricing
18 regimes and investment regimes in terms of their horizons,
19 then you would expect that the discount rate or the hurdle
20 rate would be lower for rate of return regulation where
21 you are able to recover the costs of your investment
22 basically off your existing customers versus a very long-
23 term arrangement where you have a long-term contract of
24 some 15 years, say, for supplying a gas fired generator
25 with gas in which there is a possibility of redundancy,
26 then that would be an investment which you would evaluate
27 at a higher threshold than it would be one which you did
28 at a rate of return regulation. So, if it fits within
29 those principles, then I agree.

30 **MR SELL:** I think the comparison is not so much between
31 different regulatory models as between control versus no

1 control, but I think -- I hear the point that you're
2 making, and I suspect that they will apply equally there;
3 that really the investment analysis is a function of the
4 hurdle rate and the risk profile, and if you have a lower
5 hurdle rate and less risk, that may be equivalent to a
6 higher hurdle rate and greater risk, at least
7 conceptually.

8 **PROF EVANS:** Yes.

9 **MR SELL:** Just following on from that, it seems to me that
10 inherent in your analysis is an assumption -- or your
11 adjustments to the Commission's analysis is an assumption
12 that the current level of investment is optimal-based on
13 NGC's hurdle rate; in other words, is optimal and,
14 therefore, if there was less investment and therefore less
15 growth in the gas market going forward under control, that
16 that would be an inefficient result.

17 I just wonder if that's necessarily the case, and
18 whether it could equally be argued that with a lower WACC
19 maybe what that's implying is that NGC is currently over-
20 investing at the moment and promoting growth which is
21 inefficient. I'm not arguing that's the case either,
22 simply that it's an equally plausible hypothesis. In
23 other words, the level of investment, the optimal level of
24 investment is something we don't actually know, whether
25 it's the current level or whether it's some lower level.

26 **PROF EVANS:** The way to check that out is to look at NGC's
27 criteria for investment in a way; first of all, their
28 process for investment. They want a return that exceeds
29 their particular hurdle rate, is that in society's
30 interests.

31 The other thing is, we've put together in the model

1 that we use for simulating the future, says that the
2 investment hurdle rate of NGC is in fact desirable because
3 we get negative net public benefits when we compare the
4 factual against the counterfactual, and a large driver of
5 that is the extent to which there is investment in the
6 network.

7 The extent to which that is an artifact of the model
8 needs to be inquired into, because we have just written
9 down the model on the basis of what people have told us
10 and so on at the present, so the actual calculation is
11 reasonable to be inquired into, but the higher excess
12 profit at the 8.5 percent WACC is, or zero expected net
13 profits at NGC's 9.5 percent WACC is certainly in our
14 model a driving investment that leads to net public
15 benefits that are greater than if it were to be price
16 regulated.

17 **MR SELL:** Yes, I agree, and I think what it points to is again
18 the need to probably reconcile the different WACCs and as
19 part of that to look at the different risk profiles that
20 are inherent in the way NGC is doing its analysis versus
21 the Commission.

22 **CHAIR:** We are now out of time for this session. Paul is
23 there any brief issue you want to cover?

24 **MR SELL:** No.

25 **CHAIR:** Sue, did you have any brief question you would like to
26 ask?

27 **MS BEGG:** Just on the missing market analysis and the
28 assumptions made there, you point out that the
29 Commission's assumption of demand there in the missing
30 market leads to pretty price elastic demand. I think the
31 Commission has assumed that the profile of demand in the

1 missing market, the customers are akin to the marginal
2 customers in the existing market.

3 Your assumption is that in the missing market the
4 profile of demand will be similar to the existing market.
5 I think our assumption might be conservative, but yours is
6 probably aggressive in that presumably the customers with
7 the highest demand or willingness to pay are those that
8 are first served so that those who are in the missing
9 market are less likely to have the high willingness to
10 pay, so I would just be interested in your comment on
11 that.

12 Then the second thing is that you take the elasticity
13 of minus 0.3 and then you extrapolate using a linear
14 demand curve, and I think that might mean aggressive
15 assumption as well. I know that Vector, for example,
16 model a convex curve -- is it convex? Concave; anyway,
17 sloping as you get to the axis there. I just wondered if
18 you had any comments on that?

19 **MR STRONG:** Obviously, the way in which the demand curve is
20 constructed is relatively simple and certainly it would be
21 reasonable to look at that and look at whether there are
22 better ways of doing that. In the model, the point at
23 which demand is set equal to 0, sort of the intersection
24 of the demand curve with the Y-axis occurs at a price of
25 about \$10 a gigajoule. Given the comparison with other
26 fuel prices, that's still very low. So, I would actually
27 argue that it's the other way around, that we've actually
28 been quite conservative in terms of estimating the
29 consumer surplus under the demand curve.

30 **MS BEGG:** The only other comment I had was on the
31 interruptability assumptions.

1 You've suggested that we've underestimated that
2 because we haven't taken into account the possibility of
3 infrastructure marginal customers being bumped off. But
4 surely, if we have this increased congestion, the risks to
5 those customers needn't change as long as NGC can manage
6 the increased congestion through greater interruptability
7 of those who volunteer to interrupt. So I don't see that
8 necessarily both of those things would increase, you could
9 manage the risks through the voluntary side of things.

10 **CHAIR:** I'd just like to interrupt and ask CRA to respond to
11 that in cross-submissions, because we really must end this
12 session now; I don't want to have to do that, but I really
13 need to. So can I ask, Sue, that we get CRA to respond in
14 cross-submissions, is that satisfactory to you?

15 **MR STRONG:** Fine.

16 **PROF EVANS:** Certainly.

17 **CHAIR:** I now will adjourn this session and ask people to be
18 back at 25 minutes till, at which time we will hear
19 submissions from Nova Gas.

20 I would like to thank you CRA and NGC for what's been
21 a valuable session, and we'll give very careful
22 consideration to the submissions that have been made.
23 I've let this go on for quite some time, but we needed to
24 spend the time on it, so we're grateful to you for that.

25 We'll now adjourn until 25 till, thank you.

26

27

28 **Adjournment taken from 10.20 am to 10.35 am**

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