

To be read in conjunction with
the tabled evidence/statement



**HEARD BEFORE DR R SOMERVILLE QC (CHAIR), MRS G BAUMANN,
MR W GARDINER AND DR R CHAPMAN, MEMBERS OF THE BOARD**

MONDAY 3 AUGUST 2009

**HELD AT THE WELLINGTON CONVENTION CENTRE,
SQUARE AFFAIRS ROOM, 111 WAKEFIELD STREET, WELLINGTON**

HEARING OPENED [10.35 am]

APPEARANCES

Dr R Hawke and Mr S Lawrence, Ministry of Economic Development

Mr J Gleadow, Electricity Commission

Ms R Feary, Mr N Ross and Mr R Tromed, Energy Efficiency Conservation
Authority

Mr A Schollum, Ministry for the Environment

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CHAIR: Good morning everybody and thank you very much for returning to the panel in response to some questions we had. And I think Dr Hawke you are going to speak for a number of parties, I see. But you have a cast of thousands to support you. But what we would like you to do is actually read through your statement before we have any questions rather than take each question separately.

DR HAWKE: Okay. Thank you. So I am Richard Hawke, I am the manager of the Energy and Environment Group in MED and as you say, I am here representing the Ministry, the Energy Efficiency and Conservation Authority and the Electricity Commission. But I have got a number of my colleagues both from MED and from EECA and from the EC. I don't intend - if it is okay with the Chair, I don't think you actually want me to read all my answers to the questions. You have got them in written form. Rather, can I make a couple of points and group them in a couple of areas and make a couple of points, overall comments. And then you can follow up with questions. The questions -

CHAIR: Pause please. Now I'm sorry, we don't need to read pages 1 to 4, but we would like you to read your answers from 4 on.

DR HAWKE: You really want me to read?

CHAIR: Yes we do. Because we want to explore them, we want to hear how you address them. Thank you.

DR HAWKE: So question 1: the Minister has said that the draft of the energy strategy will be completed and out for consultation this year.

Question 2: The energy strategy in 2007 modelled the effect of the proportions of renewables that was in the derivation of the 90% target, and so they're modelling both the 90% and 95% but that hasn't - we haven't done any further from there. The effect of proportions of renewables above 90% on the cost of transmission, for modelling work completed as part of the energy strategy in 2007, did consider the cost of both transmission and renewables in that modelling work. And it also assessed approximate incremental inter-regional transmission costs required to support different proportions of renewable electricity. And the modelling indicated that for most of the scenarios considered transmission costs decrease as a proportion of renewable, as the proportion of renewable energy increase from approximately 90 to 93%. And this implies that additional generation is required to reach 93% - was that the additional renewable generation required to reach 93% was located close to major sources of electricity demand, and no analysis of the results was undertaken though to confirm this.

Question 4: I don't think that we are able to expand further on the answer previous given.

Question 5: The most recent published estimates are from the Benefit Cost Analysis of the New Zealand Energy Strategy, October 2007. That analysis suggests that, compared with a zero emissions price, a \$25 per tonne emissions price would increase the wholesale electricity price by around 3%, and reduce total electricity demand in 2025 by around 0.5%. We expect updated information to be available shortly.

Question 6: Work was completed to estimate the impact of the introduction of the renewables preference policy, which broadly concluded that the impact would be minimal, or nil, assuming an emissions price, because base load renewable options was likely to be the most

cost-effective options anyway. We haven't updated the work on the modelling work on the electricity generation system to take into account the needs of increasing security of supply.

The next series of questions related to the Electricity Commission. Are you happy for me to go through these, John?

CHAIR: Do feel free if you want to stand up and add anything, but if you would be good enough to identify yourself.

MR GLEADOW: I am John Gleadow.

DR HAWKE: Okay. Sorry, John is the director of Transmission at the Electricity Commission, he is here to answer the questions you have around the Electricity Commission.

Question 8: Around the electricity transmissions project transmission to encourage renewables. Phase 1 of the report was completed in 2008. The output was a report by the Commission. Key questions that remain unanswered from phase 1 which need to be addressed prior to the Commission considering possible refinement to the regulatory framework are: Of what magnitude are the economic renewable resources located? Key factors, such as inputs to the economic modelling, include resource quality, capital cost, distance from existing grid (which covers the cost of connection), distance to demand (for instance, electrical losses), and cost of inter-regional transmission upgrades.

What are the costs and constraints of the development of these resources and what technology needs to be considered? Phase 2 of the project is broken down into two broad analysis areas: The first one, economic analysis - Further development and use of the Commission's model to

provide a set of co-optimised future renewable power system scenarios (given the inputs developed in Phase 1 of the TTER project and feedback derived from the new technologies research projects which will be available by the end of July 2009); and, New Technologies; investigating new technologies - for example, giving further consideration to the issues raised in phase 1 submissions regarding the use of new technologies such as high temperature conductors, special protection schemes and investigate the possible economic benefits that could result from those technologies. Outputs from the above research will then be used to investigate possible changes to the regulatory framework - for example, consider whether new, specific connection contracting and pricing framework is required.

Question 9: The Electricity Governance Rules in the proposed NPS deal, with different issues. As such, the Electricity Governance Rules would not be an alternative or enhancement to the NPS. To support the integration of renewable generation, the Electricity Governance Rules seek to minimise barriers to entry and to provide accurate cost reflectivity, to ensure efficient development of both renewables and non-renewable resources, eg peaking plant to provide backup to wind generation.

Question 10: The Commission and Transpower have agreed on a Grid Upgrade Investment Review Policy. This combined with the Grid Investment Test (which is schedule F4 of Section III of Part F of the Electricity Governance Rules 2003) allows use of market development scenarios which include modelled projects. Modelled projects in each scenario include potentially economic generation development opportunities identified through the Transmission to Enhance Renewables work. When appropriate, this enables the Commission to approve transmission investment in advance of decisions by generator commitments to build. This is important when new transmission lines are

needed as these can have lead times in excess of five years. The Commission has to weigh up the benefit of approving such investment against the costs of transmission investments as if not used, they would still be paid for by consumers.

Question 11: No, it doesn't have any implications for the integration of hydro and wind generation.

Question 12: To ensure the least cost provision of electricity, the Commission's focus is on facilitating development of the most economic generation sources, whether these are renewable or not. The participation of the Electricity Sector in a future Emissions Trading Scheme impacts the costs of the oil generation. This is taken into account when developing market development scenarios and so when considering the need for transmission investment.

Question 13: Transpower currently has the opportunity to contract for transmission alternatives, and seek approval from the Commission for recovery of the costs incurred. Transpower has progressed this through its Grid Support Contracts arrangements. However, there are concerns whether this process is as effective as \$2.7 billion of transmission investment has been approved, but no funding has been approved for transmission alternatives (excluding the trial noted below).

Question 14: The process for aligning the objectives and outcomes set out in paragraphs 96 and 99 of the Government Policy Statement has evolved over time as the Commission has responded to both the Government Policy Statement, the requirements embedded in the Electricity Governance Rules, and its wider responsibilities stemming from the Electricity Act of 1992. The relevant Commission initiatives, with respect

to paragraphs 96 and 99, were of consideration of transmission alternatives and the development of the transmission pricing methodology.

[10.45 am]

In May 2005, the Commission prepared a consultation paper that asked industry stakeholders for their views on the various policy options to enable the consideration and provision of transmission alternatives. In December 2005, the Commission published a summary of submissions, and the Commission response, and sought cross submissions and comments on the Commission's analysis of submissions. The Commission published a review of cross submissions in June 2006. The Commission noted that there was no clear consensus emerging from the consultation, with most generators expressing caution with respect to any rules setting out how Transpower could procure transmission alternatives.

The Major Energy Users Group and Todd Energy Limited generally supported the Commission's approach to developing a policy on the procurement of transmission alternatives, Genesis Energy Limited, Mighty River Power Limited, and the Electricity Networks Association and Meridian Energy Limited generally concluded that a transmission alternative procurement mechanism was not necessary. Contact Energy Limited supported a mechanism for procuring transmission alternatives as a risk management measure, but did not support central procurement of transmission alternatives that delay or avoid the need for transmission investment. Many cross-submitters repeated their views that a cost benefit assessment should be undertaken before any transmission alternative policy is introduced.

The Board decided that it would hold back the development of a mandatory policy or rules to see if the industry and Transpower developed

a bilateral contract that would facilitate the development of economic alternatives to transmission. The Commission supported this development by approving \$8.27 million of expenditure by Transpower to conduct a trial on the availability and reliability of demand-side participation to respond to requests to manage load in order to potentially defer transmission investment, and for the development of a grid support contract for demand-side participants to be compensated. The grid support contract has subsequently been developed by Transpower. The grid support contract enables payments to be made to parties providing transmission alternatives to Transpower.

As part of the process for developing the Transmission Pricing Methodology, the Commission published a guideline that noted "Transpower may be required in the future to fund alternatives to transmission" and required that Transpower "should indicate in its proposed methodology how it intends to allocate the costs of transmission alternatives if they are funded by Transpower." Transpower's Transmission Pricing Methodology includes such a provision.

Question 15: The Electricity Commission expects some additional peaking generation capacity will be needed to support large wind investments, although this would still be small in comparison with the overall size of the national generation base. Further, the Commission would expect that wind generation investors would take account of the likely costs of this additional peaking provided by market price signals, and so when wind generation investment does occur it would be part of an overall economic least cost efficient market national investment process.

Wind generation in New Zealand is expected to have a lower amount of annual variation than hydro as low wind yields and low hydro inflows are not fully correlated; that is, overall wind will not always be low during dry

spells. In this respect, additional wind generation is better than hydro as it does not exacerbate dry year issues and so from an annual energy viewpoint, wind does not create a security of supply problem that is different to what would arise from underinvestment in any other generation technology. More information is available from the NZIER website in their report to the Electricity Commission.

However, wind generation, along with non-storage (run of river) hydro schemes cannot be relied upon to meet peak demand. Typical capacity factors are between 20 to 40% are applied. The greater the amount of wind in a system, the lower overall capacity factor, and once wind energy generation exceeds 20%, the Commission would see this as a significant issue. As other analysis have shown, New Zealand is well positioned to be able to efficiently integrate wind, at up to this 20% penetration level by relying on peaking generating capacity provided mostly by existing hydro generation.

The Electricity Commission has noticed from initial evaluation of data from wind sites dispersed across the country that weather conditions and the New Zealand geographic layout can result in infrequent periods of simultaneous still air and no generation. For example, if this were to occur once every five years, then sufficient generation, or demand side management arrangements, would be needed to meet demand at that time.

Going forward, more investment in peaking generation capacity will be needed as demand increases, and the load shape exceeds the ability of existing largely hydro plant to meet demand peaks. Internationally, most electricity systems are peak constrained. Historically, New Zealand was different as it tended to be energy constrained. However, with load

growth, New Zealand is reverting to the norm. Higher levels of wind generation will also require further peaking generation.

When modelling wind generation in the 2008 Statement of Opportunities, the Commission made a number of conservative assumptions including, one that it not contribute to meeting peak demand at all, see section 8.14, page 105 of that report. These assumptions also help to reflect other system operation issues for which additional reserve generation may be required.

Managing security and reliability of supply at the least cost over time, requires investment in the correct mix of generation and transmission assets. In the “sustainable path” scenario, the Commission modelled carbon prices rising to \$60 per tonne by 2018 - it's in the Statement of Opportunities report. With this carbon price assumption, optimising generation development in this scenario resulted in a substantial investment in wind generation from 2020 onwards.

Comparing the “sustainable path” scenario with, say, the “medium renewables” scenario, which has a significantly lower amount of wind generation, gives an indication of how much additional peaking is required through greater wind. The difference is between 200 and 300MW in most years, and peaking capacity in future is also more likely to be provided by demand management.

The next group of questions revolve around energy efficiency.

Question 16: EECA projects savings of around 9.89 petajoules over 22 years from the three years of funding from the Budget initiatives. That includes autonomous savings.

Question 17: No, we are not aware of what other jurisdictions are doing in relation to their rate of autonomous energy, energy efficiency improvements.

Question 18: Economy-wide energy use increased from 454 petajoules in 2001 to 525 petajoules in 2007. During the same period, energy efficiency improved, offsetting 38 petajoules of energy use. Thus, if energy efficiency had not improved, our energy use would have been 563 petajoules instead of the observed 525 petajoules in 2007. On 454 petajoules energy use in 2001, economy-wide energy efficiency improved at an average rate of 1.4% per annum.

The analysis showed that 35% of this increase in energy services, enjoyed by New Zealanders was due not to new supply but due to efficiency gains. The figure that is produced in my evidence shows the relationship between the change drivers, and the net effect on energy demand in the economy.

Most of the overall energy efficiency gains of 38 petajoules came from electricity, followed by wood, solid fuel and liquid fuel. Gas use energy efficiency worsened by about 1 petajoule.

Residential energy use grew by 5.5 petajoules from 59 petajoules in 2001 to 64.5 petajoules in 2007. Activity expansion alone caused energy use to grow by 7.1 petajoules, mainly from an increasing population. Fewer people per household and larger dwelling sizes respectively contributed 1.1 petajoules and 1.5 petajoules towards the household structural effect. Improved living standards or the wealth effect, especially higher heating levels, are reflected in these figures. This is mainly because that this energy efficiency improvement has not become visible. Fuel switching (a

shift away from fossil fuels to electricity) caused the energy use to decline by about 1.1 petajoules.

Commercial sector energy use increased by 1 petajoule from 48.4 petajoules in 2001 to 47.4 petajoules in 2007. Expansion of activity levels caused the energy growth level at 11.4 petajoules, and 0.6 of a petajoule decrease came from within the sector's structural change, with financial and construction sub-sector growing faster than trade or government services. Shifts towards more efficient fuels contributed a decrease of 3.2 petajoules. Improvements in energy efficiency saved a total of 8.7 petajoules of energy use, out of which 4.7 petajoules came from electricity.

[10.55 am]

Industrial, including agriculture, energy use increased by 32 petajoules from 160 petajoules in 2001 to 192 petajoules in 2007, with activity expansion alone contributing 64 petajoules. A trend towards relatively less energy intensive production off set energy use growth by 3.3 petajoules. Energy efficiency saved around 29 petajoules, out of which 13 petajoules came from electricity. This short-term overall energy efficiency improvement rate was boosted significantly by the export-led increase in GDP, and is not likely to continue. A more typical (medium term trend from 1996 to 2007) energy efficiency improvement rate of 1.2% per annum is more likely to occur over the next few years.

Transportation overall energy use increased by 35 petajoules from 186 petajoules in 2001 to 221 petajoules in 2007, and this sector's energy efficiency improved, reducing energy demand by around 0.7 petajoules. The figure that is reproduced in my evidence shows that a more typical economy-wide medium term (so 1996 to 2007) energy efficiency

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improvement rate is 0.7% per annum, and this is likely to occur over the next few years. The most recent change of 1.4% per annum from 2001 to 2007 is boosted significantly by the export-led increase in GDP (and measuring export sectors in terms of international prices) is likely to be a short-term situation.

The over-riding energy use drivers in the New Zealand economy are economic and population growth. Strong propensity for economic growth and demand for improved household, and passenger transport services continued to drive New Zealand's energy use growth.

New Zealand's overall energy efficiency performance compares favourably with many other countries. For example, between 1990 and 2004, energy efficiency in the 14 IEA countries improved by a total of 14% or around 1% per annum – much lower than in previous decades. While it is difficult to make the prediction, on recession led energy efficiency near term trend, the recently released 2008 energy use and GDP data point, to the difficulties in maintaining the past uptake rate.

The above analysis has also been undertaken for electricity. This graph is in my evidence as well. The figure shows the analysis for the drivers behind the change in electricity demand over the past 6 years. Although activity led demand for electricity grew by 34 PJs, most of this growth in demand for electricity has been offset by higher technical efficiencies, enabled by new end-use technologies.

Question 19: For determining the 2009-2025 impact of solar water heating, EECA have used three scenarios that included various assumptions regarding sales trends and other factors.

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The “most likely” scenario results in cumulative savings of around 11.26 PJs, for the period. The “pessimistic” scenario results in about 9 petajoules of savings and the “optimistic” scenario gives about 14.6 petajoules savings.

The wide range from the lowest to the highest scenarios relates largely to attempting to forecast sales, which have fluctuated in recent years. Total industry sales increased from annual installations of less than 1000 in 2001, to over 4000 in 2007. Industry sales then declined in 2008, and continue to be affected by the downturn in the new homes market, a key market for solar hot water heating. However, EECA still anticipates installations to grow, on average, through to 2025.

2008/2009 solar water heating installation data collected from the Solar Industries Association, and other suppliers suggests solar hot water heater installations will be around similar or slightly lower levels than 2007/2008. This follows a decline of almost 20% in 2007/2008.

Forecast growth in the solar hot water heating market has not been realised over the past two years. Reasons for this include the economic downturn, and the resultant downturn in the new build housing market (a key market for solar water heating) and the lack of uptake of residential grants during the first year (that is 2007/2008) of the current solar water heating programme.

Government solar water heating grants issued during 2008/2009 exceeded forecasts. Many installations depend on the government grant to proceed. This indicates that solar water heating finance schemes, are helping mitigate the effect of the economic downturn in the industry.

Future growth in solar water heating installation volume will depend on a range of factors, including the extent and length of the current recession, the availability of government grants to incentivise installations, competition from other technologies, and the ability of the industry to maintain or improve installation quality and performance.

Questions 21: A number of councils provide support for solar water heating through the provision of zero or reduced fee building consents.

Councils providing support via zero or reduced building consent fees include (but are not limited to): Taupo, Hamilton, Waitakere, Westland, and Christchurch.

A number of Regional Energy Strategies are at various stages of development, and these strategies often mention solar water heating as an opportunity in their district.

Expanding on the Nelson project, Nelson City Council is establishing New Zealand's first system for providing loans paid off through targeted rates specifically for the purpose of encouraging uptake of solar water heating. That scheme is scheduled to start in the 2009/10 financial year with the council seeking tenders probably in August/September for suppliers to participate in the scheme. Nelson City Council has also set up a highly streamlined process for assessing building consent applications, for solar water heating installations.

Question 22: In 2008, 4MW or below contributed 0.9% of capacity, and 0.8% of generation - Generation 10MW or below contributed 2.4% of capacity, and 2.2% of generation.

Question 23: It is not known exactly how many communities are not connected to the distribution lines in New Zealand, although unlike countries such as Australia where the number of remote off-grid communities is relatively high, in New Zealand this is not the case.

Neither the Chatham Islands nor Stewart Island communities are connected to the mainland distribution networks. In both situations, reticulated electricity is provided through micro grids that connect the various houses and businesses on the islands.

There are also a number of communities and villages, especially in the East Coast region, where there is no connection to the electricity distribution network, and as a result alternative energy supply options are used. For example, the village of - pardon my pronunciation - Papueru, for example, relies on a diesel generator to power the Marae and other buildings. Although there are thought to be a relatively few small communities similar to this, although this has not been quantified.

On Great Barrier Island, approximately 1,000 households have their own stand alone power system, and it is estimated that there are approximately 1600 domestic-scale stand alone power systems in New Zealand, with about 70 to 90 being installed each year. These systems typically power a single dwelling.

CHAIR: Thank you Dr Hawke and also thank you for your team for providing this information. Do you wish to add anything to that before?

DR HAWKE: No.

CHAIR: Now can I just record who we have please, from the authority and the Electricity Commission.?

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MR GLEADOW: John Gleadow.

CHAIR: John, how do you spell it Mr Gleadow?

MR GLEADOW: G-L-E-A-D-O-W.

CHAIR: Thank you.

MS FEARY: Rose Feary.

CHAIR: Thank you, Ms Feary.

MR TORRENS: Steve Torrens.

CHAIR: Thank you.

MR TROMED: Rob Tromed, T-R-O-M-E-D.

DR HAWKE: One more from EECA, Nathan Ross.

MR ROSS: Nathan Ross.

CHAIR: From?

MR ROSS: EECA

DR HAWKE: And then also from MED you've got Simon Lawrence.

CHAIR: Mr Lawrence – oh yes, hello Mr Lawrence, welcome back. Thank you very much. Now if we can just work through these. Mr Chapman, do you wish to speak?

DR CHAPMAN: Yeah, I just have one or two points of clarification. Thank you very much for this. I think it is giving us a sense of - I should say that my questions arise out of just of a desire to get a sense of where some of the uncertainties arise in this, looking forward to the demand picture. Trying to get a sense of how supply and demand, match up over time, what factors could influence that and so on. So it is helpful in that regard. Starting with question 5 paragraph 9, your answer talks about a \$25 per tonne emission price increasing the wholesale electricity price by around 3%. It seems quite a low elasticity impact in terms of reducing total electricity demand by around one-half of a percent. Is that based on modelling work, that elasticity? And is the impact fairly linear? In other words if prices double, say \$50 a tonne would you expect demand to fall only by 1%?

[11.05 am]

MR LAWRENCE: Okay, so this -

CHAIR: Mr Lawrence is it?

MR LAWRENCE: Yes, Simon Lawrence, MED. Which question is this?

DR CHAPMAN: Yes. In paragraph 9 of your -

MR LAWRENCE: So that is a model result, and it is based on essentially a top-down modelling exercise where we used macroeconomic drivers to identify demand in the various sectors: residential, heavy industry and

commercial. That is a fairly low price elasticity, particularly if you think in the residential sector, elasticities are fairly low. We don't have too many options to use an oven or heat the house unless you switch to another fuel. And this has been observed over time as the price response that we see.

In terms of whether it is linear or not, it's difficult to know what would happen if prices doubled, because we'd need to observe that over an extended period of time, where we would see big changes like that in order to get a model that is actually up to the task of doing that sort of exercise. So, not sure.

DR CHAPMAN: Yes, I guess it's uncertain on two counts, isn't it? One, the straight elasticity over time of electricity demand, which we know may adjust more rapidly up, over you know - given enough time elapsing. And the other point I guess, is what is the doubling of carbon price do in terms of electricity response? Do people start fitting in industry and commerce more carbon friendly forms of generation, or energy use or whatever? So you would agree, would you, that there are a number of uncertainties in that estimate and potentially significant latitude there. Okay, thanks.

I don't know whether this is a question for Richard Hawke or for you. Just turning to paragraph 11 where we are talking about increased security of supply, I guess my question there is, is the Minister - well the government, I understand has put greater emphasis on security of supply, and my question was really about whether this is translating or is likely to translate into a new view on, or a different view on the need to provide increased security?

MR GLEADOW: (inaudible).

CHAIR: Would you mind, sorry, we are recording this, so your words are going out into the ether.

ME GLEADOW: John Gleadow, Electricity Commission. The Electricity Commission has a task relating to security of supply and recently the codification of that has been rephrased in the GPS, but from my point of view I don't see any significant change here. The existing framework and the economic driver is still there. I think the biggest change we saw was some years ago when there was a conscious move to move away from a one in 20 year to a one in 60 year supply standard. I am not really seeing any change beyond that. Currently we are doing more work looking at economic issues rather than security of supply. We don't have any evidence to suggest that the current settings are wildly wrong.

DR CHAPMAN: So when you say doing more work on the economic issues, do you mean the economic impacts of a security of supply problem?

MR GLEADOW: Yes, a loss of supply. There are two dimensions to that. One is, which I am primarily concerned with, is the transmission related event of supply and the other one, which we normally think of, is the dry year issue. Certainly the Commission is interested in changes to the market design which may result in changes in behaviour of market participants to improve the management of those situations. We don't have any evidence to suggest that the actual underlying policy or framework is changing.

DR CHAPMAN: So what is your thinking on the dry year issue, and the economic impacts of that?

MR GLEADOW: We just try and relate this to a number at the end of the day, value of loss load or value of un-served energy, and currently the thinking

is the transmission events would be looking around \$20,000/MW hour, for energy shortage events prior notice, in the order of a third of that is our current view, we intend to test this in a survey process in the next 12 months. That's certainly the historical perspective on that.

DR CHAPMAN: Thank you. Just turning to paragraph 12 where we're focussing on uncertainties arising from the – well, the Transmission to Enable Renewables Report, in 12.1, one of the things that came out was an area for refinement if you like. It's around where and of what magnitude an economic renewable resource is located. Can you update us on your thinking on that? Is this TTER which goes forward into this next phase?

MR GLEADOW: The first point is we haven't finished the next phase that we targeted for July 09, we have had other competing work, that's headed that off.

DR CHAPMAN: Okay, I was going to ask about that.

MR GLEADOW: But it is still an important activity for us.

CHAIR: What's your timing now?

MR GLEADOW: It's a bit later in the year.

CHAIR: This year?

MR GLEADOW: Yes, ideally. It is important for other reasons which I will explain as well. So the first stage of the project, I think we did fairly well in determining at a high level where the resources could be located, and we have identified very substantial wind generation resources; interestingly we found that most of it was in the North Island, which had been contrary

to views expressed earlier. And similarly, we identified – looked at the geothermal resource and saw that there appeared to be a natural limitation on that but that it was probably the most strong – the most economic renewal resource currently being consented.

CHAIR: Just to elaborate a little on what you found looking at those resources. What have been the factors that have led you to identify more wind resources than you there were before?

MR GLEADOW: The assumptions around where future generation model are located are important for considering transmission investment. Proposals to build a new transmission line relies on benefits that could occur for a long time into the future, and one of the key factors is to understand whether there will be generation remote, whether it will have an economic benefit in its development. So you want to be able to compare the case of remote generation plus transmission, compared to local generation and get a feel for the economic merits of those of those two situations. We felt we had relatively poor information, from a national perspective, on the economic merit, of the different renewable resources. And we also thought it was problematic to rely solely on the inputs from particular parties developing those resources. Although at the end of the day it will be their judgments that commit those investments, not ours. Because I think we found some fairly interesting material. Certainly the lower South Island investments didn't seem to rank quite as strongly as proponents had suggested, because we don't have quite the same information sources they have, but they have also had the opportunity to provide them to us. We also saw that wind generation in the North Island and upper North Island is quite attractive, even if the yield from the wind farms is lower, the fact that it reduced transmission costs substantially was a benefit.

[11.15 am]

DR CHAPMAN: So what is driving reassessment? Is it improved technology or the interaction between transmission and new generation opportunities?

MR GLEADOW: Both the factors we wanted to have better information for decision making, and there was a technological called change with wind, that we saw, was this opportunity to use mesoscale modelling. This is the phase for meteorological research (inaudible) complex weather models that allow you to investigate the relationship between weather and topography. So that meant that, without having to go onto people's land, you could look across the whole country and get a feel for where the resource areas were. So it is the relationship of the shape of land and the weather conditions.

DR CHAPMAN: So essentially, the mesoscale modelling was making it more predictable where there were useful resources of wind available.

MR GLEADOW: Yes, yes that's right, that was a step forward.

DR CHAPMAN: That's interesting. So would that change significantly, the sort of, profile of wind that we see in this Statement of Opportunities document in 2008?

MR GLEADOW: We used it before that as well.

DR CHAPMAN: It's been incorporated into that?

MR GLEADOW: We've reconciled it.

DR CHAPMAN: Okay. Would that - you know, looking forward to future SUE would you expect that to continue to develop that understanding of the wind profile?

MR GLEADOW: I think at this stage we are relatively happy with what we have got. We will look to update costs, because the cost of equipment change, and (inaudible) has brought to our attention the errors (inaudible). In fact, I am not aware of any beyond the change in the market for buying equipment. Other factors will make a change, a significant change to the Statement of Opportunities, which we are currently working on at the next step and that includes high population forecasts which I haven't seen anything significant impact on future electricity demand, so those population forecasts have already been produced. In October we expect to produce our first view as to what future demand might be resulting from those.

CHAIR: When will your next SUE be available in fact?

MR GLEADOW: It has to be finished by September, but there will be a consultation version in July next year. But the input assumptions to that, we will start the process of consulting on those, and the first step in that will be the good planning assumptions which is cost information about different inputs such as generation types and that would be in October this year.

DR CHAPMAN: So do you just put out the assumptions at that point, or would you put out a very rough draft?

MR GLEADOW: It would be the key assumptions, demand, cost of technologies, costs of fuels, understanding how those all come together,

will be a result of modelling work. Which will then be presented in the SUE.

DR CHAPMAN: My next question really, yeah, it is probably relating to the Commission more than anything else. It relates to paragraph 23 and this is in the context of the alternatives. I will just read out the context: “The Commission report supported this development by approving of \$8.3 million of expenditure by Transpower to conduct a trial on the availability, and reliability of demand-side participation.” I wonder if you can tell us about the result of that trial, and you know, going perhaps a little bit further than implicit here.

MR GLEADOW: I believe that Transpower and Industry generally felt the trial was quite successful. Quite a lot was learnt through the process. They had the ability to rely on their schedules like 14MW reduction, and peak load, in that Upper South Island areas, that’s from Christchurch north, and that would have the impact of delaying the need for transmission investment by around a year. I think that, combined with other initiatives that Orion and the other lines businesses that have been working on, do demonstrate that they are continuing to have an impact on the load shape. Besides this trial just finished, there are other initiatives in that area that continue to have a significant effect. And I think there is an opportunity for that approach to be used more widely, particularly in the upper North Island, I think there is a strong case for that. That was a point made recently, by Roger Sutton, Chief Executive from Orion

DR CHAPMAN: So is your sense we are investing enough in these demand-side participation trials or approaches?

MR GLEADOW: I think there is an opportunity for more work in this area. From my point of view, from a purely economic – there is likely to be more

efficient economic option in building peaking generation or transmission access. So it's important that these areas are further progressed. And certainly, at the Commission we are concerned about whether there's enough effort going into these areas, and giving consideration as to what we can do in regard to further incentivising that work.

DR CHAPMAN: Yes, just looking at paragraph 24, the conclusion that Transpower may be required in the future to fund alternatives to transmission seems fairly gentle.

MR GLEADOW: The guidelines were intended to be guidelines and they have the desired effect, the regulated methodology does provide that provision, so it achieved the outcome. But it does very much leave that process with Transpower to initiate proposed – those type of arrangements. The Commission would approve the funding for each arrangement as part of a good upgrade plan, and once that happened the transfer has the means of recovering cost for that work, so there is a clear opportunity for that to be done. There is no impediment to it. And this is when you come back to thinking maybe there are incentive or institutional issues that perhaps no-one's (inaudible).

DR CHAPMAN: Okay. In your paragraph 25, the Electricity Commission has mentioned it is expecting some additional peaking generation capacity needed to support large wind investment. Can we quantify that? Can we get a handle on -

MR GLEADOW: Well, this comes up further on in the response in paragraph 32, here we've compared two scenarios which have different amounts of wind generation. The difference in result suggests that at most, you need between 200 and 300 MW of additional peaking, due to that higher amount of wind. And, I suppose I've provide the observation

there, that we would like to see some of that provide demand management, rather than actual (inaudible) generation, so there's scope for that.

This peaking generation seems to have been a similar economic space to demand management. You really only want to use it occasionally, it's expensive when you do use it, but the generators that produce it don't cost that much – they don't have much of a capital cost, and the same set of – (inaudible) in a general sense relate to demand management. People often don't want the demand controlled all the time. It could be inconvenient or expensive in some way, but it doesn't often cost very much to put the mechanisms in place to allow it. So you have these different approaches that could compete in the same - solve some of the problems, I suppose. Obviously, very keen to support that.

[11.25 am]

DR CHAPMAN: From what you said earlier, indicating to some extent there may be institutional factors in there.

MR GLEADOW: It's possible. I suppose if we take an overview of the electricity industry, there are quite a few issues which perhaps limit these - the discussion on advanced matters for example, that's been going on, that's obviously relevant to the ability to manage demand. The discussion around market design is also relevant.

DR CHAPMAN: Is it something the Electricity Commission could advance significantly in terms of, for example, metering arrangements?

MR GLEADOW: Yes, the Electricity Commission work stream, people are working on this in collaboration with industry. It certainly is a very active

area. In the Commission's work we want to try and strike the balance between regulating something, and perhaps reducing the scope for innovation at the risk of locking into technology platforms that may well become obsolete, to allowing a market response where people make those decisions on a more flexible basis. There is a balance there I suppose, in determining what activities are the ones which are the best, that support these processes? Currently the ownership of metering is contestable, so there seems to be the parameters in that market to encourage innovation and development.

DR CHAPMAN: But the ballpark we are talking about is perhaps a part of that, half of that 200 to 300 MW, or possibly a little bit more depending on, you know, the scope.

MR GLEADOW: Just resulting from wind, whereas you'll still have other needs for other system resources.

DR CHAPMAN: That's true. Okay, thank you for that. I guess my next question is for EECA. Would that be you Robert? Yes, thanks for the input here, interesting data.

Turning to your paragraph 40, there seemed to be a big increase in energy use in industry, and I just wonder looking at your statement that a more typical energy efficiency improvement rate is 1.2%. If that is not a little pessimistic depending on – well, could it be influenced perhaps by factors such as the extent of promotion of energy efficiency and sectors like industry, and the track of energy prices, and the track of carbon prices, how influential are those factors in looking forward?

MR TROMED: I think the challenge with answering that is none of us can foresee the future. The analyses you have in front of you is all ex-post

analyses based on energy consumed, GDP produced, value changes in different sectors. Making the leap to projecting from that is an interesting challenge. Within our programs we are seeing some interesting changes. A lot of industry still holds to a one to two year payback on investments in the energy efficiency space. Now if you can create an environment where a more open-minded view of longer term changes are made, and I think you could open up quite a wealth of energy efficiency improvements across the industrial sector, for instance.

The challenge is that they are all working largely in international markets where value adding, using energy to value add to commodities in New Zealand, and those products are sold in quite stressed international markets. So I think yes, there is an opportunity to improve the promotion of energy efficiency. I think the reality is that the people that are running these businesses are facing some real challenges in keeping those businesses going in international markets.

DR CHAPMAN: Some challenges that go beyond energy.

MR TROMED: Well, yes, I mean there are macroeconomic challenges, rather than energy efficiency, per se.

DR CHAPMAN: Sure, yeah. But just going back to that issue of the energy price outlook, going forward and perhaps the carbon price outlook, you know, it is very difficult to say. I accept that. Just that 1.2% is - that certainly would be subject or influenced by those factors.

MR TROMED: Absolutely, but I think as you have already discussed with MED there is quite a low price elasticity around the demand for these products. I think a lot of our industrial output and demand for energy services are in quite capital-intensive, industrial sectors, aluminium, smelting, steel

manufacturer, the dairy industry, large capital investments. They are not that flexible. They pretty much run despite monthly changes in commodity prices. That structural change happens very slowly. That's one of the parts of this analysis that actually does show us that structural changes, it is very slow to change.

DR CHAPMAN: Okay. Thinking back over the track of electricity price, we don't have the data here, but the commercial/industrial electricity price has been growing quite slowly in real terms, whereas residential has been growing quite fast. Do you expect that to keep on going in that pattern, or do you feel the effect of the rebalancing that we've seen in the last five to 10 years will wash out and you will see an upward drift in electricity prices for the commercial/industrial sector?

MR TROMED: I really don't have the basis to project electricity or other energy prices. I think it's a really good question, but I really don't have the basis to answer that.

DR CHAPMAN: Fair enough. In paragraph 52, which is around solar water heating installations, what capacity is there for the government to influence any of those factors that you listed there, such as for example, the ability of the industry to maintain or improve installation quality and performance, to the extent that those can be influenced, you know, what's happening in that area?

MR ROSS: So particularly, on a specific point in regards to quality and performance. Nathan Ross from EECA. On the specific point regarding quality of installation and product, there's been a number of things happening over the last couple of years, which has been around standards effectively, so the standard for the manufacturer of solar water heaters, has had a significant upgrade with a new standard published in

2007, which has had a significant positive impact on the manufacturing of the system and its durability and such forth. In terms of its performance, at the moment the better performing systems are encouraged largely through consumer information.

Again, we have a standard for modelling the performance in a solar hot water system, and that information is promoted through the government program. There is no specific requirements at this stage, for say, minimum performance standards for solar hot water. There is some work being done now on Energy Star for solar hot water systems, and there are some concepts around – you know, long term concept plans around perhaps applying MEPS to solar hot water systems, but at the moment it is based largely on consumer information.

DR CHAPMAN: Sorry, what is the current barrier on MEPS there?

MR ROSS: Just the work that needs to be done. The process for developing MEPS for any product takes a few years in terms of industry consultation and so on, it takes a couple of years to develop that and that it something that's only really been sort of, looked at seriously in the last few months, solar hot water.

DR CHAPMAN: And even if that was telescoped, it would still take a year or two?

MR ROSS: It still take's a couple of years, yeah. We are actually in advance perhaps of the process, because we have had the program for so long and we do have the performance modelling of systems which is based on some real test data as well as model data. So some of the steps are already in train. We've already done some analysis of data around the cost of systems versus the performance, ie, if we imposed an energy

standard would it push the prices up for consumers? That sort of thing. So some of that analysis is starting out, but it would still be some time away.

[11.35 am]

DR CHAPMAN: Okay. Thanks for that. No, that's all the questions I have for you. Thank you.

MRS BAUMANN: I don't think I have any questions. That's good enough for me.

CHAIR: Now, perhaps Dr Hawke if I could perhaps start with you. There is a cup of tea coming in a moment. Since we met last, I'll bring you up to date with what's been happening with the inquiry and why we needed to talk to you again, to the different groups. It seems with geothermal that - and I need to relate everything back to the Resource Management Act because that's the need for this instrument. It seems with geothermal that the Waikato Regional Council has developed a plan which appears to be working all right with geothermal and the Bay of Plenty is going to also adopt the same approach, so the role of geothermal in the projections when it comes to base load and so forth, have you got any more up to date numbers than you gave us at the beginning of the inquiry?

DR HAWKE: No, I mean the best place for projections I think actually John referred to as to where we expect companies to build, comes out of the statement of Statement of Opportunities, so that's the best definitive statement on -

MR GLEADOW: It's actually in our report too. The attachment to that -

CHAIR: Sorry, the TCR report?

MR GLEADOW: The TTER report (inaudible) and it's probably the main reason -

DR HAWKE: Now that said, the Ministry is in the process of finalising its energy outlook which uses the Statement of Opportunities as a part of it, but there is some work that we've been doing about thinking about where we see some of our - the longer term scenarios for energy systems, which includes obviously the electricity system, but it's not as defined as to work with the Electricity Commission.

CHAIR: Could I just check then, with geothermal, just so we can make sure in our report that we've got the up-to-date information as is concerned with this process. As far as the Commissioner is concerned, what are your projections about the life of the fields with geothermal?

MR GLEADOW: I don't think I can give you an answer to that. I know there is an uncertainty.

CHAIR: Have you got a range, John?

MR GLEADOW: No, not really I'm sorry.

CHAIR: From all the parties here, are there any constraints currently within the Resource Management system, when it comes to geothermal, that's concerning the different groups?

DR HAWKE: I think the best people to ask that of is actually probably the people like Contact Energy and Mighty River Power, who have extensive - I mean they have been the ones who have been, and I know from experience,

they've been intimately involved in the development of the Regional Policy Statement and the Regional Plan for the Waikato and they've been through the re-consenting process of Wairakei and the consenting process for Te Mihi in the place of Contact, the consenting process in the place of Mighty River Power for Kawerau and the development, it's not called Ngatamariki, but the new plant for the Ngatamariki field. So they have extensive experience in both re-consenting and consenting and I know as part of that Contact have done a - you're asking about field life, extensive work in estimating the output and how they're going to run those fields.

CHAIR: Yes, we've heard from Contact and we're very grateful, but I just want to make sure that from a Government perspective, whether there's any further information we should have, rather from the generators perspective, when it comes to geothermal?

DR HAWKE: I think it's best if you ask the generators.

CHAIR: So, you've got nothing more to add. Now when it comes to wind, the correlation between wind and storage peaking, storage hydro, if we can try and get a better handle on that please. I'm not sure who should answer these. I think this is probably Electricity Commission.

DR HAWKE: Yeah I think so, it's probably John.

CHAIR: At the moment we've heard a good deal of evidence about a number of consented wind farms that haven't actually been built.

MR GLEADOW: Yes.

CHAIR: Would you like to - what's your understanding of what's happening there as far as -

MR GLEADOW: Well the investors in these plants have to make their own decisions about whether it's a good place to spend their money and whether they'll get a commercial return on those investments. I think there's evidence to suggest that developers like to secure options so that they know they have an opportunity to proceed with certain developments if the economic characteristics of that development become favourable. I don't think that many years ahead of time you can be completely sure as to which development options are going to be the best from a commercial point of view. So I think there's evidence to suggest that there's more options are consented than are developed, and that's not peculiar to wind generation. You see the same situation with some thermal generation sites as well.

CHAIR: What is it telling you though in terms of the demand site?

MR GLEADOW: Well there's been commentary that suggested that the turbine prices were high, although the international market seems to vary. I'm sure the current downturn in the world economy must have changed that to some extent. There's a lot of offshore developments which were relying on project financing so they were sort of tied into capital markets. Beyond that, there's a limited amount of growth each year in electricity demands, so investors need to understand where they're going to get the income from in these projects and so they'd have to have superior economic purchases to their competitors otherwise they'll be producing at higher cost than their competitors and so that's one reason why not everything that is consented goes ahead, but it does affect the dynamic going forward as well. So if there's expectations of reduction in demand or other cheaper options appear to have been developed, then that will mean that

some investors are more cautious than others. We have seen quite a lot of development though in terms of meeting demand for growth. The evidence would suggest that there are sufficient projects being developed to provide for growth.

CHAIR: In wind?

MR GLEADOW: Yes.

CHAIR: So, in your modelling, how long have you allowed for the 20% penetration to occur, over what period of time?

MR GLEADOW: With the assumptions that we have described here on the cost of carbon, that resulted in that coming around later in the modelling period, so it must have been towards the back end, closer to 2040 probably.

CHAIR: 2040?

MR GLEADOW: I'd have to go back to look at the scenarios more exactly to check that. Though it will be graphed in the (inaudible), so it's just my recollection of that.

CHAIR: Yes.

MR GLEADOW: But I know that the problem for us was that if we were going to see penetration well above that, we were going to have to improve our modelling because the other cost impacts became more significant and so because they didn't, that means that we wouldn't have to go that far, it's not going to work.

To be read in conjunction with
the tabled evidence/statement

CHAIR: We'll just pause here and have a cup of tea and we'll come back to this.
We'll just say quarter of an hour. Thank you.

ADJOURNED [11.43 am]

RESUMED [11.48 am]

CHAIR: Mr Gleadow, could you just carry on with that line of questioning and then we'll come back to Dr Hawke. Now, the 20% penetration for wind, you mentioned that you looked at the potential uptake in the top of the North Island.

MR GLEADOW: Yes, yes. Top of the North Island.

CHAIR: Can you explain the areas you are talking about there?

MR GLEADOW: In that TTA report we identify there as Northland. The advantage of Northland is that the existing transmission infrastructure is taking electricity north because there's no generation that really operates up there, apart from geothermal plant at Ngawha and so wind generation in that area would be able to utilise that transmission to send power south, so there's an obvious low cost transmission option there. But you still do have issues connecting from where the wind farm locates to the existing infrastructure and the further north of Whangarei that you go of course, the more of an issue that becomes. But that's one area. We did then find a resource on Great Barrier Island but we came to the conclusion that it would be uneconomic to get the transmission off Great Barrier, even if we could build it. But certainly I think the other areas you see where you have consenting processes underway, the Waikato coastline -

CHAIR: So, that work you've done is the NIWA work is it? The wind -

MR GLEADOW: No, no, this is independent consulting, that's Connell Wagner --

CHAIR: Oh the Connell Wagner -

MR GLEADOW: -- and they initiated - they used the scale and model. We tried to rank the different sites in a rough economic merit order in three tranches to identify with the quality of the wind and the likely turbine costs for those sites, so the most economic resource, the tranche one was the one was the one that we still found quite widely distributed. Probably enough of it to meet all of the country's energy needs, but it does relate to assumptions around whether sites are developable or not and our filtering for that criteria is fairly crude.

CHAIR: When you say all the country's electricity needs, for how long?

MR GLEADOW: Well the current needs anyway, so if you can imagine that every piece of electricity we have today was coming from wind, there's enough resource, its economic - well we're close to economic to do that -

DR CHAPMAN: Sorry just to clarify that, when you say all -

MR GLEADOW: Current total consumption.

DR CHAPMAN: The current total consumption -

MR GLEADOW: Yes.

DR CHAPMAN: Would that include going to 100% renewable for example or -

MR GLEADOW: Yes, I don't - there's a vast amount of wind energy available. That's certainly what we can see from the results of this work.

CHAIR: And how long would the storage for peaking that we currently have last then?

MR GLEADOW: So the challenge is yes, you then need to integrate that resource with the way the electricity system works, when you have demands and coping with the intermittency. Very crudely if you look at island systems, small island systems, they will have almost 100% backup for the wind generation, so they will have a diesel generator or something there to backup so when the wind's not blowing the diesel works. With our system it's not as bad as that because we'd have all these storages in hydro that we can use and the variation of wind is in shorter time scale than the storage is - it's an ideal system to integrate wind (inaudible) expense.

CHAIR: This Connell Wagner work and the - your assumptions on that, is that material in the first -

MR GLEADOW: Yes, there's an attachment to that and another attachment is the geothermal report as well.

CHAIR: We'll have a look at that. Now just to look at the demand site for a moment, we've been getting a range of numbers based on - from about one and a half percent growth through to two and we've had numbers such as - well we'll need another 40,000 megawatts by 2025 to about 19,000 megawatts -

MR GLEADOW: Gigawatt hours.

CHAIR: Oh sorry, gigawatt hours. Beg your pardon. Sorry, got to get the numbers right, how many gigawatt hours?

DR CHAPMAN: Well we're currently on 42,000 roughly so -

CHAIR: We need the same again. What would you have to say about that?

MR GLEADOW: Well I'm not completely in touch with the numbers for that because I didn't do any work on that forecasting side but I suppose as a general observation it's important that we find the most cost effective and efficient means of meeting that demand, obviously it underpins the economic wellbeing in the community and if you were to exclude a number of economic options, obviously the cost of meeting that demand would go up and I think the demand management and those sorts of options, there's another type of investment to manage that situation. For the same reason we wouldn't want to have dipped out of that developed economic renewable resource, we wouldn't want to miss the opportunity for an economic investment in demand management and those sorts of alternatives.

CHAIR: But in your modelling if you say the wind could cover the needs through to 2025, what predictions are you making about demand?

MR GLEADOW: The numbers of one and a half to two percent growth sound of the right order to me. Typically our forecast demand treats the efficiency as an imbedded assumption so we believe it's consistent with what's been happening for a number of years and we expect the efficiency developments to continue at the same rate, so it's sort of internal in the projection of demand growth, so to change that view you'd have to see some sort of major change, structural change in the process rather than sentimental development which is still clearly important but I don't really see evidence of any - it wouldn't be a reliable forecast based on assuming that things were going to change substantially in that area.

CHAIR: If wind were to meet the demand, do we need any more hydro because of our current storage capacity?

MR GLEADOW: It's a matter of what are the most cost effective means of meeting growth and there are some hydro schemes that seem to have a very strong economic merit and I think the Clutha scheme's ranked very highly in our work. There would be an assessment of - the costs of those schemes suggested that they were very economic. So as I said, if you exclude one technology or another when they are efficient, commercial, you end up increasing costs overall. The information suggests that there are some hydro schemes that have very favourable economic applications if you want to see them develop as you would for some of the wind projects.

DR CHAPMAN: Just one question I guess, just going back to the comments by Mr Tromed about the rate of improvement in energy efficiency, if that were to be lifted a little, would that significantly alter the demand site growth, do you think, from - the one and a half to two percent, could we get that down a little bit into the, around about one and a half area, perhaps a little less than one and a half?

MR GLEADOW: Potentially, but it's quite a large programme on productivity you're expecting, so I'd be sceptical of that until there you had some certainty around it, I suppose. The other one thing I'd point out is in many economies there's been an increasing electricity intensity. So while overall energy growth's fallen, the electricity use has grown. That electricity has been a more efficient use of energy and a very obvious example is electric cars of course, but there have been other examples of that as well.

CHAIR: Just - talk about the (inaudible).

DR CHAPMAN: Yes, a couple of questions. Just while you're on electric cars, are you familiar with the paper by Mike (inaudible) recently published?

MR GLEADOW: No, not directly.

DR CHAPMAN: I'd be interested in your comments on that. His theory is - he's a Waikato - was that I think you are looking at of the order of 8,000 gigawatt hours to convert a significant large part of the (inaudible) vehicle to run electric vehicles, battery electric vehicles. I'd be interested in your comments on that if you were able to comment -

MR GLEADOW: We did some of our own work which I think is also effective in the (inaudible), there is a - we think there is a constraint in terms of market uptake of electric vehicles. There is plenty of attractive choices financially.

[11.58 am]

DR CHAPMAN: Yes, yes.

MR GLEADOW: The numbers sound roughly reasonable to me, but I don't really - I can't recall what was said in the (inaudible) so I can't really give you much more than that.

DR CHAPMAN: Yes, okay. Well the other question was going back to the (inaudible) at 2008, page 77, talked about the TY Smelter being assumed to decommission in the mid 2020s under a medium renewable scenario, NPS 3, and I guess my question is, looking at the projection out to 2025, under that sort of scenario I presume we would immediately get a - that would increase the ability to get to the 90% target quite dramatically at that point.

MR GLEADOW: To the extent that some of the fuel burning plant doesn't run, so potentially energy surplus yes.

DR CHAPMAN: How would transmission factor into that?

MR GLEADOW: There are some further investments needed in the lower South Island that would happen. I suppose the background to that scenario is that we foresee with some chance that you might see that facility closing because their business is relating to commodity prices and have got merit in international market and for us not to have foreseen that it might be a possibility - the information which would be useful to take into account when you're planning transmission (inaudible). But in the Statement of Opportunities it's one of five scenarios, the notion of having a 20% weighting. If the Commission has the opportunity to rebalance those or adjust those and it makes specific decisions - and of course at that time we didn't know about the current situation where we've had to put one out of service for quite a while and the resulting imbalance that has created. So it seemed like a fact it was important to take into account when you're making investments in transmission. It's a very wise theory.

DR CHAPMAN: Could I ask also what the effect of significantly higher electricity prices would do to potentially accelerate that decommissioning?

MR GLEADOW: Well it's - I suppose it's a speculative sort of comment from my point of view, but if the purchase cost of electricity which is a big input to their process became higher compared with other places in the world where they do the same thing, you would imagine that they would look at the viability of that plant. I know that particular plant, it seems to get a premium for quality of the material they produce but it only goes so far I suppose.

DR CHAPMAN: Okay, thank you.

CHAIR: Could I just - sorry to come back to this 20%, but it may help us in the sense that we don't have to - you may be able to summarise material that is in your documentation and that is at paragraph 25 of Dr Hawke's statement, you've got additional peaking generation capacity for the needs to support large wind investment although this would still support in comparison with the overall size of the national generation base, then you refer to the 20% penetration of the wind, is - can you just give us an indication of some numbers. What sort of gigawatt hours are we talking about?

MR GLEADOW: It's also 20% at that date as well, so it's going to be more than 42,000. I'm not quite sure what the number is then, I presume it's around 50 but I'm just - I don't have the document, but it will be 20% of the total energy forecasted in that period.

CHAIR: Right and if that happens, the additional lead or peaking capacity on storage, have you got a figure on that?

MR GLEADOW: There's this two to three hundred megawatts that we observed as being needed additional, with the option for that to come from a range of sources. It could be specific hydro or diesel based plant or gas based plant or demand management or this common economic characteristic that they tend to have a high operating cost and low capital cost. That's a right mix for a peaking plant.

CHAIR: That's interesting.

MR GLEADOW: One further comment about that is that we expect that investors, generators, take into account these costs that they may face in the future and Meridian certainly made those comments in the Project Hayes theory and if they were imposing additional costs on

electricity system they would expect those costs to be signalled to them (inaudible) and certainly that would be the view of the Commission as well but we don't see this as being a significant issue until penetration rates get high.

MRS BAUMANN: Above 20?

MR GLEADOW: Yes. Well, if requested - as you start to identify causes for issues we can signal cost to, it's important to do that, because you get the wrong mix of investment otherwise.

CHAIR: So what are the incentives at the moment for the generators to push the demand site management?

MR GLEADOW: Well it's an interesting observation. There may not be strong enough incentives. One of the current issues the Commission's looking at is whether there are property rights around the management of load. One of the issues we have currently is that if someone wants to make an investment in demand management, how do they actually get it right or sell for which they can use to earn a return on their investment. The Commission is actively trying to sort some of those issues out. The actual right to management of load ultimately lies with the consumer and so you need a process where the value of that opportunity is signalled to the consumer, so that issues like advanced measuring and also the way that the price is established in the electricity market, they're both factors which are relevant to those investment opportunities, some areas of work the commission is working on.

DR CHAPMAN: So have you looked at overseas comparisons through regulatory mechanisms?

MR GLEADOW: We do, but there's often context issues with overseas processes, at times you see things that seems to be done through a strong political imperative that don't necessarily make it common sense, or the effect of structural arrangements of the industry that they have. You do see a lot of monopoly, transmission businesses, and many that are state owned, and you have the similar consistent problem, with what I'd call a supply side bias to the industry generally, and that's one of the challenges for the commissioners to, wouldn't say offset it, but foster development of other options.

CHAIR: Thank you very much, and if I could ask the authority if you could - Mr Tromed, and Mr Ross. There was just - the subject has come up during Inquiry 2, and that is, when it comes, and this is resource management related, when it comes to subdivision design, access to daylight, or sunlight, and so forth for solar uptake on new houses, have you done any work on that? In other words, it's a regulatory forcing mechanism within subdivision rules.

MS FEARY: I'm Rose Feary from EECA. I'm not sure that I can give you any answers that you want. There's not as much work done on that as I would like, but we do have in draft form, a guidance note in relation to small and domestic scale generation, and that also does address requirements for solar hot water heating, aimed at giving information to councils in relation to consenting. So I could probably give you more details of that, but I don't have it in front of me at the moment, but that's as far as we've gone. I we don't have, at the moment, detailed information about that.

[12.08 pm]

CHAIR: Is there an intention to speak to local authorities about promoting solar with new houses when they approve new developments, as part of the

resource management process, for instance we've heard evidence, and you've been good enough to give us the material about building consent waivers and things like that, but we have heard some local authorities say, "Well they could design within their subdivision rules, controls," which would effectively be incentives for solar, rather than having all the houses facing South, and things like that.

MS FEARY: Exactly. Well in terms of what we're addressing at the moment, that isn't specifically part of our program, other than, at the moment, focussing on this guide for councils. But it's something that I'm aware that there is a gap in relation to. I think our focus in terms of solar hot water heating has been to reduce consenting fees, and to do some promotion through councils in relation to that, and not specifically in terms of subdivision design and consenting.

CHAIR: Some of the local authorities certainly have controls on double glazing and things like that and are prepared to build into their application fees, advantages, if you have energy efficient techniques and methods.

MS FEARY: Yes, a lot of our, we do include submissions on district - EECA does make submissions on Regional Policy Statements, Regional Plans, and also District Plans, and we do make submissions to the effect that those things should be addressed, and that energy efficiency and solar hot water heating in general terms, need to be addressed, but we haven't worked down to specific criteria, but we're hoping that this guidance note that we're consulting on at the moment, will be the foundation block for some further work in that area.

CHAIR: Well that's helpful. And what's your timing of that guidance note?

MS FEARY: Well, I'm hoping it's going to be finalised over the next couple of months, but I would have to get back to you about that as well.

CHAIR: Does the guidance note go as far as a model set of standards, or rules?

MS FEARY: My understanding is there isn't a model set attached to it yet.

CHAIR: That would be helpful if we could see, even if it's just for the consultation. Thank you very much. Ms Feary, the information about remote properties, the NPS talks about a 4 megawatt cut off when it comes to expediting consents. The material you put out there, sorry to point this out but, it's got pictures of lodges and remote facilities that have used solar and hydro and so forth, have you actually done a survey around the country where that's been picked up, in remote areas, because that's of interest to the panel.

MS FEARY: (Inaudible).

CHAIR: Alternative generation techniques, without being hooked to the grid.

MRS BAUMANN: Distributed generation.

MS FEARY: Well I think the - distributed generation is not quite my area but, I mean, I'm not quite clear what you're asking there, but the information that we supplied there, we haven't done a total survey in relation to what communities are, and where distributed generation is and isn't, and where it's been utilised and where it hasn't in off-grid situations.

CHAIR: Yes, the reason I ask is your website, you've got examples of where it's been happening, and you seem to be promoting it, and I wondered whether or not you've got any evidence about uptake or anything else.

MS FEARY: Well, yes we have and we're working on - we've got a couple of work streams on that at the moment. Probably you might be able to provide some more information on those particular things. You're probably more familiar with them than I am, in terms of what - it's actually Joseph Mayhew in our organisation who addresses the distributed generation.

CHAIR: Well, by all means just get the material to us, but we don't want to be dealing with stuff anecdotally.

MR TORRENS: Just to clarify, you are specifically interested about remote off-grid stuff?

MRS BAUMANN: Yes

MR TORRENS: Okay

MR GARDINER: One of the issues around NPS 5 in this exercise is providing some low level of capacity, and we thought areas of the East Coast, Northland, which might look at these kinds, so we've been asking Generators, "What capacity have you got for reaching these communities?" And by and large they do, but if a community decides that it wants to actually do its own thing, we just really wanted to - and I think in Question 23, you addressed that in a general sense, and I think we just need a little bit more.

MR TORRENS: Okay, I know we certainly haven't done a national survey of people that might be off-grid. We have done some work looking at the economics of off-grid generation, and we could certainly provide you with that.

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CHAIR: That would be helpful, and if you could tell us, I think Haast has a hydro and diesel backup.

MR TORRENS: Yes it does, yeah.

CHAIR: Which isn't mentioned in the material Dr Hawke gave us.

MR TORRENS: That's true, yeah.

CHAIR: All right, thank you. Dr Hawke, thank you very much for co-ordinating that material, and we appreciate that, and also thank you to your team.

CHAIR: Now, I think Mr Schollum is it, MfE, thank you. Mr Schollum, we'd be grateful also if you could read from Paragraph A, at Page 3.

MR SCHOLLUM: Thank you Sir.

What are the factors when it comes to the identification and assessment by Generators of potential sites and energy sources for renewable electricity generation, that central government would want to make sure were included in the inferior instruments. What criteria does central government like to see in those instruments? For instance, is transmission an important factor?

At the point of finalising the Proposed National Policy Statement, it was considered that there was an insufficient evidential basis to enable officials to nominate and specify factors, or criteria at a national level, for inclusion in plans and policy statements across the country. That's not to say that we didn't look at the idea.

During the policy development process, officials did however consider a range of potential matters, including,

1. The physical scale of effects. Monitoring structures and research-scale installations are likely to have a relatively limited scale and/or scope of effects.
2. The temporal scale of effects. The effects of monitoring structures in particular are likely to be temporary.
3. The need to gather data to enable an accurate assessment of the quantity, quality and characteristics of a particular energy resource.

4. The need to gather data upon which to enable an accurate assessment of the effects that might be associated with a full-scale proposal, a factor that is relevant to both new technologies and established technologies in new locations.
5. The need to ensure that the effects of the monitoring, or research-scale proposal are not confounded with the effects of any potential proposals that may arise in the future.

I just put those in there to give you an idea of the kinds of things that we were thinking of, I thought that might help you, but during the policy development process when we started doing that work, it became apparent that we didn't have all the data necessary to be confident enough to insert it into an NPS and we felt that it was important for local authorities to have the opportunity to do that work themselves, based on the local specific factors.

Noting that the proximity to transmission infrastructure will influence the eventual effects signature of a generation proposal, as far as I can recall, 'transmission' per se, was not one of the matters that officials considered including as a relevant factor during the development of this policy.

Question B. Would you like me to read out the questions?

[12.18 pm]

CHAIR: No, no.

MR SCHOLLUM: Right. Question B. In drafting the Proposed National Policy Statement we sought to elaborate the meaning of sections 7(i) and 7(j) of the RMA in particular. We did not, however, seek to replace the judgement of decision makers on the relevance or relative importance of

particular elements of Part 2 of the RMA, or any other factor, when considering specific proposals. Including section 7(ba) of the RMA, "The Efficiency of the End Use of Energy."

Question C. The executive summary of the assessment of environmental effects associated with Crest Energy Ltd's original application for resource consent, and the executive summary attached to the revised application together provide a useful overview of the proposal, which is one that I thought it was particularly relevant to bring to the Board's attention. I have provided copies of these executive summaries in Appendix 1 of this statement. I can always provide you with more information about that, if those don't suffice. There's also an enormous amount of information on Crest Energy Ltd's website.

I have included tables in Appendix 2 of this statement, which set out the consent processing timeframe for the Crest Energy Ltd's proposal and summarise the information requested, there's a stray 'by' there, via section 92 of the RMA.

That table doesn't include, some recent processes relating to Te Uri o Hau's application or (inaudible), one of the local Iwi, requested a stay of Environment Court proceedings until such time as their application for customary territorial rights, I think, under the Foreshore And Seabed Act had been dissolved by the High Court, and that stay was declined and so the processes can come forward. But this is very rich case study, the Crest Energy proposal.

Question D. I have provided examples of Regional and District Council provisions addressing renewable electricity generation in Appendix 3 of this statement. I would like to note that, as well as helpfully updating the examples of planning provisions that I provided in Appendix 3 to my

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original statement, EECA has also advised me that it actively submits on Regional and District Plans, seeking the inclusion of the following provisions, or provisions in the following areas.

To recognise the potential for and maximise the development of the renewable energy resources.

To recognise and protect the local, regional and national benefits, social, economic, cultural and environmental, of renewable energy generation of various scales and those associated transmission and distribution networks.

To provide for the development, operation, maintenance and upgrading of existing and future renewable energy activities while, as far as practicable, avoiding, remedying or mitigating the adverse effects on the environment.

To recognise the importance and quality of the existing and potential renewable energy resources.

To manage activities that adversely affect renewable energy infrastructure including reverse sensitivity.

To ensure existing and future infrastructure and utilities are managed in a manner which achieves as much consistency across local authority boundaries as reasonably practicable.

To recognise and provide for the locational requirements of renewable energy.

So, yeah I just wanted again to thank EECA's - EECA helped a lot there. The Ministry for the Environment has been quite engaged with the RMA

reforms lately, and we've had to draw on help from other agencies in some areas.

Question E. The definition of coastal environment is discussed on pages 29-30 of the Section 32 evaluation of the Proposed NZ Coastal Policy Statement. I consider that the following discussion is particularly relevant.

“It is recognised that the coastal environment cannot be defined by one set of criteria that would be able to be applied nationally. Rather it is more logical for local authorities to define the extent of the coastal environment at the regional and district level, in a manner that takes into account the local settings. In considering local settings there are however a range of nationally consistent matters that should be considered and on which guidance can be provided.”

The relevant policy of the NZCPS in terms of defining the coastal environment is, Policy 1, “The Coastal Environment.” In promoting the sustainable management of the coastal environment, policy statements and plans shall recognise that the coastal environment includes, at least

- (a) The coastal marine area
- (b) Land and waters where coastal qualities or influences are a significant part or element
- (c) Land and waters affected by active coastal processes
- (d) Areas at risk from coastal hazards
- (e) Coastal vegetation and habitat, and
- (f) Landscapes and features that contribute to the natural character, visual qualities or amenity values of that environment

CHAIR: What stage is that?

MR SCHOLLUM: When I drafted this, the DoC website hadn't been updated, so, but I have subsequently heard, although I haven't confirmed it with DoC, that the Board of Inquiry has completed its inquiry, and provided a draft report to the department, but I'm not sure exactly where it's at in the process.

CHAIR: Thank you.

MR SCHOLLUM: Question F. The government's overarching objective for Phase 2 of its Resource Management Reform programme is to achieve least cost delivery of good environmental outcomes. This objective is supported by the four sub-objectives of,

1. Providing greater central government direction on resource management
2. Improving economic efficiency of implementation without compromising underlying environmental integrity
3. Avoiding duplication of processes under the Resource Management Act and other statutes
4. Achieving efficient and improved participation of Māori in resource management processes

At this year's annual conference of the New Zealand Planning Institute, the Minister for the Environment stated that, "Phase 2 is a far more complex reform process than the first phase of reform," my words, "With ten related work streams. The first four work streams involve greater central Government direction to improve management of aquaculture, infrastructure, urban design and water." There is also a major job to

develop the scope, functions and structure of the Proposed Environmental Protection Authority.

A further four work streams involve better alignment of the RMA processes with those of the Building, Conservation, Forests, and Historic Places Acts. The final work stream involves a number of generic RMA processes that were too complex to include in Phase 1 of the reforms.

Due to the detailed and complex nature of the second phase of the RMA reform programme, work will progress at a more modest pace. It will involve a number of advisory groups and significant opportunities for public consultation on engagement. There is also a lot of detail to work through and it will take time to get it right.

New Zealand is richly blessed with natural resources. The Government's resource management reforms are about ensuring we manage our resources more effectively and efficiently to deliver both economic and environmental benefits for future generations.

Question G. The government has not expressed any intention to review the Proposed National Policy Statement in light of the decisions to review the New Zealand Energy Strategy, repeal the Renewables Preference Act, and revise the Government Policy Statement on Electricity Governance. If the Board considers that it would be helpful, the Ministry for the Environment, via the secretariat, could assist the Board to engage an independent expert to provide an opinion on the implications of these decisions of government.

H. I will read the question on this one. Do the provisions of the Proposed NPS take precedence over Water Conservation Orders in instances where both are relevant considerations?

My response, I'm advised, is if the Board considers that it would be helpful, the Ministry for the Environment, via the secretariat, could assist the Board to engage an independent legal expert to provide an opinion on the relative effect of the provisions of a National Policy Statement, versus the provisions of an operative Water Conservation Order. The Ministry can't provide that advise I'm afraid, to you directly.

I. In the case of National Policy Statements where there is no requirement to insert provisions directly into plans, as is the case with this one, the requirement for Local Authorities to give effects to the National Policy Statement is directive but not prescriptive. That is, local authorities are afforded the flexibility to give effect to this policy statement, in a manner that best takes into account local factors and the local settings.

I note that the provisions of local authority planning documents and decisions made against them should already reflect the fact that section 3(b) of the RMA defines 'effects' to include temporary effects.

[12.28 pm]

I also note that the explicit consideration given to 'reversibility' in Paragraph 43 of the evidence of Andrew Guerin to the Environment Court, in relation to appeals on the Meridian Energy Central Plains wind farm application, appear to be in general accord with the intent of the policy.

That paragraph read, quote, "The wind farm proposal has particular compatibility with the concept of reversibility of adverse effects as set out in Policy 3 above in his statement. Should the wind farm permanently

cease to operate in whole or in part, the turbines and other infrastructure that create the majority of the ongoing adverse effects of the activity can be removed, and their effects eliminated or reversed.”

J. Section 5.2.5.2 on Page 46 of the Section 32 evaluation of the proposed National Policy Statement, includes the following statement, “Marine generation has been excluded in the definition of small and community-scale projects, because it has not been possible to clearly establish the scale of effects that could be expected to be associated with a project of less than 4 megawatts installed capacity.”

I understand that you heard from Mr John Huckerby from Awatea. At the time when we were working on the National Policy Statement, we were working with Rose from EECA, and John from Awatea, to try and understand what those effects would be, because we’re, obviously within a neighbouring policy of that type, we needed to be clear what the effects, how they would play out. And I hope that John and, I think Rose, also provided information to the Board on this, I hope that helps you, at the time we didn’t feel that we had a clear handle on what those effects would be, hence we did exclude them, although we did note in the Section 32 that there was a little bit of uncertainty around this for us, and we were hoping that this Board of Inquiry process would bring information out that would help you kind of characterise what those effects might be. I’d like to note for instance, that the pre-production prototype of the Pelamis Wave Energy Converter is 120 metres long, and has an installed capacity of just 750 kilowatts, so a 4 megawatt array of wave energy converters could occupy a quite significant stretch of the coastal environment, and given New Zealander’s preference for what - the regard that New Zealander’s tend to give to the coastal environment, we thought we needed to tread carefully in this area.

K. The Ministry for the Environment does not hold data on the costs of either acquiring new consents or renewing existing consents. We also consider that cost information is likely to be commercially sensitive in a lot of instances, and because of the specific commercial and environmental factors at play in particular cases, those costs will be highly relative, so an average cost estimate, even though it would be kind of attractive to have, I think it could take, potentially be of relatively limited value. The Board might, however, wish to direct this question to generators, who might be better placed to assist.

The Ministry for the Environment's evaluation of the benefits and costs for the Proposed NPS in the Section 32 analysis concluded on page 55 of that report, that, "Because of the high-level guidance provided by the Proposed National Policy Statement, and the complexity of the marketplace and regulatory framework within which it will apply, it has not been possible to accurately quantify the costs and benefits of the proposed Objective and policies. However, it is possible to identify areas where costs and benefits are expected, and to make preliminary estimates of the potential economic costs of the Proposed NPS."

Again, it was really difficult to quantify the benefits, and so we didn't go there. We had a bit more of a crack at identifying what the costs might be.

The principal benefits of the Proposed NPS, noting of course that the NPS was an action of The New Zealand Energy Strategy, can be summarised as follows, "The Proposed NPS will promote an increase in the proportion of electricity generated from renewable sources in accordance with the government's target for renewable electricity generation of 90% by 2025. This will result in the development of a diverse and resilient generation sector, which will in turn increase the security of electricity supply. A reduced dependence on fossil-fuel generation will minimise the country's

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exposure to fluctuations in resource prices, limit the extent of its economic liabilities on the international carbon market flowing out of New Zealand's international climate change obligations, and have positive implications for the wellbeing of New Zealanders.

Clear statutory recognition of the national benefits of renewable electricity generation, provides generators with a degree of certainty that decision makers will give appropriate consideration to these benefits, when considering plan provisions and applications.

CHAIR: Thank you very much Mr Schollum. Thank you for returning at this stage of the inquiry, because it's very helpful. We would like to get a sense of where the Ministry is coming from when it comes to wind farms, whether or not the Ministry has looked at a National Environmental Standard to do with wind farms, in the way that there's standards - standards are involved with electromagnetic fields and other things, or whether it sees an NPS as standalone, rather than being complimented with a standard.

Now the reason we raise this question, it will be obvious to you, but just for the record, is that a number of District Councils have said that the NPS in its current form, is of not enough assistance in actually assisting with, assisting with the consideration of applications for wind farms within the districts.

MR SCHOLLUM: Yeah, I understand there's been some action from local government over remit of some type of contributive specificity there.

CHAIR: Do you know what happened about that resolution?

MR SCHOLLUM: I think it was passed.

CHAIR: It was passed? Thank you. Yes, we heard about the resolution, so that's excellent. Was it passed in the same or was it amended?

MS BARKER: Kate Barker, Local Government New Zealand. So there was widely made amendments and it passed on the 2nd (inaudible), the wider community is very much appreciative.

CHAIR: Could you let us have a copy of it sometime?

MS BARKER: I've got it here, I can photocopy it.

CHAIR: That would be fine, if you could give a copy to Ms Beruldsen, thank you very much Ms Barker. Sorry, carry on.

MR SCHOLLUM: That's fine. The Ministry for the Environment, I think out of the last round of reference to the RMA in 2005 there were a number of areas where potential National Policy Statements and National Environmental Standards were identified. And the MfE has worked through those analysing the relative merits of them and on the basis of decisions from Ministers, has kind of taken those forward. None of those as I understand related to wind farms in total, there is of course a revision going on in relation to, I think it's NZ 6808, that noise standard. And that's in a relatively advanced state as far as I know.

When it comes to the concept of a National Environmental Standard for wind farms doesn't at first blush sound that attractive to me in a way because it's dealing with part of an activity rather than effects. And I think that the preference would be to perhaps, if I could park that train of thought for a second, the experiences that we've had developing National Policy Statements and National Environmental Standards in particular, having a policy framework under which to develop standards is quite helpful. And it could be that the National Policy Statement that we have here provides a framework for standards for specific effects to sit under

rather than having a standard for wind farms. I think that the rate of technological change the variety of wind environments the variety of teaming environments is such that having a standard for an activity would be potentially fraught. You might end up having a very complex standard that might not be as clear as otherwise. Some standards around methodologies for assessment might be appropriate. But, yeah, as far as I know standard for wind farms hasn't been on the agenda for the Ministry.

[12.38 pm]

CHAIR: So things like separation distances from residential properties and I realise it ties in with noise standard and also the separation distances between towers which would be visual, has that been considered?

MR SCHOLLUM: Has that I'd need to talk to our standards team but I don't think that we've gone down that path, no. There's case laws been involved through specific particular cases. There are of course relevant New Zealand standards and international standards as well for a lot of those particular effects.

CHAIR: The other thing we had put to us is that it may be of some help for local authorities to be or in the NPS to be directed to identify those areas which are high outstanding natural landscapes and inappropriate, in terms of section 6, for development. Has the Ministry looked at that?

MR SCHOLLUM: We did look at that in our policy development process for this NPS and there was we started looking at the work that had already been done around the country that could be used to put forward a robust and high quality identification. I don't know what these outstanding areas or no-go zones effectively but where they would be. And it was very patchy what had been done around the country the quality of the information wasn't always there when we looked at case law in areas where

landscapes had or hadn't been identified in the Environment Court had or hadn't agreed.

So it started getting a little bit fraught for us to at a national level say go ahead and go and do this because the cost was just astronomical and it would have taken an enormous amount of time. There was also - there are a plethora of different methodologies for identifying those areas so one thing that we looked at was possibly the Ministry for the Environment working out an agreed methodology. If we did that and then that would take quite a lot of time to get if you were talking about landscapes to get a bunch of landscape architects to agree on the appropriate standard method for assessment would take a while. And then it would need to be applied around the country, if we did it as guidance we couldn't be satisfied that all councils would even take it up, if we did it as a standard. Again, but if you take the time to develop it, take the time to put it through a standard then people would have to go and apply it and then you'd have the no-go zone and unless you made it a prohibited activity within the no-go zone then there would be instances where applicants could apply and on the merits of the application and the nature of effects to what happened there. So it started looking like it would take a very long time and we weren't entirely certain about the outcomes.

Now it was initially attractive to be able to have a National Policy Statement that very clearly said these are the areas where generation should happen, these are the areas where it shouldn't. But we just didn't have the data.

CHAIR: Yes. Well as a result of our inquiry it's fairly clear that there are certain areas that have attractions for wind but also have the conflicting values when it comes to landscapes but the instruments may be inadequate to assist when it comes to the decision making. Although having said that sometimes at a regional level they're developing instruments even though

they're not at a district level so there is inconsistency. But it doesn't affect the whole of the county it's only and we haven't been able to get a handle yet on a survey, if you like, and you might be able to do this for us. Which areas have been identified as high value wind but haven't actually got any controls for landscape, there's only one that we've identified so far but there may be others. I don't think it would take long to do that but I'm not sure how we access that information unless we trawl through all the plans ourselves.

MR SCHOLLUM: So the question there is which?

CHAIR: If you look at the high value wind areas, the (inaudible) areas, Category 1 areas that show up both on the NIWA maps and the Connell Wagner maps. Which, areas where the District Councils there haven't any landscape control so it just becomes - and clearly guidance would be of assistance. We've actually asked one local authority to present on that but we haven't done the survey ourselves. Northland for instance, we had the Northland Regional Council before us but we haven't heard - we could do that work ourselves but maybe it's quicker for you to do it just have a quick look at the farms in those districts?

MR SCHOLLUM: I'm happy to try and pull stuff together I'm just puzzling over the issues.

CHAIR: Well, the issue's this, just so you understand, there are two ways with dealing with it in terms of consistent approach nationally when it comes to section 6 values and how a national policy could assist and integrate in section 7 matters and with section 6 values. One is to actually direct it a series of criteria something that goes into district plans and regional instruments and stuff. The other way and this has been put to us by a number of parties is to identify those areas where there should be an effort made to expedite the process to get renewable generation away and so in

other words to map areas where wind farms could go and make sure that that's expedited.

The other way is which is a disenabling approach but it gives more certainty is to indicate those areas where it should not apply rather than restricted discretion or discretionary control. The difficulty we have is that we haven't heard we've had local government New Zealand's made submissions and we've had submissions from Regional Councils, some District Councils but not all. But we haven't got a consistent survey of what the plans look like when it comes to landscape values, and I'm only talking wind here, for the country as a whole because we are dealing with the national. So a whole lot of different techniques but we haven't even got the database, if you like.

MR SCHOLLUM: Yeah, I can relate, it's the same problem that we had when we went down the same line we just didn't have the data. And one of the difficulties is as well is we felt, sitting in Wellington making decisions about no or no-go or go zones based on our understanding, emphasise our understanding, of the technology as it currently exists. These NPS's they're going to have a relatively long life they're going to flow through into plans which will have a long life and affect investment decisions. And technology is changing very rapidly and signature of effects could be very different, we felt slightly uncomfortable about going down to that level of detail given the fluidity of the environment. It seems to me that if what you've heard through the inquiry process is that there are a couple of areas where there are high wind resources where councils haven't necessarily done the work to enable clear decision making is that an NPS question or is that like a section 24, 25 failure to do your work, question?

[12.48 pm]

CHAIR: Well the difficulty for us is the draft NPS has to be of value to local authorities. If it's of no value because it's all too difficult then that's one

issue but if it's to be of some value and whether it's more descriptive or not is a matter for us, that's not the issue. But to be of some value we've got to make sure we've got the best information. At the moment we haven't got all the information we've got some information, we think we've identified areas where wind is a highly regarded source and we can look at the implications for the instruments. But we haven't actually heard from all the District Councils in those areas and it seems to me the only way through that apart from using our powers under the Commission of Inquiry for councils to come and talk to us, is to actually have somebody to just have a quick look at their plans and see whether - and it's really qualitative landscape and Māori values there on wind just wind it's to have a quick look at their plans and see what controls there are or any if any. And it seems we've identified very few landscape controls and but there's a high wind resolution. So you may be able to help us but something you can think about or otherwise we'll just have to do it the hard way and go through the plans ourselves.

MR SCHOLLUM: Yeah.

CHAIR: Well, Ms Feary may have done that actually.

MS FEARY: No we haven't specifically done that and it's - although we have tried in some circumstances, it's probably harder than you're actually stating the case to do but I was just offering our services, that we could try to put something together. We may not be successful because it is actually quite difficult to work out any whether many areas coincide. And when you're talking about what controls are there, sometimes - often there aren't any controls but there might be policies or objectives that relate to those particular issues. So, A, it could be quite a big thing to attempt if you're looking at agendas and policies that affect those areas as well and B, it'd be quite difficult to try and match up where this area is versus where those other controls are as well. So we could try and we could provide

what we come up with if that will be of assistance or we could report back that it was too hard.

CHAIR: Well it may be too hard, it's just - the Board's consulate's got a duty to do what it can with the information in a meaningful way rather than just saying it's too hard. So if you could do something that would be very, very helpful.

MS FEARY: Well, we will certainly try to see what we can pull together.

MR SCHOLLUM: Can I just ask a further clarifying question, see if there's an area in a district which coincides with a Category 1 wind resource, if we identified that there aren't any specific rule addressing that, that would be one thing but then if we identified that there are some kind of general policies or objectives in that district plan that might be pro wind, you don't want to go the policies?

CHAIR: We're not so worried about objectives and policies because we've had good Regional Council information and some district. But it's really a question of whether we should be recommending activity status getting to that sort of level or not.

MR SCHOLLUM: And you're talking about effects like blade flicker noise from turbines and various specific -

CHAIR: Landscape, particularly landscape, and ecology and various scenarios you've created. See there may not be any Māori values -

MR SCHOLLUM: Not visual amenity or?

CHAIR: Oh that's all landscape.

MR SCHOLLUM: Okay.

CHAIR: But some districts have got very comprehensive rules on landscapes like the Queenstown Lakes District but it's some of these other districts that the areas, Northland areas and around the Manawatu the places where - I think Manawatu gave rise to the resolution (inaudible).

MRSCHOLLUM: Okay thanks, I just need to understand exactly.

CHAIR: No, no please, and if you need any more, if you need our views on anything else please get back to us through Ms Beruldsen.

MR SCHOLLUM: Thanks.

MS FEARY: Can I just ask one further thing to clarify, are you only wanting information about district planning because Regional Policy Statements all say that, landscape identified, and sometimes I'm aware the situation in the Manawatu that there's actually conflicts between (inaudible) what's in the Regional Policy Statement and what may be (inaudible) District Plans.

CHAIR: Yes, I'll just check with my colleagues but we have had the regional policy information from Manawatu, from Waikato, from Northland we had the chairman. Could I just say that if Ms Feary's got the information about the regional on the database and it's just a question of handing it in we may already have it but that wouldn't hurt, but don't go to a lot of trouble about it, it's really the district that we're after. We've had nearly every Regional Council here before us here but it's just districts we haven't.

The other matter is on hydro. Again, you'll appreciate this inquiry's getting different views all the time so we haven't made any determination of these matters at all so I just want to make sure we have all the information before us. We've had views that as far as the Waikato river system is concerned the existing planning provisions and what's happening with the Tainui claim and so forth, there doesn't need to be any further assistance given to the local authorities, that's one view. They, the Resource Management Act and their instruments are addressing the

issues and if there are other instruments going to fall out of the treaty process - the settlement process that will consistently deal with that. And with the geothermal you heard earlier that we've now got a pretty prescriptive regime in the Waikato and it does appear the Bay of Plenty may be picking that up but that's something you might like to confirm for us, that Bay of Plenty are going to follow the same approach, because anything we've had on that has been anecdotal up till now. Because I don't think we've had the Bay of Plenty Council.

MRS BAUMANN: No we haven't, no.

CHAIR: No. Now that's that area. Whether we accept that's another thing but that's one view that's been given by both generators and local authorities. However there are other areas where we haven't had that view and one is to do with the Clutha system. What concerns us, and it's a vexed issue and we're struggling with it, is that in a regional sense with this system that goes across a number of districts, a large system like the Clutha, there are issues involving consenting clearly but there are also development issues. It's whether or not a National Policy Statement can assist in respect of a major river system like that or whether the regional plans and the water plans and that do the business.

MR SCHOLLUM: Assist in terms of - can you please clarify what you mean?

CHAIR: Right, is whether a National Policy Statement could you give any further guidance on a major system where there's several sites like the Clutha than already exists now both under the RMA and the supporting instruments that have been developed for that area. Now we've had Ms Dickson's view on this and we've heard that evidence and we've looked at the system. But if it's to have a consistent approach across the country - we've got a number of generators saying the RMA and the regional instruments are what we deal with when it comes to major projects in hydro there's not much more you can do in respect of that,

that's the issues. And others are saying well that's a view that's come across and we've got to get our heads around that, this issue of whether you direct one region to do what another region's doing.

[12.58 pm]

MR SCHOLLUM: Yeah, it is difficult I mean there are some regions where the players, the local community, local iwi, generators, competing users, who invested an enormous amount of time and money into the existing framework. And as you pointed out the environment Waikato area is a case in point. And we were reluctant - we were careful - yeah, we tread very carefully around that when we were coming up with the draft objective and policies for this NPS. We also have to keep mindful of the fact that there's a Freshwater NPS developing as well, you focus specifically on hydro, that's dealing with issues of allocation and affect the fuel for the system. And we tried to give sufficient guidance about the benefits of renewables so that in those decisions made subject to Part 2 there is elaboration on this National Policy Statement on the weight that should be given to those section 7 matters. And particular matters that decision makers should consider without getting into questions around water allocation which are being dealt with elsewhere that's just based on the infrastructure and giving the guidance at high level. A question around consenting is a difficult one and I think that's one that I would expect the governments second phase of resource management reform to look at under the infrastructure scheme.

CHAIR: But I wonder, just to interrupt for a moment, the section 104.2(a) is it, the provision that says at the time of renewals you are to take into account the system. What we're particularly interested in is whether or not there's an intention in the reforms to add anything to section 104 in respect of new developments where there are existing developments somewhere else on the river system?

MR SCHOLLUM: The reforms haven't proceeded to a point where I could even say, because we've just been focusing on identifying problems and there are problems around those issues. Like, already degraded systems, how do you take that into regard how you appropriately factor in site investment and the implications of undermining the well lack of security of a consent. Hydro system contributes significantly to New Zealand's overall electricity generation, if you can't re-consent them that's going to cause tremendous problems elsewhere. All those kinds of factors. How do you factor in a - yes they're all problems and they will be looked at I'd expect in the governments second phase of reform but it hasn't proceeded to the point where it makes any calls about how we're going to tackle them.

CHAIR: No, no that's fine, we certainly understand about the re-consent and question people about that. It was really a question of further developments on existing river systems.

MRS BAUMANN: Yeah, rivers systems that are currently developed but it's further development there.

MR SCHOLLUM: More bang for your buck? Yeah, agree, that's a question. I can't say where we're going to get to, I mean, it's just too early in policy process for that.

CHAIR: Well we'll certainly take you up on your offer to get some legal advice so it's not coming from us internally on the issue of water conservation orders and also the other matters. There was the - yes it's the paragraph 14 that is of importance really, 14 and 15, we just want to make sure that we don't put our foot in it in the sense that something's happened in the electricity report so we either mis-describe or else end up cancelling out in terms of the resource management process.

MR SCHOLLUM: Sure, we can talk with Ms Beruldsen about that.

To be read in conjunction with
the tabled evidence/statement

CHAIR: Yes. Well we understand the challenge you had with the section 32 and putting the draft together so we're probably going through something that you've already been through. But we're very grateful to you for this extra information.

MR SCHOLLUM: Happy to help.

CHAIR: Thank you and thank you Ms Feary and Ms Barker for your further information. Thank you, we'll adjourn for lunch.

ADJOURNED [1.05 pm]