

# Hon Pete Hodgson

**Minister of Energy, Minister of Fisheries, Minister of Research,  
Science and Technology, Minister for Crown Research  
Institutes**



Monday, 07 October 2002

## Speech Notes

### Energy: the way forward

*[Address to NZ Energy Conference 2002, hosted by the Energy Federation of New Zealand and the Sustainable Energy Forum, Duxton Hotel, Wellington]*

[Back to Contents](#)

#### As delivered

Thank you Don. Thank you Rob. Good morning everybody.

I am pleased this conference is being held. It is a good thing to have a conference of this ilk around these subjects and it is a timely conference. I hope it will be valuable with the wealth of knowledge to be shared over the next couple of days.

It is a shame that Dr Rajendra Pachauri is not here today. His election this year to the chair of the Intergovernmental Panel on Climate Change (IPCC) recognises both his expertise and the growing importance of developing countries in dealing with the challenge of climate change.

Let it be clear from the outset that the government is committed to a sustainable energy future for New Zealand. This will be achieved through gains in energy efficiency and a transition to renewable energy sources.

Specifically, by 2012 the government hopes to have achieved three goals. First, to improve New Zealand's energy efficiency by at least 20 percent. Second, to increase renewable energy supply by a proposed 30 petajoules a year, which would halt and reverse the current decline in the share of total energy from renewable sources. Third, to make significant greenhouse gas reductions on business as usual, turning the current growth trend into a long-term downwards emissions path.

Before looking at how we might achieve these aims, I want to note, quickly, what has been achieved to date.

I became Minister of Energy in December 1999, determined to start shifting the focus of energy policy from the supply side to the demand side.

We now have New Zealand's first National Energy Efficiency and Conservation Strategy in place. The Energy Efficiency and Conservation Authority has been strengthened and given a much stronger ministerial mandate for its work. We are

pushing the energy efficiency and conservation message hard and getting up to speed with measures such as minimum energy performance standards, energy performance labelling and a building code that reflects the importance of good energy management (and good weather-tightness).

We have addressed the inescapable structural issues posed by the previous government's electricity industry changes and are approaching the birth – I hope – of a new self-governance arrangement for the industry. We have a comprehensive policy statement on the industry's future for the new governing body to follow. Several key elements of that vision – such as the establishment of a complaints commissioner, low fixed charges for low power users, rules for the disclosure of hydro spill, a real time pricing trial for the wholesale market – have already been put in place or are well advanced.

We have completed a review of the gas industry and are close to decisions on the appropriate form of regulation for the future - papers go up to the Cabinet Committee level on Wednesday [9 Oct].

And we have developed a comprehensive package of domestic policies to enable New Zealand to meet its international obligations on climate change. We consulted on the preferred policy package before the general election and Cabinet is likely to make final decisions soon. A Bill enabling us to ratify the Kyoto Protocol should be passed by Parliament in November and New Zealand is very likely to ratify before Christmas.

That, very briefly, is the story so far. But the theme of this conference is “the way forward” so I want to spend the rest of my time on that.

The issue of the moment is the security of New Zealand's electricity supply, now and in the medium term. I will begin with that, because it leads naturally into longer term issues concerning New Zealand's energy needs – including the fundamental necessity of de-coupling economic growth from growth in energy use.

The government has been looking closely at modelling of electricity supply and demand over the next few years.

The crucial factor, given our high reliance on hydro generation, is our ability to cope with dry years. That requires a buffer of reserve generation capacity that we can draw on when the lakes are low.

At current electricity demand growth rates, New Zealand needs to build new generating capacity at the rate of around 150 megawatts a year to meet demand and maintain an adequate dry year reserve. This is well within the industry's capability. Between 1996 and 1999 more than 1250 megawatts of new capacity came onstream, an average of around 300 megawatts a year.

It is clear from the modelling that has been done to date that New Zealand will need significant new generation capacity by about 2005, if we are to be

adequately cover the risk of a dry year. I say “about 2005” because modelling is never exact, and because in this case my examination of what we have available persuades me that there is considerable room for improvement in our ability to model.

Let me quickly add, for the benefit of the wider audience for this speech, that there is no suggestion that New Zealand’s electricity system will be unable to meet business-as-usual demand about three years from now. Business-as-usual demand in the absence of a dry year can be met for most if not all of this decade.

Modelling by Transpower, the national grid operator, suggests 2005 as the point at which the current system might have difficulty meeting demand in a seriously dry year, assuming high growth in demand. This conference will hear different predictions later today from Bryan Leyland of Sinclair Knight Merz, who has done some modelling in association with the Centre for Advanced Engineering.

Bryan believes that Transpower is too optimistic. He is ringing the alarm bell about next year and 2004. This is not particularly surprising, as Bryan has been releasing his forecasts every two years for nearly a decade now and they always ring alarm bells.

It is useful to have a number of models available and I and my officials are grateful for Bryan’s willingness to share his results well ahead of time. For another independent assessment of the current situation we have commissioned Tom Halliburton, an experienced energy modeller, to review both Transpower’s and Bryan’s work. That review is publicly available today, as are Bryan’s findings.

In short, Tom Halliburton’s review suggests that Transpower errs on the side of optimism while Bryan errs on the side of pessimism. But perhaps more importantly it suggests that the limitations of both models are significant. I found those limitations startling. I have asked officials to investigate the options for making better quality modelling work available. I think we need to move on that sooner rather than later.

While noting its limitations, the modelling currently available has caused us to look hard at the factors affecting supply security over the next three years or so. The three most important issues are the industry’s plans for new generation capacity, the availability of gas for electricity generation and the level of flexibility we can anticipate in the demand side response to a dry year. How much is coming on, how much gas to feed the gas generation is coming on and how much flexibility do we have in a dry year. I will address each of those three issues in turn.

In theory the price signals from the wholesale market should be enough to prompt the industry to build new generation capacity when and where it is needed. It is still a relatively new market, however, and I am not a minister who has blind faith that it will always deliver as theory says it should. The interests of electricity companies are not the same as the national interest, which is what the government has its eye on.

For that reason I have had officials gathering information from the industry on current plans for new generation capacity. Some of those plans are public, such as Genesis' gas-fired plant at Huntly, Contact's proposed Otahuhu C gas-fired plant, Meridian's Project Aqua hydro system along the lower Waitaki and a 39MW upgrade to the Mokai geothermal station. Many more plans that have not been made public have been disclosed to officials on a commercial-in-confidence basis. There will be still more proposals around that we have not discovered, such as industrial cogeneration plans and a likely multiplicity of distributed generation developments.

In total I am aware of serious investigations and planning amounting to more than 2000 megawatts of capacity over the next decade, including some in the next two to three years.

Clearly not all the planned capacity will be built, and plans will change in response to changing market conditions. Of the large projects, for example, clearly we will not see both Genesis' and Contact's gas combined cycle plants built in the next few years. Both await confirmation of the availability of gas and there is insufficient demand to justify building two such large plants. But a reasonable assessment on the basis of the information available is that the industry is unlikely to fall short of building new capacity at the level required.

Gas combined cycle plant is currently thought to be the cheapest option for significant new generation — depending on gas availability and price — followed closely by wind and geothermal. Meridian's Project Aqua, which is intended to bring 570 megawatts of hydro power on stream in the period 2008-2012 appears very competitive with all these options.

There is some public discussion going on about the prospects of new coal-fired generation being built in the near future, but its cost per unit of power suggests that is unlikely on a significant scale. The ministry puts the break-even cost of new coal generation at about 10 cents a kilowatt-hour, significantly higher than the estimated 6 cents for gas combined cycle and geothermal, and 6.2 cents for wind. Southland lignite would be even more expensive given its lower efficiency as a fuel. Rather than fuelling new power plants it seems more likely that coal will become a more important dry-year reserve fuel, particularly for Huntly.

The availability of gas for electricity generation is an important issue, as I mentioned earlier. Gas currently fuels 22 percent of electricity generation in a normal hydrology year and significantly more in a dry year. In 2001, for example, it rose to about 30% - although we should not forget that 2001 was freakishly dry. Gas is likely to be the preferred fuel for new generating capacity if it is available long-term, even if the wholesale price rises significantly above the current low level set by Maui.

New Zealand has arguably been rather spoilt by its good fortune with the Maui field, which looks likely to be substantially depleted by 2007. Maui has been both cheap and flexible, with the very useful capacity to increase output in a dry year.

There are uncertainties over the volume of gas likely to be available in future. It is not yet clear how much more Maui gas will be economically recoverable at the current contract prices. That is the subject of the current redetermination process, which is expected to be completed by the end of the year. Nor is it clear how much more Maui gas might be forthcoming at higher prices. The Maui partners are currently trying to work this out. We do not know how much gas will be taken after the Maui redetermination by Methanex, which currently uses around 40 percent of total gas consumption. We are not yet sure exactly how much gas will come from the Pohokura field, or when it will be available – although Shell recently said it might be one-third the size of Maui and bids could be sought from about March next year. We cannot know the timing, size, location and cost of new gas discoveries.

But these uncertainties are not cause for high anxiety. The end of Maui is not a crisis but a transition to a more typical gas supply situation by international standards. It is not normal for a country to have one enormous, cheap gas field dominating supply for so long.

As Maui production tails off, many smaller gas fields – including a number already discovered, proved up and resource consented – will become economic. New Zealand will revert to a more typical supply situation in which gas is drawn from a larger number of smaller fields. Known reserves might typically stretch forward a decade or so, rather than Maui's thirty years.

Projections from Shell, our dominant oil and gas producer, suggest current known reserves are enough to meet demand, at a wellhead price of \$4 a gigajoule, until 2010. This appears to be conservative, since there is a surplus available before 2010, at least some of which is likely to be carried over into subsequent years. These projections do not assume any new discoveries before 2010 and exclude the Kupe field, which Shell believes would be uneconomic at \$4 a gigajoule. They, Shell, also assume that \$4 a gigajoule would be too much for Methanex, which requires cheaper gas to be economic.

New gas discoveries are likely to take 5 to 10 years to bring on stream, depending critically on location, accessibility and the quality of the field. That is why steady exploration is important.

Exploration is currently high, particularly in Taranaki, and is projected to increase. New Zealand's current royalty and permitting regime is considered internationally attractive, the government's Crown Minerals group is actively promoting New Zealand to international petroleum explorers. The development of new fields will also be eased by open access to the Maui pipeline for non-Maui gas, which the government will facilitate, and by the establishment of better market institutions for gas trading as a result of the gas review.

Clearly the gas market will be more complex in the post-Maui era. Aside from domestic and light commercial consumers, whose consumption is such a small

fraction of the total that they will notice no real difference, we will have to adjust our assumptions and expectations accordingly.

I suspect there is a particular need for the financial sector to adjust its expectations about the length of the supply contracts that electricity generators and other builders of gas plant can secure. We are no longer in the unusual situation where a plant with a 30-year life will have gas supplies secured for the duration, before the first flame is lit. Both fuel and financial risk strategies will have to move with the times.

There are of course other issues affecting the construction of new generation, notably Resource Management Act processes and the pricing of transmission and distribution. I do not have time to dwell on these, as I want to move on to demand matters. But it is worth noting that we are approaching some decisions on changes to the RMA to achieve better outcomes for renewable energy projects. I expect the new electricity governance arrangements to deliver a much better process for resolving grid pricing issues. And distribution pricing, particularly as it affects renewables and distributed generation, is now being worked on by an industry project group.

I want to move on to the demand side because, as I said earlier, we have not until now paid it enough attention in this country. Building new generation capacity is not the only answer to meeting our energy needs.

With some exceptions, New Zealand's energy efficiency record to date is poor. We waste hundreds of millions of dollars every year through inefficient energy use. Most New Zealand businesses could cut their energy costs by 20 to 30 percent through cost-effective energy efficiency measures. Just under half of the average household power bill is for water heating, but hot water cylinders waste on average 40 percent of the energy they consume. Poor insulation means New Zealand homes are often colder than the World Health Organisation recommends.

Where electricity is concerned, improving our energy efficiency and conservation performance improves supply security in two respects. First, reducing demand growth reduces the pressure for increased generation capacity, delaying the need for new plant and new fuel supplies. Second, improving our energy management capability improves our ability to adjust our energy requirements in response to unusual circumstances, such as a dry year. The first is a medium to long term security gain. The second is of more immediate value.

My view is that more active load management in cooperation with large industrial and commercial customers will become a more established part of the industry's contingency planning for dry years. To the extent that large consumers themselves become increasingly active managers of their energy needs, the flexibility of that response will increase.

Already we have seen the development since last winter of contracts that give big consumers a larger role in managing dry year risk by including an element of spot

market exposure. The choice for big customers will increasingly be between cheaper power with an element of dry-year price risk and more expensive contracts with greater price stability. The advantage for the electricity system and the economy is that large consumers taking a share of dry-year risk have the incentive to develop new tools to manage it, whether technological or financial. With the risk shared a little more widely the opportunities for innovative management solutions increase.

I have been reported recently as saying that part of New Zealand's response to dry years in future must be for big industrial electricity users to cut production. In fact I have observed that the industry learned a great deal last winter about the benefits in a dry year of simple measures like rescheduling plant maintenance into the period of tight supply. That is about shifting rather than cutting industrial production.

I mentioned earlier the medium to long term gains for electricity supply security from improved energy efficiency, but of course there are wider benefits. Not least is the contribution that successful implementation of the National Energy Efficiency and Conservation Strategy will make to New Zealand's ability to meet its international commitments on climate change.

The NEEC Strategy is one of the foundation policies for our climate change response because both increased renewables and improved energy efficiency will help contain greenhouse gas emissions. Other elements of the preferred climate change policy – including Negotiated Greenhouse Agreements, projects and the carbon charge that would apply by 2008 – further reinforce the signals to business that a shift in favour of renewables and energy efficiency is desired, and will be profitable. Energy policy and climate change policy will work hand in hand, in other words, each reinforcing the other.

The energy intensive industries entering Negotiated Greenhouse Agreements would be required to move to world best practice in managing their greenhouse gas emissions. They will be required to move to world best practice over a negotiable period of time. In exchange for a successful negotiation which will be technical not political, they will be exempt from the carbon charge in part or in whole. Moving to world best practice in energy management is an obvious way to improve emissions management, with the bonus that it delivers bottom-line gains for business and a sustainable energy future.

With the climate change Projects mechanism the government would provide incentives for businesses, partnerships or industries to undertake emissions reduction measures. Qualifying projects would have to be additional to business as usual, meaning they would not be supported if they were commercially viable without government assistance. For electricity generation, renewables compete in an unfair market because thermal power stations do not have to internalise the environmental cost of carbon dioxide emissions until a carbon charge applies. Hence the economic rationale for a Projects mechanism. The qualifying criteria are a policy design challenge, but there is considerable experience overseas with such mechanisms and we are drawing on that experience.

Another key component of our preferred climate change policy is a carbon charge, to apply in the Kyoto Protocol's first commitment period. By increasing the cost of fossil fuels a carbon charge makes renewable energy projects more attractive, starting now, through its effect on future revenue and cost projections. One important consequence is that, for a given amount of new renewable energy, less funding would be required from a Project mechanism than would be the case without a carbon charge.

We don't know that we have fully internalised the externalities of course until Kyoto internationally is starting to have an effect as the Montreal Protocol might have started to have an effect with the ozone layer.

I should note at this point that our transition to renewable energy is not just about electricity, which I have discussed extensively today. It is also about heat. Much of our primary processing requires large amounts of heat, for example the dairy and wood processing industries. I expect that renewable geothermal and biomass resources will be contributing much more towards our energy needs for industrial process heat. Indeed, I see no reason why forestry biomass cannot be the beginning of a co-gen biomass industry in this country. They will play a major part in achieving our target for additional renewable energy. I think that we need to factor them in when we think about renewables in general.

I began this speech by saying that a sustainable energy future for New Zealand will be achieved through gains in energy efficiency and a transition to renewable energy sources. I hope I have managed to show how that can happen — and how government policy, including climate change policy, has been designed to help make it happen. From where I sit we think we have pretty well got most of our ducks in a row. Perhaps I have been able to give you a sense of why I believe we can make real progress towards aligning our energy needs with our resources, towards breaking that link between economic growth and growth in energy demand.

In closing I want to touch on an issue immediately in front of us, again involving the electricity industry.

I mentioned earlier that we are nearing the birth of a new governance structure for the sector. In fact just last week the Commerce Commission announced that it has authorised the proposed new rulebook for self-governance of the electricity industry, subject to four conditions.

This is a real milestone in what has turned out to be an arduous and lengthy process. The Commerce Commission has decided that on balance an industry governance board will be of greater net benefit than one imposed by the government. That will be true as long as the conditions imposed by the commission relating to consumer interests and competition are met. I agree with the chairman of the commission, John Belgrave, that the new governance arrangements contain some innovative and potentially valuable means of meeting

the Government's policy objectives for the electricity sector, and for addressing problems that have caused concern for many years.

I expect the industry will scrutinise intensely the Commerce Commission's findings. I will be doing the same. However the likelihood is that the time has now come for the Electricity Governance Board to be put in place. I urge the sector to make this happen as quickly as possible. As I never tire of pointing out, the alternative – or the penalty for failure to deliver on the Government's policy objectives – is a government-appointed board and government regulation rather than self-regulation. That will happen if necessary, but I would much rather see the industry and its stakeholders sign up to the new rules and seize the opportunity to take responsibility for its own future.

Thank you for your attention. You have an interesting two days ahead of you. I understand there will be an attempt in the final session, led by Morgan Williams, to pull together the information from the conference and draw some conclusions about New Zealand's energy future. I encourage you to bear that in mind as the conference unfolds and make the best of this opportunity to discern the way forward – not just for next year, but for the decades to come. I would be interested in hearing about the results.

[Opening](#)

[Back to Contents](#)

===