

Discussion

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Murray Ward: I am interested to understand something from the experts on demand side. Recently I sat in some meetings where there was this assumption that demand side is happening. There is going to be this 2% annual increase in demand, that is taken as a given in discussions. That has led to the kind of emotion, that we are going to run out of energy. Suddenly energy security has become the flavour of the month in discussions, and we are going to run out of energy security. Therefore we must build 150 MW of new generation capacity per year for the ongoing future, and now what is the possible stack of supply-side options? In those kinds of discussions, I have often thought - should we be taking these presumptions as givens? In fact, I would therefore pose that as a question.

The second question coming out of that is there are two aspects we have heard. There is energy efficiency generally, and then there is demand-side response which was described this morning as complementary - it is described as something that can be used to deal with peaks, and particularly peaks in dry, cold years. So that is another aspect in demand-side response. To what extent could energy efficiency plus demand-side response address the so-called problem of energy security, or if not address it, just delay it for some many years such that there is not the almighty rush for new generation? I am not personally specifically against new generation, or an advocate for demand-side, but what I do think is that the analysis needs to be there, and those who are advocates for demand-side need to be getting this analysis in front of officials who are looking at these policy areas. My perspective is that there is a lot of analysis on the supply side but in some of these discussions, the abilities of the demand-side to deal with it are dismissed at the beginning of the discussion. So I would like to hear more from this group of experts on this.

Bill Heaps: It is really in two parts - is this a band-wagon in terms of security, and then if you assume it isn't a band-wagon, that there are real problems, then how much response can we expect from the demand side, because most of the analysis appears to be on the supply side?

Ewan Gebbie: There has been a lot of analysis on the supply side and the corresponding analysis does not appear to have happened for the demand side. You can see that there are people who are responsible for modelling the future of New Zealand's energy system. They probably should be the analysts who carry out that work or at least commission the work. I certainly think that there is a role for us, EECA, to contribute to that analysis. But I think that the prima facie responsibility is with the organisation that is supposed to be predicting the future of supply demand and there have been a lot of predictions about supply. There is a lot of difficulty about gathering the basic data for demand response.

George Hooper: Are you telling me that the NEECS strategy which has a 20% demand-side target is based on no analysis?

Gebbie: Of course it is not. I think that the point is that there has been a lot of analysis done on demand-side management. The CAE for its own part did significant studies last year in this area. We are not talking about peak-shedding, we are talking about actual demand. And the second point is that we are talking about actual behaviour and the whole social science aspect.

Robert Tromop: I think there is a fundamental issue. If you start predicting future demand growth based on history of demand, you are going to under-estimate energy efficiency. There is a constant state of growth of energy efficiency demand side responses. We have got the seven tools up there, they weren't there even two years ago (when only one was there). Now in the light of that sort of change happening and the influence that it will have, how do you predict the future demand growth?

Russell Longuet: Firstly, I think you need to understand that the big mills in this country have implemented a lot of energy efficiency over the last five years. I know that Carter Holt have taken probably 17 - 20% out of their energy use. We have even won an award for the best progress in that regard. However, there isn't any more room there, and the one thing that a lot of people, particularly EECA, seem to miss out on, is that with energy efficiency if you can find something with two-year payback, you are doing very well. You might save a million dollars a year but it will cost two million dollars to do it. No-one mentioned that side of the equation. What our drivers are is least cost.

So at the moment it would be desirable, and we would probably be doing it, changing from gas to coal at one of our sites. This obviously doesn't sit well with Kyoto, but it is the best option for us, at least for the next four years or so. The best thing that could happen as far as Kyoto is concerned, is that it would give some sort of incentives for renewables, particularly biomass co-generation because it just won't happen as I think a lot of officials think it will. The best example is someone who recently put in a large wood-waste burning system. They could easily have put in co-generation but they chose not to. I think that there is an awful lot of proper energy strategy discussion that has to go on between the Ministries and they need to talk to each other a lot more.

Heaps: Have we actually answered the first question? Do we have a security problem or is there a bandwagon?

Ken Mitchell: I think that question is really about particular circumstances. Industry does tend to respond in what it provides on the basis of an average situation. There is a lot more to be got out of treating things in an individual situation. On Eastland Energy's network 22% of our peak demand has a duration of 10%. If we get down to individual consumer level, the top 67% of peak has a duration of 5%, so at installation level, the way we are averaging this is achieved by the network. There is a lot bigger scope for better management at that level.

Heaps: There are a lot of different opinions as to whether we can get good demand-side response to signals and whether there is a liquidity there. A lot of people have done studies. You have to come to it from the customer's viewpoint. One thing the industry is

not good at is understanding the consumers. We are always attacking things from the supply side. If you do look through the eyes of the consumer, you have to look at the problem regionally. We talk about supply constraints, we look at the actual physical constraints that occur, but we forget that there are manifestations of constraints that occur in other ways. For instance, in Southland they are trying to attract different industries, but there are perceived constraints to electricity supply. Metal melting business does not go well alongside an electronics business in terms of electricity quality. But if we only understood what Southland was trying to do, we could help them to achieve it.

I don't know what incentives are required for petroleum and gas exploration, because those structures are commercially sensitive. If the Government provided more incentives for exploration for gas, whether we would find another Maui, or whether it would be more expensive because it was nearer to the edge of the shelf, I don't know. I don't think we have the big picture, or if we ever did, there is no one body or organisation that has that central understanding.

Ward: It seems to me that if everybody buys into the presumption that there will definitely be a demand increase for electricity of 2% per annum you can then start to draw some curves and start to look at when you may run out if you have a dry year. And that is what goes on. It means that if you then work into this a requirement of 150 MW new generation per annum which sounds like a big number, therefore you need some big "chunky generation". Whereas if a different analysis, a more precise analysis of what might be the real demand, came back to something in the tens rather than the hundreds of megawatts, that would change your perception about the type of generation that you might use. Some of the smaller renewables look as if they might fill the gap for some years. You get a different perspective of what is going to roll out over time. I think it is critical to have an understanding which of those pictures we are definitely in. That is the underlying agenda that I have from a climate change perspective. I would really like to understand this notion of the 150 MW pa new generation as a given, because I am not sure that it is.

? Contact Energy: I am here as a retailer. You talk about consumers and customers and customer-side response. As a residential customer myself it is extremely unlikely that no matter what the price per kilowatt-hour goes to, that I would respond in changes to my lifestyle. I will not, for example put off cooking dinner for four hours because I might save 15 cents on my electricity bill. I rely heavily on my retailer to look after that for me. Why, when you interviewed those 20 large customers with regard to their response, was there not a single retailer on the list?

?: Our brief was to talk to the demand side and not the supply side.

?: The answer to your question would be the mere fact that you are very unlikely to change your demand for a change in electricity price. As a retailer you manage that risk. There is unlikely to be a huge demand response from individual households.

?: My question then was more why are retailers not responding to the price signals to a large degree? Very few of them are harnessing direct load control as a means of being able to manage on behalf of their customers.

?: If you go back to some of those graphs that Stephen Drew showed and John Laun showed yesterday, we have the very steep line of supply and if you can skew the demand line with demand response, then of course it reduces the despatch price quite significantly. While that is a great thing for all the consumers, it is a massive wealth transfer from the generators. The problem we have in New Zealand is that generators are retailers, so it is certainly not in their interest to see demand-response come in.

?: You have to look at people's portfolios. Contact Energy for example at various times would have, on behalf of its retail customers, 100-150 MW of manageable load that it could shift around if it was able to. But at the moment it has no ability to do that.

Peter McKeown: A lot of what we talked about yesterday and today is about relationships, talking to the customers and actually finding out what actually ticks with them. It has been touched on again here today. There is a problem that I see in the industry that clients have a long-term relationship with somebody whom they are not allowed to talk to, which is a fundamental problem - the network company. Most medium-sized to large clients are prevented from talking to the network company - the drivers for them changing how they do things is money. The biggest ways that they can save money is generally changing how they do business which affects network costs as against separate energy cost.

Sometimes it is the energy component too. Quite often the energy retailer do not even pass through the network pricing signals as they are given to them by the network company. So we have a fairly major communication problem here in that relationships are about passing on information which is going to encourage people to act in a responsible manner. One thing we do have to look at is that we can't really determine what we can say or how we can improve things unless we can start to create the right communications and relationships between the parties that are involved. That has partly been demonstrated by what the gentleman from Contact said.

So, from a consumer's point of view, in my past I would say that one of my biggest frustrations was actually trying to get clear signals coming through to deliver energy to the gate where I was working. That is one thing that I think as an industry and as an organisation, is a weakness that we currently have in the system. So to communicate those signals is just another challenge that we have.

In my role now, I think that another thing that we have to do is to educate the people, the consumers, what these pricing signals are, what they mean for their business, and how they can affect them to make changes. We talked earlier about a lot of the changes that might be made on the demand side by turning things off which have a great impact because they did not need to be on, anyway, or they could have been done at a different time. So there is a whole education process that we need to look at. I think that it is

going to be really hard unless we can get the relationships right and the communications being clearly passed through to the end user.

I would also be very keen to see pricing signals one day out for energy but also better communications with the network company about investment, about constraints they have. It is certainly going to help people in whole communities and how they decide to react. We have talked about big users. There are whole communities out there. There are thousands of people who live in small areas. Ken Mitchell touched on it in the number of things you can do. It is the bottom of the food chain. Even the residential customers can actually make a huge impact, individually small but collectively very large.

?: It is quite sad that a lot of companies have invested capital in plant to avoid network peak demand periods and they are no longer getting the right price signals to do so. And that is because of the structure of the industry. Retailers do not have a lot of the lines companies' interests at heart and in getting the right education for their customers.

Mitchell: One of the things that has interested me about the investments that I have been making as a network company in distributed generation, is that none of those projects were justified on the basis of selling electricity. They were all servicing customers' network needs and avoiding transmission costs and upgrades in particular. If you have a view of that, generation is actually much lower cost if you are viewing it as the cost of delivering energy and particularly in remote regions. There is that much resource out there that is viable now that will contribute to the 150 MW per annum. Retailers don't have any interest in developing that size of generation.

Ian Shearer: How many electricity retailers operate on your network?

Mitchell: We have two networks and two incumbents, and a total of eight retailers. So there is pretty ineffective competition, because we have the lowest consumption per customer so they are not attractive from a retailer's point of view. Retailers sell energy and we are not doing that.

Russell Longuet: As you have noted, in my session later I will be focussing very closely on price signals, and I have a number of graphs to show you. I would say that one of my underlying premises is that TransPower in particular pays a huge part in the delivered cost of energy and minimising restraints is the key to a lower cost to the whole economy. The signals at the moment are too volatile, too unpredictable and too difficult to respond to. There is perhaps a misapprehension among a number of people in the audience. The issue is not about peak demand, it is about firm capacity. So pricing signals about peak demand are irrelevant. New Zealand has enough capacity at the moment to meet peak demand.

Heaps: Let's take the Bay of Plenty as an example. Price spikes occur there and they can be seen as peak demand signals. Over time, if nothing is done, those signals get more intense as load grows and over time it becomes a volume problem. It tends to be a

precursor, we start to see capacity in the spikes and then over time that becomes a volume problem. There is a relationship over time.

George Hooper: This is not about peak demand, it is about firm capacity. And there are all sorts of issues around constraints and issues around diversity, but we do need to focus that we are talking about firm capacity and not about peak.

Heaps: It might be interesting to get the perspective of transport as well, because we get the same issues there, about use and about congestion.

?: One of the good things about transport is that the price signals are direct in fuel supply to the consumer. Transport fuels, being liquid fuels, are storable. Prices are essentially equalised for everybody. There are only small differences across the country. There are bulk discounts for larger consumers, it is a reverse mechanism in its own right, and also the price of fuel only captures the market price of fuel availability at that point in time. And longer term cost implications of low fuel prices are not incorporated in any of the pricing signals to the consumer. So in the long run, cheap energy now means that at some point in the future we will have an unsustainable situation. Urban sprawl will just continue and then we will be brought up short and sharp at some point in the future if those price signals are not there for the consumer.

I don't think there is anyone here from the MoT here today. MoT is probably the one Government agency which is doing a study at the moment. A lot of emphasis is going onto placing correct prices on road transport in comparison with other transport modes, because the infrastructure is provided publicly, so it's paid for indirectly. There has long been concern and argument between the different transport modes, particularly road and rail, as to whether the price signals are correct. But of course the energy cost is just a component of that. Largely, apart from aviation and shipping, energy costs are a minor component. Large commercial transport enterprises obviously work to minimise their fuel bills. The bulk of the consumer market which is in residential consumers see only one price at all times and they have no incentive to change their purchasing behaviour at all.

Heaps: Could I ask you just quickly give us the strengths and weaknesses that New Zealand has in the transport sector?

?: I suppose it depends on if you consider there is a threat in the future or not with oil supply. We have never been in the position of being able to obtain locally a large proportion of our supply of liquid fuels. We have only got about 20% of our liquid fuels at present. It is a question of the assessment of risks of continuing to be dependent on imported fuels.

Heaps: The main weakness is susceptibility to overseas supplies.

?: It is a judgement as to whether it is a serious threat or not.

Heaps: Do we have any strengths?

?: Not particularly, not in transport.

Shearer: The strength in the transport sector is the biomass that we have sitting there as the stockpile for potential future options. We have got the future options available. We just need to make use of them and the price will need to come down and technology needs to get there.

Heaps: Is congestion on the roads a strength as well? It is an opportunity to build public transport.

?: Congestion on the roads is an issue and it is inefficient in all sorts of ways, and an air pollution problem the consequences of which are just being properly recognised. It creates uncertainty and unreliability in meeting just-in-time deliveries. The road transport industry is concerned about it, the private motorist is concerned about it, it uses up time that could otherwise be gainfully used. It is a problem. The difficulty is in providing the capacity in the transport system to solve that problem. You may be just moving the problem in time down another ten years.

Shearer: The biggest weakness in the transport sector is lack of guts in government and political parties to address the issue.

?: A fundamental weakness is the structure of the electricity industry. I wonder if an opportunity might be to consider it in terms of a network company. It is the best forum for demand-side exchanges to be run by network companies, or even by TransPower?

?: I think we have suffered a lot from the split between line and energy. There are some pluses and I think what is becoming quite obvious, is why line companies need to get involved in the energy market and even distributed generation. It is very interesting when you look to get into that market, to see if you can you actually participate in the market, even though you invested in distributed generation. The same on the load management side, and I think that there are some fundamental changes that still need to be made in the NZ electricity system.

Mitchell: I do believe that networks have a role to play in the management of power systems on a more integrated basis. We are shifting towards a situation where networks can have more generation inputs and more interconnection between that and the loads that they service and their role will be management of power flow in a mesh. That is a lot more complicated than what we are doing at the moment. I think it is beyond individual customers. And there are also other issues like distributed generation. If you want to get the maximum amount of value out of your investment what you need is a basic generation that you manage diversity across. To get a windmill to work by itself doesn't deliver a lot. If you have a mixture of other generation sources of more windmills or whatever, with a bigger base, you have more to manage and more compromise and I think that is the role that networks can introduce.

?: Are you running the distributed generation? And if so, who are you selling that energy to?

Mitchell: The energy gets sold to the retailers. They contract to purchase the energy. We operate it, we invest in it. There are constraints in the types of generation that we are allowed to own and the quantity that we are allowed to own. That just means that we have to try harder with the renewables. There is also attention focussed on how we deliver the network service requirements, and they are security and capacity. The very first part of your generation investment tends to focus on security as the first issue. Before you run out into a firm capacity constraint, you get a security constraint. The investment targets that and having done that, it creates a basic generation that you build on and makes the other renewables viable. From a network point of view I manage generation as a transmission alternative.

Heaps: I think one issue that we have now with the changes that have occurred in the electricity industry, is that we don't really have anyone who knows the agents of the consumer on a regional basis. The retailers would jump up and down and say that they were trying to be them. But I think that because you have different retailers competing, we don't have now anyone that really is the agent or the champion of the consumer. Ken Mitchell is trying to find a role again there for the distribution companies. I think that the role that TransPower has got, and it should take this on seriously, is to understand regional needs but not from a central basis but looking through the eyes of regions and the consumers, finding out what they actually need.

You know the Southland issue, what sort of industries are they trying to attract? And then, how can we provide transmission or the electricity solution for them to choose how they actually create the environment for the investment in the community? But we need to understand that first. I think that TransPower has got a very strong coordination role to play. And once we understand the needs of the regions, then we can put that together on a national electricity plan. So I think there is a role.

In terms of options in energy savings I think that the biggest problem is that we don't have a property right for consumers because they cannot get fixed volume contracts. The energy demands that John Laun was talking about to Stephen Drew have got a problem in that you have to first test that those savings occur. I believe, and I said it through winter 2001, we need fixed price, fixed volume contract available to all consumers. When you get hold of a fixed price, fixed volume contract you have a property right. If you don't use it you can trade it. Until we get those sort of contracts into the market place then consumers won't have any power. If they don't have any power, they cannot participate.

David Caygill: I would like to share a thought about the question of whether our lack of self-sufficiency in transport fuels is a weakness. In one sense it seems to be obvious enough that we are exposed to international prices and shortages and so forth. I remember a day when we sought to be self-sufficient in all sorts of things. We tried to be self-sufficient in wheat, as a consequence of which we grew it where it was so damp that

the flour quality was awful. We stopped doing that and farmers started to specialise in things they were much better at. You could say that we are self-sufficient in electricity, of necessity because we can't import it or export it. This is not necessarily a strength, in that in some respects we are a victim of that fact.

There is a sense in which we are exposed to the risks of the international market place. But is that really something that we should try to run away from? It seems to me that actually, most of our opportunities lie in engaging with international markets. Precisely when the Japanese say that they want to be self-sufficient in food then we say "that is crazy for you and harmful for us". We should not try to have it both ways.

?: I am certainly not advocating a policy of self-sufficiency, but we need to be cognisant of the risks of supply-interruption and have effective risk management processes and know what we are going to do if we do have a short-term supply shortage. Those processes may well be in place, but I have not seen them.

Heaps: That is an interesting point and it is one that I think you might think of, David Caygill, because it was raised at the Commerce Commission here, about who actually has to coordinate responses to crises and emergency situations. That is a point we really do need to think about.

Molly Melhuish: I will use my moment to talk again about transport fuels. The loss of the CNG industry, is this not a major threat in that CNG both adds diversity and reduces price risk in the case of oil price hikes? Is this not a real priority to see why CNG failed and if there is a modern market response to bring it back?

?: My view of CNG is that it was to some extent was artificially supported at the time. Its introduction was successful. The higher price energy scenario that was anticipated at the time didn't eventuate and once that support was removed it was just allowed to wither. So yes, it does reduce the options and it is a little bit sad to see what was built up to be a network of stations having now been essentially completely dismantled, while some other countries are in the process of developing such networks.

?: I wonder whether CNG was knee-capped by the price of diesel. Diesel in this country is half the price of petrol, the only country where that is the situation. In Australia it is roughly the same price, and in Europe it is much higher.

Melhuish: The diesel price was reduced politically in 1985. So the CNG market was produced and knee-capped politically. If there is a true market need for robustness, is there a market solution? Other markets reward risk. They have insurance products. Is this to be ignored in this CNG case?

?: We would not leap straight to one fuel as a solution and there are other alternatives - LPG and methanol transport fuels. There are other options out there.

Melhuish: Are they rewarded for their diversity, for their adding to robustness?

?: I don't see it at the present time. Alcohol fuels have been around for donkey's years. They are not new. They are proven. So it is a matter of marketing economics whether they are introduced or not.

Peter Read: People as consumers have no power so they don't participate in market, so what we need to do is to change that. And we need to communicate to those people to enable them to create good relationships, be it with network companies, energy companies, or other organisations involved in the industry. The outcome of that will be that we will get market participation by the consumers and the outcome will be more effective and efficient market in terms of determining what we need and will we actually need it. At the moment we don't have that, because no-one is talking to the consumer and inviting them to participate, in an active manner, which is in the interest of everybody. One thing we do have to do is to change the current market structure to enable that to occur.

Ian Shearer: My point is that what we have missed out on is this whole thing is that we don't have the vision and we don't have the leadership and the will to make that vision happen. We have the wrong targets, the public do not understand a target like 30 PJ. The public would understand a target that said something like "all residential energy will come from renewable sources." The messages are the wrong messages and targets like 20% and 30 PJ are not targets and visions that can bring us forward, and I think that what we are missing is political will to state the visions and make them happen.

Heaps: I think this morning's session has been very interesting. There are a lot of positives I think, even though we do need leadership to achieve any vision. But there have been a lot of positives, of things that are moving forward. I think that a lot of the things that EECA are doing and looking at, measurements, understanding these issues and the supporting of conferences such as these is very positive. I would like to see the development of the energy exchange ideas and all those things that are going on, with John Laun's products being brought over. There is a lot more development needed but it has started to happen.

What is happening in Eastland Energy is what should be happening everywhere, managing on a regional basis where there is the understanding of the needs and what the future energy uses are.

We did pay a bit of lip service to transport. It is very important that we know about the amount of energy that is used. I think that the interesting thing is there is a lot of understanding which we can gain by cooperating across energy sectors. We do tend to be blinkered, looking at electricity, or at transport or at gas.

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