EnergyWatch
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On the bandwagon

The Sustainable Energy Forum and EnergyWatch have never been happy with the way electricity reform was handled, and in our first issue (July 1995) Molly Melhuish summarised the government's line and then made a few points which still sound familiar:

The story is plausible but misleading. In fact:

- *The decision* [to split ECNZ into two] *was mainly about profits. It will enable EC 1 to set prices; EC 2 will match them, not undercut them. LRMC pricing is efficient only where a market is fully competitive.*
- *The alternative would have been regulation designed to facilitate widespread competition. To set the ECNZs free to set prices "without interference" will condone monopoly behaviour through 'duopoly pricing,' leading inevitably to price regulation later on.*
- *Price regulation could led to political pricing in its worst form.*

The media story omits the punch line—where the profits will go: LRMC pricing will give new windfall profits to owners of low running cost assets, at the expense of consumers.

We even published a Tom Scott cartoon (February 1999), which had Max Bradford saying, "just because something doesn't work in practice doesn't mean it can't work in theory."

On the whole we were in the wilderness, and if the wilderness is that which the current Minister doesn't want to know about, then we still are. We have always been in good company (Tom Scott for a start), but now our company is getting larger and more up-market. In this issue we print two major articles critical of the electricity market, on pages 6–10. The first is by Bryan Leyland of Sinclair Knight Merz, who concludes that the current arrangements are not working and are not going to work: the electricity market in New Zealand cannot meet the conditions for effective competition under the model chosen. The second article is by John Noble, summarised by EnergyWatch from a three part series in The Independent, reaches a similar conclusion.

And then, in the midst of an election campaign, the bandwagon began to roll. Ex Minister John Luxton defended the reforms in a letter to The Independent, and was slapped down by retired electrical engineer and manager Bruce Priest (10 July). Priest made the point that the Arapuni hydro station, on the Waikato, was commissioned in 1927 and cost about £ 7 million. It will probably still be going strong when the gas has gone and the CCGT stations are scrapped. On this basis even Clyde will probably be a good investment.

Marta Steeman, writing in the Dominion Post on 18 July, pointed out some stark differences between retail charges, including generally lower charges by the state-owned power companies. To borrow Leyland's phrase, their trade-off between greed and guilt falls a little more towards guilt.

Leyland makes an interesting proposal. He calls for supply side competition, with a central co-ordinator separately purchasing the operating and overheads components of supply, as well as keeping an eye on short-term and long-term demand, and water levels. He also makes a key point, that as the gas price controls the market, prices are set to go through the roof when Maui closes.

Who knows, EnergyWatch may even turn out to be on the bandwagon on transport (page 11).

"A resource left in the ground has no value"

So said Associate Minister of Energy Paul Swain at the opening of Swift Energy's Rimu Production Station in South Taranaki, on 21 June. At one level this claim is obviously true—no well, no gas. But a slightly more sophisticated view is that to value minerals at their production cost is to assume that they have no inherent value, or in other words that the mineral resource is infinite. With petroleum there is also a cost of disposal of the resulting emissions. To ignore it is to create another infinite resource, by a single flourish of assumption.

A continuing result of this kind of thinking is New Zealand's policy of letting petroleum exploration licences with an automatic right to develop. This minimises government risk up-front but puts the exploration company in the driving seat. Which is fair enough if a resource left in the ground has no value.

This policy first went wrong with Maui. We have obviously benefited from Maui gas, but the benefits to the New Zealand economy could clearly have been greater. The problem of what to do with so much gas was solved after the development agreement—too late—and in the wrong way: broadly, it was to drop the price until there were enough buyers. Arguably, we would now be in a much stronger position if the government had accepted the risk, retained the development rights and plugged the wells. With Maui available for the twenty first century we would now be able to negotiate a much more advantageous contract to export LNG to Japan, China or the US, starting in perhaps 2010 or 2020, and keep a little for ourselves. In the mean time we could have met our 'real' gas needs from our onshore fields, notably Kapuni, and avoided the dirt-cheap gas prices which are now so inhibiting energy sustainability. It is understandable that the government of the day might have been caught on the hop in the 1960s, with a far larger resource than officials had imagined, but why have we not learned the lesson?

Another continuing area of woolly thinking on energy supply is the assumption that electricity is just another commodity, like baked beans. This despite major differences between supplier's cost structures and huge consequences of any supply failure. Would a baked beans shortage in Auckland generate world headlines?

The omens are not good, but there is some hope from the same Paul Swain, this time in his incarnation as Minister of Information Technology and Communications:

> *The hands-off, leave-it-to-the-market approach of the late 1980s and 1990s has not delivered. Since 1999 the Labour-led Government has taken a more active role in the economy.* (Dominion Post 2002/7/22)

Of course, gas in the ground could in time become a wasting asset, as sustainable energy technologies drive down petroleum prices. Given New Zealand's very generous potential for renewables, might this be what the Minister had in mind?

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Aucklanders Wise Up On Transport

Extra buses are being brought into Auckland to cope with a jump in demand for public transport, and bus company Stagecoach has added new services to existing routes. Auckland Regional Council's annual Central Area Passenger Transport Survey has shown that 37% of all people travelling into Auckland's CBD at peak times are now travelling on public transport—a 23% increase since the last survey. John Boyd, Communications Manager for the Energy Efficiency and Conservation Authority (EECA), says this means that transport in Auckland is becoming increasingly energy efficient. The National Energy Efficiency and Conservation Strategy (NEECS) calls for a 20% improvement in energy efficiency across all sectors of the economy by 2012. Transport uses 42% of New Zealand's energy so it's one of our biggest challenges.

Many car trips carry only one person, making cars a very inefficient form of travel. Auckland also has a problem with congestion on motorways and inner city roads, which increases the fuel consumption and emissions of vehicles. The 23% increase in Aucklanders catching the bus to work means about 3700 less cars making the trip to the CBD each day, which is estimated to reduce emissions by 1200 tonnes/yr.

EECA, NewsRoom, 6/6/02

(We are doubtful about the 'increasingly efficient' claim for Auckland as a whole: car use is probably still growing faster than bus use. E/W)

NZ Energy Conference 2002

The Way Forward

Duxton Hotel, Wellington
7 – 8 October 2002

See the SEF web site for more details

www.sef.org.nz

The Energy Federation of New Zealand and the Sustainable Energy Forum extend a warm invitation for you to attend the New Zealand Energy Conference 2002 in Wellington, ***The Way Forward.***

The four main themes covered by keynote speakers and discussion-starter papers on day two will be:

- Energy resources—future supplies;
- Resource transformation—existing and new technologies;
- End-use demand response;
- Markets and Governance.

Local and international experts will address the key issues on both days.

The conference is timed to follow the adoption of the most significant Government policies and energy market reforms affecting the New Zealand energy sector for some years. It aims to examine the impact of ratification of the Kyoto Protocol, the effects of the policies, and identify how the different parts of the New Zealand energy sector are identifying ***The Way Forward.***

The conference will attract representatives from all parts of the energy sector and will provide opportunities to network with these industry participants. If you are interested in how you can influence or benefit from our energy future then this is the conference that will present the opportunities to you.

In the final combined session of the conference common outcomes developed from the earlier sessions will be used to identify a process to develop energy options for the future.

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Sponsorship, display and poster paper opportunities are available. Please see the SEF website—www.sef.org.nz—or contact Ian Shearer in the SEF office for more information:

(04) 586 2003
or info@sef.org.nz

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Conference notice: Australia New Zealand Society for Ecological Economics (ANZSEE) 2–4 December 2002

Theme: Strategies into action: regional and industry policy applications of ecologically sustainable development

At: University of Technology Sydney (Broadway campus)

The conference will explore how regional strategies (local to national and beyond) and industry (ie. sectoral) policies can help create an ecologically sustainable economy.

The conference will have keynote speakers, contributed papers, workshops and discussions. It will give an opportunity to report on ecological economics work done and to explore the agenda for future work.

Everyone who is interested in the creation of an ecologically sustainable economy is welcome to participate. You don't have to be an economist or an ecologist—or a member of ANZSEE !

See the conference website for more details:

http://incres.anu.edu.au/anzsee/ANZSEE2002.html

SEF on the web

The Forum now has a new and expanded website, where you can:

- Browse the summaries of the previous SEF Conferences.
- Check the announcement for the 2002 Conference. (and put the dates in your Diary)
- Explore the links to other sites of interest.

Do it now! **www.sef.org.nz**

World Renewable Energy Policy and Strategy Forum

Robbie Morrison, Berlin, June 2002
morrison@iet.tu-berlin.de

This three-day conference was held in a single large room, part of a trade fair complex in west Berlin. About 450 people attended, although few from industry. New Zealanders present included: Ralph Sims (Massey University), Steve Goldthorpe (URS New Zealand), Richard Goldthorpe (student), and myself (Technical University of Berlin). Ralph was an invited speaker and made a presentation on biomass on the Saturday.

Presentations were in both English and German and translation was provided. Conference proceedings are promised for September 2002: check the web site for details but do not assume that contributions in German will be translated:
www.world-renewable-energy-forum.org

The conference was headed by Dr Hermann Scheer, Federal MP and SPD party member (comparable to Labour). Scheer is a forceful advocate for the solar age and has written several polemics on the subject in English and German.

This summary report is split into three parts for convenience: the upcoming Johannesburg Summit; industrial nations issues; and third world issues. Within this breakdown, matters tended to be discussed along technology lines: wind energy, solar electricity, solar thermal, biomass, co-generation, banking and urban form. Much of the conference was taken up with the need to displace fossil fuels—without due consideration for rest-of-chain measures and system-use protocols. It was only the environmental NGOs, Greenpeace and WWF, who argued for whole-of-system assessment and the need to interpret the system as supplying energy services in the first instance.

The Johannesburg Summit

Several speakers had attended various lead-up events for the Johannesburg Earth Summit II, including Precom 4 in Bali, and described the unfolding politics. They reported an almost complete failure to get energy efficiency and renewable energy onto the agenda for Johannesburg. Those opposing this move were the USA with Australia and Canada, and the G-77 under the influence of the OPEC block and some coal-using countries, including China. Energy issues can be discussed at Johannesburg, but only under the heading of 'poverty eradication,' and there was some support for the view that global summits are used by governments as a substitute for real action.

Industrial Nations Issues

Key threads included:

- The merits of price and quota-based renewable energy (RE) support mechanisms in Europe—particularly in light of the spectacular success of the German wind energy 'feed-in law.'
- Energy insecurity is now firmly on the agenda for reasons of geopolitical instability, fears over local sabotage (post Twin Towers), and the peak rate of oil production (which some analysts expect about 2010) and subsequent decline.
- Lending bank competency as an impediment to the uptake of RE, particularly for complex technologies.
- The fact that biomass had been predicted to provide most of the RE uptake in Europe, but it is wind that has showed the most spectacular gains. Despite this, some countries have been implementing support for biomass projects, including Austria.
- Denmark's once healthy RE industry has suffered a major setback with policy reversals introduced by the new conservative government.
- Conventional (non-fast-breeder) nuclear power has a 50 year horizon because uranium stocks are limited. No jurisdiction has yet arrived at a 'solution' to the nuclear waste problem.
- The potential role of the Kyoto Clean Development Mechanism and Joint Implementation in stimulating RE penetration.
- The prospects for a solar/hydrogen economy.

Three categories of RE support have been used in the European Union:

- Price guarantees and feed-in laws (7 countries) Germany has adopted this approach very successfully, with 8 GW of wind power installed in 10 years, at a capacity factor of around 0.3.
- Mandatory quotas and certificate trading (7 countries). Certificate trading has proved difficult to design, despite having technical appeal to economists. Bankers voiced fears about certificate price uncertainty.
- Investment grants have been used only in Greece, and have lead to a flood of RE applications and consequent problems.

A panel discussion on project financing by merchant bankers proved interesting. Only relatively simple schemes can be analysed, due to a lack of institutional capacity, which is why guaranteed price wind farms remain the RE technology of choice for bankers. One speaker put a € 20 M 'line in the sand' for project scale, with due diligence costs running at € 0.5 M.

Transport fuels

VW and DaimlerChrysler described plans for a synthetic transport fuel developed for use with a hybrid powertrain. The new fuel would first be made from natural gas and then from biomass. It would be specially engineered to match a new engine type, which would fall somewhere between the Otto and Diesel cycles. The idea is that a variety of feedstocks and conversion pathways would converge to one combination of fuel and engine, which could power both small cars and large trucks. By exercising exact control over the molecular structure of the fuel, low-emission engines (NOx excepted) could be built without the need for ancillary pollution control equipment. The German auto industry regards this synfuel proposal as a necessary step towards forecourt hydrogen distribution. A number of speakers lent support to the hydrogen economy concept, but there was no in-depth assessment of the regenerative fuels question beyond the VW/DaimlerChrysler proposal.

Other issues

A number of third world speakers gave excellent presentations, which are only touched on here. Key points included:

- The third world is not homogenous: dysfunctional poverty in Mali, for instance, presents problems that are quite different from those faced by the rural poor in Sri Lanka.
- A predicted uptake of solar electricity in the third world has not taken place. An African speaker suggested why, arguing for mechanical technologies first, placing a priority on better hand tools and manual pumps rather than solar lighting schemes.

Personal observations

- The integrated assessment of renewable energy policy is long overdue. The problems need to be analysed with all sourcing options, conversion pathways, intermediate fuels, end-uses, and technologies considered together. This type of assessment treats renewable energy and energy efficiency as parts of a bigger picture, in which cost-tolerable GHG reduction and depletable resource displacement are the main foci.
- While more sustainable systems will not require as much evident physical infrastructure, they will require a complex logical (in the computer science sense) infrastructure, covering issues like: co-operative planning, operational protocols, technical control, and failure containment.
- The transport problem remains largely beyond reach—biofuels can contribute but the best response remains mandatory restrictions on vehicle choice and roading network renewal (all politically unattractive!).
- Sustainable energy solutions are unlikely to penetrate as rapidly as they will need to on their own merits—unsustainable energy 'solutions' will need to be actively restricted in parallel.
- Each new change of infrastructure standard should be the deepest practicable—infrastructure standards are normally quite persistent and often outlast several generations of asset

As a final observation, speakers from the EU were, in general, far more aware of the limitations of markets as a means of selecting near-optimal solutions than were their US counterparts.

Carbon dioxide recovery in Indonesia

Nissho Iwai Corp and Mitsubishi Heavy Industries plan to build a large plant in Indonesia to recycle carbon dioxide collected from liquefied natural gas (LNG) and power production facilities, a Nissho spokesman said. The two firms have agreed with an oil and gas research centre affiliated with Indonesia's Ministry of Mining and Energy to start a feasibility study in September with a view to building a gas-collection plant in Kalimantan, on Borneo island. The cost was estimated at Yen 100 billion (€ 850 M).

The partners plan to recover 30 000 tonnes of CO_2 a day (11 Mt/yr) and to sell the gas to operators of oil fields in the Badak region. Injecting CO_2 into oil fields can increase production by some 50%. The spokesman said the partners would take advantage of a new technology developed jointly by Mitsubishi Heavy and Japan's Kansai Electric Power Co Inc. The technology to inject CO_2 into oil fields is already commercialised in the US, where about 22 Mt of CO_2 are injected annually.

Reuters 1/7/02

Electricity reform —again

We print two articles, both suggesting that the electricity reforms over the last decade have not reached a satisfactory conclusion, and are unlikely to do so E/W

Implications of the Winter Electricity Crisis

Bryan Leyland, FIPENZ
Principal, Sinclair Knight Merz

In the autumn and winter of 2001 there was little rainfall in New Zealand's hydro catchments. Lake levels fell rapidly and the price of electricity increased to many times the long run marginal cost of the most expensive generation. This cost the economy some $ 200 M, yet roughly 400 MW of available generation was unused.

The NZ electricity system has a maximum demand of about 5500 MW and an annual generation of 36 000 GWh, roughly 65% hydro, 30% gas and 5% geothermal. Droughts are a major problem due to limited storage—15% of annual generation. There can be a 30% drop in hydro output which must be made up from additional thermal generation. Planning for droughts was a major factor in NZED and ECNZ planning.

Any modern economy must have reliable supplies from utilities. Water and electricity are the most critical, with values much higher than prices. Electricity sells for 10 – 20 ¢/kWh: the industry standard 'value' is in the vicinity of 500 ¢/kWh—much more for some users. Given this high value, the price elasticity—the drop in demand as the price escalates—is very low indeed. Add to that the fact that electricity cannot be stored and it is obviously a most unusual commodity, very unresponsive to normal market forces.

The New Zealand market

The basic premises of the NZ market concept are:

Electricity is a commodity like any other
When the price goes up, the demand goes down

And, as a corollary:

Droughts will no longer be a problem—the market will provide.

The market designers expected that, as demand increased, the price would slowly rise above Long Run Marginal Cost (LRMC) giving sufficient time for new plant to be built. In the market design adopted, generators bid at the price at which they are prepared to generate, the market operator stacks the generation up to meet the load and all generators get the price at the top of the stack. The theory is that this encourages each generator to bid their Short Run Marginal Cost (SRMC). Most generators will normally get more than this, because they are not the highest priced generator. In many cases the price will be above the LRMC of the low cost generators who will then be well rewarded.

For a model like this to work there are two important pre-conditions: no significant transmission constraints; and adequate generation reserves anxious to play their part. If these conditions are not met, competition does not constrain bid prices and prices skyrocket to a value based on, "a trade-off between greed and guilt." Once generators have market power, the spot price is effectively out of control. Some markets have seen prices well above $ 10/kWh.

I believe that even if the pre-conditions are met this market carries the seeds of its own destruction. Let us assume that there are three generators, each bidding 100 MW of peaking plant into a market that needs only 100 MW. One of the three gets to run. This generator is competing with the others, and so bids at SRMC. However, this allows no return on capital investment, which on peaking duty is a large proportion of the cost. The generator who gets to run makes a loss, and the other two get nothing. So the design of the market means that generators who provide the essential peaking and reserve plant cannot make a living.

Another weakness is that if a generator has a range of base load and peaking stations and there is limited reserve capacity on the system, self-interest leads to putting a very high price on peak loads. If this price is accepted, all the generator's stations receive the same high price; if not, there is a good chance of benefiting from a similar bid by a competitor. A recent paper from W Australia states:

> *The dash to introduce openness and competition into electricity during the 1990s through inadequate and complicated methods has not delivered the desired objectives and, in many cases, has caused significant concern and disruption to the development of a country. Exercise of market power and huge transfers of wealth has been a characteristic of electricity markets where, by one means or other, generators or fuel suppliers have been able to exercise market power.*

The drought of 2001

Storage levels were at historical lows from April to June, and in August. Prices slowly crept up until early June, then climbed to peaks of about 24 ¢/kWh (30 day moving average price) or 900 ¢/kWh (half hour spot price). Prices fell just as

suddenly in September, in response to a slight recovery in storage levels (and maybe guilt). For several months the price was well above the LRMC of 7 – 10 ¢/kWh for thermal reserve plant. The difference between 7 cents and the actual price cost about $ 300 million, and inadequately hedged traders (NGC and Trustpower) lost a lot of money.

From June to August the combined unused capacity from New Plymouth and Huntly power stations was rarely less than 400 MW. I have not been able to find out why these stations were running below capacity. It is not covered in the government's Winter Review and a query to the Ministry of Economic Development elicited the response that it could have been due to many factors, including market power, and that this would be less likely in future because bid prices would be published two weeks after the event.

If this capacity had been available there would have been no crisis

I suspect that the capacity was not made available because of actual or threatened transmission constraints, some restrictions on fuel availability, maintenance requirements and 'making hay while the sun shines.' If this capacity had been available there would have been no crisis.

There was some demand side response, and it did help. Comalco and other industries shut down production—at a high cost to themselves and the economy. I suspect that the major response was made by domestic consumers—just as they have always done. So, in all probability, the most effective demand side response had nothing to do with price but a lot to do with public spirit. The outcome was that our market delivered a shortage that needn't have happened; high prices; a Minister pleading for savings; and lost production in aluminium and other industries

Lessons

Thermal generation started up too late. Although storage was low in early April, it was not until late May that Huntly and New Plymouth increased output substantially—two critical months too late. Transmission constraints limited the output of thermal stations and the amount of power that could be sent to the South Island. Transpower says that it will fix them only if someone else pays.

Electricity markets overseas have experienced similar or more extreme problems. The problems in California and the eastern USA were reviewed by the Consumers Federation of America who stated that, to work, electricity markets need 10 or more generators of similar size, and reserve margins well above the traditional 15 – 20% —perhaps as high as 30 – 40%.

McDiarmid et al described the problems that have arisen in North America and concludes that:

> *... above some load point, in a capacity-constrained market with little or no demand response, there is ... very clear market power of major consequence.*

They go on to say

> *...the result of using this (market) structure in a highly volatile market with a limited number of bidders becomes something close to a license to steal when the market approaches a peak.*

According to the US Consumers Federation

> *Making spot markets function to efficiently and equitably determine electricity supply requires the production of additional excess capacity, results in huge scarcity rents, causes a sharp rise in the cost of capital, and increases transaction and co-ordination costs.*

A paper by G D Thomas quotes a World Energy Council report which set out guidelines for successful competition. These include:

- *Three different fuel sources with three or more suppliers of each fuel*
- *20 - 35% excess capacity above annual peak demand*
- *At least three competing bids received for new generation*
- *Ten or more competing generators*
- *No generators larger than 25% of peak demand—and ideally 10% or less;*
- *A well-connected grid with less than 5% transmission constraints.*

How many of these criteria are met by the NZ system? Possibly the third but none of the others.

Who Is To Blame?

Not the generators—the market review panel says they didn't break any rules. And not Transpower —it believes that it is up to the market players to pay the cost of fixing constraints.

In my opinion, the blame lies with the designers of the market. In their blind conviction that electricity is a commodity like any other they have foisted on us a market model that is totally unsuitable for our small system relying on drought-prone hydro power with limited storage. On top of that, the electricity reforms, the Resource Management Act and the Electricity Act, have put Transpower in a position where it is virtually impossible to reinforce the transmission system.

Could we make our market work?

I do not believe we could. It doesn't have enough players, or enough reserve capacity, or a

constraint-free transmission system. We can't afford to have the 40% or so spare capacity needed to give us 25% or more of spare capacity in a 1 in 20 year drought. If we tried to get more players by splitting up the hydro power chains based on the Waitaki (1800 MW) and Waikato (900 MW) rivers it would no longer be possible to run them as a single entity and there would be unnecessary spill and increased costs. And rearranging the hydro generators would in any case make little difference because in a dry year the only competition would be between a few thermal generators—who would find it more rewarding to jack the price up.

Transmission problems could be fixed with changes to Transpower's Statement of Corporate Intent, the Resource Management Act and the Electricity Act. But fixing the transmission system is not nearly enough to make the market work.

Supply Side Competition

I believe that there is room for competition in the provision of generating facilities, even if the current electricity 'market' cannot work in NZ. With hydro plants, the cost of power is set in concrete once the plant is built because the water is effectively free and operation and maintenance costs are very low. This is less true for thermal stations which have variable fuel cost as a significant factor, although the station efficiency is set once the plant is ordered.

An alternative to returning to a monopoly generator with clearly defined financial objectives, or to an all-powerful regulator, is a centrally co-ordinated competitive system. The Central Co-ordinator (CC) would have the job of buying and selling power, dispatching generation and managing hydro storage. When new plant was needed the CC would issue a request for offers. Power companies would tender, offering hydro, geothermal, or thermal stations (*and wind—E/W*). Contracts would be signed on the basis of a fixed fee of, say, $ 200 /kW yr to give a fair return, plus payments for the energy generated. There would also be guarantees, and penalties and bonuses associated with output, availability and efficiency. In the case of hydro plant, the payment related to the energy generation would cover operation and maintenance costs only. This concept would allow the system operator to generate or store water as needed without affecting the cash flow of the power company. In the case of thermal stations the payment for generation would also depend on the fuel price (which might vary from year to year) and the guaranteed efficiency. The CC would sell electricity at a price that reflected the cost of generation, including the cost of the reserve plant needed for dry years.

There is a very significant spin–off from this idea which will be evident when—as has been suggested by Shell—the price of gas increase perhaps threefold around 2007. Under the present market, the price of gas will push up the spot price. This massive increase in the cost of about 40% of the power we use will be applied to all the power sold. So we will lose the advantage of low-cost hydropower which many of our primary processing industries rely on. But, on the other hand, hydro and geothermal generators will suddenly make huge windfall profits. Some will argue that there is nothing wrong with this, but I am not so sure. If we changed to the centrally co-ordinated system, the benefit of our low cost hydropower will be enjoyed by everyone—including the descendants of the consumers who provided much of the capital.

> ***This massive increase in the cost of about 40% of the power we use will be applied to all the power sold***

This proposal may seem to be a bit radical but similar arrangements are often made overseas, associated with pumped storage plants and with gas or coal fired plants where the purchaser of the power supplies the fuel. We recently recommended this for Bhutan in the Himalayas so that they can maximise their return from selling several thousand MW of hydropower (their only major natural asset) to the Indian market. The alternative was to have several generators on a single river, all cutting each other's throats to sell power to India and squabbling over water.

Conclusion

Last winter the market failed even though there was adequate capacity available. Failure was demonstrated by price spikes, by the Minister's pleas for savings, and by the market power exerted by the thermal generators. Some of our key industries suffered unnecessarily and the cost to the economy could have been as high as $ 200 million.

The objective of the electricity reforms was to give us a reliable supply of electricity at the lowest possible cost. Neither objective has been met. I am sure that a co-ordinated system would perform better than the 'market' we have now. I hope that it, and other options, are carefully considered on their merits.

The full version of this article, with diagrams, is available from Brian Leyland: *bleyland@skm.co.nz*

Reformed out of control

John Noble
Energy consultant and commentator

(This article is a summary by EnergyWatch of three articles in The Independent, for 22 and 29 May, and 5 June)

NZ Tariff and Fuel Consultant's price index, covering medium to large industrial contracts, shows a sudden rise from about 3.4 ¢/kWh to over 5.0 ¢/kWh last August, followed by a steady climb to a a recent 6.0 ¢/kWh and still rising. Average weekly spot prices have rocketed from 2.5 ¢/kWh in February to around 8 ¢/kWh by the end of April.

Why is this happening? The generators and the Minister say prices are moving to what economists call the long run marginal cost—the price that enables power companies to build new power stations, but this looks unlikely:

- There was no shortage of generation capacity last winter, but a general lack of prudence by the industry and a misallocation of transmission capacity. We are not yet short of power.
- The extent of additional capacity proposed and under construction suggests that the reason for building it is not that it's needed but that it's cheaper. Therefore building new power station should reduce the price of electricity, on average, by unloading Huntly and New Plymouth.

During last winter's crisis the generators refused to renew expiring contracts, so unlucky customers were exposed to spot prices soaring up to 30 ¢/kWh. When contracts became available again, prices were very high. No generators undercut these prices, and for a few months contract prices were more than double the spot price. Then the generators realised they could do the same on the spot market.

The evidence points to a lack of effective competition between generators as the primary cause of the rise. This has enabled them to push up contract and spot prices, and retail prices have followed. A lack of competition at the retail level has not helped but is not the fundamental cause. It seems that officials are telling the Minister that all is well, to validate earlier advice, and the generator SOEs are happy to go along with the easy profits, which also give the government a vested interest. The Minister is ideologically opposed to regulation, and in any case has no power to regulate wholesale prices. And any attempt to direct the SOEs to accept lower profits would allow the private generators to cry foul—and NZ's commercial reputation could suffer.

The generators dominate the debate because of their financial and technical resources—and the retailers are generally the same companies. Only the consumers are complaining, and they have very little voice in policy development.

Competition has failed consumers

Reform of the electricity industry began in 1987, but the objective was reduction in cost, not price. In 1992, John Luxton acted on the dogma that competition begets efficiency and efficiency begets lower prices. Competition, not efficiency, became the objective. Retail competition came first. It needed open access to distribution systems, which needed regulation and—not for the only time—a series of compliant consultants were brought in to verify that it would all work. It didn't; as the government had been told, small consumers could not afford the necessary metering. When large consumer contracts became contestable they could afford metering, and their prices dropped. Small consumer prices rose at three times the inflation rate as cross subsidies were reduced, with no sign of the efficiencies that were to bring down prices. Finally, Max Bradford admitted what everybody already knew and undertook to fix the sector, with two reforms:

> ***Competition, not efficiency, became the objective***

- Splitting retailing from distribution. The generators realised that retail customers represented a secure revenue source, and in the feeding frenzy to gobble them up added hundreds of dollars to each customer's value. This had to be recovered through retail prices. However, the generators wanted still bigger customer bases so competition kept prices down—until last winter's crisis made customers a liability and killed that competition.
- Splitting ECNZ into three, to promote competition in generation. This effectively dropped spot prices, but only because the generator's revenues were protected by high-priced hedge contracts let before the split. Under these contracts, if the spot price is lower than the hedge price the difference is paid to the generator. It remains a powerful incentive for generators to drop the spot price and collect on the hedges.

The industry has almost certainly become more efficient in the last 15 years, although there seems to be no research to confirm this. The nation has

probably benefited but most customers have not, in terms of either price or service.

Some economists argue that competition is an inappropriate measure, if the aim is to lower the price of a commodity such as electricity, which is undifferentiated between suppliers. In these cases the result is price discrimination, with the most flexible, or contestable, consumers getting the best prices. This is what has happened in New Zealand.

But hope springs eternal in the competition ideologue's breast. Competition is never wrong, only contaminated by its environment. Thus the suspicion that distribution profits were subsidising retailing led the reformers to separate the two (an admission, of course, that previous regulations had been ineffective). The suspicion may have been correct, for distribution prices have since fallen, and electricity prices have increased. But the objective was to reduce overall prices, which has not happened. It was assumed that competition in electricity retailing would flourish in the new environment and no legislative back-up would be needed; but that has proved incorrect.

What next?

John Luxton demonstrated by failed experiment that electricity is not a commodity like baked beans; Doug Kidd showed that pulling apart something that which took long years of experience to put together is complicated, costly and unsatisfactory; and Max Bradford showed that compounding predecessor's errors only makes things worse. David Caygill made a reasonable job of identifying the problems, but then chose a preordained solution based on the same ideologies. The core of this solution is a seven-member electricity governance board, with 'independent' members elected 50% by 'consumers' and 50% by industry. But as one senior consultant put it, "Where will they find that number of independent members with enough technical nous to avoid having Transpower pull the wool over their eyes?" The board will inevitably be dominated by the technical, financial and political might of the industry.

> ***Where will they find that number of independent members with enough technical nous to avoid having Transpower pull the wool over their eyes?***

Instead of setting policy, the governance board will administer the three agreements that govern the industry. These are:

NZEM A set of acronym-ridden committees with complicated rules covering the operation of the wholesale electricity market, which most consumers agree failed to cope with last winter's crisis.

MARIA An even more complicated set of rules still under development, covering wholesale and retail metering and reconciliation. For example, at present it loads the incumbent retailer with reconciliation errors which in many cases exceed 10% of sales.

MACQS The agreement on common quality standards, mainly for transmission and distribution, which has so far spawned more acronyms than results, and some rules that read like a monopolist's wish list.

What should be a relatively simple economic and technical decision-making process is being set up by the Electricity Governance Establishment Board, which has two consumer members; one from the Major Electricity Users' Group and one from Federated Farmers—chosen basically by default. Between them they represent over a third of electricity consumption but less than 1% of consumers. The Board's 600 page rule book is a year late and mostly irrelevant.

The Commerce Commission may refuse to approve all this. If so, a possible outcome is a crown electricity governance board. This might be an improvement, but such is the general fear of regulation and of quangos stacked with political fellow travellers—not to mention a bias towards self-regulation —that it seems unlikely. The more likely outcome will be another attempt at self-regulation.

The governance board is a good idea gone wrong. The major flaws are:

- Instead of administering existing agreements it should be addressing efficiency issues, starting at the consumer end. The existing policy statement says, "industry arrangements should promote the satisfaction of consumer's electricity requirements," when it should be promoting energy end use requirements: it is foolish to promote electricity if gas is more efficient.
- It disenfranchises consumers, who need to be able to state realistically what they want, and argue constructively in favour of it.
- It assumes that competition will automatically give the best solution.

NZ is probably too small to support effective competition without some regulation. It has too few generators, running plants with widely differing production costs, and insufficient excess capacity to ensure that there are always at least two competitors for the residual load.

Private sector funding and toll roads better option than higher petrol taxes?

Kerry Wood

The Auckland Business Forum (5 July) used this heading (without the question mark) to call for, "support for private-public partnership funding arrangements to enable rapid completion of Auckland's strategic roading network." Their release confides that:

> [Auckland Business Forum chairman, Michael Barnett] *was clearly disassociating the Auckland Business Forum from speculation that Government intends to raise petrol taxes by up to $ 1 a litre.*

Meanwhile, the July/August issue of engineering magazine e.nz carries an article entitled, "Roads, roads, roads," by Gilbert Peterson[1]. An introduction says that he "backgrounds the campaign to prioritise road over rail, the proposed works that will get Auckland moving again, and the obstacles that may yet hinder them." Two quotes give the flavour:

> *Auckland's geographically-defined dependence on cars, as well as our national love affair with them, demanded a road-based response to insufferable traffic congestion.*

(Auckland's layout is confined by its harbours, and confined layouts give busy transport corridors: just what is most suitable for public transport)

> *Altogether traffic from six or seven* [southbound] *lanes is directed across the Newmarket viaduct—which has only three lanes.*

Mailed with e.nz was a conference flyer, 'Establishing and funding public and private sector partnerships' (Auckland, 26–28 August). The conference is beyond EnergyWatch's budget, but hopefully at least four questions will be addressed:

What is the problem to be solved, and will the proposed solutions achieve it?

Peterson lists 12 'key project priorities' identified by the campaign, costed rather uncertainly at $ 1.34–2.29 bn. Most of this is for cars and especially commuters, but there is a longer list: omissions include Mayor John Banks' favourite, the Remuera expressway. Peterson draws attention to the Newmarket viaduct capacity constraint, but the only solution in the campaign's key project priorities is the Penrose–Avondale motorway, which Peterson says will reduce viaduct traffic by 30–40%.

This is bypassing the bypass. The Great South Road was adequate for a century, Newmarket viaduct for 40 years and the next round will be swamped in perhaps a decade. At 4% annual traffic growth the forecast viaduct traffic reduction is equivalent to a respite of about 9–13 years, or less with effects such as release of trip suppression when congestion is eased. Peterson says that, "partial network completion by 2010 looks possible," so the campaign's own figures show a respite of less than five years between completion and the return of 'insufferable' congestion.

The one-way capacity of the Newmarket viaduct is about 3600 cars/hr, or less while the route is featured on Morning Report. An average of 1.2 passengers in each car gives 4300 pass/hr. A bus lane can manage this, so a two-thirds capacity increase could be achieved simply by dedicating one lane to buses. This would be cheaper, quicker and more effective than spending $ 2 bn on roads. It works on the M4 in West London, so why not in Auckland? Or is the real objective spending on roads, not solving transport problems?

Auckland is planning for a population of 2 million by 2050. With traffic growing faster than this, how many other highways will have to be widened, bypassed or double decked, and at what cost?

Who will get the profits?

There are no profits in New Zealand roading. Capital is effectively written off on the day it is spent ('pay as you go'), so private sector funding will need a new profit stream.

In 1995 the Ministry of Transport considered a capital charge on the roading asset, to cover the 'opportunity cost' of the invested capital. They concluded that an appropriate 'risk free' rate of return would be 6.4%, or a charge of $ 1.65 bn/yr for the whole system. Allowing for increases in fuel use and capital valuation since 1995, this would work out to around 30 ¢/l on petrol, and something on road user charges for trucks. It would put roading onto a similar capital basis to railways, electricity and baked beans. While it would increase the cost of road use, costs for the economy as a whole would fall. Ignored opportunity costs are a hidden subsidy, and charging something close to real costs would discourage profligate motor vehicle use and encourage other, cheaper, travel modes.

[1] Presumably the author is the same Gilbert Peterson who ghost-wrote Alisdair Thompson's execrable invited contribution to EnergyWatch (*Kyoto will turn off investment and growth*, Issue 25, March 2002).

A commercial rate of return would be higher than a risk-free 6.4%—10% might be reasonable. The capital would also have to be written off: Peterson mentions a BOOT (build-own-operate-transfer) arrangement over 25 years. If this system were chosen, Auckland's motorists would be paying 30 ¢/l for their share of the system as a whole, plus a 25 year 'mortgage' for new motorways at the chosen additional rate of return—say 3.6%. The additional payments would be of the order of $ 120 M/yr. This funding would be very largely for commuters rather than trucks, so a reasonable charging method would be a local petrol tax of roughly another 17 ¢/l—or it might be charged as tolls.

Real costs will be greater than this. The road-building roundabout will not suddenly stop in 2010, with free-flowing traffic until the mortgage is paid off in say 2030. More motorway capacity will mean more local traffic, more road building, more road 'mortgages' and more taxation. A dollar a litre on petrol begins to look perfectly reasonable under this scenario. The campaign is implicitly proposing taxes, while trying to explicitly disassociate itself from them: have cake, will eat.

Who will carry the risk?

Broadly, those who get the profits should carry the risk, but private-public funding does not always work that way. This will need careful watching.

An obvious risk is that increasing the capacity of the motorway system will simply feed more vehicles onto already-clogged local streets, requiring still more funding to fix downstream problems. At present this risk is borne by drivers and ratepayers in about equal proportions (the ratepayer portion is another hidden subsidy). Other risks include international scarcity pricing of petrol, or that accelerating climate change will force Aucklanders—and city-dwellers around the world—to under-use some very expensive assets.

Who will champion the environment?

A wide range of environmental problems go begging under the campaign's proposals: noise and vibration; local pollution of airsheds and waterways; greenhouse gas emissions; and public health. Traffic pollution kills nearly as many people as road crashes, and the current 'epidemic of inactivity' is strongly associated with excessive car use. Other problems include creating 'motorway blight' and starving more effective solutions of funds. If adopted, these proposals will only push Auckland further down into third-world status: Bangkok's pollution and traffic are improving; Auckland's aren't.

A recent study tour to Curatiba, organised by Parliamentary Commissioner for the Environment Morgan Williams, has shown there are alternatives, and that outstanding improvements can be made at low cost. Other cities have found that better public transport is the only effective way to reduce congestion, or that traffic can be reduced by about 15%, simply by one-to-one coaching of drivers on the alternatives already available to them.

More questions

If there are no satisfactory answers to these questions, then more questions will need to be asked:

- Is it really self-evident that roads promote growth, when putting the main focus on cars is a known high-cost, low-sustainability approach, and many urban car journeys probably have external costs greater than their internal benefits?
- Are we serious about quality of life? Or environmental sustainability? How much are we willing to pay for a 'national love affair' with a tin box on wheels?
- When will our main centres get transport authorities, with power to raise funding and take action on all aspects of the problem—including road provision where appropriate?

A crucial problem is that Auckland already has a transport authority — Transit NZ—but only for motor roads. There is little funding and less decision-making for other modes. The result is that road building is effectively the only option. Too bad that it is costly and self-defeating.

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A dung-fired power station in the UK

The UK's first dung-fired power station should start producing electricity within weeks. The pioneering £ 7.7 M (€ 12 M) complex will run on about 1.6 Mt/yr of slurry which will be collected from about 30 local farmers. Two digesters, in which slurry will ferment and produce methane to power engines to produce electricity, are already nearing capacity. The plant will also produce hot water for use in a community heating scheme around the town, as well as organic manure which farmers will be able to use on their land.

Elsevier Science

Solar cells sell

Bernie Fischlowitz-Roberts
Earth Policy Institute 2002

Last year world solar cell production soared to 395 MW, up 37% on 2000. The top five producers in 2001 were Sharp, BP Solar, Kyocera, Siemens Solar, and AstroPower, accounting for 64% of global output. Japanese manufacturers, with 43% of the world total, benefited from subsidies under a 70 000 Roofs Program. In addition to residential subsidies, government spending of € 271 M in 2001—on research and development, demonstration programs, and market incentives—was crucial to the growth.

In contrast to Japan, the US government spent only € 60 M in 2000. The US share of the global market, at 24%, has been surpassed by the EU, which now accounts for 25%. Government commitments to renewable energy are more robust in the EU than in the US. A prime example is in Germany, where the Renewable Energy Act of 2000 offers citizens preferential loan terms for purchasing solar systems, and gives them a guaranteed price when feeding excess energy back into the power grid (known as net metering). As a result of such support, the German PV industry—the most advanced in Europe—is projected to grow from its current installed capacity of 113 MW in 2001 to 438 MW by 2004.

In Japan, government policies led to grid-connected residential installations totalling 100 MW in 2001, dominating sales. Germany's grid-connected systems accounted for around 75 MW. The 32 MW installed in the US were divided between grid-connected systems and those in remote areas not linked to a power grid. All of the 140–160 MW installed in some 50–60 developing nations was off-grid.

Economies of scale

The cost of electricity from solar cells is falling fast due to economies of scale as rising demand drives industry expansion. Cells currently cost around € 2.00 /W for thin-film wafers. Each doubling of cumulative production drops the price by about 20% *(at 37% growth that is around 10% a year —E/W)*, but some suggest that prices may fall even more dramatically in the future.

The European Photovoltaic Industry Association suggests that grid-connected rooftop solar systems could account for 16% of electricity consumption in the 30 members of the OECD by 2010. In areas where home mortgages finance PV systems and where net metering laws exist, demand could reach 40 gigawatts (GW), or 100 times global production in 2001.

More than a million homes worldwide now get their only electricity from solar cells. For the 1.7 billion people not connected to an electrical grid, solar cells are typically the cheapest source of electricity. If micro-credit financing is arranged, the monthly payment for photovoltaic systems is often comparable with the cost of candles or kerosene for lamps. After the loan is paid off, typically in 2–4 years, the family obtains free electricity for the remainder of the system life.

Photovoltaic systems provide high-quality electric lighting, which can improve educational opportunities, provide access to information, and help families be more productive after sunset. A shift to solar energy also brings health benefits, allowing refrigeration of vaccines and other essentials. The replacement of a kerosene lamp with a 40 W solar module eliminates up to 106 kg of CO_2 emissions a year.

Solar PV systems also benefit industrial nations. Even in the UK, putting modern PV technology on all suitable roofs would generate more electricity than the nation consumes in a year. Recent research on zero-energy homes, where solar panels are integrated into the design and construction of extremely energy-efficient new houses, presents a promising opportunity for increased use of solar cells.

Continued strong growth suggests that the solar cell market will play a prominent role in providing renewable, non-polluting sources of energy in both developing and industrial countries. A number of policy measures can help ensure the future growth of solar power. Removing distorting subsidies of fossil fuels would allow solar cells to compete in a more equitable marketplace. Expanding net metering laws will make owning solar home systems more economical by requiring utilities to purchase excess electricity from residential solar systems. Finally, revolving loan funds and other providers of micro-credit are essential to the rapid spread of solar cell technologies in developing nations.

Solar cell manufacturers are beginning to sense the enormous growth in the market that lies ahead. Japan-based Sharp Corporation, already the world's leading producer of solar cells, plans to double its capacity in 2002, from 94 to 200 MW. For the industry as a whole, annual growth is expected to be 40 – 50% over the next few years.

Additional data is available from:

www.earth-policy.org

Recent SEF submissions

(In June SEF made two submission, on the government's preferred policy on climate change, and on the proposed renewable energy target. We give here the summary and conclusion of each submission. The full submission is available on the web at: www.sef.org.nz E/W)

Climate Change—the government's preferred policy package

On the whole we are supportive of the preferred policy package, but we have substantial doubts. We see it as a 'glass half-full' rather than a complete package. This is partially because so much work remains to be done — inevitably—but also because we see ominous signs that the early promise has been diluted, the sense of vision and opportunity lost. Two key instances are the retreat from a strong 'risk management' approach to a weak 'economic' approach. The economic approach taken has a 'classical' emphasis on market balance, after a carbon charge has internalised the external costs, when a more radical approach, using the economic theories of information and learning, gives answers much closer to the risk management approach. Other issues we highlight include:

- The key importance of rate of growth of new technologies and businesses, and with it the need for making an early start to maximise gains.
- Potentially serious weaknesses in the competitiveness-at-risk area.
- A lack of balance in the National Energy Efficiency and Conservation Strategy (NEECS), because the emphasis is on efficiency of use rather than greenhouse gas abatement.
- The need to strengthen the RMA as a climate change policy instrument.
- Weaknesses around the late introduction of a carbon charge.
- The lack of any effective transport policy before the start of the first commitment period, with effects out to at least the third commitment period.

All this leaves a depressing sense of lost opportunity. In effect we are to rely on our Kyoto forests while we delay changes for a few years more. We note that New Zealand has good or excellent resources in biomass; hydro-electricity; wind energy; and offshore energy, ranging from wind turbines in shallow water to tidal and wave energy. Probably no other country is better placed to develop a fully renewable-energy economy. There is an enormous opportunity here, for technology development and intellectual capital; independence from declining and increasingly expensive non-renewable energy; joint ventures and demonstration projects. There are strategic opportunities, building partnerships with other countries in the Asia/Pacific area through the Clean Development Mechanism or Joint Implementation provisions of the Kyoto Protocol. We have the chance to punch well above our weight in reducing the threat of climate change.

The preferred policy has the potential to capture all of this. So why the quaint superimposed notion that delaying real change for as long as possible is a low-risk, low cost approach?

Conclusion

The Government has made an excellent start in achieving a 'glass half full' policy, but now needs to work on the other half. Some of this 'second half' is ongoing policy development, extending into and beyond the first commitment period; present indications are that under current policy directions it will happen so long as funding is made available. But other aspects of the second half-glass are more worrying:

- The retreat from a risk management approach.
- A dubious economic approach.
- Unnecessary delays in starting the change-over, when a major limitation is the rate at which new or marginalised technologies can grow into the mainstream.

We look forward to an early start on further work in these areas.

Renewable energy target

The Forum is strongly supportive of the general thrust of the NEECS strategy and the consultation document, which we see as having been done very well. However, we are very disappointed at the 30 PJ/yr target for renewables. It includes far too much energy from business-as-usual sources, such as the second Manapouri tailrace, which have nothing to do with new renewables policy. Possibly worse is that we are far from clear what it does include: what, for example is the proportion of wind energy in the 'likely' target range of developments?

We recognise that neither policy makers nor industry can do everything at once, and the need

to keep the rate of growth of each sector within reasonable limits. We are also sympathetic to Energy Minister Pete Hodgson not wishing to, "see a return to another era of big-Government sponsored energy supply development." Few will want another round of 'think big.' However, we see a range of factors pointing towards the need for Government intervention in one form or another, as well as a Government backing away from earlier commitments.

We see some astonishing gaps. For example wind energy gets hardly a mention. It is listed in Box 1, described in Box 3 as making a small contribution, and described on page 14 as offering "near cost-effective opportunities." There is no mention of wind runs that would make the Danes green with envy, or opportunities for indigenous industry, or the likely effect of either Maui closure or a carbon tax on cost-effectiveness. "Intermittent characteristics" are mentioned coyly, with no particular reference to wind, and no recognition that wind and hydro are ideal partners, each covering the other's deficiencies—no wind and no water respectively. We note that there is almost no correlation between a dry year and a low-wind year.

A better target?

We suggest that the real issue is not whether the target for new renewables is 25 or 55 PJ/yr, or even the 7.5 PJ of 'real' policy-derived renewable in Figure 1 ('Likely' less project Aqua). The real issues are twofold:

- How to bring each technology onto the market and see it growing, as early and as rapidly as possible.
- The extent of non-commercial funding justified in each case.

It follows that we wish to see separate targets for each technology.

We also argue that there is a weakness in the NEECS objectives, with a focus on energy efficiency rather than emissions avoidance.

Conclusion

We strongly support the general thrust of the NEECS strategy and the consultation document, but are very disappointed at the 30 PJ/yr target for renewables. We suggest that the real issues for several of the more promising technologies are:

- How to bring each technology onto the market early and see it growing quickly.
- What target to set for each technology.
- The extent of non-commercial funding justified in each case.

Meteorologists hit the streets

Nature 1/7/02

Meteorologists in Edinburgh are getting streetwise. Using sensitive detectors they have pinpointed how much carbon dioxide is produced by road traffic, home heating and even construction. Identifying which parts of a city's hustle and bustle contribute to global warming or other forms of atmospheric pollution is crucial to accurate climate modelling and policy-making. Estimates of the amounts of environmentally important pollutants that cities produce are currently based on averages, with the exception of specific sources of pollution within them, such as power stations. Their production of greenhouse gases is calculated from the total amount of fuel that a country or region uses.

Eiko Nemitz, of the Centre for Ecology and Hydrology in Edinburgh, fitted the Nelson Monument, 35 m above central Edinburgh, with a highly sensitive CO_2 detector and wind-speed instruments. They measured daily fluctuations of CO_2 levels for four weeks each in the summer and the autumn. They found peaks of CO_2 concentrations during rush-hour traffic, and from gas-powered heating for homes. They also identified the vast construction site for the new Scottish Parliament building in the east of the city as a major CO_2 source. The technique can monitor other pollutants, including dust particles or nitrogen dioxide. Currently, measurements of these are also averaged—based on a car in a laboratory, for example. But in cities, emissions from cars, which are often inefficiently stopping and starting in traffic, could be very different.

"We need to know how much [of these pollutants] comes from each source to know how much effect our emissions controls are having," says Nemitz. "Regional and global models need to take into account the nature of the urban environment," agrees Sue Grimmond, a meteorologist at Indiana University in Bloomington. Cities, she says, are growing and are where most of a region's greenhouse-gas emission is concentrated. Grimmond and her colleagues are using eddy monitoring in other cities in Europe and North America. They find that, by day at least, cars are the most important source of CO_2 in city centres. But surprisingly, they find that leafy suburban neighbourhoods—because of CO_2-hungry plants—actually absorb more of the gas than they produce. "What is emerging from these studies is how diverse urban areas are," Grimmond says.

NZ Business Is Missing Out On Climate Change Business Opportunities

Stephen Tindall
Chairman, New Zealand Business Council for Sustainable Development 2002/7/13

The New Zealand Business Council for Sustainable Development (NZBCSD) is concerned that NZ businesses are at risk of missing out on significant business opportunities arising out of the climate change challenge. NZBCSD has identified important opportunities in this area, which we believe are available to all New Zealand businesses. However a lack of awareness and innovative thinking may mean that businesses miss out.

My recent experience through The Warehouse has proved that companies can make a real difference. Our eco-efficiency programme in the form of energy management— which last year received the EECA supreme award —is currently saving about $ 3 M a year and is reducing emissions.

Many energy management initiatives are simply the clever application of common sense. The NZBCSD Climate Change Business Opportunities report describes 32 potential business opportunities that the six participating companies have identified within their operations. These opportunities range from the provision of knowledge and services, to 'climate friendly' branding, to investment in emissions reduction projects at home and in developing countries. We have released this report to help all businesses thinking positively and creatively about the climate change challenge so that we can collaboratively seek win-win solutions.

The collaboration between Waste Management and Mighty River Power is an excellent example of a win-win alliance. Methane, a powerful greenhouse gas, is now captured from Waste Management's Redvale landfill and used to generate power for around 700 homes. BP International has proved that reducing greenhouse gas emissions can be good for a company's financial bottom line. Steve Bonnici, Managing Director of Urgent Couriers Ltd notes, "Reducing Urgent Couriers' CO_2 emissions through fuel use management reduces our impact on the natural environment while improving our contractors' financial sustainability." Andy Pearce, CEO of Manaaki Whenua Landcare Research was recently in London where there was considerable interest in the capabilities that Landcare has developed. Pearce noted, "In the UK, major industries, banking, investing and insurance organisations have an increasingly strong focus on the sustainable development performance of businesses. Reducing greenhouse gas emissions is a key element of that performance. London is setting itself to be the global centre for emissions and credits trading, and there is strong interest in credits from New Zealand."

Milburn Cement has recognised a significant potential opportunity to receive credit for improving the efficiency of their subsidiary cement plant in China, and Hubbard Foods have identified energy efficiency opportunities that will lower their costs and reduce emissions. Dick Hubbard notes that the first priority is to reduce emissions by improving energy efficiency, but further out they would look at the firm's whole 'greenhouse footprint.'

High-level quantitative analysis in the specific areas of commercial building energy efficiency; energy from wood waste; overseas emissions reductions using the Clean Development Mechanism; methane reduction through ruminant efficiency and 'climate friendly' branding revealed revenue opportunities of over NZ$ 350 M/yr. The resulting greenhouse gas savings would be around 9 Mt of CO_2 a year. This is the equivalent of taking over 2 million cars off the road.

We believe that this analysis is only the beginning—a taster to get business thinking. There are plenty more opportunities out there. For example, optimising transportation systems has the potential to deliver enormous financial and greenhouse gas savings. For most companies climate change is now a significant risk management issue. It makes good sense for business to get to work as early as possible, to understand and minimise their greenhouse gas emissions. Often, they will find other business opportunities in a carbon constrained economy. If we don't act soon we will miss out!

The NZBCSD report was prepared by Pricewaterhouse Coopers in conjunction with the Ministry of Economic Development (MED), the six participating members, BP Oil New Zealand; Hubbard Foods; Landcare Research; Meridian Energy; Milburn NZ; and Urgent Couriers. Experts from NIWA and Telecom also provided project input. A full copy of the report is available at:
www.nzbcsd.org.nz

(It is encouraging to see that companies with apparently inflexible energy needs, such as BP and especially Milburn Cement, are making useful and profitable reductions in energy use EW)

Saving the planet is a business opportunity not to be missed

Tom Delay, Financial Times 2002/7/1
The writer is chief executive of the Carbon Trust, a not-for- profit organisation that invests in low-carbon technology

Climate change is a reality. Scientific opinion generally accepts that rising levels of greenhouse gas concentrations in the atmosphere will cause significant changes to global climate patterns. This, in turn, will result in catastrophic floods and storms as well as population and economic dislocations. But if companies can join scientists in tackling climate change, they may find a host of viable business opportunities. And seizing those opportunities now makes business sense. The challenge is to adopt a rational approach towards something that is still so remote from everyday life, however convincing the evidence and however great the long-term impact.

First, climate change is developing slowly - at least in human terms. The most tangible consequences are still 50 to 100 years away. Second, those first hit by the impact of climate change will be in remote developing countries, in particular small island states. Third, most of us find it difficult to accept that there is a direct relationship between our day-to-day activities and the weather. There is, however, a relatively straightforward answer to the problem. To stabilise the atmosphere and stop climate change, emissions of greenhouse gases—particularly carbon dioxide—must be reduced.

To reduce CO_2 emissions needs a shift towards a 'low- carbon economy.' Three measures can help: lower energy consumption; energy efficiency; and use of lower carbon energy sources such as gas, renewables and nuclear energy. The balance will depend on cost, security of supply and public acceptance.

The Carbon Trust has assessed the relative impact of these measures and the technologies that drive them. We have found that it is technologically feasible to make the transition to a low- carbon economy in the time frame indicated by the Royal Commission on Environmental Pollution's report to government. The UK can reduce its CO_2 emissions by 60% or more by 2050. Similar reductions should also be possible in many other developed countries. This may all be achieved at little or no cost, particularly bearing in mind the economy as a whole; there will always be winners and losers in a transition of this scale. Economic research suggests an impact ranging from a 3% increase to a 4% loss in gross domestic product. In the former case, we would be better off economically; in the latter we would lose one to two years of economic growth over a century.

The disparity is due to the fact that although there are potential efficiency measures across all sectors that would save energy costs, these are currently stifled by short-term budgeting and the low priority many managers give to energy costs. There are new, renewable energy sources whose costs will come down to match that of gas, at which point they will flourish. Business has ideas for other low-carbon products and services but is waiting for consumers to show interest.

If we go further and put a value on a stable climate, the small proportion of our productive resources allocated to slow climate change will look like good value indeed. It will almost certainly cost more to stop climate change or adapt to its consequences if we wait to act. In a transition driven by legislation and standards rather than by consumer demand, governments must signal their long-term commitment to reversing climate change. Notwithstanding the US, about 70 countries have agreed to the Kyoto Protocol.

Political support in the UK is strong and the set of policy measures extensive. The UK is one of the few countries with a tax on energy use, the climate change levy, a trading system for emissions credits that should reduce the overall cost, and myriad incentives to stimulate market and technology development. The effectiveness of these measures needs to be reviewed regularly. Ultimately, business will be the engine of the transition to a low-carbon economy; only business will develop the products and services that use less energy and energy sources that emit less carbon dioxide.

Successful companies will be those that capture the tide of increased demand, reduce their energy costs and manage risk better. There could be a significant transfer in shareholder value between incumbents resisting change and new entrants, much as there was between the makers of horse-drawn carriages and cars in the early years of the 20th century. History has shown that 'first movers' often benefit during a period of transition. Today's corporations could learn from this and drive the transition, using their human and financial capital to good effect. They would then see climate change as a business opportunity rather than an economic threat.

Solar Water Heating Industry Responds to Government Challenge

Brian Cox
Executive Officer of the
New Zealand Solar Industries Association

The New Zealand Government has released its draft Renewables Policy which proposes significant support for solar water heating. The policy was outlined in the May issue of EnergyWatch.

Most of the emphasis of the low temperature heat programme of the draft policy is on solar water heating (SWH). The goal of the programme is 'market transformation'—reducing barriers and transforming a relatively small-scale industry and marketplace to re-position SWH as a commercially viable, mass-market product. A target of 10 000 installations a year is suggested. This is a very large increase on current installations (less than 1500 a year) but represents less than half of new homes constructed. It is considered to be consistent with the 'achievable challenge' principle of the policy. It would contribute about 0.5 PJ to the overall 2012 target of 30 PJ.

The main approach proposed is an industry action plan as a partnership between industry and government, including a purchase programme for SWH. This would have twin benefits; increased demand and better credibility. There would also be social benefits, with the programme designed so that the majority of SWH systems receiving government financial support are for low-income households.

A further opportunity is the recent increases in the price of electricity, which mean that solar water heating systems are now a very sound investment for home owners.

Industry Response

The Solar Industries Association represents manufacturers, importers and installers of solar water heating systems. Last year the Association responded to the support for solar water heating in the Government's National Energy Efficiency and Conservation Strategy, issued in September. In November the Association appointed an Executive Officer and established a partnership with the Energy Efficiency and Conservation Authority (EECA).

The Association worked to support expansion of the industry, including a greater promotion of member's products, and the establishment of an Action Plan with a target of 10 000 new systems installed each year. (It is noticeable that the Minister of Energy also set this target when releasing the draft Renewables Policy)

SIA has been working through a systematic programme of activities that relate to:

- Improving the performance of the Association and the industry.
- Confirming manufacturing and installation quality standards for the industry.
- Improving the national perception of the cost of solar water heating through education of potential buyers, architects, builders and plumbers.
- Creating awareness about solar water heating by picking high profile initiatives.
- Preparation of common promotion material and establishment of national marketing programme that supports individual member marketing initiatives.

EECA is funding a review of the technical standards that cover solar water heating systems in New Zealand. The current published standards are being reviewed and updated. There are a number of New Zealand and joint New Zealand/ Australian standards which currently duplicate each other and require determination for New Zealand. The standards are for both manufacture and installation of systems and are necessary in order to provide assurance to purchasers that the system is made and installed to a high standard.

To provide assurance to potential purchasers that their system meets the appropriate standards, The Association has established a membership accreditation system. Accredited members will have to meet the relevant criteria including standards. Because of the number of Australian sourced systems available in New Zealand the accreditation system is based on the Australian SEIA system.

In future purchasers of solar water heating systems will be able to use accreditation by the Solar Industries Association as a guarantee that their purchase meets the relevant manufacturing and installation standards.

The Association has established a website which will provide information on system suppliers, and basic information on the operation of solar water heating systems:

www.solarindustries.org.nz

America's failure on climate change

David Crane, Economics editor,
Toronto Star, 23/6/02

One wonders how much longer Americans can play the role of the world's ostriches, heads buried in the sand, on the urgent issue of climate change. The latest reality check for the United States comes in a new report released by NAFTA's Commission for Environmental Co-operation on North America's increasingly integrated electricity market. It shows that planned expansion of electricity production in Canada, the US and Mexico is likely to lead to a new surge in emissions of the greenhouse gases that contribute to costly climate change.

Of the three NAFTA countries, the US produces by far the dirtiest electricity, not just in absolute numbers but also on a per capita basis. US electricity generation results in per capita emissions of 8.6 tonnes of greenhouse gases, compared with 4.0 t in Canada and 0.92 t in Mexico. The US relies heavily on coal, the dirtiest fuel for electricity. Moreover, even assuming that only 40% of planned power projects go ahead in each of the NAFTA countries, the US could end up generating an additional 333 Mt of greenhouse gas emissions by 2007, compared with 25.7 Mt in Mexico and 3.7 Mt in Canada.

While the tri-national body stops short of criticising the US, its electricity and environment advisory board, made up of experts from the three countries, does not mince its words. It notes that the electricity sector accounts for about 35% of CO_2 in North America, and that, "absent effective national carbon reduction strategies, future increased generating capacity is likely to significantly elevate carbon emissions to the atmosphere." It adds, "considering the US contribution to CO_2 levels globally, the advisory board recommends the US adopt an aggressive, long-term program to stimulate clean and renewable energy production." The advisory panel included representatives of the US electric power industry.

The NAFTA report follows the publication of two others that highlight the need for the US to behave as a more responsible global citizen. One is the Report of the National Assessment Synthesis Team, a committee of experts established to help the US Global Change Research Program fulfil its mandate. Published last month, the report declared that, "long-term observations confirm that our climate is now changing at a rapid rate." And while the 20th century showed significant global warming, "science indicates that the warming in the 21st century will be significantly larger than in the 20th century." It outlines the highly damaging impact that climate change could have on the US. Moreover, it warns, "climate-induced changes in water resources available for power generation, transportation, cities and agriculture are likely to raise potentially delicate diplomatic issues with both Canada and Mexico." There could be growing pressure on Canada to supply the US with water to make up for arid conditions resulting from climate change.

And this month, the US Environmental Protection Agency, in a report to the UN on US climate actions, acknowledges that, "the changes observed over the last several decades are most likely due to human activities." The EPA report paints a disturbing picture of the future consequences of human-induced changes to the chemical composition of the Earth's atmosphere, and warns the US could suffer damage.

US greenhouse gas emissions in 1999 were about 12% higher than in 1990. The report points to the Bush administration's pledge to reduce the energy intensity of the US economy by 18% in 10 years; in fact, existing policies would have reduced energy intensity by 14%, so the Bush plan represents only a modest advance. Most important, the plan means that the US will still significantly increase its level of greenhouse gas emissions. President Bush's reaction to the EPA report, which has the effect of having his own administration admit, for the first time, that climate change was due to human activity, was to dismiss it as the work of bureaucrats and repeat his opposition to the Kyoto agreement on climate change.

Irresponsible behaviour by the US should not cause Canada to back away from its own obligations under the Kyoto Protocol. But we shouldn't accept American pretensions for world leadership when it is so blatantly refusing to accept responsibility for the enormous damage it is doing to the world's environment.

Well worth while?

UK group Future Forests estimates that the Summit in Johannesburg will generate 500 000 t of CO_2, mainly from jet fuel used to bring delegates to South Africa.

Mail & Guardian, Johannesburg 2002/6/28

Australia could reap millions by ratifying Kyoto

According to new analysis released by the Australian EcoGeneration Association, Australia could reap hundreds of millions of dollars if it ratifies the Kyoto Protocol. The AEA has used Federal and NSW Government figures to analyse the cost of making the necessary greenhouse gas emissions cuts to meet Australia's Kyoto target. They also looked at the opportunity for export income.

The AEA states that the Federal Government will shortly release emissions projections for the first Kyoto Commitment period (2008–2012). It is expected to show Australia will not be far over its 108% Kyoto target—perhaps 20 Mt , or 4–5%. The NSW Government has announced its decision to require electricity retailers to reduce per capita greenhouse emissions to 5% below 1990 levels by 2007. Modelling by NSW Treasury estimates the cost of introducing this scheme both in NSW and across the national electricity market. AEA figures suggest that the latter approach would add A$ 15 to each household's electricity bill.

"The Federal Government's Greenhouse Gas Abatement Program has identified an even lower cost of abatement," said AEA president Andrew Stock. "It shows that the required reduction in emissions can be achieved by the electricity sector alone at A$ 100 M/yr. This is less than A$ 0.50 /MWh or less than A$ 5 /yr on an average household electricity bill." "But this relatively small cost is only half the story —ratification offers significant export benefits for Australia. As Australia has some of the lowest cost abatement potential in the world, ratifying the Kyoto Protocol enables us to export abatement to countries with higher cost of abatement such as Japan and those in Europe. However, these local jobs and investment opportunities are not available if we don't ratify the protocol."

The AEA analysis suggests that Australia has the ability to export 15 Mt of abatement, at A$ 54/t. This equates to A$ 800 M/yr by 2012, which it expects will outweigh the cost of reducing emissions. "Rather than being a cost to Australia, ratification of the Kyoto Protocol will provide Australia with a significant windfall gain," said Stock. For more information go to www.ecogeneration.com.au 'media releases.'

Contributor Nigel Isaacs adds:

I keep looking amazement at how the USA and Australia— countries that 'will not' ratify Kyoto—are still doing more activities that NZ: backing all horses, both ways!

Oz won't ratify but

NZWEA 2002/7/19

The Federal Government has negotiated to buy an average of 8% of its electricity from new renewable sources. The agreement with ActewAGL covers 53 Commonwealth Agencies involving 176 sites in the ACT, and is for 3 years from 1 September 2002. The contract is reportedly for A$ 22 M (€ 12 M). The announcement follows a report in The Age in which staff of the Australian Greenhouse Office were said to be demoralised by a lack of action towards the Kyoto Protocol.

Victoria has wind energy facilities at various stages of development from planning assessment to operation, with the potential for 476 MW.

A landfill gas power generation project at Nowra uses a 1 MW generator, currently drawing gas from 55 wells up to 15 m deep. When the scheme is running at full capacity in 2006, it is expected to annually displace around 8000 t of greenhouse gas emissions. By using methane that would otherwise be released into the atmosphere, a further 32 000 tonnes of greenhouse gas emissions will be eliminated.

(That sounds like 8000 t of methane, the greenhouse equivalent of some 180 000 t of CO_2. However, burning 8000 t of methane releases only 22 000 t of CO_2 so the remaining 10 000 t will be from avoided use of other fuels.
Nowra is on the NSW coast, about half way between Sydney and Canberra. E/W)

The Federal Government has announced funding of A$ 200 000 (€ 110 000) for a new curriculum pilot scheme in NSW and Victoria called 'Sustainable Schools.' It is aimed at incorporating waste and energy reduction and biodiversity targets into schools in their teaching programs and into their daily operations. In the Sustainable Schools programme, students will be actively involved in making their schools more sustainable, while teachers will have access to a one-stop-shop and a Professional Development Programme in environmental education through existing Environmental Education Centres.

Hydro Tasmania's first mini-hydro development at Lake Parangana on the North-West Coast has been officially opened. The A$ 1.5 M (€ 800 000), 0.75 MW scheme will power some 600 homes when fully operational. The Parangana scheme captures energy from the additional flow Hydro Tasmania now releases into the Mersey River.

MiniWhats

Early morning musings

EnergyWatch's editorial alarm radio is set to come on a bit before six, and the current 'bit before' happens to be just a few seconds. Those few seconds vary. Sometimes there is a snatch of words or music before the time signal, sometimes the pips are truncated or even missed. Necessarily casual observation gives a range of at least 10 s. But isn't the grid supposed to be kept in phase, so that electric clocks keep accurate time? And when corrections are needed, aren't they made in the small hours, when demand is light? So if the range is at least 10 s at 06.00, what is it like on a cold winter evening? Who is minding the shop?

EnergyWise car rally

An EnergyWise car rally will be held over a 1500 km route from Auckland to Wellington and back, starting on November 11. It will be sponsored by EECA, with support from Gull Petroleum.

The rally is designed to highlight the fuel efficiency of new cars driven at normal highway speeds. Up to 50 cars will compete in classes for the lowest fuel consumption, and there will be an overall 'EnergyWise Environment Award' calculated by a formula that balances fuel consumption and CO_2 emissions against the vehicle's size and practical ability to carry people and luggage.

One of the most popular classes so far is for diesel powered cars under two litres, with four vehicles registered: a Citroen, a Mercedes-Benz and two Peugeots. Distributors of new-generation diesel cars see the EnergyWise Rally as a valuable opportunity to promote the fuel efficiency of their vehicles, but entries in the pipeline from some of the major car distributors will see a number of very efficient new petrol-powered cars join the event.

Honda is entering a five car team, including a special entry: the petrol-electric Civic Hybrid, imported especially for the event. It will run in a special class, not eligible for awards, as it is not available for sale in New Zealand. It will, however, provide an interesting comparison with the most fuel-efficient conventionally-powered cars available on the local market.

EnergyWise Rally, 2002/7/15, 25 and 29

More gas from Taranaki?

Genesis Power is exploring development of the Kupe gasfield, 30 km offshore from Hawera, South Taranaki. The intention is to secure a gas source for Genesis' proposed 400 MW combined cycle gas turbine station (CCGT) at Huntly, which Genesis wants to commission by the end of 2004. Kupe contains 270 PJ of proven reserves. The intention is to have a development plan finalised by the end of 2002, with an operator to take responsibility for development of the gasfield. A 1989 estimate of development costs was $ 300 M.

Genesis Power seems to be intending to have a second option available when it bids for Pohokura gas; the Pohokura partners have announced their intention to offer gas for tender in late 2002 or early 2003, for first gas supply by the beginning of 2006.

Kupe was discovered in 1986 and is 70% owned by Genesis Power. NZ Oil and Gas own 19% and the Crown owns 11%. The owners of Kupe effectively have an option to cap gas prices, at the cost of developing Kupe. Dominion Post 2002/7/12

UK carbon price rises

Trade in the fledgling UK market in carbon emissions allowances has picked up, with prices rising as companies try to meet targets to cut greenhouse gases. "The last trade was £ 7.00 /tonne (€ 10.90/t),"said Nicola Steen, vice president of brokers CO2e.com, adding that recent prices had been around £ 6 and typical transaction sizes were 5000–15 000 tonnes of CO_2 equivalent. Steen said, "I think the price will go down—there's potentially large volumes from big companies."

Reuters 2002/6/21

There is much confusion in reports of this kind, over whether the price applies to tonnes of carbon equivalent or carbon dioxide equivalent. This report seems to give the price on a CO_2 basis. Carbon dioxide contains only 27.3% by weight of carbon, so to give the same results the price for a tonne of CO_2 needs to be 3.66 times higher than the price of a tonne of carbon. This makes the Government's proposed cap price of $ 25 /tonne of CO_2 equivalent to a price of $ 6.82 /t of carbon. EnergyWatch will standardise on a CO_2 basis, following practice in the Government's Preferred Policy Package. E/W)

Ecotax news

Peter Read has drawn our attention to an eco-taxation newsletter on the web. Supporting membership is available at € 60 /yr (~NZ$ 120), from: http://www.foes-ev.de/englisch/9kontakt/index.html

Two snippets from the copy provided are:

> If Canada ratifies the Kyoto Protocol, the country will have to reduce greenhouse gas emissions by 6% by 2010. The government report found that the cost of buying greenhouse gas emissions

permits from countries that have excess emission permits falls dramatically without US participation. A permit for one ton of CO_2 would cost $ 40 if the US was in the market, that cost would drop to $11 a ton without US competition. The findings were released after 15 EU members, including the United Kingdom, agreed to ratify the Kyoto pact.

(This time the emissions basis is clearly CO_2 and the dollar is probably Canadian, but are those tons long or short, or even metric? The difference is up to 12%.
E/W)

The UK is to charge tax company car use on a CO_2 basis rather than the present mileage basis. The new system is meant to help the UK meet its commitments under the Kyoto Protocol to reduce CO_2 emissions. With 21 tax brackets for emissions, a typical car that emits less than 169 g/km of CO_2 would qualify for the lowest rate of 15%, while those emitting the greatest amount would be taxed at 35%. Diesel-fueled cars are taxed an additional 3%.

Heaps of helpful info

The Household Energy End-Use Project (HEEP) Year 5 report has been released by BRANZ. The Executive Summary (300 k) is available for downloading from:

www.branz.co.nz/branzltd/PandS/heep.htm

Nigel Isaacs

Kyoto ratification update—and disappointment

An update on the status of ratification of the Kyoto Protocol is now available from the UNFCCC secretariat at:

http://unfccc.int/resource/kpstats.pdf

Minister of Energy Pete Hodgson told delegates at the Wind Energy Association conference that the Government will not ratify the Kyoto Protocol at Johannesburg in August. The reason given was that legislation had been stalled at the select committee stage when Parliament was dissolved for an early election. Hodgson said that the delay would not delay ratification. Uncertainty over Russia's position meant that he seriously doubted whether the protocol would come into force this year.

WEA Chairman Alistair Wilson said the delay exacerbated the uncertainty facing businesses that wanted to capitalise on opportunities provided by Kyoto. "We're not getting the investment in climate we need to make progress and we're not getting the early learning curve," Wilson said.

Dominion Post, 2002/7/20

(SEF has the Minister's notes of this speech, and they do not mention ratification E/W)

US support for renewables

The best way to meet energy needs in the US is through expanded use of renewable energy, energy efficiency and fuel-efficient vehicles, according to a national poll. There is strong opposition to the US approach to global warming from men and women in all age groups and in all regions, concludes the poll for the Union of Concerned Scientists. Seventy five percent of all respondents (including 65% of Republican voters) agree that doing nothing about global warming is 'irresponsible and short-sighted.'

Wisconsin Energy Corp says it will spend US$ 60 M to source 5% of its retail power from renewable energy sources by 2011. "We believe renewable resources must play an expanding role in our generation mix," says Carl Siegrist of We Energies. "Our 5% commitment exceeds what is required by law and demonstrates that our company is willing to do more than simply talk about renewable energy."

Refocus Weekly, http://www.re-focus.net

Hydro rorts in Oz

Greens Senator Bob Brown says he will move an amendment to close a loophole allowing millions to be siphoned away from new renewable projects. "Hydro electric producers are rorting the intention of the system so that new clean, green energy projects like solar and wind are being starved of the very funds which were intended for them," he said. Hydro Tasmania stands to siphon off, on average, an astonishing A$ 35 M/yr up until 2020. "This... 'something for nothing' is on top of funds that will be allocated for new wind turbine capacity under construction on Tasmania's west coast.

Australian Democrats energy spokeswoman Lyn Allison said the government could not ignore the fact hydro operators could gain a windfall at the expense of solar and wind projects. "The minister has been warned that existing hydro-electricity generators are getting a windfall gain at the expense of solar and wind," she said. "I have raised this with the government on numerous occasions for over a year, urging them to fix the problem that this report has confirmed."

Industria 2002/7/30

New wind turbine supplier

German group REpower Systems AG has joined with Australian company Notus Power Partners Pty Ltd, to market wind turbines in Australia and New Zealand, with plans for local manufacture should a target of 50 MW of sales be reached.

REpower has established Notus Energy Pty Ltd, calling it Australia's first joint venture between a

foreign wind turbine manufacturer and a local partner, and has extended a license agreement for the eventual manufacture of REpower wind turbines locally, along with an authorised distribution agreement. The core business will be to market, produce, erect and operate turnkey wind turbines in the multi-megawatt class.

Notus Energy's headquarters will be located on the production site of long-standing Queensland engineer Walkers Pty Ltd in Maryborough, in South East Queensland.

Industria 2002/7/30

As others see us (1)

The government of New Zealand will impose new targets to stop the decline in the use of renewable energy, but the target may be half the level suggested in an energy strategy released last year. The strategy proposed an increase of 25 to 55 PJ from renewable energy by 2012. Although hydro, geothermal, wind, wave and direct solar currently provide 29% of the country's consumer energy, the level has been declining. The document suggests an additional 30 PJ should come from renewables, which would represent a 22% increase over 2000, and would lift the share of renewables to 31%. The 30 PJ target is 11 PJ over the anticipated 'natural' increase in renewables in the next decade.

Refocus Weekly, http://www.re-focus.net

As others see us (2)

New Zealand will not ratify the Kyoto protocol on reducing greenhouse gas emissions in South Africa next month as planned. Radio New Zealand Sunday quoted New Zealand Energy Minister Pete Hodgson as saying that the early election has stymied the government, because legislation needed for ratification had been stalled at the select committee stage when Parliament dissolved last month. The delay would not derail the climate treaty which aims to cut greenhouse gases responsible for global warming, he said. "New Zealand is such a small player, it can neither make nor stop Kyoto," he added. The controversial protocol would require New Zealand to reduce greenhouse gas emissions to 1990 levels by between 2008 and 2012. The minister, who is in charge of the government's policy on climate control, said he seriously doubted Kyoto protocol would come into force this year. It is learned that the US and Australia have refused to ratify the protocol. Xinhuanet 2002/07/21

Carbon dioxide trial in Norwegian Sea

The world's first attempt to demonstrate sequestration of carbon in the oceans by injecting liquid CO_2 into the Norwegian Sea is set to begin this summer. Environmentalists are campaigning to stop the experiment. Capturing and sequestering CO_2 from combustion of fossil fuel is a possible means of reducing greenhouse gas emissions. Last year, the European Climate Change Programme concluded that it offers 'good potential' for reducing emissions, but that further research is needed, in particular to reduce costs. The Norwegian oil firm Statoil is already injecting some 1 Mt/yr of CO_2 into the rock strata of an offshore oilfield in the North Sea, but no one has yet tried sequestration in the oceans.

Led by the Norwegian Institute for Water Research (NIVA), the group is planning to inject 5 tonne of liquid CO_2 at 800 m depth off the coast of Norway. The ocean sequestration project was originally set up to run a similar test off Hawaii, but this plan was dropped recently in the face of local opposition. Norway's Pollution Control Authority granted the Norwegian project a discharge permit last week. A final decision is expected from the Environment Ministry by next month.

ENS 2002/7/11

California adopts renewables strategic plan

"The distributed generation (DG) industry is at a crossroads," according to a strategic plan adopted by the California Energy Commission (CEC). "It can emerge from its infancy to become a major contributor to California's electric system, or it can remain on the sidelines, serving niche markets for remote, emergency, or other special power needs." California has 2000 MW of DG installed, from solar PV cells, wind turbines, fuel cells and combustion engines, with 300–400 MW of new small-scale projects expected to be added each year in the near term. The most common application for DG is backup power, which raised consumer awareness when the state experienced rolling blackouts last year.

"As the number of DG projects grows in California and optimism increases about the potential benefits that these technologies could provide, so do concerns about the impact that wide-scale deployment of distributed generation might have on the future performance of the California energy system and the environment," concludes the report. Last year, investment firms predicted that solar PV, microturbine and fuel cell companies would grow significantly, but the value of many DG firms, "grew exponentially and then declined after realising disappointing sales," with current stock prices in slow decline.

The strategic plan of the federal Department of Energy says DG should represent 20% of new electric capacity additions by 2010 across the country. The report says institutional and

regulatory barriers must be addressed if they interfere with the purchase or operation of DG facilities, while financial and tax incentives should be provided to encourage voluntary deployment. Within ten years, it says CEC should reduce DG equipment costs to a level that would obviate the need for incentives, and should, "certify and deploy DG systems in such a way that procuring distributed generation is as routine as purchasing appliances for the home." In the longer-term, the goal is to make California's energy generation and delivery system, "the cleanest, most efficient, reliable, and affordable in the nation by maximising appropriate use of distributed generation." http://www.energy.ca.gov/reports/2002-06-12_700-02-002.pdf

Refocus Weekly, http://www.re-focus.net

Consultants to evaluate Maui reserves

Methanex has withdrawn court action to stop a redetermination of Maui's remaining gas reserves. Now international consultants are to be brought in, to make a redetermination of behalf of the Crown and Maui Development. The field's three users—Methanex, Natural Gas Corporation and Contact Energy—want to obtain as much gas as possible before it runs out.

The Independent 2002/7/10

Think big in Iceland

Iceland expects to go ahead with a the € 3 bn Karahnjukar hydropower project, exploiting glacial meltwater, an undertaking so big it equals nearly a third of the country's gross domestic product. The power plant will have one customer: an aluminium smelter owned by Alcoa, which is considering investing € 1 bn.

For Iceland, which has only about 280 000 people, the project is a grand experiment in social engineering. The test is to see whether dying towns can be repopulated and virtually an entire region's economy redirected from fading fishing industries and skittish tourism. The smelter is to rest on Iceland's wind-swept eastern fjords, with a view to creating 2000 construction jobs and 600 to 1000 permanent ones in a region that Icelanders are deserting in droves. When and if the project is finished, 80% of Iceland's electricity will be dedicated to making aluminium.

The latest plan calls for damming up two of the area's three virgin rivers, draining them through 38 km of tunnels, and then pouring the water through turbines to generate 700 MW of electricity.

The actual price at which Iceland will sell Alcoa its hydropower is still being negotiated, and will not be made public. But Norsk Hydro was known to be negotiating for around 2 ¢/kWh, half the rates in the US and less than a third of some in Europe.

New York Times 2002/7/16

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website at
www.sef.org.nz

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