EnergyWatch
The Journal of the Sustainable Energy Forum

"Facilitating the use of energy for economic, environmental and social sustainability"

ISSN 1173-5449 Issue 20, June 2001

Published by the Sustainable Energy Forum Inc, P O Box 11 152, Wellington

E-mail sefi@actrix.gen.nz Editor: Kerry Wood

Setting targets for renewable energy efficiency and renewable energy

John Blakeley

The government (and EECA) should be congratulated for setting an energy efficiency target in the draft National Energy Efficiency and Conservation Strategy (NEECS) of at least a 20% increase in economy-wide efficiency by 2012, which it calls "a challenging but achievable target for New Zealand." However, this will only lead to a 12% reduction in energy-derived carbon dioxide emissions in 2012, as past experience suggests that increased energy efficiency does not automatically result in an equivalent reduction in energy use, as economic savings stimulate greater production and consumption of energy.

The draft NEECS is not nearly so forthcoming in setting a target for increased renewable energy supply in 2012, setting only a 'Claytons' target (yet to be defined). Unlike energy efficiency reductions, the reductions in energy-derived carbon dioxide emissions from increased renewable energy supply should be directly proportional to the size of that increase, as this will involve substitution of renewable energy supply for what would otherwise be fossil fuel-derived energy production.

Figure 1 of the draft NEECS may only be a pictorial indication, but it suggests that about half of the required greenhouse gas emission reductions below business-as-usual assumptions (if New Zealand is to meet its requirements under the Kyoto Protocol) can be achieved by the 20% improvement in energy efficiency target, and perhaps another quarter of the requirement by the (as yet undefined) increased renewable supply target. The balance of about a quarter is a 'target shortfall' which can be met either by carbon trading (or credits for carbon sinks) an/or by further efficiency/renewables initiatives (but it does not elaborate on a strategy as to how this could be done).

It has been suggested that such an increased renewable energy target in 2012 as implied by Figure 1 of the draft NEECS can only be achieved if no new power stations fired by fossil fuels to service increased electricity demand are built from now until 2012. All such demand increase would have to be met by electricity generation from renewable energy sources. Even one of the three proposed new 400 MW combined-cycle gas-fired power stations is likely to halve the proposed renewable energy target. Two of these stations are likely to completely eliminate it.

Has anybody told Contact Energy, the Natural Gas Corporation and the shareholding ministers in Genesis Power about this? Putting the electricity industry behind its own walls as proposed in the Electricity Industry Bill certainly will not help this situation. It really does seem that the left hand of government (promoting the Electricity Industry Bill) does not know what the right hand of government (promoting the draft NEECS) is doing!

Sustainable Energy Forum
Annual General Meeting—2001

Held at the Quality Hotel, 355 Willis St, Wellington at 12.30 on Friday 18 May 2001, during the SEF 2001 Conference

Present:
Faoud Abdallah, Hugh Ball, Viv Ball, Greg Bell, Rob Bishop, Tony Bittar, John Blakeley (Chair), Pamela Dawber, Brian Farrell, Steve Goldthope, Dorothee Heumeuller, Sven Heumeuller, Maggie Lawton, Neil Mander, Heidi Mardon, Ken Piddington, Peter Read, Ian Shearer, Ralph Sims, Ng Meng Swee, Colin Wells, Kerry Wood (Minutes).

Apologies and proxies:
Noeline Gannaway, John Peet, Ian Bywater

Visitors:
John Adams, Arnold Watson, Darci Westergard

Proposed/ Seconded

1 Members and visitors were welcomed to the meeting. The apologies and proxies were accepted. JB/KW

2 Copies of the Minutes of the 2000 AGM, in Wellington on 21 February, were distributed, taken as read and approved. KW/KP

3 A copy of the Convenor's report is attached.

4 Financial reports could not be prepared in time for the meeting, due to pressure of other work and lack of time since 31 March. Reports for both 1999/2000 and 2000/2001 will be sent out with the June EnergyWatch, together with a meeting notice and proxy form for a Special General Meeting to approve the accounts.

5 John Blakeley was nominated as Convenor. There were no other nominations and John was declared elected. KW/IS

6 Four committee members have resigned during the year, and their resignations were accepted: Richard Ball, Robbie Morrison, Fiona Weightman and Ralph Sims. Continuing members are Heidi Mardon, Ken Piddington, Ian Shearer, Kerry Wood, Molly Melhuish and Steve Goldthorpe. New members nominated and appointed are Rob Bishop, Colin Wells and Brian Farrell. JB/RS

7 The future of the Forum was discussed. No formal minute was passed but the general thrust of discussion was that there is still a useful role for SEF, but that possible merger with one or more similar groups—as suggested by the old committee—is a possibility. However, the need for an impartial voice should not be compromised, especially now that a credibility gap seems to be opening around the governments's energy efficiency strategy.

8 Two amendments to the constitution were approved: JB/BF

- Amend clause 15.1 to read:
The Management Committee members shall comprise 6 to 12 members not including co-opted members. (originally 9 to 12 members)

- Delete clause 15.4:
Management Committee members shall stand down for three years after two consecutive terms.

9 There was not sufficient time for discussion of the draft SEF submission on NEECS. Members were given two e-mail address and invited to contact either if they wished to take part in e-mail discussion:
sefi@actrix.gen.nz
kerry.wood@paradise.net.nz

10 There was no other business.

Note:
The effect of Minutes 5, 6 and 8 is that committee members are appointed for the following periods:

	Until after AGM
John Blakeley	2004
(John has stated that he wishes to stand down earlier than this)	
Rob Bishop	2004
Brian Farrell	2004
Colin Wells	2004
Steve Goldthorpe	2003
Ken Piddington	2003
Heidi Mardon	2003
Molly Melhuish	2002
Ian Shearer	2002
Kerry Wood	2002

Convenor's report

John Blakeley

The main activities of SEF in the period since the last AGM, on 21 February 2000, have been the organisation of a very successful annual Conference held in Dunedin on 8 – 9 July 2001, followed by preparation of the Proceedings and the organisation of the following Conference now being held, on 17 – 18 May 2001. I wish to express particular appreciation to the local group who organised the Dunedin Conference on behalf of SEF.

In addition we have continued to publish *EnergyWatch* at least four times a year to a very high standard.

On the policy front SEF has been rather less active, but we did make a submission to the Electricity Industry Inquiry and we also produced (through Kerry Wood) a discussion paper on Sustainable Options for Transport Policy Development, which was sent to the Minister of Transport in October 2000.

However, in my view there is a very big question mark over what the future role of SEF should be. Soon after being co-opted as Convenor I produced the attached discussion paper, in October 2000 *(slightly updated here—EW)*, and I have had no cause to change my views since. Should SEF seek to continue as a stand-alone organisation or should it now seek to join or merge with some other body or group of bodies, to obtain more resources and 'clout?' Our difficulty in maintaining a full Management Committee gives extra point to this consideration.

If SEF does want to assume a 'ginger group' role, then I believe it should be in promoting new renewable energy projects. Whereas the present Government now appears to be committed to actively promoting energy efficiency, there seems to be a very big question mark over its commitment to seeing New Zealand develop more renewable energy electricity generating capacity, as evidenced by the recent decision by the Minister of the Environment not to exercise her call-in powers under the RMA in respect of CO_2 emissions from a new 400 MW power station at Otahuhu (to be possibly followed by a similar sized power station at Huntly). Every new project of this type places a very large 'hurdle' infront of new renewable electricity projects or seeking to meet future growth in electricity demand.

As noted above, I was co-opted as Convenor of SEF on 22 September 2000. At the AGM in February 2001, Ralph Sims had agreed to take over the role when he returned from an overseas trip and Ken Piddington kindly agreed to carry on in an acting capacity in the mean time. However, Ralph's subsequent appointment to the EECA Board meant that he was not able to take up the position. I had reservations about taking on the role as a non-Wellington resident and I now find that in seeking to build up a consulting practice, I do not have t time required to do justice to the role of SEF Convenor. While willing to carry on in the mean time until a replacement can be found, I do wish to step down as soon as possible, while remaining on the SEF management Committee for the balance of my elected term.

I wish to express particular appreciation to Ian Shearer and Kerry Wood for their work done on behalf of SEF during the past year, and to Neil Mander for editing the Conference Proceedings.

Discussion points for future directions of the Sustainable Energy Forum

1 At present, SEF activity is mainly confined to:

- Producing four issues of EnergyWatch each year.
- Presenting submissions as appropriate, such as on the Draft National Energy Efficiency and Conservation Strategy.
- Organising an annual conference.

Is this enough, or should SEF be looking for new initiatives? Alternatively, has SEF done its job now that New Zealand has a government which is more sympathetic to energy efficiency, energy conservation and renewable energy initiatives? Should SEF 'go out with a flourish' by organising a really good conference in mid-2001, and then disband?

2 In summary, SEF needs to redefine both its mission and its aims and objectives over the next 18 months, and look for new initiatives if it is to continue beyond mid-2001.

3 SEF obviously has very limited financial resources. If it is going to undertake new and additional activity, as well as seeking sponsorship for its annual conference, it will need more sponsorship or other sources of extra funds to

support this new activity.

4 SEF needs to redefine its 'niche,' if this still exists. It seems to fit in at the policy end of sustainable energy rather than at the technical end? How does this relate to other organisations, such as:

- Government policy development, such as MfE and EECA?
- Technology-based organisations, such as NZWEA, Solar Action, the PVA, biomass groups etc?
- Environmental lobby groups such as Greenpeace.

Is there some form of ongoing coordinating role for SEF? Or has its previous role been largely been taken over by other groups?

5 If there is to be an ongoing role for SEF, I suspect that it may be in the area of being a 'ginger group' if a credibility gap begins to open up between the stated policies sand objective of the present government and the commitment of resources and 'muscle' they are prepared to commit in achieving these policies and objectives.

This will become clearer after the draft NEECS is published on 1 April 2001, and perhaps more definitely after the final strategy is adopted on 1 October 2001.

(The AGM's broad answer to these questions is given in Minute 7 on page 2, but further discussion is needed —contributions are invited. EW)

Conference note

We have generally left conference reports to the Proceedings, but two contributions have short half-lives and one is a development:

- *A summary of Jeanette Fitzsimons' perspective on what is happening with CoP-6 and in the NZ energy scene (next column)*
- *Robert Tromop's presentation of EECA's draft strategy, which was followed by an extended question-and-answer session. A standard response Robert used was,* ***make a submission****. We have done so, and the final version is on page 10.*
- *In response to a question, Rob Whitney, of the Energy Federation, has given two web addresses for information on 'Clean Coal' technology, which have led to the article on page 21.*

Some green thoughts on CoP-6

Jeanette Fitzsimons, Green Party Co-leader

The EU should not be blamed for failure in The Hague. The proposals for biomass carbon credits were very much a cheat's charter, counting the positives and ignoring the negatives.

In the end, President Bush has done the world a huge service by publicly jarring the EU into a 'do it anyway' mood. Bush is already under pressure from US industries other than oil, gas, coal and nuclear, as well as groups and individuals wanting change. And there are two more US elections before the start of the First Commitment Period. Beyond that is totally useless speculation.

In New Zealand, under a Labour-led coalition government, we could be forgiven for thinking the new age was dawning—but now the sun has gone. It is hard to see anything in the government's first 18 months which has actually led anywhere. Energy efficiency won't directly affect climate change, and the energy companies are still selling as much energy as possible, so the situation we are heading towards is to have every house floodlit all night with super-efficient lighting...

At present we are seeing a rush of new proposals for combined cycle gas turbine stations (CCGT)—are they intended to get in before the government adopts an energy efficiency strategy? It is unlikely that these stations will be needed until 2008, and they could in any case be built after a review in 2006, if needed. Gas turbines stations are easy to build. A moratorium might be a good approach, but how could it be achieved? The only current option is a ministerial call-in under the Resource Management Act, which was useless for the Stratford CCGT station. New high-efficiency CCGT stations have not led to closure of substantially less efficient stations at New Plymouth and Huntly, yet we are now building a 50% increase in thermal generating capacity.

A consent condition for the Stratford station was tree planting to offset the emissions, but not a single tree has yet been planted, because the base year is unclear. If new stations were called-in under the RMA, a reasonable mitigating requirement could be to permanently close old plant: Contact could close New Plymouth, Genesis could close Huntly. But will it happen? The counter-argument is that closure is unnecessary because the market will ensure that the most

efficient plant is used, but this assumes that the electricity marked is demand-driven, and ignores promotional selling.

Even with agreement on the present Kyoto proposals there will be no real atmospheric benefits in the first commitment period—there are too many holes. Planning must look further out, to beyond 2012. New Zealand has 45% of all Kyoto forests, so we don't need to do too much if we get carbon credits for it.

If we are looking for progress at home, electricity and transport are the areas most needing attention. However, the electricity establishment board has set sustainability objectives on one side and is setting up market objectives. Even spill reporting may be ineffective, because of gaming. The core is a black box that only a few experts can get into.

Transport has done something on public transport but there is no commitment on rail integration for freight, and motorway building in Auckland is still going ahead. We need a commitment to make Transfund a supplier of sustainable transport—not just roads.

How would the government react if there was a commercial proposal to develop gas field(s) for liquefaction and shipping to the US?

(Jeanette has won the Member's Bill ballot with a bill to carry out her Transfund suggestion: see page 19 EW)

SEF Subscriptions

The Forum has adopted a new policy on subscriptions. All subscribers will be invoiced for twelve months, starting in June 2001. Invoices will be sent out quarterly, with EnergyWatch, to all subscribers whose subscription will expire before the next issue. Overdue subscribers will be sent a reminder with the next EnergyWatch, and membership will then be terminated if no subscription has been received by the time the following EnergyWatch is sent out. 'Extra' issues of EnergyWatch (other than March, June, September and December) will be ignored, so termination will not be until six months after invoicing. Additional reminders will be sent if appropriate.

Energy Management Association

New Zealand Energy Management Association became an Incorporated Society in March, for liability reasons when they begin to accredit energy auditors. The Association's aims are:

- To promote the highest standards of energy management skills and competence.
- To foster and facilitate the integration of sound energy management practices into all sectors of the New Zealand economy.
- To provide a forum for the discussion of energy management issues, skills and techniques.
- To develop practical energy management policy proposals and represent these where appropriate.

As part of the EMA's role, they are launching an accreditation programme for energy auditors. People who are accredited will be able to call themselves 'EMA Accredited Energy Auditors.' Accreditation will allow auditors a market advantage over non-accredited auditors, and will allow access to EECA's energy audit grant programme. Contact details are:

Mail: c/- IPENZ, PO Box 12-241, Wellington
Phone: 04 473 9444, fax 04 473 2324
Web: http://www.ema.org.nz/

(The articles below and on pages 7 and 20 of this issue are taken from the EMA's e-zine. EW)

Huge, cheap energy savings from continuous commissioning

EMA

In September 2000, Dr David Claridge of Texas A & M University gave a presentation in Wellington on continuous commissioning, a technique for optimising the control settings in a commercial building to give low-cost energy savings. Claridge has supervised the 'Loan Star' programme in Texas, a state government programme to systematically invest in cost-

effective energy efficiency improvements to their own buildings.

Continuous commissioning was developed during follow-up to retrofits, and was found to give about the same savings as the retrofits, at less than half their cost. The process consists of systematically monitoring energy use and comfort conditions in buildings, with dedicated sub-meters and data loggers, and analysing the results.

The presentation covered two case studies. The first was of a 10 000 m^2 commercial building with a good-quality energy management control system. The building had many comfort and ventilation problems, and the owners were contemplating installing much larger heating and cooling systems. Analysis showed that the main problem was over-ventilation. Continuous commissioning reduced this by 87%, as well as reducing recirculated air. Heating energy use dropped by 67% and cooling energy by 29%. However, the main effect was that "the building became inhabitable." An important clue to the problem was that the indoor CO_2 levels were very low, at about 400 – 500 ppm.

The second case study was a new US Army Medical Centre, 150 000 m^2 and state-of-the-art. It was designed for maximum energy efficiency, and was being remotely monitored by "a large controls company." Even in this new, supposedly design-optimised and operated building, continuous commissioning saved another 15% of energy costs. In this case, it was a major effort, taking about a person-year of engineering time, but had a simple payback of less than a year.

The average time taken for continuous commissioning was about 36 hours for each 1000 m^2, and the average energy cost savings were about US$ 5400/yr for each 1000 m^2. There were often productivity and comfort savings that were much more valuable to the building operators than the energy savings, but they generally were not quantified.

Interestingly, the techniques described were less complicated than the hourly simulations done in NZ in the past (for developing the building code for example). They use the ASHRAE temperature bin method, where the average daily heating and cooling energy use are calculated at each step of outdoor air temperature, with a typical humidity and solar radiation value attached to each temperature. The resulting 'graphic signature' curves are plots of heating and cooling energy use as a function of outdoor air temperature.

US energy policy announced

New York Times

President Bush laid out his long-awaited energy plan in mid-May, proposing looser regulations on oil and gas exploration, conservation-minded efforts like a review of vehicle efficiency standards (but with no commitment to implementation) and a US$ 4 billion tax credit for a new generation of highly fuel efficient cars. The Bush plan also ordered a sweeping review of public lands to determine whether more energy resources can be extracted. Other details include:

- A direction to all federal agencies to consider the effects of all new regulations on energy production and to expedite permits for all energy projects, "while remaining mindful of protecting the environment." The Secretary of the Interior will be ordered to "look at any impediments" that discourage exploration for oil and gas.

- Revision or reinterpretation of the Clean Air Act requirement for government review of any power plant modifications that affect emissions.

- A tax credit for hybrid cars and a review of federal standards for automotive fuel efficiency.

- A new evaluation of nuclear reprocessing (to reprocess plutonium as a reactor fuel), and lifting of double taxation for funds put aside for nuclear decommissioning.

Much of the report simply urges companies to build, build and build some more, including 61 000 km of new gas pipelines, 400 000 km of distribution pipelines and a new power plant every few days for the next 20 years. But for every such proposal, Bush's team carefully inserted proposals for expanding the use of renewable fuels, from geothermal energy sources to the methane produced in landfills.

The head of the UN forum on climate change, Jan Pronk, said, "In terms of the possibility of forming an integrated policy, this is a disastrous development." Pronk reiterated earlier statements that he would press other countries to move forward with the Kyoto pact without the US, but hoped to draw the country back into the treaty at a later date.

Why the Bush oil (energy) policy will fail

Cutler J Cleveland and Robert K Kaufmann

The authors are Professors in the Center for Energy and Environmental Studies and the Department of Geography at Boston University

Following his four predecessors, President Bush has identified dependence on imported oil as an urgent concern. Domestic production is now less than half of total oil consumption, and by 2020 it will fall to 35% of consumption. To close the 'oil supply gap' the President will promote the development of domestic resources of oil and natural gas. The argument goes that increased domestic production will reduce dependence on imported oil and reduce the ability of OPEC to control the supply of oil, and hence the price of oil and the chance of oil shocks.

What are the chances of success for this policy? The available evidence suggests that these policies will collide with the realities of the state of depletion of the domestic oil resource base, the economics of the international oil market, and the ecology of some the planet's most important ecosystems. The policies will fail to improve US energy security or reduce OPEC's market control, and will damage the US economy and environment.

The Bush oil policy is built on a foundation of myths about our energy situation.

Myth 1: Oil from ANWR will reduce our vulnerability to OPEC decisions

The Administration correctly notes that Area 1002 of the Arctic National Wildlife Refuge (ANWR) in Alaska lies above the most promising oil prospect in the nation. But how much oil is there? The US Geological Survey's estimate of the amount of oil-in-place in the 1002 area is 20.7 billion barrels (3.3 km^3). The amount recoverable with existing technology is 7.7 billion barrels (1.2 km^3, 37%). The economically recoverable amount—that recoverable at 20 US$/barrel—is estimated to be about 3 billion barrels (say 0.5 km^3, 15%). The technically recoverable oil is the equivalent of 390 days of supply at the current US rate of use; the economically recoverable oil is just 152 days of supply.

The US Energy Information Administration (EIA) projects world oil production in 2020 to be 112 million barrels per day (17 800 000 m^3/day). If we decide to develop ANWR today, the EIA projects that by 2020 it could supply 1.4 million bbl/d; about 1% of global oil supply or about 8% of forecast US imports.

Myth 2: The footprint of development in ANWR will be small

The coastal plain of ANWR provides a vast and unique array of ecosystem services that do not have a dollar values assigned to them. The oil industry should be credited for its development of new technologies that could reduce its ecological footprint in ANWR compared with Prudhoe Bay. But new technology is not always footprint-reducing. 3-D seismic interpretation has revolutionised the oil discovery process, but requires an enormously greater amount of data collected in the field, needs that can actually increase the number of passes that exploratory vehicles must make over the land surface compared to 2-D. These impacts hinge on the exact size and type of the geologic structure under investigation. Prudhoe Bay operations cover about 40 km^2; the entire system covers hundreds of square kilometres of Alaskan wilderness. Even if we grant the oil industry a reduced footprint from development in ANWR relative to old technology, we are still talking about a significant addition to an already large industrial operation.

Myth 3: ANWR is not an 'ecological treasure' because few people visit each year

Myth 4: The oil industry has been a good steward of other important ecosystems

(We assume that EnergyWatch readers will be familiar with these arguments EW)

Myth 5: Fostering domestic production will be good for the US economy

Economics 101 teaches us that trade benefits importing nations when the imported good is less costly than the domestic alternative. Because domestic oil sources are more costly to produce than overseas alternatives, tax relief and other incentives to encourage exploration and development will hurt the economy in the same way they did 20 years ago when the oil prices shocks produced record rates of drilling. Between 1973 and 1980, the total length of wells drilled increased threefold and the fraction of new capital investment in the US economy going to the oil

industry increased from 2% to 7%. What did the nation get in return? During this same period, US production declined 7% and the oil industry's share of GDP declined from 4% to 2%. The gap between investment and production totaled more than US$bn 100 from 1975 to 1987. The reason for this poor performance is simple: the domestic oil resource base is depleted to the point that large investments in drilling cannot generate a commensurate increase in oil supply.

The Bush energy plan calls for tax relief for an industry that already receives hefty support from taxpayers. Estimates of current government subsides to the oil industry range from US$bn 2 to 88 a year. These studies assess obvious subsidies such as the percentage depletion allowance for the oil and gas industry and tax deferrals on enhanced oil recovery. The upper end of this range include the cost of maintaining a military presence in the Persian Gulf to insure a secure flow of oil from the Middle East, the cost of maintaining the Strategic Petroleum Reserve here in the US, and environmental externalities associated with oil production and use.

These massive subsidies distort market signals, producing a misallocation of investment in energy markets, and they discriminate against renewable energy technologies such as wind and photo-voltaic power. Finally, subsidies corrupt the very market mechanism that Bush argues should help guide our energy and environmental policies.

The president, vice president and secretary of commerce are all from the oil business. Fourteen of the 25 largest contributors to Bush political campaigns are from the energy industries. It should not surprise us that the Bush oil plan would shower the energy industry in an additional US$bn 20 of tax breaks. But in this case what is good for big oil is not good for the nation.

(See also 'Quote of the month' in Mini-Whats. The full original article, with diagrams, can be seen on www.oilanalytics.org EW)

EnergyWatch maintains the highest standards

We didn't use the headline:

Fuels rush in

Cronyism in the Presidency

Martin Khor The Star Malaysia

When US President George Bush unveiled his energy plan, it was condemned by friends and foes alike for being harmful to the global environment. Coming so soon after the US pullout from the Kyoto Protocol, this marks a disaster for global efforts to reverse climate change. Bush is also opening himself to criticism that his presidency and policies are dominated by cronyism, especially with the energy companies. The Democrat Party leader in Congress, Richard Gephardt, said, "This is a plan mostly engineered for and by the energy companies"

A report in the Asian Wall Street Journal (May 17) documents links between key US administration personnel and the US energy industry:

- President Bush received US$M 2.8 from oil, gas, mining and utility interests during the 2000 presidential campaign. Overall these sectors gave US$M 64, with 75% going to Republicans.

- Vice-President Dick Cheney earned over US$M 30 in salary and stock in 2000, as chief executive officer of Halliburton, an oil-field-services company.

- White House Chief of Staff Andrew Card earned at least US$ 500 000 a year to lobby for GM and other US auto makers. Under the Bush plan, the auto industry will not have to improve fuel efficiency of their gas-guzzling sport utility vehicles and will profit from tax credits to consumers buying their hybrid gas-electric cars.

- Commerce Secretary Donald Evans was awarded a US$M 5.3 package when he retired as CEO of oil and gas company Tom Brown Inc.

When the history of cronyism is finally written, it will surely be noted that the country that most shrilly preaches to others against having strong government-corporate links, is the one that has the most of such links; to the point where it is hard to distinguish anymore the line between government and corporations. Unfortunately, this cronyism at the heart of the Bush presidency can also cost the Earth its survival, as the process of global warming scores yet another victory over humanity's weak and unconvincing attempt to control it.

What uses 3 litres/100 km but is snubbed in the US?

(That's 94 miles to a NZ gallon, 78 /USgal)

New York Times

The Audi A2 sounds like the kind of exotic hybrid-fuel car that President Bush wants to promote with his new energy plan. The sporty new four-door compact has a top speed of 160 km/hr. It can travel 78 miles on a single (US) gallon and emits fewer greenhouse gases than almost anything on the market. Yet the A2 uses a technology that generates scorn in the US: the diesel engine.

The A2 is part of a powerful movement in Western Europe, where gasoline prices are often three times US levels. Diesel engines are as much as 30% more efficient than comparable petrol engines, and emit far less CO_2 and other greenhouse gases. A new generation of clean, nimble diesel-powered cars is suddenly the height of fashion in Europe. They power a third of all new cars sold last year, compared with 22% in 1997.

Today's diesel engines produce far fewer tiny soot particles than just seven years ago, and European environmentalists and government officials are much more comfortable with diesels than their American counterparts. "A litre of diesel takes one farther and produces fewer greenhouse gases," said Albrecht Schmidt, an expert on energy issues for Germany's Green Party. "The big problem is the small particulates, but we think that can be solved with new particulate filters."

American environmentalists are highly critical. "Diesel is the quick and dirty way to increase fuel economy," said Daniel Becker, of the Sierra Club. "As long as we have other technologies that are clean, I don't see the point in producing carcinogenic soot." Differences in attitudes among environmentalists are reflected in the stringency of air pollution rules, with European regulators giving fairly lenient treatment to diesels while American regulators have virtually banned them. However, the US has much dirtier diesel fuel than Europe, with far higher levels of sulphur *(see page 24—EW)*. The American oil industry, has lobbied successfully to prevent rules requiring cleaner fuel to take effect until June 2006.

In Europe, both Ford and GM lost significant market share because they failed to recognise the coming popularity of diesels years ago. Today, both companies are racing to catch up.

Europe can afford Kyoto

ENS

The European Union (EU) could cut its greenhouse gas emissions in line with Kyoto Protocol commitments at an annual cost of under 0.1% of Gross Domestic Product, says a study released by the European Commission (EC). The estimate is considerably lower than previous figures and will strengthen the EU's hand in the argument over the 'affordability' of responding to climate change.

The study calculates costs of cutting all six greenhouse gases covered by the Kyoto Protocol across the EU economy. It suggests an annual net cost during the first protocol commitment period 2008 to 2012 of 0.06% of GDP.

In the report, Ecofys of the Netherlands, AEA Technology of Britain and the National Technical University in Athens, combine 'top-down' and 'bottom-up' approaches to identify and cost the total 'technical' reduction potential in all economic sectors. Some sectoral reports have already been published by the EC. Almost two-thirds of the overall savings potential could be realised at a profit or at no cost, the study found. Approaching the Kyoto goal on a 'least cost' basis would lead to EU-wide costs of 3.7 billion Euros—or 20 Euro/t of carbon equivalent (NZ$ 40/t). However, this cost would almost double if the 15 member states were to act individually.

Another aim of the study was to determine how far different economic sectors should reduce emissions from 1990 levels to ensure the cheapest implementation of Kyoto Protocol targets which average a reduction of 7%. Under this scenario, the biggest contributors would be the fossil fuel extraction sector (46% reduction), waste management (28%) and industry (26%). Transport emissions would fall by only 4%, reflecting the generally high cost of technical abatement measures. The study's authors stress that some of the abatement options identified, though cheap, might not be adopted because they are "not politically or otherwise feasible." However, they also point out that 'non-technical' abatement measures, such as increasing taxes and charges to reduce energy demand, were not included in their calculations.

The study is available at:
http://europa.eu.int/comm/environment/enveco/climate_change/sectoral_objectives.htm

NEECS Submission

The final version of SEF's submission on the Draft National Energy Efficiency and Conservation Strategy

(A draft submission was printed in EnergyWatch 19 but the final version came out substantially larger and is now included again, in a smaller than usual typeface EW)

1 The objective of the Sustainable Energy Forum is to facilitate the transition to sustainable energy. The Forum has about 120 members, including politicians, business people, academics and corporate members.

This submission has been finalised after receiving feedback on a draft presented at the Forum's AGM, followed by further e-mail discussion, and includes points raised at the Forum's recent Conference, on 17 – 18 May 2001.

2 The draft National Energy Efficiency and Conservation Strategy (NEECS) is very welcome and very much on the right lines. EECA, MfE and the Minister are to be congratulated. Particular points supported include:

- Recognition of the need for a new direction for New Zealand (NEECS Section 1.7) and the Minister's comment that *it's time for energy efficiency and renewable energy to take centre stage* (Section 1.1).
- Realistic goals set (Section 1.3).
- Realistic targets set for energy efficiency (Section 1.4).
- A clear intention to establish a target for renewable energy (Section 1.4).
- A rational basis to goal selection and setting, with a realistic view of the limitations of government action.
- Recognition of the need to win hearts and minds (Section 3.2), and the importance of both sticks and carrots, including taxation.
- An initial focus on retrofitting existing buildings.
- Transport recognised as needing much more attention, and alternative modes and urban form recognised as parts of the transport solution.

3 Given our name, The Sustainable Energy Forum, we need hardly emphasise our views on the need for New Zealand to take a long term view of its future energy resources. Whilst the draft NEECS strategy is high on 'efficiency' strategies there is a dearth of 'conservation' strategies, particularly with regard to energy resources. Is there a risk of New Zealand moving ever more efficiently towards an unsustainable energy future? We believe that economic necessity, resource depletion, climate change and pollution provide ample grounds for this concern.

4 In developing NEECS a great deal of ground has been covered in a short time, but it is inevitably no more than a start. The draft covers the period to 2006, with a focus on effects out to 2012, but it is vital that the task should not be seen as complete when the strategy is published on 1 October. A revised version released in late 2002 or early 2003 would be vastly better than waiting five years, both because the first step inevitably contains substantial weaknesses and because of rapid developments in science, technology and policy. Another important task is to look beyond 2012, and we suggest going as far as 2050; see paragraph 13. Areas for consideration in developing a revised policy include:

- The Maui gas contracts. If nothing can now be salvaged from the wreck, we should at least be ensuring that new gas contracts, for Kupe South or Pohukura for example, do not squander resources in the same way.
- Linking NEECS to the electricity and gas industry reforms.
- A review of concessions for oil and gas exploration. Such concessions do nothing to increase the size of the resource, but encourage earlier development than would be commercially justified—possibly resulting in the wastage seen in the Maui contract.
- Mechanisms to ensure that the environment (the playing field) is at least level, and historic distortions are removed or tilted toward energy efficiency and renewable energy.
- Links to the current taxation review: see paragraph 8.
- Links to the RMA: see paragraph 19.

Having said all this, we recognise that the best can be the enemy of the good, and that there will be remaining dislocations in government policy to be ironed out. The Auditor General and the Parliamentary Commissioner for the Environment will have roles to play here.

5 'Hearts and minds' will be a key aspect of NEECS, perhaps especially in transport. The draft mentions *an integrated 'all ages' educational plan* (paragraph 49) and touches on education in several places. Some of the most successful public awareness campaigns (seat-belts, be a tidy kiwi, lead-free petrol etc) have been through primary school programmes, delivering the message into communities through their children. Energy, climate change and water and waste within the natural and built environment are ideal multi-curriculum topics for primary schools. Schools are themselves ideal vehicles to demonstrate efficiency measures. The educational benefits of healthy classrooms with good air quality, heating and lighting would far outweigh the

efficiency gains.

Hearts and minds is a presentation issue too: a car or domestic appliance with a five-star rating will mean little to many people, but an average vehicle- or appliance-life saving of $ 1000 over 'normal' efficiency would be much more readily understood.

6 The 'least cost' approach is appropriate, but great care is needed to ensure that it sends the right signals to energy users. Allowing trading in carbon emission permits to determine the size of the economic incentive for efficiency and renewables could encourage a 'wait and see' response from energy operators. The NEECS strategy needs to incorporate signals which will encourage investors to consider the long term implications of current energy infrastructure decisions. Another need is to signal now the possibility of principles such as 'allocating permits usefully' being embodied into the rules of the carbon trading game.

7 Another difficulty lies in the objectives set. The EECA objective is to reduce energy use—not greenhouse gas emissions—and the difference may sometimes be important. If the objective is to control atmospheric CO_2, an essential contribution is to understand and manage the carbon inventory of New Zealand's native forests, yet it is outside the strategy and with no obvious linkage made. Greater clarity on the reasons for the policy would be helpful: is it minimum compliance with the Kyoto Protocol; achieving greenhouse gas objectives; maintaining a 'clean green' image; future-proofing; or some combination of all of these?

8 We see a need to link NEECS to the current taxation review, which is the first since the Rio Conference, the passing of the Resource Management Act and the government's commitment to ratify the Kyoto Protocol. In such changed circumstances it is highly unlikely that the existing tax regime is optimal for achieving national goals. We see taxation as a particularly important tool in achieving environmental objectives, and we note that the OECD is now taking this view:

> *Countries around the world should remove subsidies and implement 'green taxes' to prevent "irreversible damage to our environment over the next 20 years," says the Organization for Economic Cooperation & Development.*(OECD Press release 2001-04-23)

Existing structures favour energy policies based on fossil carbon, with tax breaks for oil and gas exploration and under-priced transport, especially road transport. A revised structure more in keeping with a Kyoto commitment might see renewable energy sources as a more appropriate area to be encouraged with tax breaks, and revenue-neutral petrol taxation as a reasonable offset for unpriced transport externalities. We believe that it will be best to assume that any taxation changes linked to NEECS will be revenue neutral.

Hypothecation may be attractive, especially where there are unpriced externalities, but should not be seen as either essential or unacceptable.

9 We feel confident that NEECS will provoke squeals from industry— especially if there is a link to taxation—with claims that such policies will drive business overseas. This is almost a reflex action, and there is now plenty of data (OECD etc) to show that such effects are limited to corporate tax regimes or labour costs. Energy businesses will go when the profitable resources have gone, taking their gas turbine power stations with them.

NEECS will be most effective if it is recognised that investment decisions tend to determine outcomes for the life of the investment—frequently 30 years or more—and that taxation is a powerful driver of decision-making. If such changes put large and well-established businesses outside their comfort zone, that may be no bad thing for New Zealand as a whole.

The recent European Commission finding, that the EU could meet its Kyoto Protocol commitments at negligible economic cost, is a major setback to the fatuous but widely believed argument that we cannot afford environment, and supports Amory Lovins' argument that Kyoto compliance is profitable when you look closely; see paragraph 18.

10 We would be very concerned if the strategy treated carbon credits as anything but a minor 'last resort' component of the overall plan. Credits, from either planting or technology, can only too easily become a 'cheat's charter.' If New Zealand is to maintain its 'clean green' image we should play down carbon trading.

11 The approach taken in NEECS is perhaps too rational. The Minister's introduction says, *If you think we need to go 'further and faster' we need evidence, analysis and proof.* However, we are dealing with new attitudes, new technologies and the future here. The Minister's phrase implies well-established methodologies, but these alone are unlikely to give the right answer:

> *Either you rigorously extrapolate current trends, in which case you get rigorous nonsense; or you adopt an imaginative blue-sky approach, in which case you get imaginative nonsense.* Peter Jay

A successful NEECS will need the right balance: rigor and imagination; recognition that either or both may be nonsense; and acknowledgment of the risks of 'paralysis by analysis.' It is tempting to suggest implementation ahead of analysis in some 'obvious' cases, while recognising that that was how we got into the Clyde Dam. Mistakes are inevitable, but the biggest mistake of all might be to take fright and pretend that 'business as usual' is a low-risk approach.

12 A particular area needing imagination is the extent of renewable energy supply. NEECS correctly identifies this as unsuitable for a leave-it-to-the-market approach, but perhaps fails to give sufficient weight to the gathering strength of the precautionary principle. The

risks needing a precautionary approach now include climate change, but also cost and risk considerations, both present and future:

- Renewable sources are reaching the stage where the uncertainties of construction cost are comparable with non-renewable sources. Indeed, they may be lower because of their generally smaller scale. A wind farm programme to develop the generating capacity of the Clyde Dam could never achieve the dam's cost over-runs because it would be a series of more-or-less independent projects on separate sites, with few common factors other than equipment supply, which is easily managed for risk.

- In general, renewable energy costs are falling and non-renewable costs rising.

- The risks of cloud cover and calm weather—especially when offset by hydro system storage—are lower than the risks of energy supply security and price manipulation, whether by electricity generators or OPEC.

- The distributed nature of solar technologies—especially solar water heating and solar electricity on roof tops—makes these ideal for spreading large scale infrastructure risks, including risks in transmission and distribution.

Potentially important benefits of a bold renewables target would be opportunities for local manufacture, technology transfer, or even exports.

13 Expert opinion at the Forum's recent conference was that New Zealand is the country most easily able to switch to exclusive use of renewable energy, and—with sufficient commitment—should be able to meet such a target by 2050. The July 2000 Energy Data File shows that our end-use energy consumption is 438 PJ/yr, of which about 125 PJ/yr is from hydropower and other non-fossil resources. If end-use consumption could be reduced by a modest 1% each year to 250 PJ/yr by 2050, then we would be already halfway towards the target. New renewable sources would have to provide an extra 125 PJ/yr (4000 MW) plus losses. This corresponds to an average annual increase of around 80 MW of renewable electricity generation capacity. We believe that this is achievable.

Establishing this goal and making substantial progress towards it would have a world-wide inspirational effect, in much the same way as our anti-nuclear policy. There would be huge benefits in avoided energy costs, including foreign exchange costs; 'clean green' image; credibility in international negotiations; and profits from international sales and consultancy. Industry in a country this size needs niche markets, which renewable energy has generous potential to provide. And at a profit, if the externalities eventuate and the EC report mentioned in paragraph 9 can be applied here.

A potential benefit is opportunities as a test bed for renewable technologies. Technology trials may be needed on a regional or national scale, in a similar way to Iceland's moves towards a trial hydrogen economy. Bio-fuels might be a good area. We hope that government, industry and academia will be alert to any opportunities.

14 It follows from the points above that setting renewables targets too low is probably a greater risk than setting them too high, so the targets should be set as high as is reasonably credible—perhaps even a little higher. We strongly support a policy of setting bold and imaginative targets, designed to work at both wholesale and retail levels, and as widely as possible: not just the electricity sector.

15 We give below our initial comments on the proposed mechanisms for encouraging new renewable energy sources (NEECS Section 3.6). We look forward to considering these mechanisms again when more detail is released for discussion in the July 2001 'renewables mechanisms' consultancy reports. We wish to be involved in the consultation that will follow the release of that information.

- Negotiated agreements will be worth exploring, but if used in isolation they will give the impression that the government is not serious. They are short on carrot and have no stick, so they cannot be expected to achieve much. They will be especially ineffective if they are allowed to be obscured by 'commercial confidence.' However, some large US companies are starting to see renewable energy as a hedge against rising energy costs, and the same could happen here.

- Mandated targets at a wholesale level are workable for the electricity industry and perhaps also for petroleum. A problem is that mandated targets tend to be set towards the cautious end of the achievable range, with little or no incentive for greater efforts.

- Mandated targets (including green energy certificates) for retailers, are a good option for solar hot water, photovoltaics, fuel cells and other small-scale (often domestic) energy sources. Barriers must be identified and removed, starting with the proposed changes to the Electricity Act. Small-scale technologies will be the future of the 'solar and hydrogen economy' and moves to support these related developments should be encouraged. Government may need to be active in the market, buying green energy certificates (at the penalty rate) from small scale generators each year. This support could provide a substantial boost for small renewable energy industries. Again, a disadvantage is that mandatory targets tend to be too cautious.

- Levies are our preferred mechanism. They spread the opportunities as widely as possible—down to individual roofs and yards; can be widely used; are simple to administer; and provide an incentive to maximise development of renewables. We note that the 3 EU countries that have done best in developing wind energy use levies to fund a feed-in tariff: Germany, Denmark and Spain (*Wind Directions* 1/2001). The UK's 'fossil fuel obligation' has done

less well, despite a substantially better wind resource. However, we note that levies do not support off-grid sources, whether small-scale systems used as alternatives to grid connection, or solar hot water systems used as an alternative to otherwise grid-connected loads.

The lack of price competition in a levy system is not a problem: competition is still there, but takes place in the equipment supply and maintenance areas rather than directly on energy price. Improvements as a result of competition encourage further investment and lead to the government reducing the levy.

For governments the disadvantage of levies is a relatively open-ended financial commitment, but this is controlled by using short contracts. The tariff at the time of signing the agreement is usually guaranteed for five years (or say 4 years from commissioning), and then switches to whatever is the current tariff for new agreements. Any financial blow-out is in any case offset by other benefits: encouragement of local industry and increasing immunity from energy price fluctuations.

- Tradable permits may well have their place but should not be the only mechanism. They are of limited use because they are only practicable for the big players: for example they could hardly be used for retail petrol sales.

In summary, we see the two best options as levies, and mandated targets at a retail level. However, some combination of two or more options might be better still.

16 There is a strong possibility that the objectives for energy savings have been set too low. Taking a transport example, Auckland spends 15% of Gross Regional Product on transport. Paris spends 5%: two-thirds less cost than Auckland, with about one third less energy use. NEECS perhaps over-emphasises the point that city design locks-in this kind of spending, because cities are in any case renewed at around 1 – 2% a year, or over 50% by 2050. Public transport can be improved much more quickly. Aucklanders already have choices for some trips and could fairly quickly be given choices for many more.

Getting Auckland's transport costs down to Paris levels is unattainable in a 5 year strategy, but could be done in perhaps 20 – 40 years. If it were done the savings would be of the order of $ 4 billion a year—at current energy costs—and perhaps another billion each in Wellington, Christchurch and collectively in the smaller centres. Achieving a fraction of these savings would be a huge gain. Even bringing the average Aucklander's attitude towards public transport into line with the average Wellingtonian would be a good start.

17 Similarly, a doubling of passenger transport patronage in ten years (7% annual growth) is thought challenging, even from a low base. Professor Hass-Klau says that a good system can initially attract 20% of car drivers, equivalent to a threefold growth in Auckland's public transport patronage. The time-scale depends more on the rate of introduction of realistic pricing and good alternatives to the car than on any annual percentage: Strasbourg achieved 380% passenger transport growth in four years (33%/yr), although this followed several years of planning and construction.

Much the same applies to pedestrians and cyclists, except that the initial phases can be probably shorter and certainly cheaper. It is too easy to ignore these low-tech modes in the rush to improve public transport, while failing to recognise that they support public transport and bring major benefits in their own right: over a third of urban trips in Germany are by walking or cycling, and the figure for The Netherlands is 45%.

18 There are indications that energy saving measures run into diminishing returns much more slowly than previously thought, and that very rapid advances are possible. On this theory the limitation is not opportunity and fundability, but findability: what Amory Lovins calls 'barrier busting.' An example quoted by the New Zealand Energy Management Association (e-zine 1/2001) was a 10 000 m^2 commercial building where the heating energy requirement was reduced by 67% and the cooling requirement by 29%, at almost no cost. Even more important was that "the building became inhabitable." The problem was over-ventilation and the crucial measurement that revealed it was a very low internal CO_2 level, but how often is that measured? In another example a new 150 000 m^2 hospital with supposedly state-of-the-art energy systems made further savings of 15% at a simple payback of less than 12 months.

Once the barriers are busted, learning-by-doing begins and costs fall as experience is gained. There is a world-wide shortage of professionals trained and experienced in seeing opportunities, and few institutions have energy savings as a specific objective. A major difficulty will be identifying and prioritising the problems. Clearly, much of this lies beyond direct government intervention, but a worthwhile exercise might be to study how the key barriers might be identified.

19 A particular barrier is the Resource Management Act. We do not advocate major change, but we support three measures:

- Ensuring that energy provision and use are among the factors considered, such as adding to Section 1 of the 4th Schedule of the RMA: *An assessment of the full fuel cycle greenhouse gas emission consequences of the activity and ways to minimise them.*

- A National Policy Statement on energy.

- Ensuring that incremental effects are covered.

It is a pity that the NEECS and RMA processes could not have been twin-tracked, but the next-best solution might be to use the final NEECS text as the starting point for an RMA process. Hopefully, twin-tracking these exercises will be possible in a later round.

OECD and The Greens suggest green taxes

Countries around the world should remove subsidies and implement 'green taxes' to prevent "irreversible damage to our environment over the next 20 years," says the Organization for Economic Cooperation & Development (OECD) in its recent *Environmental Outlook* report. Industrialised nations should coordinate a program to remove environmentally damaging subsidies and introduce environmental taxes.

The Outlook recommends the removal of environmentally harmful subsidies and a more systematic use of environmental taxes, charges and other economic instruments to get the prices right. "At the beginning of the 21st century, OECD countries are taking stock of their natural resources, the damage that is being done to the environment, and what actions they can take to ensure a clean, healthy and productive environment to pass on to future generations," says the report's introduction. "The main drivers of environmental change include economic drivers (economic growth and development, trade and investment liberalization), social drivers (demographic and labour force developments, and consumption patterns), and technological innovation."

The report uses 'traffic lights' to signal key findings, with green indicating pressures that are decreasing, yellow for uncertainties or potential problems, and red for environmental conditions that are expected to worsen until at least 2020. A large number of areas are under red lights. "Climate change as a result of greenhouse gas emissions is, arguably, one of the most important red light issues faced by OECD countries," the report explains. "Stronger policies to tackle this problem are urgently required if the worst effects of climate change are to be averted," it warns.

In New Zealand, talk of environmental tax leaves many businesses cold, but the Green Party insists its detailed proposal for ecological tax reform would at worst be economically neutral and reward—rather than penalise—environmentally friendly development. By creating a tax-free threshold for the first few thousand dollars of annual income, the Greens say lower income earners would not be penalised by the proposals detailed in its submission to the Government's tax reform team. Higher green taxes and lower income taxes could improve the economy by reducing tax distortions. Overseas experience suggests that the policy would not bring significant job losses and that total employment might increase. Research also suggests that broad ecotax-based reforms are roughly neutral for the economy. The broad results indicate substantial gains to the environment, with a relatively neutral to positive impact on the economy overall, even in the absence of tax-induced technical innovation.

The economic model used by The Greens suggests that applying a carbon tax at $ 25.70 /t of CO_2 would reduce emissions in some cases, but none of the energy-producing industries—gas, coal, electricity and oil—would contract financially. Similarly, forestry, cement and aluminium--three of New Zealand's four energy-intensive sectors—would not contract. Only the iron-steel sector, dominated by New Zealand Steel, was projected to shrink if a carbon tax was introduced. "The key message is that analysis, rather than rhetoric, is needed to determine the actual effects of ecotaxes on resource-intensive industries," The Greens say.

New taxes would not add to the overall tax burden, but would shift the tax burden from activities which are desirable (such as earning income) to those that are harmful (for example, pollution of the environment). Taxation then becomes an agent for environmental protection as well as providing government revenue.

Because ecotaxes target physical processes, there is less scope for changing purely financial arrangements in order to evade taxes. The Greens say that "Tax avoidance becomes aligned with environmental responsibility, rather than diverting resources away from productive activity. As a tax base, it is one of the least exposed to e-commerce and internet banking."

In world terms, the $bn 1.68 NZ raises annually from environmental taxes—mainly transport fuels and road user charges—is low, at about 3.5% of total tax revenue, compared with a 7% average among 17 OECD countries surveyed recently. Higher taxes on transport fuels would provide a starting point for a broader ecological tax system, providing sufficient revenue to fund early stages of the proposed reform. But the most well-advanced plans in New Zealand for a significant new environmental tax were those for a carbon tax aimed at all carbon dioxide emissions and designed to address climate change.

Divisions over Kyoto set the scene for explosive Bonn meeting

The Guardian, 15 June 2001

Europe's continuing support for Kyoto and its renewed intention to ratify—even without the US—was last night being interpreted by environment analysts and diplomats as a further, but perhaps final, escalation of the war of words in the run-up to the crucial Bonn meeting in July. With neither side prepared to give way without loss of face, it is increasingly certain that the US will be diplomatically ostracised by the majority of the world community when the talks begin.

Few European heads of state had expected Bush to back down. In the past few weeks, the president made it clear that it would not be possible for the US to sign up to a 5.2% decrease in carbon emissions on 1990 levels by 2012. The new US energy policy, which heavily supports fossil fuel industries, was seen widely as a clear indication that the US was not intending to take into account carbon emissions and was prepared to risk global isolation.

The hope in Europe is that Bush will eventually be shamed by public opinion—at home and in the world community—to sign at a later stage. A revived US environment movement, increasingly involving the science community and industry, is putting pressure on the president.

Opinions have been sharply divided over whether Europe should go ahead without the US. Some politicians and environment groups have argued that a treaty without the backing of the world's greatest emitter of greenhouse gases would achieve nothing. But a majority of groups and European leaders have consistently argued since the collapse of talks in the Hague last year that to water down a treaty already regarded as only a very small step towards addressing the potential impacts of climate change would be both foolhardy and against their own policies. They argued that if more loopholes and exceptions were embedded in the treaty, as the US wanted, the treaty would be worse than useless, and prove impossible to change at a later stage.

If Europe is serious, and this is not a negotiating position, the member states must now go ahead with a legal commitment to sign. None of the 15 has yet ratified, but there are few signs that any country will break ranks (although Italy, under the new right-wing president, Silvio Berlusconi, could waver at some point). It is not clear how much influence the US will exert. In the past, it has put huge diplomatic pressure on individual countries on everything from trade to genetic engineering.

The protocol is now on a knife-edge. Should one EU member waver, the whole treaty would be in danger. It is hoped that by sticking together, the EU will persuade Russia and Japan to sign with them. The Bonn meeting could be one of the most explosive international conferences in years.

The EU/US joint statement said in part:

We had an interesting and open dialogue here in Gothenburg on climate change, which will continue. We recognise that climate change is a pressing issue that requires a global solution.

The EU and US are both committed to providing strong leadership on climate change. Prompt, effective and sustainable action is needed, consistent with the ultimate objective of the UN Framework Convention on Climate Change (UNFCCC) of stabilising greenhouse gas concentrations in the atmosphere. We are determined to meet our national commitments and our obligations under the UNFCCC through a variety of flexible means, drawing on the power of markets and technology. In this context, we agree on the importance of intensifying cooperation on climate-related science and research.

We disagree on the Kyoto protocol and its ratification but we are determined to work together in all relevant fora to address climate change... Our efforts must ultimately result in an outcome that protects the environment and ensures economic growth compatible with our shared objective of sustainable development for present and future

Japan the hinge

New York Times

Japan's foreign minister, Makiko Tanaka, said that Tokyo would work "to the last moment" to persuade the US to support the Kyoto Protocol. Tanaka's comments were the latest in a drum roll of remarks by senior officials in Tokyo, aimed at supporting European efforts to convince Washington to reconsider.

The 1997 Kyoto accord was named after Japan's ancient capital and has inevitably become linked to

national pride, but Tanaka has carefully kept Japan's options open, saying that ratification "cannot go ahead with European countries while leaving the United States behind."

If Japan and Europe together adopted the protocol, ratification would be assured. "Japan is key," said Svend Auken, Denmark's energy and environment minister, in a statement to the World Bank. "Russia, the Ukraine and the EU account for about 53%. It is the last 2% that is difficult."

US the problem

New York Times

The US produces 22% of the world's gross domestic product but accounts for 25% of global CO_2 emissions. In contrast, the EU accounts for 20% of GDP while consuming only 16% of energy. The proportions for Japan are similar to Europe. If the US economy operated as efficiently as those of Europe and Japan, energy consumption would fall by about 30%, and US carbon emissions could be expected to fall by about 35%.
The American appetite for energy will only be more of a problem in the future. No boost in domestic energy production will suffice to keep up with the projected growth in American demand over the next 20 years. American domestic oil production has been falling for 30 years, largely because the relatively cheap oil has been pumped. The oil to support ever- expanding energy use is just not there. Nor can the shortfall be made up with oil from abroad. International supplies will be increasingly scarce, as China and India are likely to continue growing at rates of 5 – 10% a year. Increasing scarcity and rising prices could be a real long-term threat to US economic growth.

Simply the wrong policy

The Guardian

Exxon's US$M 1.2 pre-electoral contribution to the Republican party must rank as the most cost-effective political gift of all time, judging by the Bush administration's new profligate energy policy. Having recklessly abandoned the Kyoto commitment to reduce greenhouse gases by 5% by 2010, Bush has now gone gung-ho for a vast expansion of the oil, nuclear and coal industries, coupled with some tactical concessions in the direction of serious energy conservation.

The fundamental problem with the Bush plan is that it is all about boosting supply and not about curbing demand. Even when he appears to make concessions to the environmental lobby—as with the US$bn 1.2 for funding renewable energy resources—it is tied to royalties from the administration's highly controversial plans to start drilling for oil and natural gas in the Alaska National Wildlife Refuge.

The US needs to expand energy supplies and to establish a national electricity grid to alleviate regional problems, such as the ongoing California black-outs. But it would not need to build anything like the 1300 new nuclear, gas and coal fired stations it is planning if it were to act dramatically to increase spending on renewables and reduce US citizens' divine right to use as much energy as they want and pay as little as they can get away with.

If the energy history of the 20th century was all about hydrocarbons and nuclear power, the 21st century will be about harnessing energy from wind, solar power—of which the US has abundant resources—and hydrogen. By burying itself in the sand, the US will enrage other countries that have signed up to the Kyoto targets and increase US isolationism. It will also give the rest of the world a competitive edge in developing alternatives.

The Bush proposals will rightly face fierce opposition in Congress. The provisions have been carefully crafted so that only 20 out of 105 principles need congressional approval—but that is enough to make a battlefield.

What America really needs is a carbon tax, the proceeds of which could be channeled into a really serious exploitation of renewable resources. If solar and wind power—both of which can provide solutions to local energy shortages without needing to be part of a national grid—had been given even half of the research budget that went into ill-fated experiments with nuclear power, then US attitudes to energy today might be very different.

Why do we need more thermal power stations?

John Blakeley
(From a SEF press statement, 28 May 2001)

At the recent SEF Conference, the view was expressed that there is increasing evidence in rural New Zealand that climate change is occurring, whether you speak to ski operators on Mt Ruapehu, wine growers in Marlborough or Martinborough or sheep farmers in many parts of the country. Yet as concern about climate change increases, there are plans to build three new 400 MW thermal power stations, at Otahuhu (Contact Energy); Huntly (Genesis Power) and Stratford (Natural Gas Corporation). These stations will add another 50% to our existing thermal generating capacity and are likely to 'crowd out' many promising potential renewable energy power projects, especially wind farms and hydro-electric projects.

The Government seems to believe that the deregulated electricity industry will provide new generating capacity when it is needed and that demand increases will control this. Hence there has been no government interference with the supply side of the electricity industry which is still seeking to promote and sell as much electricity as possible using new thermal generation and with nothing getting in its way.

On the other side, the government is developing its draft energy efficiency and conservation strategy, which includes renewable energy. This leaves the distinct impression that the left hand doesn't know what the right hand is doing. Even the most bullish projections do not suggest that New Zealand needs additional generating capacity until around 2008. At the SEF Conference, Jeanette Fitzsimons, Co-leader of the Green Party, proposed a moratorium on new fossil fuel-fired power stations for about five years. Then if the government's energy efficiency and conservation strategy is not working well enough to avoid the need for new thermal power stations, they could still be built by around 2008.

Ms Fitzsimons said that her calls for a moratorium have been totally rejected in today's 'hands off' electricity market. She reached the conclusion that the only way for the government to influence the market was a Ministerial 'call in' under the Resource Management Act. Having now declined to do this for Otahuhu, it is most unlikely that the Ministers will use the call-in process for the Huntly or Stratford projects. Ms Fitzsimons said that there were essentially three arguments advanced by the two Ministers for not calling-in the Otahuhu C project:

1 Why pick on thermal electricity generation which only produces 7% of NZ's emissions?

Everything is 'only' a percentage of greenhouse gas emissions, making this argument a recipe for doing nothing. Worse, CO_2 emissions produce only a third of NZ's total greenhouse gas emissions, the dominant gas being methane, so although thermal electricity generation accounts for only 7% of our total emissions, it produces around 20% of our CO_2 emissions. In NZ the fastest-growing sectors for CO_2 emissions are transport and thermal electricity generation, and these are the sectors which we will have to target if we are to make progress.

2 New thermal power stations will help NZ meet its Kyoto targets by replacing less efficient thermal power plant.

This argument only works if electricity use is demand–driven, whereas many people believe it is supply–driven, with promotional selling of electricity as the power company 'ramps up' demand.

3 The call-in process itself would have cost the government some $ 350 000.

This is a pathetic argument when one considers the potential cost of power station mitigation measures.

The government cannot expect to be seen as serious about its commitment to the Kyoto Protocol if it hides behind the deregulated electricity market. How can it reconcile its active promotion of a national energy efficiency and conservation strategy (including more renewable energy) with the building of such power stations?

They shall beat their swords into plowshares

The US government has signed an agreement for a 260 MW wind farm on 2.7 km^2 of the former atomic test site in Nevada. The first phase should be complete by the end of the year.

Renewable Energy World

Hard questions on nuclear power

New York Times

After decades in the doghouse because of environmental, safety and cost concerns, nuclear power is enjoying a renaissance of expectations. There are good reasons to take a fresh look at this much-maligned source of energy, but it is worrisome that the (US) administration seems to have endorsed a nuclear resurgence with little sustained analysis of its pluses and minuses.

By most accounts, the industry has learned to operate its plants more safely and efficiently than in the years leading up to the traumatic near-tragedy at Three Mile Island. Meanwhile, external events are increasing the appeal of nuclear power. Nuclear plants emit no CO_2, and contribute to the diversity of the nation's energy supplies. They already supply some 20% of US electricity, compared with 52% for coal, 16% for natural gas and 3% for oil. But the great majority of all new power plants burn natural gas, making then vulnerable when supplies are tight.

Bush's energy plan proposes to accelerate the use of nuclear power, but before this goes too far, some crucial questions require answers.

Impact on global warming: The proponents will need to do a much better job of spelling out just how to make a real dent in the problem. Nuclear power is used almost exclusively to generate electricity, and cannot reduce the nation's reliance on imported oil for transportation. It will primarily be substituting for natural gas—the least of the CO_2 emitters.

Weapons risks: Expansion of nuclear power in the US poses no weapons danger, but the spread of nuclear plants into other countries could pose a risk. As more and more technicians around the world learn to work with nuclear materials, and as governments become procure nuclear technologies, there is a danger that civilian nuclear programs could serve as a cover for clandestine weapons activities.

Waste disposal: In the political world, the lack of a proven method to store spent fuel from nuclear reactors for the tens of thousands of years the material remains radioactive has long been considered the Achilles' heel of the nuclear industry. Bush has proposed a new look at reprocessing the fuel to remove the long-lived plutonium for reuse as reactor fuel. That could greatly ease the storage problem here but might encourage wider use of reprocessed materials abroad, increasing the risk of weapons-grade plutonium falling into the wrong hands.

Reactor safety: The safety problem in conventional nuclear plants is that, if things start to go wrong, emergency cooling systems and human operators have to act correctly to prevent a catastrophic meltdown. That makes nuclear power an unforgiving technology that cannot tolerate equipment failures or human mistakes. But the industry is exploring new technologies that would not lead to meltdown even in a worst-case malfunction, making them inherently safer and cheaper to build and operate. This is where the administration and the industry should be focusing their efforts—to develop demonstrably safer power plants.

Economics: No matter what else is done to make nuclear power more attractive, the industry will make little headway unless it can overcome the high capital costs that brought it to a halt in recent decades. Some relief should come from standardized designs. But Congress will need to take a close look at whether it should renew one of the industry's economic underpinnings—the so-called Price-Anderson Act that limits the liability of nuclear companies in the event of an accident.

(EnergyWatch notes that Germany has just reached agreement on phasing out nuclear power within 25 years. We suggest that this article is over-optimistic on three counts:

- *The need—in the UK and presumably also in the US—to run nuclear stations as base load, for safety reasons. This limits the total contribution that is possible, when 20% of US electricity is already from nuclear power.*
- *Control system safety. Any safety system is useless if it is over-ridden by human operators, as happened at both Three Mile Island and Chernobyl. Systems will have improved since those stations were built, but no safety system is perfect and over-riding must be possible.*
- *The stability of US and other institutions. The oldest western institution is the Roman Catholic Church, at a mere 1500 years or so; not long enough for nuclear waste to become safe. EW)*

The Road traffic reduction bill

Green Party co-leader Jeanette Fitzsimons has had her Road Traffic Reduction Bill drawn from the private members ballot. "I am delighted that this bill has been drawn because New Zealand cannot simply go on using more cars and building more and more roads," said Fitzsimons. "We have to turn this unsustainable trend around. The transport sector is New Zealand's largest single producer of climate-changing CO_2 emissions and we have one of the highest rates of child pedestrian deaths in the OECD. Research shows the only effective way of dealing with this problem is slowing down and reducing traffic."

The Bill amends the principal objective of Transfund New Zealand to provide a safe and sustainable land transport system rather than being solely focused on roading. Transit New Zealand's principal objective is amended to focus on environmentally and socially responsible management of the state highway network.

The bill requires the Minister of Transport to develop targets, timetables and measures for traffic reduction on state highways and requires councils to reduce traffic in their regions. Transit and Transfund are then bound to support these targets. The expected result is a substantial increase in support for public transport, walking and cycling at the expense of major roading projects.

Growth in the speed and volume of motorised road traffic is the underlying cause of many social, environmental and economic problems. Local and global pollution is associated with the use of fossil fuels and the waste products from cars and trucks. Communities are divided and essential human interactions undermined by urban sprawl, traffic noise and the physical barrier created by busy roads. Congestion and urban sprawl impose enormous economic costs by diverting resources from the production of goods and services into their movement.

Arctic getting greener

Scientists in Alaska say that new vegetation is spreading over the tundra as the climate gets warmer. According to aerial photographs the amount of greenery has doubled in some areas over the past 50 years. BBC

Morning in America

Ultimately, the main intention of the first commitment period of the Kyoto Protocol is to focus minds—the initial cuts will not make much practical difference. However, some minds remain determinedly unfocused, or focused on some parallel universe unknown to Jan Pronk. The three paragraphs below are taken from separate articles on nuclear power, the reaction to Bush's energy policy and the European stance on Kyoto. All are of US origin and are slightly shortened:

All energy technologies produce waste. Burning fossil fuels—even relatively clean fuel like natural gas—generates waste that cannot be contained within the power plant, as nuclear waste is, but must be released into the environment as air pollution and toxic waste. In the case of coal, burning releases ash that is mildly radioactive, because radioactive uranium and thorium are ubiquitous in the earth's crust, including coal seams. Even renewable technologies produce waste: manufacturing the materials requires burning fossil fuels. Thus wind or solar power systems release far more greenhouse gases across their life cycles than does a nuclear system of equivalent output.

Conservation is useful if it means producing and using energy more efficiently. Engines summoned by marketplace demand have been getting more efficient for 200 years. But it´s not enough. What (Senate Democratic Leader Tom) *Daschle means by conservation is giving up energy-consuming activities. If we cut back 10% a year on our energy use, in only 10 years we will not need any energy—we will live by our muscle power. Mankind has tried that: it's called the Stone Age.*

So, let's get real and see how many bangs we get for each CO_2 buck. The best way to do this is to divide US greenhouse emissions by the country's economic output, which gives emissions per dollar of gross domestic product. For the 10 biggest emitters, the worst in this respect is Russia, where 148 million people produce virtually nothing... Let's assign the Russians an emission-economic rating of 100, the worst rate. On this relative scale, the US rates a 33. The best are the Japanese, at 18, not far ahead of the US, and mainly because of their intensive use of nuclear power. Among the 10 largest emitters, in terms of economic efficiency, America comes in third, after Japan and Germany. That's not bad, considering America's lack of nuclear power, which in recent years has provided only a bit more than 10% of its total energy...

The energy crisis in California and nearer home

EMA

The real energy crisis in the US is because they have based their energy future on natural gas, but the recent growth of the economy has outstripped their capacity to supply gas from declining reserves. California's special problem is their heavy dependence on gas for electricity generation.

Because the peak demand for gas has exceeded supply, the spot price has increased dramatically, pushing up the cost of electricity on the spot market. Many power stations are being withheld from the market (about one-third of California's capacity was unavailable during the winter load peak for maintenance or other reasons) giving rise to claims of 'gaming' and collusion.

The financial woes of the two large energy traders are caused by regulation. The retail price of electricity is capped at 7.5 c/kWh, but since November 2000, spot market prices have averaged 30 c/kWh and peaked at 500 c/kWh. This has resulted in the main traders losing over US$bn 12. However, other energy traders in California—who are sufficiently hedged—have had no problems. And, it appears that the separate generation arms of the main companies have made windfall profits about equal to the retail losses. Another result of high prices is that two large aluminium smelters, with electricity hedge contracts, have found it more profitable to shut down and sell their hedges on the spot market than to continue to refine aluminium. Some other energy users have been forced to shut down because of the high prices.

The new president plans a supply-side solution. This will be unsuccessful, in both the short- and long-term, but will funnel incredible amounts of money to the oil and nuclear industries. Initial proposals will raise the subsidies for the energy supply industry from the present US$bn 10 a year to US$bn 30 a year. As the crisis intensifies, as it almost certainly will, the focus on energy supply can only be expected to increase.

The gas capacity problem is the most troubling, as this has the potential to affect the rest of the world. The low season (March 2001) hedge price for natural gas on the New York Mercantile Exchange has more than tripled in a year, to 2 c/kWh, about the same as New Zealand's average domestic retail price.

America currently imports about 60% of Canada's total gas production, supplying about one-quarter of US demand. One result is that people in Alberta, who formerly thought they had no (short-run) energy problems, with a thirty year supply of gas in the ground and low prices, now have only about a five year supply, at triple the price.

The US's only short term solutions are to rapidly increase imports of gas from Canada and Mexico; relicense and reopen nuclear power reactors (the first two new licenses since 1978 have recently been issued) and increase capacity for liquid natural gas imports. Of course, switching to more efficient energy end-uses is the only viable long-term solution, but it may be some time before this is widely realised. Even as the government ignores the potential for energy service improvements and demand-side savings, the high energy prices will force energy consumers to look into this, and dramatically increase the cost-effectiveness of efficiency improvements. Such energy turmoil may cause the political pendulum to swing back in four years, leading to a more climate-friendly strategy.

These changes will probably affect New Zealand. The likelihood of increased LNG traffic will make gas more of an international commodity, subject to world-wide prices. When the Maui gas field runs out, probably within the next decade, new contracts for fields such as Pohukura will be at higher prices. Our high use of gas to generate electricity will feed into electricity prices, as in California, increasing our power costs too. Another mechanism affecting New Zealand is that energy intensive industry will not be able to operate profitably in the US. International prices for energy-intensive commodities (methanol, aluminium, fertilizer) will tend to rise, driving up demand and encouraging production where energy prices are still relatively low—such as in New Zealand. This will speed the gas depletion, and bring our energy crisis closer. Other likely effects are reduced interest in drilling for oil and gas in New Zealand, and a 'brain drain' of qualified energy personnel, because work in the US will be plentiful and profitable.

Clean Coal?

Steve Goldthorpe

There was a reference at the SEF Conference to clean (or low CO_2 emission) coal systems, and EnergyWatch was referred to two web addresses:

http://www.ieagreen.org.uk/ Reducing Emissions
International Energy Agency Greenhouse Gas R&D Programme, UK

http://www.netl.doe.gov/products/power1/vision21/v21rdmp.pdf
Vision 21, USA

The IEAGHG is an multi-nation funded R&D programme charged with coordination and investigation of technologies for removal and disposal of CO_2 from fossil fuel power plants, and other greenhouse gas mitigation technologies. The purpose of this research is to quantify the economic penalty and technical issues that the fossil fuel industry faces in putting its house in order. The CO_2 sequestration option is essentially the classic pollution control approach, as distinct from the preferable pollution avoidance approach, to breaking the link between energy supply and climate change.

The IEAGHG conclude that the high cost of separating CO_2 from flue gases from coal fired power generation is a major barrier to widespread use of CO_2 removal technology. Substantial reductions in these costs would be needed. The IEAGHG also conclude that it is uncertain whether this can be achieved through improvement to the separation process alone and a broader search is warranted for radical improvements to CO_2 removal concepts. The studies result in estimates of the level of carbon charge that would be required to make CO_2 removal from the use of coal economically viable in a carbon constrained world.

The other aspect of CO_2 sequestration is disposal of separated CO_2 . The IEAGHG make much of a project on the Sleipner gas field, in the Norwegian sector of the North Sea. On this offshore platform, 1 million tonnes a year of CO_2 are being removed from a natural gas stream using a solvent absorption process. The separated CO_2 is injected into a reservoir 800 m below the sea-bed. This level of sequestration is equivalent to about 10% of emissions from domestic transport in NZ. This project is driven by a large CO_2 emission penalty imposed by the Norwegian government on CO_2 stripped from natural gas. It provides a large scale demonstration of the concept of CO_2 injection into aquifers. Injection into aquifers is likely to prove to be the least infeasible of the CO_2 disposal concepts. In comparison with separation costs, reinjection costs are low. However, the scope for application of this concept is limited.

The Vision 21 site leads to a 150 page report produced by the US Department of Energy, justifying its extensive research programme into novel fossil fuel energy conversion technologies. This report is long on promises that technology developments will deliver, with very little hard information about how this will be achieved. Even the highly optimistic, uncosted efficiency targets of Vision 21, (which seem to give scant regard to the laws of thermodynamics) cannot even cut in half the use of fossil fuel for power generation. It is pertinent to note that Vision 21 only gives targets to be aimed for, not estimates of what can ultimately be achieved in real systems.

Both sites are long on research proposals and their justification. The wide range of ideas suggests that no clear answers are in sight yet. The US approach in particular seems to be saying that if enough research is carried out then maybe something will come of it one day. This scatter-gun approach seems to be an unreliable basis for the optimistic view that technology developments will allow reliance on fossil fuels as the world's principal energy resource to continue indefinitely.

It is particularly worrying to note that when the carbon trading fraternity are asked where the generation of carbon credits will come from after the low hanging fruit has been picked, they typically cite fossil fuel technology developments in the USA as the source of salvation. Look at the Vision 21 website and form your own opinion.

Mini-Whats

Quote of the year

These adjustments to the USGS (US Geological Survey) *and MMS* (Materials Management Service) *estimates are based on non-technical considerations that support domestic supply growth to the levels necessary to meet projected demand levels.*

These weasel-words are buried in the text of the US Energy Information Agency *Annual Energy Outlook*. The authors are explicitly admitting that their energy supply forecasts are 'reverse-engineered' to maintain the charade that there is

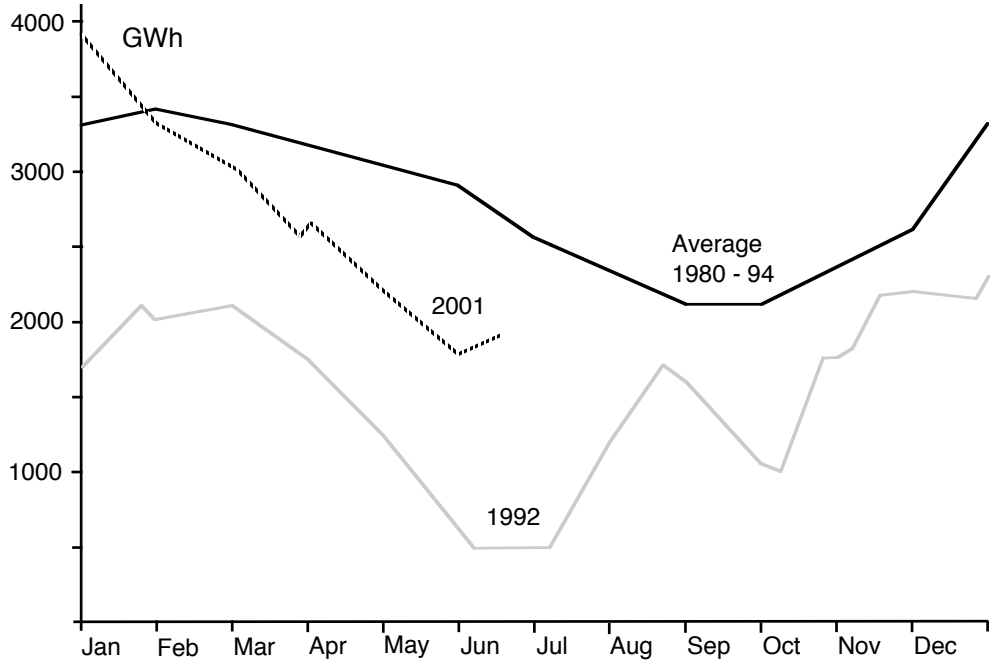
enough oil and gas available to the US to meet Bush's energy fantasies without taking any official steps toward conservation or efficiency. See page 221 at:
www.eia.doe.gov/pub/pdf/multi.fuel/038398.pdf EMA

Satellite paints a smoggy picture

NASA's new Terra satellite has produced the most comprehensive view ever of air pollution on the planet. Monitoring atmospheric carbon monoxide (CO) levels, the satellite shows that forest fires in Africa and South America send heavy concentrations of smoke as far as Australia. Factories and fires in Southeast Asia do the same to North America. "With these new observations you clearly see that air pollution is much more than a local problem. It's a global issue," said John Gille, a Terra researcher with the National Center for Atmospheric Research. By tracking CO, a by-product of the burning of fossil fuels or organic matter such as wood, scientists can indirectly track the movements of related pollutants such as nitrogen oxides. CNN

Hydro lake storage

Latest levels are 1915 GWh, 73% of normal (23/6/01). Updates available on:
http://www.m-co.co.nz/h5summary.htm MCo



Green car committee formed in Japan

The Japanese government has established a committee to draw up recommendations for promoting development and use of environmentally friendly vehicles. The committee is expected to concentrate on low-emission vehicles, such as hybrid cars powered by a combination of gasoline engine and electric motor. The move is part of efforts to help ease air pollution in cities and cut emissions of CO_2 and other greenhouse gases. The committee's recommendations will be reported at a meeting of transport ministers from industrial nations in January. In a speech at the panel's first meeting, ministry chief Chikage Ogi said, "The Cabinet of (Prime Minister) Koizumi has decided to replace all state-owned vehicles with low-emission vehicles by the end of fiscal 2004." Japan Times

Big bus success in Christchurch

Christchurch's Orbiter bus service has now carried one million passengers, with patronage doubling since the route's extension in November to complete its circuit of the city. Over 4000 trips are now being made on the service every week day, making it the city's biggest single bus service. In any one week, it is carrying as many passengers as many other services carry in a month. Environment Canterbury Passenger Transport Chairperson, Diana Shand, says the Orbiter's success after just one year shows the benefit of extensive consultation and market research. It can also be attributed to distinctive branding and the wide range of destinations on the route it services. Passengers use the bright green buses to travel to a variety of schools, tertiary institutions, shopping malls, workplaces, recreational complexes, a hospital and a cinema complex. The council is now looking at improving frequencies of the service to provide increased capacity without having to resort to larger vehicles. Sustainable Transport Newsletter

Commuter challenge

On National Bike to Work Day in February, a commuter race was held in Wellington. Three teams (car, bike and bus) of four people

each, raced from Johnsonville, Brooklyn, Oriental Bay and Karori to Civic Square in peak morning traffic. Results showed that biking is the most effective form of commuter travel, with a convincing win over the bus and car teams. Times (in minutes) were:

	Bike	Bus	Car
Johnsonville	20	32	38
Karori	9	19	17
Brooklyn	6	11	9
Oriental Bay	6	11	7
Average	10.2	18.2	17.7

For more information contact Felicity Close, Health Sponsorship Council, e-mail: felicity@healthsponsorship.co.nz

Sustainable Transport Newsletter

(Three of these journeys have substantial downhill sections, so an evening peak race might give a different answer—but then many people are in more of a hurry in the morning EW)

African nations plead for US help on global warming

African environment ministers have scolded the US for spurning the Kyoto Protocol, saying the move left Africa vulnerable in the face of global warming. "Their withdrawal condemns us in the developing world, with the least capacity to adapt, to the dire consequences of climate change," the African Ministerial Conference on the Environment, representing 53 nations, said in a statement. African countries were among the most vulnerable to global warming because of their heavy dependence on agriculture. At the same time, because Africa produced so small a share of greenhouse gases, any reductions in its emissions would have an insignificant impact on warming.

Reuters

Mower Pollution

The air pollution from cutting grass for an hour with a gasoline powered lawn mower is about the same as that from a 150 km car ride, according to a new study from Sweden. The report recommends using catalytic converters on mowers. For full text and graphics visit: http://ens.lycos.com/ens/may2001/2001L-05-31-06.html ENS

Full circle

The US Powerplant and Industrial Fuel Use Act of 1978 required all power plants burning natural gas to switch to another fuel, generally coal. The Government was concerned over the amount of natural gas available at that time and wanted it to be used for residential purposes. It was repealed some 10 years later. Curious how things turn full cycle. Steve Goldthorpe

Japanese CO_2 forecast

The Japanese government predicts a 7% increase in CO_2 emissions from 1990 to 2010, instead of the committed 6% reduction under the Kyoto Protocol. Meeting the target is said to be "totally impossible," but an important reason for the higher figure is using coal to generate electricity because it is cheaper than oil. Newsroom

Minister Warns Electricity Retailers

The Minister of Energy, Pete Hodgson, has warned electricity retail companies to introduce lower fixed charges, or the government will regulate them. Hodgson said moves by Contact, Mercury and On Energy to reduce fixed charges were good news for small electricity consumers, but the reductions must be more widely available. Contact and On Energy have yet to announce lower figures for all their areas. First Electric has announced new tariffs for some areas but they are above the 30 c/day mark. Six other electricity retailers have not yet announced new tariffs.

NZ Govt

A long extension cable?

The Scottish Executive is considering importing electricity from Iceland along a submarine cable as part of plans to combat global warming. Environmental scientists believe a 1000 km undersea cable could be used to import up to 20% of Scotland's energy needs. Scotland on Sunday

A long-term investment

The point was made at the SEF Conference, that investment decisions may drive energy use for thirty years or more. An extreme example is the Elscar pumping engine in the UK, built in the late eighteenth century. The colliery owners used the older and much less efficient Newcomen design, rather than pay royalties to the Watt patentees. The engine ran for some 140 years and then stood by for another 40 years before being stood down for preservation. It's last commercial use was in the 1947 energy crisis. It was never modernised, even to James Watt's best practice of 1769, and its thermal efficiency will have been somewhere around 2 – 3%. EW

Middelgrunden opens

A string of 20 windmills at the entrance of Copenhagen's harbour are a symbol of Denmark's leadership in the pollution-free wind energy sector. The world's largest offshore wind farm, with a capacity of 40 MW—four times more than its nearest rival in Sweden—has started producing energy. Middelgrunden will supply 3% of the Danish capital's electricity consumption. Turbines are 2 MW capacity, with 75 m diameter blades on 65 m towers. Wind turbines produce about 10% of Denmark's electricity. Two bigger offshore wind farms are expected to open in Denmark next year, and more are planned off Sweden and the Netherlands, some producing as much as 160 MW—four times the size of Middelgrunden.

MSNBC

Greenhype

Auckland Regional Council raised a spat in early June, by calling for cleaner diesel fuel. Shell's initial comment was that the ARC needed to, *spell out the likely additional cost to the motoring public (of almost one cent per litre)...* and should also address the *main source of Auckland's air quality woes Auckland's burgeoning traffic congestion problems.*

ARC replied, *The four major oil companies and the NZ Refinery Co say sulphur levels could drop more than half, almost immediately and at minimal cost. The only prerequisite for this is the support of all four major oil companies and while Caltex and BP are right behind the initiative Shell and Mobil are refusing to support it.*

The spat rattled on, with The Greens calling for regulations, and saying that the sulphur could be lowered from 'up to' 3000 ppm to 1000 ppm. BP claimed that they have already reduced sulphur by 80% in Christchurch, since late 2000, and added, *BP's cleaner diesel is made at Marsden Point in a limited batch and shipped to Christchurch,* which doesn't seem to fit the one-refinery line. The Greens found more data: maximum permitted sulphur levels in selected countries (all in ppm) are: Sweden 10; UK, Finland and Denmark 50; USA 500; NZ 3000; Australia 5000 (500 by end 2002). The EU target is 50 by 2005. A low-sulphur tax rebate of around NZc 3 – 4 seems to be widely used. As EnergyWatch went to press, Mobil were the last company holding out. A boycott had been called for, and we were informed that Mobil are in any case the No 1 global warming villain (Greenpeace).

But on 26 April, Mobil launched 'Synergy Diesel,' a new initiative as *part a long-term commitment to high quality fuels that are better for the environment.* National change-over should have been completed by now. We were told that, *In testing, Synergy Diesel was found to reduce black smoke emissions by as much as 78% and particulates by up to 25%.*

An observer notes that there seem to be two routes to reducing the mass of particulate emissions from diesel engines; either the low sulphur route which reduces the mass of SO_2 absorbed onto carbon particles and thereby reduces their weight, or the Mobil route which reduces the number of carbon particles produced in the first place. Obviously a combination of both approaches would be best.

He adds that it is most unfortunate when complicated technical issues get mixed up with political point scoring and competitive marketing strategies between oil companies. This does not help towards finding the best environmental outcomes.

Funny that. EW

Forum Membership

Memberships are for twelve months and include at least four copies of EnergyWatch. Membership rates, including GST, are:

Unwaged/student	$ 22.50
Individual or Library	$ 45.00
Small corporate (less than 50 staff)	$ 250.00
Large corporate (more than 50 staff)	$ 900.00

Overseas rates: No unwaged/student rates, Individual/library rate $NZ 55.00.

Mail the form below, with your payment or order, to Sustainable Energy Forum (Inc), P O Box 11 152, Wellington, New Zealand. A GST receipt or invoice will be sent on demand.

Name: _____

Organisation: _____

Address: _____

_____

_____

Phone: _____ H/W

E-mail: _____

Membership type: _____

Amount enclosed: $ _____