



# Energy Watch

The Journal of the Sustainable Energy Forum Inc

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

ISSN: 1173-5449

Issue 27, December 2002

Published by The Sustainable Energy Forum Incorporated, P O Box 11 152, Wellington

E-mail: [info@sef.org.nz](mailto:info@sef.org.nz)

Editor: Kerry Wood

Web: [www.sef.org.nz](http://www.sef.org.nz)

---

## Governance, sustainability and barrier busting

Electricity governance is developing into a scandal. In articles on pages 2 – 4 we report the summing up of the NZ Energy Conference by Parliamentary Commissioner for the Environment Morgan Williams, and give Molly Melhuish's slant on why the current approach to electricity governance is wrong. On pages 5 – 8 we summarise a paper on what has been learned in the US, and on page 24 we list the organisations accepted, and rejected, for the governance board.

Williams sets the scene, placing energy alongside soil and water as an absolute fundamental, and reminding us of the need to consciously target barriers to change — starting with the spaces between the ears. It looks increasingly likely that major changes will come at us quickly or very quickly, and we need to shock-proof our energy sources.

The Government has now passed the Climate Change Response Bill, but the focus of electricity governance remains, broadly, on building profitability into the old NZED model. Sustainability, as well as abundant scope for energy efficiency and renewable generation, should be pushing us in quite a different direction. As Melhuish puts it, "Expanding conventional supply is no longer the cheapest, the most sustainable or even the least-risk way of providing electricity, but it is the most profitable for generator-retailers." Williams points out that the demand side is scattered across society, which may explain the industry approach, but not the Commerce Commission's acceptance of that approach.

Melhuish identifies four options frozen out by the new rules, with the compliance of the Commerce Commission. The current state of the first of them

is representative of them all. On Ministry of Economic Development figures, break-even costs for new electricity generation are 6.0 c/kWh for gas, 6.2 c/kWh for wind (geothermal is about the same) and 10.0 c/kWh for coal (more for Southland lignite and yes, we did hear lower figures at the conference). Electricity from gas is likely to cost at least an extra 2 c/kWh after Maui closes. Wind energy will be economic by the time the turbines can be built, and their intermittent supply can be absorbed by our hydro resource (think of wind

energy as conserving water behind the dams). Despite this, NZ manufacturers of wind turbines are struggling to raise working capital and gain orders for medium-

sized turbines. Solar photovoltaic electricity is already economic for many off-grid applications, and may well be competitive for net-metered, grid-connected applications in another five years or so — again, around the time Maui gas runs out.

Melhuish identifies four plausible Government objectives in electricity governance: reliable supply; lowest practicable cost to consumers; environmental sustainability; and an appropriate return on investment. Overseas experience suggests that the first three are heavily compromised by the market model chosen by NZ.

William's placing of energy alongside soil and water — as a fundamental — is a useful reminder of what we are trying to achieve, and he reports that the focus seen in his recent visit to Curitiba, on quality of life, education and infrastructure, has achieved spectacular growth. The market model is not the only tool, and certainly not the objective.

We have some major rethinking to do. Soon.

# NZ Energy Conference summary

Morgan Williams  
Parliamentary Commissioner for the Environment

*(An abstracted version of Morgan Williams' summing up at the end of the NZ Energy Conference, 8 October EW)*

Now I've got the hopeless task of actually saying, where to next, and what are some of the things we could be focussing on? I'll just share a few general observations as a starter:

- There seem to be three basic resources that are fundamental to society's security in a sustainability context, and they are worth reflecting on: soils, water, and energy.
- New Zealand has plenty of passion and capability around in many elements of designing our future, and energy is no exception.
- There has been rather too much focus on the supply side, because we have had a few defining events that have tended to shape the debate.
- The supply side energies tend to be with a few players, but the demand side is scattered across society. That is really important to think about because there are a lot of design issues on the demand side too: buildings; transport systems; appliances, the list goes on and on.
- You have to be quite conscious about targeting barriers to change, starting with the spaces between the ears. There are trip wires everywhere, and we don't tend to focus on them. But until you do you can't make the incremental steps.

## Going forward

The first need for going forward is easy to say but hard to do: develop a long term vision and strategy — the big game plan. To do that you have to have good research capacity, in a big systems sense, I think that is something the energy sector of New Zealand desperately needs. The individuals are largely around but it's how you bring them together.

Just across the Tasman, CSIRO has been doing a lot of this type of systems work related to resource bases and linking it to population, which is then linking it to what's going on in the demand side.

They are just completing a very large piece which hasn't been done in that way anywhere in the world — linking three population scenarios to the resource demand impacts across about 37 resource sectors. Very sophisticated linking of resource flows, infrastructure designs, rolling changes in technologies, abilities of the Sydney airshed to carry certain amounts of pollutants with different technology mixes through time, through population, through age dimensions and so on, and linking it into big economic models. We have nothing of that capacity in New Zealand and you cannot get energy futures going until you do.

Recently I went and looked at a Brazilian city. And one of the defining things about the success of that city in growth over 35 years (from half a million to 1.6 million in a region with 2.7 million, so we're talking about reasonably big numbers) was that they'd had an urban planning and research institute. It had been a knowledge powerhouse for the evolution of that city since 1965 and tightly linked in to the infrastructure development of the city. So great capacity is needed there.

## Framework

The second fundamental thing about a long term vision and strategy is to have a framework which keeps it alive — they are not an end in themselves. We can put them together with lots of enthusiasm, but we're talking about keeping something alive and evolving it for 20, 30, 40 years. So what we need is a model that will survive electoral cycles. We have a desperately short cycle here — three years — and there are vested interests in the electricity sector and the energy sector as a whole. How do we deal with that?

## Paradigm breakout

The second major area that seems to be coming through is how do we break out of existing paradigms? How do we get out of business-as-usual which we're all worrying about at the moment. If you look back through history, what tends to shift us is, and again there's been some very good work done in relation to how we absorb gene technologies into societal futures around the world, and it tends to be shocks. It tends to be catalytic events that jolt us and take us off on another pathway.

I think that we've got to look at our future of energy here as shock-proofing it. Think about what the tipping points are going to be. There's enormous instability sitting there in terms of international security of energy supply and where the Middle East is going, and the relationship to Islam. I don't think we can begin to understand how unravelling that could be.

So think about lessons from history in terms of tipping points and put together ways of breaking through, because we must break through the notion that this is a sort of an incremental change. And I think we've got to do it much quicker than we might think. Because I think the rate of change here will catch up with us very quickly.

### Public/private roles

A third point is that understanding the role of markets and governments in allocating resources such as water, electricity, fossil fuels and so on, and investing in long term public good infrastructures like roads and dams, needs some tough thinking. Markets are looking to be very efficient at allocating resource flows, the rapid movement of materials, energies, goods, services through economies. But they're not too good at assigning the original price

to a resource — witness Maui. And they're not too good at dealing with infrastructures with design lives that go 20 to 100 years.

We have to be very conscious of where markets and market mechanisms work really well — because they certainly do in some places — and where don't they work well. I think that is the tension we are seeing in the evolution of our electricity industry and is why we have a governance board and so on. We have been muddling up where markets do things well and where they don't do things well, and I am not sure we have separated that yet.

I suspect that we need to look at the sophistication of public-private partnerships. In public transport, the Brazilian example is very, very illustrative of what can be done with public-private partnership in the delivery of the city's public transport. Its operational side is not subsidised, in a city with the same car population as an average European city — 2.3 persons per car. It's a very sophisticated partnership, and they're making the passenger fares pay for it. So I suspect we actually could learn about some of these other models around the world.

And the last point is, which has been raised and I'd really underline it, the sophistication of our energy consumers — access to information, power to influence choices. In other words it's not simply about educating the consumer, it's about raising the whole understanding about where energy fits into quality of life, because the end gain that we're all going for is actually sustaining and raising quality of life. Everything else is an element of that. Go back to the Brazilian city. We kept asking the business leaders there, and the civic leaders

"Give us three points that have allowed this city to go ahead of others in a tough continent." They said "Focus on quality of life, focus on education and focus on infrastructure, and out of that economic opportunity grows." And the city has grown at about 6.5-7% for about eight years.

So I think getting greater understanding across society as to where energy fits and what it adds in qualities of life — the broader aspect of education — is important as it is with water. I mean, we've got some real tangles with water here in New Zealand in terms of how we value it, and there tends to be some of those same things in energy. We tend to undervalue it.

So that's enough from me. All I would say to you is that I and my team, Doug Clover who's heading the work on electricity assessment, look forward to

working with you in what is a tough but exciting and a patch where there's extraordinary opportunity for New Zealand. I really, really sincerely believe that, and I think we've got a lot of the

capabilities to do it. Thank you for the opportunity to contribute.

## SEF and registration for the Electricity Governance Board

Molly Melhuish

With the Commerce Commission's recent approval of self-regulation governance arrangements for electricity, the Electricity Governance Committee invited the Sustainable Energy Forum to apply for voting rights in a referendum of interested parties on whether to approve or reject the self-regulation Rulebook.

The invitation incorrectly defined the Forum as a consumer group. In response, the Forum asked to be given voting rights as a supplier of energy services, rather than as a consumer representative. The letter was published in the October 2002 edition of EnergyWatch. It complained about the voter registration process, gave a thumbnail sketch of our interests, confirmed our wish to be an active participant, and asked that we be considered as suppliers not consumers.

A reply was received on 1 November, turning down the application. This did not surprise us because the governance Rulebook is a private

multi-lateral contract between the wholesale market participants – generator-retailers, Transpower, lines companies and major electricity users. The contract will be administered for their mutual self-interest, which means the incumbent suppliers will match demand by increasing generating and transmission capacities as needed, in just the way the NZED used to do. This is no longer the cheapest, the most sustainable or even the least-risk way of supplying consumers' needs, but it is the most profitable for generator-retailers.

Small-scale energy businesses which could compete with the generator-retailers are not market participants and have been excluded from electricity governance consultation. SEF and a fledgling industry have been cast as supplicants, not stakeholders, and the result is that important options have been left out in the cold:

- Renewable energy sources, and especially new renewables: wind and eventually photovoltaic: There is nothing to stop the big players from using these sources, but little to encourage them either — and in a country with such an abundant wind resource their performance has been abysmal. Their focus is on profitability rather than broader issues. New players are effectively shut out by a combination of 'natural' barriers, such as the relatively high cost of capital and resource consents, and 'rules' barriers such as higher grid costs on a kilowatt hour basis.
- Consumer participation in the electricity market (demand response): Consumers have participated for many years at a very low level, by getting a cheaper rate for having some loads under ripple control. Today the technology exists for much more effective participation, either through automatic control of appliances or by active response to high spot prices. For larger customers the hourly charge might be notified in advance by pager or e-mail. Domestic consumers would be most likely to participate in emergency load response, and could be paid for reducing their demand.
- Negawatts: consumer efficiency gains reduce the consumer's need to buy power, as well as the industry's need for new generation and transmission capacity. Again, there is nothing to stop consumers from taking a negawatt approach. The problem is that by making savings they are effectively subsidising the generator-retailers, by reducing the need to expand generation and transmission capacity. If the generator-retailers were to pay consumers to make negawatt savings, those savings would be made on a greater scale. Overall costs would fall and supply security and sustainability would improve. The payments could be quite

large, because negawatt measures usually reduce peak capacity, and thus the need for very expensive peak-only generation.

- Distributed generation, which comprises a wide variety of generator sizes and types, spread around the distribution system. This would bring gains to all consumers in two ways: a reduced need for distribution system capacity, in the same way as negawatts, and increased diversity in the system. The result would be much lower risk of failure, whether the cause was a dry year (there is no reason to expect that a dry year would also be a windless year), a generator failure or a power pole knocked over. Generation can be installed at the premises of large industrial or even commercial consumers, giving them extra reliability and protection from voltage sags and surges — and these generators can also be called upon to improve overall system reliability.

Why are these obvious benefits not captured by the market? Because generator-retailers make more money by selling more electricity. This is a direct result of New Zealand's corporatisation, imposing commercial goals on a public utility. There is every incentive for them to suppress energy efficiency or generation on the customer side of the meter, and plenty of scope for doing so.

I suspect the outcomes of greatest priority to Government are reliable supply; lowest practicable cost to consumers; environmental sustainability; and an appropriate return on investment. Overseas experience, particularly in the US, suggests that the first three of these outcomes are greatly compromised by the fully competitive market model chosen by New Zealand. Our electricity market has failed to learn from earlier deregulation in California and the UK, and is in grave danger of repeating those mistakes, failing to meet Government objectives and becoming very unpopular.

Clearly, more work is needed. A required outcome should be a progressive and substantial shift of investment away from the conventional generation and transmission of the NZED model, and towards energy efficiency, demand-side management (especially 'peak-load response') and small-scale renewable energy.

It is unwise to assume that a market model without independent regulation can best meet the needs of New Zealand retail customers, much less sustainability of energy supply. Markets have their place but unregulated markets can only meet the objectives of dominant industry players. The question is not whether, but what, regulation will be required.

# Efficient reliability

## The critical role of demand-side resources in power systems and markets

Richard Cowart  
The National Association of Regulatory  
Utility Commissioners  
Regulatory Assistance Project, June, 2001

(An edited version of the summary of a report on electricity markets in the US. The full report (86 pages) is available on: [www.naruc.org/5.7g.pdf](http://www.naruc.org/5.7g.pdf) EW)

The reliability of electric supply, long taken for granted, is now a matter of increasing concern. Economic growth, heat waves and cold snaps are driving demand to new peaks and taxing an already-constrained electricity grid. Policymakers are considering steps to assure system reliability during the transition to competitive markets, where traditional utility rules of price restraint and mutual aid are under siege. The California power crisis of 2000 – 2001 commands national attention, but reliability problems in various forms are arising in almost every region of the country.

As the recently-released National Energy Policy states, “A fundamental imbalance between supply and demand defines our nation’s energy crisis.” New investments in generation and transmission are obvious reactions to demand growth, but we must also consider the very real benefits from customer resources: efficiency, load management, customer-owned generation, and response to market prices.

The nation’s utility regulators have also recognised the importance of demand-side resources for reliability. They have urged state regulators, power pools, and Congress to, *encourage and support programs for cost-effective energy efficiency and load management investments as both a short-term and long-term strategy for enhancing the reliability of the nation’s electric system...*

This report explores restoring the demand-supply balance in electricity. It concludes that as much as 40 – 50% of expected load growth over the next 20 years can be met through end-use efficiency and load management, cost-effectively and reliably. It sets out a menu of regulatory and policy solutions to achieve that potential.

### The benefits of demand-side resources

A narrow focus on fixing weak links in supply and delivery will ultimately be less resilient and more expensive than a strategy that also targets demand-side investments. There are powerful

reasons why reliability policy should also focus on demand-side solutions:

- **Avoiding new weak links**

By accepting load growth and demand spikes as givens, and attempting to meet them through an exclusive wires and turbines policy, reliability managers can fix each ‘weak link’ in the supply chain as it appears. But once one upgrade is completed, the next weak link will then emerge. For example, when load growth is met through increased generation, it is likely that transmission links and gas pipeline capacity will be more stressed in peak periods. Unless further upgrades are made, degradation in transmission and fuel supply reliability may offset the gain due to the new generation. Demand-side resources, on the other hand, can lighten the load *at the end* of the supply / delivery chain, and thus simultaneously enhance the reliability of each link in the chain, from generation and fuel supply through to the local distribution network.

- **Matching needs and resources**

Energy efficiency gains limit the system load curve during critical hours. For example, in most regions, air-conditioning load accounts for a major portion of daily system load swings on peak days. Improving air-conditioning efficiency automatically generates savings that lighten the system load during the most critical periods.

- **Economic benefits**

Demand side measures can also lower the nation’s electric bill. Many efficiency measures are cheaper than the costs of generation, delivery, and reserves that they displace. Persistent high demand and high peak loads are principal drivers of the price spikes and growing market power exercised by generators. Lightening the load can moderate generator market power and lower wholesale prices.

- **Environmental benefits**

Demand-side measures also lower the environmental footprint of the electricity industry. Load management and load response programs lessen the need for new power plants and transmission lines, while efficiency measures lower total fuel consumption and the related costs of air pollution, fuel extraction, and waste disposal. By lowering the risk of future environmental problems, demand-side measures also improve the long-term system reliability.

### How did we get here? Load up, efficiency down

Load growth in the US, and particularly peak load growth, has put great strains on our power system. Between 1994 and 1999, non-coincident summer peak load in the US increased by 95 GW. The Bush

Administration's National Energy Policy now estimates that electricity demand will increase 45% by 2020, requiring the addition of 393 GW of new generating capacity; roughly nine times California's recent peak load.

Meanwhile the contribution of utility-sponsored demand-side management programs (DSM) has been in decline. In the early 1990's, utility DSM programs saved a total of 29 GW at a cost of about 3 US¢/kWh. The Energy Policy Act and the national move to retail electric competition has cut back utility-sponsored DSM programs sharply: spending has halved. Urgent efforts to restore those programs are now underway in some states, with attendant logistical, marketing, and cost problems of off-again, on-again operations.

### **'Wires and turbines' reliability — some practical considerations**

Significant new investment in generation and transmission is justified on both economic and reliability grounds. Economic growth, changes in settlement patterns, and the emergence of superior technologies all support a conclusion that investment in generation and transmission is needed. However, a program that overlooks cost-effective efficiency and load management resources will be more expensive and less reliable than a program that is more balanced and more flexible. Such a supply-side strategy will require a very large commitment of investment capital in generating plants, gas pipelines, and electric transmission and distribution lines. It will also pose significant new challenges for natural gas supply, and place upward pressure on gas prices. Electricity generation and transmission facilities also have substantial environmental costs.

### **The demand-side reservoir is very large**

Over the past two decades, there have been numerous studies, experiments, and programs aimed at improving the efficiency of electricity use in the US. The central lesson is that very large reservoirs of low-cost energy and capacity resources on the customer side of the electric meter are still untapped. A large fraction — as much as half — of the nation's anticipated load growth over the next decade could be displaced through energy efficiency, pricing reforms, and load management programs.

- In 1984 – 94, utility-sponsored efficiency and load management programs avoided a total of 29 GW at a utility cost of less than \$ 0.03 /kWh [6 ¢/kWh in NZ]. The DoE concluded in 1997

that cost-effective energy efficiency could displace 15% of total electrical demand by 2010.

- Customer market studies and load-response pilot programs demonstrate that the potential for load management is also substantial. Approximately 15 – 17% of large-customer total load could be managed in response to short-term price signals. A relatively modest load response would lower peak demand, improve reliability, and lower power costs across regional power markets.

### **Historic market barriers and new market flaws block demand-side responses**

Cost-effective energy efficiency investments are often untapped. Even in the fluid and price-responsive electricity markets envisioned by restructuring advocates, most of the well known and widely documented barriers to efficiency investments remain. Moreover, reduced resource planning and new market rules have created new impediments to market-based efficiency and load management.

In a competitive market, generators have no financial incentive to promote either efficiency or load management, and they profit handsomely from high peak prices. Under the rate designs commonly in use, wires companies profit from increased throughput, and find their profits harmed by energy efficiency programs.

Market advocates sometimes assume that demand-side responses can be 'left to the market,' but current market structures actually block price signals from reaching service providers. Providers, load-serving entities and end-users do not see the real value that demand-side resources can provide to the market and the grid. US electricity markets are more expensive, more volatile and less reliable than they should be.

### **Tapping the demand-side reservoir: a solution menu for decision-makers**

There is nearly twenty years' experience with utility-sponsored energy efficiency programs, leading to the central conclusion of this report: Cost-effective efficiency and load management investments could significantly improve the reliability of the nation's electric system, and make markets more competitive and more efficient, while lowering the economic and environmental costs of service. However, there is no single mechanism for capturing all those benefits. The challenge is to examine each market component, and each important market or regulatory rule with

the following questions in mind:

Could the function of this market or the purpose of this rule be served at lower cost and/or lower risk through demand-side resources?

And if so, how can we organise this market or structure this rule to ensure that high-reliability, low-cost solutions are in fact developed?

There are three major venues for discovering and deploying cost-effective efficiency resources:

### A Wholesale market structures

Wholesale markets should be designed to invite demand-side price responses to bid against supply, and should permit demand-side resources to compete with transmission and generation investments to meet system needs. This report sets out four policy reforms in this area:

- Demand-side bidding. It is essential to open the trading floor to the demand side, and reveal the slope of the demand curve. Markets will clear at lower quantities and lower prices — especially in peak periods — when this curve is exposed.
- Reforming load profiles used by wholesale markets and wires companies, to assign load responsibility among load-serving entities. Service providers would then have an incentive to seek out customers who have less expensive consumption patterns, and to invest in equipment and rate plans that would move customers to more advantageous load profiles.
- Multi-settlement markets to recognise the differences between projected market conditions and real-time events. Bidding rules should permit market participants to plan consumption and generation decisions in advance, but they should also permit additional adjustments to those plans in response to real-time conditions.
- ‘Dispatchable load.’ Controllable load can provide most balancing services just as well as controllable generation. Wholesale markets for ancillary services should permit demand-side resources to bid their services on a technology-neutral basis in ancillary service markets.
- Efficient reliability levels. Proposed generation and transmission investments should be tested against demand-side and distributed resource options to see whether they are the lowest-cost,

Cost-effective efficiency and load management investments could significantly improve the reliability of the nation’s electric system, and make markets more competitive and more efficient, while lowering the economic and environmental costs of service.

Could the function of this market or the purpose of this rule be served at lower cost and/or lower risk through demand-side resources?

And if so, how can we organise this market or structure this rule to ensure that high-reliability, low-cost solutions are in fact developed?

reasonably-available means to correct a reliability problem.

### B Rates and rules for wires companies

- Transmission Congestion Pricing: Transmission constraints impose significant costs on electric systems, but those costs are often hidden in averaged rates. Locational pricing can reveal the cost of congestion and thus the value of demand management and distributed resources to enhance reliability in constrained areas.
- Retail rate design: Rate design is still a critical function of regulation — almost all electricity is delivered on monopoly wires systems, and the vast majority of energy sales are still made at regulated rates by regulated franchises or default service providers. Administrative and legislative rate designs for power prices and wires services should be re-examined for their effects on consumption, peak demand, and reliability. Retail rate caps should be modified to better align rates and power costs, and to encourage customers to better manage their loads. Wires company rates should not be based on per-unit price caps, which promote throughput and impair reliability, but on performance-based, per-customer revenue caps.

### C Promoting end-use efficiency

Broad-based energy efficiency measures provide multiple reliability benefits. They can reduce load, fuel use, equipment maintenance, and environmental impacts throughout the system, and have a very valuable role to play in lowering power market clearing prices. The savings resulting from energy efficiency are obviously very

high at peak, but they are also surprisingly high at other times. The ‘public’ benefits of energy efficiency investments to customers in a market may substantially exceed the private benefits of efficiency to those who

install efficiency measures. Mechanisms for delivering broad-based efficiency measures include:

- System benefit funds: Broad-based wires charges can use small, non-bypassable charges, which are competitively neutral and provide adequate funding for programs to serve all customer classes.
- The Energy Efficiency Utility: A utility is awarded a franchise to deliver efficiency services

to customers across a state or region. The first such utility was chartered by the Vermont Public Service Board, supported by a wires charge in each franchise territory in which it delivers services.

- System benefit charges at the power pool level: Power pools with authority to impose tariffs for supply-side investments should also have authority to support cost-effective demand-side programs on a regional basis.
- Complementary policies for energy efficiency: Building codes, appliance and equipment standards, and financial policies are all important tools to advance energy efficiency. Higher air conditioning standards alone could save over 40 GW over the next two decades. Better building codes, expansion of the Energy Star labelling program, and new tax and finance mechanisms would add measurably to a more reliable electric system.

### Conclusion

Blackouts and price spikes are the result of public and private choices. Outages and price spikes are not caused by extreme events, they are the consequence of policy decisions. Energy efficiency investments can be viewed as a low-cost means of 'peak-proofing' the system, keeping the grid intact during challenging events. The means of providing this reliability are well within the grasp of utilities, governments, system operators and customers.

### Roof-top solar project keeps growing

One of the world's largest roof-mounted PV plants is currently under construction on the roof of the new Munich Trade Fair Centre. Once completed, an additional 1 GWh of solar energy will be fed into the main supply of Munich's utilities company, the Stadtwerke München. Some 7500 solar modules from Shell Solar are being installed on an area of 63 000 m<sup>2</sup>, spread over the six southern halls of the trade fair centre, providing a nominal peak output of 1.06 MW.

Back in 1997, the first 1 MW plant on the six northern hall roofs of the new Munich trade fair centre began feeding current into the network, and the output is now being doubled.

Solar Access 2002/11/27

## CoP-8 in New Delhi

October 24 – November 1

UNFCCC 2002/11/1

Ministers and senior officials from some 170 countries have adopted a Delhi Ministerial Declaration on climate change and sustainable development.

It stresses that in addition to mitigation, high priority must be given to adapting to the adverse impacts of climate change. The Declaration reiterates the importance of carrying out all existing international commitments under the United Nations Framework Convention on Climate Change. It also calls for early ratification of the Kyoto Protocol.

The Declaration further promotes less polluting energy and other innovative technologies. It urges governments to promote technological advances through research and development, to substantially increase renewable energy resources and to promote the transfer of technologies that can help reduce greenhouse gas emissions in major economic sectors including through public sector and market-oriented approaches.

"The New Delhi conference has achieved its main goals of further strengthening international collaboration on climate change while meeting the requirements of sustainable development," said Joke [*pronounced Yoka*] Waller-Hunter, the Convention's Executive Secretary. "Now the spotlight must focus on action to accelerate the transition to climate-friendly economies.

Industrialised countries have only 10 years to meet their Kyoto emissions targets — and the evidence today is that most of them still have a great deal of work to do to reduce their greenhouse gases," she said.

One of the conference's biggest accomplishments was making the Protocol's Clean Development Mechanism fully operational. The CDM will channel private-sector investment into emissions reduction projects in developing countries. In this way, it will promote sustainable development in these countries while offering industrialised governments credits against their Kyoto targets. The first projects are now likely to be approved during the first quarter of 2003.

The conference also concluded three years of work on the procedures for reporting and reviewing emissions data from developed countries. The result is an unprecedented international system for ensuring that national data on greenhouse gas emissions are comparable and credible. This is vital for safeguarding the integrity of the Kyoto



agreement and promoting compliance with its emissions targets. The Parties improved guidelines for reporting by non-Annex I Parties [*developing countries* — EW] of the Convention. These guidelines should substantially improve the quality of reports and be a means of assisting non-Annex I Parties in identifying important needs under the Convention.

Other conference decisions will advance the implementation of the Climate Change Convention. The meeting is providing guidance to the Global Environment Facility on the priorities for two new funds — the Special Climate Change Fund and a least developed country fund — that were established last year. These funds will help developing countries adapt to climate change impacts, obtain clean technologies and limit growth in their emissions.

Delegates also agreed on improved guidelines for national communications from developing countries. Governments issue these communications on a regular basis in order to share information with others about their climate change policies and activities.

Another conference decision established the New Delhi work programme on promoting public awareness, education and training.

The Kyoto Protocol will enter into force 90 days after being ratified by 55 governments, including developed countries representing at least 55% of that group's 1990 carbon dioxide emissions. Ninety six Parties have ratified, including developed countries accounting for 37.4% of CO<sub>2</sub> emissions. Poland and the Republic of Korea announced their ratification at the Delhi conference. The Russian Federation and several other countries are expected to ratify in the near future, pushing this percentage over the threshold.

CoP-9 will be hosted by the Government of Italy from 1 – 12 December 2003.

#### **Additional points from the Pew Centre include:**

- With most of the issues relating to implementation rules for the Kyoto Protocol resolved at CoP-7 in Marrakech — but the protocol not yet in force — the formal agenda at CoP-8 was comprised mostly of second-order and technical issues. However, beyond the formal agenda — in political statements and in hallway discussions — CoP-8 also saw the emergence of a vigorous debate over next steps in the development of the climate change regime.
- The US, while reiterating its opposition to the Kyoto Protocol, was deeply engaged in the

negotiations as a party to the Framework Convention and as a member of the Umbrella Group (developed countries outside the European Union and Eastern Europe). Having repeatedly cited the lack of developing country commitments as a primary basis for its rejection of Kyoto, the US struck a far different tone in Delhi, declaring that it would be 'unfair' to insist that developing countries adopt greenhouse gas targets.

- An overriding emphasis for many parties was the importance of bringing Kyoto into force as quickly as possible. Its entry into force now hinges on ratification by Russia. Although Russian representatives at CoP-8 offered conflicting signals on the likely timing of a ratification decision, there remained optimism that Russia would ratify sometime in 2003.
- As adopted, the Delhi Declaration makes no reference to future steps to further elaborate the climate regime. It largely underscores principles established in the Framework Convention and themes adopted at the World Summit on Sustainable Development earlier this year in Johannesburg.
- While the Declaration was adopted by consensus, in statements in the closing plenary the European Union, Japan and Canada expressed disappointment that it did not offer a clearer long-term vision. The EU said it would submit its own statement for the record. Developing countries and the United States expressed strong support for the Declaration.
- The looming issue of future commitments heavily shaped the political dynamic of CoP-8 and dominated much of the political dialogue. Developing countries continued to publicly oppose any suggestion that they take on some form of emission target. Among developed countries, there was a striking reversal of roles by the EU and the US.
- Parties completed a set of detailed guidelines on how developed countries must account for the several types of emission units established by the Protocol and their transfers of these units through Kyoto's flexibility mechanisms — emissions trading, joint implementation, and the CDM. The guidelines require tracking and reporting of emission units and transfers in a uniform format to allow linkage of national emission registries. They also establish procedures for expert review of registries to assess compliance with the Protocol, including the requirement that parties keep a portion of their emission units off the market in a 'commitment period reserve' to ensure they do not sell units needed to meet their targets.

Parties found out of compliance with the reporting requirements can be deemed ineligible to participate in the trading mechanisms.

- Funding to assist developing countries in meeting their Convention commitments and in coping with climate change impacts continued to be a divisive issue.
- The Kyoto Protocol requires developed countries to pursue Policies and Measures (PAMs) to reduce greenhouse gas emissions and enhance sinks, but allows each country flexibility to devise its own set of measures. Since Kyoto, the EU has pushed for development of methodologies to assess the effect of PAMs on greenhouse gas emissions and to elaborate 'best practices.' At CoP-8, the issue was derailed by Saudi Arabia's insistence that assessments of PAMs focus not only on their effectiveness in reducing emissions, but also their adverse economic effects on developing countries (and, in particular, oil-producing states).

### **SEF Conference 2003**

Outline planning has begun for the next SEF conference, which is tentatively at Unitec in Auckland, on Saturday and Sunday 5 – 6 July 2003. The proposed title is:

#### **Setting targets for sustainable energy in NZ**

Two main themes are proposed:

- Renewables and uptake rates:  
Wind, PV, Biomass, and perhaps small hydro and Geothermal
- Energy efficiency and conservation:  
Domestic, Industrial, Commercial, Transport etc.

See the SEF website for up-to-date details as planning progresses: [www.sef.org.nz](http://www.sef.org.nz)

## **Kyoto plus will fail to tackle climate change**

### **More on contraction and convergence**

Edie 2002/11/1

Climate change abatement will not be achieved without fixed maximum atmospheric levels of greenhouse gases, a global emissions budget shared between countries and timetabled reduction targets, according to a new report.

The New Economics Foundation's report, *Fresh Air: Options for the Future Architecture of International Climate Change Policy*, examines eight proposals for structuring the next stages of climate change negotiations, including the Kyoto approach. All but one is predicted to fail.

The report says that fixed global concentration targets are needed to stabilise greenhouse gases. This entails the agreement of a global emissions budget to be shared between countries. For this to succeed, argues the report, a framework for convergence — where emissions are eventually allocated per capita — will be required to ensure developing countries agree to participate. Uncertainty over what is a 'safe' concentration in the atmosphere is no reason not to set targets, argues the report: an initial target could be modified in the light of new findings.

The concept of convergence should be used to allocate emissions allowances between countries. Phased targets for per capita output would ensure emissions were distributed fairly amongst the world's population. The report urges a timetabled framework, with convergence fixed for an agreed date.

Using criteria set by the Foundation, all but one of eight proposals on how to manage climate change will fail. Kyoto Plus proposals are hampered by a lack of urgency and concentration targets, and also lack an effective framework to bring in developing countries. Other proposals, such as Triptych, Price Cap and the World Resources Institute's Carbon Intensity proposal, also fall short.

The Global Commons Institute's Contraction and Convergence is the only proposal to match the Foundation's criteria. GCI calls for fixed atmospheric concentrations, equitable allocations as requested by developing countries, and the potential for immediate implementation of a full-term framework. It also meets US criteria for participation, says the report, and its trading provisions would accelerate the development of zero emissions technologies.

# NZ will ratify Kyoto

Parliament passed the Climate Change Response Bill by a narrow margin on 13 November. It was opposed by coalition partner United Future and the Progressive Coalition abstained, and Labour relied on Green Party support.

## Climate Change Response Bill Third Reading, 2002/11/13

Jeanette Fitzsimons (Co-Leader - Green Party)

Despite all the faults of the Kyoto Protocol, despite all the faults of the Government's climate change package, and despite the huge technical complexities of this bill, the Green Party supports it and is glad to see it pass today. We do not agree that trading between carbon sources and sinks is environmental integrity. We do not believe that locking up carbon for a short time in a tree can offset the release of fossil carbon into the atmosphere, where it will be climatically active for hundreds of years. However, those things were agreed to at Kyoto, and if we want to have a binding international agreement we can build on in the future, rather than go back to square one, we have to accept them.

Trading in assigned amount units will be hugely complex, and the transaction costs will be very high. It is Governments that hold targets, obligations, and assigned amounts, and it is private companies that produce emissions and plant forests. The entities that trade may not be the entities whose behaviour produces the emissions or the credits. That is the reason for much of the complexity of this bill and for the Government decision that, initially at least, New Zealand's sinks will be traded by the Government.

However, the Kyoto Protocol is only for 2008 – 12, while the framework convention endures. The second commitment period will have its own protocol with different rules, and only by ratifying Kyoto can we get to that later stage and try to improve on our early attempts. The Government policy response is flawed, too. There is no credible economic signal until 2007, that we will be able to save money by saving carbon.

Big emitters will be let off the eventual carbon tax if they commit to binding negotiated agreements and projects, and they will be funded by the taxpayer to undertake those projects. If I buy a more fuel-efficient car, like those we saw on the forecourt in the economy rally today, and halve my fuel consumption, I will not be let off the

carbon tax. I will still have to pay it. We have no evidence yet that negotiated agreements will require industry to make its full share of the post-1990 reductions required of the whole economy. If those agreements do, then they are an acceptable tool in a world in which two of our trading competitors have not ratified the treaty. I know the power of the big business lobby on Governments, and I am not holding my breath.

We support the policy package and the bill because they enable us to get started on the process of working internationally to reduce greenhouse gases. The Greens are glad to see the select committee changes that protect democratic rights by constraining search and seizure provisions. My colleague Keith Locke worked very hard for those at the select committee, and the bill is improved as a result. Climate change challenges our industrial society because energy use goes to the heart of our production systems. I have been frustrated, for the 25 years that I have worked in the field of energy, that there is still a widespread assumption that economic growth requires energy growth of the same degree.

It is fitting to close with references to this week's visit by Amory Lovins, the international guru of energy efficiency, who has done more than any other individual over the last 25 years to debunk the myth that economic growth must have an equivalent growth in energy. Let me give two home-grown examples. Two New Zealand companies recently saved more than half their total energy use for far less than the cost of paying for the energy that they had saved. Auckland University reduced by more than half its CO<sub>2</sub> emissions, from 1 t/student year to 0.4 t/student year, and there is still a lot more that it can do cost-effectively. The Warehouse, 5 years ago, used the New Zealand average for its type of building of 200 kWh/m<sup>2</sup> yr. It now uses less than 100, and all of those changes were made at a profit.

Opportunities to reduce emissions and to make money doing it are huge. We would be irresponsibly neglecting our economic opportunities not to take them. Signing and ratifying the Kyoto Protocol will not in itself, of course, reduce any emissions, but if we want international action where countries work together to reduce their emissions and to protect their forests, we have to have an international instrument with binding effect. This is the only one on the table. Therefore, we must support it despite its faults, and move forward and hope for better conditions for the period 2013 –18.

# Renewable Energy, Energy Efficiency and the RMA

*(SEF's November 15 submission to Ministry for the Environment on RMA amendments. It has been slightly shortened. EW)*

1 The Sustainable Energy Forum (SEF) has the objective of, "facilitating the use of energy for economic, environmental and social sustainability." The forum has about 100 members, including academics, business and professional people, and corporate members.

2 This submission has been developed in consultation with the SEF committee and other members who have expressed an interest.

## Objectives

3 The objective of encouraging renewable energy and energy efficiency is ultimately to avoid climate change, but this is too remote from any individual hearing under the RMA. We note that the recent Stratford decision got lost here, and factual errors by both proponents and (despite a correction in evidence) the court, only emphasise the remoteness: the effect on world-wide emissions was understated by two orders of magnitude. The proponents argued that the CCGT (Combined Cycle Gas Turbine) emissions could not be separated from the effects of other emission sources: scientists could never trace climate change effects to any particular source. This argument was accepted by the court. The result is that any single source is now acceptable, no matter how large, simply because its emissions will mix with emissions from other sources. The proposed wording of Section 6, requiring consideration of, "the effects of climate change" as an issue of national significance, will do nothing to overcome this problem.

4 The suggested solution is to adopt a more immediate target, and to require that the issue of national significance be, "minimising emissions of greenhouse gases." This is not the ultimate objective, but it is a necessary step. Achieving it will contribute to the ultimate objective, as well as to the Government's Kyoto Protocol targets. With New Zealand's ratification of the protocol now certain, minimising greenhouse gas emissions is a perfectly reasonable issue of national significance. The advantage of this approach in RMA hearings will be bypassing the whole science and politics of

climate change, with all their uncertainties. The issue becomes simply, "does this project minimise emissions of greenhouse gases?" That leaves open the balancing of other objectives, but the intention of the RMA is to allow the striking of a balance between competing objectives, so striking a balance can be left to RMA processes.

5 We note that the RMA tends to favour the status quo. This is generally a wise approach to resources, but in the particular case of renewables the status quo — assuming that the atmosphere is an infinite sink — is acting against the environment, and a new balance is needed.

## National Policy Statement

6 A National Policy Statement is our strong preference to ensure that Renewable Energy and Energy Efficiency are given adequate weight under the RMA. As the issues paper points out, policy statements were the intended mechanism for giving weight to issues of national importance. The discussion paper says it all:

*An NPS provides an opportunity to give legal weight to appropriate and accepted targets for renewable energy and energy efficiency and also to issues in practice.*

## Section 6 Amendment

7 An alternative option in the issues paper is to amend Section 6 of the RMA, to include renewable energy sources and energy efficiency as matters of national importance. We see this as less satisfactory than a National Policy Statement. However, amendment of Section 6 does have the advantage of rapid implementation. This suggests that Section 6 could be used to reinforce a National Policy Statement in either of two ways: as a temporary measure until a policy statement can be developed ("In the absence of any National Policy Statement on..."), or as a permanent complementary feature of the act.

## NEECS

8 We note the proposal by the NZ Photovoltaic Association for a direct legislative bridge between the RMA and the National Energy Efficiency and Conservation Strategy (NEECS). We see this as a significant step forwards, but without being able to comment on the legal mechanisms involved.

9 Another weak area of the RMA is its inability to deal with incremental effects, and especially growth in emissions from road traffic. A bridge between the RMA and NEECS should be helpful here, although we note that this area is being handled by the Ministry of Transport rather than MfE.

# Study quantifies public transport benefits

Lyndsey Layton, Washington Post 2002/7/16

The fastest and most effective way to reduce air pollution and dependence on foreign oil is to get more people out of cars and onto trains or buses, according to a new study released today by the transit industry. The study, written by economists from the Brookings Institution and American Enterprise Institute and funded by the American Public Transportation Association, is the first scientific analysis that compares mass transit with private vehicles in terms of the fuel they burn and the pollution they spew.

"Everybody's got an intuition that public transit uses less energy and produces less pollution than private vehicles," said Robert J Shapiro, an economist and fellow at Brookings. "I don't know of any previous study that has actually quantified it. The environmental advantages are really very striking because they're so great." For every passenger mile travelled, public transportation uses about half the fuel of private automobiles, sport-utility vehicles and light trucks, the study found. Private vehicles emit about 95 % more CO<sub>2</sub>, 92% more volatile organic compounds and about twice as much CO<sub>2</sub> and NO<sub>x</sub> as public vehicles for every passenger mile travelled, it said.

Those conclusions have particular significance for Washington, one of 16 major cities in violation of federal clean air standards. The region produces too much nitrogen oxide, which mixes with sunlight to produce unhealthy levels of ground-level ozone.

Local leaders must find ways to cut pollution or the region risks losing millions of dollars in federal transportation funding. The study's authors say that if people in the Washington region used transit for 7% of their daily trips, it would make a significant difference in air quality and help the region meet federal standards.

Residents in the Washington region now use transit for about 4.5% of all daily trips, a rate four times the national average, according to the Metropolitan Washington Council of Governments. "I'm perfectly willing to accept that if you can make those changes, you'd get substantial impact on energy consumption and emissions," said Ronald F Kirby, chief transportation planner for the council. "The question is, how do you make that happen?" Transportation association President William

Millar said the answer is more public investment in transit and land-use policies that connect jobs and homes to transit. "If it's convenient and you make transit available, people will use it." The association will use the study as it lobbies for more transit funding when Congress reauthorises the country's transportation spending plan next year, Millar said.

Highway lobbyists dismissed the study as fanciful, saying that mass transit has limited appeal for most people. "If everyone had wings, we wouldn't need roads or mass transit," said Bob Chase, of the Northern Virginia Transportation Alliance. "The same is true if everyone telecommuted or was placed under house arrest. . . . I don't think it's realistic to think that is the key to solving the air quality problem in this area. It's not convenient, not viable for most people." And if people suddenly opted to forgo their automobiles and start riding transit, local systems couldn't handle the load, said Lon Anderson, of the American Automobile Association. "Right now, Metro is having to grapple with how to handle the crowds they have," he said. "They've got too many people in too few cars. If we suddenly had tens of thousands of additional people decide they want to take Metro tomorrow morning, we'd be in a pickle. These are great things to say. The reality is, we couldn't do them anyway."

*(The claim that this study is a first can be challenged. A team at Murdoch University in Perth, led by Peter Newman and Jeff Kenworthy, have been doing this kind of work for a decade. They have data for over thirty cities, including Washington. In New Zealand, work has been done on Auckland [awful] and Wellington and Christchurch [a bit better], by Mark Bachels. Perhaps the key point is that even in the US, studies like this are being made, and can make the Washington Post. EW)*



## EU emissions increase

Preliminary figures for the 15 EU countries show a 0.6% rise in CO<sub>2</sub> emissions in 2001. Emissions in 2000 were the same as in 1990, the base year for the Kyoto Protocol. This rise highlights the challenge of reaching the 8% reduction that is the EU's Kyoto commitment. However, other greenhouse gases have decreased by about 3%.

Sustainable Energy News, 2002/10

# US road congestion

## The Texas Transportation Institute is seeing the light

The 18 years of data presented in a recent report by the Texas Transportation Institute documents the growth of congestion levels on the major roads of 68 US urban areas. The data gives a relatively easy-to-understand view of an issue that is widely discussed but less well understood. It shows increasing traffic demands on a transportation network that is not expanding as rapidly, and hints at some other causes of traffic problems.

Major transportation system improvements need time for planning, design and implementation, and often a significant amount of funding. Communicating the condition and the need for improvements is a goal of this report. The decisions about which, and how much, improvement to fund will be made at the local level according to a variety of local goals, but there are some broad conclusions that can be drawn from this research.

Congestion is growing in areas of every size. The 68 urban areas in this report range from New York City down to those with 100 000 population. All of the size categories show more severe congestion over longer periods and affecting more of the transportation network in 1999 than in 1982. The average annual delay climbed from 11 h/person in 1982 to 36 h/person in 1999.

Congestion costs are increasing. The total congestion 'bill' for the 68 areas in 1999 came to € 78 billion, based on 4.5 bn hours of delay and 26 bn litres of excess fuel used. To keep congestion from growing between 1998 and 1999 would have required:

- Around 2900 new lane-kilometres of freeway and 4000 new lane-kilometres of streets; or
- Around 6.1 million additional trips [a day] taken by either car-pool or transit, or perhaps satisfied by some electronic means; or
- Some combination of these actions.

These events did not happen, and congestion increased.

Road expansions slow the growth in congestion. By themselves, however, additional roadways do not seem to be the answer. The need for new roads exceeds the funding capacity and the ability to gain environmental and public approval. The answer to the question, "Can more roads solve all of the problem?" lies in practical limitations. In many of the nation's most congested corridors

there doesn't seem to be the space, money and public approval to add enough road space to create an acceptable condition. Only about half of the new roads needed to address congestion with an 'all roads' approach was added between 1982 and 1999.

The 'Solution' is really a diverse set of options that require funding commitments, as well as a variety of changes in the ways that transportation systems are used. The chosen options will vary from area to area, but the growth in congestion over the past 18 years suggests that more needs to be done.

More roads and more transit are part of the equation. Some of the growth will need to be accommodated with new systems, and some older system elements expanded. Existing systems can be used more efficiently, by using information technology and intelligent transportation systems; educating travellers about their options; and providing a more diverse set of options than are currently available.

The way that travellers use the network can be modified to accommodate more demand. Longer periods of high travel volume ('peak spreading') already accomplish this, but there are ways to give incentives and improve conditions for working, shopping and a variety of other activities as well as improving the travel situation. Techniques to change the way that urban developments occur appear to be part of the solution. Some of these have been labelled 'smart growth' actions, but most are just familiar methods of arranging land use patterns to reduce the use of private vehicles and sustain or improve the 'quality of life' in urban areas. The typical suburban development pattern will be part of most cities for many years, but there are ways to make transit, walking and bicycling more acceptable for some trips.

Improving system reliability is an important aspect of the programmes in most large cities. Identifying and clearing accidents and vehicle breakdowns, addressing construction and maintenance activity impacts on congestion and providing more reliable and predictable travel times are goals for congested corridors. Future reports will examine the impacts of these activities and their role in urban congestion.

This year's report is the product of a co-operative arrangement between the Texas Transportation Institute and 11 state transportation agency sponsors. The Urban Mobility Study continues to research new data and new estimation methods to measure and communicate transportation issues to a range of audiences.

More information is available at:

<http://mobility.tamu.edu/>

# Control of methane emissions would reduce both global warming and air pollution

Science Daily 2002/10/10

Both air pollution and global warming could be reduced by controlling emissions of methane gas, according to a new study by scientists at Harvard University, the Argonne National Laboratory, and the Environmental Protection Agency. The reason is that methane (CH<sub>4</sub>) is directly linked to the production of ozone in the troposphere (the lowest part of Earth's atmosphere, extending from the surface to around 12 km altitude). Ozone is the primary constituent of smog and both methane and ozone are significant greenhouse gases.

A simulation based upon emissions projections by the Intergovernmental Panel on Climate Change (IPCC) predicts a longer and more intense ozone season in the US by 2030, despite domestic emission reductions, the researchers note.

Mitigation should therefore be considered on a global scale, and must take into account a rising global background level of ozone. Currently, the US standard is based upon 84 parts per billion (ppb) by volume of ozone, not to be exceeded more than three times per year, a standard that is not currently met nation-wide. In Europe, the standard is much stricter, 55 – 65 ppb, but these targets are also exceeded in many European countries.

Writing this month in the journal *Geophysical Research Letters*, Arlene Fiore and her colleagues say that one way to simultaneously decrease ozone pollution and greenhouse warming is to reduce methane emissions. Ozone is formed in the troposphere by chemical reactions involving methane, other organic compounds, and carbon monoxide, in the presence of nitrogen oxides and sunlight. Methane is known to be a major source of ozone throughout the troposphere, but is not usually considered to play a key role in the production of ozone smog in surface air, because of its long lifetime.

Sources of manmade methane include, notably, herds of cattle and other ungulates, rice production, and leaks of natural gas from pipelines, according to the IPCC. In addition, natural sources of methane include wetlands, termites, oceans, and gas hydrate nodules on the sea floor. In a baseline study in 1995, 60% of

methane emissions to the atmosphere were the result of human activity.

The researchers find that a reduction of man-made methane by 50% would have a greater impact on global tropospheric ozone than a comparable reduction in manmade nitrogen oxide emissions. Reducing surface nitrogen oxide emissions does effectively improve air quality by decreasing surface ozone levels, but this impact tends to be localised, and does not yield much benefit in terms of greenhouse warming. Reductions in methane emissions would, however, help to decrease greenhouse warming by decreasing both methane and ozone in the atmosphere world-wide, and this would also help to reduce surface air pollution.

Both in the US and Europe, aggressive programmes of emission controls aimed at lowering ozone-based pollution may be offset by rising emissions of methane and nitrogen oxides from developing countries, the researchers write. Pollution could therefore increase, despite these controls, and the summertime pollution season would actually lengthen.

## A key to global warming prediction within reach

Scienceblog 2002/11/16

The search for a Holy Grail of climate science may be nearing an end: NASA are close to approving a project for a satellite to measure soil moisture. That measurement has been missing from the array of clues — rainfall, atmospheric chemistry, humidity and temperature — used by scientists to predict change in the local and global climate. Using soil moisture, they can calculate evaporation — the process that links the water, energy and carbon cycles — giving them a better understanding of global change.

“Soil moisture has been one of the Holy Grails. The community of Earth system scientists has been trying to measure it for a long, long time, but couldn't because it's so expensive,” said Dara Entekhabi, a hydrologist and professor of civil and environmental engineering at MIT. “We have a measurement for rainfall, atmospheric chemistry, humidity and temperature, but surface soil moisture has been missing.” A bonus would be improved weather forecasting.

The Hydrosphere State mission (Hydros), selected by NASA from 18 competitors, would be launched

in 2007. Hydros would measure soil moisture globally from a satellite in near-Earth orbit. The satellite will be equipped with a 6 m reflector antenna, rotating every 4 s, to measure how much water is contained in the soil on which we walk, farm and build our houses. The project will cost € 220 M to design, build and launch.

### **Not just a drop in the bucket**

Soil moisture gives important clues to weather because it affects climate in a big way. If pushed just a little one way or the other, it can have a profound effect. Take the drought in the Midwestern US in 1988. That started with a small area: the soil became dry and there was less evaporation, which meant less precipitation. Soon, crops and cattle were dying as the drought spread. The opposite happened in 1993, when the Mississippi River flooded for weeks on end. "Soil moisture tells us the state of the surface land. In the same way that temperature tells the state of the surface oceans, soil moisture controls the rate of the water cycle, which affects weather and climate and how much evaporation takes place," said Entekhabi.

### **Kyoto requirements**

In addition to measuring soil moisture, Hydros would also tell scientists whether the surface soil moisture is frozen or not. In forests this can help scientists determine the length of the growing season, telling them whether a forest is a net source or net sink of carbon. During the growing season, carbon is sequestered in forests through the process of photosynthesis, when plants use carbon dioxide, sunlight and water to create biomass. The Kyoto Protocol of 1997 called for each participating country to have a quota for carbon emission, a system that presumes all atmospheric carbon has been accounted for. If industry is a carbon source, a forest could be a carbon sink, offsetting the carbon released by industry. Without proper measurements, the Kyoto agreement won't be able to balance the books.

"It's like having a bank account and not knowing whether someone is depositing into it or withdrawing from it. You can't balance your bank statement," said Entekhabi. "We need this if we're going to stabilise the amount of carbon in the atmosphere."

## **Land transport reform again**

On December 3, Minister of Transport Paul Swain introduced the Land Transport Management Bill, and released the New Zealand Transport Strategy. "The bill proposes the biggest overhaul of land transport funding since the current system was introduced in the late 1980s," said Swain. "It will allow for more long-term planning, introduce more flexible funding for transport projects in line with regional priorities and expand the objectives of Transit and Transfund." To encourage long-term planning Transfund and all organisations seeking funding from it will need to prepare ten year financial forecasts."

The main focus of initial comment was on the bill's provision for Public Private Partnerships (PPPs): a funding mechanism which give the private sector the opportunity to finance transport projects in partnership with the public sector. The bill places several conditions on PPPs:

- Partnership arrangements are limited to 35 years or less.
- Land transport infrastructure remains in public ownership.
- Initial acquisition of land, and designation of land for roading, remains with the public sector.
- The public sector is not liable to compensate any party if traffic numbers are below forecast for the life of the project.
- The project has a high degree of support from affected communities. The final proposal needs ministerial approval.

PPPs will usually involve tolls. The bill provides a generic framework for tolling projects and introduces additional conditions:

- Toll roads must be new roads.
- An alternative route must be available.
- The tolling scheme must be consistent with government and regional transport strategies.

"Because they require high traffic volumes, there are unlikely to be a large number of tolling projects in New Zealand," said Swain. "Tolls may be collected electronically so the bill contains privacy protection provisions."

### **New Zealand Transport Strategy**

The New Zealand Transport Strategy (NZTS) has been developed in partnership with the Greens. It



will guide government decision-making on transport. The NZTS defines the government's vision for transport:

*By 2010, New Zealand will have an affordable, integrated, safe, responsive and sustainable transport system.*

"The strategy aims to ensure that transport can contribute to the government's objective to return New Zealand's per capita income to the top half of the OECD, while also improving our communities and environment," said Swain. The strategy has five main objectives:

- to assist economic development;
- to assist safety and personal security;
- to improve access and mobility;
- to protect and promote public health and
- to ensure environmental sustainability.

"The NZTS represents a fundamental change in the way we deal with transport in New Zealand," said Swain. "This is the first time all the modes of transport — road, rail, sea and air — will be looked at in an integrated and long-term way." The NZTS will guide government decision-making on transport policy. Implementation will occur through policy development, rules and legislation, such as the Land Transport Management Bill, the Road Safety Strategy to 2010, work on emissions control, measures to improve maritime and aviation security and the Rail Safety Bill.

The NZTS is also a reference point for all who wish to contribute to government transport policy and planning. All future projects that seek funding from the National Land Transport Fund will have to actively take into account the NZTS objectives.

The strategy draws together the results of a wide range of consultation and discussion that has taken place over the past three years across the transport sector and with stakeholders including business, local government, Maori, transport users and the social sector. It also includes policy from other areas such as 'Growing an Innovative New Zealand' and the National Energy Efficiency and Conservation Strategy.

*(The bill seems to avoid the worst problems of PPPs [see EnergyWatch, July 2002]. It looks very promising, although we note that the 'sustainable' in the vision has lost its 'economically, socially and environmentally' tag; hopefully these are covered adequately in the objectives. The public health objective is new and very encouraging. We expect to include more detailed coverage of the bill and strategy in the next issue. EW)*

## Embrace Kyoto ... or we will surely face a dry and dusty future

Bob Carr  
Premier of NSW  
Smh.com 2002/9/16

Just over a month ago I stood in a bare, dusty field next to a dried-up dam on a grazing property outside Bourke. This drought is not caused by the greenhouse effect, but it gives us a taste of a burnt-out future. Global warming will shrivel flows in the Murray-Darling by 20% and take a lot of arable land out of production. If the planet continues to heat up, Australia will suffer.

But let's set aside the environmental imperatives. On grounds of economic self-interest alone Australia should ratify the Kyoto Protocol. The network of agreements created by Kyoto means trading opportunities and incentives for new industries and huge funds of global capital for investment in clean power. But by standing aside from Kyoto we'll be left behind. In 1998 the NSW Government was the first in the world to legislate for carbon rights, and the Tokyo Electric Power Company has already committed to 3000 ha of new plantations on the North Coast. Our legislation measures the sequestered carbon locked in the trees. This gives the company carbon credits it 'banks' in Japan. Australia will only be able to attract more of this type of investment if we ratify Kyoto. If we don't, it will dry up. Moreover, the protocol creates penalties for non-compliance with environmental standards. Japanese trading houses may only be prepared to buy commodities like coal that have carbon credits linked to them. And just last week Japan announced that it would introduce a tax on coal imports from April, adding A\$ 4 bn (€ 7 bn) to the price of Australia's coal.

### Australia is just beginning to export clean technologies

Global Renewables has developed a way to transform garbage into energy, which means no landfill and no methane — a gas worse than carbon in greenhouse impact. The company recently signed a joint venture agreement to operate the waste management of China's Taizhou, a city of 5.2 million people. This project, worth A\$ 200 M over three years (€ 350 M), will earn A\$ 500 000 in carbon credits each year. These credits have been sold to BP. Global Renewables could not use them here because the Prime Minister has kept Australia

out of this world trading system established under Kyoto.

What would happen if the Chinese were to declare the 2008 Olympic Games will not only be green, but also Kyoto-compliant? That is, they would generate no net carbon emissions. Australian companies should be at the forefront of achieving this but they would likely be locked out. The cost of climate change on our economy will be harsher than the costs of meeting Kyoto targets. Modelling by the Australian Bureau of Agricultural and Resource Economics from last October estimates that implementation of Kyoto could lead to GDP growing by about 0.17% less than would otherwise be the case by 2010. That's 0.17% less when, through the same period, GDP is expected to rise by about 40%.

Looked at this way, if Australia were to sign the Kyoto Protocol by 2010, our economy would take a mere three extra weeks to reach the expected 40% growth. Do we reach our growth potential on January 1, 2010, while doing little to address the biggest environmental threat to our country? Or do we wait until January 22, 2010, while acting in our environmental interest?

Some US state governments are ignoring Washington and adopting ambitious greenhouse gas reduction programs. For example, all the New England states have joined with Canada's eastern provinces to reduce emissions to 1990 levels by 2010, and 10% below 1990 levels by 2020. NSW's greenhouse benchmark scheme means energy retailers will have to meet compulsory per capita-based emissions reduction targets every year to 2006 – 07. Retailers can do this by sourcing electricity from low carbon fuels and renewables like wind and solar, or by introducing measures to reduce demand. This will stimulate further investment in renewable technologies. It will quicken energy efficiency and we will see new carbon sinks through forestry plantations. It will help ensure that NSW's businesses and industry are not left behind in the Kyoto world. If the NSW measures were to be expanded to the whole of Australia's national electricity market, then 35 MT of carbon emissions would be cut each year. That puts us in the Kyoto targets. The country could then sell 15 MT of abatement credits to German steel manufacturers or Chinese power generators. This would earn Australia as much A\$ 800 million a year (€ 1.4 bn/yr).

As I read the scientific reports and the economic analysis my mind returns to that dry landscape near Bourke. We must do all we can to avert an even drier, dusty future. With my heart and my head I believe we should ratify the Kyoto Protocol.

# MiniWhats

## More morning musings

In our July edition we used a radio alarm clock to show that the grid can be out of synchronisation with NZ Standard time by up to 10 s at 06.00, which should be about the best time. Presumably it is often worse than this on winter evenings. SEF member Neil Mander queried this logic, pointing out that an old-fashioned electro-mechanical alarm clock is kept on time by the grid, but an electronic radio clock is probably quartz and independent.

A test of running the clock off-grid was unsuccessful: it is one of the consequences of Murphy's Law that standby batteries are always flat when needed. But the timekeeping on mains looked grid-like: it was just as accurate over several weeks as over one day.

Ever-eager for scientific truth, EnergyWatch borrowed another clock, and got much the same answer. This time the maximum daily error was about 6 s, consistent with reduced grid loading in warmer weather. EnergyWatch concludes:

- Electronic radio alarms are not quartz-controlled when on grid power.
- Loose synchronisation of the NZ electricity grid is confirmed, and is not limited to the mid-winter peak period.
- Radio alarms may theoretically go onto quartz control while on battery power, but this phenomenon is inherently impossible to observe.

## Green light for two UK offshore wind farms

The UK's first two offshore wind farms have won £ 20 M (€ 31 M) in government aid. The funding will be split equally between two sites off the coasts of North Wales and Norfolk, which are the first to gain full consent out of 18 potential projects identified by offshore developers. National Windpower, part of UK utility Innogy, will operate the North Wales site, comprising 30 turbines with a total capacity of 90 MW. Powergen will operate the Norfolk site, which will include 39 turbines and have a capacity of up to 80 MW.

The UK government has also launched new guidelines for developers on where to locate their wind farms to avoid interfering with military and civil aviation operations. Radar can be disrupted by wind turbines.

Planet Ark, 2002/10/4

## The economic value of walking

More accurate survey information on the number of people walking, and more rigorous economic analysis, are likely to justify a greater investment in walking infrastructure. That is the conclusion drawn by Todd Litman, Director of the Victoria Transport Policy Institute, in a paper summarising current research in the area.

Litman identifies inaccurate estimation of the number of walking trips made, and the difficulty in assessing walkability (the quality of walking conditions), as the main causes for the current undervaluing of walking. Traditional travel surveys that count only the principle mode of travel for each trip are to blame for the underestimation of the number of walking trips. Litman cites one study that claims the actual number of walking trips carried out is six times what traditional travel surveys estimate.

Transport planners have a number of standard indicators that make assessing the economic value of roadway improvements relatively easy. However, walkability cannot be so readily quantified and, as a result, tends to be undervalued in planning decisions. Naturally this leads to a shift in resources away from pedestrian facilities and to policies that favour car-oriented land use development. This, in turn, leads to greater car dependency.

The paper indicates that to accurately assess the economic value of walking the following areas should be covered — community liveability, accessibility and transportation costs, health, external costs (such as congestion, accident costs, environmental impacts), efficient land use, economic development and equity.

For more information see the paper at:  
[www.vtppi.org/walkability.pdf](http://www.vtppi.org/walkability.pdf)

## More on walking

EnergyWatch discovered the difficulties of quantifying walking trips when doing a two-week, one-household, household travel survey, as part of university studies. The household made most trips on foot and several problems emerged. Walking is just too ordinary. Even if you manage to remember all trips, what is a trip? It is the bit between an origin and a destination, but what about calling at a shop? looking in a shop window? chatting to a friend met on the way?

A crucial question is, how do you convince household members that all this is important? Because many trips will disappear if you don't. (The assignment recommendation was to staple a GPS unit to each subject's head)

## Another triumph of hope over experience

A recent article in an investor magazine, put out by a finance group which shall be nameless, looks at the prospects of a war in the Middle East, and concludes:

*All up, there may well be significant economic effects from any war, more so abroad than in New Zealand, but any such effects are likely to be mainly transitory.*

So far the tone is upbeat if a little vague, but the body of the article contains the following:

*First let's make some bold assumptions:*

- Any action is endorsed by the UN
- Hostilities end quickly
- [There is] a regime change [in Iraq]
- There is no significant change in relations with the Arab world as a result.

None of the assumptions are discussed in the article.

## 80% carbon dioxide reductions

In September the German Ministry for the environment released a study on how German energy-related CO<sub>2</sub> emissions could be cut by 80% by 2050, combined with a phase-out of German nuclear power. The study shows that with energy efficiency, energy consumption can be halved. Then renewable energy can cover close to half of the remaining energy demand. The study concludes that the development is technically feasible, economically viable and does not present the players involved with any insurmountable problems. Rather, it constitutes both a challenge and an opportunity. The study was done by Wuppertal Institute and DLR Stuttgart, Institute for Technical Thermodynamics.

Read more (in German) at:  
[www.bmy.de/presse/2002/ppm233.php](http://www.bmy.de/presse/2002/ppm233.php)  
Sustainable Energy News, 10/02

## Government wants to open Maui pipelines

The Government has announced that it will facilitate the negotiation of open access arrangements to the Maui pipeline. The Maui contracts, which expire in 2009, only allow Maui gas to use the Maui pipeline. "Open access has a critical role to play in promoting the efficient delivery of gas, especially for electricity generation," said Energy Minister Pete Hodgson. "The gas industry has indicated that sooner or later non-Maui gas will need to use the Maui pipeline. If that does not happen, there might not be enough gas transport capacity north of Taranaki to meet the demand for electricity generation, creating a risk of higher prices and electricity shortages."

The Government, as a party to the Maui contracts, has invited Maui Development Ltd, the Natural Gas Corporation, Contact Energy and Methanex to present it with a proposal for open access, consistent with the following approach:

- The Government does not seek to improve its current commercial position as a result of a move to open access;
- The Government seeks to maintain the value of its existing contractual rights;
- The Government will not accept any increase in the risk it faces as a party to the Maui contracts as a result of the move to open access; and
- The open access arrangements need to provide non-discriminatory access to all potential users and not be biased towards those with an existing contractual interest in the Maui pipeline.

“The government has clearly indicated that it is not seeking to maximise its commercial advantage,” said Finance Minister Michael Cullen. “We have set out our commercial position so that other parties are clear on the basis for moving forward. It is now up to the other parties to propose arrangements that promote efficient and secure energy markets and are consistent with the Government’s position.”

NZ Government, 2002/11/6

### **Vision 2050 in Europe**

The vision for phasing out fossil fuels and nuclear energy by 2050 is becoming clearer in Europe. For Denmark, the combination of a scenario for 1996 – 2030 and a vision for 2030 – 2050 show how the transition could be made. The scenario shows that development with 70% reductions in CO<sub>2</sub> emissions by 2030 is no more expensive than business as usual.

A new tool for developing the vision for a country or area is under development, and will soon be available for INFORSE members. The basis is an energy balance for the starting year, combined with estimated trends for development of renewable energy and energy efficiency. More information from INFORSE Europe:

[ove@inforse.org](mailto:ove@inforse.org)

And INFORSE-Europe (International Network for Sustainable Energy) has a new web address:

[www.inforse.org/europe](http://www.inforse.org/europe)

### **Web quote**

*The best thing about biomass energy is that it provides only enough for frugal living, not wanton wasting.*

John Benemann

### **Thanks Mike**

EECA Chairman Mike Underhill has announced that he will stand down from his role as Chairman of EECA in March 2003. He said that after seven years on the EECA board, it was time to move on and let others make their contribution.

Underhill said that with the National Strategy in place and the next round of appointments to the Board of EECA about to commence, now was the right time to announce his departure.

Energy Minister Pete Hodgson praised Underhill’s leadership and said, “under Mike Underhill’s leadership EECA has transitioned to a Crown Entity; produced a challenging National Energy Efficiency and Conservation Strategy and set renewable targets. I have admired Mike’s enthusiasm and passion for energy efficiency.”

EECA, 2002/11/7

### **Auckland among the worst walking cities in the western world**

Auckland is rated one of the worst cities in the western world for walkers by an international transport expert. Rodney Tolley, a director of the UK Centre for Alternative and Sustainable Transport, met Auckland transport leaders to tell them how to make the city safer for pedestrians. Tolley, who has promoted walking in Europe, Britain, America and Australia, said that during his four days in Auckland he had found walking in the city hard and dangerous. “Auckland is definitely at the bottom of the pile. I know I’ve only been here a few days, but tourists would have the same perception — and it’s not good news....”

NZ Herald, 2002/11/22

### **Ambitious plans for Iceland’s surplus energy**

Researchers in Iceland are thinking of innovative ways in which the country can benefit from the island’s wealth of renewable energy resources. Iceland has only 300 000 inhabitants, but it is estimated that its geothermal and hydroelectric resources alone could be sufficient to meet the annual electricity requirements of 6 million people, more than the entire population of Denmark. Consequently, energy research in Iceland has always focussed on new ways of utilising these resources.

Traditionally, the country has used surplus energy to fuel power-intensive industries, most notably aluminium production. This provides around € 500 M/yr in export revenue for Iceland, around half the export revenue from fishing and fish processing. New large-scale investment in aluminium smelting plants is planned, but a huge potential surplus remains for further exploitation.

One highly ambitious proposal is direct export of electricity to mainland Europe through a submarine cable. The demand is high, with Kyoto Protocol targets to be met and further aims identified at the world summit in Johannesburg. However, there are practical difficulties: it is estimated that the world's current cable manufacturing capacity would need 6 years to construct the 1170 km required to reach Scotland.

Another possibility is the use of energy to produce clean fuels for export. The production of hydrogen through electrolysis is one such method, and research projects, including collaborations on EU funded initiatives, are ongoing. A world hydrogen market is still decades away from becoming a reality, however, and there are practical obstacles such as storage that still need to be resolved.

Iceland remains fully committed to increasing the production of clean and renewable energy though, with power-intensive industry the most viable short-term outlet. Speaking in Brussels on 14 October, Icelandic Minister for Energy and Commerce, Valgerdur Sverrisdóttir, stated that, "as a country with an abundance of renewable energy resources, and corresponding levels of expertise in the area, Iceland will lead the way towards meeting the targets discussed at the world summit on sustainable development in Johannesburg."

Cordis, 2002/10/15

### **Cutting greenhouse gas emissions is good for the pocket**

Leading an energy-efficient life could save you \$ 240 000 and save the planet more than 1000 t of greenhouse gases, a UK environmental scientist has calculated. The analysis shows that measures to alleviate climate change need not come with a financial punishment.

About a third of the emissions in developed countries come from cars, homes and leisure activities. Raising public awareness could lead to big cuts, says David Reay of the University of Edinburgh. "I'm optimistic that most people would go for the chance to leave a big inheritance and a better environment for their children," says Reay.

To illustrate the economic consequences of individuals could cut their emissions such a lifestyle, Reay has created two hypothetical Londoners: the wasteful Mr Carbone and the virtuous Mr Bellamy. The two lifestyles are extremes, says Reay, but small changes are also worthwhile: "You can make a significant difference without going the whole hog," he says — driving a small, energy-efficient car, for example. By age 75, Mr Carbone has been

responsible for the emission of 1251 t of greenhouse gases, and spent \$ 400 000 in the process. For Mr Bellamy, the figures are 370 t — a 70% reduction — and \$ 150 000.

The benefits of cutting personal emissions may not necessarily translate into wider economic gains, warns climate-change specialist Richard Tipper, of the Edinburgh Centre for Carbon Management. For example, he says, burning less coal is bad news for coal miners. Creating a low-emissions economy may be beneficial for all in the long run, but it will require big changes. "We've got to be able to persuade the losers that there's something in it for them."

Nature, 2002/10/17

### **Green roofs for greenhouse gas reductions**

Toronto is experimenting with planting vegetation on building rooftops, over highly water-and root-repellant membranes. Two trial roofs have been instrumented and will be monitored over the next two years, on the publicly accessible City Hall podium roof and the recently completed Eastview Neighbourhood Community Centre, in Toronto.

Findings from an Environment Canada study show green roofs can help to save energy, reduce greenhouse gas emissions, reduce emissions of sulphur dioxide and breathe easier on hot summer days. Toronto's summer temperatures are 4°C to 10°C higher than those in the surrounding rural communities, a phenomenon known as the urban heat island effect. This means that more energy is consumed to cool buildings, leading to more air pollution. The study shows that green roofs on approximately 6% of the total available roof space can reduce summer air temperatures in the city by 1 – 2°C. Even a 1°C reduction in the urban heat island will result in a 5% decrease in demand for electricity for cooling and refrigeration, resulting in lower greenhouse gas emissions.

[www.greenroofs.ca](http://www.greenroofs.ca)

National Research Council, Canada, 2002/10/9

### **Three quarters of Canadians support Kyoto**

Three quarters of Canadians support implementing the Kyoto accord, but many say the government needs to spend more time investigating the time and cost of the environmental accord, according to a new poll. Support for the environmental treaty was lowest in Alberta, (27%) and strongest in Quebec (85%).

CTV, 2002/10/8

### **US voters want strict greenhouse gas cuts**

Three quarters of voters surveyed want the US government to require cuts in emissions linked to global warming, according to a poll released by an

environmental group. The survey of 1008 likely US voters across the nation was commissioned by the Union of Concerned Scientists, an activist group that backs a Senate proposal for strict cuts in industrial emissions of carbon dioxide.

Some 76% of those surveyed said the government should set standards for cutting emissions.

Another 16% said they supported a voluntary approach, while 8% said they were undecided.

Last month, the administration quietly released a report that affirmed the probable harmful effect of greenhouse gases linked to industry, but President George Bush dismissed it as a product of the "bureaucracy."

Forbes, 2002/7/9

### **German Greens win climate concessions in new government**

Germany's Social Democrat and Green parties are ready to return to full time government after finalising a coalition agreement after last month's elections. The deal includes some stronger environmental policy positions, though the current program of annual energy tax increases is to be halted. There are 10 ministries for the SPD and three for the Greens.

Energy taxes will rise only once more, next January as already scheduled, despite pressure from the Greens for further increases. The party's consolation prize is a scheduled review of the ecotax program in 2004.

Several loopholes that have benefited energy intensive companies such as aluminium manufacturers will be closed. The government is to abandon opposition to European Commission proposals for mandatory rather than voluntary participation in an EU CO<sub>2</sub> emissions trading scheme.

Among a string of tax measures, car taxes will continue to be developed along 'environmental lines,' including tax breaks for natural gas-powered vehicles until 2020. Flights from Germany to other EU nations will no longer be exempt from the Value Added Tax. The government will do its utmost to achieve an EU accord on jet fuel taxation. There will also be equal taxation of gas and heating oil. Coal industry support is to be cut from € 3.05 bn to € 2.17 bn by 2005. Meanwhile, renewable energy subsidies are to be increased to € 230 M by 2006.

ENS, 2002/10/15

### **Green energy park**

UK energy group Alkane Energy opened a new energy park in northern England to turn polluting methane gas into power. The new Alkane Energy Park, built on the former Wheldale coal mine in

West Yorkshire, has a capacity of 10.6 MW and is expected to cut methane emissions from the mine by 85%, the Department of Trade and Industry (DTI) said in a statement. "Converting methane from abandoned coal mines into electricity is an innovative method of generating electricity," British Energy Minister Brian Wilson said in the statement. "If fully exploited it could provide an extremely valuable contribution to meeting the UK's Kyoto targets."

There are more than 1000 abandoned coal mines in the UK and estimates suggest they could leak up to 13.8 Mt of methane into the atmosphere. Methane gas is 23 times more potent than CO<sub>2</sub> produced from conventional coal-fired power stations.

Planet Ark, 2002/10/14

### **Meridian's push for wind power**

On 19 October the Dominion Post reported that Meridian Energy is aiming to develop 200 MW of wind power capacity over the next few years. The intention is to develop two or three wind farms, with the first coming into service in about eighteen months time, and perhaps another four sites in service by 2008. Chief Executive Keith Turner said, "If we can get the first of those projects up by mid-2004 we could be meeting some of the [dry year] tight periods, depending on the hydrology of course." "There might be two, possibly three farms that would give rise to that 200 MW." That would produce about 800 GWh/yr.

The wind farms could be funded from borrowings and cash flow. Turner admitted that resource consent processes could be "challenging," but thought Meridian had, "a couple of projects we think we can permit reasonably quickly." Meridian has sites in the Manawatu and near Makara, west of Wellington, and is also looking at sites nationwide. It is trying to find sites where the visual impact is not a problem.

### **Bush sides with car makers on California emissions fight**

The Bush administration has sided with auto manufacturers in opposing a California requirement that a percentage of passenger vehicles sold in the state achieve zero emissions. The Justice Department maintained that federal law overrides any state effort to regulate fuel economy for cars and trucks. In a filing with a federal appeals court in San Francisco, the department lawyers argued that California's zero-emission mandate impinges on what is solely a federal responsibility. "The Energy Policy and Conservation Act provides that when a federal fuel economy standard is in effect, a state or a political subdivision of a state may not adopt or enforce a

law or regulation related to fuel economy standards," the department argued. In its court papers, the state of California says there is an exception to the federal Clean Air Act permitting the state to regulate auto emissions.

California's zero-emission mandate, covering an increasing percentage of new cars and trucks, was to have taken effect next year, but General Motors and DaimlerChrysler won a preliminary injunction that delays implementation for two years. The standard says that for model years 2003 through 2008, at least 10% of the passenger cars and light-duty trucks in California must emit no pollution.

Associated Press, 2002 10/9

### **Russia caught between coal and Kyoto**

Russian President Vladimir Putin has called for greater exploitation of the country's vast coal reserves, but this policy could clash with Moscow's commitments to reducing carbon dioxide emissions under the Kyoto Protocol. "By preparing to burn more coal for its energy needs, Russia aims to free more natural gas for lucrative exports to Western markets," Natalia Olefirenko, climate programs co-ordinator with Greenpeace Russia said. "It is a flawed approach, and it amounts to a sell-out of the Russian environment because growing use of coal is likely to adversely affect the country's ecological balance and cause acid rains."

Russia's coal reserves are estimated at 3000 Gt, nearly a third of the world's coal deposits. About 80% of the country's known coal deposits are in Siberia. Once a pillar of the Russian economy, coal went out of favour after the Soviet era. But government subsidies were slashed after 1993 and the coal sector could not compete any more with gas prices, kept artificially low to contain inflation. Electricity from coal is now twice as costly as power generation from gas.

The World Bank helped close loss-making coal mines and privatise others. In 1998 alone some 420 000 miners were laid off, and the World Bank has given Russia € 1.3 bn in loans to close mines and to pay for re-skilling of miners laid off. The coal sector still employs 320 000 people and produced 270 Mt of coal last year.

Putin has said that Russia was "inclined" to approve the Kyoto Protocol. Russian Prime Minister Mikhail Kasyanov told the World Summit on Sustainable Development in South Africa recently that "ratification will take place in the very near future." Russia's latest pledges indicate that ratification may come by the end of this year. But some environmentalists have their doubts about Russia's official pledges. The fact

that the South Africa summit was given virtually no coverage in Russian media and the recent drive towards increased use of coal indicated that Russia was not moving towards the Kyoto Protocol, says Vladimir Zakharov, head of the Moscow-based Centre of Ecological Policies.

Inter Press Service, 2002/10/3

### **Tranz Rail ferry decision soon**

In mid-October, Tranz Rail Managing Director Michael Beard said that decisions on a new ferry terminal at Clifford Bay were 'close' and construction might start as early as mid-2003. The Port of Tauranga has since been named as a possible partner.

The breakwater, berths and terminal would take two years to build. A revised design needing less reclamation is now expected to cost some \$ 80 M. Clifford Bay will be a major improvement on both commercial and environmental grounds:

- The conventional ferry trip will save 30 minutes (fast ferry 15 minutes). In bad weather, ferries in Cook Strait will be end-on rather than beam-on to the seas, allowing a more comfortable and reliable service.
- The road and rail trips from the ferry terminal to Christchurch will also be shorter, by one to two hours. Journey times to Blenheim or Nelson will change only slightly.
- The combination of a shorter journey time and potential for designing the facility for larger ferries will eliminate the need for a third vessel.
- The two steepest gradients on the Picton – Christchurch line will be bypassed, allowing heavier trains: the Dashwood Pass (2.0%, the same as the Raurimu Spiral) and the climb out of Picton (2.7%, the fourth steepest in New Zealand).

TranzRail will retain what will become the Picton Branch (which also gives access to the new port facilities in Shakespeare Bay), if there is sufficient traffic.

### **Solid Energy carbon tax warning**

Solid Energy's annual report warns the Government, its shareholder, about the risks of a carbon tax, saying that the effects of a tax introduced in 2007 could be felt before the reduced costs of alternative energy sources could be achieved. It claims that renewables will not make a big contribution in the next 10 – 30 years unless there is a significant increase in the cost of energy. However, "new coal-based electricity generation could maintain the wholesale electricity price at current rates — 5 or 6 c/kWh — for hundreds of years." According to Solid Energy, coal-fired

power stations can now be built for a thermal efficiency of 50% or more, with near-zero pollutant emissions, with "ambitious targets" set for carbon dioxide emissions.

*(See the front page opinion piece for Ministry of Economic Development estimates of the break-even cost of new generation, given at the NZ Energy Conference. EW)*

**More gas in Taranaki**

Two exploration wells in Taranaki hit oil and gas in early December. Indo-PacificEnergy's Kahili well near Inglewood flowed gas at 1.6 m<sup>3</sup>/s and was said to be "rich in condensates." And Westech Energy's Surrey well flowed gas at 14 m<sup>3</sup>/s, with condensate flow at 0.2 l/s.

Dominion Post, 2002/12/5

**Electricity Governance Board**

As part of the establishment procedure for the Electricity Governance Board, an independent audit firm was engaged to receive applications for consumer voting entitlements. Applications were received and accepted from the following persons and organizations:

Business New Zealand , Carter Holt Harvey, Comalco Power, Consumers' Institute, Eastland Energy Community Trust, Federated Farmers of New Zealand, Fletcher Building Steel Group, Fonterra Co-operative Group, Grey Power New Zealand Federation Inc, John Blackaby, Major Electricity Users' Group, Norske Skog Tasman Limited, NZ Electrical Institute Incorporated, NZ Steel Ltd, NZ Chambers of Commerce and Industry, Pan Pac Forest Products Ltd, Richmond Limited, Wellington Regional Council.

Declined applications came from the following:

Auckland Energy Consumer Trust, Central Hawke's Bay Consumer Power Trust, CentralPower Electricity Trust, Eastern Bay Energy Trust, Electricity Supply Industry Training Organization, Hawke's Bay Power Consumers' Trust, Keith Rowling, King Country Electric Power Trust, Line Trust South Canterbury, MainPower Trust, Network Tasman Trust, NZ Photovoltaic Association, NZ Wind Energy Association Inc, NZ Tariff and Fuel Consultants Ltd, Renewable Energy New Zealand, Southland Electric Supply Consumer Trust, Sustainable Energy Forum, Top Energy Consumer Trust, Waipa Networks Trust.  
Energy Trusts of NZ, newsletter 2002/11

**NZ Energy Statistics (September 2002 quarter)**


Total electricity generation in the September 2002 quarter was 6.2% higher than the September 2001 quarter, the 'dry year crisis' period. Hydro generation was 42.6% higher than in 2001.

Production of crude petroleum was 1.1 Mt in the year ended September 2002, a fall of 11.1% in twelve months.

Crude petroleum production was 43.4% lower than in the year ended September 1991, when production peaked at 1.9 Mt.

The total volume of petrol delivered in the year ended September 2002 was 5.9% higher than twelve months earlier. Diesel use was up 7.6%.

Statistics New Zealand

<b>Forum Membership</b>		
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
Corporate	\$	250.00
Overseas	\$	55.00
Mail the form below, with your payment or order, to The Sustainable Energy Forum Inc, P O Box 11 152, Wellington, NZ. A GST receipt or invoice will be sent on demand.		
Name:	_____	
Organisation:	_____	
Address:	_____	
	_____	
	_____	
Phone:	_____	H/W
E-mail:	_____	
Membership type:	_____	
Amount enclosed:	\$	_____