

# EnergyWatch

The Newsletter of the Sustainable Energy Forum

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

ISSN 1173-5449

Issue 9, February 1999

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

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## Opinion: Fallacies in Wonderland

There are times in New Zealand when the policy roundabout appears to become completely detached from reality. Often this is a symptom of the decay of government; sometimes it is the capture of government by a new rhetoric or a new 'spin'; and at other times it simply reflects system failure, so that the linkage of normal checks and democratic process is suddenly bypassed (either by accident or design). In the energy sector, this happened most famously during the 'Think Big' era. There is every indication it is happening again.

For most of the 1990s we have witnessed a bizarre sequence of electricity, roading and other reforms which would make Alice at home in Wonderland. Certainly, the level of confusion has increased by quantum leaps with each new step in the policy process. Are you puzzled about what is going on in the electricity sector? Who owns your local distribution network? Who will send you the power bill in future? Do you understand where road reform is leading? And are either of these policy strands linked to greenhouse policy?

If it is any comfort, you are not alone in being confused. Even for those who follow the plot from day to day as closely as they can, there is no coherent thread. At SEF, the only pattern we can see is of discounting and segmenting risk, of cutting back on technical maintenance and of focussing increasingly on the management and manipulation of the financial end of the energy business. And it is only a year since the Auckland power crisis, which reflected all of these elements!

Please note, for example, that when the Huntly transformer blew up late in February, the electricity price went up. But the charge of poor maintenance was met with a predictable rebuttal by ECNZ. As reported in the 'NZ Herald', the spokesman asserted that Huntly had a '*fairly thorough*' programme of maintenance. Perhaps the Cook Strait ferry had a '*fairly thorough*' systems check on delivery? Perhaps the Bay of Plenty blackout in 1998 was due to the contractor making a '*fairly thorough*' check that the sub-station switches were left in the right position?

### EnergyWatch and Forum Membership

Here it is at last: the first issue of EnergyWatch since December 1997. We have had a series of problems which added up to one problem: nobody with enough time to put an issue together. Our apologies. We are now past that stage—at least for the moment—and we hope to put at least four issues out in 1999. Again, our apologies for the delay.

Last year we decided to set the membership renewal date as 1 July each year, and to cancel overdue subscriptions on about 1 October. We shall maintain that policy, but this year we will continue to send EnergyWatch to members who have not renewed, until they have received at least four copies since their last subscription.

The Committee

Are we to believe that such incidents have nothing at all to do with the rapid shift in corporate structures, the loss of in-house expertise and institutional memory? Again, you may be confused by the Government's rush to restructure, privatise and still avoid resort to regulatory safeguards. On the bidding process for Contact Energy, for example, the Commerce Commission went "woof! woof!" at the possibility of TransAlta obtaining dominance in the market, and then rolled over. If 850,000 captive customers (out of a total 1.4 million for the whole of New Zealand) is not dominance, what is? Like Alice, we find it gets curiouser and curiouser!

It is specious to suggest that because TransAlta Canada is nominally separate from TransAlta New Zealand, this dominant position will not be exploited. These are the Tweedledum and Tweedledee of the emerging energy monopoly. They will control **all** NZ's low-cost combined cycle thermal generation. In effect, these stations set the market price of wholesale electricity.

Worse still, the Commerce Commission appears quite comfortable that one of these companies retain control of sufficient Maui gas to dominate the market for premium fuel—able to undercut any other supplier on the gas market, which is competitive only in a nominal sense. So Tweedledum and Tweedledee will have the customer monopoly, the levers on electricity pricing **and** the control of a strategic fuel. Watch this space!

As citizens and as consumers, we might feel entitled to look for redress in the courts for price-gouging. Some protection against offshore orchestration of 'competing' companies in the energy sector... (or has the file on the oil companies slipped off the Minister's desk?) Some real (and impartial) assessment of environmental outcomes—such as the practice of spilling water in the South Island in order to increase CO<sub>2</sub> emissions, and profits, in the North! Yes, we could all dream on...

One thing is crystal clear. The reforms in the electricity sector are not producing, and indeed will never produce, the outcome which the Government has claimed for them—true competitive behaviour. Instead, they are leading inexorably to a privatised set of monopoly networks. This will replace the public sector monopoly **at a higher price**. Tom Scott made exactly the same point in his pungent cartoon—reproduced with permission opposite.

The reasoning is very simple—the arithmetic does not work. An enterprise has to be large to be competitive (we are told). A functioning market needs a reasonable number of competitors (clones don't count), say, 6-8 at the minimum. The NZ market is smaller than a medium city in most industrialised economies. Something has to give.

If size of enterprise into size of market does not go, the end result will be 3, or at the most 4, large companies. They will be able to exercise virtual monopoly from generation through to retail delivery, probably on a regional basis. The current minister will have produced by legerdemain the exact model he set out to destroy in the petrol market.

To the claim that in the real world these changes will reduce costs, we say "No, Minister!" The external costs of electricity reform, environmental and social, are already rising. Take the real-world issue of flood management in the Waikato. Hitherto, one phone call to ECNZ has ensured maximum retention in the upper catchment. This is what happened last July. After April Fool's Day there will be two competing companies for Environment Waikato to call, both looking for larger market share. Could you please divert water from your Rangipo and Tokaanu power stations to keep it out of Lake Taupo?

Try the other one, generating from the dams below the lake... Hold some water in Lake Taupo for a few weeks? In the middle of winter, with demand at its peak, this would mean handing the market to the thermal generators and the South Island hydro operation. If regulation is needed to win compliance, how do you enforce it in an emergency situation?

In the narrow sense, we doubt in fact whether costs will come down on consumer bills in 12 - 18 months time. If by then some of the more extreme ideas on road reform have been implemented, it will be quite clear that we have returned to the 19th Century ethic of allowing free rein to private capital. It will outgun public interest every time.

When the fireworks are over we might feel this was a funny way to celebrate the new Millennium. Alice knew what it felt like to step through the looking glass. We are about to learn.

Ken Piddington

# Fascinating facts about electricity restructuring

Did you know that electricity restructuring is forcing the owners of large buildings such as shopping centres into contortionist splits? Large building owners often buy electricity at the entry point of their building and then sell it to their tenants through their own distribution and metering system. Those who presently on-sell more than 2.5 GWh of electricity per year (a load of about 5 MW) are now electricity suppliers and subject to the legislation. They need to split themselves into a line company and a separate energy company—and they cannot own both. They must stop selling electricity and tell their tenants to buy it from someone else, effectively selling their retail customers to an energy supply company.

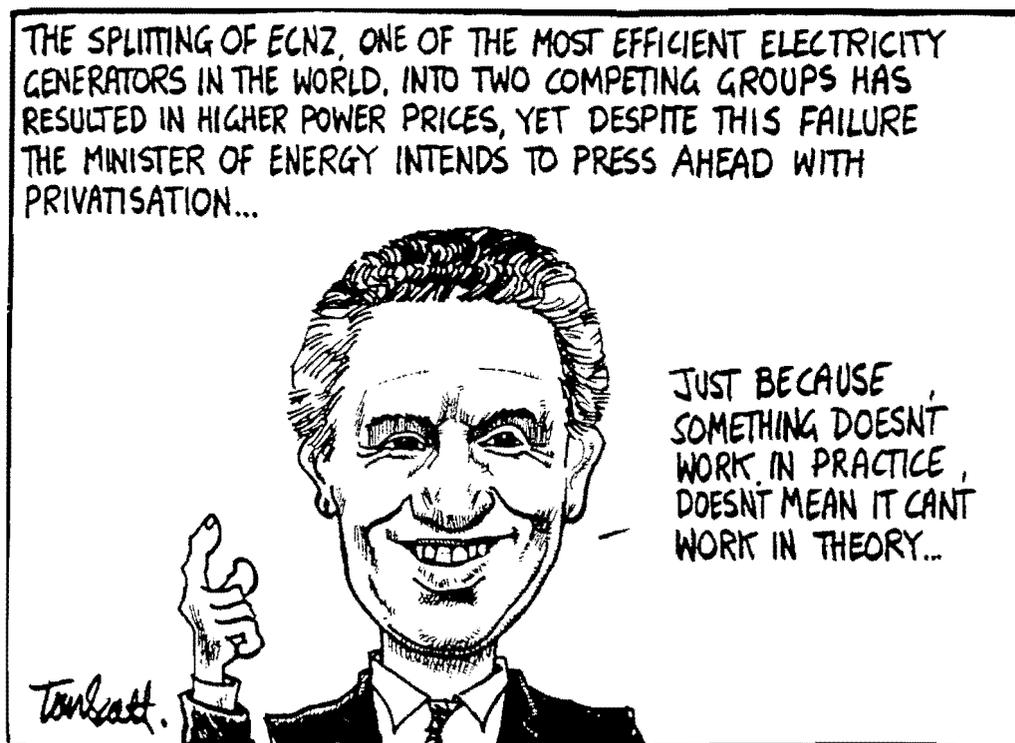
The new supply company will be invoiced by the line company—the hapless building owner—for line and possibly meter reading charges. They will add the charge to the existing charges and invoice the tenant, adding a margin on the way. And the last part of the headache is that the existing meters used for billing the tenants are probably not MARIA compliant, so someone will have to pay for them to be changed. Guess who?

The alternative is to apply to the Commerce Commission for an exemption, as Auckland Airport has done. We gather that the procedure is to give the Commerce Commission a cheque for \$10 000 and hope that there will be some change when the investigation is over, but with no guarantee.

EnergyWatch wonders whether the Crown (as the owner of many public buildings and clearly now a line company) has sold their energy business yet? We have not seen this announced publicly, but they still have almost a month to go, so all is well. They will not wish to apply to the Commerce Commission, because Max Bradford's office will wish to have a choice of power company. An exemption for government buildings would not be playing the game, would it?

Ah, life was simple in the old days, but this is more fun, and it all has to be done by All Fool's Day 1999. Check it out at:  
[www.m-co.co.nz/mrcc.html](http://www.m-co.co.nz/mrcc.html)

Ian Shearer



# Roading Reform—Again

It looks as if Brian Easton's delicious article in the Listener last year (31 January) was right: the government's road reforms are going to be just like the health reforms. Brian made tongue-in-cheek predictions of a series of disasters in the first six years of road reform, and finished by saying:

*"I cannot tell you what happens after year six, because we are only into the seventh year of the health reforms, the paradigm of how a commercialisation policy fails when it has nothing to do with the problems. Who said that the first time is tragedy, the second time farce?"*

The Listener article was prompted by the November 1997 RAG Report, which attracted a huge 13 000 submissions, nearly all critical. Now they are consulting us again, with 'Better Transport, Better Roads' (December 1998).

An important issue played down in BTBR is common law rights. A cabinet paper asks ministers to:

*"Note that the common law rights to pass and repass on public highways and the unique characteristics of the roading corridor limit the ability to develop normal commercial relationships between users and providers of roads."*

The 'solution' given is:

*"Officials recommend that the details surrounding such regimes should as far as possible be left for inclusion in the contract. Detail requirements pertaining to this optional penalty regime that are unlikely to be able to be enforceable or able to be negotiated into a contract could be included in regulations, rather than primary legislation."*

Not content with staring down existing difficulties, the government seems determined to create new ones. Heavy vehicle users will be able to negotiate charges with the road companies. Those who take this route will display an 'opt-out' licence sticker. If the police find an irregularity with an opt-out licence they will not prosecute, but instead notify the road company, who will not prosecute either: they can only sue.

Evasion of road user charges costs about \$M 40 / year at present, but looks set to become another growth industry.

A frightening similarity to the health reforms is the lack of detailed policy development. As Brian Easton predicted:

*"Financial consultants make a packet, but fail to resolve confusion."*

One difference from the health reforms is that 'health' affects us only when we are sick. Roads affect us the rest of the time, so the impact for most of us is even bigger. SEF will be making a submission again (sigh): please contact the SEF office if you want to be involved. Submissions close on 30 April 1999.

Kerry Wood

## NZWEA 1999 Conference

The New Zealand Wind Energy Association's 1999 conference will be held on 24-5 March 1999, in Palmerston North, New Zealand.

The conference will include:

- Key note speakers including the Chief Executive of the European Wind Energy Association, and others providing an Australian and NZ perspective.
- Papers on wind energy policy and technology developments, including several wind turbine manufacturers (24th March)
- A major forum on green power pricing schemes (25th March).
- A tour of the new 32 MW Tararua Wind Power wind farm - the largest in the Southern Hemisphere.

For further information please contact:  
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# World Renewable Energy Congress in Perth

Ralph E H Sims Director, Centre for Energy Research, Massey University.

This exciting event, held at Murdoch University in February, attracted almost 300 delegates from 40 countries, to discuss the future role of renewable energy technologies and policies for sustainable development.

A key driving force towards Renewables in Australia is Prime Minister John Howard's directive that 2% of power generation come from new Renewable Energy projects by 2010. This may not seem much but it excludes existing projects such as the Snowy Mountain hydro scheme. It is expected to create a market for over 9000 GWh/y of electricity from Renewables. (New Zealand's total electricity demand by comparison is around 30 000 GWh/y). Power generating companies are already seeking investments in commercial projects to meet their share of the target.

The Australian Greenhouse Office (AGO) has already supported five 'Showcase' renewable energy projects to a total of \$10 million and several other projects will soon receive grants. Recipients of the Showcase awards were:

- A 30 MW electric co-generation plant at the Rocky Point sugar mill burning bagasse during the 6 month cane crushing season and other biomass sources for the remainder of the year.
- A municipal solid waste energy and recycling facility at Wollongong which will convert the non-recoverable organic components of the waste to heat and power.
- The installation of 18 solar thermal dishes to provide 2.3 MW of power to the New South Wales grid.
- A 5 MW solar thermal plant at the Stanwell power station, Rockhampton to provide green energy to the Queensland grid.
- Installation of two variable speed wind turbines and energy storage system in Denham, Western Australia and development of a novel computer control system to achieve integration of their output with the Western Power grid.

Details are available on the AGO's web site.

One of the strengths of Australian research is their work on Remote Area Power Supply Systems, and several papers covered improved

technologies and applications, both in rural Australia and the S Pacific islands. Reliability and service remain a problem. The social issues in owning, maintaining and operating such systems, where fully trained personnel are not always available, is an on-going challenge. Education is seen as the key and many papers discussed new education initiatives.

The Australian Cooperative Research Centre for Renewable Energy (ACRE) was established at Murdoch University in late 1995 with links to a range of other institutions across Australia including 9 universities, 8 industrial enterprises and 4 power utilities, as well as IRL in New Zealand. Progress has been tremendous, particularly with the teaching initiatives at Murdoch, but also various collaborative research activities. New Zealand could well benefit from greater collaboration across the Tasman in this area. The new ACRE managing director, Dr Frank Reid, would be keen to see it happen.

New Zealand was represented by a small contingent who presented three papers:

- Porphyrin dyes for new photovoltaic technology by Kirsty Wild.
- Bioenergy- a sustainable carbon sink by Ralph Simms.
- Wind power generation in weak grids—economic optimisation and power quality simulation, by Thomas Ackermann and Alister Gardiner.

A few other New Zealanders were present but greater representation would have been better.

Overall, the three day event showed just how far renewable energy had progressed in Australia, with a little Government support. Renewables are seen as a future export earner as well as a means of meeting the Kyoto obligations. These policies have helped to ensure that Australian society in general is aware of the opportunities resulting from Sustainable Energy implementation. Commercial projects are leaping forward and green power sales are being offered by most power companies, with good support from customers.

Australia has a long way to go to lower its greenhouse gas emissions, but is definitely

leading the charge towards Renewables in this part of the world. Even India has a Renewable Energy Act going through its political process and it already has 1000 MW of wind power installed. Unfortunately the New Zealand story is not so exciting. Perhaps the Parliamentary Commission's role of evaluating the potential for Sustainable Energy in New Zealand and reporting back to the Select Committee of Parliament (which is currently considering Jeanette Fitzsimon's Energy Efficiency Bill) may help. But by then Australia, now on a roll, will have cornered the Renewables market.

## EnergyWise Products and services directory

The need for energy efficient or renewable energy products and services is increasing. The Energy Efficiency and Conservation Authority (EECA) is often asked for referral to organisations that provide these services. Effective energy products and services are a key part of improving the wise use of energy resources in New Zealand.

In order that up-to-date information about these services is easily obtainable EECA is collecting details of organisations that provide energy saving or renewable energy products, contractors, consultants or associations.

The database will be published in a one-stop-shop directory, and then at a later date on the internet (<http://www.eeca.govt.nz>). It will build on from EECA's Energy Management Consultants and Renewable Energy databases already published on the Internet.

In order to register for a free listing in the directory please email to:

rachel.dunn@eeca.govt.nz

and entitle the message:

"Energywise Directory"

or contact Rachel Dunn on 04-470 2224 or fax 04-499 5330 to request the appropriate forms.

If you would like to advertise in the directory then you should contact Rosemary Payne in EECA's Auckland office on 09-307 5142 or 025-411 284 for further details.

## Are we running out of oil?

Estimates vary widely, but a consensus seems to be emerging that, sometime in the next decade, conventional oil production will peak. This was the position taken by the International Energy Agency, in a March 1998 report to the G8 energy ministers. After that, production will decline, and by 2050 will be roughly halving every 25 years.

The unknown quantity of oil in undiscovered oil fields—as well as uncertain amount remaining in existing fields—make estimates difficult, but the world has been fairly well explored and the industry can make a reasonable guess. It 'helps' that the rate of new oil discovery peaked in 1964. It turns out that the uncertainties of undiscovered oil do not make much difference—if the optimists are right it may delay the peak by a decade. More important is that China and India are developing car-based economies.

More oil is available at higher production cost—\$US 30 per barrel or more—but another difficulty is that an increasing share of production cost is for energy. Much of the remaining oil must be heated or dissolved before extraction, to make it flow. Some can only be mined. Energy used for production increases the effective greenhouse emissions from final use.

Methane hydrates are a possible alternative, but nobody knows how they will be produced. They only exist in liquid form when are mixed with another liquid: pure hydrates go straight from solid to gas—and back to solid when you try to pump them. Any production will be expensive, and will need to include conversion to methanol or synthetic petrol before use in cars: another expensive and energy-intensive process.

Economies facing developing oil shortages will do best if they reduce oil demand while it is still cheap, and before oil import costs become too high.

And the global economy? It only works if international transport is very cheap.

Kerry Wood



# Renewable Energy Events

Wind and renewable energy conferences are booming around the world. Now is the time to plan that world trip to prepare for the future business opportunities that are available.

Contact Ian Shearer (shearer@express.co.nz or 0800-65-46-36) if you would like more details on any of these events.

23-25 March 1999 Palmerston North, NZ  
**NZ Wind Energy Association Annual Conf**

11-14 April 1999 Maui, Hawaii  
Renewable & Advanced Energy Systems for 21st Century

25-27 May 1999 Amsterdam, Holland  
World Sustainable Energy Trade Fair. Includes renewable energy, waste-to-energy, and sustainable transport.

1-3 June 1999 Frankfurt, Germany  
Renewable Energy Europe '99 (& Powergen '99)

7-11 June 1999 Kuala Lumpur, Malaysia  
World Renewable Energy Congress '99

12-16 June 1999 Portland, Maine USA  
SOLAR 99 - Growing the Market

15-18 June 1999 New York, USA  
American Council for an Energy Efficient Economy Summer Study

18-19 June 1999 Auckland  
**Electricity Engineers Assn (NZ) Conference**

20-23 June 1999 Vermont, USA  
Windpower '99 American Wind Energy Association

21-24 June 1999 Copenhagen, Denmark  
International Conference on Wind Energy

23-25 June 1999 Auckland  
**Sustainable Energy Forum Annual Conference**

28-30 June 1999 Newcastle, NSW  
Australian Wind Energy Association Conference,  
(Register:  
<http://www.eng.newcastle.edu.au/me/awec/> )

29 June - 1 July 1999 Miami, USA  
Latin America Power

4-9 July 1999 Jerusalem, Israel  
International Solar Energy Society Solar World Conference

July 1999 Budapest, Hungary  
SUN Summer Study Energy Policy

29 August 29 - 2 September 1999 Oakland, California  
4th Biomass Conference of the Americas

20-24 September 1999 Hokkaido, Japan  
11th International PV Science & Engineering Conference

20-24 September 1999 Rome, Italy  
4th International Congress: Energy, Environment & Technological Innovation

22-24 September 1999 Brisbane, Australia  
IPLEA '99, International Conference on Passive & Low Energy Architecture  
(sally.brown@mailbox.uq.edu.au)

20-21 October 1999 Wellington, NZ  
**8th NZ Coal Conference**

1-3 December 1999 Geelong, Australia  
Plug-In Solar 99, Australia New Zealand Solar Energy Society Conference, Deakin Uni.  
(luther@deakin.edu.au)

24-28 January 2000 Zurich, Switzerland  
World Clean Energy Conference

1-3 July 2000 Brighton, UK  
World Renewable Energy Congress 2000 & Renewable Energy 2000,  
(rob.schulp@reedexpo.co.uk)

25 November - 2 December 2001 Adelaide, Australia  
International Solar Energy Society, Solar World Congress. (<http://www.eastend.com.au/solar>)

# Sustainable energy studies by correspondence

Massey University is again offering two papers in sustainable energy which can be undertaken mainly from home. Both have almost half the work revolving around a personal project so each student can gain most benefit from enrolling. Fees are around \$400 and it is possible to just enrol for one interest paper and gain a certificate rather than enrol for a full degree or diploma.

Both papers begin in July and carry on through to October so it is not too late to enrol.

## 38.251 Sustainable Energy Systems

An introduction to the sources of energy available in New Zealand, and their use. Solar energy, wind, biomass, oil, hydro, gas, nuclear power, methane, heat pumps, transport fuels. Energy efficiency and conservation. The use of energy, including electrical reticulation, motors, engines, heating and cooling systems. Energy costs and environmental implications (including a laboratory course). A personal project on a selected energy topic or case study.

Objectives are to:

- Provide an appreciation of fossil fuels and renewable sources of energy, and the wider implications involved in their selection, utilisation and environmental impacts.
- Outline the dependence of industries (including agriculture/horticulture) on energy inputs and the need for energy management to reduce energy use and save costs;
- Provide a working basis for the assessment of an energy budget for an enterprise.
- Undertake an energy related project which has direct relevance to the interests of the student.

## 38.757 Renewable Energy Resource Engineering

The design and operational analysis of renewable energy supply systems using natural resources, particularly wind, solar, micro-hydro and biomass. Case-study evaluations and site visits. Economic and social issues of independent power supply systems.

Objectives: By the end of this more advanced paper a student will be able to:

- Describe and review the technological and environmental issues relating to a range of renewable energy sources

- Discuss the environmental, economic and social issues involved in the development of renewable energy, including for developing countries
- Develop the relevant scientific concepts using both basic mathematics and rigorous verbal reasoning
- Undertake life cycle cost analysis of a range of renewable energy technologies
- Design a renewable energy system by selecting the appropriate components and matching them with the immediate energy demand.

## Energy tidbits

### Green Taxes in Denmark

(From Jyllands-Posten)

The introduction of green taxes in Denmark in 1995 has proved to be a success, according to a report worked out by several ministries. Thanks to the green tax package, CO<sub>2</sub> emissions are likely to be reduced by 4% by 2005, even though it will still remain a 5% reduction to live up to the Government's plan. As regards businesses, the taxes have not had a negative effect on their competitiveness.

### And Un-green vehicles

(From The Guardian)

The Rolls-Royce Silver Spur and the Bentley Brooklands, two of the UK's most luxurious cars are also two of the least environmentally friendly, after Fiat's Ferrari 550 Marane, according to the Green Guide produced by the American Council for an Energy-Efficient Economy. The report claims that the real price of such cars is much higher than the purchase price due to hidden environmental costs such as air pollution. Both the Silver Spur and the Brooklands are powered by 6.8 litre engines and are only capable of doing 10 miles to the gallon in cities. Four wheel drive pick-up trucks and multi-purpose vehicles also featured prominently in the list of the world's most environmentally-unfriendly vehicles. However, Honda's Civic and the two-wheel drive Jeep Cherokee were praised as acceptable alternatives to electric and sub-compact cars. Of the 12 most environmentally friendly vehicles, 50% had electric engines and one was powered by natural gas.

## First hydrogen economy?

It hasn't happened yet, but a group of well known international corporations is at least studying the possibility of creating the world's first economy—in Iceland—to be fuelled by hydrogen instead of fossil fuels. Daimler/Chrysler, Norsk Hydro, Royal Dutch/Shell Group and Icelandic company Orkvis hf. have created the Icelandic Hydrogen and Fuel Cell Company to explore the possibility of this new economy and implement projects toward that end. Ultimately the joint venture aims to convert public and private transportation, including fishing vessels, to fuel cells. Work will also be carried out towards the production, storage and distribution of hydrogen. The first project will bring fuel cell powered bus service to Reykjavik. The other projects will be introduced between 2000 and 2002, according to the new company. To Icelandic, Hydrogen Daimler/Chrysler will bring its research in fuel cell powered vehicles; Norsk Hydro its expertise in hydrogen production and carriers; Royal Dutch/Shell its technology to convert liquid fuels to hydrogen-rich gas. Iceland is well known for its renewable energy sources. Some 67 percent of its energy comes from geothermal and hydroelectric power. Iceland has one of the highest per capita living standards in the world.

### SEF Conference, 1999

#### *Threshold 2000 - Livable cities for the next millennium*

Auckland, 24/5 June 1999

We will look at the infrastructure problems facing Auckland and other cities, their energy implications and possible solutions. Main themes will be power, transport and waste disposal—solid and liquid. As usual, we intend to have political debate, technical papers, examples of technologies, the opportunity to network, and field trips on the 26th

The coordinator is Tricia Allen  
E-mail: [tricia\\_allen@hotmail.com](mailto:tricia_allen@hotmail.com)  
Phone: 021 213 5603

We invite papers in the areas covered by the main themes.

## Government failure? Market failure? Or both?

The abstract of Ken Piddington's address to Solar 98 in Christchurch

Renewable energy technologies in New Zealand are not healthy. The reasons have something to do both with government failure and market failure. The main government failure is the assertion that market failure does not exist. It therefore does not see this as a risk to be covered.

The implications of 'unexpected' events, such as the current upheavals in the global economy, the first oil shock of the new millennium and the next major natural disaster in New Zealand, are all discounted. This creates a second layer of breakdown in risk management, which in the absence of any coherent policy becomes a private sector license to ignore climate change and other risks. The Auckland power crisis reflected this all too vividly. At the technical level, Mercury Energy was shown to have had a totally inadequate approach to technical and climatic risk.

Behind all these factors lies the widely held conviction that the production and supply of electricity is no different from the production and distribution of baked beans. Far from undermining this fallacy, the Auckland crisis has miraculously been interpreted as a demonstration of the need to accelerate 'reform' in this sector.

Therein lie the seeds of something much more serious than government failure. It is the conceit that New Zealand has somehow developed a policy matrix which has ultimate veracity and universal applicability. This rules out the need for debate, for risk assessment or any pragmatic evaluation of what is actually happening.

Such a pervasive illusion presents an enormous challenge to all practitioners in the energy sector (in particular those committed to renewable energy and energy efficiency), and to the advocates of sustainability in a broader context.

A copy of Ken's paper is available from the SEF office; a donation to cover costs would be appreciated.

# The Energy Efficiency Bill

Jeanette Fitzsimons introduced an Energy Efficiency Bill into Parliament last year. The stated purpose is to promote the conservation of energy within New Zealand. The intention is to provide a least-cost way to implement our commitment under the Framework Convention on Climate Change to reduce emissions of carbon dioxide.

The bill creates a framework for improving the energy efficiency of the New Zealand economy by establishing a statutory authority, a process for developing a national strategy, and the power to set performance standards. The bill gives the Energy Efficiency and Conservation Authority (EECA) formal establishment, broader functions, and powers to enable it to play a major role in New Zealand's strategy to meet our climate change obligations.

Under the bill, EECA have the power to develop market transformation plans, and to address market failures within various sectors of the energy market. These may include educational activities, partnerships, and recommendations to the Minister for performance standards and/or price control as appropriate, and may form part of the Energy Efficiency and Conservation Strategy.

Submissions on the Energy Efficiency Bill closed in October 1998. There was not enough time to put together a submission formally endorsed by the Forum, but individual submissions were made. They included the following points:

- The Bill makes no mention of any energy using sector or any policy approach, instead leaving EECA to develop policy in consultation with other stakeholders. The purpose is given admirably briefly, without setting any direction. This is an excellent arrangement, as it allows full flexibility in a rapidly developing field, while requiring discipline in following policy directions; developing a national strategy; and consultation.
- We note with incredulity the view (*in NZ Government policy*) that market deregulation will in itself produce energy efficient outcomes. There is a mass of theoretical literature and documented experience which indicates exactly the opposite. Briefly stated,

the international consensus is that significant improvements in efficiency can only be achieved when there is the right mix of public policy, institutional reform and clear market signals.

- New Zealand is quite simply out of step with other countries. The Bill would be seen as evidence that we have taken some sort of reality check. Indeed, it is not dissimilar from legislation which international agencies have supported in Eastern European countries to assist them in handling the situation after market liberalisation.
- The reality, in New Zealand and elsewhere, is that the quality of the environment is locked into steady and sometimes serious decline. The logical response would be to treat energy policy as the first line of environmental defence.
- Since SEF has consistently pressed for a national statement on energy policy, we see this as one of the major opportunities opened up by the Bill. We have pointed out that the discussion of such a policy could generate much greater consistency between public and private investment decisions, on the one hand, and New Zealand's international commitments.
- Transport is an area riddled with market failures, which could usefully be addressed by the 'market transformation plans' in Part 3 of the Bill. For example, road users avoid many of their costs. There are environmental externalities for noise (most probably cost \$M 290/year), local air quality (\$M 700/year), greenhouse gases (\$M 290/year) and water quality (\$M 100/year). Drivers also transfer risk to other road users, especially pedestrians and cyclists (at least \$M 80/year for cyclists).



## EnergyWatch

Some readers will have received this edition with a hand written address: a gentle reminder that your subscription is overdue.

# Corporations enlightened about solar power

By Christopher Flavin and Molly O'Meara

The Worldwatch Report: February 10, 1999. Distributed by The Los Angeles Times Syndicate  
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Market growth, spurred by international efforts to slow climate change, has made solar power a hot field for profit-minded investors. At least eight companies that draw more than 20% of their business from photovoltaics are now publicly traded, according to PV industry analyst Paul Maycock. Several major companies, such as Canon, Honda and Siemens, have invested in solar power, and the US energy firms Enron and Amoco have teamed up to increase investment in their jointly owned Solarex Company—most recently with a \$M 7.7 threefold expansion of their solar cell plant in Maryland.

British Petroleum CEO John Brown said in 1997 that his company would expand its investments in solar energy—boosting its output tenfold over the next decade—to \$bn 1.0. And Royal Dutch Shell has formed a fifth core corporate group that plans to invest \$M 500 in renewable energy over five years, 5% of what it spends annually on its fossil fuel production, processing and marketing businesses. Given the small base from which the PV industry is building, those announcements provide an important boost. The BP goal alone, is equal to total world sales in 1997.

These companies and others are investing in new solar manufacturing plants, that are expected to further reduce the cost of solar power

by deploying the latest technology and increasing the scale of production. Royal Dutch Shell, for example, has teamed with Pilkington Solar International to build a 25-megawatt factory in Germany, the world's largest so far.

The silicon in solar cells typically accounts for only 10 percent of a module's cost, leaving ample room for streamlined assembly to reduce costs. And as companies scale up production, robotics will become more cost-effective. For several years, with producers racing to keep up with rising demand, the average price for PVs has remained at around \$ 4000 /kW. However, according to the Massachusetts-based Spire Corporation, which makes equipment for manufacturing solar modules, its latest equipment allows large factories to produce modules at \$ 1780 /kW and potentially sell them for as low as \$ 2000 /kW.

Also on the horizon are potential gains in the efficiency of the solar cells themselves. Single crystal cells, the mainstay of the industry for four decades, still accounted for nearly half of sales in 1997. Another 34% consisted of the newer polycrystalline cells, which are a bit less efficient but also cheaper to produce.

The other main class of solar cells in use today is the non-crystalline 'thin film' cells that are less

## SEF Members: Special General Meeting

The Committee is calling a Special General Meeting, in the Forum's office at 171 Thorndon Quay at 15.00 on Thursday 8 April 1999. The purpose of the meeting is to amend the SEF constitution, so that we can get an income tax exemption. The amendment proposed is an addition to clause 20.1, which at present reads:

*20.1 The Rules of the Forum may be added to, altered, or rescinded by a resolution of the General Meeting.*

We propose to add to this clause:

*However, no addition to or alteration of the non-profit aims, personal benefit clause or the winding up clause shall be approved without the approval of the Inland Revenue Department. And the provisions and effect of this clause shall not be removed from this document and shall be included and implied into any document replacing this document.*

Please cut out and return this coupon, as your proxy authorising us to make this amendment. If we have an e-mail address for you, we will also send you this notice so that you can reply more easily.

I agree / do not agree\* to amending the SEF constitution as proposed above

Signed \_\_\_\_\_

Date \_\_\_\_\_

\*cross out one

than one one-hundredth of the thickness of conventional solar cells. They do not need to be sliced or rigidly encased and can be made into large, flexible sheets ideal for integrating into building materials such as shingles. Thin films are less efficient than crystalline technologies, but much cheaper. They also use less raw material, so costs are cut further.

The solar market has recently grown at 10 times the rate of world oil production. If annual production were to grow at 25 percent per year through 2020, solar capacity would reach 106 000 MW by 2020, generating as much power as 30 to 40 large nuclear plants. In Sacramento, the local utility estimates that the city could generate 400 MW of electricity, one-sixth of the local peak demand, simply by covering the available south- and west-oriented roofs, parking lots and transmission-line corridors with solar panels. Researchers at the U.S. Department of Energy estimate that if PV panels were mounted atop 5000 square kilometres of roof space, they could generate 25% of the electricity used in the United States. And a study by Shell projects that solar and other renewable energy sources could grow from less than one percent of world energy use today to 5-10% by 2020 and 50% by mid-century.

The world still has a long way to go if the energy system is to be effectively 'decarbonised' over the next century, as most atmospheric scientists believe it must. Solar energy cannot do the job alone, but combined with other new technologies such as wind turbines and hydrogen fuel cells—as well as more resource-conserving urban designs, products, processes and lifestyles—it may allow the world to live a little cooler in the 21st century.

## An Energy Fair in the US

The US magazine 'Home Power' (12/98) has an article on a renewable energy fair in the south western USA, held in Flagstaff, Arizona; one of several such fairs held in the States last year. It included a conference, workshops and industry booths, with an attendance of thousands (makes the SEF conference look small). There were lots of exhibitors that nobody on this side of the Pacific has ever heard of, but also Siemens, General Motors and Honda.

A claimed advantage of meeting in Flagstaff is the 2000 m altitude, which boosts the performance of PV arrays: perhaps a NZ Energy Fair in Ohakune would help to offset the loss of business from a short ski season?

## Nuclear Power in Germany

The German government's plan to close 19 nuclear plants is in doubt, after its coalition with the Green party lost a legislative majority. The Social Democrats may still pass a law without approval from the Bundesrat, which is required for laws that concern German states. The nuclear stations provide one-third of the country's energy.

## EnergyWatch again

We expect to produce the next edition of EnergyWatch in May 1999, so now is the time to start on that article you always wanted to send us. 50 - 1000 words will be fine, although we reserve the right to edit.



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