

# ENERGYWATCH

The Newsletter of the Sustainable Energy Forum - P O Box 11 152, Wellington, Phone/fax: 04 384 2755.

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

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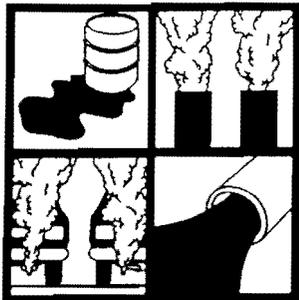
## SOME PEOPLE HAVE 'EM...

*Ken Piddington, Convener of the Forum*

A "National Sustainable Energy Policy" that is! Among its other preoccupations, the Australian Government is currently running an important process, which is planned to end in mid-1996 with the publication of a White Paper. The first stage in the process was the release late last year of a discussion document - ironically enough the Forum could have made a submission if the timing had fitted in with the Tauranga Conference (and we may still have the opportunity to make some comments before the White Paper finally emerges).

Like all such document, the text has something for everyone and often shows signs of having gone through the interdepartmental laundromat in Canberra. But it makes a strong push for a "sustainable energy services sector", which is defined as "efficiently meeting the community's energy needs in ways which minimize environmental impacts".

An interesting suggestion is that upward pressure on energy prices because of rapid expansion of demand in developing countries (especially China, India and the 'tigers') could create price increases - even for Australia with its cheap fossil fuel resources. This "could



raise concerns about security of energy supply" - an intriguing thought that should surely be taken into account in any post-Maui scenarios for Aotearoa/NZ.

A lot of space is given therefore to greenhouse issues, but the most intriguing feature is to find one tenth of the 55- page printed document given over to a detailed examination of the role of governments (of which the Australians as we know have too many!). But the role of central government in forestalling market failure and in providing leadership is all set out in detail. It will be interesting to see how this, essentially bureaucratic, draft survives in the next stages of the consultation process.

But one paragraph stands out, and is not likely to be open to dispute;

"The ownership of natural resources, including energy resources, is vested in the community as a whole. In some cases government action may be appropriate to ensure that the benefits of producing or mining these resources is shared by the community as well as the producers."

Kia ora to our Australian colleagues who, in this area at least, can claim to be a few wallaby jumps ahead of the kiwis who are digging for different worms in the energy forest!

An update on the Australian process will be available at the Tauranga Conference and could be used in the workshop on 'National Energy Policy'. The document itself is available by writing to 'The White Paper on a National Sustainable Energy Policy, Energy Division, Department of Primary Industries and Energy, GPO Box 858, Canberra, ACT 2601'.

## TAURANGA CONFERENCE 1996

*Mary Dillon*

Plans are shaping up nicely for the Annual Conference on the 29th & 30th March with sponsorship from Tauranga Electricity, the Energy Efficiency and Conservation Authority and from Tranz Rail.

We have managed an excellent range of speakers, experts, locals and iwi with some possible surprises added in as well.

Workshops will deal with the Ministry of Transport's discussion papers as well as with electricity generation and community issues.

We will discuss once again a National Sustainable Energy Policy. In New Zealand our politicians have put

a national policy to one side in the 'too hard basket'. Australia, on the other hand, has produced a white paper for nationwide discussion. It is a pity on this occasion that Australia has had to lead the way!

Field visits are wide ranging and we have some unique entertainment arranged for the Conference dinner. Accommodation can be arranged to suit all pockets.

Come to Tauranga, learn more about Sustainable Energy issues and see some of the beautiful Bay of Plenty at the same time.

For further information ring Mary Dillon or Rodney Evans at 07 578 7933 or fax 07 578 2670; or write to SEF Conference 1996, PO Box 1034, Tauranga.

# LET THE SECOND DEBATE COMMENCE

*Pete Hodgson, MP,*

*Opposition Spokesperson for Energy and the Environment*

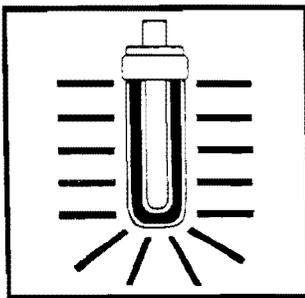
About twenty years ago New Zealand's first energy debate of recent times was about to get underway. The new Muldoon Government was grappling with the issue of how to best deal with the Maui gas field. The outgoing Labour Government had signed a series of temporary deals; fortuitously, as they then thought, just before the oil shocks of the spring of 1973 sent up the price of natural gas.

By the late seventies the debate was in full swing. These were the days of the Liquid Fuels Trust Board and then of Think Big. The debate widened, well beyond Maui and into the realms of the Clyde Dam, the aluminium smelter at Aramoana, the Glenbrook steel mill, the Bluff smelter expansion and the Marsden Point expansion.

Like many, I was trying to comfort myself in the midst of this technological hyperbole with titles such as "Small is Beautiful" and "Soft Energy Pathways". As it happened, in 1979 I wrote what was to become an energy discussion paper within the Labour Party which was finally summarised and amended into Labour's 1981 energy policy.

Labour opposed Think Big in 1981, but National won New Plymouth, Invercargill and Whangarei and therefore the election. The Government then faltered over Clyde, but Social Credit came to its rescue and the Synfuels and ammonia-urea plants were also built. I am forever grateful that Aramoana, just down the road from where I live, was spared.

This discussion paper I wrote had a rather unctuous theme running through it called the post Maui era. That era is already upon us, several years earlier than I had predicted. My, doesn't time fly when you set out to squander fossil fuels!



The post Maui era is the second energy debate. In a nutshell the question is "what will replace Maui?" Will it be coal and imported oil or will it be improved efficiency and renewables? Will we seize upon the demise of Maui as an

opportunity to take a significant step towards a sustainable future?

Natural gas has a bright future in New Zealand, but not to generate electricity, nor to manufacture methanol, urea or synthetic petrol. Instead natural gas will play a significant role in the transition away from fossil fuels as we move to purpose built CNG-powered cars & to cogeneration.

Yet it is with renewables and with improved energy efficiency that the long term future lies. There is no better measure of a nation's progress towards sustainability than its ability to shake its addiction to fossil fuels. New Zealand has a long way to go - only 29% of our consumer energy is renewably produced. Our economy and our society are therefore powered unsustainably. The logical, unassailable, conclusion is that business-as-usual policies have no validity. Yet they predominate, with some exceptions, most thinking and most Government actions.

The details of a policy which would enable a significant move towards sustainable energy use are, of necessity, numerous indeed. Some are dramatic or exciting: many merely involve the tedious identification and removal of barriers - erected by industrial interests or by habitual apathy.

There is no doubt that New Zealand can make the shift. Indeed we are well placed to. We have a well educated and innovative society that adopts new technology quickly, if fax machines or E-mail are any indication. There seems no good reason why that ethic will not extend to the modern era of electric vehicles or to emerging biomass technologies. The paradox of a history of cheap and readily available energy is that we are able to make significant energy efficiency gains at low cost. There is low fruit to be picked. Moreover we are a scattered, low density population, well poised to lead in remote area power supply systems.

But change will not proceed without debate and without integrated resource planning. We need to discuss and set goals, such as a 2.5% per annum improvement in energy efficiency, or a 2.5% per annum switch from non-renewables to renewables. They must be achievable goals, but arising from the process of public debate and guided by the ethos of integrated resource planning techniques. That is a key role for Government, a role it currently does not play.

But it is a role for others too, chief amongst them the Sustainable Energy Forum. Let the second energy debate commence.

## NEW PHONE NUMBER

**04 384 2755 - SEF TELEPHONE & FAX**

From February the Forum will have a new telephone and fax number - 04 384 2755. We hope this will not be too inconvenient for our supporters but is unavoidable as we are moving to new office space (however our PO Box address remains the same). For a short time calls will be forwarded from our previous number, however this is a fairly expensive exercise, so please make a note of our new number. Many thanks.

# DRAFT AGENDA FOR SEF TAURANGA CONFERENCE

## 28/3/96 - 30/3/96

### THURSDAY

5.30pm - 7.30pm Registration  
7.30pm - 9.30pm Sustainable Energy Forum's AGM

### FRIDAY

8.00am - 8.30am Registration  
8.30am - 9.30 Opening/Powhiri/Welcome  
9.30 - 10.00am Alan Bickers - Provocative, layman's transport dream  
10.00 - 10.30 Neil Plimmer (Ministry of Commerce) - National Energy Policy/Voluntary Agreements  
**10.30 - 11.00 Morning Tea**  
11.00 - 11.20 Roger Toleman (Ministry of Transport)  
11.20 - 11.40 Mark Bachels (CRC) - Community Transport Planning  
11.40 - 12.00 Questions to two previous speakers  
12.00 - 12.30 Chris Kissling (Lincoln Uni.) - Summation/Discussion from floor  
**12.30 - 1.30 Lunch**  
1.30 - 3.00 Workshops - Including Land Transport, Environmental Costs of Transport, Urban Transport, Rural & Inter-Urban Transport, National Energy Policy, Community Energy, Renewables, Iwi.  
**3.00 - 3.30 Afternoon Tea**  
3.30 - 5.00 Workshops - (Second choice of above options)  
5.00 - 5.30 Display/Exhibition/Networking  
**5.30 - 7.00 Dinner**  
7.00 - 9.30pm Experts & Politicians Forum

Two separate panels including

- 1) Robin Dunlop (Transit NZ), Murray King (TranzRail), Ken Piddington (SEF), Local Authority Representative (to be confirmed).
- 2) Jeanette Fitzsimons (Deputy Leader of the Alliance), Winston Peters MP (Leader of NZ First Party and MP for Tauranga), Pete Hodgson MP (Labour Spokesperson for Energy & the Environment), National Party representative (to be confirmed)

### SATURDAY

9.00 - 9.30am Phil Edgington - Electricity  
9.30 - 10.30 Bill Cassidy (TEL)  
**10.30 - 11.00 Morning Tea**  
11.00 - 11.30 Tainui Representative - Investment  
11.30 - 12.00 Frank Pool (EECA) - Renewables  
12.00 - 12.30 Ralph Sims (Massey Uni.) - Biomass  
12.30 - 1.00pm Ken Piddington (SEF), Chair/Summation  
**1.00 - 2.00pm Lunch**  
2.00 - 5.00pm Field Visits - Two/three local sites  
6.30 - 9.30pm SEF Dinner & Entertainment - Baycourt Centre



**Tranz Rail**

Tauranga Electricity Limited



**EECA**

Energy Efficiency and Conservation Authority

# ROADING PAPER

*Kerry Wood*



'Roading as an Economic Good' is the title of another of the Ministry of Transport's Land Transport Pricing Study papers. It is available free from the MoT. Comments on all papers are being encouraged and should be forwarded to the MoT by the 30 June.

Roads are discussed in terms of being something between a private good (like any private property) and a public good (like a lighthouse). Public goods are defined as 'non-rivalrous' (one person's use does not detract from that available to others) and 'non-excludable' (tolls or road pricing would be too difficult or expensive). The report says that few things are purely public goods and roads lie on a spectrum between a public and a private good.

Main roads are no use without the minor roads to feed traffic to them, so the system has to be treated as a whole. This means that saying one road is more of a public good than another becomes meaningless, and the whole system has to be treated as an almost pure public good. So if the system is 'non-rivalrous', why do we get traffic congestion?

## ECONOMIC ROAD USERS

An unstated assumption in treating roads in economic terms is that road users behave in an economic fashion, but car advertisements quickly show the error of this. If we behaved economically we would use the term 'supercar' for the likes of the Morris Minor or Volkswagen, and see the Ferraris and Volvos as expensive and impractical.

Even commercial road users do not always behave economically. An investigation into banning heavy trucks in London showed that setting a limit on truck size would reduce costs, not increase them as claimed by the industry.

The MoT paper misses the opportunity to look at

three important areas:

- The system of cost/benefit analysis used to justify new road construction, and its connection to economic theory.
- The economic logic of subsidising road users by paying for roads from rates. The first MoT report in this series reminded us that a third of roading expenditure comes from rates, but this is outside the economist's brief.
- Transfers from one mode of transport to another.

## ROAD/RAIL COMPARISONS

If a new or improved road encourages passengers to go by car instead of by train, the railway's income falls. Consequently costs per passenger go up and with no subsidy the fares must be raised, encouraging a further transfer to road. This could trigger a further round of fare increases and could lead eventually to closure of the railway. A commuter road improvement could make travelling worse for everyone by forcing all rail commuters onto the road. The alternative of improving the railway is normally cheaper and more sustainable but is rarely considered. It is 'uneconomic' because it cannot capture the external benefits to road users, while the road users escape paying for the external disbenefits of road use.

Commuter bus services are a similar problem. Urban road building benefits cars more than buses, because the buses have to stop for passengers. Congestion makes bus services unreliable as well as slow, further discouraging users. But road improvements aimed at the buses lanes, traffic light priority etc help to reverse the decline of passenger transport, making the buses faster and more reliable, and by attracting passengers this may even help to speed up the cars.

A bus lane (or a cycleway or footpath for that matter) can carry far more people than the same space on an ordinary road, so it is less likely to fill up and is closer to being 'non-rivalrous' than the road. It excludes cars but is 'non-excludable' for other buses: this makes it closer to being a 'public good' than a conventional road. But the network argument tells us that a bus lane is useless without the rest of the bus route and so cannot be considered separately.

If economics is unable to discuss roads in real-world situations, it that a problem for economics or roads?

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# ON TRACK FOR AN ENERGY WISE FUTURE

*E'duar Enoka*  
*Energy Officer - Tranz Rail*

Energy is Tranz Rail's largest cost, yet it is also one of the most controllable.

Tranz Rail Executive Manager Corporate Services, Dr Murray King, says Tranz Rail is committed to commercially and environmentally responsible energy management and to the promotion of an energy efficient workplace.

Tranz Rail is a founding member of the Energy-Wise Companies campaign, and this commitment has added urgency to its existing energy drive.

To facilitate energy consciousness, a fulltime Energy Officer has been appointed with the brief to create and implement an Energy Management Policy throughout the Company.

Dr King said that one of the first directives put in place is that in all new work, energy efficiency must be taken into the consideration at the design stage.

For all new design work, the Company will implement change and so begin to instil an energy efficient culture. However, there are also efficiencies which can be made in existing operations.

Energy audits are in the process of being conducted on the top 10 non-traction electricity consumers within the Company, thereby establishing benchmarks for other divisions.

Six pilot audits of medium size sites throughout the company resulted in a number of measures which reduced energy used.

For example after an audit at the Tranz Rail Hutt Workshops Traction Machine Plant energy saving measures were recommended which would reduce the energy the plan used by 12% with no loss of productivity. Furthermore, the capital cost of those measures, such as installing delay timers on ovens, would be repaid in energy savings within two months.

Further energy efficiency mechanisms the Company will initiate over the next few years include flange lubrication and train pacing.

Flange lubrication involves greasing the inside of rails to reduce rolling resistance while not detracting from the braking potential of the train. Road-rail vehicles are currently being trialed with a prototype flange greasing facility which discharges

a minute amount of grease onto the rails.

Train pacing is a technique of avoiding unnecessary stoppages to reduce the energy consumption associated with restarting a train.

This communications based initiative involves the management systems of train control and the rail network. Through training and staff awareness of train pacing, significant energy savings can be made.

Overseas estimates show that these two factors alone can reduce fuel consumption by more than one quarter, although Tranz Rail's mainly single track network and difficult topography may not allow such large savings.

Upgrades to the Company's 30 strong DFT fleet will increase each locomotives horsepower by 50% and reduce its fuel consumption by 15%.

Mechanical changes to the DXR locomotive, the most powerful in the Tranz Rail fleet, have increased its horsepower by 15%. Initial tests also show that the DXR uses 13% less fuel and can haul nearly one third more than its predecessor the DX in the same time.

An energy awareness publicity campaign using the "Eddie Energy" logo was launched last September to heighten awareness amongst staff of the need to conserve energy.

Articles and tips on saving energy were published in the Company's staff magazines and a collection of memory aids such as stickers, display wobblers, and posters have been distributed throughout the Company.

Dr King said that when you add the energy efficiencies of the upgraded locomotives, initiatives on the track network, coupled with an energy conscious staff, the potential savings per net tonne kilometre of freight hauled are considerable.

Tranz Rail is committed to being an energy-wise company. Energy efficiency makes good commercial sense and Tranz Rail is not the only one that benefits. Employees benefit at home with greater energy awareness, and the nation as a whole benefits with energy resource conservation and improved competitive edge.



**Tranz Rail**

**COMMITTED TO ENERGY EFFICIENCY**

**PROUD TO BE A SPONSOR OF THE SUSTAINABLE ENERGY FORUM 1996**

# PROGRESS TOWARDS PRIVATISATION?

*Les Ryan, Invercargill, Power for Our Future, Southland*

Power for Our Future Southland is extremely concerned that Electricity Invercargill Ltd (EIL), owned by the City Council, will soon be privatised if The Power Company (covering most of Southland) is restructured as recommended by a consultative committee appointed by the Minister.

A consumer trust would own 54% of the company, private investors 23%, and a cornerstone investor, 23%. The Minister would appoint the Trustees, and also the Trust's Directors on the company. Two companies have shown interest in becoming the cornerstone investor - Infratil and Amuri.

The Directors of EIL in their submissions to the consultative committee suggested that EIL be sold to the power company. Having expressed this intention, the action cannot be far away. Coincidentally EIL has been valued at \$35 million - the same amount as the city council's debt.

Southland mayors and local councils are also up in arms about this restructuring plan. A statement issued by 3 out of 4 Southland Mayors (excepting the Mayor of Invercargill City), rejects the ownership model, as Ministerial appointees on the Trust and the Board would be able to decide on the "cornerstone shareholder". The Mayors' statement describes the decision as "a carefully crafted progression to privatisation with a misleading appearance of Trust ownership, initially ineffectual and then irrelevant." The statement points to the irony of the Minister having in his own electorate a long-term 100% Community Trust, which is surviving nicely in the commercial world, generating some of its own power and hoping to buy one of the small ECNZ power stations, Cobb.

The Minister commented earlier that the local body politicians seem to be "anchored in the status quo" and suggested that they meet the committee again. The Mayors' statement responds - is it not the Minister's responsibility to respond to the concerns expressed and ensure he takes the wishes of Southlanders into account?

## LAND TRANSPORT PRICING STUDY

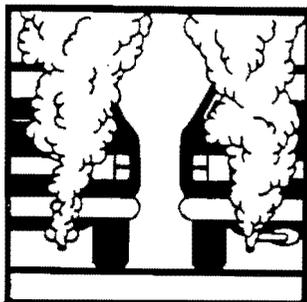
The Ministry of Transport's Land Transport Pricing Study is grinding ahead slowly. The papers are:

- The Cost of Roothing Infrastructure (Published July 1995, see EnergyWatch issue 2)
- Roothing as an Economic Good (Published December 1995, see review in this issue)
- Greenhouse Gas Emissions from NZ Transport (Published October 1995)
- Road Safety (due in February 1996)
- Environment (due in February 1996)

The first paper says that our roads are worth at least \$ 25 billion and are more or less paying their way, but the word is that the road safety and environmental costs push costs up to a level far higher than user charges. This is what has been found elsewhere, but the systematic investigations by MoT will give New Zealand a much clearer idea of costs than most other countries have and will help in developing sensible policy options.

Papers are free from: Land Transport Pricing Study, Ministry of Transport, P O Box 5248, Wellesley Street, Auckland.

Most papers are available in full and summary forms. Comments on all papers close at the same address on 30 June and the papers will be a major focus of the SEF Conference on March 29-30.



## CLIMATE NEWS

- On the 11th January the Energy Minister released new Ministry of Commerce figures showing that New Zealand's CO2 emissions rose by 7% between 1990 and 1994. About 90% of these emissions came from the energy sector (which includes domestic transport). Emissions increased temporarily during 1992 as thermal powered electricity generation increased to offset the effects of the hydro shortage.

The Minister of Energy, Mr Doug Kidd, said "However, the report considers only gross emissions, and it is net emissions that contribute to the greenhouse effect. The Government's target is to return net emissions to their 1990 level by 2000."

Carbon dioxide emissions are about two fifths from the domestic transport sector, one fifth by industry, and one eighth by electricity generation, with the remainder from petroleum refining, and the commerce, residential and agriculture sectors.

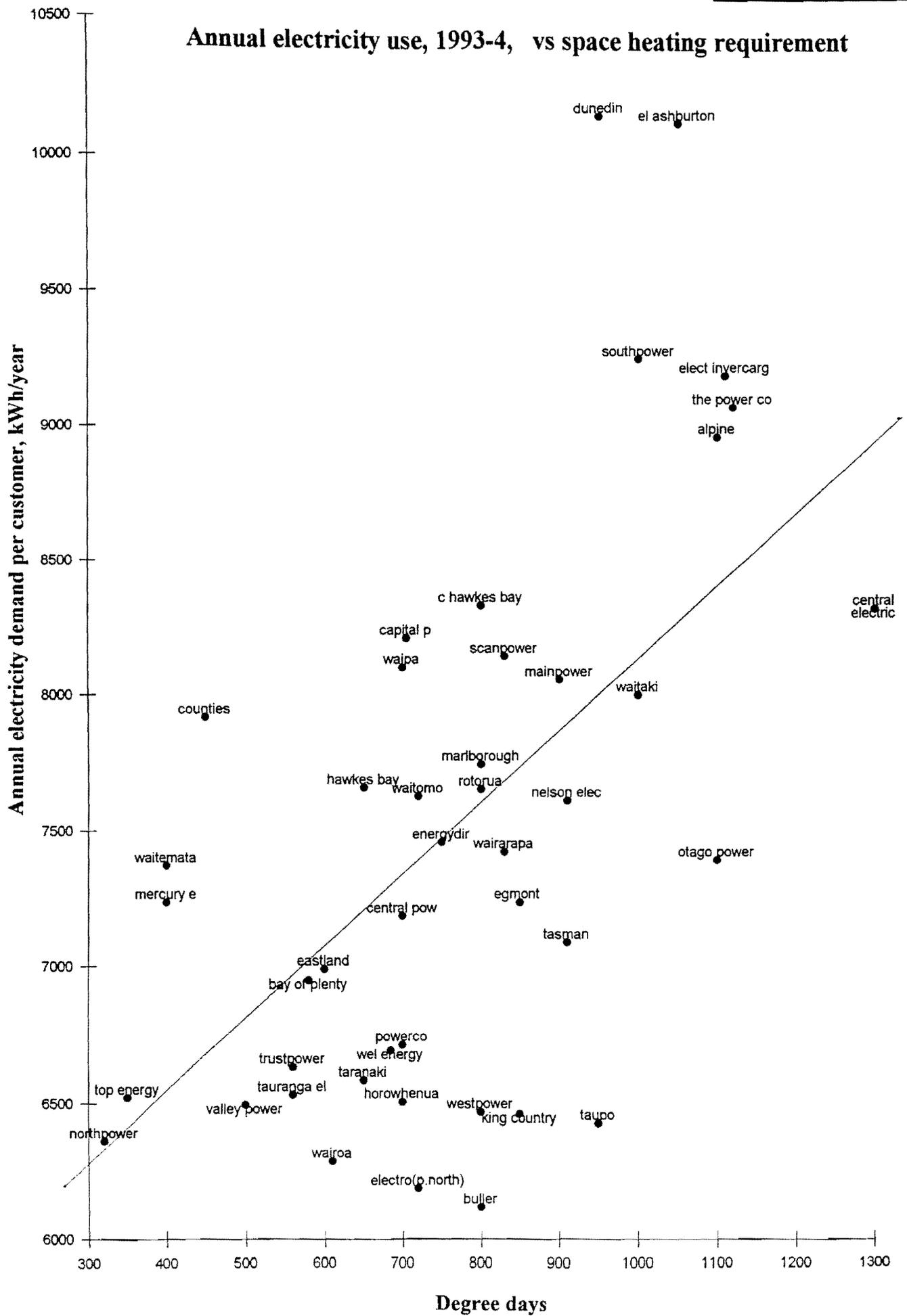
- On the 18th January the Energy Minister was at the 'Ground Breaking Ceremony' at the site of the new Stratford power station. The station has been taken over by a consortium of Fletcher Challenge, Mercury Energy and TransAlta.

- The CO2 Working Group should be forwarding a draft of its discussion document to a Cabinet Committee in mid February. The earliest the discussion paper will be circulated to the public for comment will be late February.

The principle issues the eight person taskforce were dealing with (4 officials and the 4 private sector members) were;

- 1) CO2 and the Resource Management Act, 2) Whether a carbon charge is the most efficient economic instrument to use if adequate progress on reducing CO2 emissions has not taken place by mid 1997, 3) The need for further analysis on NZ's approach of using trees as carbon sinks.

**Annual electricity use, 1993-4, vs space heating requirement**



# INFLUENCES ON DOMESTIC ELECTRICITY CONSUMPTION

Molly Melhuish

New Zealand's domestic electricity use correlates strongly with climate and wood price, in an analysis which tests six potential influences on annual consumption per domestic consumer. The other factors - electricity price, fixed charges, gas prices and domestic sales of each supplier - were not statistically significant.

This is the remarkable conclusion of a multivariate regression analysis of the information in the accompanying table. Electricity information came from the Electricity Supply Industry Statistics 1993/94 published by ESANZ; fixed charges from a table released by the Minister of Energy; wood and gas prices from Consumer April 1993 p. 6-7, and climate data from a table of degree-days base 15 degrees, which drives the space heating requirement of a house (NZ Meteorological Service, Misc. Pub. 159, 1978).

I had to estimate the degree-days figures appropriate to some power companies such as Powerco, which covers warm Wanganui and chilly Ohakune. Wood and gas prices also had to be adapted, as none were given for Kaitaia, central Otago, King country, S. Westland, etc.

Despite the fact that climate data and wood prices were only estimated, they explained 64 % of the variation in annual domestic electricity demand per customer. Adding the four other variables explained less than 1 % more of the variation. The R-square for the two-variable analysis was .636, and the adjusted R-square, .619. The remaining four variables changed the figures to .643 and .585 respectively. Coefficients, Standard Errors, t-Stats and P-values for the six-variable analysis are shown in the table.

Other factors were tried, including number of customers and space heating requirement as calculated by the Building Research Institute; these were rejected because of multicollinearity. An adjusted wood price was also tried, using the findings from a Canterbury Regional Council study which indicated that 50% of wood used in rural domestic heating cost nothing, but the resulting series proved a non-significant influence on electricity demand.

It would appear that although purchased wood may not supply a very large amount of space heating energy, its price is a good measure of the amount of wood actually used for heating, and that this is highly significant on a national scale. Undoubtedly gas price is a very important influence for some power companies.

The relevance of wood fuel was suggested by information in EECA's June 95 Monitoring Quarterly, showing that wood supplied 34% of fuel used in domestic space heating.

Here and over the page are graphs of the two significant factors, and the best straight-line fits. Names could not be fitted onto the wood-heat graph, but they are not difficult to figure out by studying the table.

Average annual electricity demand per domestic consumer*93-'94 compared to electricity sales, climate and energy prices							
company	average	domestic					
	annual demand	domestic sales	degree days	elect price	fixed charge	wood price	gas price
	custome	GWh/yr		c/kWh	\$/yr	c/kWh	c/kWh
alpine	8941	201	1100	7.5	232	4.8	14
bay plenty	6949	130	580	10.4	308	3.2	4
buller	6117	21	800	10.4	287	3.4	14
c hawkes b	8324	44	800	11.0	195	4	9
capital p	8204	409	705	9.7	205	5.2	4
central elec	8307	112	1300	8.1	179	4	14
central pow	7184	168	700	10.2	219	4	3
counties	7917	162	450	9.6	162	5	3
dunedin	10115	443	950	7.9	187	5.8	12
eastland	6989	110	600	11.9	329	2.8	6
egmont	7234	63	850	10.6	211	3.4	3
el ashburton	10088	91	1050	9.0	149	4.8	12
el invercarg	9167	142	1110	7.7	259	4.2	11
electro(p.nort	6187	97	720	11.7	183	2.8	3
energydirect	7456	575	750	9.7	164	5.2	4
hawkes bay	7655	343	650	9.7	162	4	4
horowhenua	6505	193	700	10.6	203	3.5	4
king country	6461	62	850	8.7	200	4.2	13
mainpower	8050	127	900	9.9	243	4	16
marlborough	7741	121	800	8.4	252	3.6	13
mercury e	7236	1528	400	9.4	222	6.2	3
nelson elec	7607	53	910	8.9	240	4	10
northpower	6364	216	320	9.5	100	3.8	4
otago power	7387	82	1100	9.4	219	4	14
powerco	6713	177	700	10.9	162	2.8	4
rotorua	7649	180	800	11.3	378	3.4	4
scanpower	8137	36	830	11.6	306	4	13
southpower	9230	1196	1000	8.6	99	4.8	14
taranaki	6583	203	650	11.6	205	3.4	3
tasman	7087	153	910	9.4	184	3.4	10
taupo	6426	59	950	11.5	324	2.8	13
tauranga el	6531	17	560	9.6	225	3.6	4
the power co	9051	217	1120	9.5	230	3.6	11
top energy	6521	120	350	11.7	182	3.8	4
trustpower	6631	266	560	10.4	208	3.6	4
valley	6495	286	500	11.2	308	4.2	4
waipa	8097	116	700	9.8	273	4.2	4
wairarapa	7420	118	830	11.5	246	2.8	14
wairoa	6288	26	610	13.2	339	2.8	6
waitaki	7990	74	1000	8.5	260	4.6	12
waitemata	7370	1018	400	9.6	308	6.2	3
waitomo	7624	58	720	11.7	239	4.2	14
wel energy	6692	341	685	11.5	141	4.2	4
westpower	6468	59	800	11.5	310	3.4	13
	intercept	Statistics					
Coefficient	3156	-0.288	2.749	-23.1	-0.671	686	-8.6
Standard error	1959	0.465	0.755	119.5	1.741	196	32.6
t-Stat	1.611	-0.619	3.639	-0.193	-0.385	3.50	-0.26
P-value	0.1158	0.540	0.001	0.848	0.702	0.001	0.790

