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EDITORIAL

by John Blakeley



Three Inconvenient Truths

The recent joint ESR/SEF Conference on "Responding to Oil Depletion and Climate Change" held on Saturday 26 July in Oakridge House at Unitec in Auckland was a very successful event as reported on elsewhere in this issue and on the SEF website www.sef.org.nz.

For myself, it highlighted three "inconvenient truths" which not only our politicians, but also most of our society as well, want to shy away from and keep their heads firmly in the sand in their planning for the future. This is not only true for NZ but for many other countries as well.

First Inconvenient Truth

Supplies of crude oil globally are going to diminish in relation to demand before very long and almost certainly within the next decade, leading to a continually escalating international oil price, and most probably shortages of supply.

This will inevitably mean a much lesser amount of petrol and diesel fuels available both for transporting goods and, more particularly, that

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available for personal mobility, especially in our presently excessive number of motor cars in NZ.

A very significant event occurred at the end of January 2008 when a statement was made by Shell CEO, Jerome van der Veer predicting that world demand for oil and gas will outstrip supply within seven years (i.e. around 2015) and that this would have serious environmental and political consequences.

This statement by Shell represented a major breaking of the ranks with the other major oil companies, such as Exxon Mobil and BP in maintaining that “there is still plenty of oil out there, technology will overcome shortages, and we’ll go out there and find it”.

At the ESR/SEF Conference it was stated that the large French oil company, Total, has more recently said something similar to Shell, and that one or two other major oil companies are now acknowledging the looming problem.

And yet those responsible for the planning of our towns and cities, instead of trying to make their best forward estimates of oil supply and price, seem to be basing their future planning on looking backwards into the past and then trying to predict that forwards into the future!

Second Inconvenient Truth

The Government’s Emissions Trading Scheme (ETS) is likely to have very little effect in reducing NZ’s overall greenhouse gas emissions increase by 2012.

Geoff Bertram and Simon Terry of the Sustainability Council have estimated that the ETS will only achieve a 2% reduction in greenhouse gas emissions by 2012 from what they would otherwise be. There seems to be as yet no official estimate to suggest a different figure.

At present NZ’s overall greenhouse gas emissions are 26% above 1990 levels (for the 2006 calendar year) and are likely to be well in excess of 30% by 2012 - so the impact of the

ETS in reducing greenhouse gas emissions is likely to be absolutely minimal.

The ETS seems to me to be aimed at salving our collective national conscience about increasing greenhouse gas emissions causing global warming/climate change.

Through the ETS we can persuade ourselves that by purchasing carbon credits, that will collectively absolve us as a nation from taking further action, or accepting full responsibility for the extent that these emissions will be in excess of the 1990 level by 31 December 2012, at the end of the Kyoto Protocol commitment period (CPI).

Speaking recently on TVNZ’s Agenda programme (Sunday 3 August) the Prime Minister, Helen Clark, seemed to be implying that the main imperative for introducing the ETS was for NZ to try and keep onside with our Western European trading partners; rather than to actually be doing something that will genuinely reduce our greenhouse gas emissions.

In answer to a specific question, the Prime Minister seemed to be quite vague as to exactly how the lower income members of our society were going to be compensated for the significant price increases which the ETS will impose on them if passed into legislation before the election later this year (and it was passed on 10 September - see Page 30).

She did not seem unduly worried that if the ETS is passed into legislation, it will mean no decrease in our greenhouse gas emissions. Rather, she seemed to be much more concerned that if the ETS is not passed into law, the impact of the country’s likely billion dollar plus liability under the Kyoto Protocol by 2012 will have to be paid for by the taxpayer; rather than being paid for by the NZ consumer (through their energy bills).

Third Inconvenient Truth

It will not be possible to reduce greenhouse gas emissions back to anywhere near 1990 levels, let alone reduce them below that level, without a significant impact on living standards, both within NZ and globally.

All the world's political leaders seem to believe that somehow through "technology" these emissions will be magically reduced but we know that this is most unlikely to be the case.

The latest issue (June 2008) of the journal *Pacific Ecologist* looks at the problems of the dysfunctional global economic system with its imperative for continual economic growth and asks whether we can actually reduce greenhouse gas emissions sufficiently and move to renewable energy, while the world economy continues to grow through the 21st century as planned.

Can responding adequately to global warming actually be done in any consumer society?

Several articles in this issue of *Pacific Ecologist* demonstrate clearly in different ways why we must phase out economic growth. This is a tough challenge for politicians and voters.

The Peak Oil advocate, Richard Heinberg who visited NZ last year has recently said "for the worst case future scenario to develop, all that is needed is for world leaders to continue with current policies".

John Blakeley

Conference Outcomes

The following statement was issued at the end of the ESR/SEF Conference held on Saturday 26 July 2008.

The Urgent Need to Address Future Oil Scarcity in New Zealand

The conference was a resounding success. Those present accepted the urgent changes we need to be talking about, the mix of cold hard facts that we as a society find hard to face up to but also the hope for the future in the examples of local action in New Zealand communities on sustainable towns, and examples from abroad. Those present at the conference were deeply concerned at the lack of urgent action by the Government and most political parties on rising oil prices, peak oil, and climate change. The conference therefore agreed to the following statement, in the hope of helping raise

SEF AGM and Seminar

1. The SEF AGM will be held at 10.15am on Thursday 9 October 2008 in the Edison Room of the EECA Offices at 44 The Terrace, Wellington.

For Agenda details and a Proxy Form, see separate notice attached.

Indications of attendance or apologies should be sent by email to convenor@sef.org.nz.

2. The SEF Seminar on *Making Household Energy More Sustainable* is to be held on Thursday 9 October 2008 from 12.00 to 2.00pm at Old Government Buildings (Law School), Lecture Theatre 2, Lambton Quay, Wellington.

There is no charge for attendance but SEF welcomes notice of intention to attend by email to convenor@sef.org.nz

government and community awareness, and to help build a consensus for change.

1. This conference is concerned at the potential for serious and long-term disruption of the New Zealand economy and society from rising oil prices and climate change.

2. The conference accepts that the potential threat of climate change is now widely recognised and many people are being increasingly motivated to take action to mitigate its effects, though effective action by governments is slow. However the future threat to our way of life posed by depleting oil supplies and rising prices is still barely recognised and acknowledged by officialdom and most political parties in New Zealand.

3. The need to take action to prepare for future oil shortages and much higher prices is now urgent, as this will have a major and ongoing impact on our country over the coming decade and beyond. In contrast to the oil situation, early climate change impacts on New Zealand (though not necessarily elsewhere) are likely to be less serious.

4. The conference accepts, on the basis of international oil industry evidence available and provided at this conference, the seriousness of oil supply, price and security issues, and the likelihood of oil scarcity within the coming decade, as well as the need to reduce greenhouse gas emissions from transport.

5. The conference is aware of a number of ways in which the solutions to make our communities more resilient to diminishing oil supplies and rising prices already exist, and we encourage the Government to support these measures.

6. The conference believes that there is a need to investigate and facilitate the scope for autonomous action by communities, and local government and regional authorities, to develop longer-term solutions for these issues. This could be a priority task for the new government elected at the end of this year and assisted through a participatory exercise by a commission with full authority to conduct its own inquiries.

7. In the run up to the general election, the conference calls on all political parties in New Zealand to explicitly outline how they will proactively govern to take full account of future oil depletion and climate change issues, focusing on the following:

- Volatile and rising oil prices, and future oil supply, security and price issues.
- The impact that these will have on the New Zealand economy and society.
- The actions needed now to help safeguard the future of New Zealand economy and society.
- How such actions will support reductions in New Zealand's greenhouse gas emissions from transport.
- Supporting the transition of New Zealand's towns and cities, and rural communities and farms, to a new sustainable future through empowering and supporting local community action.

Letter to the Editor

Dear Sirs

Thank you very much for allowing me to comment on your statement of the conference on "Oil Depletion and Climate Change". On an international scale, I think that tackling climate change through limiting CO₂ emissions is complementary to tackling the problem of oil depletion. Who knows, maybe nature for its own survival and climatic equilibrium, is doing, through oil fossil fuel depletion what the politicians have been arguing about for the last two decades?. However, as long as oil usage continues, it is our responsibility not to let New Zealand suffer first from its eventual demise.

Although measures need to be taken to reduce New Zealand dependence on foreign oil by encouraging conservation and the use of alternative energy resources, I feel that the world will still depend on oil for many years to come. The New Zealand Government should not sit down and do nothing (while serious supply disruption may take place) but move in the direction of securing part of our oil needs directly from supply sources (while conserving the limited reserves existing within our own shores).

As long as NZ depends solely on commercial foreign oil companies for the supply of its crude oil, like many other nations we will feel this shortage. NZ has never sought to secure its oil directly nor did it utilise the know-how of its new Middle Eastern citizens (some have fair acquaintance and knowledge of their home country's oil industry) for this purpose.

NZ is not making use of its excellent neutral foreign policy and the goodwill created by this policy in that part of the world. I feel it is high time for the NZ Government to take this matter seriously and move in the direction of forming some kind of partnership with a medium size "Oil Exploration and Field Development Company" (preferably NZ based) to try to acquire a small share in the Southeast Asia/Middle East oil (Iraq in particular).

A moderate find (by Middle East standards) may be enough to secure NZ oil supplies for many years to come without the risk of facing the type of shortages envisaged and at a much cheaper price. NZ oil demand is not high (about 150,000 barrels per day) and we only need a small to medium size field to satisfy our requirements. If no action is taken now, NZ may be subject to blackmail and could pay a great penalty to secure its requirements from the open marketplace to refine crude so purchased at the Marsden Point Refinery.

The time may not yet be too late. The NZ Government must invest for future generations instead of waiting for things to happen by which time it may probably be too late to do anything.

I will be pleased if you publish this comment in the next editions of EnergyWatch and the ESR Newsletter. Thank you.

*Mundher Al-Saleem
Oil Products Consultant
18 Bonnie Brae Rd., Meadowbank Auckland*

Comment from SEF Member

Catherine Sheehan of Waitakere City Council has written to your editor on 18 July offering congratulations on Issue 49 and wondering about the distribution of energy money obtained from windfall profits presently being made by the electricity generation companies.

She notes that Waitakere City Council have dreamed up a project entitled "Retrofit the City". So far it is just a name and a vision of warm, dry homes with happy, healthy people.

She notes that in her role, she sees the poor quality of Waitakere's housing stocks as an immense handicap for the people trying to cope with rising electricity and transport prices (and everything else), particularly as the city was built as dormitory housing for people working in the CBD or South Auckland so they have a long way to travel to work.

She notes that Waitakere has 60,000 households.

Many of the houses are poor quality group homes but because a lot of them were built after 1978 and theoretically have insulation, they don't qualify for EECA retrofit grant funding.

There would be so many benefits from high quality home retrofits that include wood burners or pellet burners, solar water heating, plenty of insulation and draught-proofing, and water tanks, and somewhere to dry clothes under cover outside.

This would reduce pressure on infrastructure, household budgets, health spending and greenhouse gas emissions. But at (say) up to \$15,000 per house, that would be anything up to \$900 million total for Waitakere City alone.

So Waitakere City knows what needs to be done but doesn't have the money to do it and all other Councils face the same problem. Dunedin is attempting a massive retrofit programme but needs a financial backer to provide a capital revolving fund. Similarly Wellington City is calling a symposium to figure out how it can be done.

Reading EnergyWatch Issue 49, she sees that there is plenty of money "sloshing around" in the system all collected from consumers - whether through the Electricity Commission levy, the inequities of the wholesale electricity market or soon (if it ever happens) the Emissions Trading Scheme.

So can some of this money be recycled into EFFECTIVE (not token) home retrofits? She asks if SEFers can apply their effective brainpower to this problem?

STOP PRESS: On 26 August 2008, it was announced that there would be a major house retrofitting programme to achieve energy savings as part of the Emissions Trading Scheme legislation.

SEF Press Statements

Obsession With Roads Leads Transport Policies Astray

Both major parties are letting their obsession with building new roads distract them from the real issues facing the transport sector, according to the Sustainable Energy Forum. Spokesperson Tim Jones says “In the argument that has erupted over the level of tolls that motorists would pay for new roads under National’s transport policy, the most important question seems to have been lost: are new roads needed at all?”

“Recently, as fuel prices have risen to previously unknown levels, New Zealanders have shown that they are not as wedded to their cars as many people, and many politicians, claim,” Mr Jones continued. “Vehicle counts have been down substantially on the Auckland Harbour Bridge and Wellington’s Ngauranga motorway, while Auckland public transport numbers have risen 10% since 2007. Why build new roads for motorists who won’t use them, tolls or no tolls”.

“Although oil prices have fallen a little recently, this is unlikely to last. The International Energy Agency is predicting a worsening oil supply crunch from 2010 onwards, which will drive fuel prices still higher. In addition, every car journey is worsening transport’s already alarming contribution to New Zealand’s greenhouse gas emissions,” Mr Jones said.

“So we think that National and Labour are barking up the wrong tree. Instead of competing with each other to promise the most roads, they should abandon their obsession with roading and focus instead on the real priorities for infrastructure: public transport, especially an expansion of urban rail systems; freight movement by rail and sea; making walking and cycling easier in our cities; and improving telecommunications so that more people can work from home.

“Expenditure in those areas will lead to meaningful change, not more public and

private money going up in smoke,” Mr Jones concluded.

Issued 27 August 2008

Government Confused Over Transport

Tim Jones, SEF Convenor, said “For years, SEF and other groups have been warning that much higher fuel prices are on the way. The Government has chosen to ignore this advice, and now that high prices have arrived with a vengeance, the Government is becoming increasingly confused”.

“Recently, we’ve seen the Government make a positive move by buying back the rail and ferry networks, then undo all the good work by putting the skids under regional petrol taxes and delaying the entry of transport fuels into the proposed Emissions Trading Scheme (ETS) by two years”.

“Auckland was going to use the regional petrol tax to electrify its rail system, thus providing the sort of alternative to private road transport we need now more than ever. It would be a tragic irony if the Government’s reduced regional tax ended up making us even more dependent on road transport. And as for the ETS move, it weakens the Government’s climate change flagship policy but will be barely noticed by motorists as petrol prices continue to rise”.

Tim Jones says “The Government, local authorities and transport planners must face up to the new reality. The International Energy Agency’s chief economist now admits that we are facing a world oil supply shortage. The urgent priority for New Zealand’s transport policy is to lessen our dependence on oil and our shockingly high transport emissions”.

“What we need now is coherent transport policy designed to address these issues, not contradictory policies made on the hoof” Tim Jones said.

(Abridged). Issued 7 May 2008

Electricity Matters

A Period of Consequences¹

by Steve Goldthorpe, Energy Analyst, Waipu. - 16th July 2008

A discussion paper developed from a presentation to the “The Sustainable Electricity Debate” organised by the New Zealand Society for Sustainable Engineering and Science on July 4th 2008 and presented at the ESR/SEF conference on July 26th 2008.



Summary

New Zealand is at a critical point in its electricity and energy supply planning. Decisions made in the near future will have major long term consequences. New Zealand needs to make some firm decisions soon about its energy future.

The Government has proposed an Energy Strategy, based around 90% renewable generation by 2025, which sets out a sustainable way forward.

However, that route will require some tight house-keeping and maybe some uncomfortable changes to energy expectations if New Zealand is to learn to live within its means².

There is an alternative strong body of opinion that New Zealand should pursue a different pathway, based on a business-as-usual policy in which unconstrained supplies of energy are accessed at any cost to facilitate a comfortable lifestyle and economic expansion. This pathway would use a mix of generation technologies; mostly coal and gas fired. Resource consent applications for a gas fired power station north of Auckland and the associated Liquefied Natural Gas importing terminal in New Plymouth are indications that steps along this alternative pathway are already in progress. This pathway is based on the premise that New Zealand

will be willing to abandon its international obligations with regard to Climate Change. It is obvious that the choice made between these two pathways will dramatically affect the resulting CO₂ emissions from the power generation sector in New Zealand. However there are also other environmental, economic and strategic consequences that arise from the choice of electricity generation pathway that New Zealand makes.

Data Analysis

This comparative assessment is based on two of the scenarios presented in the grid planning assumptions for 2008 produced by the Electricity Commission (EC). The EC does not have the authority to dictate what type of generation capacity shall be built, but they are required to ensure that any electricity that is generated can be delivered to consumers via the transmission grid. Accordingly the EC has prepared a series of possible scenarios based on likely viable combinations of generation options that would provide sufficient power to meet demand at all times. The Primary Renewables Scenario and the Mixed Technologies scenario are two of these possible futures that the EC is planning to be able to accommodate with the national transmission grid.

¹. "Sir Winston Churchill, on November 12, 1936, discussing an earlier crisis said 'The era of procrastination, of half-measures, of soothing and baffling expedients, is coming to its close. In its place we are entering a period of consequences.'" - Al Gore: - An Inconvenient Truth - 2007.

². The graphs in this paper are derived from data in two of the Grid Planning Assumption (GPA) scenarios published by the Electricity Commission in February 2008. The subsequent revision of the five GPA scenarios for the draft 2008 Statement of Opportunities (SOO) released in July 2008 are not included.

These two scenarios broadly illustrate the choice between the Government's Energy Strategy pathway, which is reflected by the EC's Renewables scenario and the alternative fossil-focussed pathway, of which an example is the Mixed-Technology scenario.

Under the Renewables scenario there would be major growth in hydro, geothermal and wind capability and no new coal or gas generation. This scenario would give 39% more electricity generation capability in 2025 than in 2006.

In contrast, the Mixed Technology scenario assumes very little growth in hydro generation and a modest growth in geothermal and wind generation. This scenario includes substantial growth in fossil generation by 2025, with the building of a gas fired power station and three new coal fired power plants. The total generation capability under this BAU scenario is 34% greater than the 2007 capability. This capability increase is less than under the Renewables scenario, because the EC's security of supply criteria and load-following needs can be met more easily with controllable fossil generation than with weather-dependent wind and hydro generation.

This analysis only considers the total generation capability over each year. The ability of the installed equipment and the available energy resources to meet the hourly, daily, weekly and monthly variability in electricity demand is

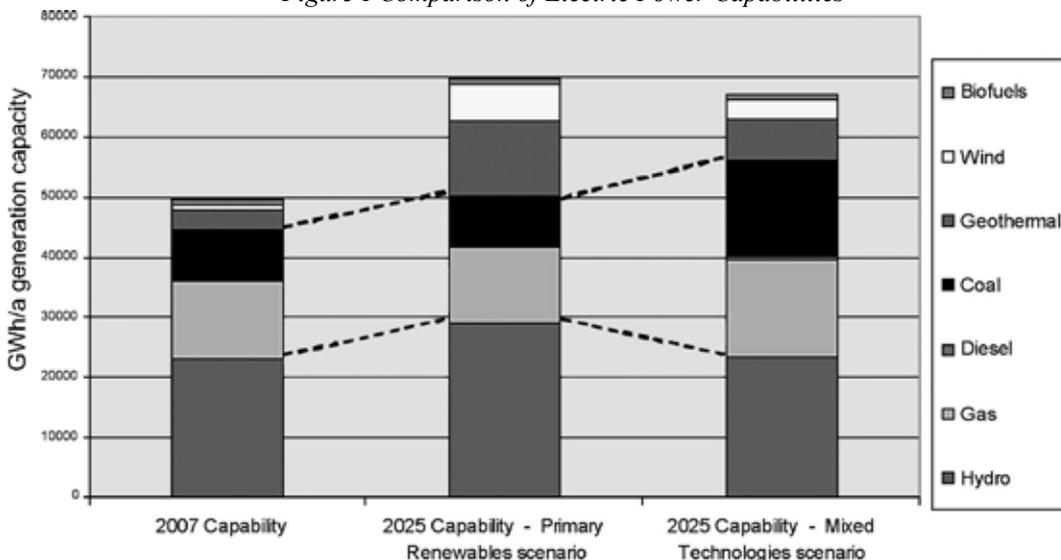
embodied in the much more detailed analysis that has been carried out by the EC that underpins the technical viability of these scenarios.

Figure 1 shows a comparison of the generation capability under these two scenarios in 2025 with the electricity generation capability in 2007. The term capability is used to describe the net expected annual output for each technology, which is a fraction of the theoretical output from running at nameplate capacity every hour of the year. This takes account of the availability of energy resources and equipment. The assumed overall capability factors are:- Gas 92%, Oil 30%, Coal 85%, Geothermal 95%, Hydro 50%, Wind 40%. The low figure for oil relates to it being only used for stand-by generation.

Under the Renewables scenario all new generation to 2025 is from renewable resources. For the purpose of this analysis the type of renewable technology is not important. Figure 1 shows contributions from Hydro, geothermal and wind in the EC scenario. Beyond 2025 it is possible that additional generation technologies based on the use of wave and tidal energy, large scale photovoltaic generation and other new renewables may become practical and economic.

Under the EC's Mixed Technology scenario 35% of the additional generation capability installed by 2025 would be from renewable energy sources. The other two thirds of the additional

Figure 1 Comparison of Electric Power Capabilities



capability would be from the commissioning of a gas fired power station at Otahuhu C in 2011 and coal fired power stations in Southland in 2014, at Tauranga in 2018 and at Marsden Point in 2023.

In order to explore the consequences of these two alternative electricity generation scenarios out to 2050 the following business-as usual assumptions have been made:-

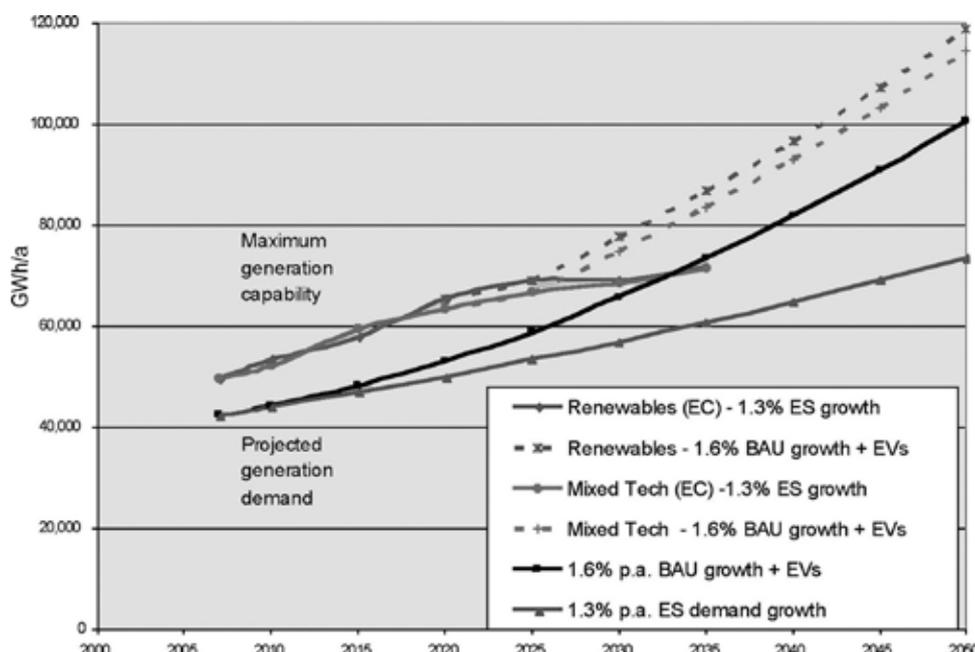
- The electricity demand growth rate is assumed to be 1.6%, excluding the effect of electric vehicles. This growth rate is based on residential demand increasing in proportion to population, whilst commercial and industrial consumption grow at 0.9% p.a. and 1.8 % p.a. respectively above the population growth rate.
- In addition a demand for electricity for electric vehicles is estimated by assuming that the demand for transport energy increases in proportion to population and that an electric vehicle requires about one third of the purchased energy of a conventional vehicle. It is assumed that electric vehicles comprise 1% of the vehicle fleet in 2015, 5% in 2020 and 10% in 2025. Thereafter a further replacement of 2% of the vehicle fleet each year to 2050 is assumed, resulting in 60% of the NZ vehicle fleet being electric by 2050.
- The generation capability requirement out to 2050 is determined by assuming that

under the Renewables scenario the required generation capability is 18% greater than the average projected demand. However, in view of the better controllability of thermal plants, the generation capability is assumed to be 14% greater than the projected annual demand under the Mixed Technology scenario.

- The utilisation of generators is based on the assumption that all renewable sources are utilised during the year (including use of hydro storage for load following) with fossil generation being used as required to meet demand. Stand-by oil fired generators are assumed to be used at 5% of capability.
- Once built, it is assumed that all generation plant is maintained or partly replaced at full design capability, with the exception of geothermal generation capability, which is assumed to decline at a rate of 0.4% per year.
- The split between coal and gas fired generation is determined on a basis derived from 2007 data when the unused coal generation at Huntly comprised 77% of the total coal and gas unused capability.

Figure 2 shows a comparison of the demand and capability curves with the excess capability that is necessary for operability of the system.

Figure 2 Comparison of demand and capability curves



The red and blue lines show generation capability out to 2025 according to the two EC scenarios. The green line shows a demand curve corresponding to the demand growth rate of 1.3% p.a. without significant uptake of electric vehicles. This is the basis of the New Zealand Energy Strategy. However, if the demand growth is 1.6% p.a. and there is a significant addition of demand for electric vehicles, then the demand will follow the yellow line. Figure 2 shows that with that demand growth profile, as assumed for this assessment, additional generation capability is required beyond 2025.

The dashed blue line shows the required enhanced capability curve if it is met by additional Renewable generation. The dashed red line shows the capability that would be met under the Mixed Technologies scenario, in which two thirds of the demand is met by fossil fuels and one third is met by renewables.

Achieving 90% Renewables by 2025

Figure 3 shows with the green line that the Energy Strategy of 90% renewable generation by 2025 would be achievable provided that the demand growth rate is only 1.3% p.a. However, that target is only met under the Renewables plant build scenario because there is an overcapacity of renewables, causing the

use of fossil generation to be suppressed. The green line shows that as demand rises further, the surplus fossil capability would be used and the fraction of renewable generation would be reduced until further growth in demand is matched by increasing provision of capability and the renewables fraction increases again achieving 90% renewables by 2050.

At the higher rate of demand growth, shown by the blue line, the effect of over capacity is less marked. In this case more renewable generation would be required and the 90% renewable generation target would be reached by about 2037.

The red and yellow lines show a steady decrease in renewables fraction with the Mixed Technologies scenario, reducing to about 50% by 2050.

CO2 Emissions

Figure 4 shows calculated CO₂ emission consequences for the Renewables and the Mixed Technology scenarios, based on the assessment assumptions described above³.

³ In addition, it is assumed that Coal, Oil and Gas power stations operate on average at 37%, 30% and 48% hmv efficiency respectively and that Geothermal generation has an emission factor of 50 kg.CO₂-eq/MWh.

Figure 3 Fraction of generation by renewables

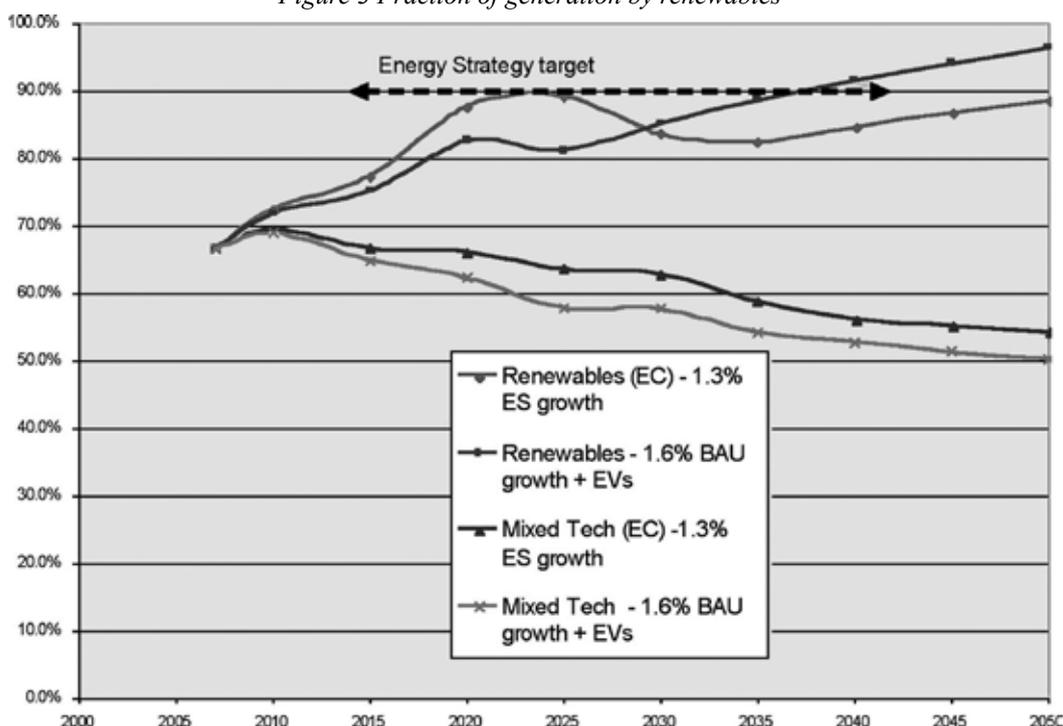
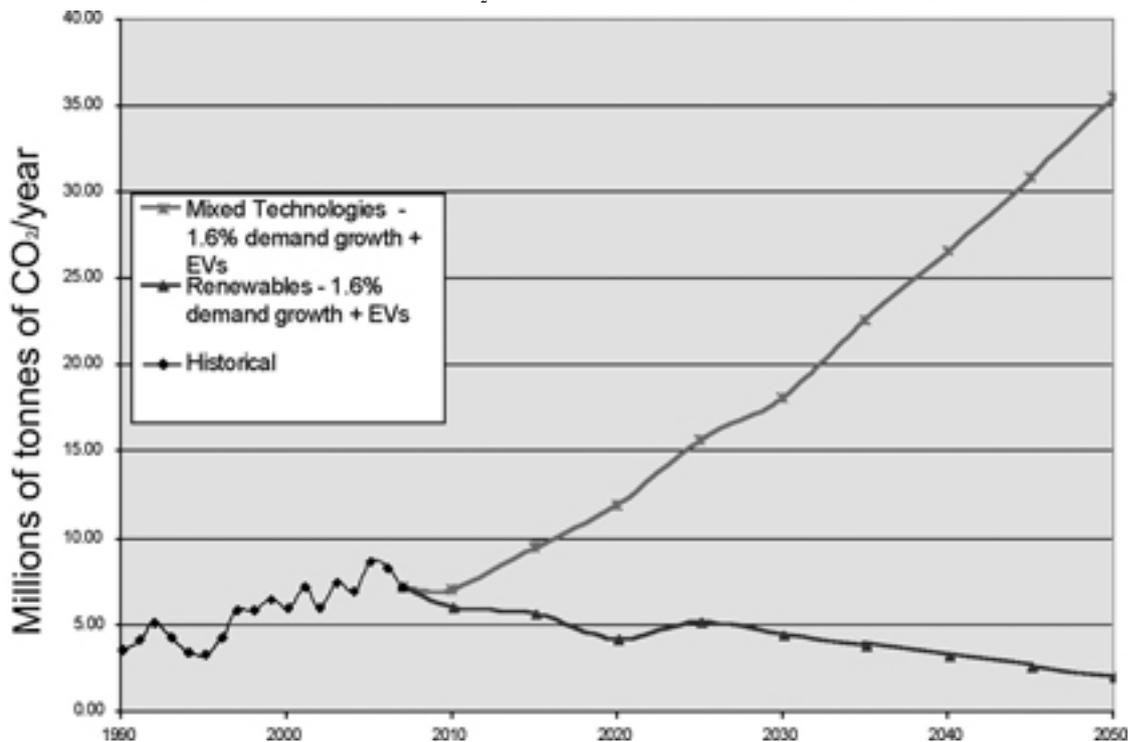


Figure 4 Comparison of CO₂ emissions from the New Zealand power generation sector



Whilst the 1990 CO₂ emissions from power generation was a small proportion of New Zealand's total inventory, the ten-fold potential increase by 2050, which would be a consequence of following the Mixed Technologies scenario, would be significant. The greenhouse intensity of the NZ power generation sector was 110 kg.CO₂/MWh in 1990 and is currently about 200 kg.CO₂/MWh. Under the Mixed Technology it would further increase to about 350 kg.CO₂/MWh by 2050; whereas under the Renewables scenario the electricity emission factor would be reduced to less than 20 kg.CO₂/MWh in 2050.

The electricity sector CO₂ emission factor is an important signal of a country's greenhouse performance because it is more amenable to mitigation measures than most of the other components of a national greenhouse gas inventory. The trend in electricity CO₂ emission factor is an important Key Performance Indicator. A consequence of following the Mixed Technology pathway is that a strong international message would be sent that New Zealand intends to abandon its international obligations with regard to Climate Change.

Coal

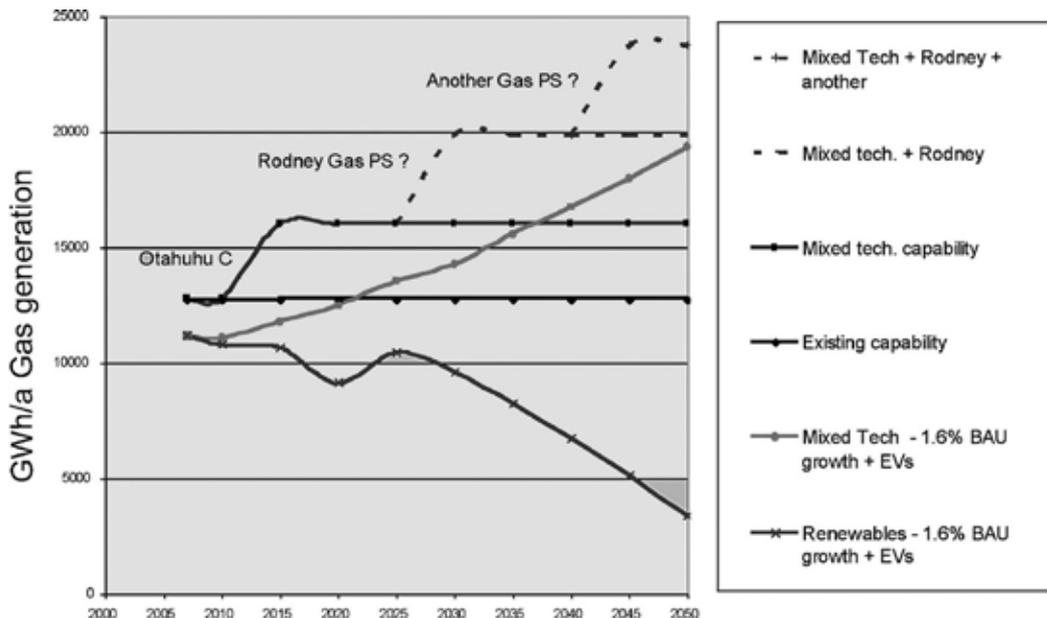
Under the Renewables scenario, the use of coal in Huntly power station in a mean hydrological year would likely be phased out in the next decade. However, retaining that facility for dry year reserve might still be appropriate.

Under the Mixed Technology scenario the use of coal for power generation might increase to about 10 million tonnes per year by 2050. Since two of the proposed coal fired power stations included in the scenario (Tauranga and Marsden Point) are near to ports and distant from coal fields, it is possible that coal would be imported rather than use made of domestic production.

Oil

Under both scenarios oil fired generation is limited to reserve generation. With crude oil prices approaching \$150/bbl and the efficiency of open cycle diesel generation in the region of 30%, the cost of electricity from oil is in the region of 40 c/kWh. Accordingly, oil generation is unlikely to make a significant contribution to the electricity supply.

Fig 5. Gas generation requirements



Natural Gas

Figure 5 shows the gas generation requirement in comparison with the gas generation capability. These trend lines are calculated under the assumptions listed above.

The blue line shows the required gas generation under the Renewables scenario with the assumed electricity demand profile. This shows that the current installed gas capacity of 12,800 GWh/a (including E3P) is sufficient to meet that need. This is consistent with the Energy Strategy principle of no new base-load fossil generation.

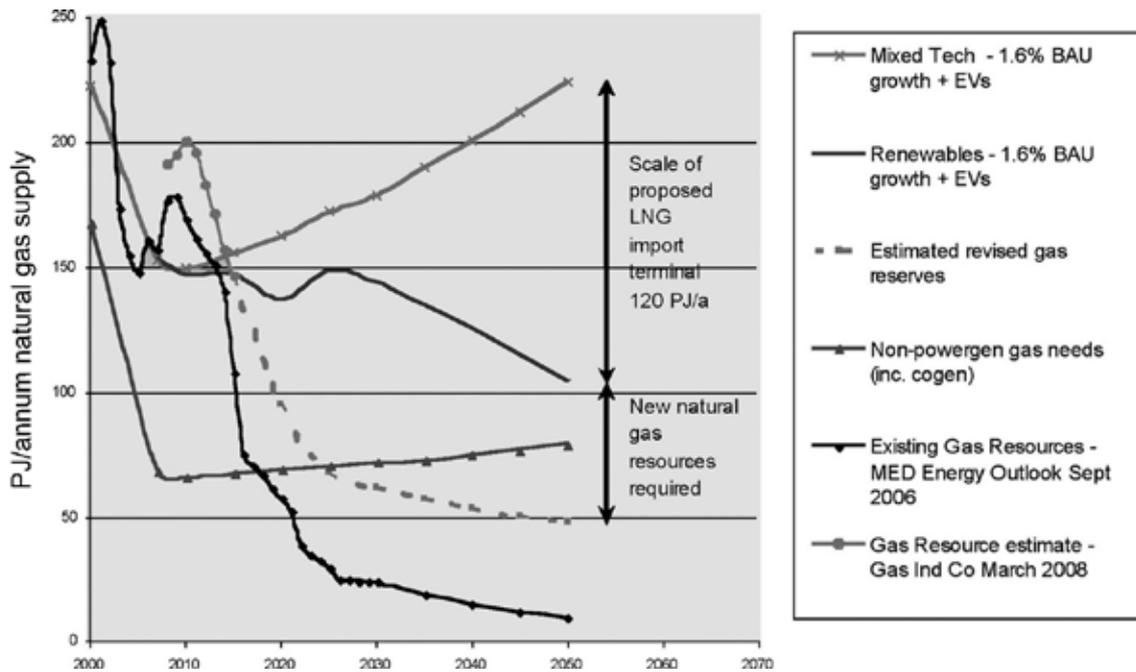
The red line shows the required gas generation under the Mixed Technology scenario with the assumed electricity demand profile as an on-going year on year increase in gas generation requirement. The Mixed Technology scenario includes the commissioning of a new gas power station at Otahuhu C in 2011. That power station has already been consented. The subsequent growth in demand for gas-fired power generation shown on Figure 5 would require additional generation capacity of the scale of the proposed 480 MW Rodney power station to be built after 2025 and a further power station of the same size to be built before 2050. In addition, existing power stations would be partially replaced as components reach the end of their design life.

Figure 6 shows the corresponding natural gas requirements in the context of the rapidly declining indigenous supply of natural gas. The black line shows the decline in existing natural gas supplies that was reported in 2006 in the MED's Energy Outlook to 2030. This shows a severe impending shortage of gas in New Zealand. However, the grey line shows more recent estimates by the Gas Industry Company this year of a significant increase in available natural gas as far as 2015. The dotted grey line shows the effect of the extra 38 PJ/a being projected forward from 2015 to 2050.

The brown line shows the underlying demand for non-powergen applications including residential, commercial, industrial, petrochemical and cogeneration uses. The blue line shows the combined gas demand arising from this non-powergen demand plus the gas demand for power generation under the Renewables scenario. This is well above the currently projected gas reserves.

About 50-80 PJ per year of additional new natural gas resource would be needed to meet the expected demands under the Renewables scenario. It is reasonable to assume that on going exploration and development could fill this gap if use for methanol production is curtailed.

Figure 6 Natural gas supply and demand projections



However, if the Mixed Technology pathway is pursued the natural gas demand is much higher, as shown by the red line. It is not reasonable to assume that new gas discoveries would be able to produce that large amount of additional gas. As shown on Figure 6, importing of natural gas in the form of LNG at the scale proposed for New Plymouth is likely to be needed to sustain the Mixed Technology pathway. **Accordingly, it is concluded that the ability to import LNG is an essential prerequisite for proceeding down the Mixed Technology pathway.**

A major new gas discovery at least as big as the Maui field could change the picture. However, if that discovery were off South Island, where there is no gas delivery infrastructure, then it might have to be delivered to the North Island market via the installation of an LNG production facility with a receiving terminal in the North. This would expose that gas resource to world markets and the global LNG price.

The cost of generation of electricity from LNG may be prohibitive. Market indications are that in the long term the cost of LNG will roughly equal the cost of crude oil on an energy basis; driven by global demand for internationally transportable liquid hydrocarbons exceeding supply. If crude oil prices were to eventually

stabilise at \$150/bbl then the fuel cost of electricity from LNG would be more than 25c/kWh in today's terms; significantly more than many renewable generation options.

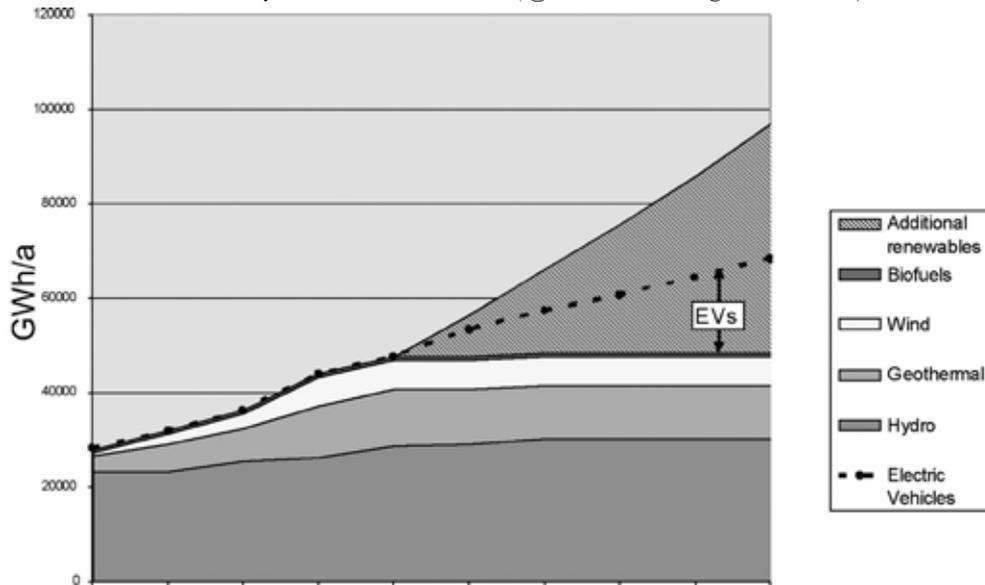
Renewables

The Renewables scenario requires substantial construction of new renewable generation capacity. The EC's Renewables scenario identifies a credible renewables construction programme out to 2025. Figure 7 shows the amount of additional renewables capability that would be required to supplement the output from plant built prior to 2025.

The dotted black line shows that just under half of that additional renewables requirement would be due to the advent of electric vehicles switching transport energy demands from liquid fuels to electricity. This large additional requirement for renewable electricity presents challenges for both existing and emerging technologies.

However, under both the Mixed Technology scenario and the Renewables scenario, additional renewable generation capability would be required beyond that which has been identified in the EC scenarios up to 2025. Figure 8 shows a comparison of annual renewables build requirement under the eight scenarios considered in this assessment. Figure 8 is based on an assumption that the mix of new

Figure 7 Renewable Electricity Generation Scenario (@ 1.6% demand growth + EVs)



renewables technologies would provide a plant availability of 65%, which is the same as in the EC Renewables scenario up to 2025.

Consequences

The analysis presented in this paper has identified that there are major strategic and economic consequences in continuing to pursue the fossil fuel based Mixed Technology electricity supply strategy:-

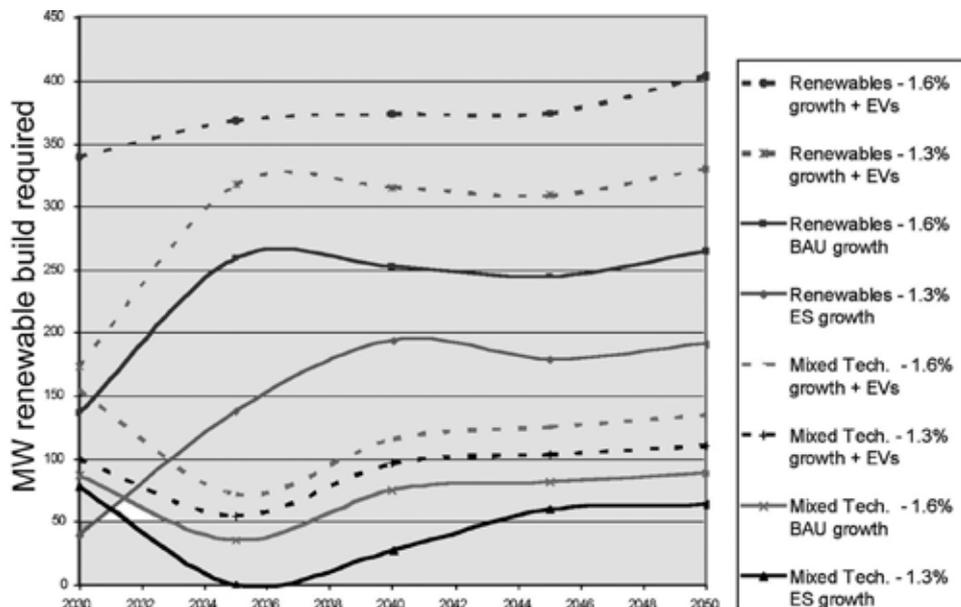
- New Zealand would effectively be abandoning its international climate change obligations;
- New Zealand would probably get locked into competing for imports of globally scarce LNG;

- New Zealand would become increasingly exposed to international energy prices for the imports of coal, oil and gas

On the other hand pursuing the Renewables pathway would also present difficulties:-

- Meeting the on-going increasing demand for new renewable electricity generation capacity would present technical challenges;
- There would be increasing pressure to modify energy consumption expectations to accommodate the new reality of electricity being a scarce resource;

Figure 8 Annual additional build of renewable generation capacity



- The environmental intrusiveness of renewable electricity generation is likely to be significantly greater than the environmental intrusiveness of an equivalent amount of fossil generation, because the natural primary energy resources are more dispersed than the concentrated fossil fuel resources.

Conclusion

New Zealand is at a critical point in its electricity and energy supply planning. Decisions made in the near future will have major long term consequences. New Zealand needs to make some firm decisions soon about its energy future.

Editors note

Some interpretation of the above graphs is required by the reader, as it was not possible to reproduce the graphs in colour. Colour copies are available from the author.

The author notes that this discussion paper was prepared before publication of: -

- The draft 2008 Statement of Opportunities;
- The proposed National Policy Statement for Renewable Electricity Generation
- The National Party Energy Policy

Hydro Storage Now More Comfortable?

Memories of the so called “power crisis” are fading rapidly as hydro lake storage has moved steadily away from the Electricity Commissions “min-zone”.

As at Friday 1 August, hydro lake storage has risen to 1672 GWh, or 69% of average. The 30-day average weekly inflow was 474 GWh or 118% of average, and meteorological experts are predicting a return to normal weather patterns over the next few weeks.

This suggests that hydro generation will return to normal, taking the pressure off thermal stations which have been running at capacity for most of the winter months.

The debate is continuing over what kind of margin needs to be built into the NZ electricity system to cope with dry years, which appear to be increasing both numerically and in severity. The Government, which has placed a 10-year moratorium on new base-load thermal capacity, is placing its faith in renewables, but some experts are sceptical about heavy reliance on new wind farms, because of the variability of wind strength.

Reference: NZ Energy and Environment Business Week, 6/8/08.

However since 1 August the situation has deteriorated again. On Tuesday 19 August, Radio NZ News reported that hydro lake storage in the South Island was “creeping back towards the min-zone again” after two weeks of very dry weather and with very little snow melt yet occurring.

On Monday 25 August, Radio NZ News reported that while the low levels of storage in the South Island hydro lakes continued to cause concern, the storage levels in North Island hydro lakes were now close to full, but the limited capacity to transmit power south across Cook Strait meant that the electricity spot price in the South Island was now close to twice that in the North Island.

Rio Tinto had expressed concerns about the continuing high electricity spot prices in the South Island, and the Tiwai Point aluminium smelter has been operating with a 10% cutback in production since April because of high spot prices.

Kawerau Plant Comes On Stream

The new 90MW geothermal power station being built by Mighty River Power (MRP) at Kawerau is set to be commissioned ahead of schedule, with final testing of the new plant taking place during August.

The power station is already generating electricity at full capacity and is expecting to be operational by the end of August.

The \$300 million Kawerau project is the largest single geothermal development in NZ in more than 20 years and will meet one-third of residential and industrial demand in the Eastern Bay of Plenty.

The power station has been partly built using Mongrel Mob labour. MRP last year secured a \$1 million contract with the gang and says its workers have performed to a high standard.

Kawerau is one of four geothermal projects which MRP is involved in north of Taupo. The company plans to invest over \$1 billion to develop around 400MW of geothermal energy in the area by 2012, of which Kawerau is the first stage.

Pre-construction work for Nga Awa Purua, a new \$450 million 132MW geothermal power station at Rotokawa, north of Taupo, begins in April in partnership with the Tauhara North No.2 Trust. MRP, in conjunction with Maori partners, also has a significant investment in new geothermal generation at Mokai, north west of Taupo.

Reference: NZ Energy & Environment Business Week, 6/8/08.

South Island Grid “Won’t Cope”

Transpower’s proposed South Island transmission upgrade will not be enough to support both Project Hayes and the Mahinerangi wind farm if they are built at the same time.

Transpower has told the Environment Court in Cromwell that it does not think there is enough room for both the 630MW Project Hayes and the 200MW Mahinerangi project.

Transpower’s planned \$40 million stage one upgrade will increase the grid’s capacity by 500-600MW. It is expected to be complete in about two year’s time.

Meridian Energy’s transmission expert, Guy Waipara told the Court it would be possible to build up to 300MW of new generation in the lower South Island with the current grid. Waipara says that both Project Hayes and

Mahinerangi are being planned in stages, to allow for transmission constraints.

Transpower is planning a full \$100 million upgrade of the transmission line from Roxburgh to Waitaki but this would be 10 to 20 years away.

While the present stage one \$40 million transmission upgrade would accommodate Project Hayes and Mahinerangi, it would not be sufficient to allow for other proposed energy generation in the South Island.

In addition to Project Hayes and Mahinerangi’s combined total of 830MW, the output of all other wind farm projects proposed for the South Island could be up to another 500MW.

Guy Waipara noted that not all the proposals are likely to be built, or built to their capacity. The energy generation of Project Hayes and Mahinerangi alone would be enough to power every home in the South Island.

Meanwhile, Meridian has agreed to hand over its Project Hayes wind data to appellant groups if they sign a confidentiality agreement. Meridian’s wind technical strategy manager Paul Botha told the Environment Court hearing at Cromwell that the wind resource on the site is “outstanding” at an average of over 8 metres/second over the past four years. Botha says the site has a high mean wind speed, very low turbulence, and significant space available for optimum turbine placement.

Reference: NZ Energy & Environment Business Week, 6/8/08.

National Announces its Energy Policy

The National Party has announced a pragmatic energy policy, which includes gas-fired generation as part of the mix to ensure that NZ has a secure electricity supply.

National is promising to scrap the Government’s 10-year moratorium on new thermal power stations if it wins this year’s general election. It will also consider abolishing the Electricity Commission and will revamp the RMA to

help fast-track major power generation and transmission projects.

National's Energy Spokesman, Gerry Brownlee, stresses that while the Government's 90% renewables target is laudable, National "will not let it get in the way" of security of supply. He says that the lesson from this winter is that "thermal electricity generation is essential to keeping the lights on".

National anticipates that its proposed ETS will result in no coal-fired power stations being built, unless future technologies for carbon capture and storage change the emissions profile of coal.

Gerry Brownlee argues that the Government has "failed in its responsibility" to ensure secure electricity supply. He notes that this is the third winter since the current Government came to office that NZ'ers have been asked to seriously save power (2001, 2003 and now 2008).

Brownlee says that National will plan for "realistic levels" of future electricity demand growth. He notes that NZ's historical average annual increase in demand for electricity is 2.2%, but Labour is planning on just 1.2% on average to 2025.

Reference: NZ Energy & Environment Business Week, 20/8/08

And the Government Responds

Deputy Prime Minister, Dr Michael Cullen, predicts that under National's policy, both greenhouse gas emissions and power bills will increase. Dr Cullen accuses National of paying lip service to renewable energy but lacking serious commitment to it.

He adds that "It is incomprehensible how National could release an energy policy that promotes the use of gas-fired electricity generation without also providing details of their Emissions Trading Scheme (ETS)."

Dr Cullen says that without these details, National's policy is simply a mandate for heavy reliance on coal and gas. He is also sceptical of National's promise to have an ETS in place

within nine months of taking office. He says that it would be impossible for National to draw up a new ETS in nine months so it would either have to essentially revamp Labour's scheme, or else National has a hidden agenda with an alternative scheme already drawn up by its business cronies.

Reference: NZ Energy & Environment Business Week, 20/8/08

And the Green Party Responds

Green Party Co-Leader, Jeanette Fitzsimons, describes the National Party's energy policy as "financial madness". She says that the policy ignores NZ's biggest energy problem, transport fuels and the rising cost of oil, and relies on "drill and hope".

She predicts that National's policy on gas-fired electricity generation will lead to the importing of liquefied natural gas (LNG), where international contracts are linked to the price of oil. This means that for the first time in NZ's history, the country will "lose control" of electricity prices, and become dependent on international market prices, just as it already has in petrol.

Jeanette Fitzsimons also noted that National's proposed \$1000 grant for solar water heating is something that the Green Party have already secured with the Government and is already operating.

Reference: NZ Energy & Environment Business Week, 20/8/08

Editor's Note: See page 23 for further comment on LNG

Fuels

Over a Barrel - A New Vision Needed

Tim Jones

In November 2007, when the world oil price was nudging US \$90 per barrel, I wrote an article entitled “The Future of Oil” for the Dominion Post. The article explained that oil prices were rising because world oil production had been virtually static since 2005, while demand had continued to rise.

Since my article appeared, the price has climbed still higher. And there’s not much relief in sight: the International Energy Agency is now predicting only a slight increase in supply over the next couple of years, and a worsening supply crunch after that.

It appears that historically high oil prices are here to stay, and further increases remain likely. The question now is: how should we respond?

Individual New Zealanders have been taking sensible steps to reduce their dependence on oil. People have been using their cars less and walking, cycling and using public transport more. Those who can afford to buy new cars have bought smaller cars. Those who can afford to relocate have been moving closer to where they work.

But individual action won’t be enough. Since the end of World War Two, our entire economic system has become dependent on the easy mobility that oil, with its low price, ready availability, and high energy content, allows.

The “business as usual” position is that we can depend on an unhindered flow of oil to keep our just-in-time economy moving: but business as usual stopped making sense a while ago.

We now face two threats: the long-term depletion of oil supplies, leading to sky-high prices and potential shortages as an unprepared world struggles to adapt; and the increasing risk of short- to medium-term oil emergencies. With production already struggling to meet demand,

any disruption caused by war, terrorism or natural disaster will be magnified.

The recent truckies’ protests are a sign of the times. The road transport industry grew to dominate freight transport because of cheap fuel and policies that favoured road freight over sea and rail. Now that fuel is no longer cheap, and other modes are starting to make better sense, the truckies are feeling the pinch, and using their political muscle to try to insulate themselves from the winds of change.

Yet our distribution system for food and freight depends on trucks. Even if we shift long-distance transport to sea and rail, it is trucks that move goods from port or railhead to the shops where we buy them.

Of all goods, the most critical is food: New Zealand may grow far more food than we need for domestic consumption, but we still need to move it from farm to consumer. And our heavily mechanised farming system is just as dependent as trucking on oil and oil-based products. It’s time for the humble vegetable garden to make a comeback in our cities.

New Zealand is still better placed than most countries to cope with restrictions on oil imports. But all of us – politicians, planners, officials and the public – have to get real about what the post-cheap-oil future will be like. Where are we most vulnerable? What must we do as a society to become more resilient and adaptable? How do we manage the transition to a less oil-dependent future?

In the pursuit of economic efficiency, we have become dependent on overseas manufacturers for such critical items as clothing and medicine.

But this dependence increases our vulnerability. Is it time to bring such critical industries back to New Zealand?

We also need to stop wasting money on projects that only make things worse. Let’s

start by placing a moratorium on building new motorways and highways. In an era of declining vehicle use, there is no longer any justification for more of these expensive white elephants, foisted on us by transport planners whose models and methods are stuck in the past, and those politicians who believe that more roads equal more votes.

Let's spend the money on things we actually need: better public transport, walkways and cycleways; an expanded and electrified rail system; better broadband infrastructure; and more robust ways of moving freight and producing food.

Major challenges are ahead. Let's start facing up to them.

Reference: Dominion Post, 21/7/08

Global Oil Supply & Demand Are Finely Balanced

Some commentators have blamed the large price rise in the international price of crude oil in recent months on Opec, or the oil companies, or geopolitical uncertainty, and more recently speculation has also been blamed when investors buy commodities like oil for a limited period to hedge against the weakening US dollar.

"However the most likely explanation of the rapid rise in oil prices over the last two years is that because the global market is now so finely balanced between supply and demand, small changes in that balance can cause disproportionately large increases in prices" spokesman for the Sustainable Energy Forum, John Blakeley, said today. "The market price for crude oil has risen from US\$61 per barrel at the beginning of 2007 to as high as US\$147 before falling back during this month to around \$US130 on fears that a recession in the US economy will reduce demand".

"The International Energy Agency is now forecasting global oil demand to reach 86.9 million barrels per day (bpd) by the end of 2008 and Opec is predicting an almost identical figure". Mr Blakeley said. "Oil supply was averaging 86.8 million bpd during the month of

April 2008. It appears that there is no longer any reserve production capacity".

"Some people believe that Saudi Arabia can fill the emerging gap from its large oil reserves and President George W Bush has recently been urging the Saudis to increase oil production to meet rising demand" Mr Blakeley said.

But the respected US publication Business Week recently (10 July) stated that a field-by-field breakdown of estimated Saudi oil output from 2009 through 2013 shows that the sustainable Saudi oil production level is only 10.4 million bpd compared with current production of 9.65 million bpd.

"The global demand for oil has grown at an average of 1.4% per annum (BP statistics) over the last decade, so any additional Saudi oil is likely to be swallowed up by increasing demand within about a year from now unless other countries can also increase their oil production" Mr Blakeley said.

"An analysis of present consumption of liquid fuels in the Auckland region shows that an extra \$550 million per year is being spent on these fuels over and above that in 2004/05 when oil prices started to move significantly upwards. That means about \$10 million per week less which Aucklanders have to spend on other categories of purchase" Mr Blakeley said. "If this upward price movement continues without any corresponding decline in oil consumption, this must inevitably lead to a drop in employment levels and a cycle of progressive economic decline".

Reference: Press Release from the Sustainable Energy Forum 22/7/08. (Note that the international crude oil price had fallen back further to US\$91 per barrel on 16/9/08).

Increasing Demand Fuels Rising Oil Prices

1. Introduction

The dramatic increase in oil prices in recent months has been blamed on a number of factors, including:

- Financial speculation by major investors, including pension funds, investment banks, mutual funds and private hedge funds as a protection against the falling US dollar.
- Geopolitical uncertainty and tensions around the world, including the ongoing posturings between the USA and Iran.
- The unwillingness of Opec producers to raise their oil production output.
- A worldwide shortage of oil refining capacity.
- Excessive profits being made by the major oil companies.

These may have been contributing factors but the main catalyst for the oil price surge, from US\$61 at the beginning of 2007 to as high as US\$147 in July 2008 before dropping off again, has been the increasing demand for oil, particularly from developing countries, and especially China and India.

2. Demand Side

Oil prices may now fluctuate in the short term but low oil prices are a thing of the past if developing countries in particular, continue to experience strong GDP growth.

Total world demand for oil has increased from 57.6 million barrels per day (bpd) in 1981 to 83.3 million bpd in 2005 and is expected to be nearly 118 million bpd by 2030, as shown on Table 1.

In 2005 the 30 OECD countries, which include NZ, accounted for 49.8 million bpd or nearly 60% of total world demand.

By 2030 the demand from OECD countries will have increased by only 3.8 million bpd to 53.4

million bpd, but this will then represent 45.4% of total world demand, with most of the rising demand coming from non-OECD countries which will have increased consumption by 30.5 million bpd since 2005.

Table 1 – Oil Demand (million BPD)

	2005	2010	2015	2020	2025	2030
OECD Demand	49.6	50.3	51.3	52.5	52.9	53.4
Other Demand	33.7	39.4	45.2	51.3	57.5	64.2
Total World Demand	83.3	89.7	96.5	103.5	110.4	117.6

Source: Opec Figures

The grouping of oil consuming countries showed the following breakdown in 2005:

- North America 30.6%
- Western Europe 18.6%
- OECD Pacific (Japan, Korea, Australia and NZ) 10.3%
- OPEC countries 8.9%
- China 7.8%
- Other Countries 23.8%

The main users of oil worldwide in 2005 were:

- Road transport 38%
- Industry 26%
- Residential/commercial and agriculture 12%
- Air transport 8%
- Electricity generation 7%
- Other uses 9%

The future looming demand forecasts are largely based on a dramatic increase in road transport use.

- Passenger car numbers are expected to increase from 700 million in 2005 to 1200 million by 2030.

- Commercial vehicles are expected to increase from 210 million to 450 million by 2030.

This forecast is based on a dramatic increase in passenger car ownership and commercial vehicle usage in China and India. Even though these two countries will experience a sharp increase in road transport usage by 2030, they will still trail the western world on a per-capita basis.

For example by 2030, per 1000 people, there are expected to be:

- In North America 500 cars
- In China 60 cars
- In India 50 cars.

By 2030, annual per capita use of oil is expected to be:

- North America 19.5 barrels
- OECD Pacific 16.0 barrels
- Europe 10.5 barrels
- China 4.0 barrels
- India 1.5 barrels

(One barrel is equal to 159 litres)

It is going to be difficult for OECD countries to tell the rest of the world, where 82% of the world's population lives, to curb their appetite for oil when OECD consumption is so substantially higher on a per capita basis.

3. Supply Side

The 12 OPEC countries accounted for 41.2% of the world's oil supply in 2005. These countries are:

- Algeria
- Indonesia
- Iraq
- Libya
- Qatar
- United Arab Emirates
- Angola
- Iran
- Kuwait
- Nigeria
- Saudi Arabia
- Venezuela

The largest producers in terms of the world's oil supply are:

- Saudi Arabia 12.9%
- Russia 12.1%
- USA 7.9%
- Iran 5.5%

The USA is also the largest importer of oil by a wide margin because of the huge demand by its road transport sector.

As far as non-Opec countries are concerned, increased production in Russia and the Caspian Sea, mainly Azerbaijan and Kazakhstan, in the medium term will compensate for the drop in North Sea output.

However non-Opec output is expected to plateau around 2015. This is due to expected production declines in:

- The North Sea
- Mexico
- Alaska, and the rest of the USA

As Table 2 shows, the world will become increasingly reliant on Opec oil in the years ahead.

Table 2 – Predicted Oil Supply (million BPD)

	2005	2010	2015	2020	2025	2030
OPEC Prodtn	34.3	35.6	40.2	45.7	51.9	58.8
Other Prodtn	49.0	54.1	56.3	57.8	58.5	58.8
Total World Production	83.3	89.7	96.5	103.5	110.4	117.6

Source: Opec Figures

This increasing reliance on Opec countries will create considerable uncertainty, because there is no assurance that Opec countries can increase their output to anticipated levels, particularly as many of these countries have unstable political structures.

Also contributing to global political instability is that there will continue to be a dramatic shift in economic wealth to oil producing countries as

European and North American output decreases and Opec, Russian and Caspian Sea supplies increase.

But the most critical point about the non-Opec oil production forecasts is that there is expected to be a dramatic increase in non-conventional production, mainly CTL's (coal to liquids), GTL's (gas to liquids), and biofuels over the period from now to 2030.

Non-conventional output in non-Opec countries is forecast to grow from only 2.2 million bpd or 2.6% of total global oil production in 2005 to 10.2 million bpd or 8.7% of total global oil production by 2030.

There are big question marks about the achievability of the above targets because of the huge capital and environmental costs, notably regarding the Canadian oil sands projects (in Alberta) and the impact of biofuel projects on food supply and prices.

Biofuels are primarily produced in Brazil and the USA, with bioethanol being made from sugar beet, sugar cane and corn, while biodiesel is derived from oilseed crops such as soy, rape and sunflower. Biofuels put an enormous pressure on land usage, and have been a major contributor to escalating food prices.

4. A More Pessimistic View of Future Oil Supply

A number of oil analysts have a far more pessimistic view of the future oil production outlook than the Opec figures contained in Table 2.

They believe that the biofuel contribution will now be less than expected, and that oil output from Venezuela and Mexico will grow more slowly than anticipated.

The more bearish view is that oil production will peak at around 90 to 92 million bpd in the 2012 to 2014 period and will decline after that.

An important factor seems to have been the statement by Shell CEO, Jerome Van der Veer at the end of January 2008 predicting that world demand for oil and gas will outstrip supply

within seven years (i.e. around 2015) and that this would have serious environmental and political consequences.

Van der Veer believes that there will be no choice but to add other sources of energy, not only renewable but also nuclear power, and unconventional fossil fuels such as oil sands. He also foresees a growing number of electric cars and hydrogen-powered cars, while industrial facilities will capture carbon dioxide and store it underground.

This statement from Shell represented a major breaking of the ranks with other major oil companies, such as Exxon Mobil and BP, in maintaining the previous industry line that "there is still plenty of oil out there, technology will overcome shortages and we'll go out there and find it".

The view now being promoted by Shell would have major implications for the world economy and for oil prices, particularly if China and India continue to achieve GDP growth in excess of 8% per annum.

5. The New Zealand Situation

Although New Zealanders complain about higher petrol prices affecting the cost of living, these higher prices are an important reminder that energy is a scarce commodity.

New Zealanders are high energy users yet many are reluctant to see the country invest in new energy sources. There is major opposition to new hydro-electricity schemes and wind farms.

New Zealanders are also still reluctant to invest in greater energy efficiency in their homes and we continue to import a very high proportion of our motor vehicles as less fuel-efficient second hand ones. We have also imported a large number of gas-guzzling SUV's in recent years and our politicians have failed to develop viable public transport systems in our cities.

On the more optimistic side, revenues from the recently opened Tui oil field are having an increasingly positive impact on our balance of payments situation as oil prices continue to rise,

and this will be enhanced when the Maari oil field comes into production in about a year's time. (This is because of the peculiar situation of all this high quality crude oil being exported to be refined overseas, instead of being used here in NZ).

New Zealand's response to the higher oil prices will be a test of character as we can either develop realistic energy and transport policies, or succumb to the motor vehicle lobby by cutting taxes on petrol and diesel to reduce the impact on motorists of rising prices.

Reference: Article by Brian Gaynor, NZ Herald 14/6/08.

Proposed Liquefied Natural Gas Terminal

On June 13, Tim Jones as SEF Convenor wrote the following letter to the Hon. Tevor Mallard, Minister for the Environment, (Note that the likely date for lodging the application is now early November).

As you are aware, Contact Energy and Genesis Energy are proposing to apply for consent to build a Liquefied Natural Gas terminal at the Port of New Plymouth. The project is being handled by a wholly owned subsidiary known as Gasbridge. It has been indicated that a joint hearing with commissioners appointed by both the New Plymouth District Council and the Taranaki Regional Council would be held later in the year.

Whilst there are local issues including visual and amenity effects, the most important consideration is the safety of New Plymouth residents. The on-shore location of very large liquefied gas off-loading and storage facilities close to a major population centre would expose the city to a level of risk that is unacceptable in other developed countries. The level of societal risk to which New Zealanders should be exposed is a matter of national interest.

Additionally, the strategic national significance of the proposal is a matter of national interest. There are fundamental issues of national energy

policy at stake. Should it go ahead, the effects of the project can be summarised as:

- The importation of LNG in large quantities would suppress the evolution of renewable energy technologies in NZ.
- The viability of LNG imports into NZ would depend on its large scale use as an electricity generation fuel. This runs directly counter to the NZ Energy Strategy.
- The use of LNG in this way would lock NZ into reliance on a second finite imported fossil fuel resource (the first being crude oil) thus reducing NZ's strategic independence.
- The price of LNG is likely to become directly linked to the escalating price of crude oil resulting in significant downstream effects on the entire economy.
- The long term availability of LNG resources is questionable.
- The LNG production, transport and re-gasification process would give imported LNG a global greenhouse gas footprint some 40% greater than indigenous natural gas supplies.
- The price of locally-sourced natural gas is likely to rise as the local market will effectively be exposed to global prices.

Gasbridge may argue that national strategic effects or economic consequences of the project are not something a local hearing committee should take into account. We suggest that the proper forum for assessing the safety and economic and environmental impacts of an LNG terminal would be a Board of Inquiry.

We therefore recommend you to institute a Call-in for this proposal under S 141b of the Resource Management Act.

Minister's Reply

Trevor Mallard replied on 3 September indicating that he had not received any formal request from the relevant Councils or the applicant asking for a Call-in.

Pohokura Reserves Higher

The Pohokura offshore gas/condensate field's recoverable reserves of condensate have been revised upwards by 38% from 44 to 61 million barrels, and total gas reserves by 24% to almost one trillion cubic ft (1148PJ). These figures are published in the latest Energy Data File published by the Ministry of Economic Development.

Pohokura will now produce more oil in the form of condensate than either the Tui oil field which has revised its estimated reserves up to 50.1 million barrels or the Maari field (now being developed) which has current estimated reserves of 49 million barrels.

During 2007, production of condensate at Pohokura rose to 4.7 million barrels which is an average of 12,875 barrels per day. This was a large increase from 900,000 barrels in 2006 when only three offshore wells were operating for much of the year.

The Pohokura field is operated by Shell (with partners OMV and Todd Group) who only recently completed drilling of the offshore section of the field.

Reference: NZ Energy & Environment Business Week, 30/7/08.

Tui Performs Strongly

The four existing Tui field production wells continue to perform strongly. In the June 2008 quarter their output was 3.8 million barrels, averaging close to 42,000 barrels per day, despite rising water production.

Production was curtailed at the end of June due to poor weather delaying tanker loading, but at mid-July production had returned to around 42,000 barrels per day. Cumulative field production to the end of June 2008 was 14.2 million barrels (compared with present total estimated field capacity of 50.1 million barrels).

Tui's projected production for the June 2008/June 2009 financial year has been upgraded

from 6 million to 9 million barrels (an average of 24,600 barrels per day).

Planning for an additional development well Tui 4H has continued, with long-lead equipment currently being purchased, with Tui 4H expected to be drilled in late 2009 or early 2010 depending on rig availability.

Additional appraisal and/or exploration drilling in and around the Tui field is also under consideration during the same drilling campaign.

Reference: NZ Energy & Environment Business Week, 6/8/08.

Latest EDF Reserves Figures

As published in June 2008, the NZ Energy Data File gives the following oil and gas reserves figures for the main fields.

Gas Reserves Remaining (P50)

Production Fields

Pohokura	1063.6PJ
Maui	489.6 PJ
Kapuni	239.4 PJ
Others	402.0 PJ

Non-Production Fields

Kupe	188.1 PJ
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Oil & Condensate Reserves Remaining (P50)

Production Fields

Pohokura	366.4 PJ
Tui	216.3 PJ
Maui	133.7 PJ
Rimu (incl Kauri)	50.6 PJ
Others	135.5 PJ

Non-Production Fields

Kupe	95.4 PJ
Maari	Not Available (but possibly around 210PJ?)

Pohokura will therefore be the major source of NZ's natural gas over the next decade, followed by Maui, Kapuni and Kupe.

Pohokura will also be the major source of oil and condensate, followed by Tui, Maari, Maui and Kupe.

Biofuels

Full of Promise or Fantasy?

By David Painter, Consultant



Much confusion exists about the effects turning to biofuels will have on the world. David Painter separates fact from fiction.

Biofuels have had a lot of publicity recently. Some of it has been wrong. Oxfam's recent report concluded that biofuel policies deepen poverty and accelerate climate change. The Parliamentary Commissioner for the Environment said the Biofuels Bill should not proceed, but Air NZ intends to use 10% biofuel by 2013. Earthrace just broke the round-the-world powerboat record, publicising biofuel.

Confused? Here are some facts, fallacies and fantasies:

Fossil oil is biofuel. Fact. Fossil oil was formed by microscopic marine organisms trapped in geologic formations millions of years ago and subjected to extreme heat and pressure.

Other biofuels are recent. Fallacy. Rudolf Diesel ran his first engine in 1895 on peanut oil, and said in 1912 that such oils could become as important as petroleum and coal tar products. Henry Ford designed his Model T to run on a petrol-alcohol blend, "the fuel of the future".

Peak oil is here. Fact. Arguing when peak oil will occur or whether it has occurred is pointless. Cheap fossil oil is no more.

World transport fuel problems will be solved by ...: hydrogen fuel cells, electric cars, 'water motors' etc. Some take too long to implement. Others violate science.

High prices for fossil oil, economic problems and rationing will occur. Fact. A top USA analyst expects an oil-induced financial crisis

about 2010 to 2015, which will last at least 10 or 12 years. US consumers will pay NZ\$5.20 per litre at the pump. It will be more in NZ.

Biofuel production increases food prices. Fact and fallacy. This is fact for biofuel made from food crops (first generation) or on food production land. Second generation biofuels don't use edible crops.

Biofuel production causes deforestation. Fact and fallacy. It is fact for biofuel made from non-forest crops such as babassu palm, which displaces forest as in South-East Asia, but not generally.

Recent US and European Union biofuel policies increased food prices and deforestation. Fact. Over-enthusiastic politicians adopted biofuel-encouragement policies when only first-generation biofuels were available.

There are huge reserves of ... to quickly replace fossil oil. Insert: shale oil, tar sands, methane hydrates, etc. Fallacy. Peak oil is about volume, but also ease, cost and rate of recovery. Some reserves take more fossil energy to recover than new energy obtained, and not quickly.

The best contribution to New Zealand's transport fuel challenge will be conservation. Fact. It means using cars less, public transport more, more fuel-efficient transport, alternative energy sources and appropriate urban design and infrastructure.

Biofuels increase fuel prices. Fallacy. Almost half of Brazil's vehicle fuel is sugar-cane bioethanol, which costs NZ\$45 a barrel, while oil is NZ\$180. The Gull Oil blend in New

Zealand of 10% Fonterra bioethanol and petrol, costs slightly less than petrol. Fossil oil will increase. Biofuel will decrease with second-generation biofuels and scale economies.

Government intervention is unnecessary; the market will provide. Fantasy. State organisations control much of the world's oil production. Global oil companies still maximise profits from selling fossil-oil products. They have no incentives to treat the small New Zealand market generously.

NZ has great renewable energy. Fact. We have a steep, wet, sunny, windy, fertile country and a long coastline. Transport fuel is a special, difficult case, needing high energy per volume, safety and affordability. Biofuels will ease the difficult readjustment from fossil-oil plenty.

NZ is active in biofuels research. Fact. The Government's main 2008 research round allocated 9%, or \$40 million, of all contestable funding to biofuels research.

The Biofuels Bill will make matters worse, affecting atmospheric carbon, deforestation, land use and food prices. Fallacy. The Bill now requires biofuels to meet "specified environmental or sustainability standards or specifications".

There is still much oil; high prices result from producers playing the market, oil companies profiteering and the actions of commodity speculators. Prices will fall and business will resume as usual. Fantasy. The first sentence is probably correct, but see the "peak oil" and "high prices" facts, and the "solved by" and "quickly replace" fallacies. Business as usual is a fantasy.

Richard Branson's Virgin Atlantic Airline was the first to fly with biofuel, on 24 February 2008. Fact and fantasy. A Virgin Atlantic Boeing 747-400 flew from London to Amsterdam that day. One of four fuel tanks contained a blend of 80% fossil-oil-derived fuel and 20% vegetal oil-derived fuel. So 5% of the fuel was biofuel, for a 400 km flight in an aircraft with a 14 000 km range.

Air NZ will this year become the first airline to test second-generation biofuel, made from jatropha nut oil. Not yet fact or fallacy. Air New Zealand requires future fuel to be: "environmentally sustainable and not compete with food; at least as good as today's JetA; significantly cheaper than that and readily available." This Boeing 747-400 flight will use oil from jatropha grown in South-East Africa or India. Will it really occur this year, go a reasonable distance with one engine running on 100% jatropha-derived fuel, satisfy the airline's requirements and New Zealand's expectations for sustainability and social effects?

NZ can produce rapeseed biodiesel, as in the European Union. Fact and fallacy. We can and are (Solid Energy subsidiary Biodiesel NZ), but should not. It is a first-generation feedstock that competes for arable land with food and could interfere with seed crops.

NZ can produce sugar cane bioethanol, as in Brazil. Fallacy. NZ can not grow sugar cane. Using crops like sugar beet or sorghum would still compete with food production.

NZ can produce maize bioethanol, as in the US. Fact and fallacy. We can, but should not. It is energy inefficient and contributes to world-grain price increases.

NZ can produce wasteland-willow bioethanol, and simultaneously save Lake Taupo from excess nutrients. Fact and fallacy. Cellulosic materials such as maize, need more energy for processing than sugary feedstocks. Lignin materials, such as cane willow, need even more.

NZ can produce useful biodiesel from waste cooking oil and tallow. Fallacy. Commercial New Zealand biodiesel production started this way. There is insufficient waste cooking oil to contribute significantly to fuel needs and better things to do with tallow, at better prices, as Environment Canterbury discovered with its biodiesel bus trial (see page 28)

Biodiesel is just diesel, produced from crops and animals. Fallacy. Biodiesel is usually

produced from vegetal or animal oils by base-catalysed transesterification, producing monoalkyl esters. It is an international specification fuel which can be blended with diesel or used straight in diesel engines, but it is not diesel.

More biofuel can be produced from aquatic microalgae than from land-based crops occupying the same area. City sewage ponds can be used to grow the algae.

Facts. Microalgae are phenomenal biomass producers. Compare rapeseed at 1200 litres of biodiesel per hectare a year, maize at 3000 litres of bioethanol, sugar cane at 6000 litres, and jatropha or babassu palm oil at about 2000 and 4500 litres of biodiesel, with pond-grown microalgae at more than 30 000 litres of oil.

NZ company Aquaflo Bionomic produced the world's first biodiesel from wild algae in 2006. Fallacy. Christchurch's Solvent Rescue produced biodiesel from sewage pond algae in 2003. It was probably done earlier in Japan, Israel or the US.

Oillike fossil oil can be produced synthetically.

Fact. The Fischer-Tropsch process used by Germany in the 1939-1944 war to make oil from coal is still used in South Africa. For energy and carbon dioxide emissions reasons, it is not a good solution for NZ. Other options, including liquefaction of biomass, show great promise.

Round-the-world record-making 100% biodiesel powerboat Earthrace sourced enough fuel from body-fat liposuctioned from crew and volunteers to propel it for 15 km of its 24 000 km journey. Fact, but irrelevant. It illustrates one difficulty in basing serious discussion of biofuels in New Zealand's transport fuel future on over-hyped publicity in media-sized bites.

These are items I have reacted to in television, radio and print which are facts, fallacies or fantasies, and the comments are my opinions. Biofuels are neither good nor bad. They have an important transitional role in New Zealand's transport fuel future.

Biofuel production can be good or bad; it is subject to commercial, regulatory and social pressures.

David Painter is a Christchurch consulting engineer and former university academic. He worked on biofuels from crops in the 1970s and 1980s, and has more recently been involved in oil from algae developments.

Reference: As published in The Press, Christchurch, 24/7/08.

Biodiesel Company Quits NZ

Dickon Posnett, NZ's Managing Director of Argent Energy is returning home to the UK after his company pulled the plug on plans to build a \$100 million biodiesel plant in this country.

Posnett arrived in NZ in 2006 full of optimism about the potential to manufacture biodiesel from waste tallow. But after almost two years of battling with the Government over its biofuels policy he is despondent over what he sees as a wasted opportunity for the country to develop a domestic biofuel industry.

At the heart of Argent's decision to leave NZ is the Government's waiver of excise tax on ethanol until 2012. Posnett claims this gives oil companies a huge incentive to import ethanol rather than use NZ-made biodiesel to meet their sales obligation, because he says it is effectively a 42 cents per litre subsidy for ethanol over biodiesel.

Argent has tried unsuccessfully to persuade the Government to tax ethanol to create a "level playing field" between ethanol and biodiesel.

Posnett says that if the Government added excise to ethanol it would not affect consumers who now pay the same tax as on petrol anyway. Energy Minister, David Parker, has said that the Government will review the excise tax on ethanol in 2010 and is unlikely to extend the exemption beyond 2012. But Posnett says Argent can't wait another four years for a level playing field.

Argent's proposed plant in NZ would have produced 80 million litres of biodiesel a year from tallow as well as waste cooking oil. Argent is not shutting the door on NZ completely. It

will keep “a close eye on the situation” over the next few years, particularly if a National-led Government comes to power. At this stage, National has not said whether or not it would continue to waive the excise tax on ethanol.

Argent will now be looking for opportunities to build biodiesel plants in other countries. It has a major plant in Scotland which has been supplying oil companies in Britain and Europe for more than two years.

Meanwhile Solid Energy’s biofuel subsidiary, Biodiesel NZ, is pressing ahead with plans to make biodiesel at a new plant in Christchurch from canola grown in the South Island.

Biodiesel NZ agrees with Posnett that the waiver of excise tax on ethanol is going to make it tough for biodiesel suppliers in the short term, but are confident that they will find a market for the fuel. Biodiesel NZ arguably has an advantage over Argent in being an SoE which means it doesn’t have to go out in the market place and persuade investors to invest in the company, as Argent would have to.

Furthermore, being a subsidiary of coal miner, Solid Energy, the company has other incentives such as trying to improve its environmental image.

Minister’s Response

Energy Minister, David Parker notes that ethanol is more expensive than biodiesel, so the continuing excise tax waiver for ethanol will actually work to level the playing field.

He argues that without this waiver, ethanol would not be competitive with biodiesel and oil companies would focus on biodiesel to meet their requirements under the Biofuels Sales Obligation.

While this might be beneficial for Argent Energy, it would not encourage the introduction of both ethanol and biodiesel into NZ. David Parker said that he is confident that there will be a domestic biodiesel industry in NZ, even if Argent is not involved.

Reference: NZ Energy & Environment Business Week, 6/8/08.

Bus Company Quits Biofuel Trial

A Christchurch company has abandoned a trial of biodiesel in its buses, due to a lack of infrastructure and the rising price of biofuels.

Leopard Coachlines trialled biodiesel blends across its entire fleet of 100 buses for a year in a joint partnership with Environment Canterbury. The company states that they were initially sceptical of whether the buses would perform well on biofuels, but encountered no problems with performance and the fleet required no special modifications apart from new filters at the pumps.

However “prohibitive costs” then caused Leopard to return to regular fuel, except for two of its inner-city buses.

The company began the trial by using biodiesel made from recycled vegetable oil, but supplies were too unreliable so it switched to tallow-sourced biodiesel. But the price of tallow then doubled to about \$1,000 per tonne, forcing the company to supplement it with biodiesel obtained from palm oil in Malaysia.

Leopard says that it didn’t feel comfortable using palm oil, due to the possible impact on rainforests. In addition to the difficulties with sourcing the biofuel, Leopard had to wear significant costs in storing, blending and heating the biofuel (tallow requires heating to avoid solidification).

Leopard says that the infrastructure must be put in place, plus a reasonably-priced, sustainable and reliable source of biofuel made available before the transport industry can be expected to convert.

EECA biofuel spokesperson, Elizabeth Yeaman, says Leopard’s experience highlights the need for the oil industry to “partner” with bus companies to encourage them to switch to biofuels. She noted that bus companies are a “classic niche market” as their fleets usually fill up at private depots rather than at conventional petrol stations.

Reference: NZ Energy & Environment Business Week, 13/8/08.

Huge Bio-Ethanol Potential

Crown Research Institute, Scion, and its partners are talking up the potential of using ethanol from wood waste from forestry harvesting. They believe that they can produce ethanol for about NZ \$1.40 per litre and are planning to set up a pilot refinery by 2011 capable of producing about 2 million litres of the fuel a year.

By 2015, they hope to have a commercial plant producing 100 million litres annually. In the longer term, they believe that this biofuel could replace 50% of NZ's imported petroleum by 2030. There is also the potential to export the technology to other countries.

Scion is part of the "NZ Lignocellulosic Bioethanol Initiative", in partnership with the US-based Verenium Corporation, AgResearch, and Carter Holt Harvey which began in May 2006. The Initiative was recently awarded a \$5.4 million grant by FRST to look at the viability of producing cellulosic ethanol from NZ's pine forest resource.

Verenium will bring its enzyme and fermentation technologies to the programme and hopes to leverage their company's existing facilities to accelerate commercialisation timelines. Verenium's process involves first breaking down wood waste into fermentable sugars, using acid or enzymatic hydrolysis and industrial enzymes. The sugars are then fermented into ethanol using various fermentation organisms.

Reference: NZ Energy & Environment Business Week, 27/8/08

Climate Change/Global Warming

ETS Bill in Doubt?

The Government's flagship bill on the Emissions Trading Scheme (ETS) is languishing on Parliament's order paper as the Government struggles to get minor party support for the legislation.

The Maori Party has come out against the ETS in its present form, joining United Future which is also rejecting it. Two independent MP's are also understood to be opposed. This reduces the Government's options to the Green Party and NZ First, both of which have expressed reservations about the legislation.

NZ First's position has been that there must be compensation for the elderly and other low income groups for the higher costs they will face when the ETS comes into operation. Given NZ First's precarious electoral outlook, they may be

reluctant to risk the blame for pushing through a measure which will increase household costs still further.

The recent announcement of proposed details of the Australian Scheme is an additional complication which means that even if passed before the election, the ETS may not have a long life.

Catherine Beard of the Greenhouse Policy Coalition has pointed out that it is hard to imagine how long a scheme would last in NZ if businesses and consumers face increases in fuel and energy costs based on an international price of NZ\$40 to \$50 per tonne of carbon dioxide while Australia has a capped price of carbon at A\$20 per tonne.

Furthermore, Australians will not be burdened with any increase in their fuel costs because they will be offset by matching reductions in fuel excise tax.

Catherine Beard points out that NZ consumers will say that no matter how the scheme is designed, putting a price on all greenhouse gas emissions is a new cost which makes a large range of inputs across the economy more expensive.

Another major difference between the NZ and Australian approaches to emissions trading is that the Australian Government has promised to recycle every cent of revenue collected from the ETS. There has been no such promise on this side of the Tasman and the Government stands to make many hundreds of millions of dollars from the ETS by 2013, by having it cover more emissions than only those above 1990 levels, and there will also be windfall profits for state-owned electricity generators.

Reference: NZ Energy & Environment Business Week, 6/8/08.

The Government may be close to securing the numbers to pass its controversial ETS legislation. The Prime Minister, Helen Clark, said through a spokesperson that "The Government has had constructive discussions with other parties". Other Beehive sources report that the Government is now optimistic that it can pass the legislation before Parliament rises for the election.

This suggests that the Government will now give passing the ETS Bill a high priority.

Reference: NZ Energy & Environmental Business Week, 20/8/08

Radio NZ News reported on Tuesday 26 August that the Green Party had agreed to support the ETS legislation and that they have obtained agreement from the Government for a major house retrofitting programme to achieve energy savings, funded by electricity company dividends resulting from ETS. The Government has also agreed to compensate low income households for electricity price rises caused by the ETS.

There was still no word on when the NZ First Party will decide whether or not it will support the ETS legislation.

STOP PRESS: On Wednesday 27 August the NZ First Party agreed to support the ETS legislation and it was passed into law on Wednesday 10 September.

National Under Pressure on ETS

It is easy to see why the National Party is procrastinating on releasing details of its ETS. The reality is that National is being squeezed from both sides by conflicting interest groups.

Big business and farmers are seriously concerned about the economic implications of emissions trading, while National also needs the support of middle-class city voters who see themselves as having a "green conscience".

National can't please everyone, so the best option is to delay for as long as possible, while making reassuring noises to both sides.

Of major concern for National NP's who understand the NZ economy, is the volatile price of carbon credits on international markets. It has ranged from NZ\$28 per tonne to about NZ\$45 per tonne of carbon dioxide equivalent during the past six months, and some European analysts are tipping the price to reach NZ\$100 per tonne by 2012.

This has massive implications for the NZ economy. If the Government's Emissions Trading Bill gets passed in its present form, every business and household will face a new set of volatile energy costs over which they have little control.

The Government promoted the ETS on the basis of a carbon dioxide emissions price of NZ\$15 per tonne. At that price, its impact on the economy would be manageable. But if the price hits NZ\$100 per tonne by 2012, it would be a nightmare scenario for NZ, which few politicians are prepared to publicly grapple

with.

Business and farming lobbies are continuing to exert huge pressure on National over emissions trading. Once they are in Government, expect these two sectors to play a key role in shaping National's eventual ETS.

Reference: NZ Energy & Environment Business Week, 20/8/08

Editor's Note: The proposed Australian ETS has a capped price of A\$20 per tonne of carbon dioxide equivalent. This would put NZ in an impossible position compared with Australia if the international price was to reach NZ\$100 per tonne by 2012.

Government Faces Bill of up to \$2 Billion?

The Government could be forced to pay Maori up to \$2 billion to compensate for the impact of the Emissions Trading Scheme (ETS) on forestry land given to iwi under treaty settlements.

A confidential report commissioned by MAF shows Maori could be owed many hundreds of millions of dollars in compensation because land currently in forests will not be able to be converted to other potentially more profitable uses. The report was obtained by the Christchurch newspaper, The Press, under the Official Information Act.

MAF will not disclose the estimated loss in value to Maori forestry land contained in the report, but The Press reports it is understood to contain a figure of \$350 million for the value of carbon credits attached to the Maori-owned forests.

Paul Morgan, CEO of the Federation of Maori Authorities believes that the compensation bill is likely to be around \$2 billion. Morgan notes that about 700,000 hectares of NZ's total pre-1990 forestry estate of 1.2 million hectares is Maori-owned. Morgan adds that there is no legal action by Maori related to the ETS at present, but he believes that MAF commissioned the report to assess the risk to the Government of

“Maori basically suing them”.

The Federation in a submission on the ETS earlier this year, called for Maori land to be exempt from the ETS. Maori believe that the ETS will be a breach of the Treaty of Waitangi as the Crown will effectively be legislating how Maori can use their land.

Both Maori and non-Maori forest owners have expressed concern at a proposed levy under the ETS on pre-1990 forests if they are felled and converted to other uses, such as dairying. The penalty is likely to make conversion to other land uses uneconomic.

Reference: NZ Energy and Environment Business Week, 13/8/08.

California to Sue

The State of California is to sue the US Environmental Protection Agency (EPA) for “wantonly” ignoring its duty to regulate greenhouse gas emissions from ships, aircraft and construction and agricultural equipment.

California Attorney-General, Jerry Brown, says the lawsuit is designed to force the EPA into action, adding that President George W Bush “stalls with one bureaucratic dodge after another over climate change”.

Reference: NZ Energy & Environment Business Week, 6/8/08

STOP PRESS:

The speakers at the SEF Seminar on Thursday 9 October will be as follows

*Alexandra MacMillan, Domestic Energy User's Network

*Phillippa Howden-Chapman, Wellington School of Medicine and Health Sciences, University of Otago

*Jonathan Lermitt, specialist in electricity forecasting

*Frank Pool, specialist in energy efficiency programme design (to be confirmed)

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