



DOMESTIC ENERGY USERS' NETWORK

Co-convenors:

Ann Reading, 027-688-4207, areading@clear.net.nz

Molly Melhuish, 04-568-4873, 027-230-5911, melhuish@xtra.co.nz

Submission on Emissions Trading Scheme Review, 27 Feb 2009

We wish to speak to this submission.

The Domestic Energy Users' Network, DEUN, is a network of national organizations which advocates for affordable and sustainable energy services for all householders. Our policies are based on both statistical evidence and the experiences of our organizations. We promote actions that reduce the inequities in well-being, made worse by household energy bills. We promote energy efficiency and renewable energy solutions that improve household living conditions while reducing greenhouse emissions and other adverse environmental impacts.

Our members are:

Age Concern New Zealand;

Grey Power Federation;

Royal New Zealand Returned and Services Association;

Rural Women New Zealand;

Public Health Association;

Child Poverty Action Group.

DEUN supports the principles of the Treaty of Waitangi.

1. Summary of Submission (Note TOR is "term of reference")

1.1. It is essential that New Zealand design policies that not only respond to climate change but also promote more secure, sustainable energy options, and create more socially just economic development in response to changing climate.

1.2. **TOR3:** DEUN agrees that "high quality" regulatory analysis is very important for climate change policies.

DEUN recommends: Regulatory analysis must include the impact on vulnerable consumers. The key question is: will policies increase inequality? The choice of assumptions will determine the result. To have credibility, regulatory analyses should be peer-reviewed by relevant stakeholders.

1.3. **TOR5:** The impact of emissions pricing on New Zealand household budgets is of real concern - every increase in electricity or gas prices will cause further deaths in winter, and increasingly in summer through overheating.

DEUN recommends: The Household Fund should be retained, to fully fund services targeted to households in energy poverty. Retrofits, energy advisory services and education are the preferred means of alleviating energy poverty, but fuel vouchers will be needed as a transition measure.

- 1.4. **TOR 6.** Mitigation and adaptation approaches should not be treated as ‘either-or’, ‘but ‘together-with, because both approaches are needed to address both physical impacts of climate change, and financial impacts of rising energy costs on the NZ economy. Middle-income householders who renovate houses should have financial incentives to insulate and install low-emissions heating. First priority for assistance must remain with the lowest income tier - always the first victims of climate change, whether from extremes of temperature, storms or floods, or coastal inundation.

DEUN recommends: Provide incentives for cost-effective insulation and low-emission heating for all NZ houses, to mitigate (reduce) household carbon emissions. Fund local authorities to design and implement projects to help adapt their housing to climate change, including urban forestry.

- 1.5. **TOR 8:** DEUN prefers the emissions tax approach, rather than an emissions trading approach, because a tax raises revenue directly and with certainty, and tax revenues can be redirected in a socially just manner. The essential criterion for any energy pricing policy is that it must act to reduce rather than increase inequalities throughout New Zealand society. The Crown already takes \$1 billion per year of tax and dividend revenues from domestic electricity consumers, which increases with every price increase. Therefore DEUN opposes any further privatisation of electricity assets, because that would reduce the Crown’s revenue take.

DEUN recommends: any carbon pricing should be by way of a carbon charge rather than the far more complicated emissions trading. Excess profits that accrue to Government from the electricity sector should be used to fund energy efficiency measures that reduce energy bills and reduce carbon emissions. No more electricity companies should be privatised or part-privatised, as this would cause further leakage of excess profits from an essential service into the private sector. Electricity market rules should not permit large excess profits created by the abuse of market power by retailer-generators.

- 1.6. **TOR 9:** The best regulatory intervention additional to emissions pricing would be reduction of the perverse incentives of the generator-retailers to sell more electricity, which improves their bottom-line profits. There are interventions which decouple electricity profits from electricity sales.

DEUN recommends: Any regulatory interventions to combat climate change must recognise that reducing electricity end-use carbon emissions will reduce supply company profits. Overseas experience on mechanisms to reduce this perverse incentive should be used to design appropriate regulation.

2. International Context

- 2.1. The ETS Act (amending the Climate Change Response Act 1992) was passed at a time when recession had barely begun, both in New Zealand and globally. International carbon prices were high and predicted to increase, due to the increasing commitment, in Europe especially, to move towards more stringent carbon reduction targets.
- 2.2. There is no retraction internationally from the belief climate change is happening and requires strong policy moves. However the ability of New Zealand, or any other country, to respond constructively will be strongly influenced by the global crash of financial markets, and also by the country's particular economic circumstances.
- 2.3. The UK in particular has responded to the recession and climate change with increasingly strong measures to promote renewable energy together with household energy efficiency. In the U.S also, significant changes in climate policy are pending. In Canada, Ontario now claims to have the greenest climate and renewable energy policies in North America.
- 2.4. The New Zealand government must decide whether to design its energy and climate change policies in line with these and many similar international policy developments, or to retain its traditional energy policies, which have supported large-scale generation, and given only meager support to energy efficiency investments.
- 2.5. The gap between rich and poor in New Zealand is very large compared to that of most developed countries. It is essential that we design policies that not only respond to climate change but also promote more secure, sustainable energy options and create more socially just economic development in response to changing climate.

3. Terms of reference and DEUN response

- 3.1. **TOR1. Hear views from trade and diplomatic experts on the international relations aspects of this issue** No comment
- 3.2. **TOR2. consider the prospects for an international agreement on climate change post Kyoto 1, and the form such an agreement might take** No comment

3.3. TOR3. require a high quality, quantified regulatory impact analysis to be produced to identify the net benefits or costs to New Zealand of any policy action, including international relations and commercial benefits and costs

3.3.1. DEUN agrees that “high quality” analysis is very important for climate change policies. This requires genuine stakeholder engagement followed by peer review.

3.3.2. Analysis must go beyond narrow economic and commercial parameters – it must include analysis of the impact on low income and vulnerable consumers, increasing numbers of whom are now in energy poverty.

3.3.3. The results of any impact analysis will depend strongly on its input assumptions - which energy efficiency measures are chosen, the costs of overcoming barriers such as the cost of capital to low-income consumers, middle-income home owners, and large companies. Results will also depend on whether environmental costs, including climate change costs, are counted, and on whether co-benefits such as improved health and welfare, and employment opportunities, and even the potential for marketing our technology developments overseas, are included.

3.3.4. The results of cost-benefit analyses of both energy efficiency or carbon reduction measures are often displayed as a supply curve, which show the quantities of energy savings (or carbon reduction) on one axis, and cost of the energy savings (or carbon reduction) on the other. See Annexe 1. Comparison of New Zealand with overseas examples of supply curves indicates massive differences in expectations of costs and benefits. Examples of supply curves are shown in the annexe to this submission; they cannot be compared in detail but simply show that the residential sector features much more strongly in the US example than in New Zealand.

3.3.5. DEUN recommends: Regulatory analysis must include the impact on vulnerable consumers. The key question is: will policies increase inequality? The choice of assumptions will determine the result. To have credibility, regulatory analyses must be peer-reviewed by relevant stakeholders.

3.4. TOR4. identify the central/benchmark projections which are being used as the motivation for international agreements to combat climate change; and consider the uncertainties and risks surrounding these projections No comment

3.5. TOR5. consider the impact on the New Zealand economy and New Zealand households of any climate change policies, having regard to the weak state of the economy, the need to safeguard New Zealand's international competitiveness, the position of trade-exposed industries, and the actions of competing countries.

- 3.5.1. The TOR as stated addresses only the trade-exposed business sector. The household sector is at least as important, or more so, because of the importance of the household environment in maintaining health, reducing health sector costs, and enabling people to be more productive in the economy.
- 3.5.2. Any form of emissions pricing will add significantly to the impact on consumers of price rises in electricity or gas. This is already causing deaths, illnesses and accidents in winter, and possibly in summer through overheating. Emissions pricing is predicted to add 2c/kWh to electricity prices, based on an international carbon price of \$25/tonne.
- 3.5.3. The present ETS addresses the impact of emissions pricing on NZ households through the Household Fund. This must be either retained in some form, or replaced by some equivalent means of mitigating the impact of price rises. Energy poverty is real and increasing (Briefing, section 2)
- 3.5.4. Actions to make houses more healthy can keep New Zealanders in jobs, reduce costly energy waste, and promote the investment by homeowners in retrofits and rebuilding that will create jobs in forest industries, sawmilling, manufacturing, trades including building, plumbing and electricians.
- 3.5.5. Home retrofits score high on all the above counts. They future-proof houses against energy price rises caused by resource scarcity as well as climate change. They improve the health status of all New Zealanders (cold houses are found throughout all income sectors), and provide jobs throughout all regions.
- 3.5.6. Some people claim that retrofits will not save energy, because people will heat their houses more. To the extent this happens, the value of improved health will usually outweigh the cost of any increased energy used.
- 3.5.7. Any retrofit scheme needs to be implemented with care. If seen as a mere job-creation exercise, an army of newly-trained installers could be encouraged to install insulation into a mass-market of houses in fairly short order. In EECA's original Energy Saver Fund, many of the hot water cylinder wraps and even bundles of insulation were reportedly left unused in ceilings – or even removed. We are aware of shoddy installation still happening today. An urgent priority is to assess the physical quality and householder satisfaction with previous retrofits, before launching a new mass-market exercise. (Briefing, #9)
- 3.5.8. A further essential is for home energy advice, which should be tailored to the preferences and needs of the individual householder – their home is indeed their castle. A pilot home energy advice line – an 0800 number - is underway, but its

funding ends this financial year. We note that a free Biz0800 hotline and mentoring service is part of Government's new package to help small businesses.

3.5.9. NZ-developed technologies for low-carbon and efficient energy supply and use are potential export earners. Wood fuel is barely mentioned in renewable energy policy documents in NZ, but it provides a stored energy source that could be vital in providing household energy in dry years. Wood fired heating is still the least expensive heating source for a majority of householders, the more so as electricity prices continue to increase. (Briefing, #6)

3.5.10. **DEUN recommends: The Household Fund should be retained, to fully fund services targeted to households in energy poverty. Retrofits, energy advisory services and education are the preferred means of alleviating energy poverty, but fuel vouchers will be needed as a transition measure.**

3.6. **TOR6: examine the relative merits of a mitigation or adaptation approach to climate change for New Zealand**

3.6.1. Mitigation and adaptation approaches should not be treated as 'either-or', 'but together-with', because both approaches are needed to address both physical impacts of climate change, and financial impacts of rising energy costs on the NZ economy. Middle-income householders who renovate houses should have financial incentives to insulate and install low-emissions heating. The first priority for assistance must remain with the lowest income tier - always the first victims of climate change, whether from extremes of temperature, storms or floods, or coastal inundation.

3.6.2. **Mitigation** is about actually reducing the physical impact upon the planet of emissions. Greenhouse emissions from households now comprise at least 10% of New Zealand's energy-related greenhouse emissions, and the overseas supply curves indicate that household energy offers a very large resource of carbon reduction to be "mined". Mitigation is also about reducing the financial impact of greenhouse policies, as discussed above in relation to energy poverty.

3.6.3. One of the most effective means of reducing household emissions is to use wood fuels instead of electricity for heating. Heat pumps, though more efficient than gas heating, have similar emissions to gas-fired heating, and use of heat pumps for cooling is rapidly creating new summer peaks and kilowatt-hour demands. Houses should be insulated before the size of any new heating appliance is decided. See Briefing #4.

3.6.4. **Adaptation** policies make the New Zealand economy less susceptible to the impacts of storms, floods, blackouts, hotter summers etc. Local authorities are in the best position to ensure that housing is protected from physical threats from changing climate. Some of the revenues that government would take if a carbon charge were applied should be passed on to local government to fund climate adaptation policies.

3.6.5. Increased tree planting in city and suburban streets and reserves is one example of adaptation – tree cover can reduce temperatures by several degrees in “urban heat islands”, reducing the need for air conditioning. Trees filter harmful particles that come from vehicles and wood smoke, and their roots filter storm water pollution. Many native trees grow very fast, and could be cut back regularly for both firewood and compost. A tiny contribution of carbon-tax funding could stimulate the huge pool of voluntary labour that is now available but unused in native forest restoration projects – an unconventional but genuine public-private partnership.

3.6.6. **DEUN recommends: Fund insulation and clean heating to mitigate (reduce) household carbon emissions; fund local authorities to design and implement projects to help adapt their housing to climate change, including urban forestry.**

3.7. **TOR7: consider the case for increasing resources devoted to New Zealand-specific climate change research** No comment

3.8. **TOR8: examine the relative merits of an emissions trading scheme or a tax on carbon or energy as a New Zealand response to climate change.**

3.8.1. DEUN prefers the carbon charge approach, rather than an emissions trading approach, because a tax raises revenue directly and with certainty, and tax revenue could be redirected in socially just manner.

3.8.2. We understand that with the ETS, as now enacted, Government will not receive net revenue for between one and two decades. This time lapse is simply not acceptable. Any trading scheme is open to manipulation, and requires confidence in financial transactions. Confidence has been shattered with the global financial collapses. It must be noted that the value of Kyoto credits on the European market has fallen from almost 40 Euro per unit to around 10 since the global financial crash.

3.8.3. DEUN recognises that the Household Fund in the ETS Act was based on the principle of recycling government windfall revenues into the sector that suffered most harm from emissions pricing. We believe that principle must be retained, whatever form emissions pricing might take.

3.8.4. If Government decides to delay any pricing on emissions, this will not prevent the large and increasing burden on householders of electricity and other energy price rises. The principle of recycling windfall profits would still be important even if emissions were not priced. Government already takes about \$1 billion per year in revenues from dividends, income tax and GST from the electricity sector, up from about \$500 million in 2004 – see briefing # 8.

3.8.5. The term “windfall profit” has been criticized in an academic analysis in a peer-reviewed journal. This article, published in Energy Policy, describes a

taxonomy of excess profits¹. “Windfall” only properly applies to unearned rent which is not foreseen or expected by a company. Any differential rent which is expected and planned on will be incorporated in asset values, and thus not create excess profits.

- 3.8.6. Excess profits that arise from carbon trading schemes in the European context are defined by the authors as “swindle profits” because they arise from lobbying by companies to be excused from paying for their carbon emissions. That term would not be accepted in New Zealand policy circles. However there is no question that energy-intensive industries do enjoy shelter under New Zealand’s ETS Act, from 90% of the impost of Kyoto credits – a close parallel to the situation discussed in the Energy Policy article.
- 3.8.7. A much larger quantity of excess profits arises from differential rents to hydro, wind and geothermal electricity². To the extent that retailer-generators have been able to influence electricity market rules to enable them to exert market power, and hike prices above those of a fully competitive market, “market-rule” profits are a further example of unearned rent that arises from deliberate actions by the companies.
- 3.8.8. Where electricity companies have been privatised or part-privatised, the dividend stream is no longer available for public purposes, in particular to mitigate the effect of high prices on vulnerable consumers.
- 3.8.9. The government has so far rejected the concept of taxing what it called “windfall profits” from the electricity sector.³ If instead it were to insist on a system of electricity market rules that created a much more competitive market, the resulting reduction in electricity prices might far outweigh any burden of carbon charges on the domestic consumer.
- 3.8.10. **DEUN recommends: any carbon pricing should be by way of a carbon charge rather than the far more complicated emissions trading. Excess profits that accrue to Government from the electricity sector should be used to fund energy efficiency measures that reduce energy bills and reduce carbon emissions. No more electricity companies should be privatised or part-privatised, as this would cause further leakage of excess profits from an essential service into the private sector. Electricity market rules should not permit large excess profits created by the abuse of market power by retailer-generators.**

¹ Verbruggen, Aviel. “Windfalls and other profits”, Energy Policy 36 (2008), 3249-3251

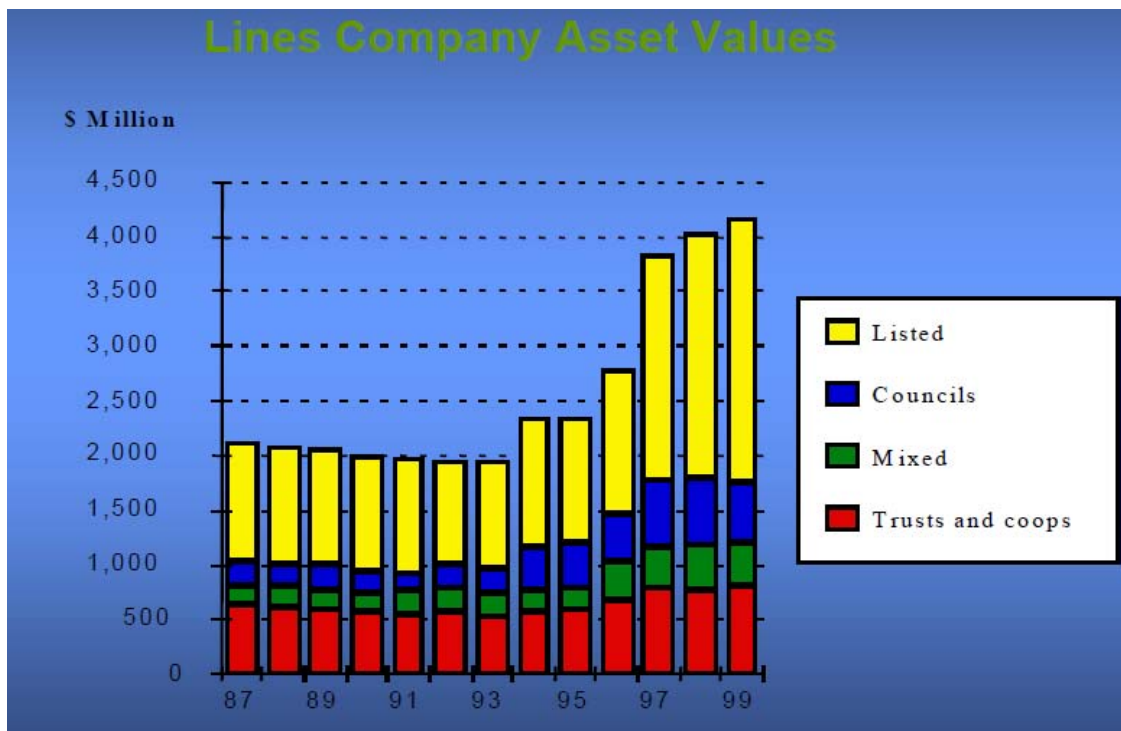
² Bertram, Geoff, 1988. “Rents in the New Zealand Energy Sector”, in the April Report, Royal Commission on Social Policy, Volume IV.

³ <http://www.med.govt.nz/upload/45603/pricing-part1.pdf>

Ministry of Economic Development, 6 March 2006 “Pricing in the New Zealand electricity market and its economic impact”

3.9. TOR 9: consider the need for any additional regulatory interventions to combat climate change if a price mechanism (an ETS or a tax) is introduced

- 3.9.1. The best regulatory intervention additional to emissions pricing would be reduction of the perverse incentives of the generator-retailers to sell more electricity, which improves their bottom-line profits.
- 3.9.2. DEUN believes that regulatory intervention will be essential to enable any carbon reduction in the retail energy sector to be commercially viable. Carbon reduction means reduced electricity (and gas) sales, and this will reduce profits. Excess profits are already a major concern in the electricity industry, and are the subject of a four-year study by the Commerce Commission.
- 3.9.3. Lines company regulation has already been imposed since 2003, following the rapid rise in lines prices from 1987-1999, which were quickly capitalized into asset values, as shown below.⁴



- 3.9.4. Electricity and gas deregulation from the mid-1990s in the US and Europe “failed to achieve the promised goals of lower prices, greater choice and more innovation When combined with the ability to serve both basic and growth markets, exploit differentiated markets and employ political influence, it is easy

4

<http://www.comcom.govt.nz/IndustryRegulation/Electricity/ElectricityLinesBusinesses/TargetedControl/ContentFiles/Documents/STA%20Thresholds%20Submission%20-%20ppt.pdf>

to see how dominant incumbent firms can sustain market power and achieve high levels of profit under deregulation.⁵

- 3.9.5. New Zealand's electricity deregulation was unusually radical, attempting to rely on self-regulation to curb monopolistic behavior. Self-regulation allowed lines company profits that have exceeded the levels which would have been acceptable under the old rate-of-return regulation, by some \$200 million per year.⁶
- 3.9.6. Options for promoting energy efficiency without compromising profitability, in both regulated and deregulated utilities, have been extensively researched in the U.S. Regulation to decouple profits from sales has been set up in 13 states, including those with deregulated electricity sectors, but the regime must be very carefully tailored to the particular regime in each.⁷
- 3.9.7. The Commerce Commission is expected to report very soon on its 4-year inquiry into whether electricity companies are abusing their market power. In considering options for regulation, it is important to ensure that these do not suppress cost-effective energy efficiency.
- 3.9.8. This points clearly to the need to re-regulate New Zealand's electricity industry, to an agenda of controlling market power, and achieving cost-effective environmental protection. The principles of institutional economics could provide a suitable organising framework for this.
- 3.9.9. **DEUN recommends: Any regulatory interventions to combat climate change must recognise that reducing electricity end-use carbon emissions will reduce supply company profits. Overseas experience on mechanisms to reduce this perverse incentive should be used to design appropriate regulation.**
- 3.10. **TOR 10: consider the timing of introduction of any New Zealand measures, with particular reference to the outcome of the December 2009 Copenhagen meeting, the position of the United States, and the timetable for decisions and their implementation of the Australian government** no comment

⁵ Trebing, Harry M, 2008. "A Critical Assessment of Electricity and Natural Gas Deregulation" Journal of Economic Issues. Sunday, June 1 2008, <http://www.allbusiness.com/energy-utilities/utilities-industry-electric-power/11462531-1.html>

<http://www.allbusiness.com/energy-utilities/utilities-industry-electric-power/11462531-1.html>

⁶ <http://www.geoffbertram.com/fileadmin/publications/Price-Cost%20Margins%20and%20Profit%20Rates%20in%20New%20Zealand%20Electricity%20Distribution%20Networks%20Since%201994.pdf>

Bertram, Geoff, 2006. "Price-Cost Margins and Profit Rates in New Zealand Electricity Distribution Networks Since 1994: the Cost of Light Handed Regulation", Journal of Regulatory Economics; 27:3 281-307, 2005

⁷ http://www.raponline.org/Slides/RS-Ohio_Workshop_on_Electric_Decoupling_4Feb09.pdf

4. Annex: Proportion of “savings” available from the residential sector:

Two examples of supply curves

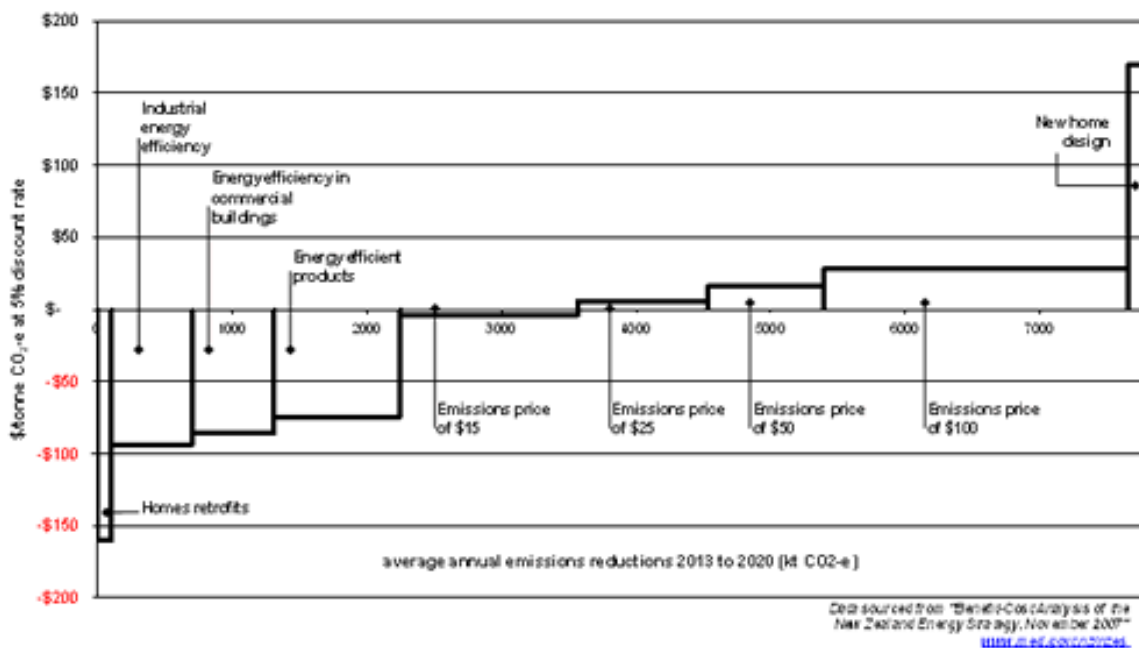
4.1. A NZ supply curve for policies to reduce carbon emissions was produced a year ago, see Briefing #5. The “available” energy savings from home retrofits is shown as very small indeed, consistent with the very low estimate of 1.55 PJ of energy savings by 2012 (p. 18 of the NZ Energy Efficiency and Conservation Strategy, Oct 2007). See Fig 1.⁸

4.1.1. The diagram shows home retrofit measures to have the “lowest” cost – in fact, a financial savings of \$180. Why, then, is the quantity so low?

4.1.2. The point being made in this comparison is not the quantity or cost of savings, but the proportion of savings available from the residential sector in comparison to other sectors. The figures for “cost” are not comparable at all, as different conservation studies count the cost to different agents, whether to Government, or to investors, or to the economy as a whole.

4.1.3. The small quantity of savings considered available must come from the assumptions of the studies – that little effort would be put into residential energy programmes compared to commercial and industrial ones.

Figure 1: Supply curve, costs and quantities of emissions reduction, NZ



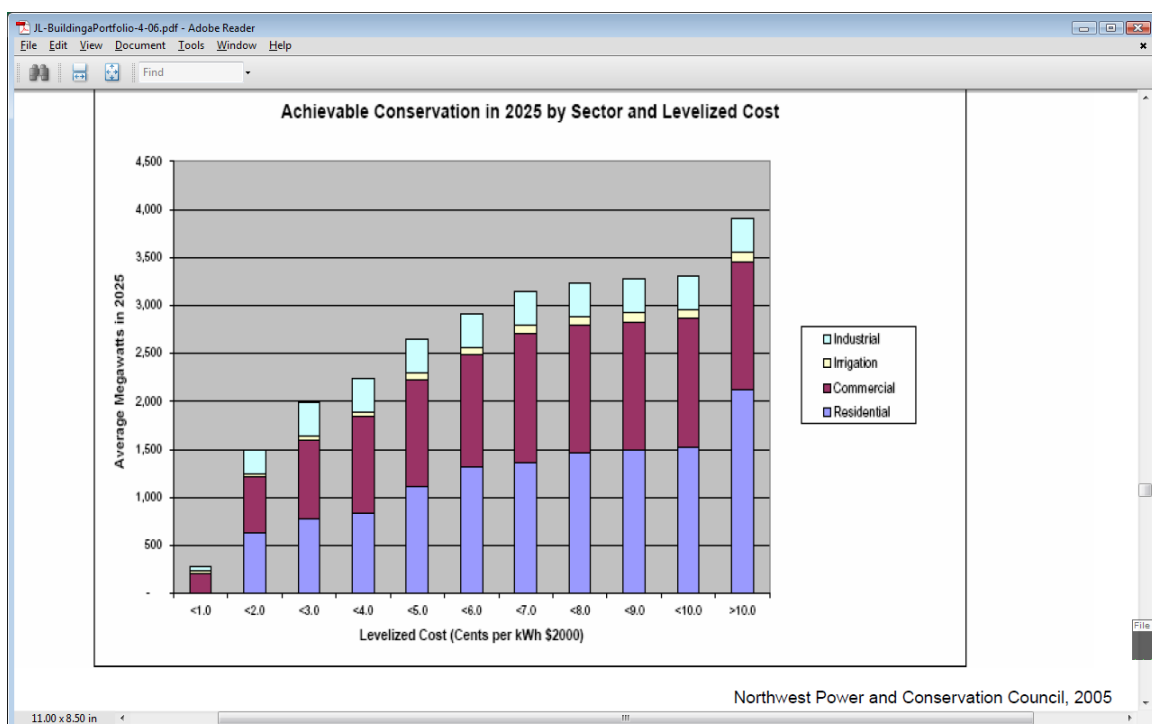
⁸ <http://www.climatechange.govt.nz/emissions-trading-scheme/input-and-engagement/climate-change-leadership-forum/2008-02/mitigation-potential-cost-gas-emissions.html>

4.2. In contrast, a supply curve on savings available from buildings, produced by the U.S. Northwest Power and Conservation Council (four Pacific Northwest states), shows residential energy efficiency providing nearly half the available energy efficiency resource, with commercial building savings a little less, and industrial savings less again. See Fig 2.⁹

4.2.1. The United States studies on energy savings typically focus on electricity savings rather than emissions reduction, consistent with the policies of past U. S. administrations. (The New Zealand supply curve in figure 1 had been evidently based on the European work which focused on emissions not electricity demand reduction.)

4.2.2. The costs of conservation measures range from less than 1c (in year 2000 US\$ units) to more than 10c/kWh. Quantities are of peak demand savings, ranging from 500 MW at less than 1c/kWh to 4000 MW at less than 10c/kWh.

Fig. 2: Available Conservation in 2025 by sector (industrial, irrigation, commercial, residential)



From the same reference are costs per kWh, of three selected measures:
 Commercial lighting, 12c/kWh,
 Commercial Heating, ventilating, air conditioning, 3c/kWh
 Residential heating, ventilating, air conditioning, 3c/kWh.

⁹ <http://www.raponline.org/Slides/JL-BuildingaPortfolio-4-06.pdf>

Annexe 2:



DOMESTIC ENERGY USERS' NETWORK

Briefing to Incoming Parliament, 11 November 2008

Co-convenors:

Ann Reading, 06-367-2367, 027-688-4207, areading@clear.net.nz

Molly Melhuish, 04-568-4873, 027-230-5911, melhuish@xtra.co.nz

The Domestic Energy Users' Network, DEUN, is a network of national organizations which advocates for affordable and sustainable energy services for all householders. Our policies are based on both statistical evidence and the experiences of our organizations. We promote actions that reduce the inequities in well-being, made worse by household energy bills. We promote energy efficiency and renewable energy solutions that improve household living conditions while reducing greenhouse emissions and other adverse environmental impacts.

Our members are:

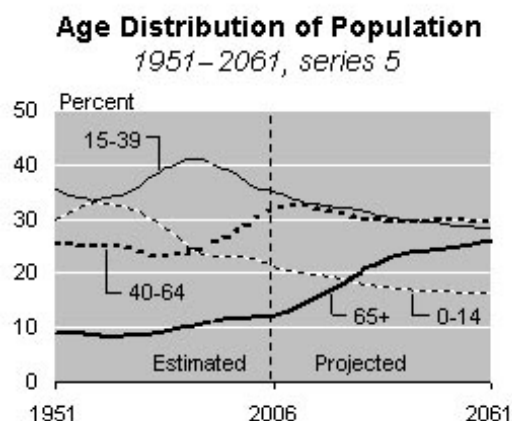
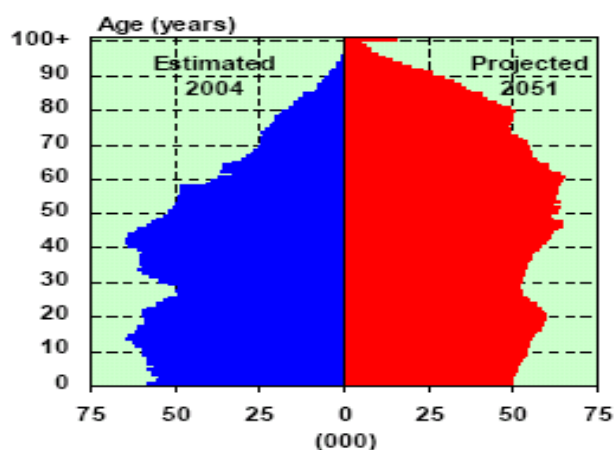
- Grey Power Federation;
- Royal New Zealand Returned and Services Association;
- Rural Women New Zealand;
- Age Concern New Zealand;
- Public Health Association;
- Child Poverty Action Group.

DEUN supports the principles of the Treaty of Waitangi.

1. Demographic context

Globally, we are in a time of rapid population ageing. In New Zealand, by 2030, for the group aged 65 to 74, numbers will double from 276,000 in 2006, to 559,000. As indicated in the first figure, by 2030, it is estimated that the numbers of those over 85 will almost treble, from 58,000 today to 150,000ⁱ. As is shown in the second figure, Treasury (2006) has also calculated that the ratio of the young to the old is transposing, and after 2020 we will have more people over age 64 than under age 15.

Families with small children, and older people, spend much more time at home than working-age people. DEUN argues that hardship and poverty for these groups especially, now and in the future, can be significantly reduced by investment in retrofitting

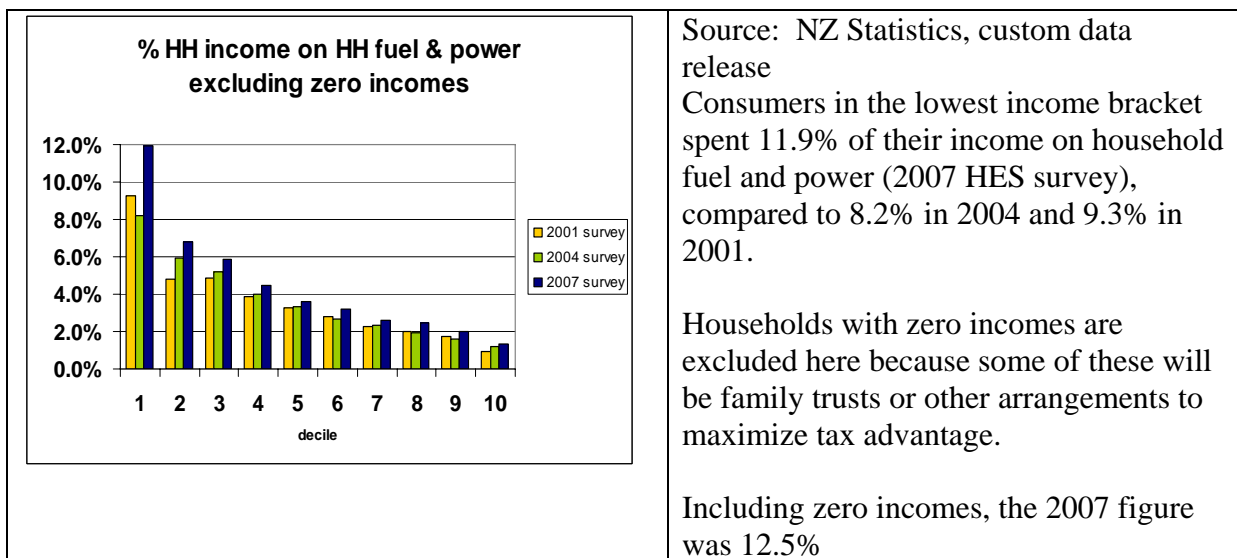


houses. Insulated homes are warmer, dryer, and healthier. As well as these benefits, retrofitting results in reduced medical costs and usually lower heating costs. The amount of energy that is “taken back” in the form of warmer houses will vary, but the small amount of data available suggests that insulating homes will on average reduce the demand for electricity, gas, and solid fuel, and create a smaller carbon footprint.

DEUN Recommends: Use of the Household Fund with a particular emphasis on families with dependent children and superannuitants.

2. Energy Poverty

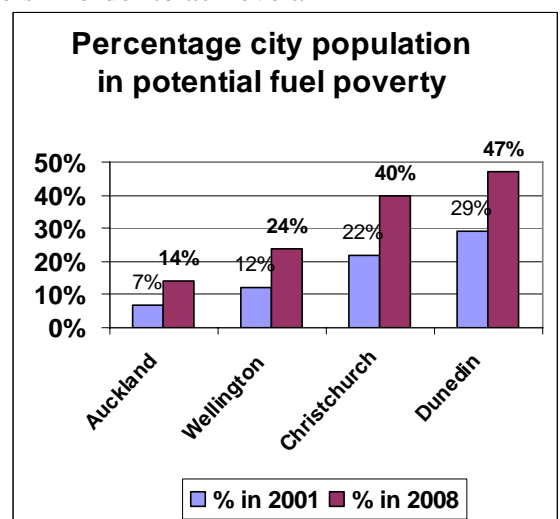
Household Economic Surveys show low income people are paying by far the highest proportion of income on “household fuel and power”. Average statistics are not relevant to the low income sector.



DEUN supports the definition of energy poverty as “Households which would need to spend more than 10% of their income on all household energy fuels in order to achieve a satisfactory indoor heating regime”.

Based on this definition, Bob Lloyd of Otago University has compared income levels with the thermal performance of typical low-income houses in Auckland, Wellington, Christchurch and Dunedin.ⁱⁱ He concludes that the percentage of city populations in potential fuel poverty in 2008 has nearly doubled since 2001, having risen from a weighted average of 10-14% to a weighted average of 23%.

The model assumes a house of 90 m2, all-electric, paying 21c/kWh in 2008. (The NZ average price in May 2008 was actually 22c/kWh.) Most households using alternative fuels will in fact have lower fuel prices, but



that overestimate is offset by the fact that most houses are larger than 90 m². LPG prices are now higher than electricity prices.

Lloyd concludes: “the problem of fuel poverty is not going to go away as fuel prices are going to rise. Relatively small increases in fuel prices raise the numbers very quickly.”

This has proved to be true in the UK, where a 22% price rise in gas and electricity prices in 2006 tipped a million UK households into fuel poverty.ⁱⁱⁱ Environmentalists and consumer advocates recommend

“a government strategy that combines both short- and long-term solutions - crisis payments to help with the here and now, and in the longer term improvements to the energy efficiency of our housing stock. . . . As a starting point, the government should be working with energy companies to reform their social tariffs to end the inequalities of energy pricing that mean poorer people pay more.”

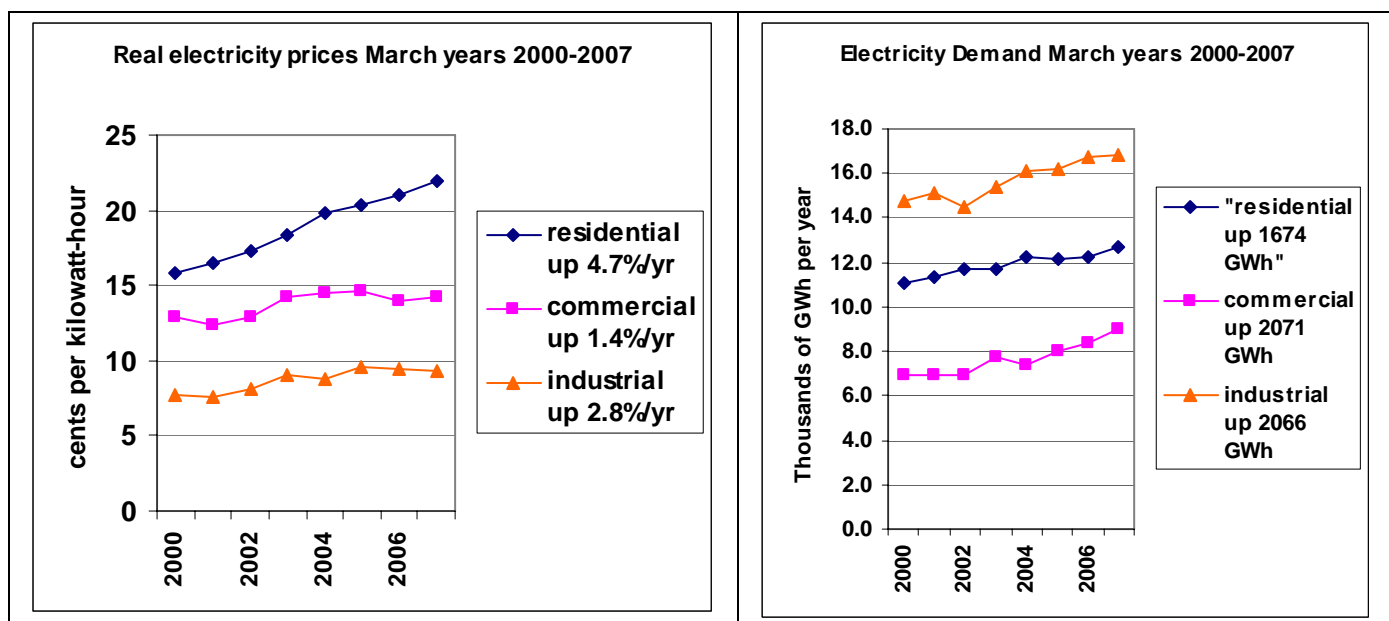
This position is essentially the same as the position DEUN has taken following the past year’s research and policy discussions.

DEUN Recommends: Elimination of energy poverty in New Zealand through a combination of crisis payments to the most vulnerable home energy consumers and fairer electricity and gas tariffs, plus a long-term programme of home energy retrofits.

3. Household energy prices are rising faster than inflation

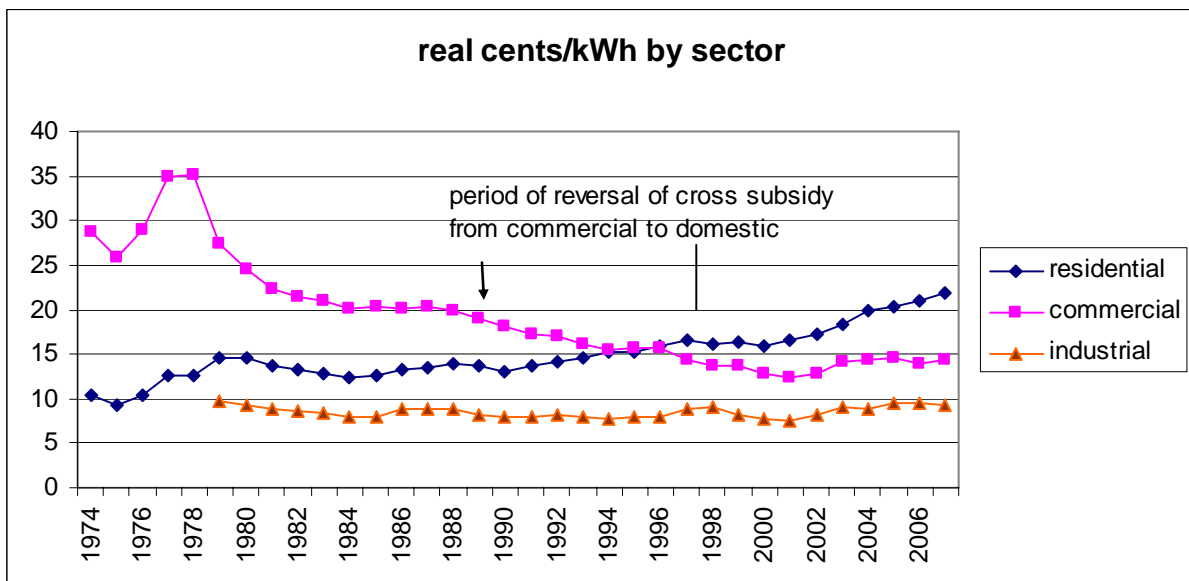
Domestic electricity users are now in effect subsidising commercial and industrial electricity users. Domestic energy prices have risen 5% faster than inflation since 2000, compared to commercial prices 1½ %, and industrial prices 3% faster than inflation.

Government officials and industry people say electricity prices must rise because demand is growing. New power stations have to be built to meet the demand - but demand growth from commerce and industry has been 2 ½ times as fast as growth in domestic demand.



Information provided by the Electricity Commission for its Electricity Market review shows that the domestic prices are far higher than needed to ensure new power stations can be built. The network component of domestic prices has increased little if at all since 2000, while the energy component has risen to twice the cost of electricity from new power stations (the long-run marginal cost).^{iv}

The longer-term series of real prices for the three sectors showed a rapid electricity price rises after 1976, following a residential price freeze (but a time of fairly high inflation). From about 1990-2000, residential prices rose in real terms while commercial prices fell, reversing the former cross-subsidy from commercial to residential consumers. From 2000 onwards, all prices have risen in real terms, but residential prices have risen the most.



DEUN Recommends: Independent review to determine fair and efficient pricing for domestic electricity and gas supply.

4. Carbon emissions from household sector

Household energy emissions are significant, with average emissions amounting to 10% of New Zealand’s energy sector greenhouse emissions. Policies to modify consumption to reduce emissions need to be based on marginal emissions factors^v, in keeping with the concept that prices should be related to marginal costs.

New Zealand’s average emissions from electricity were 180 grams CO₂-equivalent per kWh in 2007. Marginal emissions are generally taken as 600 grams per kWh, and even higher at winter peak times. The big difference is because the majority of generation is from renewable hydro energy, but the year’s inflows are supplemented by gas and coal to make up the year’s electricity consumption.¹⁰

¹⁰ Suppose all new power stations were based on renewable energy sources. Average emissions would then fall, but the marginal emissions would remain the same. Only when hydro and wind energy are in surplus and spilled to waste can it be said that renewable energy is on the margin – and this would be very wasteful of the investment capital used to expand the power system.

Thus projects to reduce winter electricity peaks, through insulation, efficient wood burning, lighting, double glazing, or curtains, reduce emissions by at least 600 grams per kWh saved.

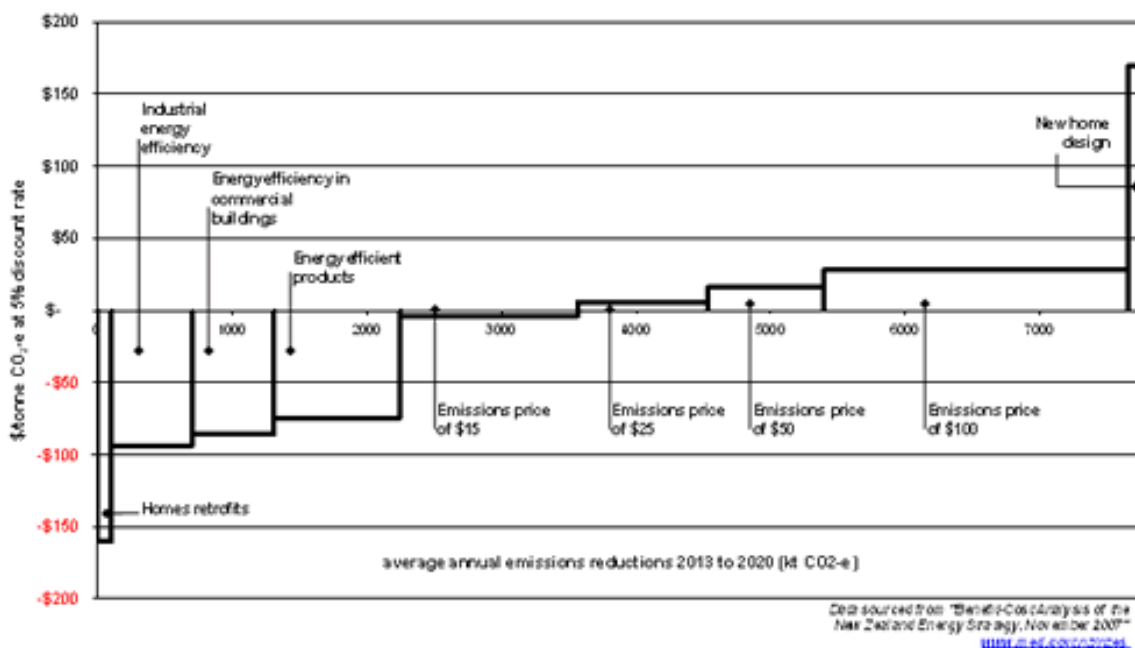
Emissions from gas and LPG are around 300 grams per kWh of end use heat – marginal emissions are the same as average. Marginal emissions from heat pumps are around 200 grams, but can be much higher on the coldest days when the performance falls. Greenhouse emissions from wood are taken as zero, because growing trees use up all the carbon dioxide that is emitted.

DEUN Recommends: The contribution of the household sector to marginal greenhouse emissions be incorporated into cost-benefit studies of proposed retrofit measures.

5. Household insulation

Home insulation is the most cost-effective of all household energy efficiency strategies. The “supply curve” for energy efficiency has long been used to describe cost-effective energy efficiency policies. This describes the costs per kWh of energy saved of a number of “measures” which reduce energy consumption, and the quantities of energy that can be saved from each measure.

New Zealand has not recently produced supply curves for household energy efficiency. However Ministry for the Environment has produced a similar curve can be described for measures that abate greenhouse emissions. This indicates a net benefit to the NZ economy of about \$160 per kilotonne CO₂-equivalent^{vi} for household retrofits. **This is by far the most cost-effective of all measures to reduce CO₂ emissions.**



DEUN Recommends: Review of the condition of New Zealand houses to determine how many retrofits are cost-effective, including health as well as energy benefits.

6. Technology solutions for low-cost, low-emission household energy:

The only practical way of reducing the impacts of increasing energy prices and emissions from household energy will be through improved technology, but only if houses are insulated also. Technology change was rapid in the mid 1970s, when residential electricity prices rose by 55% in two years. New Zealand research led to the rapid introduction of “double burning” wood burners, and firewood became the main source of household space heat.

Solar energy for water heat, and pellet burners for space heat, are fully commercialised now. Technologies for central heating plus water heating using wood chips or logs are commercially available in Europe, and are being adapted and further developed in New Zealand. They are especially appropriate for large houses, and for new houses in New Zealand’s cold climates.

Clean and efficient wood burning depends as much or more on the quality of the fuel and on understanding how to use the fuel, as on the appliance itself. Packaged dry firewood and firelogs are sold in supermarkets today – a market that is growing by over 10% per year, despite the high retail margins. Retail prices for very dry firewood could potentially be greatly reduced.

Heat pumps are an important part of the strategy for low-emissions, low-cost home heating. Yet at present, heat pumps are causing a rapid increase in both winter peak and winter energy demands, especially in the coldest locations. It’s not the heat pumps themselves, it’s how we’re using them - that is driving excessive electricity demand. If used in poorly insulated houses, heat pumps will be working very hard on the coldest days, and their efficiency will fall severely. They may well be being supplemented by ordinary electric heaters, causing high peak demands.

Where householders have access to wood or LPG heating, new tariff options including critical peak pricing could encourage the use of heat pumps when they are most efficient, while using the other fuel at the coldest times when heat pump efficiency drops markedly.

DEUN Recommends: Develop and promote highly efficient wood burning technologies and fuel supply systems.

7. Home energy projects to stimulate the economy during a recession

DEUN does not have a position on whether to favour economic growth as measured in conventional terms, or to prefer other means of measuring and promoting ongoing well-being in New Zealand society. We do however recognise that Government has a vital role both in job creation and in mitigating the financial impacts of the recession on New Zealanders.

A focus on home energy retrofits, on repair and rebuilding of houses, and of energy-efficient new houses for low-income as well as high-income earners, would lead to jobs throughout the regions. It has even been suggested that closure of major industrial plant may be mitigated by retraining the unemployed specifically for housing upgrades in the district.

Projects within a small area can create many economies, with better use of tradesmens' time, bulk buying of materials, etc. New businesses would be required for a massive home retrofit programme, in particular, new plant to manufacture insulation^{vii}.

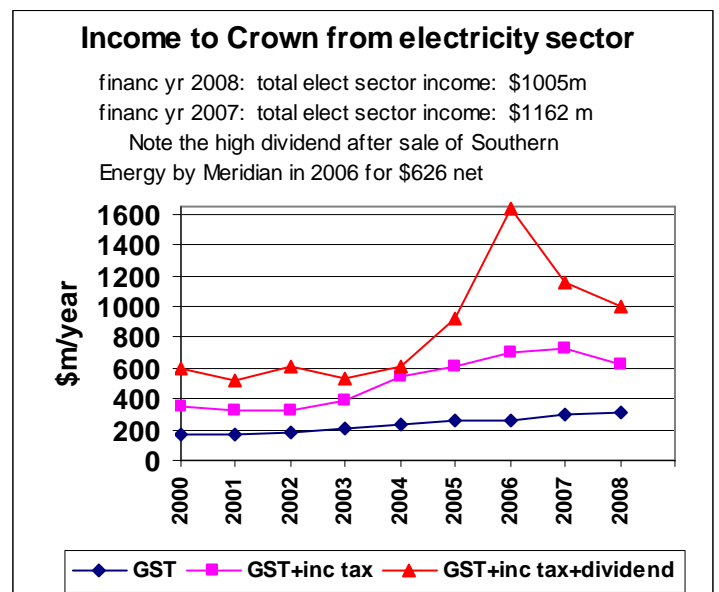
8. Funding for home energy retrofits

The Climate Change Response Act 2002 (as amended in September) provides for a Household Fund^{viii}, "for the purpose of reducing non-transport household greenhouse gas emissions through the promotion of household energy efficiency and conservation and household renewable energy technologies." Specifically mentioned in the Act are household insulation, clean heat retrofits, energy efficient appliances and lighting, and space and water heating efficiency improvements.

The Minister determines the criteria, after seeking and considering advice from EECA, having regard to income and energy needs of households, and cost-effectiveness of the measures. EECA must manage and administer the fund according to the Minister's criteria.

The Household Fund was conceived as a means of recycling revenue that the Crown receives from the electricity sector. Government already takes about \$1 billion per year in revenues from dividends, income tax and GST from the electricity sector, up from about \$500 million per year in 2004.^{ix} The dividends from electricity state-owned enterprises are now reducing, as funds are being retained for investment in new generation and transmission. But as prices rise, income tax and GST still provide a generous revenue base to recycle into home energy efficiency projects.

Emissions pricing will add further windfall revenues from 2010.



DEUN Recommends: Dedicating a proportion of the Crown's revenues from the electricity sector to the Household Fund.

9. Implementing home energy schemes

To date EECA's Energywise Homes schemes have been very difficult to implement, with energy efficiency trusts being required to find 40% (formerly 60% or more) of the funding from outside sources. Partnership funding is becoming rapidly more difficult to find, with corporate and charity funding sharply reduced. Many retrofit organizations have had to lay off staff even while energy price rises have increased the need for the programmes.

The billion dollar 15-year Household Fund needs to be implemented by a much more sophisticated process. Internationally funded energy efficiency projects, for example those funded by the Global Environmental Facility, require a fairly standardized design.^x A \$10

million programme for a developing country, might take several months to design, beginning with professional input, and continuing with five or six local teams looking at policies, institutional and technical aspects. It would begin with an assessment of any previous programmes – based on extensive data collection, not just a few small studies. The proposed goals and proposed indicators of success would be made available on a public website, and there would be stakeholder meetings to identify barriers to achievement of success, and propose how to overcome the barriers.

DEUN members have already participated in this type of process, in two cases. Three DEUN members were invited by the Auckland Regional Council to attend stakeholder meetings on its Regional Energy Strategy, with the first meetings addressing a broad vision for the future, desired outcomes, and barriers to achieving those outcomes. We are very hopeful that the consultation document will reflect the extensive comments we made during these meetings. DEUN was also invited by Transpower to participate as stakeholders in their long-term transmission planning project.

A similar analysis framework, which targets greenhouse emissions reduction, is already in operation in 34 local councils representing 83% of New Zealanders. “Communities for Climate Protection”, a Government initiative linked to the International Council for Local Environmental Initiatives (ICLEI)^{xi}, gives Councils a standardised framework for identifying greenhouse emissions both from their own activities and in their communities. The programme helps councils set their own emissions reduction goals, develop and implement a local action plan, and monitor and report on progress towards their goals.

A billion-dollar 15 year programme deserves to be designed through a data-rich, broadly consultative public process, rather than simply in-house as has been done by both EECA and the Electricity Commission for their energy efficiency programmes.

DEUN Recommends: Use of the Household Fund be professionally planned using international best practice, including input from the community.

ⁱ (Treasury (2006). Working New Zealand, Obtained under the Official Information Act).

ⁱⁱ Lloyd, Bob (2008). Fuel Poverty in NZ.

http://www.cea.co.nz/files/Fuel_Poverty/Lloyd_Fuel_Poverty_in_NZ_ver_2008.pdf accessed Nov 1 2008

ⁱⁱⁱ “Number of homes in fuel poverty rises by 1 million.” guardian.co.uk, Thursday October 02 2008

<http://www.guardian.co.uk/money/2008/oct/02/householdbills.energy>

^{iv} Market Review Options Paper briefing, slides 9 and 12.

<http://www.electricitycommission.govt.nz/pdfs/opdev/wholesale/market-design/presentation-MDR-BriefingSession-12Aug08.pdf>

^v http://www.pce.govt.nz/_data/assets/pdf_file/0013/3523/Concept_Smart_Metering.pdf, appendix D

^{vi} Mitigation Potential and the Cost of Mitigating Greenhouse Gas Emissions in New Zealand 2013 – 20, Briefing for the Climate Change Leadership Forum, Prepared by the Ministry for the Environment February 2008, <http://www.climatechange.govt.nz/emissions-trading-scheme/input-and-engagement/climate-change-leadership-forum/2008-02/mitigation-potential-cost-gas-emissions.html>

^{vii} Michael Camilleri, BRANZ, pers. comm

^{viii} http://www.legislation.govt.nz/act/public/2002/0040/latest/DLM1662838.html?search=ts_act_climate#DLM1662838

^{ix} Data from Official Information Request to CCMAU, plus annual reports of Contact Energy and TrustPower. GST estimated from table G.5a of Energy Data File

^x From correspondence on the Sustainable Energy Forum newsgroup

^{xi} <http://www.iclei.org/index.php?id=3920>