



Hydro power provides 80 percent of New Zealand's energy needs. While hydro is a favoured form of energy, there is also a limit to the number of dams the public is prepared to allow to damage the environment. Photo: Energy Management Group

Yet deregulation of the electricity industry has allowed several electric power boards to plan their own gas-fired power stations, at a time when we have a large oversupply of electricity.

The Motunui synthetic petrol plant costs the taxpayer \$280 million to waste Maui gas. Half the energy content of the gas is lost during the conversion process. Consequently, it takes twice as much natural gas (and carbon dioxide emissions) to run cars on synthetic petrol rather than CNG.

The depletion of natural gas has been driven by the take-or-pay clause in the Maui Gas Contract which required the Crown to pay for a specified quantity of gas each year whether or not it was used. It is no surprise so much was allocated to electricity generation and synthetic petrol production (over 60 percent of our natural gas output in 1988) since they are sufficiently inefficient to deplete the resource at the required rate. But it would have been cheaper just to burn the gas to waste through the flare stack than to waste half of it at a capital cost of about 2 billion NZ dollars.

Meanwhile the removal of government incentives for alternative fuels has resulted in a halving of CNG use in three years and a halt to its provision in new service stations. All this at a time when other countries are set-

ting up CNG programmes and drawing on New Zealand experience.

An underlying cause of this debacle is the failure to set resource charges. Prices for natural resources are based on the cost of extraction and do not reflect their long-term scarcity nor the environmental impact of their production and use. As a result, at Waihapa Petrocorp flares gas at a rate similar to our CNG use, and gas suppliers have less incentive to leakproof their pipework. For example, the Wellington Gas Company's gas leakages reached a high of 22 percent in 1982 and are still around 9 percent.

Transport and Urban Development

Besides avoiding unnecessary energy conversions, the other main source of "negawatts" and "negajoules" is improving end-use efficiency. Road transport uses 63 percent of our fossil fuel energy. Developing an efficient transport system is the biggest hurdle to reaching a sustainable energy future. Key issues to be addressed at national level are the use of more efficient vehicles and the choice of replacement fuels. At the local government level, issues include the shape of urban development, alternative modes of transport, and reducing the need to travel.

The structure of our cities has a profound influence on transport energy use. Recent studies have shown that cities with low petrol use have a high population density, high use of public transport, and modest road development. The differences are remarkable: in low density Houston, petrol consumption per capita is more than twice that of Toronto, six times that of London, and nearly nine times that of Tokyo. Auckland, the only New Zealand city studied so far, has twice the petrol consumption per capita of European cities but half that of typical American ones.

As our cities became flooded with traffic, transportation planning was caught on a treadmill of congestion, road building, sprawl, congestion and more road building. The resulting investment in roads and parking has entrenched cars as the dominant mode of transport. Public transport could not follow the move of urban development to the city fringe. This approach has left a legacy of unsustainable liquid fuels consumption, air pollution, excessive land use requirements, and massive public expenditure on the car and its tarsealed "habitat". It has also deprived those without cars of their access to city, town and countryside.

Local governments need to recognise it is sometimes counter-productive for alternative modes to compete with cars. Empty buses serving low density areas use more energy than the few cars they displace. But in higher density areas where a good public transport system can be made accessible to all, it is counter-productive to widen roads, erect parking buildings, and encourage cars to compete.

A positive approach by local government would foster sustainable transportation by integrating land use planning policies with public transport initiatives. One example is promoting higher residential densities close to main centres, along public transport corridors, and around interchanges.



The Beehive uses three times as much energy as efficient high rise buildings.

Every capital works decision by local and regional governments shapes the patterns of energy use in our towns and cities for decades to come. Energy use must be a priority consideration in planning new motorways, buildings, subdivisions, and business areas.