

Cars for Our Times

By Vince Dravitzki

In responding to the twin challenges presented by peak oil and climate change we should seek to do much more than just cope and adjust, but instead look to our advantages to greatly improve the liveability of our cities and to increase our economic competitiveness by becoming a low energy society. We can do this by understanding the relationship between transport, transport energy, and urban form; and by understanding the processes by which our settlements have grown to become as they are at present.

While we love the mobility and access that cars give us, and they are the ideal way to make some particular journeys, the reality is that they are equally a burden. We use them for those special journeys only two or three times per month. Most times we are using them only 15-40 minutes per day on routine journeys. The rest of the time they are lying idle, but incur further expense in parking charges, or because we pay more for our properties and houses to accommodate them on site.

Cars represent a high expense, high energy lifestyle. Households spend 14% of their income owning and operating cars and this is the same amount as they spend on their own food. More than 20% of a car's lifetime energy is spent on its manufacture. Cars are poor users of energy and they have only been viable because of a vast supply of low cost petroleum energy. So while it is possible to almost immediately replace petroleum fuels with biofuels and continue life as before, biofuels will be neither abundant nor low cost. Although much higher fuel efficiency vehicles are available, they are invariably smaller and this partly negates the main reason why we own cars in the first place, which is for those special social and recreational journeys. Biofuels have the further disadvantage in that they can be put in barrels and exported, so that just as we found with cheese, our price will reflect the world price, not the advantages that we have as a cheap producer.

Electric cars are four to five times more energy efficient to operate than current cars, but are currently manufactured on very limited scales, tend to be smaller, and the three major problems of expensive, limited range and slow recharge/refuel times (hours not seconds as it is for current cars) all remained to be solved. While solutions will no doubt be found and probably soon, we should be wary of emulating countries which have car manufacturing and export underpinning large portions of their economies that they must somehow maintain, and instead focus on our own advantages and where we could re-invest in transport.

Currently we spend approximately \$30 billion every 20 years replacing our car fleet. This figure is artificially low because we take advantage of the premature obsolescence of vehicles in Japan and import about two thirds of our vehicles at a low price second hand. But this cost could easily double to \$60-\$80 billion since in facing the same situation that we do, Japan is less likely to dispense prematurely with the very high efficiency and electric vehicles that we also require, forcing us to buy new. Electric cars will therefore be a high price, medium energy solution. In addition we spend about another \$30 billion every 20 years expanding the road network, mainly to increase the available space for cars. To spend so much to only replicate many of our current problems of congestion, community severance, noise, air and water pollution,

consumption of productive land, and death and injury from road crashes, would be a pity when we have so many advantages that would allow us to do better.

There is often strong advocacy for us to live much more densely in small sections multiple housing and apartments. But we need to seek solutions also to some of our other energy problems not just transport alone. There is much about our settlement pattern that is good. One study has shown that our style of individual housing provides both the flexibility for energy efficiency, energy generation retrofits, water collection, and for different lifestyles such as growing much more of our own food, to reduce our carbon footprint by 60-75%. This is at least twice the gain that we can achieve by apartment living.

We are also limited in our ability to change our residential form as population growth with new household formation and consequently more housing, which has been the fundamental driving force for changing our form in the past 100 years, has slowed. In the next 30 years most cities will grow only by 5-15%, a few by 25%, and several will actually reduce in size. So while a better range of housing choices is desirable and will partly occur, in the main we must do the best with the cities that we have,

We have the capability to reach that acknowledged optimum state of 90% renewable electrical energy, which is our most likely transport energy of the future. But we should think, “what is the best way to use this energy”? The expert consensus emerging internationally, favours fixed line public transport such as trolley buses, modern trams and light rail as being far more effective than the individual vehicles. Not only do these avoid the energy and resource waste of an individual vehicle for everyone, but the energy source, in not being exported or imported, is one where we can set both the supply and demand, and is therefore more likely to be stable and lower in price.

The size of our settlements is also an advantage. These are small and in international terms tiny. More than a million of us live within 15 cities with populations between 50,000-150,000. These almost all fit within a radius of about 6km. Their size fits well with what are established natural travelling distance of about 2km if walking 5-7km if cycling and about 10-12km by ordinary public transport, all being travel times of 20-30 minutes. Our two medium cities of Wellington and Christchurch for different reasons are well configured for public transport because much of their growth was in the public transport era.

This form of our cities is a further advantage. While we often refer to them as being car dominated cities this is only partly true. Our cities are actually an accumulation of several different transport eras when a particular mode dominated and influenced the size and layout of the city: walking; horse drawn and electric trams; train line settlements, then finally cars. The settlements are overlaid on each other, but each expanded the existing settlement. While the previous mode has disappeared, parts especially the street pattern remains.

Each era generated distinctive street patterns. Our highly walkable inner cities are the remnant of the walkable settlement established pre 1880. The direct outward routes and grid pattern of the subsequent public transport area, 1880-1960, is still highly favourable to a walking plus public transport lifestyle. It is only the curvilinear street

pattern favoured particularly from the 1970s onward that is unfavourable to buses, and also to walking as it lacks walking lanes and short-cuts, so that walking routes are long.

The portion of most New Zealand cities established post 1970 is usually only a minor portion. But one city, Auckland faces major transport issues. It owes so much of its growth to the car era, having tripled in size since 1950. It is not just that it is sprawling, but much of the street pattern is consequently unfavourable to public transport and walking. The distances involved mean that simple public transport is often not viable and instead much faster rapid transit is needed. Perhaps its predicted growth to 2million by 2040 may not occur in a much less benign future transport environment.

While it is possible to create intersecting public transport networks so that with transfers you can still quickly travel from anywhere to anywhere, it is preferable that we concentrate destinations so that we travel from anywhere to somewhere. In particular we need to merge big box retail back into Main Street. If we are to lessen the cars role as a means of personal transport we also need to replace its role as the light freight vehicle by which our purchases are taken home. Low cost delivery needs to return as a key part of retail service.

Two issues remain. Standard public transport is not viable for the nearly one million people living in our smaller towns and rural areas, but this population is key to our economic prosperity. It is this population, that have few other alternatives, that we need to ensure have access to affordable biofuels or electric vehicles. The second issue is the social and recreational travel. We will always, from time to time, want to travel out of town or to more distant friends and relatives, but we need to devise ways so that a need for these car journeys can be easily separated from the need for car ownership.