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Response by Alan A. Parker to the NSW RTA report " Better regulation of motor-assisted pedal-cycles : issues and solutions

The objectives of this submission

This submission supports the RTA identification of the key issue: that there is a need to change the Australian road rules and NSW regulations so that consumers can buy the best and safest electric bicycles with automatic speed control. (See page 6 "*Better regulation of motor-assisted pedal-cycles: issues and solutions.* which is referred to here as the *RTA Report.)* However, the fact that speed control that limits the maximum speed is the most important safety factor is not clearly stated.

The first objective of this submission is to demonstrate that there is no need for the RTA to take three more years, in addition to the seven years already spent with other State road agencies, to ensure that the safest electric bikes are for sale. A much simpler, less costly, less time consuming and much better way to revise the Australian NSW road rules by December 2008 is possible. This would provide for the mobility needs of both the able bodied and those who are not able bodied,. that is some of elderly, the partially disabled, those not allowed to drive cars for medical reasons and the obese, none of whom are considered in the *RTA Report.*

The second objective is to show the errors of fact that are contained in the *RTA repor*t . These errors demonstrate that the RTA has, since 2001, ignored, or was not aware of, the publicly available information in the trade journals and year books, of the electric bicycle industry of Australia's two most important trading partners, Japan and China. (Cycle Press 1998, 2005)(Cycle Press 2006 A & B) This has resulted in the current situation where less safe electric bicycles and electric scooters and some other inferior power assisted products have been sold in NSW since 2001. Worse still, the regulatory "blow back" of RTA incompetence is that most of the best and safest electric bicycles, some of which have been available on the world market since 1998, have not been on sale in NSW.

The third objective is to discuss two new reasons for changing the Australian and NSW road rules as quickly as possible. That is the new priority being given to climate change initiatives and the peak in world oil production. The need for reducing car dependency was set out in Professor Ross Garnaut's first Issues paper on transport and urban planning in March 2008 < www.garnautview.org.au>

Introduction

Power assisted bicycles have been around since the 1950's; there were millions of them in Europe. Australian regulations for power assisted bicycles were produced in the 1970s classifying them bicycles and not motor vehicles. It was applicable to a quarter horse power (200 Watt) two stroke throttle controlled engines fitted to a heavy duty bicycle. Most power assisted bicycles were imported from the UK with which Australia had much stronger trade links than today.

Electric bicycles with fully automatic power assistance, electronically linked to pedalling effort via sensors in the cranks, were invented in Japan in 1989 This was partly the result of the Japanese government's desire to provide their ageing and large bicycle riding population with a mobility aid that reduced the physical effort of cycling by around 50%. Keeping older cyclists riding was in the national interest for both health and environmental reasons. Trials of this new invention and subsequent refinement resulted in the introduction of safety regulations for electric bicycles in 1993.

By 2002 Japanese electric bicycle production reached 200,000, the Chinese produced 1,200,000, and European manufacturers were commencing production. The European Union, the U.S., Canada and New Zealand all upgraded their regulations by 2004 because they all recognised the health and environmental benefits of using this new and proven intelligent transport mobility aid, and the need for consumers to gain access to these products.(Parker, 2006)

In 2007 17.5 million power assisted bicycle were produced world wide, mostly in Asia: 16.5 million in China and 210,000, in Japan. Over 150,000 were sold in Europe and 100,000 in the US. Today electric bikes are reducing air pollution in China and are used by millions of commuters. In Japan the national objective of enhancing the mobility of the elderly has been achieved and the largest niche market for electric bicycles is women over 55 years of age. In Europe, and the US they are a practical substitute for many single occupant car trips of less than 10 km.(Parker 2006

The best and safest electric bicycles are being produced for the Japanese domestic market and need to be available here. What the RTA should be doing is ensuring that NSW consumers have access to them and stop considering proposals for complex vehicle design standards that are not required. Electric bicycles complying with Japanese safety regulations are now mass produced in China by Chinese and Japanese companies. Australia cannot compete with these companies with low labour costs so there is no need for a national vehicle standard

Australia's major trading partners, Japan and China, produce the best and safest electric bicycles and our legislation should simply to make it possible for Australians to buy the best product. This should be done as quickly as possible by upgrading the power output allowed in the Road Rules to 250 watts and by allowing only the import of electric bicycles with automatic speed controls

complying with Japan's quality requirements for electric bicycles for which model test reports are available.

The solutions proposed by the NSW RTA are unsound. However, the regulatory requirements developed for the safety of Japanese consumers are based on rigourous product testing and thorough research in the safest form of electronic speed control by the Yamaha electric bicycle division that has stood the test of time. If these regulations had been adopted in the Australian Road Rules then the current problems with unsafe scooters and low quality electric bicycles that have been a problem for the NSW police would never have evolved. T this problem will not be resolved until the maximum power output is lifted from 200 to 250 watts. The need for a 250 watt maximum power output has been stated in the academic and cycling press since 1999 (Parker 1999 A & B) and four peer reviewed transport conference papers (Parker 2002, 2004, 2006) (Parker and Worth 2006).

NSW consumers are still suffering from the 'blow back 'from RTA bureaucratic blunders. There are many well meaning importers who have no trade association to protect them, as they have in Japan, and they too will suffer as a consequence because the NSW RTA, in collusion with other road agencies, denied them the choice of importing the best and safest power assisted bicycles.

In NSW nearly all the current electric bicycle users are going to have to pay registration fees. They will have the inconvenience and cost of "conditional registration'; buying and fitting number plates; taking out compulsory insurance and proving road worthiness. To add insult to injury they are not going to be allowed on bike lanes or shared cycle ways; to use advanced stop sign boxes at inter sections; or to use foot paths even when escorting children, which is now legal. These proposed regulatory changed will be seen by users and the media as a way for the RTA to tell owners of non-exempt electric bicycles to dump their bikes on the scrap heap.

NSW RTA report Appendix 1 - Vehicles that combine motors with cycles

The low quality machines, presumably available for sale in NSW, are shown in *Appendix 1 -Vehicles that combine motors with cycles.* However the data provided are very incomplete compared to the specifications in the CYCLEPRESS Electric Bike Year Books which are published in English and Japanese. For those who are familiar with these year books and know about electric bicycle specifications and actual performance the data in Appendix 1 shows that NSW consumers do not have the right to buy the most innovative and safe electric bicycles (205 to 250 watts) from our major trading partners, China and Japan.

Appendix 1 shows photographs of 17 electrically powered bicycles and scooters and two electric motor cycles with incomplete specifications which are limited to the. model and type of battery, price, weight , power output and availability in Australia. It provides support for the claim that Consumers in NSW have been denied access to the best electric bicycles on the world market .

For example the five electric scooters complying with the 200 watt limit and sold in Australia are difficult to pedal due to a low fixed saddle height and are twice as heavy as the two best Japanese electric bicycles (Panasonic's) which are not for sale in Australia. Appendix 1 one does not even indicate that both of the Panasonic electric bicycles have automatic speed controls that fade out power assistance from 20 km to 24 km per hour. This is the most important safety feature that has been built into Japanese safety regulations since 1993 and Chinese regulations since 2004. The Japanese Electric Bicycle Industry Year Books provide far more detailed data and specifications.

The Panasonic BE-EHF07 is an excellent fold up bike that weighs only 16.9 kg. Only one fold up that is comparable is available in Australia: it weighs 26 Kg with a lead acid battery and 22 kg with a Lithium ion battery. Fold up bikes need to be light in weight as well as to be safe to operate and easily foldable. The Panasonic BE-EHS632 is an excellent ladies bicycle with large wheels and weighs only 20.4 kg with 240 watts power output. The two ladies electric bikes available in Australia (Cruiser Eltie and Cruiser Nomad) weigh 36 kg with a lead acid batteries and 26 kg with Lithium ion battery. Note that the Appendix 1 shows that the Panasonic is much lighter and has a lower centre of gravity .

The ladies shopping tricycle (Transporter Tricycle) which is available in Australia weighs 50 kg with a lead acid battery and 41 kg with a Lithium ion battery. The latest Japanese made ladies shopping tricycle (not shown in Appendix 1) weighs only 28 kg. As shopping bike loads can be as high as 15 Kg the reduced load is a better buy.

Two of the motor scooters shown (Sprint 125 and Metro 450) are so powerful that they can exceed 50 km per hour and are classed as motor cycles; structurally they are by no stretch of the imagination “bicycles” and should not be in the Appendix.1

Appendix 1 reveals that the *RTA Report* is clearly a desk job with limited information about future product developments and about potential customers and their needs. The talk about “look alike’ vehicles in the *RTA Report* is nonsense as anyone who has looked at the coloured photographs over the detailed specifications in the industry year books, can see. An electric bicycle identification aid could have been prepared by RTA for the police using photographs and some simple notes. (Cycle Press 1998, 2005)(Cycle Press 2006 A & B)

Australia should adopt the same regulations and approved test results required for domestic use of electric bicycles in Japan

The *RTA report* is oblivious to the fact that Intensive product testing took place in Japan before they introduced their safety regulations in 1993 that stipulate a 250 watt limit. The data from those tests are available but they were not consulted by any Australian road agency before finalising the Australian Road Rules. Note that when designing the safest Japanese electric bikes with automatic speed controls

they conducted tests with male and female elderly riders to see what level of assistance they needed before settling on 250 watts of maximum power output

The most important safety requirement in the Japanese regulations is the automatic control of power assistance, not the maximum power output. What makes the power assistance safe is that once the bicycle reaches 20 km per hour it starts to fade out and is gone at 24 Km per hour. This means that power assistance cannot be used to wind up electric bicycles to a high speed, which can happen with throttle controlled electric bicycles and scooters not fitted with electronic speed limiters.

Japanese regulations that originated in 1993 defined the electrical power assisted bicycle with automatic speed limitation and controls as a bicycle and that regulation is still in effect without change 13 years later. The power ratio of one to-one up to 20 kph (12 mph) still applies and above that speed motor effort is reduced until it automatically shuts off at 24 kph (14.4mph) (Jamerson & Benjamin 2005- 2007)

These regulations came as result of bicycle companies lobbying regulators in 1992 to establish nation wide rules that all manufacturers would agree to in order to have a uniform legal framework. Note that electric bicycles that are throttle controlled, are in a category similar to electric scooters and both require a license and insurance before they can be used on the road.

To introduce regulations for the new type of electric bicycle with automatic speed limitation The Japanese National Police Agency established the rules in July 1993 for speed limitation and controls. The Road Traffic Law Enforcement Regulations were established in 1995 which allowed these electric bicycles to operate on roads with traffic. Approvals for new electric bicycle models requires the following procedure:

1. The design, quality control, handling instructions, and test results are submitted to the National Public Safety Commission for examination and approval. (Jamerson and Benjamin 2005 and 2007)

2. This Commission asks the Japan Traffic Management Technical Association to test the models and report back the results. When tests and other requirements are met, the Technical Association grants a certificate of approval to the manufacturer. (Jamerson,and Benjamin, 2005 and 2007)

The Japan Bicycle Association Foundation of the major manufacturers has committees that offer advice and assistance on Bicycles, Components, Safety and Trade. The Bicycle Committee includes experts on electric bicycles with automatic speed limitation. This Committee has a relationship to the Safety Promotion Committee of the National Police Agency in matters dealing with the safety aspects of electric bicycle design. This appears to be a very bureaucratic system but it provides products that are well engineered with high quality. It certainly is of benefit to Japanese consumers. It could be of benefit to Australian consumers as well if we adapted our regulations to suit .

It should cost little to make the Australian road and state regulations conform with the Japanese regulations and to only import into Australia the best and safest models of automatic electric bikes made in China and Japan for the Japanese domestic market. However the section on “overseas experience” on page 8 of the *RTA Report* is a trivial summary that ignores world best practice in Japan; Japanese test reports and their approvals process do not even rate a mention.

Proposed regulatory solutions for Australia

What is needed in Australia is to have regulations requiring that wholesalers and retailers must produce evidence that the automatic electric bicycles models they import has gone through a Japanese type approval process.

All imported models of automatic electric bicycles that are approved for sale as bicycles in Japan should be classified as bicycles in Australia, requiring no compulsory registration, and insurance or number plates.

Electric bicycles and electric scooters which have not met this approval process should not be allowed to be imported from December 2008, except for those that are already held in stock by retailers and wholesalers. This is the easiest way to restrict their entry into Australia.

The new "National Standards for Electric Bikes" law went into effect across all of China in May 1, 2004. These standards stipulate that both electric bicycles and scooters must have a top assisted speed of 20 km/h and motor power set at 250W maximum. This means that they will have to be fitted with pedals and chains to be easily pedalled by the rider. A minimum wheel size of 20 inches is required. This means that the source of electric scooters without pedals and higher maximum power out that have been a problem in NSW will dry up. (For details see Appendix A .) There could be a problem with the dumping in Australia of stocks of Chinese made electric bike and scooters that do not confirm with the Chinese laws but that could be dealt with by import restrictions.

All existing throttle controlled electric bicycle and electric scooters could be exempt from registration if they have a maximum power output of less than 200 watt. The low quality of most of these machines is such that they will not last very long because faulty components and poor after sales and service is already a problem for any existing users. If this provision was coupled to a quick change in the existing road rules to 250 watts for the best and safest electric bikes and left at 200 watts for the throttle controlled electric bicycles and scooters this would discourage consumers from buying before they become restricted imports.

This is why the most important new regulation for electric scooters is for them to be required to have an ergonomically optimum cycling posture that allows efficient pedalling. Making adjustable seats a compulsory requirement would ensure that nobody will be able to buy most of the older models still held in stock because the seats are are fixed and too low. Specifying the length (140 mm) of the cranks could

be another requirement .

The proposed conditions for exemption from registration in the *RTA Report point 1 page 9* recognise that the ability to operate without pedals is not acceptable. However it fails to recognise the ergonomic reasons for encouraging scooters that do have pedals. If the motor fails there can be a need for riders to be able to ride away easily and an ergonomically efficient riding position is essential.

The proposed conditions in *the RTA Report* for exemption should make it obvious that automatic speed controls are the key safety issue for new electric bicycles, not the power output. For example, New Zealand's regulations for electric bikes allow a maximum power output of 300 watts, because that extra power is needed in hilly cities like Auckland and some of the provincial towns. It is certainly needed in Sydney and Hobart and the hilly suburbs of Brisbane, Melbourne, Adelaide and many provincial cities. If the maximum power output is increased to 300 watts and a maximum automatic cut out speed kept at 24 km per hour then Chinese and Japanese manufacturers, using low cost labour in China, can produce safe machines that can be classified as bicycles. There is need to produce a consumers' guide to the best and safest electric bikes in Australia.

The conditions to the exemption of not allowing the use of internal combustion engines are too restrictive as new green fuels are becoming available. For example, the production of ethanol as a cleaner alternative to fossil fuel throws up a number of opportunities. In particular, the use of cellulosic biomass instead of food crops to make commercial ethanol is a possible solution now that Range Fuels has announced plans for the first commercial ethanol plant in the U.S. to use cellulosic biomass from wood and wood waste from Georgia's pine forests and mills as its feed stock.

This new US technology will in time be introduced into Australia and the option of a blend of 85% ethanol and 15% petrol being used to fuel power assisted bicycles should not be ruled out. In the US this technology is seen as one of the means of reducing the impact of predictable future oil shortages. It would be silly to proscribe the use of biomass fuels in the Australian road rules for any vehicle, especially , for a power assisted bicycle that can travel 100 km on a litre of biomass fuel.

The mobility needs of the elderly, the partially disabled, those not allowed to drive cars for medical reasons and those trying to cope with obesity.

The *RTA Report* does not discuss the needs of the elderly or the partially disabled, very few of whom are making use of power assisted bicycles and scooters. There are a million or so potential users of power assisted bicycles and scooters whose own physical power output has declined with age and who need more power assistance than 200 watts. There are are tens of thousands of people with osteo-arthritis in the hips, knees or ankles for whom riding bicycles is far less painful than walking because the saddle and not the legs carry most of the body weight (Parker 1992)

There are hundreds of thousands of the elderly who are no longer able drive a car safely but are capable of using power assisted bicycles or electric tricycles. There are a million or so obese middle aged Australians who risk permanently damaging their joints if they run or jog on roads who could benefit from riding a bicycle.

All these potential users could safely use speed restricted residential streets and the network of on-road bike lanes and off road bike paths being constructed in all Australian cities. The power assisted and fully powered bicycle is the in-between machine that bridges the gap between cars, ordinary bicycles and the very slow 3 and 4 wheel powered scooters designed to be used on footpaths . They are faster and more convenient than powered 3 and 4 wheeled footpath scooters. However,some of these people need fully powered electric bicycles and tricycles. All these groups of potential users are a rapidly growing proportion of the population; there are around two million of them in Australia in 2007

This submission recommends that determining the maximum power output required in Australia should be focused on the needs of .the elderly, the partially disabled, those not allowed to drive cars for medical reasons and the obese.

A maximum power output of 250 watts is what is required for the young and able bodied but a maximum power output of 300 watts would probably be sufficient for the elderly who are of a healthy weight and are still able bodied. Most of the other elderly users who are not fit enough to drive a car., and are frail and partially disabled may require more power assistance.

My experience as a 72 year old with a heart problem and osteo arthritis who rides an automatic power assisted bicycle which does not cut out the power at 24 kph, is that I do not need to ride along at 40 km an hour on the flat at full throttle but I do need greater power assistance on hills . A bicycle or electric bicycle meeting Japanese or Chinese regulations would have automatic speed controls My power assisted bike will not get me up short steep hills because it has only 200 watts maximum power; I need 300 watts power output to ride up hills. Osteo arthritis makes walking painful but with a bicycle most of my weight is carried by the saddle with less stress on the painful ankle joint so I can make all my local trips by bicycle.

The *RTA Report* proposals would create uncertainty over the availability of for a 3 year delay 300 watt power output and at best a 3 year delay in its implementation

The RTA needs to test imported machines with a range of power outputs from 250 to 600 watts with both able and non-able bodied testers, the latter selected by a doctor who specialises in assisting people with disabilities. There is no need for the development of Australian vehicle standards or licensing schemes for these higher powered machines. However, the Australian road rules need to state that higher powered machines can be used by those who not able bodied at the discretion of the state road agency and the user's doctor.

The only requirement for ownership of and personal use of a higher powered electric bicycle on which speed control fades out at 24 km per hour should be for a

doctor to sign an RTA document that states the power output options for different classes of user who are not able bodied. The doctor would indicate which class of user the patient belonged to and sign the document . Copies of that document would be sent back to the RTA who would provide a small machine readable card for the user to show to the police if required. The card would be like a seniors card and would not need to be renewed. The user's machine could be sold to anyone in the same class of non-able bodied person but the buyer would t have to contact the RTA for the document for their doctor to sign.

Now that China has changed it regulations and is tooling up to export electric bicycles to Canada and the USA, power assisted bicycles are available with higher power outputs of 500 watts and 600 watts. Taiwan is also tooled up to produce electric bicycles and scooters with a power output of 400 watts for its own domestic market. A power restricted Taiwanese 300 watt machine could be used for user tests of a 300 watt machine. (See Taiwan's regulations in Appendix A.)

Fully powered electric scooters may be needed for the elderly who very are frail or seriously disabled and a maximum power output of 600 watts would enable them to cope with longer distances, with hills and with steep driveways in Australian suburbia. They may need powered tricycles which have relatively large wheels compared with footpath scooters. (Parker 1992)

The revised 2004 New Zealand Land Transport Act provides for this with a provision for fully powered electric bikes with a 600 watt maximum power output to be used at the discretion of the Minister for Transport. A doctor would have indicate and approved the need for a fully powered mobility aid. (NZTS 2002)

Freeing up restrictions of international trade in electric bicycles in the EU

The section on Overseas Experience has failed to pick up on the need for common regulations in economic regions to harmonise trade in the region.

The European Union (EU) like Japan has legislation that allows electric bicycles with a 250 Watt maximum power output. Their view is that one of the means to attain free circulation of new products and green products, like electric bicycle,s is the harmonisation of the technical requirements they have to comply with. Harmonised technical requirements allow manufacturers to develop one and the same product for the whole European Union, whereas, without harmonisation they have to develop different variants in order to comply with Dutch , French, Italian and other. national regulations.

This also avoids possible problems caused by excessive speed and/or tampering with the vehicles, as is the case with speed controls and engine tuning on traditional mopeds. The 27 member states had to replace their national legislation. Other countries have taken timely action to produce sensible legislation and so should Australia

Australia has regional commitments and its major trading partners, Japan and China, produce most of the world's electric bicycles. Australian legislation should simply make it possible for Australians to buy their products and the Australian Road Rules and State regulations should not constrain this trade. If the NSW police have any problems they have been caused by the absence of sound advice from the NSW RTA..

The right to buy the best available and safest electric bicycles

The advice that we have to wait till 2011 for new regulations because of all the electric scooters and electric bicycles that have been sold since 2001 will merely make it difficult for the police to enforce the existing regulations. Those who have examined the published minutes (courtesy of VicRoads) of the Austroads Committee set up to conduct a review in the year 2000 of the legislation and road rules for power assisted bicycles, Scooters and other Wheeled Recreational Devices, know that the NSW RTA actions on that Committee prevented it from taking action in the last 7 seven years.

In 2001 Australia road agencies were hostile to the growth in electric bicycle usage and there was no real appreciation of the future benefits of this mobility aid Low quality machines and less safe machines proliferated in NSW but the NSW RTA did not know that their regulations prevented the sale of the best and the safest electric bicycles fitted with automatic speed controls. NSW is not alone in this regard. The State ministers of Transport at their regular meetings should be made aware of this and asked to authorise that Australia's road rule regulations can be changed by December 2008 to allow Australian consumers access to the safest machines.

The RTA should consider why NSW regulations allow consumers to buy the best cars on the world market but they cannot buy the best electric bicycles with automatic speed limiters. That question suggests that what we have in NSW is restriction of free trade that needs to be addressed politically at ministerial level.

Planning to integrate the electric bicycle with the domestic solar electric power.

Australian road and traffic agencies should be aware that the next advance in the design of intelligent electric bicycles is on its way. Japanese experimental electric bicycle with solar PV battery rechargers enhance mobility with minimum resource depletion. In the near future these solar charged electric bikes will be mass produced in China and Japan. The opportunity now exists for Australian industry to develop roof mounted solar cells to charge the batteries of commercially available electric bikes.

State and Commonwealth environment agencies should provide marketing incentives for imported electric bikes to be sold as part of a package, complete with a PV 24 Volt or 36 Volt DC battery charging system coupled to solar panels. Solar PV battery recharging installations should be introduced in new housing schemes,

new flats, factories and office complexes. This should be part of a strategy to reduce oil use by substituting for single occupant car journeys without increasing the demand for electricity from power stations.

The proposed new regulation of electric bicycles should not create a constraint on the use of PV charged electric bike batteries. These should be available in a couple of years and will reduce oil consumption and carbon dioxide emissions without increasing the consumption of grid electricity. The new regulation should anticipate this development.

The appalling air pollution in big Chinese cities was the incentive for the new electric bicycle regulations. The next stimulus is the predicted increases in world crude oil prices and decline in Chinese indigenous oil production over the next five years. This will handicap China's economic growth and put a limit on car production for their domestic market. By then China will be the world's major producers of solar cells with many new factories planned.

It is inevitable that these trends will interact with one another so it seems reasonable to assume that the mass use of electric bicycles, powered from rooftop photo voltaic cell arrays in cities, will be the next transport/sustainable housing innovation. The Japanese have shown this to be a workable solution that will perhaps be adopted in China in the near future. Perhaps it will happen in some new Australian housing schemes.

Electric bicycles will be needed to reduce oil consumption

Depleting oil supply is the major threat to Australian national security. In 2000 Australia's production of crude oil and condensate satisfied nearly 100% of its needs but by 2007 40% was being imported and this could be 80% by 2012. The threat comes from world crude oil production peaking between 2008 and 2012, which will increase imported crude oil prices, perhaps to $200, a barrel. This could cause permanent oil shortages and necessitate fuel rationing. The future, of course, is uncertain but a risk management approach to the future is the way to go. The mass use of electric bicycles charged by rooftop solar cells would certainly make life less difficult if petrol use had to be rationed. (Parker 2007)

The US Vice President Dick Cheney said in 1999 that peak oil was only a few years away and on March 2008 he said high oil price reflects market reality:-

"One of the problems we've got now obviously is that there is not a lot of excess capacity worldwide... there's just not a lot out there, and some of that excess capacity represents high sulphur crude for example, it's not very attractive and not easily marketed..... there had also been a "dramatic increase" in demand from countries like China and India, and also a lot of countries that used to produce oil primarily for export were now consuming a larger part of what they produce as their economies develop like some of the Gulf states....You look at all of that and you look at the much closer balance if you will between supply and demand, as well as

the declining value of the dollar, you've got a situation in which we've seen the price of oil rise fairly dramatically in recent months,...But it reflects primarily the realities in the marketplace,"

This indicates that a major change is needed in the planning and management of the transport sector which has one of the highest levels of per capita car and air travel, road freight carried, greenhouse gas emissions and oil consumption in the world. The need is to reduce oil consumption by 3% per year by decoupling the growth in oil consumption from the growth of GDP and persuading regional neighbours to do likewise. (Heinburgh 2006)

Whatever the timing of peak oil people living in outer urban and rural areas will be the most disadvantaged and within a year or so the well being of most other people will be under threat. Because peak oil is certain to occur it would be prudent to conserve oil to maintain essential public services and food production. The use of electric bicycles in outer suburbia would be a great mobility aid and if roof mounted solar panels were used to power electric bicycle batteries it would reduce dependence on oil.

The electric bicycle will perhaps be just as important as the various kinds of hybrid car in reducing carbon dioxide emissions as required by the Garnaut Interim report and for reducing the growing dependence on imported crude oil at US$100 plus per barrel. (Parker 2007)

Conclusions and recommendations

At present the use of the best, the lightest and safest power assisted bicycles is constrained by regulations which prohibits their import from Australia's major trading partners, Japan and China, which is a restriction of free trade. Most of the the commercially available power assisted bicycles on the world have maximum power outputs of 250 watts. There an urgent need to change the the Australian Road Rules and NSW regulations. Consumers should have the immediate choice of buying safe “state of the art” electric bicycles that are legally classified as bicycles and are not required to be registered, licensed or subject to compulsory insurance. Less safe products should no longer be imported.

The Australian Road Rules and state regulations should allow a maximum power output of 250 watts provided that .that the speed control system is fully automatic. After being actuated with a starting key or switch, immediate power assistance will be provided at all times, including when starting, when on hills and when riding into the wind, except that it will fade out from 20 to 24 kph. This would be the principal safety requirement for classification as bicycles in Australia and would ensure that only those bicycles made in China and Japan that meet the requirements of the Japanese domestic market are imported into Australia.

What is also required by state agencies such as the RTA is that wholesalers and retailers must produce evidence from their suppliers that the automatic electric

bicycles models they import have gone through the Japanese testing and approval process. This will also require that the RTA coordinate with the Japanese and Chinese agencies (described in Appendix A) to provide full information about their testing and approvals process. There is a need for the RTA to produce a consumers guide to the best and safest electric bikes.

The NSW RTA recommendation for there to be a 300 watt maximum power output is fully supported because there is a need to cater for old and the partially disabled most of whom require more power assistance to compensate for their lower level of human power output. 250 watts is sufficient power for young able bodied riders. To enhance the mobility of the elderly, the lame and disabled electric bicycles designed for the US and Canadian markets which have a power output of up to 600 watts should be classified as 'bicycles' at the discretion of road or transport minister, as is done New Zealand. Chinese manufacturers will be selling products that satisfy their needs and some of these product will be suitable for this purpose.

The existing electric bicycle fleet are nearly all throttle controlled machines which do not have speed limiters that cut out at 24 km per hour and can use power assistance to exceed 30 km per hour. However they should be allowed on bikelanes, shared footways and footpaths if used to escort children below 12 years of age. Throttle controlled machines will no longer be imported so that the existing electric bicycle fleet will fade away with time and be mostly replaced in five years with safer products. What is unacceptable is waiting three years before upgrading the regulations and then punishing consumers for buying less safe products that conform with regulations agreed to by the RTA. That is not in accord with Australian ideas of a' fair go'.

The NSW RTA proposal that compulsory registration, number plates and compulsory insurance be required for electric bikes is unnecessary and inequitable. Bikes that have already been sold should not be required to retrospectively acquire registration, number plates or compulsory insurance. Nor is there any need for this for new bikes of any power output if they will all comply with Japanese world best practice safety regulations.

There is a need for policy support from the RTA for the Commonwealth to provide marketing incentives for imported electric bicycles to be sold as part of a package, complete with a PV 24 Volt or 36 Volt DC battery charging system coupled to solar panels. A study is needed to develop a prototype solar PV battery recharging installation for electric bicycles, test the recharging installation over a period of one year and produce a feasibility study and detailed costing for factory production.

There is a need for policy support from the RTA that solar PV battery recharging installations should be introduced in new housing schemes, new flats, factories and office complexes and for the general public to purchase. There is no necessity in the long-term to recharge batteries from the mains electricity. This would reduce the demand for oil and electricity from mains electricity or coal powered generators.

Appendix A Regulations in China and Taiwan.

China. The Chinese National Environment Protection Agency has issued regulations that encourage Chinese industry to produce electric bicycles to satisfy the growth in demand and to replace existing petrol powered bicycles and mopeds. The new "National Standards for Electric Bikes" Law went into effect across all of China beginning May 1, 2004. Since then, some cities sought to ban Electric Bicycles because were very hilly with narrow main roads and appalling traffic conditions Even so in most big cities and towns that are not very hilly the public has taken to use the Electric Bicycles as a main source of daily transport. In 2007 16.5 million electric bikes were sold. Note that new regulations applies to electric scooters as well and seeks to constrain the use of fully powered electric scooter.(Jamerson and Benjamin 2005 and 2007) A summary of the main 2004 regulations are as follows.

1. Top assisted speed is 20 km/h.
2. Motor power set at 250W maximum.
3. Total weight must be under 40 kg, and the weight without battery be under 27 kg. 4. The diameter of wheel well must be more than 20 inch.
5. the width of bike (over the cranks must be less than 220 mm) many scooter style Electric Bicycles)
6. The new mud guard width will be under 300 mm instead of no requirement.
7. The bike should be capable of turning at a 25 degree angle.
8. The crank arm length should be 140 mm.
9. The new regulation will also require the new water resistance test and cycle frame shake test.(more than 100,000 vibrating cycles)

The China Bike Test Bureau Office has been reorganised. Members of the Test Bureau include, the Consumer Protection Bureau, Product Quality Inspection Bureau, Bike A s s o c i a t i o n , and other knowledgeable and qualified people. The Bike Test Bureau does all the tests and inspections specified by the regulations for products from each manufacturer. Products that pass the test will be given a license permit that allows it to be sold in the public. There are four test offices established in China, in Shanghai, Beijing / Ti a n j i n , Guandong, and Zhejiang, that will coordinate their activities to provide- de for a uniform application of the government regulations on electric bikes. (Jamerson and Benjamin 2005 and 2007)

The appalling air pollution in the big Chinese cities was the incentive for the regulations. The next stimulus is that within five years predicted increases in world crude oil prices and decline in Chinese indigenous oil production will handicap China's economic growth.

Taiwan The pollution in major cities in Taiwan is caused, in part, by millions of petrol powered scooters that operate in cities an Towns. The government is encouraging the development and use of Electric Scooters and the use of Electric Bikes and a National standards- CNS 14126 - was created for manufacturers to comply. Both electric bikes and electric scooters in Taiwan must comply with the following regulations:(Jamerson and Benjamin 2005 and 2007)

1. Whole bicycle weight (including batteries) may not exceed 40kg.
2. Batteries may not exceed 48V.
3. Motors may not exceed 400W Power output:
4. Battery power must automatically shut off if the rider stops pedalling for more than 3 seconds.
5. Automatic power cut off when the speed exceeds 30 km, power must automatically shut off, or the battery power must temporarily shut off within 3 seconds.
6. The battery power must automatically shut off after the bike is stationary for 3 second.
7. The battery power must automatically shut off if the motor breaks down

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NOTE Cycle Press is a Japanese publisher serving the information needs of Asian manufacturers and distributors of around 85 million new bicycles and over 17 million electric PABs and E-Bikes in 2007. It produces their power assisted bicycle (Pedelec) International Year Book; monthly journal CyclePress and catalogues in English and Japanese. Publications available from the publisher. URL http:/www.cyclepress.co.jp