



SUSTAINABLE TRANSPORT COALITION of WESTERN AUSTRALIA

STATEMENT ON LIGHT RAIL

Summary Statement

Light rail is one of many forms of public transport, all of which should be considered on their merits and not supported simply to promote a particular mode.

What is light rail?

Light rail is basically a tram running on rails which are either placed in an ordinary road or may be in their own right of way. Light rail has a greater carrying capacity than conventional buses, less carrying capacity than medium or high capacity urban passenger rail. Medium rail is the type of rail we have in Perth.

Per kilometer, light rail is substantially more expensive to provide than buses, but less expensive than medium or high capacity rail.

Where rail may be appropriate

The role of passenger rail is to provide transport to larger numbers of people than can be accommodated by buses. If the demand is very high then rail may be more appropriate than conventional buses for two reasons. One is that, when the passenger numbers are large, there may not be space for enough conventional buses whereas rail can carry more passengers per 'vehicle'. The second reason is that rail is more energy efficient per passenger than buses to operate, as long as rail is carrying large numbers of passengers, because the rolling resistance of steel wheels on steel rails is less than that of rubber tires on bitumen; and rail has the ability to recapture energy from regenerative braking.

Where rail is inappropriate

Large numbers of passengers only come from dense urban areas, so it will always be very cost inefficient to provide rail (light, medium or high capacity)

where the density is insufficient to provide the passengers. Perth is basically a low density city, with medium rail through most of the denser parts and through some very low density areas as well. Most passengers are brought to rail by car and bus, with modest walk and cycle levels.

Note also that, if a 'cradle to grave' view¹ of energy efficiency is taken, then urban trains use almost the same amount of energy as urban buses, and light rail uses only slightly less².

While public transport is usually more energy and green house efficient per passenger than the private car, this is only so where the public transport is reasonably well patronized: a car carrying 2 or more passengers has approximately the same fuel efficiency per passenger as off peak buses and trains³. So, again, there is the need for reasonable patronage for even conventional buses to be effective. While it may be possible for this to occur during peak periods, it is unlikely to be the case off-peak.

STC position in more detail

For Perth the STC position is that:

1. More public transport is needed as Perth's population grows, as the price of petrol and diesel increase, as the possibility of an oil shortage increases, and as people become more aware of the need to reduce greenhouse gas emissions.
2. More public transport alone will not solve the transport problem. Education programs (such as 'Living Smart') together with price, tax, and regulatory incentives are needed to encourage people to switch from driver only commuting, change to sustainable lifestyles, and live closer to their place of work.
3. There is a need for more sustainable transport in Perth. The STC's position is that 'sustainability' means not just environmentally and socially sustainable, but also economically sustainable. **For this reason the STC cautions against the promotion of any one form of public transport for its own sake, or even on solely environmental or social grounds. Rather all forms of transport should be considered on their environmental, social and economic merits depending on the area they are to serve.** Forms of public transport to consider should include mini-buses, ferries, conventional buses, large (bendy) buses, light rail, medium rail and, should Perth grow dramatically in density in future decades, even high capacity rail.

¹ The energy cost to build the roads, railways, buses and trains as well as operate buses or trains on them, including the energy cost to extract and distribute their fuel

² see <http://www.gmagazine.com.au:80/features/82/train-versus-bus>, March 2007, quoting Manfred Lenzen of Sydney University who studied all public transport systems in Australia.

³ Lenzen notes that, on average, there are more people in cars off-peak, the roads are less congested, and buses and trains often operate at around 10% of capacity.

4. There are many forms of light rail. One called 'ultra-light rail'⁴ (but which is really just a modern tram) has regenerative braking and no overhead power lines. A few are being used in the UK but are not currently available in Australia.



Ultra-Light Rail in Southport, England

5. Bus Rapid Transit (BRT), a version of which is operating in Brisbane, should be considered in comparison to light rail.

BRT consists of large buses operating in segregated lanes with its own stations which allow 'off-board' fare collection: keys to providing greater capacity and travel speed than conventional buses. BRT is said to combine the quality of rail transit and the flexibility of buses. It can operate on bus lanes, high occupancy vehicle lanes, freeways, or ordinary streets. BRT can combine frequent service, passenger information systems, traffic signal priority, clean and quiet vehicles, high-quality passenger facilities, and integration with land use policies such as enhancing property values.

Dual mode BRT is a system that uses electronic guidance to combine the advantages and service quality of rail with the flexibility and low operational costs of buses. The electronic guidance can be used in full (to give direction and speed), partially (to give direction but not speed), or switched off (so the driver controls direction and speed).

BRT can be faster to implement, has a lower capital cost, and is more flexible than light rail for medium capacity requirements or areas that have a moderate degree of density. But BRT and light rail may have similar total costs over a 30 to 50 year period, according to a recent Queensland study⁵.

⁴ www.ultralightrail.com

⁵ http://www.translink.com.au/qt/translin.nsf/index/gc_rapidtransit



Quito BRT (Quito is the capital of Ecuador, population approximately 2M)

6. Urban planning should proceed according Network City, with zoning for denser housing, commercial and industrial nodes along transport routes and especially near rail and bus interchange stations.
7. All forms of public transport need to be accessed by the public, which is best done on foot or by bicycle⁶, so priority needs to be given to creating or enhancing pedestrian/cyclist friendly paths and secure bike parking around public transport pick-up and drop off points. This should be a key component of a future public transport policy for WA; a policy that is badly needed.

*This is a modified statement, approved by the STC Committee 25/5/09.
(It replaces the 19/1/09 statement)*

The STC web page is www.stcwa.org.au

⁶ Walking and cycling are the only truly sustainable forms of personal transport available at present, and their use allows the high densities not possible if large parking areas are provided around train or bus stations.