

Public transport reforms

Governments globally have been, to some degree or another, providing better public transport services, in large part to reduce people's dependence on private motor vehicles and proportionally to reduce greenhouse gas emissions.

The basic requirements of any significant reform on public transport in southeast Queensland are:

1. Services must be frequent, reliable and accessible;
2. Fares must be cheap — and eventually eliminated altogether;
3. Major infrastructure projects must place provision of public transport as one of the highest priorities to be considered;
4. Competition requirements be removed from public transport providers;
5. Public transport must be considered as an essential part of the social (rather than the *economic*) infrastructure in major metropolitan areas and funding provided accordingly.

At present, public transport services are subsidised by around 75 per cent input from the Queensland Government, so out of a revenue of \$1.2 billion, fares provided \$289.9 million. (*2009-10 Translink annual report*). The fare rises of around 15 per cent imposed in January 2011 are part of the Government aim to reduce the amount of fare subsidy.

These fare increases may cause a slight drop in patronage, at least in the short term. This paper considers fare increases are detrimental to the objectives set out above, and even if patronage levels remain the same, the cost of government subsidy will likely increase in real dollar terms, due to increased costs.

Planning stages proposed

Stage 1

The first stage of reforms would seek to reduce the relationship between fares and distance travelled within the Translink network.

To do this the number of zones would be reduced to three: inner metropolitan, suburban, outer. Zone fare structures would remain as they now are (i.e.: a current three-zone fare would, under the changes, take a passenger from the city to the outer limits of the network).

This would ensure that people are not penalised for living in outlying areas, and would encourage greater numbers of these people to use public transport.

Stage 2

The second stage would see all zones scrapped, and a common one-zone fare applied to all services.

Stage 3

In this stage of implementation, all fares in the Translink network would be eliminated.

Timing

The proposal will require State Government support and co-operation. Stage 1 would be implemented in 2012, the other stages one year each after that.

Cost

On current operating revenues, the cost of *totally eliminating* public transport fares would be around \$290 million a year (based on 2009-2010 fares revenue). As services would need to be expanded and new infrastructure provided over the implementation period, further costs would be required, which government must provide for in its budget. It is crucial that the full costs of this proposal take into account the savings of reduced private car usage, lower road maintenance bills, reduced traffic accidents and related hospital and medical costs, reduced greenhouse gas pollution; reduced ticketing costs. Additionally, there would be massive savings from stopping the construction of tunnels and bridges for private vehicles that at best effectively move traffic jams from one point of the road network to another.

Savings

Significant money would be saved by eliminating the fare collection and distribution processes. Non-government bus operators would be paid to provide specific services, not for carrying a measured number of passengers.

Expansion

A 1994 draft State Planning Policy document proposed that no urban residence should be more than 400 metres from transport access point (generally a bus stop).

This proposal would seek over time to implement such a policy, using a range of vehicle types and sizes operating on localised pick-up services which delivered passengers to a major urban transport hub (tram, bus or train).

Services would be frequent and run around the clock, catering for shift-workers and people out for social activities.

Other initiatives would be to re-open closed rail tracks (e.g. to suburban Pinkenba and some country lines) and to begin planning and construction of light rail (tram) facilities.

State Governments should urge the Federal Government to defer any further subsidies to the car manufacturing companies unless they agree to tool up to produce efficient and economical public transport vehicles in a range of types and sizes.

Free public transport – a discussion.

Discussion about free public transport must include all related costs (e.g. the cost of **NOT** providing it), including road construction and maintenance, the various costs of pollution (health, greenhouse gas, etc), time wasted (people sitting in grid-locked cars), as well as the benefits (social and financial)

The main objective of free public transport is to reduce the number of private vehicles on the road, and increase the use of public transport (in its various forms).

While many places have free CBD bus/tram shuttle services, these do NOT provide the full benefits of a totally free public transport system throughout the urban areas. While they provide a useful service and should be retained, the CBD services probably do not take one private car off the road.

The following provides some points of discussion.

(From wikipedia)

Free public transport, also often called free public transit and sometimes zero-fare public transport, is a single or network of transport services funded in full by means other than collecting a full fare from passengers. It may be funded by national, regional or local government through taxation or by commercial sponsorship by businesses. The concept of "free-ness" is one that may take other forms, such as no fare access via a card which may or may not be paid in its entirety by the user. See Free travel pass for more on this.

City-wide systems

Several mid-size European cities and many smaller towns around the world have converted their entire bus networks to zero-fare. The city of Hasselt in Belgium is a notable example: fares were abolished in 1997 and ridership was as much as "13 times higher" by 2006.

See list below.

Town/City	Population	Operator	notes
Aubagne, France	42,900		since 2000
Cache Valley, Utah			since 2000
Camano Island, Washington	13,358	Island Transit	since 1995
Chapel Hill, Carrboro, and UNC-Chapel Hill, North Carolina	70,000+	Chapel Hill Transit	operated by the Town of Chapel Hill to serve Chapel Hill, Carrboro, and UNC-Chapel Hill; supported by taxpayers and University fee-

			payers. The system has been fare-free since 2002.
Châteauroux, France	47,127		
Clemson, South Carolina	11,939	Clemson Area Transit	partnership between Clemson University and surrounding communities
Colomiers, France	28,538		In 1971 it became the first area of France to offer zero-fare public transport which is still in operation at present
Commerce, California	41,000		all transportation services are free of charge since 1990s
Compiègne, France	12,500		
Coral Gables, Florida	42,871		
Emeryville, California	9,727	Emery Go Round	
Hasselt, Belgium	72,000	H-Iijn	since July 1, 1997; 1300% ridership increase
Island of Hawai'i, HI, USA	175,784	Hawai'i County Mass Transit Agency	Hele-On bus offers free islandwide passenger service on all scheduled routes since 1992
Logan, Utah	49,534		influenced by Hasselt
Lübben, Germany	14,500		
Manises, Spain	30,478		
Mariehamn, Åland	11,000		in addition to free bus services, persons and bicycles travel free of charge with the archipelago ferries (there is a fee for motorcycles, cars, caravans and other vehicles).
Nova Gorica, Slovenia	31,000		since April 2006.
Övertorneå, Sweden	2,000		even 70 km free rides on local buses in this rural community
Ketchum, Idaho/Sun_Valley, Idaho	3,003	Mountain Rides	
Türi, Estonia	6,174		
Vail, Colorado	4,589		over 20 hours of service every day during winter
Vero Beach, Florida	140,000	GoLine	free 14-route public transit system serves 700,000 annual riders
Vitré, Ille-et-Vilaine, France	15,313		since spring 2001.
Whidbey Island, Washington	58,211	Island Transit	since 1987
Hořovice, Czech Republic	6,800	Probo Trans Beroun s. r. o.	since March 2008, city transport has only one bus line (No. 210009 alias C09 or C9)

Cheremushki, Russia	9,000	trams are serviced by Dam's staff	zero fare is official to anybody (de jure service line because the taxes would be higher than revenues)
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Local services

Local zero-fare shuttles or inner-city loops are far more common than city-wide systems. They often use buses or trams. These may be set up by a city government to ease bottlenecks or fill short gaps in the transport network.

Zero-fare transport is often operated as part of the services offered within a public facility, such as a hospital or university campus shuttle or an airport inter-terminal shuttle.

Some zero-fare services may be built to avoid the need for large transport construction. Some port cities where shipping would require very high bridges might provide zero-fare ferries instead. These are free at the point of use, just as the use of a bridge might have been. Machinery installed within a building or shopping centre can be seen as 'zero-fare transport': elevators, escalators and moving sidewalks are often provided by property owners and funded through the sales of goods and services. Even community bicycle programs, providing free bicycles for short-term public use could be thought of as zero-fare transport.

A common example of zero-fare transport is student transport, where students travelling to or from school do not need to pay in many cases.

In some regions transport is free because the revenues are lower than expenses from fare collection is already partially paid by government or company or service (for example BMO railway road in Moscow, most part of it is used to as service transport and officially pick up passengers).

Benefits of zero-fare transport

Operational benefits

Transport operators can benefit from faster boarding and shorter dwell times, allowing faster timetabling of services. Although some of these benefits can be achieved in other ways, such as off-vehicle ticket sales and modern types of electronic fare collection, zero-fare transport avoids equipment and personnel costs.

Passenger aggression may be reduced. In 2008 bus drivers of Société des Transports Automobiles (STA) in Essonne held strikes demanding zero-fare transport for this reason. They claim that 90% of the aggression is related to refusal to pay the fare.

Commercial benefits

Some zero-fare transport services are funded by private businesses (such as the merchants in a shopping mall) in the hope that doing so will increase sales or other revenue from increased foot traffic or ease of travel. Employers often operate free shuttles as a benefit to their employees, or as part of a congestion mitigation agreement with a local government.

Community benefits

Zero-fare transport can make the system more accessible and fair for low-income residents. Other benefits are the same as those attributed to public transport generally:

Road traffic can benefit from decreased congestion and faster average road speeds, fewer traffic accidents, easier parking, savings from reduced wear and tear on roads

Environmental and public health benefits including decreased air pollution and noise pollution from road traffic

Global benefits

Global benefits of zero-fare transport are also the same as those attributed to public transport generally. If use of personal cars is discouraged, zero-fare public transport could mitigate the problems of global warming and oil depletion.

Examples of limited zero-fare transport

- **Adelaide, Australia** has free travel on the Glenelg tram within the CBD as well as a free bi-directional loop route 99C (City Loop) in the CBD. The free tram has replaced the previous 99B Bee line bus which used to ply from the Railway Station to Victoria Square, via King William Road. In addition, the suburbs of Glenelg and Port Adelaide have their respective free community bus services. The Tram also has a free service between Brighton Road and Jetty Road in Glenelg.
- **Ann Arbor, Michigan** – free bus services between University of Michigan campuses and student housing. Note that most large universities provide a similar kind of bus service. The city bus service, the AATA, is free for students, faculty, and staff of the University of Michigan. The AATA also runs a service called "the Link" which runs between downtown and campus area and is currently free (for everyone) to ride. While individual rides are "free," typically students pay a transportation service fee as part of their tuition and fee charges.
- **Auckland, New Zealand** – a free CBD loop service links the ferry terminus, railway station, universities, theatres, casino, galleries and shopping districts using hybrid electric buses.
- **Austin, Texas** – free bus service (under citywide bus system Capital Metropolitan Transportation Authority) is provided to University of Texas students / staff / faculty, uniformed police, fire, and military personnel, and City of Austin employees. "Ozone Action Days" were once offered to encourage more car owners to ride the bus and combat

high levels of ozone pollution on a given day, but this Capital Metro has discontinued this service.

- **Bangkok, Thailand** – free bus service on 800 buses along 73 routes.
- **Birmingham, England** - In 2006 a free bus link around the city centre was launched, known as Birmingham Stationlink, however after considerably low passenger usage this service was withdrawn in December 2007 after just over 18 months of service.
- **Brisbane, Australia** has free bus trips around "The Loop" in the CBD on two routes mirroring each other, varying only because of Brisbane's one-way street grid.
- **Buffalo, New York** – Free Metro Rail transit from Special Events Station to Theater Station.
- **Calais, France** – Free bus called the Balad'in runs from Boulevard La Fayette (or more precisely Jardin-des-Plante, in the town centre) to the beach and back every 10 minutes. Three buses operate on Monday to Saturday from 8.55am and with the last departures at 6.47pm (beach) and 7.02pm (town centre).
- **Calgary, Canada** – Free C-Train light rail transit within the downtown core (the "7th Avenue Free Fare Zone").
- **Cardiff, Wales** – The Free bus shuttle bus circles the city centre.[8]
- **Charlottesville, Virginia** – A free motorized trolley links the campus of the University of Virginia to the downtown area.
- **Christchurch, New Zealand** – The Shuttle is a zero-fare shuttle service in the inner city.
- **Dallas, Texas** – McKinney Avenue Transit Authority heritage trolley transports riders along a three-mile stretch from downtown to uptown McKinney Avenue seven days a week, 365 days a year.
- **Denver, Colorado** – Free 16th Street Mall shuttle bus downtown.
- **Dordrecht** – bus and ferry, some Saturdays at the end of each year.
- **Eugene, Oregon** and Springfield, Oregon – Free Emerald Express (EmX) service between the cities of Eugene and Springfield.
- **Ghent** – free night bus services (weekends only).
- **Greater Manchester, England:**
 - Bolton Metroshuttle bus services link Bolton railway station, Bus station and town centre leisure attractions.
 - Manchester Metroshuttle bus services operate every 5 minutes on Route 1 and every 10 minutes on Routes 2 and 3. These busses operate in City Centre of Manchester/Salford between 0700 and 1900. Three different routes connect Piccadilly, Victoria, Oxford Road, Deansgate and Salford Central Railway Stations, Shudehill, Chorlton Street and Piccadilly Gardens Bus and Coach Termini, Metrolink tram stations and NCP Car Parks with other areas of the city.
 - 'Stockport Metroshuttle links Stockport railway station with the Bus Interchange, supermarkets and leisure attractions. This service was formerly known as the Stockport Shuttlebus, but was rebranded in line with other zero-fare bus services in Greater Manchester.
- **Halifax, Nova Scotia** – Free bus route around the downtown area.

- **Hyannis, Massachusetts** - CCRTA operates a free shuttle loop on Main Street and many of the downtown beaches during July and August each year.
- **Invercargill, New Zealand:**
 - The Freebie – a zero-fare loop service in the inner city.
 - The Purple Circle a free suburban bus circuit.
 - All other suburban bus services operate zero-fare between 9:00 am and 2:30 pm daily.
- **Ipswich, England** – A free shuttle bus service runs on a circular route around the town centre linking the site of the former County Council head-quarters to the replacement building.
- **Maui County, Hawaii**, pop 128,000: Maui Bus, on the Kahului and Wailuku Loop, plus the Lahaina Villager Routes.
- **Manly, New South Wales, Australia** – Four routes of free "Hop, Skip & Jump" minibus services throughout the municipality.
- **Mandurah, Western Australia, Australia** - a free shuttle service operates between the local railway station and the eastern foreshore in the city centre.
- **Marousi**, a wealthy northern suburb in Athens, Greece has small municipal bus shuttles (of red colour) which can be used for free by anyone.
- **Melbourne** in Australia has a free tram around the city center, and a free bus to popular tourist attractions. Both of these connect to other public transport. Free public transport is sometimes offered on major holidays such as Christmas and New Year's Eve.
- **Miami, Florida** – Miami Metromover is a free people mover in Downtown Miami.
- **Minneapolis, Minnesota:**
 - Select Metro Transit buses are free along Nicollet Mall between the Convention Center and Washington Ave.
 - The University of Minnesota Campus Shuttle has 4 routes that serve the Minneapolis and nearby St. Paul campuses. The system carried more than 3.5 million riders in 2008.
- **Moscow, Russia:**
 - Bus stops near Auchan shopping center are near Vetkina street and Sevastopolsky lane. Thus, the buses half-officially are used by local residents and offices and even have unofficial "A" number.
 - Stankolit platform area serviced by a variety of free routes because this area is not accessible except by long walking by foot on daytime from November 2002 (tram service terminated, low train service by mornings and evenings).
 - Buses from Komsomolskaya square (3 railway stations) to market located at western border on Balashiha (buses are free only to riders originating or terminating at the market), in addition two shuttle buses from the nearest metro stations.
 - During Easter Sundays, the Sunday before and after, buses and some trolleys to cemeteries are free. The system is criticised because it strongly lowers service on regular routes and religions. In Zelenograd district with specific: the routes do not change

(except discarding peak hours two-stops branch on route 1 and 2) are free to cemetery and to riders originating at cemeteries (because cemeteries are terminus stops at all routes), otherwise requires a fare

- bus 028 goes in a loop Alabyana str-Panfilowa str-Leningradsky lane is free and hired by developer in order to speedy built-up. It has 4-7 min intervals from 6:00 till 1:00, compensates longer walking to metro Sokol's closed exit and at June 2009 assigned stop on the route to metro Oktyabrskoye Pole. The closer ride to the metro requires a transfer (most often a trolleybus) and fare.
- During major football matches on Rodina Stadium, Khimki, Russian railway company (known as "pid") assign free trains between the cities and often unofficially don't check at all fare collection on other trains and off the turnstiles in 2 stations in Moscow.
- **Moscow Oblast**
 - BMO railway road: No fare collection on most trains that doesn't go from Moscow unless the passenger originates at stations other than Voskresensk, Kurovskaya, Egoryevsk, Orekhovo-Zuevo or Kubinka (timed) or Buzhaninovo or leave the platform at Kurovskaya or Dmitrov. Because there are many other stations, de facto most trains are free but may be charged during raises of service.
- **Mountain Village, Colorado** – Free cable car to Telluride and shuttle bus.
- **Newcastle, New South Wales** in Australia has a free bus service that operates in the CBD area between 7:30 am and 6:00 pm.
- **New York City, USA** and vicinity:
 - The Staten Island Railway is free of charge to riders originating or terminating at stations other than St. George or Tompkinsville.
 - The Staten Island Ferry operates between Whitehall, Manhattan and St. George, Staten Island 24 hours a day, 365 days a year. Fare collection ended in 1997.
 - The Airtrain at JFK Airport is free within the terminal loop, but requires a fare at the Jamaica and Howard Beach stations.
 - The Airtrain at Newark Liberty International Airport is free, except to and from the Amtrak/New Jersey Transit station. In that case, the fare is included in the price of the train ticket. New Jersey Transit monthly pass holders must pay an extra \$5.50 to ride AirTrain, unless they set EWR as the source or destination stop for their pass.
- **Noordwijk/Oegstgeest** – Leiden Transferium – The Hague, express bus, running on weekdays during daytime, free of charge as a test during 2004; it was intended for commuters working in The Hague and living in Leiden or beyond who would otherwise travel by car to the Hague, to promote parking at the Transferium and continuing the journey by bus; the aim was to reduce road traffic congestion between Leiden and The Hague. The test was paid by the province of South Holland. It was discontinued in 2005.

- **Oxford, UK** - A 15-seater minibus is run by Geo, an American Immigration Corporation to take passengers on the half-hour journey between Oxford railway station and Campsfield House detention centre near the village of Kidlington and Oxford Airport. It runs every hour, and then every two hours, all afternoon, 7 days a week.
- **Perth, Western Australia** has free bus and train trips around the city centre (the "Free Transit Zone"), including three high-frequency Central Area Transit (CAT) bus loops. This is also in Fremantle and recently added in Joondalup.
- **Philadelphia, PA** offers free transportation between terminals A through E of Philadelphia International Airport on the SEPTA Airport Line trains, which run every 30 minutes. Transportation on this train into Center City Philadelphia and other destinations is available but requires payment. Transportation between the airport terminals can also be accomplished by using concourses and moving walkways and through two free shuttle bus routes operated by US Airways.
- **Pittsburgh, PA** offers free public transit within their downtown areas.
- **Portland, Oregon** – All streetcar and light rail trips are free within the "Free Rail Zone"[5], a 330 square-block zone, encompassing most of downtown Portland. (Until January 3, 2010, bus trips were also free.)
- **Reading, Berkshire, England** – Free shuttle between Reading railway station and Thames Valley Park
- **Renesse** (mun. Schouwen-Duiveland), Netherlands – free bus services in the area (in summer only)
- **Sacramento, California** – A free shuttle is operated between the arrival/departure terminals and the rental car facilities at Sacramento International Airport.
- **San Jose, California** – The Santa Clara VTA runs a free bus in downtown San Jose connecting the San Jose Diridon Station with San Jose State University. This bus is called DASH. There's also a free bus that connects VTA light rail, the Santa Clara CalTrain station, and the San Jose Mineta International Airport. This bus is route 10, called the Free Flyer.
- **Seattle, Washington** – Metro Transit buses are free from 6:00 am to 7:00 pm in Downtown Seattle (the "Ride Free Area").
- **South Yorkshire, England**, in the two locations of Sheffield and Rotherham, zero-fare city/town centre circular routes operate under the FreeBee branding, the first in the city of Sheffield was launched in 2007, and after its success the scheme was rolled out to Rotherham in 2009. Both are funded by Travel South Yorkshire/SYPTE(a member of the Travel South Yorkshire Partnership).
 - Rotherham – FreeBee runs from Rotherham Interchange every 12 minutes from 08:00 to 18:00 Monday to Saturday.
 - Sheffield, England – FreeBee runs around the city centre, Monday to Saturday, every seven minutes.
- **Southampton, England** – City-link bus between Southampton Central railway station, WestQuay shopping Centre and Town Quay for the Isle of Wight Ferries. It is operated for Southampton City Council by Bluestar.

- **State College, Pennsylvania** – CATA runs four routes that offer bus service between the Penn State campus and downtown State College, an addition to two regional service routes that do not charge fare if they are only traveling across campus.
- **Sydney** in Australia Free downtown city bus loop, also offers occasional free public transport travel to and from events at particular times, notably New Year's Eve celebrations in Sydney CBD, or to ANZAC War Memorial Services for veterans. The rationale is a mix of traffic reduction and cultural recognition. During the two weeks of the 2000 Olympic Games all public transport was free if you had an admission ticket, however everyone ended up traveling free because the normal ticketing system was abandoned.
- **Tarbes** in France offers a year-long free shuttle bus around the city, linking the main spots.
- **Tirumalai** (Tirupati), India – Free buses run by Temple authority to visit the nearby religious centres on the top of the hill.
- **West Yorkshire**, England, four of the larger settlements covered by the West Yorkshire Passenger Transport Executive have Zero-fare bus services which are jointly funded by WY Metro, local councils and private companies. The services are branded either FreeTownBus or FreeCityBus, depending on whether the location is a town or city:
 - Bradford - FreeCityBus - a free loop service around the city centre.
 - Dewsbury - FreeTownBus - the latest FreeTownBus in West Yorkshire, it was launched in December 2009.
 - Huddersfield - FreeTownBus - a free loop around the town centre operated by K-Line Travel
 - Leeds - FreeCityBus - a free circular route around Leeds, the first of the FreeTownBus and FreeCityBus routes to be established within West Yorkshire
 - Wakefield - FreeCityBus - free circular route around the city centre
- **Willoughby**, Sydney The Loop - a free bus that operates a different circular route each weekday (Mon-Fri) every 45 minutes.
- **Hradec Králové**, Czech Republic – all city buses and trolleybuses between the main train station and the new central bus terminal, since 2008 July 5.
- **Bluewater Shopping Centre, Greenhithe** - Free bus service to the shopping centre; users must buy a train ticket which says Greenhithe.
- **Voronezh**, Russia - buses with letter "H" (n) are free to anybody and go by their own network and timetable
- **Zagreb**, Croatia - free tram service to and from several stops in the vicinity of Ban Jelačić Square

Selections from Public Transport Users Association, Victoria:

Myths about public transport

Fact: There are enormous economies of scale in public transport. To carry each additional passenger costs virtually nothing, whereas to put each additional car on the road system adds to congestion and pollution. What's important is to ensure public transport is of high enough quality to attract passengers throughout the day, so that operating costs aren't wasted running empty vehicles. Running good public transport does require real money, but on the whole it costs much less to run public transport well than it does to run it badly.

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Many systems in Britain, Europe and Canada not only provide a higher level of service - they actually cost less per passenger to run. Vancouver, for example, has for thirty years pursued a strategy of investment in public transport as an alternative to traffic congestion. Its public transport runs at much higher frequencies than ours, and charges lower fares. Yet its budget for roads and public transport in 2005 was \$180 per resident, compared to \$430 per resident in Melbourne.

It seems to be a quite general rule that it costs much less per passenger to run public transport well than it does to run it badly. The effects of operational inefficiencies, neglect and bad planning leak right through to operators' bottom lines: on the other hand, a little effort invested in efficient scheduling and service quality to grow patronage (rather than just apologising for failure) pays off many times over in higher cost recovery.

It's also common to baulk at the high upfront costs of new urban rail systems (in particular), not realising that once an initial investment is made, a high level of service can be provided for relatively little additional cost. By comparison, new road projects can be sold to the public fairly easily, because of the perception that roads cost nothing to maintain. Not a word is said about the vast sums of money that will be required in the future just to keep the road up to scratch.

Other bits

In the Belgian city of Hasselt, within a year of introducing free bus fares, patronage increased by 870% (now more than 1000%).

Free public transport would save money in other parts of the state government budget — in spending on health, road maintenance and construction, and also on ticketing.

Paris has a system of a 2.2% payroll transport levy on all CBD employers with more than 10 staff - in 2003 this accounted for 65% of the Paris transport budget.

Other costs (NSW examples):

Air pollution: The health cost in Sydney's greater metropolitan region alone (Sydney, the Illawarra and the Lower Hunter) is anywhere between \$1 billion and \$8.4 billion per year (depending mainly on the price put on life!), with motor vehicles contributing anything between \$496 million and \$4.7 billion (NSW Department of Environment and Conservation — DEC). A 2003 Bureau of Transport and Regional Economics (BTRE) study put the figure at about \$3.3 billion for Australia (about \$1.5 billion for NSW).

Road accidents: \$3-4 billion per year (based on studies by the BTRE and the Centre for Automotive Safety Research).

Traffic congestion: Estimated at around \$7.5 billion per year and rising (BTRE).

Disposal of waste: Road transport generates used vehicles, used tyres and waste oil. The cost of disposal was estimated in 1995 at between \$1.2-4.7 million per year (State of the Environment 1997, NSW DEC).

Greenhouse-gas emissions: The transport sector is NSW's second-largest source of greenhouse gas emissions, around 20% of all energy-related emissions. Road transport accounts for 91.4% of the total (State of the Environment 2006, NSW DEC).

Noise pollution: 1.5 million people in NSW suffer from noise pollution, which is rising with growing car use (State of the Environment 1997, NSW DEC).

Road development and maintenance: Present annual spending by the Roads and Traffic Authority is \$2 billion, with more than \$700 million going to road and infrastructure maintenance.

Total cost: \$12.2 billion (minimum) to \$20.9 billion (maximum).