

# Urban Congestion

John Stanley  
Bus Association Victoria

# Scope

1. Identify sustainability goals for Australian cities
2. Discuss congestion as an aspect of sustainability
3. Outline some directions for dealing with congestion and broader sustainability, focussing on
  - improved road pricing systems
  - better transport land use integration
  - improved travel alternatives
  - institutional change

# (1) What is a sustainable city from a transport perspective?

- Economic = ensures travel needs are met efficiently and in a manner that supports a dynamic economy
- Social = ensures basic access is available to all, with acceptable safety
- Environment = manages emissions to meet air quality goals and climate change targets (as they evolve over time)

## **(2) Sustainability assessment.**

### **Economic efficiency: congestion**

- Congestion = a major economic drain, costing about \$A4b, maybe more, annually in Melbourne
  - over half business costs
  - growing fast (~\$20b nationally)
- Solutions will be city-specific but require a national pricing framework for their resolution

## Economics: dynamic economies

- Knowledge-intensive/creative industries are central to national economic growth prospects
- Cities are their seed beds
- Accessibility and quality of life elements are key locational influences (liveability)
- Traffic congestion, air pollution and poor access to public transport are negatives

## **(3) An integrated approach to reducing urban congestion**

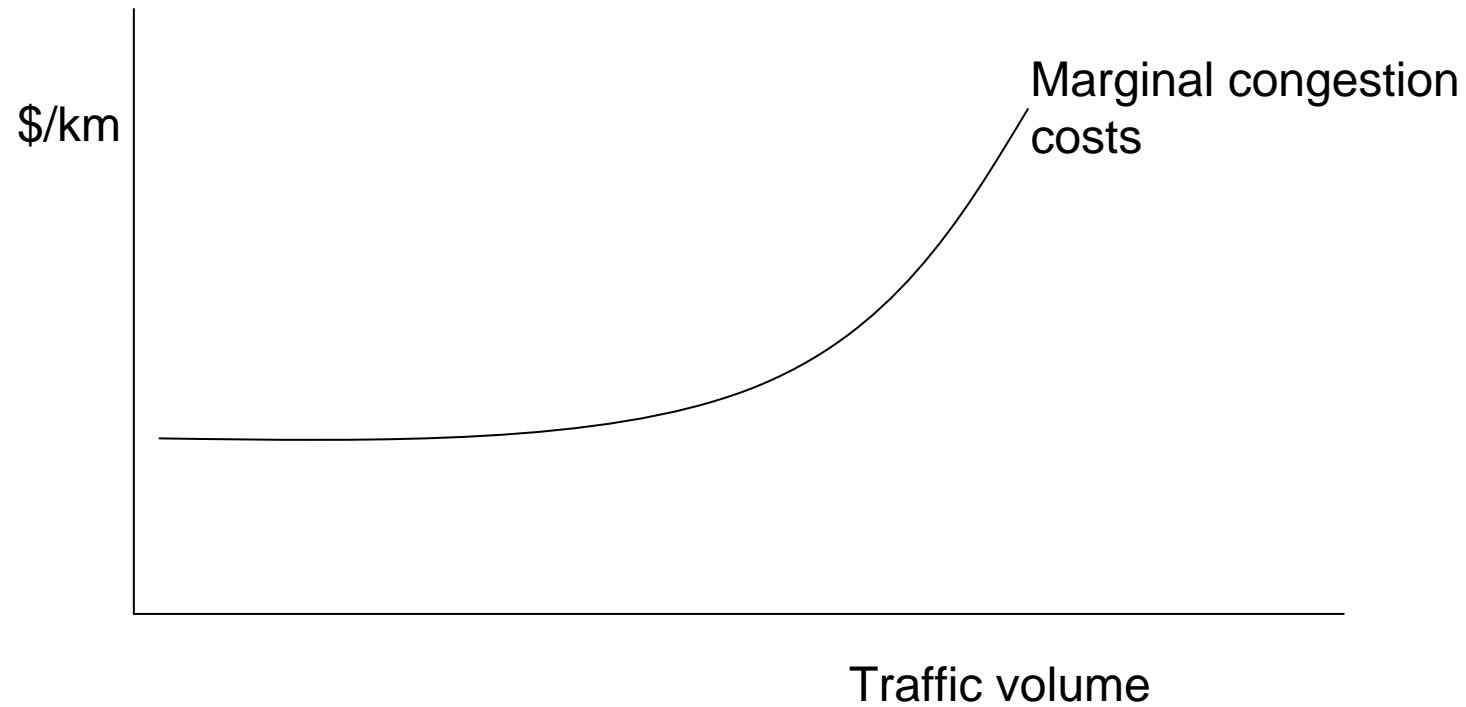
1. Road pricing reform
2. Better land use/transport integration
3. Improving public transport service level

**These levers, used in concert, will substantially improve sustainability**

## (3.1) Basic transport pricing principles

- Efficient road (transport) pricing requires that users be charged for the costs their travel choices impose on others
- Except if there are social reasons for varying this principle
- Are there external benefits from road use?

# Congestion cost curve





# Road pricing in Australia

- Only heavy vehicles are explicitly charged for road use in Australia and only then for “averaged” road damage costs (under NRTC/NTC pricing)
- If marginal external costs are considered, compared to fuel taxes paid
  - rural car users pay too much
  - car/truck users on congested roads do not pay enough
  - trucks probably do not pay enough in regional areas (after fuel rebate)

## Implications of more efficient road pricing

- Demand for rural car use would increase but rural truck growth would probably slow
- Demand for metro road use would decline (e.g. better freight distribution decisions)
  - under-pricing has encouraged excessive road traffic growth
- Congestion levels and costs would decrease
- Get the prices for road use right then assess road infrastructure upgrade requirements

# Congestion pricing

- Congestion costs are easily the single most significant “unpriced” cost of road use
  - probably ~\$20b annually in Australia at present
  - projected to be \$30b by 2015 (BTRE)
  - nationally significant
- Embedding these costs in user charges faces two major problems:
  1. the technical problems of implementing a user charging system
  2. political acceptability

# It's happening

- London central area scheme
  - minor fall in total trips but traffic down 18% and large switch to bus (+35%)
  - initial scheme widely supported and extended
- Stockholm
  - trial scheme recently extended
  - through traffic down 25%, bus use up
- Singapore
  - more sensitive pricing scheme

## UK national road pricing scheme

- Under active consideration
- Potential to cut congestion by about half, for only about 3-4% reduction in urban traffic levels (£10-12b annual benefits; gross revenues ~£9b p.a.)
- With charges capped at £0.80/km
- And the maximum charge only being paid by ~1/2% of traffic
- Remember our roads in the school holidays!!!

# Improving road pricing in Australia

- Sharpen pricing for heavy vehicles
  - adding an externality component (exc. congestion)
- Extend the application of parking levies in central areas and adjust to better reflect congestion costs
- Extend charging to most congested sections of existing freeways (e.g. High Occupancy Toll lanes)
- Review overall national road pricing through ATC
  - as one part of a new Intergovernmental Agreement on Land Transport
  - include a focus on requirements for eventual implementation of congestion charging

## (3.2) Transport/land use integration

- Sustainable urban transport systems require and enhance sustainable urban development patterns
  - to improve accessibility, reduce the need to travel and facilitate travel by low impact modes
- Urban congestion partly reflects poor transport/land use integration
- Selectively increased settlement densities are central to more sustainable outcomes (whatever your views of Melbourne 2030)

# Strategic LUTI

- Melbourne 2030
  - aims to protect the liveability of established areas and increasingly channel growth into strategic redevelopment sites (activity centres)
  - supported by an expanded/attractive PT system
- M2030 subject to much criticism over (for example)
  - whether it is achievable (e.g. Birrell et al)
  - whether the Government itself is supporting it fully
- What can we learn from overseas?



# Curitiba (Brazil)

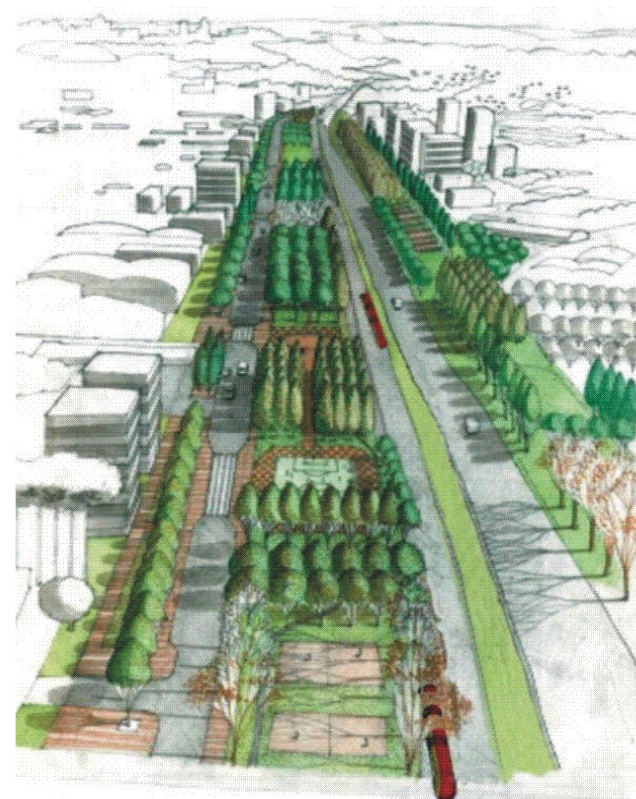
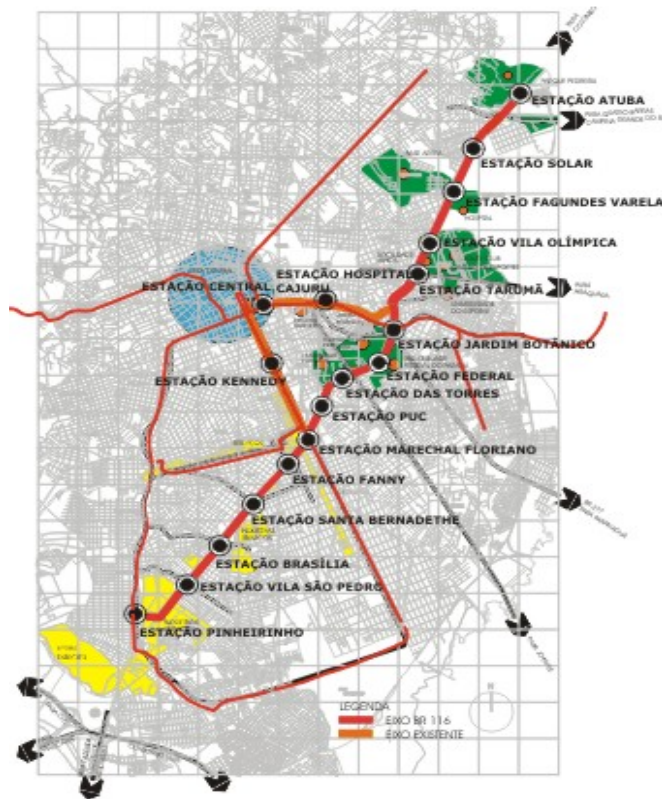
- Metro Curitiba has about 2.8m people
- Rapid population growth (7% in '50s; 6% '60s and '70s)
  - massive pressure on infrastructure/services
- Same master planning guidelines for 40 years
  - managed by the Inst. of Urban Research and Planning of Curitiba



# The linear city

- Growth channeled into the downtown core and structural axes (a linear city), for sustainability
  - with range of local services/amenities, extensive green space provision, pedestrianisation of downtown, incentives for heritage conservation and green space
- 3 key structural axes, based along the world's first BRT
  - with circle lines forming a network web
  - land use controls require high density activities to be along axes; surrounded by medium/lower density (Hong Kong to LA!)
  - new transport axis being added, converting an old national road

# The new metropolitan axis



## Some aspects of the plan

- Limited central area growth
  - partly closed to vehicular traffic; pedestrianised
- Encouraged growth along transport axes
- Land within 2 blocks zoned for mixed commercial-residential use, then densities taper
- Local community self-sufficiency in services encouraged
- IPPUC must approve new shopping centres; chaneled to transit corridors
- Limited, expensive parking
- Employer PT subsidies for workers

# Outcomes

- Internationally recognised for urban planning, transportation, waste management, environmental management, cross-sectoral integration
- 33% PT mode share in broader Curitiba
- Peak 2-way BRT loading of 35,000/persons/hr
- More cars per capita than any Brazilian city except Brasilia, yet 75% commute by bus
- One of lowest air pollution levels in Brazil
- Fuel use 30% below comparable Brazilian cities
- Only 10% of household incomes spent on transport

# Vancouver: the world's most liveable city!



# Vancouver

- Major focus on liveability and sustainability from the 60s
- Vision supported by policies and strategic plans across governments
- Seen as a successful model for
  - consultative, community-based urban and transport planning
  - integrated PT planning and co-ordination
  - a competitive high growth economy

# Liveable Region Strategic Plan 1995

- The land use outcome from the 1990 *Creating Our Future* document
- Four fundamental strategies (interdependent and consistent)
  - protect the green zone
  - build Complete Communities
  - achieve a Compact Metropolitan region
  - increase Transportation Choice
- Within these 4 areas, the SP establishes clear objectives and identifies the partnerships needed to achieve them



# Transport strategies/plans

- Early decision (1960s) to not build freeways in the city
- Regional Transportation Plan (*Transport 2021*, prepared in 1994)
  - emphasis on partnerships; pursue TDM
  - promoting a transit-oriented and auto restrained transport system, based on intermediate capacity systems
  - provide flexible local services to support complete communities and a compact metro region
  - road capacity to favour HOV, freight, inter-regional flows
  - enhance local streets and infrastructure for transit, bicycle and pedestrian use

# Results

- High livability (now rated higher than Melbourne)
- Relatively concentrated housing, population and jobs assists (65% of population growth is in growth concentration areas – target was 70%)
  - but considerable job growth in poor PT areas
- Good PT modal share but below 2006 target (peak 11-12%, cf. 17% target)
- Only limited implementation of TDM
- Rapid transit roll-out below target
- Road program also behind target

## Some key LUTI issues raised by these case studies

- Vision, strategy and the system design grunt to see it through long term are central
- Foundation in community values important
- Champions can be vital
- Local government driven
- Transport can contribute a lot in isolation but needs land use integration for maximum impact
- How do you sustain commitment over the long term?

## (3.3) Improved travel alternatives

- Requires
    - increased PT service frequency and coverage, especially in middle and outer suburbs (equity),
    - increased reliability (priority access; better connectivity), esp. middle/inner suburbs (congestion)
    - better information and marketing
- = **public transport performance that is more competitive with the car**

*Meeting our Transport Challenges* does this for Melbourne

# Conclusions

- The scale of our congestion costs is a major indicator of unsustainable land transport systems
- Radical changes are needed
- *Melbourne 2030* and *Meeting our Transport Challenges* are a good start
- New partnerships and greater community engagement are needed to achieve buy-in on more sustainable settlement patterns (bottom-up and top-down)
- Local government should play a larger role in metro LUTI
- Road pricing reform is central
- The impacts on our cities are such that Canberra must be involved