Twin Peaks: Research for life on the downslopes?

Report on two workshops

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Consulting in Applied Transport, Access and Land use sYSTems
Climate change will affect our cities in a range of ways, including:
- More extreme weather conditions, including the effects of heat stress on extremely hot days;
- The potential for extensive damage and loss of life associated with major storm and flooding events;
- The impact of increased variability in rainfall on water supplies, and the pressure to build often expensive infrastructure, such as desalination plants, to provide water security.

Energy prices are likely to continue rising over the coming decades, potentially rapidly and significantly. This is despite the fact that greater attention is being given to the development of non-traditional sources of oil and electric vehicles. Some energy sources, such as shale oil, are likely to add to the challenge of reducing carbon emissions. Higher energy prices will lead to an increase in the real cost of driving, and may result in a continued decrease in per capita vehicle usage.

Figure 5 – Australian trend in vehicle kilometres travelled per person

Energy sources:
- Non-con Gas
- Gas
- Gas Liquids
- Polar Oil
- Deepwater
- Heavy Oils
- Regular Oil

America has long created transportation policy under the assumption that driving will continue to increase at a rapid and steady rate. The changing transportation preferences of young people—and Americans overall—throw that assumption into doubt.

Transportation and the New Generation: Why Young People Are Driving Less and What It Means for Transportation Policy
Rachel Lewis: BP

- Global situation results from individual choices
  - People have different options available at different times and places
- 2011 events (Libya/Japan) saw oil price over $100/barrel annual average for first time
- Global energy consumption is growing
- Some decoupling of economic growth and energy consumption in developed countries
- Energy efficiency in transport in developed countries reducing growth of transport energy
- Renewables are fastest growing energy sector but still small (6% by 2030)
- Security requires strong supply chain as well as local refineries
- BP Kwinana can produce full spectrum of oil products from a wide range of crude oil types, but has surplus petroleum capacity and deficit of diesel.
Bruce Robinson: ASPO Australia

- Peak oil will come whether we ‘kick the habit’ or not
- Global oil production will stop rising and start to decline
- We are not likely to know Peak Oil until after it has occurred
- Geology is primary constraint; economics sees substitution/efficiency; social optimism bias
- Is Peak Oil a ‘predictable surprise’? Why do leaders ignore signs of crises?
- Does ‘optimism bias’ affect ‘forecasts’ on which policy is based?
- Apparent production ‘cap’ on oil
- Since 2005, price has been driven by demand rather than supply – production highly inelastic with respect to price.
- Oil price likely to double by 2020
- Production forecasts for 2020 substantially reduced since 2002 – now only 5% growth 2010-2020
- New discoveries falling short of production since late 1980s
- IEA see emerging gap even after increase in non-conventional oil
- Biofuels limited by ability to produce feedstock without adverse impact on food supply/price
- Outer suburbs are highly vulnerable to oil price/supply
Peter Newman: Peak Car

- Something happened in 2004/5 – trend in car use per capita turned down
- All Australian capital cities peaked in 2004
  - Predates global financial crisis
  - Not just related to congestion
- Urban density and public transport have reversed
- Public transport leverage – six car-km ‘lost’ for one extra public transport passenger-km
- Peak Oil has happened – cheap oil has ended
- Culture is changing in the younger demographic
  - Driven by the digital revolution
  - 16-34 year olds declined car use 23% between 2001 and 2009 (USA)
- Car ownership increasing in China/India – but not necessarily car use.
- Responses include:
  - Polycentric cities
  - Light rail infrastructure
  - Reduce road building
  - More help to people who want to reduce car use
Four questions

- What are the issues and drivers?
- What are the policy responses?
- What do policy makers need to respond?

- What research is needed to support policy?
What are the drivers?

Transport Energy/Peak Oil
- Developing country demand and aspirations, esp China and India
- Taxation regimes distorting demand
- Lack of flexibility - we have built-out options for a lot of people
- Habits – “fuel will always be available”
- Response transitions are long-term
  - Technical efficiencies
  - Urban form
  - Individual behaviour
- Mitigation – drivers of reduced demand
  - Climate change
  - Health

Peak Car
- Demographics
  - Concentrated in younger age groups
  - Movement back into the cities
  - Young people prefer to spend money on things other than transport
- Technology
  - Less need to travel to stay ‘connected’
  - Ability to do things while travelling not in car
  - On-line retailing
- Improved alternatives
  - Speed, reliability, frequency
  - Network coverage and connectivity
  - Ease of use (eg SmartRider ticketing)
- Time-budget/trip-chaining
- Oil price/supply
How should policy respond?

Transport Energy/Peak Oil

- Recognise and acknowledge oil/energy vulnerability
  - Economic
  - Social
- Contingency planning for oil-constrained future
- Longer-term decision frameworks and commitments
- Incentives for alternative fuels/technologies
- Emission/fuel economy regulation and taxation incentives
- Government underwriting of infrastructure to support new fuels/technologies

Peak Car

- Flexibility, robustness and creativity
  - Funding
  - Adaptable transport systems
  - Flexible road designs to accommodate change
  - Housing density
  - Car parking requirements
- Shift from getting people out of cars to supporting new behaviours
- Reduce road building
- Location-efficient mortgages to increase affordability of accessible locations
What does policy need to respond?

Transport Energy/Peak Oil
- Acknowledgment of emerging issues
  - Over-the-horizon radar
  - Peripheral vision
- Better information and measurement
  - Energy issues
  - Monitoring of actual responses
  - More timely information
- Better-informed community
- Understanding the impacts of decisions
  - Scenario planning tools for alternative futures
- Contingency planning and flexibility
  - Short term (eg supply disruption)
  - Long term (eg structural economic and social issues)
- Minimise impact of electoral cycles
  - Bipartisan understanding and support

Peak Car
- Understand travel market better
  - Travel budget driver? or
  - Genuine behavioural shift
- Improved modelling and forecasting
  - Increased income no longer means increased car use
- Investment and systems to reflect policy and behaviour changes
  - New funding and evaluation models
- Decision-support systems to reduce lags and increase responsiveness to changes.
- Community engagement and dialogue
What is the research agenda?

Transport Energy/Peak Oil

- Understand the broader impacts of the problem and of potential solutions
  - Economic
  - Environmental
  - Social – often neglected
- Develop risk-based and non-determinist decision-making frameworks
  - Move from ‘engineering’ to ‘social science’ mindset
- Expose implicit assumptions in policy and planning
- Understanding behavioural responses
  - What determines travel behaviour – beyond the ‘usual’ transport system attributes
- Personalise the research
  - What are the effects on individuals, households and businesses?

Peak Car

- Understanding what drives the change in the younger demographic
  - Better and continuous data
  - National travel survey
  - Qualitative as well as quantitative research
- Revenue, taxation, public finance implications
- New modelling paradigms
  - Car ownership and use
  - Trip rates
  - Decision algorithms
  - Demographics
  - Accessibility modelling
- Funding models to support and encourage alternative modes and travel behaviour changes
- How to make alternatives to the car more effective and usable, especially in low-density areas