**Senate Standing Committee on Rural and Regional Affairs and Transport Inquiry: Investment of Commonwealth and State funds in public passenger transport**

**Exhibit: Notes for the appearance of Colin Ashton-Graham, Principal Policy Officer Household Sustainability, Department for Planning and Infrastructure as a witness in regards to the TravelSmart and Living Smart programs.**

**Summary**

Shifting car trips to walking, cycling and public transport delivers multiple benefits to the local and global environment, public health, communities and road congestion. Voluntary behaviour change provides a cost effective demand side management tool. The application of the TravelSmart Household program in Perth has delivered reductions in car driver trips of around 10% in each target area.

The TravelSmart program in Perth has delivered rapid and large increases in public transport patronage on existing services and infrastructure. Investments in public transport services and infrastructure have also delivered increases in patronage. Integrating TravelSmart with public transport infrastructure improvements significantly improves rates of patronage increases.

The TravelSmart program in Perth has, over ten years, reached 460,000 residents and now delivers annual outcomes of:

- 30 million fewer car trips;
- 300 million fewer car kilometres;
- 4.8 million more public transport trips;
- 5 million more bicycle trips; and
- 15 million more walking trips.

Mode changes resulting from TravelSmart are durable for at least four years. The socio-economic return on the program is calculated to be better than 30 to 1,

which is significantly higher than supply side projects. TravelSmart programs significantly improve the cost recovery of the public transport system and deliver cost effective greenhouse gas reductions.

The ten year program in Perth has been delivered at a total cost of $17.6 million including co-contributions from Commonwealth, State and Local Governments and private bus operators. The program cost averages less than $40 per target person.

TravelSmart Household programs (also known as TravelSmart Communities in other jurisdictions and Personal Travel Planning in Europe) have been adopted by most Australian jurisdictions and by Governments in USA and Europe. WaterSmart programs are now being developed with great success. Voluntary demand side approaches are proving to be adaptable and transferable.

Further potential exists to extend successes in voluntary behaviour change to manage demand for water, energy, travel and waste. The Department for Planning and Infrastructure has led such developments through the Living Smart program. A national roll out of such a program could deliver more than 10 million tonnes of carbon abatement per annum.

There is strong need for Commonwealth support for voluntary demand management programs as a complementary measure to carbon pricing mechanisms. Significant improvements to public transport patronage and the economic costs of congestion could also be harnessed from a national roll out of the TravelSmart Household and Living Smart programs.

**What is the potential for voluntary behaviour change?**

Voluntary behaviour change programs seek to correct market failures emerging from incomplete information availability and misperceptions (bounded rationality) in many areas of consumer choices.

It is clear that there is market failure when traffic congestion imposes a significant time penalty on private car trips and yet time competitive public transport, walking and cycling alternatives are not fully utilised. Similarly, price inelastic responses to increasing petrol and electricity prices are likely to stem from a mix of non-discretionary demand and a lack of consumer capacity to act on the discretionary elements of consumption.

To explore the degree to which private car travel is discretionary DPI has conducted in-depth research into the viability of alternatives to the car for specific trips made by a sample of individuals in the community. This research[i] reveals that Perth has public transport services, bicycle networks and walkable developments that are sufficient to provide a realistic alternative for up to half of all car trips.

The primary barriers to changing travel modes are:

- lack of detailed knowledge regarding access to local services and facilities; and
- mis-perceptions regarding the comfort, convenience and travel time of the alternatives to car travel.

In considering the potential for trips to be made by public transport (switching from car use, cycling or walking) the in-depth research examined the barriers to public transport use. For the 94% of trips currently not made by public transport in Perth:

- 33% were ‘Constrained’ by the need to carry luggage, use a company car etc.
- 39% had ‘Objective reasons’ such as no public transport service at the right time, or the trip times not being competitive with the car.
- 14% had ‘Information barriers’ such as no knowledge of the available service.
- 2% had ‘Subjective barriers’ such as a negative view of public transport.
- 6% had a ‘Choice’ being well informed and positive, but choosing the car.

Conversely half (3 mode share points) of the 6% of trips that are currently made by public transport are 'captive' to public transport because the user has no viable alternative for the trips in question. The remaining half (3%) of public

transport trips are made in the full knowledge of available alternatives such that public transport is the mode of 'Choice'.

Given that ‘Constraints’ cannot be overcome and ‘Objective reasons’ require system/ service improvements, voluntary behaviour change is applied to the 22% of all trips that are influenced by ‘Information’, ‘Subjective’ issues and ‘Choice’.

It is theoretically possible to increase the mode share of public transport in Perth from the current level of 6% to a maximum of 28% of all trips (more than a four-fold increase). In reality the public transport travel option will not be chosen for every possible trip and significant increases in public transport ridership will, in the short term, be limited by capacity issues with existing levels of services.

An observation of the spread of energy use in neighbouring homes, coupled with an examination of the potential for simple household energy efficiency measures, suggests that approximately half of household energy use is discretionary (potentially wasted). The similarity between the potential to reduce car dependence and energy (and water) inefficiencies is currently being explored by DPI through the Living Smart program (see: www.dpi.wa.gov.au/livingsmart).

**How TravelSmart works**

The TravelSmart Household program establishes a dialogue with each household in the suburbs in which it is delivered. Depending on the response to an initial contact, households are taken through a process that informs and motivates them to replace car trips with walking, cycling and public transport trips. The process is delivered over a two month period and works by:

- addressing information barriers by localising and simplifying information to make it relevant to people's needs;
- providing motivation through dialogue and personalised communication; and
- assisting with system experience particularly for new users of public transport.

TravelSmart empowers people by providing advice and encouragement relevant to their unique situation and then leaves the choices up to them. It does not tell people to get rid of their car or to reduce their mobility around the city. It encourages people to consider their travel choices and to try an alternative to the car for one or two trips a week (sufficient for a 10% reduction in car trips).

The TravelSmart program in Perth has been delivered to a target population of 460,000 residents over 26 local areas (groups of suburbs) since 2000. TravelSmart changes are immediate and are achieved at a fraction of the cost of land use and public transport improvements[ii].

The project has been highly successful in Perth because the urban form is characterised by low-density suburban living that is highly car dependent (as measured by 80 per cent of personal trips being made by car as driver or passenger and only 20 per cent by walking, bicycle or public transport). This high level of car dependence leads to a strong habitual response to car use and a low level of awareness of realistic alternatives for many trips. The public transport system, and the opportunities for walking and cycling, are better than the perception that the vast majority of the population has of them.

This knowledge gap is revealed only when a person's trip-making is checked against other travel modes, thereby measuring the difference between what an individual perceives as the alternative modes of transport available and what is actually available on the ground (eg. whether a bus service or other option was available for each car trip).

The research demonstrates that knowledge and experience (which can be affected by motivation) are far more powerful than attitude. Dialogue based marketing approaches work because they overcome these simple information barriers to unlock some of the large potential for behaviour change.

**The impacts of TravelSmart**

The TravelSmart program in Perth addresses the information and subjective barriers to more optimal transport mode choice. It has achieved (on average for

each target area) relative increases in public transport ridership of 18%, taking public transport mode share from 6% to 7%. Similarly there are strong potentials to increase the levels of cycling and walking in Perth and the TravelSmart program has delivered a 25% increase in walking and a 50% increase in cycling (from a very low baseline mode share).

***Fig 1: Public Transport ticketing increases with TravelSmart***

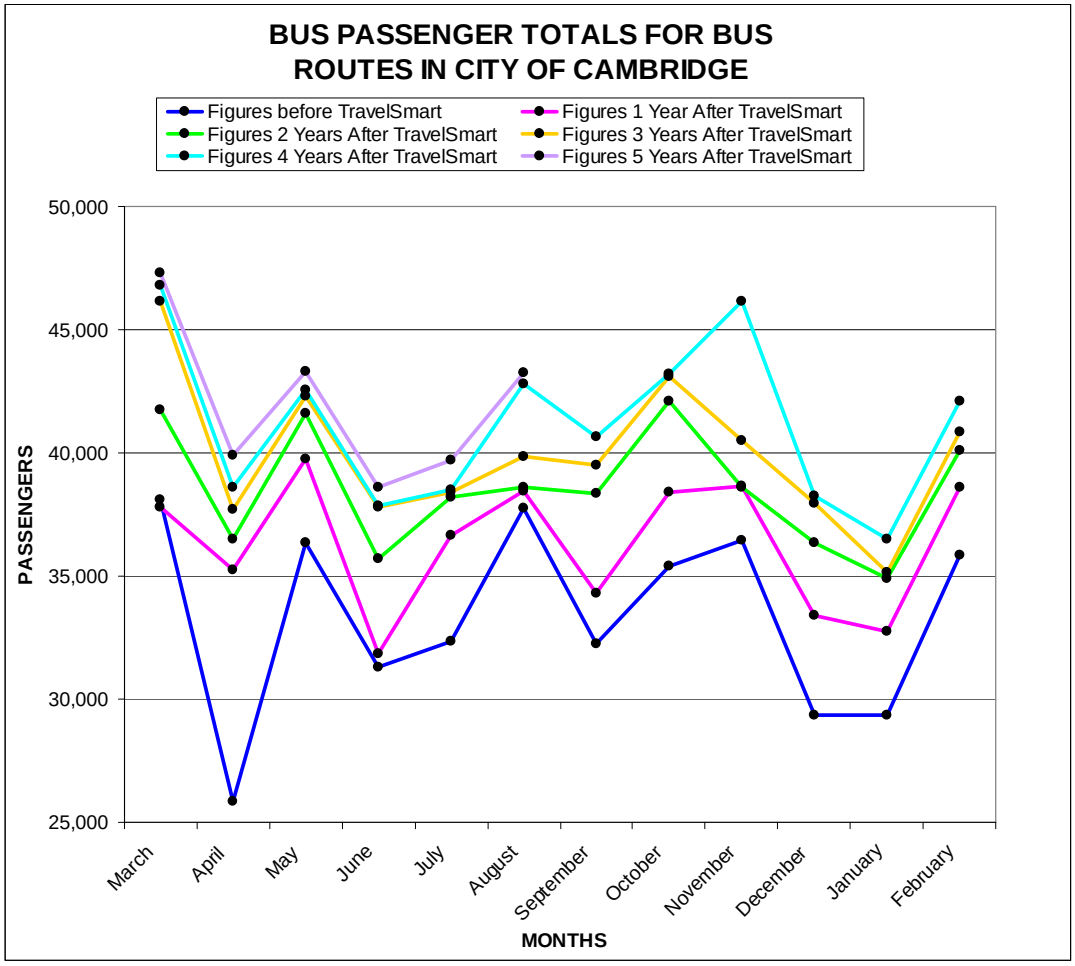



Figure 1 provides area wide data from the public transport ticketing system which verifies the results of random sample travel survey data on the impacts of TravelSmart on public transport mode share. In the Town of Cambridge, where only limited service improvements were introduced, TravelSmart delivered an initial increase in bus ticket sales of 16%. In subsequent years the increase was not only maintained but increased further by several percent each year. Behaviourally this illustrates the power of imparting knowledge and motivation from which residents can exercise an increasingly sophisticated modal choice.

***Fig 2: Non TravelSmart (Control Group) patronage***

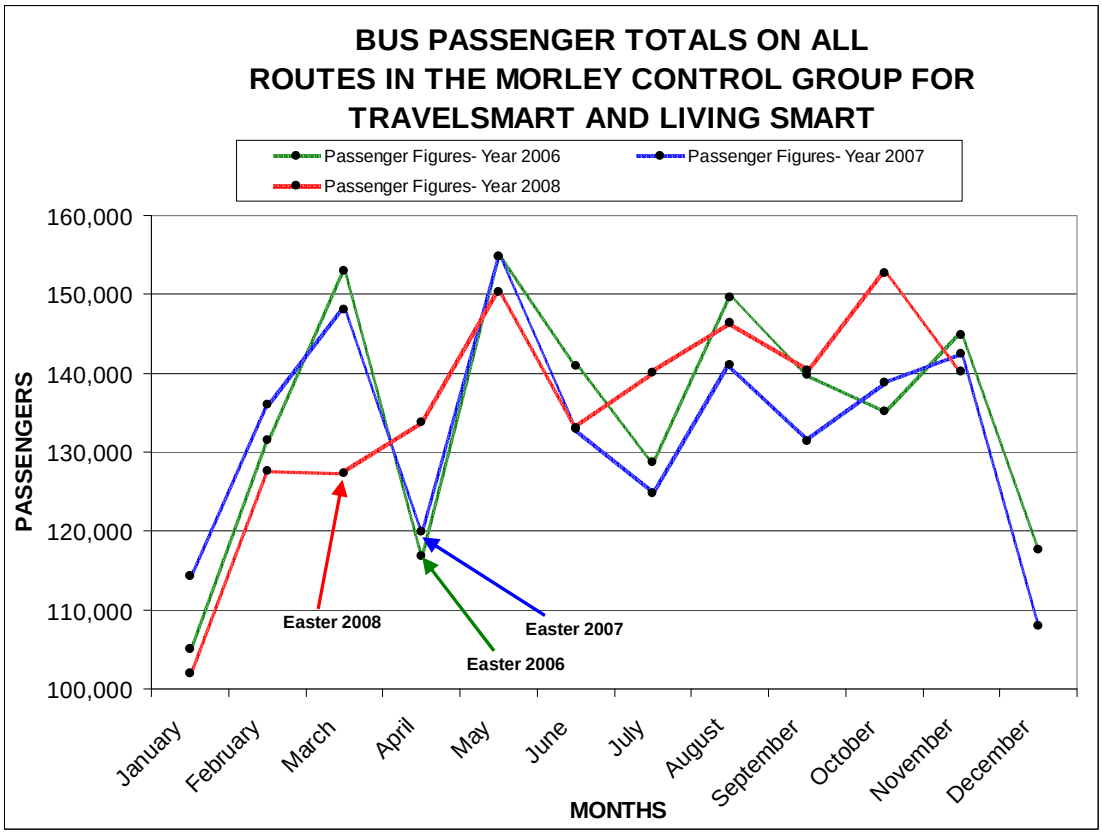



Figure 2 illustrates that bus boardings remain relatively unchanged over time in areas where service frequency is not increased, population growth is not strong and TravelSmart is not offered. Morley is currently used as a control group for TravelSmart.

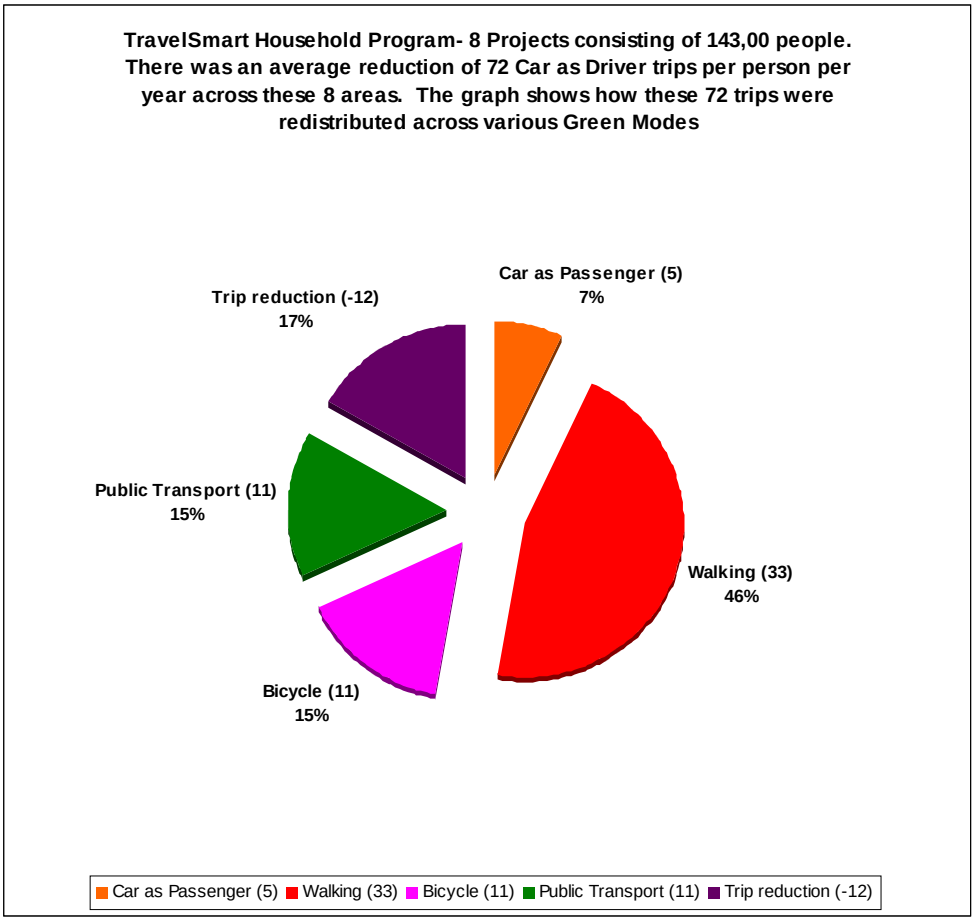
Overall public transport system increases in Perth between 1997/08 and 2007/08 amount to an impressive 26.3 million additional initial boardings per annum, representing a relative increase of 48%. At a system level analysis this could be interpreted to suggest that patronage growth trends rather than TravelSmart explain the patronage increases in TravelSmart target areas. However, TravelSmart has primarily been targeted to areas where public transport patronage trends are flat and service improvements are not proposed. Examination of project area ticketing data reveals a step change in ticket sales with the introduction of TravelSmart. Revisiting the system level data also reveals that the overall 48% increase in patronage has been primarily driven by a 40% increase in service kilometres to meet the needs of a growing city. The

increase in patronage per service kilometre is a more modest 6% over 10 years (increasing from 1.21 to 1.28 initial boardings per service km).

The strong increases in public transport patronage in Perth are primarily driven by a combination of:

- increasing population and service provision;
- improved public transport service frequencies in key corridors; and
- TravelSmart information services.

***Figure 3: Distribution of car trips to the alternatives***




The combined effects of system improvements and TravelSmart are evident in the system data noted above. The combined effect of facilitating increased utilisation of public transport, walking and cycling in Perth has been a decrease in private car kilometres of 13% in each of the TravelSmart target areas. Figure 3 illustrates the change in mobility for the typical person in a TravelSmart area.

The 10% reduction in car trips amounts to 72 trips per person per year replaced by alternatives.

**The outcomes of TravelSmart**

Over the past twelve years the TravelSmart program has been delivered to approximately 460,000 residents in the Perth and Peel region. The majority of the 27 different localised applications of TravelSmart have been evaluated using public transport ticketing data and random sample travel surveys. The combined annual performance of the program is estimated to be in the order of:

- 30 million fewer car trips;
- 300 million fewer car kilometres;
- 4.8 million more public transport trips;
- 5 million more bicycle trips; and
- 15 million more walking trips.

From these mode shifts flow a number of annual policy outcomes:

- 97,000 tonnes of greenhouse gas abatement;
- the equivalent of removing 20,000 cars from the road;
- contributing approximately 18% of total system patronage growth between 1997/98 and 2007/08; and
- adding 7 million hours of physical activity.

Significant measures of these policy outcomes include:

- project lifecycle greenhouse gas abatement at a cost of less than $30 per tonne[iii];
- cost recovery, through increased public transport ticketing, in less than four years; and
- moving approximately 2.5% of the population to a sufficient level of physical activity to maintain their health and significantly reduce the risks of heart disease, diabetes and several forms of cancers.

**The integration of voluntary behaviour change into public transport infrastructure and service provision**

System and project level analysis of the relationship between public transport service expansion and TravelSmart information services led to the deployment of TravelSmart around the catchment of the Murdoch rail station on the new Mandurah rail line.

Each rail station on the Mandurah line has very different urban form and socio-demographic profiles. However, at the observational level it can be seen that the travel changes experienced by the Mandurah community (where the new rail line was opened without the support of a TravelSmart information service) differ markedly from the travel changes in Murdoch (where TravelSmart supported the new rail line). Figure 4 shows that the increase in public transport mode share and the decrease in car mode share are stronger when the public transport infrastructure and services are provided in concert with TravelSmart.

***Fig 4: Impacts of Mandurah rail services with and without TravelSmart***

| **MODE** | **Mandurah mode share** | | | | **Murdoch mode share** | | |
|---|---|---|---|---|---|---|---|
| | **Before** | **With Rail** | **Relative change** | | **Before** | **With Rail and TravelSmart** | **Relative change** |
| Walking | 7.6 | 8.3 | + 9% | | 7.7 | 9.7 | + 26% |
| Bicycle | 2.3 | 2.4 | + 4% | | 1.4 | 1.9 | + 36% |
| Motorcycle | 0.6 | 0.6 | - | | 0.3 | 0.4 | - |
| Car driver | 61.1 | 60.5 | - 1% | | 62.7 | 57.1 | - 9% |
| Car passenger | 26.2 | 24.7 | - 6% | | 24.8 | 25.2 | +2% |
| Public transport | 2.3 | 3.5 | + 52% | | 3.1 | 5.7 | + 84% |
| TOTAL | 100% | 100% | | | 100% | 100% | |

TravelSmart adds materially to the effective operation of existing public transport services and to the investment in new public transport infrastructure. The cost of

adding TravelSmart to the catchment of a new rail station or bus hub is in the order of $1 million to service a population of 28,000 residents and to leverage an additional 300,000 public transport trips per annum.

**Durability of behaviour change**

The immediate impacts of TravelSmart are very large, being equivalent or larger than the mode change resulting from major public transport infrastructure investments or widespread urban renewal[iv]. While the first year impacts of TravelSmart alone provide impressive outcomes, any durability of the effects will strengthen the returns on investment. Two measures of program durability have been deployed by DPI to track the early TravelSmart project outcomes.

The tracking of bus ticketing (Figure 1) demonstrates that the public transport patronage increases are maintained over at least five years.

Repeat, target and control group, travel surveys for the South Perth project in 2000 reveal that the car trip numbers were reduced by 14% initially and rebounded by 4% over the next three years of project tracking. Control group surveys reveal an increase of 9% in car driver trips over a period of seven years. The available evidence suggests that an initial step change reduction in car use is followed by a resumption of the general trend of an increase of around 1.3% in car trips per person per annum. The benefits of TravelSmart are almost fully preserved over at least three years.

**Transferable**

By the end of 2008 TravelSmart projects have been completed across a range of inner, middle and outer suburbs in Perth with a total population of 460,000. These suburbs stretch from Clarkson in the north to Rockingham in the south and include a range of urban typologies and socio-demographics.

The TravelSmart program, first trialled in Western Australia, has now been adopted by almost all jurisdictions in Australia with considerable success[v]. The jurisdictions are at different stages of program development and vary with their focus on individual and capacity building programs.

Individual marketing is now widely used to address the demand for travel in developed cities around the world. Projects have been delivered to more than two million people and several specialist dialogue marketing contractors have emerged.

The TravelSmart approach has been applied by many City and National jurisdictions across Australia, Europe and North America:

- The City of Nurnberg in Germany commenced dialogue marketing for public transport in 1996 and has now delivered the service to 250,000 residents representing the vast majority of the City.
- Smaller projects have been run in France, Sweden, Austria and other parts of Germany.
- In the UK the Department for Transport funded a series of demonstration projects in Bristol, several London Boroughs, Gloucester, Frome, Nottingham, South Yorkshire, Cambridgeshire and Leeds.
- In the USA the Federal Transit Administration has coordinated demonstration projects in Washington State, Ohio, North Carolina and Sacramento. Portland, Seattle and Oregon have implemented projects outside of the Federal grant system. In Canada Vancouver has commenced a demonstration project.
- In Australia, State jurisdictions commissioned demonstration projects in Adelaide, Melbourne and Brisbane. The then Australian Greenhouse Office provided contributory funding to South Australia, Victoria, Queensland, Western Australia and the ACT to deliver large-scale projects. The largest project in Australia has just commenced in Brisbane where more than 400,000 residents will be provided with TravelSmart dialogue marketing services.

**Value for money**

The Perth TravelSmart Household program has been delivered over ten years at a total cost of $17.6 million. The vast majority of the program has been funded by the State Government with co-contributions of $3.0 million from the Commonwealth, $1.4 million from Local Governments and $0.4 million from

private bus operators. The full cost of the program is less than $40 per person in the target communities.

The large changes in travel behaviour provide financial and socio-economic returns sufficient to justify the program on the basis of travel behaviour changes sustained for as little as two years. When the full range of community benefits are taken into account (including car operating costs, traffic congestion and road maintenance, pollution and health benefits), it returns more than $30 for every $1 invested (over 10 years)[vi].

From a greenhouse gas abatement perspective the TravelSmart program in Perth delivers a car use reduction of 750 kilometres per target person per annum. This approximates to 225 kg of $CO_2$-e (full fuel cycle) of abatement per target person. Each $1 million of Government investment in the project (with 28,000 target persons) delivers 6,300 tonnes of greenhouse gas abatement per annum. The first year cost is $159 per tonne of abatement. Based on conservative assumptions for an 80 per cent durability of behaviour changes over five years, and no behavioural maintenance costs, the abatement cost falls to $40 per tonne over five years. The 10-year cost (not yet tested by ongoing evaluations) may be around $20 to $30 per tonne. Factoring in the fuel cost savings to the community and the public transport fare revenue take for the government and public transport provider would produce a net negative community cost per tonne of abatement.

Dialogue marketing techniques are deliverable by Commonwealth, State and Local Governments, at reasonable cost (c $200 per household) to communities upwards of 10,000 households. The realistic reach, constrained by making reasonable efforts to contact households, is around 80 per cent of urban and regional centre populations.

**Potential for a wider scope - Living Smart**

The Stern Review recognises that one of the three main policy responses to climate change involves removing barriers. This includes "…action to remove barriers to energy efficiency, and to inform, educate and persuade individuals

about what they can do to respond to climate change"[vii]. Stern also concludes that "Dangerous climate change cannot be avoided solely through high level international agreements; it will take behavioural change by individuals and communities, particularly in relation to their housing, transport and food consumption decisions"[viii]. Additionally the Stern Review recognises that governments, businesses and individuals can all help to promote action through demonstrating leadership.

Water authorities in Western Australia, Victoria and New South Wales have run demonstrations of the TravelSmart (individual marketing) technique to manage water demand. Results from WaterSmart demonstration projects show between a 7 and 12% reduction in water demand from target area households. These savings amount to between 15 and 45 kilolitres of water saved per household per year[ix]. The relative cost of reduction in demand through WaterSmart is approximately 10% of the financial cost of providing increased supply through desalination processes.

The success of the WA TravelSmart Household program has also led to its expansion beyond transport to incorporate other consumer behaviours through a Living Smart (energy, water, waste and travel) demonstration program scheduled to be delivered to 15,000 households during 2008/09. The Living Smart program was funded under the Premier's Action Statement on Climate Change[x] in Western Australia.

Two communications packages are being tested in the demonstration project to compare household engagement in one 'topic' at a time (energy, water, travel or waste) with engagement in a progressive 'package' of actions across all topics. The 'package' design introduces simple behavioural and low cost technologies first, moving on over 12 months to offer advice on more difficult behaviours and home improvement investments.

The potential abatement outcomes from Living Smart are up to four times greater than that of TravelSmart because the potential for home energy efficiency improvements is so great (the typical household can abate 1.5 tonnes of $CO_{2\text{-}e}$ by

simply changing to energy efficient lighting, reducing standby power use and adjusting heating and cooling settings[xi]). The costs of enlarging the scope of TravelSmart to become a cross-cutting program (Living Smart) are approximately 80% higher, for potentially four times the greenhouse abatement outcome.

The Living Smart program is projected to deliver greenhouse gas abatement at a Government cost of between $10 and $20 per tonne depending upon the durability of the transport, energy and water changes achieved. Such outcomes make Living Smart a competitive abatement solution when compared to grants and subsidies for technologies such as photo voltaic systems (such systems will provide a lifecycle greenhouse gas reduction of 60 tonnes at a Government cost of more than $100 per tonne). There are community transformational and electricity grid peak load benefits from both technology and voluntary behaviour change programs such that an integrated package of energy efficiency measures will provide best value outcomes.

**Role for the Commonwealth**

Over the past six years, the Commonwealth Government through the former Australian Greenhouse Office and Department of Environment and Heritage (now the Department of Environment, Water, Heritage and the Arts - DEWHA), has provided essential coordination and funding support for many of the travel behaviour change pilot and demonstration projects. The Commonwealth environment agency has also led a National Travel Demand Management (TDM) Network to facilitate information exchange between the States.

Commonwealth funding for large-scale projects was provided through the Greenhouse Gas Abatement Program (GGAP) and smaller projects funded through the Local Greenhouse Action Program. The results of the GGAP funded TravelSmart projects have been strong, with the collective result projected to deliver more than 1.5 mega tonnes of greenhouse gas abatement for the 2008 to 2012 Kyoto target period at a Commonwealth (GGAP) cost of less than $10 per tonne of greenhouse gas abatement. Results from individual projects are available on the websites of most of the participating jurisdictions (links are available from www.travelsmart.gov.au).

Following the conclusion of the GGAP and Local Greenhouse Action programs, both the Environmental Protection and Heritage Council (EPHC) and Australian Transport Council (ATC) agreed to a collaborative approach to scope travel behaviour change initiatives for inclusion in a National Transport Policy. The ATC Climate Change, Environment and Energy Working Group (CCEEWG), and EPHC Travel Behaviour Change Working Group (TBCWG) were referred this decision for further action. This cross-portfolio approach was a response to recognition of the multiple benefits of travel behaviour change as a legitimate and effective contribution to high priority national (and State) issues including climate change, oil vulnerability and obesity.

Despite the success of the GGAP co-funded program DEWHA advised through the ATC CCEEWG that, after June 2009, it will not be able to provide any funding or provide a coordination role for work on travel behaviour change. Whilst the EPHC is yet to consider options for the future of this working group, it is unlikely that the national transport portfolio will take on this task as the Department of Infrastructure, Transport, Regional Development and Local Government (DITRDLG) does not appear to see a role for itself in this area.

Whilst the CCEEWG has indicated a willingness to consider national level travel behaviour change initiatives, further progress will require an on-going coordination and facilitation role at a national level. Travel behaviour change programs are a relatively new discipline in the transport sector and are likely to require on-going coordination and funding support by the Commonwealth Government at least until they can be mainstreamed.

The multi-sectoral benefits and cross-portfolio nature of travel behaviour change may have led to a lack of national government agency willingness to provide coordination and support. This is despite the fact that, unlike many other TDM measures, travel behaviour change programs have been proven to be effective, can be implemented in the short term, have immediate benefits and are cost effective.

**About the witness**

Colin Ashton-Graham is the Principal Policy Officer Household Sustainability with the Department for Planning and Infrastructure (DPI) in Western Australia. He is a behavioural economist with extensive experience in program development to achieve voluntary behaviour change in personal transport choices. He has also pioneered the adaptation of behavioural techniques to achieve (through reduced consumption of energy, water waste and car travel) cost effective reductions in the carbon footprint of households. Prior to joining DPI Colin was involved in cycling policy development and was a member of the Steering Committee for the UK National Cycling Strategy.

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