New South Wales Transport and Infrastructure

Analysis on release of new annual taxi licences from 1 July 2010

March 2010

PricewaterhouseCoopers

Contents

1 Executive summary

NSW Transport and Infrastructure (NSWTI) has engaged PricewaterhouseCoopers (PwC) to:

- in accordance with section 32C of the *Passenger Transport Act 1990*, develop an approach to determining the number of annual taxi licences (including unrestricted, fringe area and peak availability, but excluding wheelchair accessible taxis (WATs)) to be issued each year by consideration and analysis of the factors that the Director-General is to consider;
- provide a recommendation whether to restrict the number of licences allocated to each applicant or related applicant, and whether there is merit in giving preference to drivers in licence allocation; and
- report on the findings of stakeholder consultations, and analysis to recommend the appropriate number of new taxi licences to be issued in the Sydney Metropolitan Transport District (SMTD) for the year commencing 1 July 2010.

Objectives

The reforms introduced by the Government represent a direct move to encourage taxi fleet growth as well as:

- ensuring that the supply of taxis responds more closely to growth in passenger demand;
- balancing the need for a more affordable means of entry into the taxi market with the need to ensure gradual and sustainable fleet growth;
- reducing barriers to entry and encouraging competition;
- placing downward pressure on fares over time; and
- simplifying existing taxi licence structures.

Process undertaken

In developing a taxi growth model for Sydney, the study considered approaches used in other jurisdictions to estimate the efficient increase in taxi numbers and collected information available from NSWTI and other public sources that could assist in identifying drivers of demand for taxis.

Extensive consultations were then undertaken through meetings with key stakeholders to discuss the most relevant factors to consider in determining an optimal number of licences to release for the year commencing 1 July 2010.

Wider community and industry views were also obtained through the release of an Issues Paper on NSWTI's website on 1 March 2010. Using the range of available information and stakeholder input, a draft taxi growth model was developed.

A stakeholder forum (including representatives from the taxi industry, public transport organisations, the disability community, and other government departments/agencies) was held to discuss the broad approach used in a draft model and the model components.

The draft model was then finalised and presented to NSWTI.

Estimated number of new taxi licences

The recommended release of new additional taxi licences for the year commencing 1 July 2010 is provided below.

Two adjustments are suggested to take account of the backlog in demand, which increases the number of new taxi licences to be released for 2010/11, and for the number of new WAT licences issued which reduces the number of new licences calculated.

New Fleet Growth

Component	Relevant factors to be considered by the Director-General under the legislation	Source	Weighting	Growth	Contri-bution to fleet growth
State final demand *(1)*	Likely passenger demand	ABS; NSW Treasury	20%	2.8%	0.6%
Sydney population size *(1)*	Likely passenger demand	ABS; NSW Dept of Planning	5%	1.2%	0.1%
Unemployment rate *(1)*	Likely passenger demand	ABS[1]	5%	-17.7%	0.9%
Sydney Airport passenger numbers *(1)*	Likely passenger demand	Sydney Airport Corp	10%	4.2%	0.4%
Total network bookings *(2)*	Likely passenger demand	NSWTI	10%	-1.1%	-0.1%
Value of licences *(2)*	Demand for new licences; viability	NSWTI	10%	9.6%	1.0%
Plate lease costs *(2)*	Demand for new licences; viability	IPART	10%	9.0%	0.9%
Annual average pick up time (mins) *(2)*	Performance of existing taxi services	NSWTI	10%	-3.6%	-0.4%
Percentage of pickups within 15 min *(2)*	Performance of existing taxi services; latent demand	NSWTI	10%	0.6%	-0.1%
Percentage of 'no cars available' *(2)*	Performance of existing taxi services; latent demand	NSWTI	10%	-0.1%	0.0%
Taxi fleet growth					*3.2%*
Number of new annual taxi licences					**169**
Adjustment 1: Less uptake of WAT licences for past 12 months, with adjustment for wheelchair passenger volume and the predominantly single-shifting approach to operating WATs *(3)*	Other matters that may be relevant	NSWTI			-22
Adjustment 2: Add backlog in demand *(4)*	Latent demand	NSWTI			21
Net new fleet growth					**167**
Level of interest in past licence releases (5)	Demand for new licences				*Very High*

(1) Based on forecast for 2010/11.
(2) Based on compound annual growth rate since 2006.
(3) WATs generally undertake 1-2 wheelchair customer trips per day and spend the substantial, remaining portion of their time undertaking standard work, thereby increasing the overall market capacity. Most WATs are also single-shifted.
(4) Based on application of model for 2006-2010 and adjusting it for the actual fleet growth over this period including the recent release of 100 taxi licences. This shortfall is assumed to be caught up over the next two years.
(5) A suggested qualitative outcome for the Director-General to consider is the over-subscription of the recent release of 100 new taxi licences by over 7 times, with around 500 bids within a reasonable bid range (based on current market licence rates), indicating a very high industry demand for the new taxi licences.

Another adjustment to the growth model outcome is then required to replace the 149 existing licences (52 unrestricted short-term licences, 7 fringe area licences and 90 peak availability licences (PALs)) which expire during 2010/11.

[1] Usually NSW Treasury's unemployment forecast should be used however, Treasury's unemployment forecast of 6.75% for 2010/11 was made late last year and in light of the pick-up in the economy since then, this forecast may no longer be appropriate. Accordingly, the most recent unemployment rate (i.e. as of February 2010) as published by the ABS has been used for 2010/11.

Replacement Fleet

Existing licences	Number
Short-term unrestricted	52
PALs	90
Fringe area	7
Total	**149**

Conclusion

The taxi growth model has been developed based on the range of available data of relevance to likely passenger and industry demand for taxis. It can be improved by developing and regularly collecting a whole-of-market measure on passenger trips. It is recommended that NSWTI consider collecting additional information for this purpose.

The fleet growth of 3.2% for 2010/11 as suggested by the taxi growth model is towards the lower end of the long-term average demand growth of 3-5% per annum, which is based on an economy growing at trend and relative stability in the market share of taxis, hire cars and tourist vehicles. A fleet growth of 3.2% may therefore be expected, given that the economy is in recovery phase from the recent economic downturn and also the declining market share that the taxi industry is experiencing over time. Moreover, service quality is weighted 30% in the taxi growth model and this has been improving. Whilst it is an important consideration and a good outcome, it is moderating the growth required in the fleet from the long-term growth estimate of 3-5% per annum.

This study did not find any compelling need to issue additional fringe area licences and PALs for the year commencing 1 July 2010, other than to replace existing licences due to expire during 2010/11 with similar licences. It is recommended that NSWTI monitor the need for these additional licences each year.

The study recommends making a certain number of new licences available only to authorised drivers, given the high proportion of applications (around 60%) by drivers for the new taxi licences in the recent tender. This should encourage longer industry participation by providing a career path and greater engagement by operator-drivers with resulting benefits for passengers. In relation to replacement of existing licences, the study recommends they should be available to all applicants, including drivers.

The study does not recommend restricting the number of licences per applicant for the 2010/11 release, preferring to allow free market dynamics to determine the number of licences that an applicant may hold. If a proportion of the new release is allocated to drivers, this should achieve reasonable diversity in the make-up of new licence holders.

2 Introduction

Scope

NSWTI has engaged PwC to:

- in accordance with section 32C of the *Passenger Transport Act 1990*, develop an approach to determining the number of annual taxi licences (including unrestricted, fringe area and peak availability but excluding WATs) to be issued each year by consideration and analysis of the factors that the Director-General is to consider;
- provide a recommendation whether:
  - to restrict the number of licences allocated to each applicant and related applicant; and
  - there is merit in giving preference to drivers in licence allocation; and
- report on the findings of stakeholder consultations, and analysis to recommend the appropriate number of new taxi licences to be issued in the Sydney Metropolitan Transport District for the year commencing 1 July 2010.

Background

Taxi licences in NSW can be purchased directly from NSWTI, or purchased or leased on the secondary market from an existing licensee. As at February 2010, there were 5,231 taxi licences in Sydney across three broad classes of licences: perpetual, ordinary and short-term.

Since 2006, the uptake of new licences in Sydney has averaged around 1% per annum (and has mainly been in the form of WATs).[2] This is because short-term licences available from NSWTI were priced at 14% of the current market value to approximately $1,100 per week, whereas the average lease price for a standard taxi on the secondary market was $550 per week, rendering short-term licences an uncompetitive option.

WATs (which can spend around 90% of their time undertaking standard taxi work) are available at a discounted rate of $1,000 per annum in Sydney from NSWTI. Moreover, ordinary licences that were available from NSWTI were not considered by the industry to be as attractive as those available through the secondary market, resulting in lower fleet growth.

[2] Uptake of WATs has averaged around 13% per annum since 2006.

The new licence arrangements being implemented by NSWTI will help to resolve this issue by allowing interested parties to nominate a rent level that is believed to be fair market value through tender bids or public auction.

The taxi industry has experienced increasing returns to licence owners (including passive investors) while returns to operators and drivers have remained static or declined over time. This is despite the fact that passengers have been subject to regular fare rises as the IPART fare model includes a factor for the change in plate lease rent levels.

Some industry participants have argued that the release of additional licences will reduce returns to existing participants as they face greater competition for a fixed volume of work. Similarly, some current licence holders have suggested that the release of additional licences will negatively affect the value of their licence.

These arguments may not fully consider that taxis compete in the market for transport services, with demand influenced by factors such as price, expected waiting times and perceptions of reliability, safety and service quality. There is likely to be latent or unmet demand for taxi services in Sydney. Most indicators suggest that taxis may have lost some market share to hire cars, tourist vehicles, rental cars, courtesy vans and relatively cheap long-term parking at key locations such as Sydney Airport. However there is potential for taxis to be more competitive through improved services. Western Australia's recent experience with licence reforms may offer some guidance on potential latent demand, whereby an increase in the number of plates of 25% over five years was followed by a similar increase in the volume of work.

An increase in the number of operating licences can reduce response times and availability more generally and may encourage more people to consider taxis as a reliable transport option, thereby increasing overall patronage.

The reforms involve all future new taxi licences issued by the Government in Sydney to be non-transferable annual licences which may be renewed by the licence holder up to nine times on payment of an annual licence fee.

Objectives

The reforms introduced by the Government represent a direct move to encourage taxi fleet growth as well as:

- ensuring that the supply of taxis responds more closely to growth in passenger demand;
- balancing the need for a more affordable means of entry into the taxi market with the need to ensure gradual and sustainable fleet growth;
- reducing barriers to entry and encouraging competition;
- placing downward pressure on fares over time; and
- simplifying existing taxi licence structures.

Relevant factors to be considered by the Director-General

The new supply-based model for Sydney requires the Director-General of NSWTI to determine the number of annual taxi licences (unrestricted, fringe and/or peak) except WATs to be released each year. (WATs will continue to be available on application to NSWTI.)

In making this determination, the Director-General is to have regard to the following matters, as set out in section 32C(3) of the *Passenger Transport Act 1990*:

- likely passenger demand and latent demand for taxi services;
- performance of existing taxi services;
- demand for new taxi licences;
- viability and sustainability of the taxi industry; and
- any other matters that may be relevant.

The Director-General may also consider:

- making a certain number of licences available to authorised taxi drivers only; and
- limiting the number of licences granted to the same or related applicant, to promote competition.

3 Process undertaken

In developing a taxi growth model for Sydney, the following process was undertaken:

- desktop research of approaches used in other jurisdictions to estimate taxi numbers and passenger demand;
- collection of all available information from NSWTI and other public sources such as the Australian Bureau of Statistics (ABS) (both historical data and forecasts as relevant), and analysis of their average annual growth over time and more recently;
- meetings with key stakeholders to discuss the most relevant factors to consider in determining the optimal number of licences to release for the year commencing 1 July 2010;
- release of an Issues Paper on 1 March 2010 to obtain wider industry views on the key indicators of passenger demand for taxi services, and the key indicators of demand for taxi licences. Submissions to the Issues Paper provided comments on the possible indicators of demand (including the possible use of trends in actual pay-ins, taxi utilisation rates, or number of dead shifts as alternative indicators of demand for licences);
- development of a draft taxi growth model based on the range of available information and stakeholder input;
- facilitation of a stakeholder forum (including representatives from the taxi industry, public transport organisations and the disabled community – refer Appendix A for a list of invitees) to obtain feedback comments on the draft taxi growth model; and
- refinement and finalisation of the draft taxi growth model following feedback from the stakeholder forum and NSWTI, and provision to NSWTI.

4 Review of taxi growth models

Taxi growth models

There is no widely accepted model used across jurisdictions within Australia and internationally to estimate the optimum number of taxis. In establishing the number of additional taxis, regulators have used a variety of approaches, from unstructured approaches that may be influenced by industry lobbying or policy considerations (such as Victoria),[3] to structured approaches with the use of formula-based taxi growth models. These taxi growth models differ in their level of complexity, number and type of model components, and weightings used.

Queensland's model

The Queensland model estimates taxi fleet growth with regard to identified four key drivers of taxi numbers.

Driver of taxi numbers	Factors
Demographic changes	Population changes(1); 'appropriate' ratio of taxis to population(2)
Industry issues	Number of network bookings per taxi(1); licence values(1); performance of taxi company operations(2)
Service levels	Satisfaction of response times KPIs(1)
Community expectations	Community satisfaction with taxi services(2)

Notes:
(1) 'Objective' inputs based on data collected
(2) 'Subjective' inputs based on perceptions

As it can be seen, not all elements of the Queensland model are objectively determined. In addition, the relative importance of model components in setting the overall taxi fleet growth appears to be subjective and changeable. In this way, the Queensland model is flexible and provides a degree of discretion, with a key advantage being the simplicity in its approach.

[3] Under a policy decision, the Victorian Government released 600 peak licences over six years from 2003 (i.e. 100 licences every year). It has also announced the release of 200 unrestricted taxi licences for metropolitan taxis and 330 WAT licences later this year.

NSW Taxi Council's model

The Taxi Council proposed a model in 2005 to NSWTI and this was re-evaluated in discussions in stakeholder meetings held as part of this study. The Taxi Council's model is comprised of six components, as shown below.

Component	Weighting
Sydney's population growth	30%
Airport passenger numbers	10%
Change in real licence values	10%
Total network bookings	20%
Annual average pickup time	20%
Percentage of 'no cars available'	10%
Total	**100%**

It is noted that there is an arguably high weighting (30%) placed on population growth, as Taxi Council considers changes in population size as a main determinant of changes in the demand for taxi services. However, people travel more by taxi as incomes rise and business activity increases, with the growth rates for these factors usually being greater than population growth.

Schaller's model

A model was proposed by Bruce Schaller in 2005, based on a regression analysis of six potential factors affecting the actual number of taxis across 118 US cities:[4]

- population size;
- employment;
- vehicle ownership;
- subway rail transit use;
- airport passenger volumes; and
- taxi fares.

[4] Schaller, B 2005, A regression model of the number of taxicabs in US cities, *Journal of Public Transportation 2005, vol.8 no.5*, pp.63-78

Schaller concluded that there are three key factors determining taxi demand, being the number of subway commuters, the number of no-vehicle households and the number of air travellers exiting the airport by taxi.

Other models in transport market growth

The study also examined the approach used to estimate the passenger traffic growth in the airline industry. Like taxis, airlines provide a mode of transportation that is a discretionary form of spending for passengers; the use of air travel and taxi travel would increase during times of strong economic growth, and soften during economic downturns.

Air passenger traffic growth is conventionally linked to GDP growth via a multiplier. For example, a multiplier of 2 means that if GDP growth is forecast to be 3% for 2010/11, then traffic growth is estimated to grow at 6% for 2010/11.

Sydney Airport Corporation and Airbus utilise a multiplier of 1.5 to 2.0[5] whereas Boeing refers to a multiplier of 1.8.[6]

It is also noted that in regards to rail passenger growth, CityRail's forward estimates of passenger demand is linked to CBD white collar employment growth.

[5] Refer: Sydney Airport, *Economic Impact Report 2008*, available at http://www.sydneyairport.com.au/SACL/Economic-Impacts-Report.html; Airbus, *Global Market Forecast 2009-2028*, available at http://www.airbus.com/en/corporate/gmf.

[6] Boeing, *Current Market Outlook 2009-2028*, available at http://www.boeing.com/commercial/cmo/index.html.

5 Proposed taxi growth model

The approach

In theory, the most accurate approach would be to develop a model based on regression analysis of the possible factors influencing the passenger demand for taxis, and determining the predictive power of these factors on taxi numbers. However, this approach requires measurement of the total passenger demand for taxis and substantial data requirements going back at least ten years for each of the possible demand drivers.

Unfortunately, not all of this information is currently available:

- at this point in time, the only measure of passenger demand is the number of network bookings, which the networks are required to report to NSWTI. There is little information available as to the number of jobs performed in the rank, hail and private booking markets, which is believed to generally comprise about 80% of the total Sydney market;
- networks are required to report the satisfaction of KPIs on network jobs to NSWTI. However, reliable KPI reporting has taken place only since 2005/06, and KPI reporting is not done for rank and hail jobs.

As a result of these limitations, a degree of judgement must be exercised in developing a taxi growth model for the Sydney taxi market. As part of this process, the study considered the number of new taxi licences that would be recommended under the Queensland model and the model proposed by the Taxi Council. The study also considered stakeholder views on the potential demand drivers through meetings with key stakeholders and the Issues Paper.

The study then examined the range of available data and analysed the movement in data over time and more recently. A full table of this information has been provided in Appendix B.

Proposed taxi growth model

The final taxi growth model is comprised of ten components, as presented in the table below.

Component	Relevant factors to be considered by the Director-General under the legislation	Weighting
State final demand *(1)*	Likely passenger demand	20%
Sydney population size *(1)*	Likely passenger demand	5%
Unemployment rate *(1)*	Likely passenger demand	5%
Sydney Airport passenger numbers *(1)*	Likely passenger demand; latent demand	10%
Total network bookings *(2)*	Likely passenger demand	10%
Real value of licences *(2)*	Demand for new licences; viability	10%
Plate lease costs *(2)*	Demand for new licences; viability	10%
Annual average pick up time (mins) *(2)*	Performance of existing taxi services	10%
Percentage of pickups within 15 min *(2)*	Performance of existing taxi services; latent demand	10%
Percentage of 'no cars available' *(2)*	Performance of existing taxi services; latent demand	10%
Adjustments		
(A) Less: WAT uptake for past 12 months, adjusted for percentage of wheelchair jobs undertaken and single-shifting model		
(B) Add: Backlog in demand		
Equals new fleet growth		
Add replacement fleet growth for existing licences expiring in 2010/11		

(1) Based on forecast for 2010/11

(2) Based on the compound annual growth rate since 2006

The weightings have been calculated based on a judgement of the relative importance of the key drivers of demand for taxis:

- measures of passenger demand for taxi services contribute 50%;
- the ability of industry to meet key KPIs comprises 30% of the model; and

- industry viability indicators or operator demand to enter the industry comprise 20% of the model.

It is believed that this ten-component model should enable a balanced consideration of factors while retaining simplicity in approach. As the data to support calculations of these ten components is publicly available, the model is also user friendly. More importantly, the model is based on objective inputs.

A discussion of the model components and the bottom line adjustments to the raw output are provided below.

(1) Likely passenger demand and latent demand

State final demand

Conventionally, passenger demand for taxis should be linked to the level of economic activity – in times of increased economic activity, there should be increased business activity (and increased business travel) and increased household incomes (and increased discretionary spending on entertainment travel and travel generally).

State final demand (SFD) has been included as a component in the model as a measure of NSW's economic activity from an expenditure view of the economy. It encompasses expenditure by individuals, businesses and government within NSW's borders.[7]

In comparison, gross state product (GSP) is another common measure of state economic output. It is the total market value of goods and services produced after deducting the cost of production inputs – that is, SFD plus international and interstate trade plus changes in inventories. GSP has not been used in the model because it is a broader measure of economic activity than SFD and includes production activities that may not necessarily influence the demand for taxi services.

An alternative, but narrower, indicator is household disposable income. As disposable incomes rise, people would increase their discretionary spending on items like entertainment, dining out and travel. However, this focuses on households and it does not directly consider business activity.

[7] It includes personal and government expenditure on goods and services, and government and business fixed capital investment.

Sydney's population

Intuitively, the demand for taxi services should partly reflect changes in population size. Population changes feature in both Queensland's model and the Taxi Council's proposed model. However, population increases are typically in the 0.8-1.2% range for NSW and other indicators of transport demand are usually higher than just population growth.

Unemployment rate

Unemployment rate is a macroeconomic measure of labour market activity, which is linked to the level of economic activity. In this regard, there may be overlap with SFD. However, it is considered necessary to include the unemployment rate as an increase in joblessness, or anticipated increase in joblessness, tends to have a more immediate impact on the demand for taxi services.

During the height of the Global Financial Crisis, unemployment rose quickly and the taxi industry reported a decrease in demand from the business sector and also from the leisure market as people curtailed their discretionary spending. Hence changes in unemployment are arguably a meaningful indicator to consider in establishing changes in passenger demand.

Airport passenger numbers

Passenger traffic at Sydney Airport is a significant source of fare revenue for taxis. Volumes through the airport are also correlated to tourism activity levels with tourists being more active taxi users.

One demand indicator is the number of Sydney Airport passengers, although it is acknowledged that airport passenger numbers does not always translate into taxi trips, due to multiple hirings and lost mode share (e.g. to hire cars and airport shuttle buses).

An alternative demand indicator is the number of airport taxi trips, which would directly represent the number of jobs undertaken by taxis. However, Sydney Airport passenger numbers rather than the number of airport taxi trips has been included in the model as:

- total passenger numbers would capture latent demand for taxi services, particularly given the lost mode share; and
- assuming that the average occupancy of a taxi has remained constant over the years, then the change in the number of passenger numbers should correspond to the change in the number of actual airport taxi trips.

Network bookings

Network bookings only represent on average 20% of the total Sydney market and changes in number of network bookings do not necessarily reflect a change in the overall passenger demand if there is a switch to or from rank, hail and private booking markets. However, in the absence of a more complete measure of passenger demand, network bookings are the best current proxy for total taxi demand.

There are possible, alternative measures of the total number of jobs undertaken during the year:

- meter activations – however, meter activations are not readily provided by all networks due to commerciality of information. It is also understood that the number of meter activations can be overstated by drivers switching their meter on and off during a shift; and
- odometer readings – similarly to the above, odometer readings are not collected by NSWTI. Moreover, a change in distance travelled may be due to congestion or increased dead running due to expanding outer suburbs rather than an increase in passenger demand.

Therefore, network bookings have been included in the current model. In this regard, total network bookings (rather than jobs accepted) have been used as this may better reflect passenger demand for taxis. The number of jobs accepted may be influenced by a range of factors including driver availability, peak time of week and major events.

Going forward, NSWTI may consider undertaking a regular survey in the Sydney taxi market to supplement data in the Household Travel Survey in order to understand movements in overall passenger demand.

(2) Latent demand

The model incorporates a feature to estimate and clear the backlog in demand. This is done by applying the model to 2006-2010,[8] with the result that there was likely to be 8% demand growth over this period. Taking into account the actual fleet growth during this time, including the recent release of 100 new taxi licences, the amount of fleet catch-up required was estimated assuming the backlog is to be addressed over two years.

We note that long-term average taxi demand growth has been previously estimated to range from 3-5% per annum, assuming an economy growing at trend (say 3% per annum) and relative stability in the market shares of taxis, hire cars and tourist vehicles.

However, these assumptions have not been firmly held over the period. Taxis have been losing significant market share over this time, partly captured in the model through a decline in total network bookings (which is used as a proxy of total taxi demand). Moreover, the recent economic downturn resulted in a significant growth in the unemployment rate since 2006, which is a relatively volatile component in the model and has pulled down the taxi growth required.

[8] The 2006-2009 period has been used to estimate the backlog in demand because: (a) any model calculations based on this period would not be affected by the issue of Olympic plates and hire car compensation plates, (b) data underlying the model improves after 2005/06.

At the same time, service quality is weighted 30% in the model and this has improved over the period. Whilst it is an important consideration and a good outcome, it is moderating the growth required in the fleet from the estimate of 3-5% per annum.

(3) Viability and sustainability of the industry

Value of licences

Changes in the transfer value of unrestricted licences have been included in the model as a means of representing industry viability as well as demand by people to enter the industry. An increase in licence values would suggest that there is capacity for additional taxis in the industry. An increase in licence values should also generate demand for new licences.

Plate lease costs

Plate lease costs represent a significant cost to taxi operators who lease their plates (it comprises 12% of the taxi cost index,[9] which impacts the pay-in levels for drivers). An increase in rentals arguably indicates the capacity for additional taxis in the industry. Plate lease costs should also be a driver of demand for the new taxi licences – a relatively higher plate lease cost on the secondary market should result in an increased demand for the new taxi licences, and vice versa.

It is noted that industry viability could also be demonstrated through examining the actual pay-ins by casual drivers however, this information is not readily available and would need to be collected by NSWTI.

(4) Performance of existing taxi services

Network KPIs – average pickup times, percentage of pickups within 15 minutes and percentage of 'no cars available'

Part of the policy objectives of the new taxi licences is to ensure that taxi service levels are provided in a safe and efficient manner, and that service levels are being met.

In this regard, it is important to include select KPIs for taxi services in the model – being:

[9] IPART, *2009 Review of Taxi Fares in NSW*, June 2009.

- average pickup times;[10]
- percentage of pickups within 15 minutes; and
- percentage of bookings for which there were 'no cars available'.

In addition, percentage of pickups within 15 minutes and percentage of 'no cars available' are indirect indicators of latent demand – as taxi services become increasingly available and reliable, this should create greater passenger demand.

One point raised in the stakeholder forum was that there may be circularity – for example, pickup times would improve if there are more taxis on the road, but greater taxi supply itself would be dependent on pickup times. However, the inclusion of response times and other KPIs in the model in effect are self-adjusting mechanisms. As service levels improve, this would reduce the need for more taxis in the model.

It should be noted that these KPIs have been reported only since 2005/06. Importantly, these KPIs relate to network jobs only as there are no KPIs reported for rank and hail jobs. In this regard, NSWTI may consider the possibility of an additional reporting requirement by taxis, or alternative measures of data collection such as passenger surveys.

(5) Other matters that may be relevant

Under the legislation, the Director-General can have regard to 'other relevant matters'. It is considered that the resulting 'raw' number of additional taxis in the model should be further adjusted for the following:

- WAT uptake in the past 12 months

  Rentals for WATs in Sydney have been highly discounted by NSWTI at $1,000 per annum to stimulate WAT uptake to improve response times for WAT passengers. However most WATs generally undertake an average of 1-2 wheelchair customer trips per day, with around 90% of their time spent undertaking standard taxi work, which increases the overall taxi market capacity for all taxi passengers. Therefore, the number of additional taxi licences should be adjusted to account for WAT fleet growth.

  This was done by considering the number of WAT licences issued in the past 12 months, adjusted for the average ratio of wheelchair work undertaken and the single-shifting of most WATs (WATs are

[10] From 2006 to 2008, the average pickup time KPI related to both network jobs and internally offloaded jobs (bookings offloaded to another network within the same bureau service). After 2008, this KPI was split into the average pickup time for network jobs with no offloads and the average pickup time for internally offloaded jobs. While this means that the average pickup time KPI from 2006 to 2008 is a different measure to the KPI after 2008, in the absence of any other information this comparison was made in the model. Going forward, this issue should disappear over time as there would be the one, consistent set of response time KPI being reported.

precluded from changing over from 2-5pm, which means that they are less likely to be double-shifted).

- Expired licences

  The number of existing short-term unrestricted licences, fringe area licences and PALs due to expire in 2010/11 should be incorporated into the model as they will need to be replaced. (Fringe area licences and PALs may be replaced with a similar class of annual licence, and short-term unrestricted licences may be replaced with the new unrestricted annual taxi licences).

Period of application of data

The taxi growth model uses 2010/11 forecasts for state final demand, population size, the unemployment rate and airport passenger numbers in order to capture a 'live' measure of the demand for taxi services.

For all other components, forecasts are less readily available and the compound annual average growth rate (CAGR) since 2006 has been used in order to consider the more recent service performance of taxis and industry viability, and because data availability and reliability (particularly in relation to network jobs) improves after 2006.

Overall, the above approach has been structured to try to better reflect current supply and demand conditions so as to achieve a more balanced outcome.

Estimate of new taxi licences to be released for 2010/11

The recommended release of new taxi licences for the year commencing 1 July 2010 is provided below.

Two adjustments are suggested to take account of the backlog in demand, which increases the number of new taxi licences to be released for 2010/11, and for the number of new WAT licences issued which reduces the number of new licences calculated.

New Fleet Growth

Component	Relevant factors to be considered by the Director-General under the legislation	Source	Weighting	Growth	Contri-bution to fleet growth
State final demand *(1)*	Likely passenger demand	ABS; NSW Treasury	20%	2.8%	0.6%
Sydney population size *(1)*	Likely passenger demand	ABS; NSW Dept of Planning	5%	1.2%	0.1%
Unemployment rate *(1)*	Likely passenger demand	ABS[11]	5%	-17.7%	0.9%
Sydney Airport passenger numbers *(1)*	Likely passenger demand	Sydney Airport Corp	10%	4.2%	0.4%
Total network bookings *(2)*	Likely passenger demand	NSWTI	10%	-1.1%	-0.1%
Value of licences *(2)*	Demand for new licences; viability	NSWTI	10%	9.6%	1.0%
Plate lease costs *(2)*	Demand for new licences; viability	IPART	10%	9.0%	0.9%
Annual average pick up time (mins) *(2)*	Performance of existing taxi services	NSWTI	10%	-3.6%	-0.4%
Percentage of pickups within 15 min *(2)*	Performance of existing taxi services; latent demand	NSWTI	10%	0.6%	-0.1%
Percentage of 'no cars available' *(2)*	Performance of existing taxi services; latent demand	NSWTI	10%	-0.1%	0.0%
Taxi fleet growth					*3.2%*
Number of new annual taxi licences					**169**
Adjustment 1: Less uptake of WAT licences for past 12 months, with adjustment for wheelchair passenger volume and the predominantly single-shifting approach to operating WATs *(3)*	Other matters that may be relevant	NSWTI			-22
Adjustment 2: Add backlog in demand *(4)*	Latent demand	NSWTI			21
Net new fleet growth					**167**
Level of interest in past licence releases (5)	Demand for new licences				*Very High*

(1) Based on forecast for 2010/11.
(2) Based on compound annual growth rate since 2006.
(3) WATs generally undertake 1-2 wheelchair customer trips per day and spend the substantial, remaining portion of their time undertaking standard work, thereby increasing the overall market capacity. Most WATs are also single-shifted.
(4) Based on application of model for 2006-2010 and adjusting it for the actual fleet growth over this period including the recent release of 100 taxi licences. This shortfall is assumed to be caught up over the next two years.
(5) A suggested qualitative outcome for the Director-General to consider is the over-subscription of the recent release of 100 new taxi licences by over 7 times, with around 500 bids within a reasonable bid range (based on current market licence rates), indicating a very high industry demand for the new taxi licences.

The fleet growth of 3.2% for 2010/11 as suggested by the taxi growth model is towards the lower end of the long-term average demand growth of 3-5% per annum, which is based on an economy growing at trend and relative stability in the market share of taxis, hire cars and tourist vehicles. A fleet growth of 3.2% may be therefore expected, given that the economy is in recovery phase from the recent economic downturn

[11] Usually NSW Treasury's unemployment forecast should be used however, Treasury's unemployment forecast of 6.75% for 2010/11 was made late last year and in light of the pick-up in the economy since then, this forecast may no longer be appropriate. Accordingly, the most recent unemployment rate (i.e. as of February 2010) as published by the ABS has been used for 2010/11.

and also the declining market share that the taxi industry has been experiencing. Moreover, service quality is weighted 30% in the taxi growth model and this has been improving. Whilst it is an important consideration and a good outcome, it is moderating the growth required in the fleet from the estimate of 3-5% per annum.

Another adjustment to the growth model outcome is then required for 149 existing licences (52 unrestricted short-term licences, 7 fringe area licences and 90 peak availability licences (PALs)) which expire during 2010/11.

Replacement Fleet

Existing licences	Number
Short-term unrestricted	52
PALs	90
Fringe area	7
Total	**149**

6 Other key matters

Peak demand

The taxi market, like other passenger transport markets, is subject to peak passenger demand at certain times during the week (Friday and Saturday nights, and Saturday mornings) and during major events. At the same time, there are off-peak periods where a large number of taxis compete for a small number of jobs.

Peak availability licences were first released mainly as a solution to the high waiting times experienced during afternoon and early morning changeover periods, and have provided partial relief of this issue, along with the regulation of WAT changeover times. However, there are still some sizeable peaks during the week.

Anecdotally, it is understood that for around 10-20 hours a week (e.g. Friday/Saturday evenings and some periods in the morning commuter peak), the industry experiences a high peak in demand. Activity on Friday is often about 50% above average levels across the rest of the week. The taxi industry also features a degree of seasonality with activity levels in November/December being some 40% higher than most other months.

An increasingly common practice is for taxi operators to bundle peak and off-peak shifts to drivers, for example, by requiring drivers to take the taxi for Monday and Tuesday shifts, to earn the opportunity to drive on the higher yielding Friday night shift.

Any release of taxi licences into the market will go some way towards alleviating peak passenger demand, but would not address the off-peak issue. Airlines and hotels address the peak issue through strong pricing signals, but the taxi industry does not have an effective mechanism on hand.

Although extra PALs could be issued by NSWTI (either in addition to or in substitute for some of the new taxi licences), this would hinder the policy move towards simplifying licence arrangements. This study sees some potential merit in new peak licences but also acknowledges a range of regulatory and compliance issues with such plates.

On the other hand, free market principles suggest that the hours of operation of the new taxi licences should be left as a commercial decision for the taxi operator / driver.

Overall, it is suggested that existing PALs due to expire in 2010/11 be replaced with similar peak licences to retain the number of taxis that address the peak and afternoon changeover issue. In the longer term, it is suggested that a more robust position is formed on the merit of having proportionally more peak licences with a focus on better matching passenger demand profiles and on options to overcome compliance issues.

Fringe area licences

This study did not receive any feedback raising the need to issue additional fringe area licences for Richmond/Windsor and Helensburgh for the year commencing 1 July 2010. It is recommended that NSWTI monitor the need for additional licences in these fringe areas each year. The seven fringe area licences due to expire in 2010/11 should be replaced with a similar licence for continued services targeted to these areas.

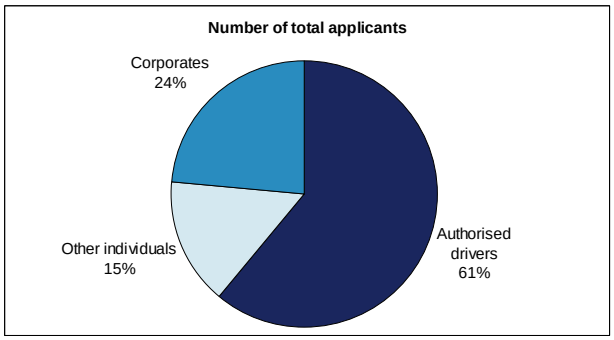
Restrictions on number of new taxi licences available for applicants

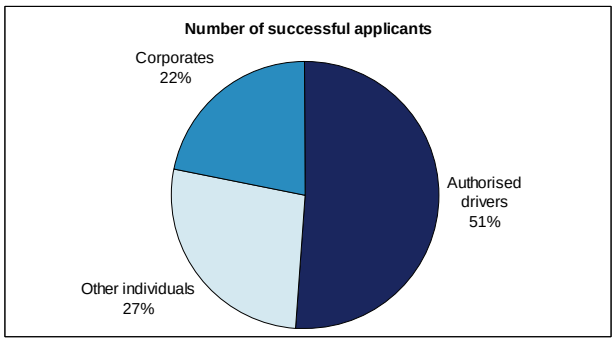
Under the legislation, the Director-General may consider:

- making a certain number of licences available to authorised taxi drivers only; and
- limiting the number of licences granted to the same applicant, to promote competition.

The study recommends making a certain number of licences available only to authorised drivers given the strong interest by this group in the recent tender. This should encourage longer industry participation by providing a career path and greater engagement by operator-drivers with resulting service quality benefits for passengers. Drivers should also be free to bid for the batch of licences to replace expiring licences (i.e. replacement licences should be open to all applicants).

As shown below, authorised drivers comprised 60% of total applicants for the 100 licences recently released, and around 50% of these 100 licences were awarded to authorised drivers.





The study does not recommend restricting the number of licences per applicant for the 2010/11 release, on the basis of letting free market dynamics determine the number of licences that an applicant may hold. There are benefits for passengers and the industry to allowing holders of the new licences to build their share in the industry if it is financially viable to do so.

In addition, if a proportion of the new licences is allocated to drivers, this should achieve reasonable diversity in the make-up of new licence holders.

Appendix A Stakeholder forum

The following organisations attended the stakeholder forum on Friday 19 March 2010:

- NSW Taxi Council
- NSW Taxi Drivers Association
- Australian Taxi Drivers Association
- Action for Public Transport
- Physical Disability Council
- Better Regulation Office
- NSW Transport & Infrastructure

The following stakeholders were invited but were unable to attend:

- Tourism and Transport Forum
- Sydney Chamber of Commerce
- City of Sydney Council
- Sydney Airport
- Council of Social Service of NSW

Appendix B Data table

Component	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010(f)	2011(f)	CAGR 2001-2009	CAGR 2006-2009
Gross state product ($m)	295,636	302,287	311,145	317,755	323,072	329,578	335,828	345,336	348,789	354,021	362,872	2.1%	1.9%
State final demand ($m)	270,517	277,046	290,741	304,192	314,561	319,800	326,703	341,121	347,261	350,734	360,379	3.2%	2.8%
Real gross state income ($m)	275,477	283,785	293,990	306,974	317,150	325,907	335,828	349,917				3.5%	3.6%
Household disposable income ($ weekly)	589		602	669		721		821				4.9%	6.7%
Unemployment rate	6.0%	6.1%	5.8%	5.4%	5.0%	5.3%	4.6%	4.6%	6.4%	6.5%	5.4%	0.8%	6.5%
Employment (full-time persons) ('000s)	2,279	2,244	2,259	2,299	2,363	2,364	2,405	2,480	2,407			0.7%	0.6%
Total employed persons ('000s)	3,049	3,074	3,122	3,163	3,228	3,274	3,347	3,428	3,395	3,395	3,420	1.4%	1.2%
Sydney population ('000s)	4,128	4,163	4,191	4,225	4,256	4,282	4,345	4,400	4,442	4,496	4,550	0.9%	1.2%
Number of zero vehicle households ('000s)	225	218	213	214	211	214	218					-0.5%	1.9%
Number of one vehicle households ('000s)	650	644	655	649	654	660	658					0.2%	-0.3%
Total annual passenger journeys on City Rail ('000s)	302,600	276,400	273,400	273,300	270,300	273,700	281,300	296,100	304,800			0.1%	3.7%
Number of Sydney Airport passengers ('000s)	25,814	23,150	23,447	26,090	27,954	28,996	31,016	32,701	32,346	33,704	35,120	2.9%	3.7%
Number of Sydney Airport taxi trips ('000s)							2,814	2,973	2,844			N/A	0.5%
Total number of taxi licences in Sydney	4,306	4,351	4,396	4,853	4,875	4,990	5,120	5,164	5,221	5,231		2.4%	1.5%
Value of licences	$208,653	$234,719	$275,418	$272,167	$257,074	$277,524	$295,868	$369,958	$363,457	$400,522		7.2%	9.4%
Plate lease costs (unrestricted licences)	$17,010	$19,500	$21,914	$22,398	$20,806	$22,100	$25,000	$27,534	$28,600			6.7%	9.0%
Total network bookings ('000s)						12,998	13,257	13,193	12,486	12,449		N/A	-1.3%
Average annual pick up time (excl offloads) (mins) (1)						7.50	7.87	8.47	7.67	6.47		N/A	0.7%
Percentage of pickups within 15 min						92.4%	92.1%	91.4%	93.3%	94.6%		N/A	0.3%
Percentage of pickups within 30 min						99.2%	99.1%	99.0%	99.2%	99.4%		N/A	0.0%
Percentage of 'no cars available'						1.4%	1.5%	1.9%	1.5%	1.4%		N/A	1.9%
Number of authorised drivers	21,056	21,736	22,687	22,739	22,709	22,093	23,185	23,215	23,829	23,275		1.6%	2.6%
Drivers per taxi	5.1	5.3	5.5	5.0	5.0	4.7	4.9	4.9	5.0	4.9		-0.2%	2.0%

(1): From 2006 to 2008, the average pickup time KPI related to both network jobs and internally offloaded jobs. After 2008, this KPI was split into the average pickup time for network jobs (excl. offloads) and the average pickup time for internally offloaded jobs

Appendix C Sources of data used in the data table

Component	Relevant factors to be considered as set out in the legislation	Data source
State final demand	Likely passenger demand	ABS cat. no. 5206.0 Australian National Accounts: National Income, Expenditure and Product, Table 21 (seasonally adj.) NSW Treasury Half-Year Budget Review
Sydney population size	Likely passenger demand	ABS cat. no. 3101.0 Australian Demographic Statistics (Table 5, data cube) NSW Department of Planning's Population and Housing Projections
Unemployment rate	Likely passenger demand	ABS cat. no. 6202.0 Labour Force, Table 4
Sydney Airport passenger numbers	Likely passenger demand	Sydney Airport Corporation, Sydney Airport Master Plan
Total network bookings	Likely passenger demand	NSWTI
Real value of licences	Demand for new licences; viability	NSWTI
Plate lease costs	Demand for new licences; viability	IPART annual taxi fare reviews
Annual average pick up time (mins)	Performance of existing taxi services	NSWTI
Percentage of pickups within 15 min	Performance of existing taxi services; latent demand	NSWTI
Percentage of 'no cars available'	Performance of existing taxi services; latent demand	NSWTI