Victorian
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Commission

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29 June 2015

Mr Matthew Lennox
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Taxi Services Commission
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Dear Mr Lennox

ADVICE ON THE ADEQUACY OF REGULATORY IMPACT STATEMENT

Thank you for seeking advice on the Regulatory Impact Statement (RIS) on the proposed New Specifications for Fare Devices which the Taxi Services Commission (TSC) considers to be a legislative instrument for the purposes of the *Subordinate Legislation Act 1994*.

The Victorian Competition and Efficiency Commission (VCEC) advises on the adequacy of RISs as required under section 12H(3) of the *Subordinate Legislation Act 1994* (the Act). I advise the final version of the RIS received by the VCEC on 29 June 2015 meets the requirements of section 12H of the Act.

The VCEC's advice is based on the adequacy of the evidence presented in the RIS and is focused on the quality of the analysis rather than the merits of the proposal itself. **Therefore, the VCEC's advice that the RIS is adequate does not represent an endorsement of the proposal.**

The VCEC notes that in the process of developing the RIS, the TSC revised the proposed specifications to become more technologically-neutral and performance-based which is intended to allow for greater innovation and competition in fare devices and the associated components. Given the potentially complex technology involved and the dynamic nature of the sector, stakeholder feedback on the flexibility of the proposed standards and approach will be important in making a final decision.

In the interests of transparency, it is government policy that VCEC's advice be published with the RIS when it is released for consultation.

If you have any questions, please contact RegulationReview@vcec.vic.gov.au.

Yours sincerely

Andrew Walker
Assistant Director
Victorian Competition and Efficiency Commission

TAXI SERVICES COMMISSION

NEW SPECIFICATION FOR

FARE DEVICES

REGULATORY IMPACT STATEMENT

June 2015

Regulatory Impact Solutions

Summary of Regulatory Impact Statement

Taxi Services Commission — New Fare Device Specification

Has the VCEC assessed the RIS as meeting the Victorian Guide to Regulation requirements?	Yes

Form of regulatory change proposed in this RIS

☐ The establishment of new regulations
☐ The amendment of existing regulations
☐ The replacement of sunsetting regulations
☒ Other

The problem and objectives of the proposed intervention

Current Fare Devices in taxis provide only limited information. The regulator has access to trip information but it is often unreliable, not timely, incomplete and not accurate.
Passengers are not informed about performance of the industry and therefore unable to compare services.
Competition in Multi Purpose Taxi Program (MPTP) processing is stagnant and is not assisted by barriers that have arisen from the technical architecture of the program implemented by the government over 15 years ago when technical solutions were limited.

The objectives of the new Fare Device specification are:

- To improve customer experience and choice in the use of taxis
- To improve passenger and driver safety
- To improve policy decision making
- To improve the administration and integrity of the MPTP.

Affected sector(s) of the public

The proposed measures directly affect taxi operators and Fare Device manufacturers, and may indirectly affect network service providers (NSPs). Ultimately, the benefits of the measures will be experienced by taxi drivers and passengers. Vision impaired passengers will gain particular benefit. The cost of the measures (reflected in higher costs of Fare Devices) will be borne by taxi operators, but may be passed through to passengers through very small increase in fares, subject to regulatory approval.

Is small business (<20 staff) specifically affected?	Yes

Key regulatory changes

The proposed new Fare Device specification:

- Improves customer experience by:
  - Providing audible automated announcements at the beginning and end of each trip of the fare and its calculation
  - Automatically adjust fares when road tolls are applicable, and make an announcement when the toll has been added
- Improves regulation and policy decision making through the transmission of data in near real time
- Removes the reliance of MPTP administration on EFTPOS devices and enable a Fare Device to process MPTP transactions, while protecting against fraud
- Provides a less prescriptive specification to enable more technological innovation in providing Fare Device services.

Costs and benefits

Costs

In net present value terms, the incremental cost of the new Fare Devices is estimated to be around $1.3 million per year over the next ten years (using a real discount rate of 4 per cent). If this were passed on in full to taxi fares, it would represent an increase of about 0.16 per cent, or an additional 4 cents on an average $20 fare.

This is considered an upper estimate of costs, being based on existing technological capabilities. The proposed specification does not limit the types of solutions that could be pursued, providing significant scope for more innovative approach based on emerging or alternative technologies.

	Benefits Benefits were not able to be separately quantified, however were assessed as part of a multi-criteria analysis. However, one expected saving is reduced costs to the industry from taxis affiliation, where affiliation is maintained only to meet GPS tracking requirements. The proposed new Fare Devices will include GPS capability, removing the need for many taxis to be affiliated. This is estimated very conservatively to save the industry around $700,000 per year, and is likely to be higher.

Alternative options considered
There has been extensive consultation on the development of the new specification. This process has included a draft proposal in 2014 of a highly prescriptive specification. Consultation with manufacturers and other industry and customer stakeholders identified a range of alternative options. The assessment of costs and benefits for this regulatory impact assessment also led to lower cost options being developed. Ultimately, the Taxi Services Commission has identified the lower burden (least prescriptive) option as the preferred approach, with other options providing a higher level of device integrity and reliability but at higher cost. The Commission also considered that the alternative options initially identified would have limited innovation and create a barrier to technological changes that could have a substantial impact on costs in the medium term.

Who was consulted	Explain position
Fare device manufacturers	Supportive of making a new specification to give certainty to market. Manufacturers provided information on feasibility of achieving objectives and costs of doing so. Manufacturers assisted in identifying alternative options.
Taxi customers (including special needs users)	Supportive of new measures related to fare announcements, automatic tolling, real time data. Identified additional opportunities for further requirements.
Victoria Police	Supportive of measures related to improved safety and incident tracing.

Are regional areas specifically adversely affected?	No	
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Abbreviations

EFTPOS – electronic funds transfer at point of sale

ESC – Essential Services Commission

GPS – global positioning system

Inquiry – Taxi Industry Inquiry

MPTP – Multi Purpose Taxi Program

MDT – Mobile Data Terminal

NSP – Network Service Provider

RIS – Regulatory Impact Statement

SRG – Stakeholder Reference Group

TCA – Transport Certification Australia

TSC – Taxi Services Commission

VCEC – Victorian Competition and Efficiency Commission

VGR – *Victorian Guide to Regulation*

WAT – wheelchair accessible taxi

Purpose and content of Regulatory Impact Statement

Regulation is an important tool for governments seeking to achieve policy objectives and to respond to community needs. However, there is increasing awareness that inappropriate or poorly-designed regulation can place an undue burden on business, the not-for-profit sector, government sector organisations and the community as a whole. The effect of this is to impede business growth, innovation and entrepreneurship.

As part of the policy development process, it needs to be clear that the costs of any regulatory intervention – no matter how small the burden imposed may appear – are at least offset by the benefits to society. This expectation is formalised in Victoria through the requirement for a Regulatory Impact Statement (RIS) to be prepared if a proposed statutory rule or legislative instrument may impose a significant economic or social burden on a sector of the public.

The Taxi Services Commission (TSC) believes the proposed new Fare Device specification is a legislative instrument for the purposes of the *Subordinate Legislation Act 1994* (Subordinate Legislation Act) because:

- as a result of issuing the new Fare Device specifications, the content of the obligation of taxi operators to comply with regulation 44 of the *Transport (Buses, Taxi-Cabs and Other Commercial Passenger Vehicles) Regulations 2005* (Regulations) will be affected
- all taxis will be required to use a Fare Device of a type approved by the TSC. Only Fare Devices that comply with the new Fare Device specifications will be approved by the TSC
- developing and implementing the new Fare Device specifications will involve consideration of a range of policy matters, including privacy.

Following an assessment of costs as part of this process, the TSC does not believe that the new Fare Device specification will impose a significant burden on a sector of the public, as the total costs of implementation are relatively low. Nevertheless, the TSC has elected to prepare a RIS to enable further consultation with the wider community and to validate the assessment of costs and benefits.

The *Victorian Guide to Regulation* requires a RIS's depth of analysis, and subsequently the resources used in impact assessment to be proportionate to the size of the impact of the regulatory/legislative proposal being assessed. This is to ensure that the government's resources are focused on scrutiny of proposals that are likely to have the greatest impact on business and the wider community, and avoiding a disproportionate amount of time and effort being spent on those proposals with smaller impacts. Therefore, given the expected cost burden is below the threshold that would normally trigger a RIS to be prepared, the level of evidence and analysis contained in this RIS has been proportionate to the size of the cost burden. In particular, where direct evidence has not been available, the TSC has relied on stakeholder consultation, which has been extensive to date. In a number of important areas, this RIS asks stakeholders to provide further views and comments.

The primary objectives of a RIS are to ensure:

- regulation is only implemented where there is a justified need
- only the most efficient forms of regulation are adopted
- there is an adequate level of public consultation in the development of subordinate legislation.

The Subordinate Legislation Act and the Guidelines made under that Act set out the requirements of a RIS. These essentially require that a RIS must include:

- a statement of the objectives of the proposed statutory rule (s. 12H(1)(a)). The Guidelines require that the objectives should be stated in terms of the policy objectives, or outcomes, being sought to resolve the policy problem, regardless of the form the solution takes (clause 159)
- a statement explaining the effect of the proposed statutory rule (s. 12H(1)(b))
- a statement of other practicable means of achieving those objectives, including other regulatory as well as non-regulatory options (s. 12H(1)(d))
- an assessment of the costs and benefits of the proposed statutory rule and of any other practicable means of achieving the same objectives (s. 12H(1)(e)). The assessment of the costs and benefits must include an assessment of the economic, environmental and social impact and the likely administration and compliance costs including resource allocation costs (s. 12H(2))
- the reasons why the other means are not appropriate (s. 12H(1)(f)).

While not a formal requirement under the Subordinate Legislation Act, the *Victorian Guide to Regulation* sets out a consistent approach to develop regulatory proposals. This RIS incorporates the steps outlined in the *Victorian Guide to Regulation* by organising the RIS into the following sections:

Policy development steps	
1	**Identify the problem or issue** There must be a clear and demonstrable problem or issue that needs to be addressed.
2	**Specify desired objectives** In addressing the problem, what are the outcomes the government wants to achieve?
3	**Identify options to achieve the objectives** Outline the different approaches that could be taken to achieve the desired outcomes.
4	**Assess the costs and benefits of the different options** To make a decision about how to achieve the outcomes in the most efficient and effective way, the options need to be compared and contrasted in an objective, consistent, and transparent way.
5	**Identify the preferred option and describe its effect** To ensure that the most effective tool to achieve the desired outcome is selected, it is important to analyse how the preferred option will function in practice.
5a	**Undertake competition assessment** Any regulatory proposal needs to be scrutinised to assess whether it will have an adverse impact on the ability of firms to enter and participate in the market.
6	**Develop an implementation plan for the preferred option** Successful implementation of the preferred option requires up front consideration of a range of practical issues involved in putting the preferred option into action.
7	**Detail the evaluation strategy** Consistent with the government's commitment to continuous improvement, mid-term and ex-post evaluations of regulatory activities will be conducted with a view to enhancing the efficiency and effectiveness of meeting government objectives and ensuring that there is a robust evidence base for future decision-making.

Source: Adapted from Victorian Guide to Regulation (2014), page 8.

This RIS and the proposed Fare Device specification will be available for a period of 28 days to allow public feedback. TSC will consider all submissions made prior to making a final decision on the new specification.

1 Identifying the problem or issue

The first step of a RIS is to identify the nature and extent of the problem to be addressed. This is an important threshold step in evaluating the need for government intervention. This section outlines the nature and extent of any social, economic and environmental costs of the problem or market failure.

The Victorian taxi industry

Taxis play an important role in Victoria by complementing other forms of transport, particularly unmet demand for public transport, and providing a means of transport for those with limited mobility.

Taxi services are a small but important part of transport services in Victoria, representing (with hire cars) approximately seven per cent of total public transport patronage in metropolitan Melbourne and about 32-35 million trips in Victoria annually. They provide flexible, 'point-to-point' transport that gives people a level of mobility not offered by other services such as trains, trams and buses. Persons with a disability are particularly reliant on taxis and Multi Purpose Taxi Program (MPTP) members – who are eligible due a severe and permanent disability – account for over ten per cent of total taxis trips in Victoria. Taxis are critical to the business, social and recreational lives of Victorians and make an important contribution to Victoria's liveability.

Taxis play a critical role in Victoria's tourist industry, giving visitors their first and last impressions of our state and having a major impact on the long term 'brand' of Melbourne and Victoria. The industry also makes a substantial economic contribution to Victoria, with annual revenue of between $700 and $800 million.

There are currently around 5,800 taxis licensed throughout Victoria.

Regulation of the taxi industry affects many parties: taxi licence owners and operators, taxi drivers, taxi network service providers (NSPs), equipment manufacturers, as well as taxi passengers.

The Taxi Services Commission (TSC) is a statutory authority of the Victorian Government established under the *Transport Integration Act 2010* (Vic). The TSC's primary objective is to regulate the commercial passenger vehicle industry in Victoria. The commercial passenger vehicle industry predominantly comprises taxi-cab and hire car services, but also covers special purpose vehicles. The TSC is responsible for issuing and monitoring accreditation to drivers of taxi-cabs and hire cars.

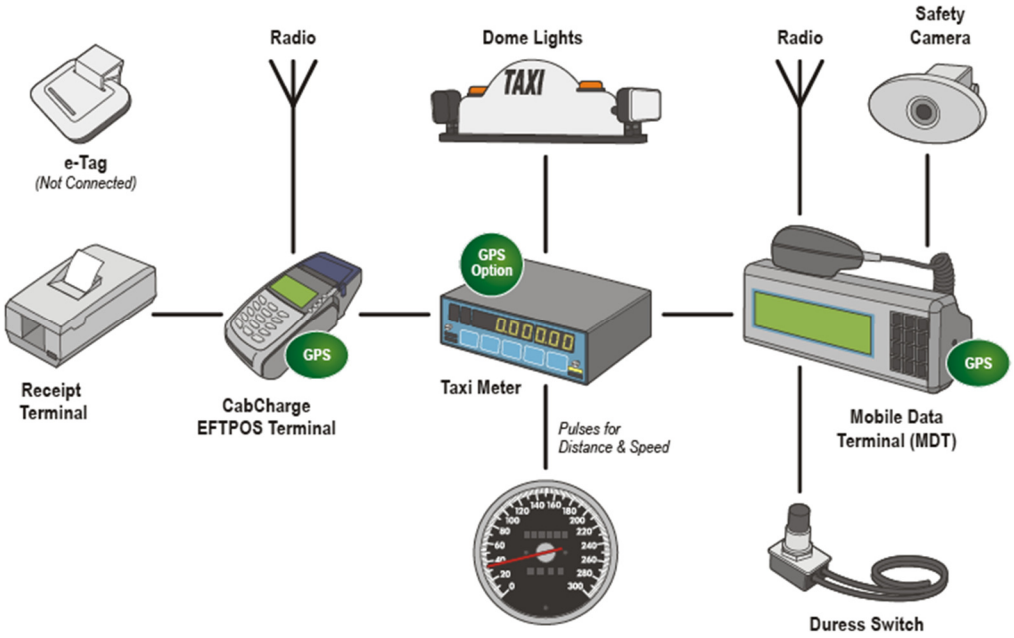
The TSC administers the MPTP, a scheme that provides its members – who have severe and permanent disabilities – with a 50 per cent subsidy of their taxi fares, up to a maximum subsidy of $60 per trip. Depending on the nature of the disability, eligibility may also depend on a person's financial circumstances.

Fare devices

A Fare Device is a device that is used to record and show the fare payable for a journey. It is a central piece of equipment within the context of operating a taxi. All taxis must carry a taximeter (a Fare Device used specifically in taxis) that is of a type approved by the TSC and that meets certain requirements set by regulation. The primary function of the Fare Device is to calculate the total fare payable by a passenger based on a fare structure set by the Essential Services Commission (ESC). Fare devices also have a secondary function of providing shift records that support driver payments. The TSC has adopted the term 'Fare Device' in recognition that taximeters will now be required to include functionality over and above that found in traditional taximeters, and that taximeters are a subset of the potential Fare Devices that may emerge for use in commercial passenger vehicles.

The figure below shows how a Fare Device in a taxi is connected to other essential parts of the taxi.

Figure 1: Required equipment in Victorian taxis



There are currently five manufacturers of Fare Devices that have previously been approved for use as taximeters in Victoria. Of all Fare Devices currently installed in taxis in Victoria, it is estimated one manufacturer has supplied around 50 per cent of the market, another around 35 per cent, and two manufactures share the remaining 15 per cent, with one manufacturer effectively not active in the market.

All Fare Devices approved for use in taxis:

- receive pulses from the vehicle's drive shaft to calculate the distance travelled
- are capable of interfacing with mobile data terminals (MDTs) in order to indicate whether the Fare Device is operating or not, which is necessary for dispatch operations (an MDT is the part of an overall dispatch system that is installed in a vehicle)
- have the capacity, in accordance with the MPTP interface standard, to connect to an EFTPOS terminal in order to transmit the fare to the MPTP back office (the Cabcharge terminal is currently the only EFTPOS terminal that meets this standard)
- are connected to security cameras to attach taxi status to captured images
- are connected to the dome light in line with the requirement to show the taxi's hiring status
- are secured against tampering and adjustment. Changes to how the device operates (including fare calculation through calibration) requires the devices to be manually adjusted by approved persons.

The current regulatory framework

The regulation of the commercial passenger vehicle industry in Victoria is administered under the *Transport (Compliance and Miscellaneous) Act 1983* (Vic) and TSC is the licensing authority under that Act.

The *Transport (Buses, Taxi-Cabs and Other Commercial Passenger Vehicles) Regulations 2005* prohibit the operation of a taxi unless it has a fitted taximeter of a type approved by the TSC and is compliant with the regulations. The TSC may also use its power under regulation 44 to cease to approve particular types or to approve new device types on an ongoing basis.

The problems to be addressed

The problems to be addressed can be summarised in the following table.

Table 1: Summary of the problems being addressed

Area	Nature of problem	Extent of problem
Customer experience	Passengers do not always understand how fares are calculated, or can have confidence in it being calculated fairly. Tolls currently have to be manually added to the fare at the end of a journey. Vision impaired passengers (who rely on taxis disproportionately compared to other forms of transport) are at a particular disadvantage from current taximeter arrangements.	The extent is unknown, in part because of lack of comprehensive data about taxi trips. However, these issues were of significant importance to the Taxi Industry Inquiry to warrant specific recommendations. The TSC has discussed these matters with stakeholders groups who have validated a need for better information about taxi fares.
Inadequate safety of drivers and passengers	Related to lack of real time data, the inability to investigate incidents that do occur and use of information to understand the safety aspects of the industry.	The extent of the problem is unclear, mainly due to the fact that data has not previously been available to identify its true prevalence.
Constraints on the efficient regulation and oversight of the taxi industry	The regulator (TSC) does not have access to accurate, reliable and timely information about the taxi industry. This inhibits the ability to make sound policy and regulatory decisions. In obtaining any data, there needs to be confidence in its accuracy.	The Taxi Industry Inquiry identified many areas where centralised data about the taxi industry was lacking, and where the existence of data would be beneficial in making better informed policy and regulatory decisions. Current approaches to obtain data are untimely, costly, and in general result in incomplete or unusable data.
Lack of competition in MPTP processing	Current policy arrangements have created a barrier to entry for the processing of MPTP subsidies.	The particular effects on passengers are unknown. The Taxi Industry Inquiry identified this as an area warranting reform. There is a risk to service continuity should the current provider withdraw. The system currently has a cost to government in the form of payments to the provider to maintain the service.

The first three problem areas overlap in their essential functional requirements—i.e., what data a Fare Device can generate, store, and provide to others. The fourth element, the current inability of Fare Devices to process MPTP payments, is somewhat standalone. All elements were considered in detail in the Taxi Industry Inquiry (Inquiry) commissioned by the Victorian Government in 2011.

Customer experience

Taxi passengers suffer an information asymmetry (relative to the operators) as they do not always understand how fares are calculated, or can have confidence in fares being calculated fairly. The TSC receives regular complaints about incorrect fares being charged, however the problem to be addressed relates to the possibly many more cases where passengers are not aware that they may be incorrectly charged. The extent is unknown, in part because of lack of comprehensive data about taxi trips. However, these issues were of significant importance to the Inquiry to warrant specific recommendations. As part of the development of this RIS, the TSC discussed these matters with stakeholder groups who have validated a need for better information about taxi fares.

Vision impaired passengers (who rely on taxis disproportionately compared to other forms of transport) are at a particular disadvantage from current taximeter arrangements, which only require the fare to be displayed on the taximeter. Vision impaired passengers rely solely on the honesty and competency of the driver to advise on the fare to be paid. Unfortunately, given the nature of the problem, the incidence of vision impaired passengers being charged the incorrect fare is not known. Peak stakeholder groups representing these users were very clear that the current arrangements were not suitable.

During stakeholder consultation, it was identified that there is a small segment of taxi users that are deaf-blind passengers, many of whom rely on taxis regularly, and that are at a particular disadvantage in relation to receiving information about their taxi trips and fares.

Safety

Driver and passenger safety is an ongoing concern within the taxi industry and the wider community.

The community should be able to expect taxis to be safe. However, incidents do occur. In such situations, investigations can be difficult where there is inadequate data about a particular taxi, such as identifying date, time and location. Further, there is no current system to allow tracking of taxis that would be able to identify any abnormal behaviour that may evidence incidents that have occurred, such as hired taxis not moving for prolonged periods or detouring from the most direct route between pick-up and drop-off location. In the past, taxi drivers who have assaulted passengers have covered the safety camera. In cases such as this, granular detail about a taxis location and route will help to build a case against a driver or, conversely, serve as evidence in their defence.

While in no way explaining all incidences where safety is compromised, the TSC understands from consultation with industry and other stakeholders that the absence of real time tracking of taxi activity is a missed opportunity to provide a deterrent to some known incidences. This is similar to the benefits of the safety cameras that are currently installed in taxis. However, safety cameras cannot at this stage be remotely accessed by any party, and images can only be downloaded from the taxi physically by TSC authorised officers at the request of a police officer, necessarily after the occurrence of an incident. Nevertheless, awareness that taxis are fitted with cameras is considered to significantly deter anti-social behaviour. Similarly, an awareness that taxis are tracked is believed to further discourage criminal activity.

Public awareness of taxi tracking will deter theft of taxis or the use of taxis in other crimes, which also happens quite frequently. The kind of example that the TSC envisages will utilise real time tracking information most commonly is where it is necessary to know which taxis were in a specific vicinity at a specific time. This will assist in locating taxis known to be involved in critical incidents such as a hit and run, where a witness or victim could not record the taxi plate number.

Furthermore, detailed tracking will result in a manifold increase in the TSC's capacity to track MPTP fraud. Without detailing the various and complex ways in which drivers have defrauded the program, the TSC believes that many of those methods would be identified through real time GPS tracking.

Availability of useful data

A key finding of the Inquiry was that the poor availability of accurate, reliable and timely data in critical areas was of concern for several reasons:

- It makes it difficult for policy-makers to assess the success or otherwise of current regulations and policies, and to design and implement effective new policies.
- It makes it very difficult for the regulator to focus its attention on 'problem areas' or to adopt a risk-based approach to compliance.
- It constrains competition, as consumers have no means of comparing performance between taxi networks and/or operators.
- It greatly exacerbates the difficulties in integrating taxi and hire car services more fully with community and public transport services.

In the absence of verifiable data, it is extremely difficult to gauge the ongoing performance of the industry, including the ability to monitor the effects of industry changes.

The Inquiry found[1]:

> *The poor availability of data in reaction to crucial aspects of the industry's performance hinders the development of effective regulation. The industry regulator needs timely access to reliable information and the best way to obtain this information is directly from the cab.*

The Inquiry discussed this problem as being due to:

- an industry reluctant to provide accurate data to the regulator on time, hindering the development of effective regulations and policy
- a lack of information on service provider performance impacting on customer choice and constraining competition in the industry
- out-dated technology and insufficient capacity from the industry makes data collection and analysis inefficient and costly.

Existing regulatory requirements impose an administrative burden on taxi operators and NSPs in providing compliance and performance data to the TSC, most of which the TSC considers is of degraded value as a result of data quality problems. For example:

- NSPs and operators are required to record an extensive set of data in relation to taxi operation, compliance and safety performance. This data does not need to be kept in any format but must be made available to the regulator

[1] Draft Report, page 42.

when requested. The lack of defined or agreed formats for the recording of this information, in conjunction with the current open interpretation of the information required to be recorded, means that, when the regulator does request the data on a regular basis, it must spend considerable time converting the data into a form that it can use.

- Taxi information systems have not been developed to support the provision of this data. Much of the data must be manually extracted from computer systems and filing cabinets by NSPs and taxi operators in processes that are both labour intensive and result in poor data quality (e.g., duplicate and missing records and date ranges, data not provided in a timely manner).
- Manually collating data is labour intensive and costly for both the industry (in collecting and collating the data) and the regulator (in converting the data into a useable form) and results in large amounts of unusable or unverifiable data.
- To date, the regulator is receiving data in a standard format through the use of electronic dispatch systems. There are almost 100 NSPs across Victoria but only around 20 use electronic dispatch systems. There are three types of dispatch systems in use currently and each vary in terms of the method for, and ease of, data extraction. While a very small number of NSPs have in-house capability to extract their own data, the majority of NSPs need to rely on their dispatch system provider to extract the data. For this the provider generally charges the NSP a fee. In the case of one dispatch system, data extraction is not supported by the supplier and an external contractor needs to be engaged in order perform the task.

While the data request to NSPs is a standing request that requires data to be submitted on a monthly basis, it is nearly always the case that NSPs have fallen behind in the submission regime (this can be due to such issues as system upgrade difficulties or resourcing problems) and subsequently larger batches of data need to be provided. The TSC regularly experiences instances where NSPs cease to provide data for a period of time, sometimes for many months. While this has rarely been due to an explicit refusal to cooperate with the data collection process, there have clearly been attempts to frustrate the process with some NSPs failing to respond to requests. In these cases the TSC has had to expend significant resources following up with NSPs, assessing whether the delay is due to a reasonable operational issue and, if not, taking appropriate legal steps in order to enforce compliance. Even when NSPs do comply, issues arise with NSPs providing data in inconsistent formats. The TSC has to check the data and, if there are problems, make the decision whether to spend considerable time correcting it or go through the process of requesting that the data be resubmitted in the required format. In either case, considerable effort is expended and time wasted.

Operators are no longer required by law to be affiliated with a NSP and therefore this avenue to receive data will no longer be viable.

Agencies such as the Essential Services Commission (ESC) require data to inform optimal fare setting. The most recent fare determination did benefit from the data obtained by the Inquiry and further data obtained by the TSC, but the ESC has informed the TSC that it considers more granular data is necessary in order to investigate more innovative fare structures. The ESC also sees the lack of real time data as a barrier to more appropriate fare structures; for instance a distinct tariff or flat fare for all trips occurring wholly within the CBD.

In the past the taxi regulator had difficulty determining whether the release of additional licences was warranted since there was no data to assess taxi supply, demand or revenue. This meant that the debate was reduced into an argument

between incumbent operators and others about the need for more taxis based on anecdotal evidence. While licence restrictions have effectively been abolished, the industry in general is still heavily regulated in the areas of zoning, pricing and the setting of arrangements between operators and drivers to name a few. The TSC requires detailed data on industry operations to ensure that adjustments in policy settings need not have to rely on anecdotal evidence.

The Inquiry was initially frustrated and delayed by a lack of hard data until it eventually obtained a full Metropolitan trip dataset through the Melbourne NSPs – at the time the most comprehensive taxi industry dataset ever collected in Australia. However, no data on the non-metropolitan sector of the industry was available, which was frustrating to the Inquiry as it was believed that the characteristics of the industry in the non-metropolitan zones were quite different to its metropolitan counterpart. In many cases the Inquiry was left with no choice but make reform recommendations for the entire state based on evidence about the metropolitan sector.

A clear example of a less than optimal policy setting that would have been avoided had sufficient data been available is the setting of times in which Peak Service taxis were allowed to operate. When the Peak Service operation times were set in 2003, the regulator was guided by industry incumbents because of the lack of any reliable and useful data. Peak Service operation times were set at 3.00pm to 7.00am, seven days a week. Analysis of trip data by the Inquiry showed that these times were inappropriate – the Peak Service taxis were being forced off the road just prior to when demand was at its highest level, and allowed back onto the road just as weekday demand was at its very lowest.

Lack of detailed and accurate data also constrains determining the most efficient locations in which to place taxi ranks, and assisting Melbourne Airport (which accounts for 19 per cent of metropolitan taxi pick-ups and drop offs) in developing the various rules governing taxis, which have, in the past, proven to be ineffective, contentious or seen as unfair.

It is important to note that the issues with data availability do not substantially relate to creating 'new' data, but being able to collate and analyse data that would already be created within existing in-taxi devices.

Multi Purpose Taxi Program

The MPTP began in 1983 and was first administered by VicRoads, which was at the time the regulator of Victorian taxis.

Initially MPTP taxi fares were subsidised using a paper voucher system. Drivers submitted completed vouchers to be reimbursed for the subsidised part of the fare. In 1999, Victoria was the first state to move to an electronic smartcard system to administer its disability subsidy scheme.

Following a tender process, Cabcharge Australia Pty Ltd (Cabcharge) was successful as the provider of MPTP system related services. This arrangement is non-exclusive, but no other entity has been able to meet the criteria.

This arrangement effectively made it mandatory for all Victorian taxis to have a Cabcharge terminal installed in Victoria due to licence conditions specifying that this terminal be used to process MPTP transactions. The design of the system relies on a EFTPOS device and the requirement for a secure interface with taximeters for the provision of fare data. Some taxis operate with additional EFTPOS devices – known as 'secondary' terminals, which must also be type-approved by the regulator – for transactions not related to MPTP (e.g., credit or debit card).

Opening MPTP processing to other providers was an important recommendation of the Inquiry.

The Inquiry found that the Victorian Government had inadvertently contributed to creating barriers to entry within this market. The Inquiry examined taxi-specific payment instruments and other equipment and acknowledged that there are numerous interconnected factors that have contributed to the state of play. The Inquiry's Draft Report stated:

> *The Victorian Government has inadvertently created barriers to entry to the payment instruments and payment processing market through (a) its policies allowing Cabcharge to be the sole provider of data collection services for the Multi Purpose Taxi Program (MPTP) and (b) through the approvals process for EFTPOS terminals in cabs. These barriers can and should be removed.*[2]

The Inquiry was not able, however, to quantify the consequences of lack of competition for MPTP processing. The TSC has no further data on the extent of this problem.

Past taxi regulation and the apparent low level of interest in the electronic payment processing market has resulted in low levels of innovation and competition in the equipment and services market, which is likely to be reducing industry choice and inflating costs. Examples include:

- Taxi-specific EFTPOS requirements have forced the industry to develop taxi-specific payment services and have created the need for a new payment intermediary to be added between the merchant (i.e., taxi driver or operator) and the banks, introducing a cost burden to the industry that is ultimately borne by the consumer.
- The Regulations have provided, and continue to provide, a single supplier for the provision of MPTP in taxi-cabs.

Consequential problems

Addressing the problems outlined above raises additional problems that have not previously been necessary to consider explicitly in relation to current taximeters. For example, using Fare Devices to process MPTP payments will require a certain degree of integrity in the ability to process transactions securely and accurately.

Using Fare Devices to provide real time data to the regulator will necessarily require the devices to meet a high level of acceptable performance (in both functionality per se, as well as accuracy and completeness of data provided). Some environmental factors may affect the performance of Fare Devices. Even though malfunctions are relatively rare at present, reliability will become much more important should Fare Devices be used more directly for ongoing data provision. It is therefore necessary to consider, should the core functional requirements of Fare Devices be increased, that additional measures be put in place to ensure that the devices continue to operate effectively. With the TSC relying on the Fare Device itself for data, there will be a need for the Fare Devices to be able to store data that has not been transmitted, particularly where a taxi is out of network range.

[2] Taxi Industry Inquiry, *Customers First: Service, Safety Choice – Draft Report,* 2012, p. 250

Questions for stakeholders

Do you agree that the problems outlined in this section exist? Are these problems that should be addressed by changes to Fare Devices?

What evidence is there that lack of competition in MPTP processing is having an adverse effect in Victoria? What are the consequences if the current situation is not changed?

The TSC believes that the current manual systems for data extraction are labour-intensive and costly. Is this a correct assumption? Are there alternative solutions for collating data?

The extent of the problems to be addressed is not clear, largely because of the lack of data available to the regulator about taxi trips. Do you agree that the problems are sufficient in size or risk to warrant new action in this area?

2 Specifying the desired objectives

RIS objectives are stated in terms of the policy objectives, or outcomes, being sought to resolve the policy problem, regardless of the form the solution takes.

Objectives should be stated in terms of the ends to be achieved rather than the means of its achievement (i.e., the strategy).

In formulating objectives, it is important to ensure that they accord with the objectives, principles, spirit and intent of the authorising Act, and that they are consistent with the objectives of other legislation, statutory rules and government policies.

It is also important that the objectives are consistent with, or contribute to, the achievement of the government's strategic policy aims. Thus, where appropriate, this RIS identifies any pre-existing policy authority for the proposed measure – for example, a relevant government decision or policy announcement.

The authorising Act

Regulation 44 of the *Transport (Buses, Taxi-Cabs and Other Commercial Passenger Vehicles) Regulations 2005* (Vic) provides for the TSC to approve types of taximeters.

Government policy

The TSC continues to implement the Inquiry's recommendations that received the support of the Government in its formal response to the Inquiry's final report.

Objectives

The objectives of the new Fare Device specification are:

- to improve customer experience in the use of taxis
- to promote competition in MPTP processing
- to improve policy decision making
- to improve passenger and driver safety.

The objectives also require the costs to be considered, in particular the burden on the taxi industry and potential for increased costs to customers.

3 Options to achieve the objectives

The 'base case'

The base case is the future outcome if the proposed legislative instrument (or any other decision by government) is not made. This is the starting point from which benefits and costs of the different options can be assessed.

In the absence of establishing a new Fare Device specification, taxis will continue to be required to operate taximeters of types previously approved by the TSC. Essentially, this means that existing taximeters will continue to be used. Manufacturers could voluntarily offer additional features that would benefit taxi operators through greater information and analytics. Indeed, most manufacturers already had plans to move down that path prior to the TSC commencing the development of a new Fare Device specification. However, the introduction of enhanced Fare Devices has not occurred to date, in part due to a cost disadvantage of being a first mover.

Options identified

The options identified in this RIS are necessarily limited to Fare Device specifications. Given the nature of taxi-cabs in the foreseeable future, devices that calculate fares will always be required, and therefore capabilities that are relevant to fares are appropriately considered within the context of regulating Fare Devices. It is also relevant that:

- the TSC has a power to approve Fare Devices under existing regulations
- the Fare Devices that meet a new specification need not be physically within a traditional meterbox, but may comprise a system of interconnected components. Therefore, options that seek to introduce new capabilities in Fare Devices are not, in effect, distinct from options that introduce the same capabilities as standalone equipment.

The options therefore focus on different design features for new Fare Devices.

Core design elements

The options are designed to incorporate all of the Inquiry's concerns about taximeters. New Fare Device standards would improve customer information, assist in fraud prevention, enable all components of the fare to be displayed and voiced, and ensure that Fare Devices are tested by independent experts. The Inquiry noted that the audible announcement of fare components as they occur offers advantages to users with a disability and to the wider community.

The Inquiry's recommendations included the following additional functional requirements:

- Taximeters
  - Include all components of the fare such as tolls
  - Voice transmit all components of the fare
  - Be accurate in line with international standards
  - Flexibility for frequent rate change, variable rates and discounting of fares
- Performance data provided to the TSC
  - Trip and fare data transmitted directly and on a continuous basis from the vehicle
  - Service delivery data from Network Service Providers (NSPs)

The Inquiry also recommended opening MPTP payment processing to additional electronic payment processing providers by reducing barriers to entry. Despite the acknowledgement that MPTP payments would require some link to the taximeter in order to obtain the correct metered fare, the Inquiry did not specifically recommend that taximeters themselves should process MPTP payments.

The Inquiry included specific recommendations relating to the function and operation of Fare Devices:

Customer experience/service

Device functionality – variable fare structures, taximeter and receipt information, automatic inclusion of fare components such as tolling and audio for the vision impaired.

Provision of data

Collection of industry data, including GPS tracking, directly from taximeters to inform the TSC and associated agencies such as the Essential Services Commission (responsible for setting fares). Benefits from this information include improved customer service through informed choices and ability to assess the outcomes of regulations, policies and the reform agenda. Detailed taxi trip data will be combined with existing data held by the TSC in its newly established data warehouse. Granular trip and shift data will enable close monitoring of: taxi occupancy rates; wait times; dead-running time, distance and expenses; and, other standard industry measures. The TSC will thus have a clear understanding of where the problems, if any, exist.

Existing driver and operator accreditation data can be matched against trip, fare and shift data within the data warehouse to determine whether there are any particular cohorts within the industry that are being inadequately remunerated. In particular detail about wheelchair accessible taxi (WAT) services in comparison to conventional services will allow the TSC to take steps – either through incentive adjustments or other regulatory measures – to meet its obligations under the *Disability Discrimination Act 1992* (Cth) and the associated Disability Standards for Accessible Public Transport (DSAPT) to make WAT services as reliable and responsive as conventional services. Furthermore, the data transmitted from Fare Devices will enable the constant monitoring of the devices themselves in terms of fare calculation accuracy.

The TSC has designed the data warehouse in such a way that TSC compliance officers will be able to track a number of nominated taxis (and by extension drivers) at a time. This is the primary benefit of real time data: that particular taxis identified for some kind of compliance intervention can be efficiently located with minimal resources. At the moment, compliance officers (and sometimes Victoria Police) need to go through a very complex and time-consuming process that involves liaising with NSPs (the current custodians of real time tracking data) in order to locate taxis.

Beyond this, the fact that the data is sent in real time actually reduces the burden on Fare Device providers in terms of collecting data detailed enough to obviate the need for a third party (effectively an NSP) to GPS-track a taxi (the mechanism by which voluntary affiliation will be supported). By setting up a real time system the TSC no longer requires a Fare Device Service Provider to maintain a back office system. The real time model means the Fare Device just needs to transmit a GPS point and, upon receiving the receipt acknowledgement, drop it from the memory.

Therefore, although the real time factor enables the extremely useful function of tracking of some taxis when necessary, the point of real time is that it is the most efficient and cost-effective way of collecting the granular data required.

Opening the Multi Purpose Taxi Program (MPTP)

'Opening' of the MPTP system, which supports the administration of a program to subsidise taxi fares for members of the program to a specific trip and annual amount. The current system is considered closed with limited ability for new entrants.

The Inquiry considered that changing the arrangements for MPTP data collection and payment processing was a 'starting point' to removing regulatory barriers to competition in the electronic taxi payment processing market. The Inquiry Draft Report specifically mentioned that the introduction of taximeters that are capable of directly streaming trip and fare data directly to the TSC (which would result from the implementation of a separate inquiry recommendation) would remove the MPTP's reliance on EFTPOS terminal-based data collection solution.[3] This was in reference to the valuable shift data that the TSC receives as a by-product of the electronic payment system.

The Inquiry recommended that MPTP administration arrangements be changed to allow a greater number of EFTPOS payment providers to be able to process MPTP transactions. An overview of how a more open system might look was provided by the Inquiry's Information Systems Review (the review). The solution presented by the review involved allowing wireless interfacing between taximeters and EFTPOS terminals, and replacing the current MPTP member card with a debit card.

However, following extensive consultation with taxi industry equipment suppliers and others, TSC found that there are significant logistical and resource obstacles to building a system as described by the review and that the system would deliver limited benefits. In particular, it is unlikely that the system envisaged by the review would have any material effect on competition in the payment processing market due to the virtual monopoly in the taxi-specific payment instruments market and the fact that electronic service fees have been capped at five per cent (GST inclusive) by the Victorian Government.

The TSC determined that a cohesive in-taxi technology solution could be achieved. This solution (centred on Fare Device functionality) would leverage off the data streaming requirement – that will ensue from a separate government-endorsed inquiry recommendation – in order to process MPTP transactions and record driver shift data through a single system.

The TSC consulted Fare Device manufacturers and it was established that it was possible to process smartcards and hence MPTP payments through Fare Devices. This solution would be more efficient than an EFTPOS-based solution as it would leverage off the expectation that Fare Devices will transmit real time trip and fare data directly to the TSC in any case. The TSC elected to adopt this approach.

This approach has the added benefit of removing the need for the TSC to involve itself in the type-approval of EFTPOS devices (both MPTP capable terminals and secondary terminals). It makes sense that the Fare Device – the requirements for which the TSC has explicit power to determine – be used to support a program administered by the TSC.

[3] Draft Report, p. 261

Other jurisdictions

All other Australian states have minimum requirements for the performance and operation of taximeters. All states except Queensland are broadly in line with the current Victorian arrangements, and therefore a similar approach is the same as the base case. Queensland has been at the frontier in making improvements to taximeter requirements.

Queensland Automation of Taximeters

New laws were introduced on 1 July 2014 that require taximeters to do certain things and drivers to do certain things.

Taximeters must be automated

- for certain tariff times and public holidays
- to change back to the standard tariff applicable for that time of day after completing a higher tariff
- to apply tolls and access fees
- to reset once the journey is completed and the fare paid
- to reset once the taxi has travelled a certain distance after the taximeter has been paused or stopped
- to restrict use of the extras button to once per journey for application to booked jobs

Taximeters must be enabled to apply a quoted fare or a set fare

Taximeters must be sealed

Drivers must

- provide itemised receipts on request
- accept all methods of electronic payment.

The Queensland government expects that the new laws will reduce incidences of the public being overcharged for taxi fares that may improve public perception of taxi services generally through enhanced confidence in the taxi system and greater transparency of taxi fares. This may also lead to a reduction in fare disputes and complaints. The changes are also expected to better protect earnings for operators.

Consultation with the industry identified that taximeters that achieve the Queensland requirements could be introduced in Victoria relatively quickly and for a cost around the same as current taximeters (i.e., around $300 per year). There is also no significant increase in ongoing costs associated with this model. However, for the purposes of this RIS, the Queensland model is not considered an option as it fails to address most of the problems and objectives identified in earlier sections of this RIS.

However, the Queensland model is clearly a case where Fare Devices are used in taxis as an efficient and effective means of meeting new objectives. The experience in New York City similarly illustrates how modern taximeters can be used.

Case study: New York City

New York has the highest profile mandated taximeter technology and functionality. The New York City Taxi and Limousine Commission (TLC) requires that taxis be fitted with the following technology:

- provision of a Passenger Information System, including a screen with a map showing the route taken by the taxi
- acceptance of debit and credit cards (previously optional)
- text message service between the taxi and the TLC
- automated collection of trip data and transmission to the TLC.

The TLC has three approved technology providers and every taxi is required to use technology and services provided by one of these providers. These services include provision of text messaging service; collection, viewing and distribution of Trip Sheets, advertising, credit/debit card authorisation and help desk support.

When introduced, the TLC expected the benefits of the system to be:

- better passenger information and service
- improved taxi usage by being able to tell taxi drivers where services are required
- increased taxi usage because of the acceptance of EFTPOS
- reduced administrative overheads.

The New York technology installations were viewed favourably because the technology contributed towards a seamless passenger and driver experience.

Options

The first option assessed in this RIS is the version of the specification that was initially developed in mid-2014 as the starting point of consultation with industry. The specification was developed by Transport Certification Australia (TCA), which was commissioned by the TSC to specifically develop a taximeter specification, in consultation with stakeholders, to meet the government's objectives. TCA is a national body established by Australian Governments in 2005 to provide assurance through the use of telematics and other intelligent technologies.

The initial specification not only included all of the core policy elements outlined above, but was a comprehensive approach to ensure that Fare Devices and Fare Device Service Providers met strict standards and functions to provide the highest level of confidence in the ongoing performance of the Fare Devices through robust certification and audit measures.

During the first phase of consultation on the initial specification and early development of this RIS, concerns were raised about the costs of achieving the initial specification. As such, a second option was identified that retained most of the core functional requirements, but relaxed some of the other prescriptive requirements related to the business processes of Fare Device Service Providers, instead leaving it up to these firms to ensure the quality of devices and integrity of data. Under this option Fare Device Service Providers would not need to maintain a back office system to keep copies of all records generated by Fare Devices (although they would not be precluded from doing so in order to support marketable data-driven features that benefit operators), and the TSC's data warehouse would assume the role of a common back office. Furthermore, reports generated by the data warehouse would

routinely check the integrity, functionality and operation of Fare Devices. By assuming the role of a common back office system, and responsibility for monitoring the health of Fare Devices, the TSC would relieve Fare Device Service Providers of significant overhead and ongoing costs.

During the development of this RIS, the TSC identified that the proposed specification could limit future technology options. Emerging technology, such as use of applications ('apps') on mobile devices, are currently being used in other countries and in other non-taxi services. Such technology can track distance via GPS and include payment capability. This would appear to dispense with the need for a traditional taximeter that calculates fares based on pulses from a vehicle's drive shaft altogether. During early 2015, a third option was developed that went even further in minimising the prescriptiveness of the specification, by defining only the required outcomes, and not locking in any particular solution or, more importantly, not proscribing any future technology solutions that might emerge in the future. This option differs from the second option in that it would no longer necessarily require a traditional taximeter solution, but could meet the specification by, for example, developing a customised app to be used on a dedicated mobile device. There would, however, need to be a requirement that such a device should be attached to, and identified with, a specific licensed commercial passenger vehicle, either physically or wirelessly.

The table below summarises the essential elements of each option. The bold text highlights some of the differences between the options.

Table 2: Summary of options

Objective area	Option 1	Option 2	Option 3
Type of solution	*Builds on traditional taximeter* *Requires established connection to pulses to calculate speed and distance*	*Builds on traditional taximeter* *Requires established connection to pulses to calculate speed and distance*	***Not linked to traditional taximeter solution*** ***Can determine own approach to calculating speed and distance (e.g., GPS)***
Customer experience in the use of taxis	Calculation of fares Visual display Audio speaker for trip and fare information Ability to print a trip receipt Automatic addition of tolls to fare **Include an internal microphone to make a recording within the taxi-cab to document that the fare information was announced and was audible** **Transmit the audio recording to the regulatory with other trip data record**	Calculation of fares Visual display Audio speaker for trip and fare information Ability to print a trip receipt Automatic addition of tolls to fare	Calculation of fares Visual display Audio speaker for trip and fare information Ability to provide a trip receipt Automatic addition of tolls to fare
Improve policy decision making	Generate data records on trips and taxi use Non-volatile memory to store records that have not yet been transmitted	Generate data records on trips and taxi use Non-volatile memory to store records that have not yet been transmitted	Generate data records on trips and taxi use Non-volatile memory to store records that have not yet been transmitted
Improve passenger and driver safety	Generate data records on trips and taxi use Transmit data in real time (at least every ten seconds)	Generate data records on trips and taxi use Transmit data in real time (at least every ten seconds)	Generate data records on trips and taxi use Transmit data in real time (at least every ten seconds)
Competition in MPTP processing	Smartcard reader to process MPTP payments	Smartcard reader to process MPTP payments	Smartcard reader to process MPTP payments
Overarching performance and integrity (i.e., required to meet other functions)	GPS receiver and antenna Mobile data communications transceiver and antenna Manual selection and input interface	GPS receiver and antenna Mobile data communications transceiver and antenna Manual selection and input interface	GPS receiver and antenna Mobile data communications transceiver and antenna Manual selection and input interface

Objective area	Option 1	Option 2	Option 3
	Internal power supply	Internal power supply	Internal power supply
	Real time clock	Real time clock	Real time clock
	Remote update of fares and MPTP disable lists	Remote update of fares and MPTP disable lists	Remote update of fares and MPTP disable lists
	Retain data for up to 7 days if no external power supply	Retain data for up to 7 days if no external power supply	Retain data for up to 7 days if no external power supply
	Security seals to Australian standard	Security seals to Australian standard	Security seals to Australian standard*
	Performance to Australian standard in relation to vibration, temperature, electromagnetic interference and emissions	Performance to Australian standard in relation to vibration, temperature, electromagnetic interference and emissions	Performance to Australian standard in relation to vibration, temperature, electromagnetic interference and emissions
	Resistant to dust and water ingress to international standard	**Resistant to dust and water ingress suitable to taxi use**	**Resistant to dust and water ingress suitable to taxi use**
	Fare device service providers to be certified according to demonstrated capacity to meet specified business processes	**Fare device service providers to be certified according to demonstrated capacity to meet specified business processes**	**Fare device service providers to put products through a type-approval process**
	Monitor status of the ignition and independent movement sensor for 7 days if no external power		
	Fare device service provider to maintain back-office data collection function with periodic reporting requirements		

* Security seals are physical in nature, albeit performance-based in terms of how it can be achieved. The specification is not prescriptive in how security seals should be implemented – this is left to innovative approaches.

Questions for stakeholders

Are there other feasible options that could be considered?

How could alternative options be designed? For example, should the TSC consider variations to standards used in the specification?

What are the impacts (costs and benefits) of any alternative options?

4 Costs and benefits of the options

Costs under the 'base case'

In the base case, there is already substantial cost on the taxi industry in relation to Fare Devices. Current Fare Devices have an effective life of up to 20 years, although they are often replaced more frequently due to technology improvements becoming available, or to coincide with vehicle replacement (only vehicles up to 6.5 years old can be used as conventional taxis in Victoria). Therefore, manufacturers have indicated that Fare Devices are replaced at around 10 years, on average. The current minimum cost of a new Fare Device that meets current regulatory requirements is around $300 per device (based on industry consultation).

Therefore, on a business as usual approach, Fare Device replacement would cost around $173,400 per year (there are currently 5,800 taxis licensed in Victoria).

There are other costs under the base case. These include:

- Reporting costs – network service providers are currently required to report to the TSC on a regular basis data on taxi services. Through preliminary consultation, this is estimated to cost around $100,000 per annum.
- Updating costs – when tariff changes are required to be made, taxis need to be taken off the road and present at an approved premises to have the device updated. This involves a direct cost of the work, but also an opportunity cost of having the taxi off the road. This is difficult to quantify in total, as there have been limited tariff changes in recent years. Feedback from manufacturers indicates that a reasonable assumption is a manual changeover of 15 minutes per taxi, and $100 per hour to cover both the costs of the upgrade and the opportunity cost for the taxi – a single change in tariff across the entire taxi fleet would cost around $145,000. It is assumed that following the reforms of the taxi sector underway, which include the ability to nominate fares below the regulated maximum, that tariffs in Fare Devices may need to occur at least once per year on average over the next decade.

These above items suggest that under the business as usual case, there would be costs to the taxi sector of around $420,000 per annum associated with Fare Devices, or around $72 per taxi (compared to an average operating cost of a taxi of around $56,000 per year). Market factors would determine the extent to which costs could be passed on to other parties within the sector, however, the ESC is also able to take account of such costs of operating taxis when looking at fare setting. If all these costs were reflected in taxi fares, the incremental cost to fares would be around 0.02 per cent[4], or less than 1 cent for an average $20 fare.

There are also costs to government under the business as usual approach. These costs include payments to Cabcharge to operate the MPTP payment system, and costs to the TSC of gathering data from existing sources. These costs have not been separately measured as they relate to current taximeter specifications (i.e., government costs relate to regulating the sector overall and have not been attributed to individual components). Therefore, the emphasis in this RIS is to identify costs under each of the options that are genuinely incremental to all current activities.

Costs and benefits of each option are measured on a basis incremental to those under the base case.

[4] Based on total annual fare revenue of $800 million.

Costs and benefits of Option 1

Costs

There are a number of costs imposed in meeting a new specification. These are:

- Cost of devices—the cost of individual Fare Devices would be expected to increase under Option 1. While the minimum cost of meeting the core functionality would only lead to a small increase in cost, additional prescriptive requirements to ensure data integrity and device operation are likely to have a more substantial impact on the cost. Industry consultation indicates that the cost of a device may increase substantially, up to around $1,000 per device, on average. This includes production costs, as well as an allowance to recover development costs and certifications/approvals. As with the business as usual approach, it is assumed that after initial installation, devices would continue to be used for 10 years on average.
- Ongoing costs – there are a number of ongoing costs associated with Option 1. This includes data costs required to transmit data, and monitoring costs (back office data collection and reporting) for the Fare Device Service Providers. These are likely to add around $480 per year per taximeter, on average (estimate from manufactures). Around $300 of this annual cost is attributable to data transmission.

It has been assumed for modelling purposes that all costs that fall on manufactures to design and produce devices, including product development, testing and type-approval and other support and ongoing costs are reflected in the prices of devices.[5]

TSC's type approval process

There is a four-stage process for type-approvals. As an applicant successfully completes one stage, they will progress to the next until the process is complete and type-approval is granted or the process is cancelled. TSC will determine whether an applicant has successfully completed each stage and may proceed to the next.

(1) Application stage: This is where the technology provider formally seeks type-approval for a Fare Device against the functional and technical requirements contained in the *Functional and Technical Specification for Fare Devices*.

(2) Checklist stage: This stage deals with the applicant's capacity to meet the required functional and technical requirements. The applicant needs to submit a Fare Device (and supporting documentation) for assessment by the TSC.

(3) Risk-focussed assessment and testing: This stage comprises a detailed, risk-based assessment of the Fare Device functional and technical capability, and as necessary, testing of the applicant's Fare Device.

(4) Type-approval: Once stages 1, 2 and 3 have been successfully completed, the TSC is able to offer type-approval.

The TSC expects that the costs to manufacturers of type approval would be in the order of $100,000 to $150,000. These costs have been included in the upfront cost of each Fare Device.

[5] The upfront and ongoing costs were determined through consultation with device manufacturers, although the information provided was on different bases. Two manufacturers were able to estimate the impact of all costs on a per device basis, while one was able to provide more granular estimates. In synthesising this information, this RIS took a conservative approach, using the upper estimate of cost estimates. A fourth manufacturer considered these estimates to be reasonable.

In practice, a full flow-through of costs to device purchasers may not always occur, with some cost burden remaining with manufacturers, however, this is a convenient working assumption to be able to compare options only.

There are also some costs savings associated with Option 1:

- The new Fare Devices will allow 'over the air' software updates, in particular where tariff changes are needed to be applied. This saves on the cost of manual updates and lost opportunity of having taxis off the road. This is expected to save the sector around $145,000 per year (see discussion of base case above).
- NSPs will no longer need to devote as many resources to data collection and reporting, as most data will now be automatically transmitted directly to the TSC. This is estimated by the TSC based on discussions with the industry to save the industry (conservatively) around $100,000 per year. (Note that new data reporting requirements are also to be included in the ongoing costs above.) Some booking related data will still be required from NSPs, but the specification is such that solutions could be developed to receive all NSP-based data directly from the Fare Device, thereby alleviating entirely any NSP reporting costs.

There are also costs to government. In particular, the TSC is required to establish a data warehouse to receive the volume of transmitted data, to manage data analysis, and to oversee the operation of the new specification (including more interaction directly with Fare Device service providers). Overall, the TSC has estimated total additional costs to government of around $3.1 million in the first year and $400,000 per year after that. However the data warehouse has already been built over the last 18 months, currently holding data from several TSC data sources (network, MPTP, compliance, and industry accreditation data). Therefore costs related to the Fare Device functionality form only part of the overall data warehouse costs. It should also be noted that the usefulness of the data already held in the data warehouse will be significantly diminished if it is not linked with data transmitted by Fare Devices.

The table below summarises the incremental costs of Option 1.

Table 3: Costs of Option 1

	Annual cost	**NPV over 10 years***
Cost of new Fare Devices	$5.8 million first year only	$5.6 million
Less avoided cost of base case replacements	*-$173,400 per year*	*-$1.4 million*
Annual operational costs of new Fare Devices	$2.8 million per year	$22.5 million
Less business as usual cost	*-$244,000 per year*	*-$2.0 million*
Costs to government	$3.1 million in first year; then $400,000 per year	$5.8 million
Total incremental cost	**$11.2 million in first year; then $2.8 million per year**	**$30.5 million**

* NPV uses a real discount rate of 4 per cent.

In net present value terms, the additional cost of the new Fare Devices is estimated to be around $3.1 million per year averaged over the next ten years (using a real discount rate of 4 per cent). If this were reflected in full in an increase in taxi fares, it would represent an increase of about 0.38 per cent, or an additional 9 cents on an average $20 fare.

Benefits

The Option has been designed to directly address the problems identified and detailed in Section 2. In preparation of this RIS, the TSC consulted with a wide range of stakeholders to validate the benefits expected to be achieved. It was not possible to quantify these benefits, however there was widespread agreement that the relatively small cost of the new Fare Devices were more than offset by the benefits. The contribution of each option to meeting the objectives is discussed in further detail in the multi-criteria assessment in Section 5.

It is noted that a further benefit of Option 1 is a cost saving related to affiliation costs. A major part of the taxi industry reforms was to permit unaffiliated taxis. This currently does not occur because taxis are effectively 'locked in' to affiliation because of the GPS requirements.[6] A Fare Device that transmits GPS will satisfy this requirement and free taxis from the need for affiliation. Currently affiliation costs around $7,000 per annum. It is not clear how many taxis may choose to become unaffiliated after the new Fare Devices are available. The TSC notes that the emergence of booking apps may enable an increase in taxis becoming unaffiliated. For a very conservative estimate, if 100 current taxis choose to become unaffiliated, the savings to the industry would be around $700,000 per year, with a net present value of around $5.7 million over ten years. This alone is capable of offsetting a large part of the additional costs of new Fare Devices, and the TSC considers that 100 taxis becoming unaffiliated is, based on its discussions with industry, a very conservative estimate. The TSC believes that, given the emerging alternatives for receiving booked work (apps, etc.), the number of taxis that may choose to become unaffiliated could be much higher than this, significantly increasing the costs savings of a new specification.

Costs and benefits of Option 2

Costs

The costs of Option 2 followed a similar methodology to Option 1, the key differences being:

- Cost of devices—with fewer functional requirements and more relaxed performance prescriptions, the cost of devices under Option 2 would be much lower. Some manufactures indicated that there is already capability to produce devices that meet this specification, with no real increase in costs to devices (i.e., price of a new device would remain achievable at around $300), while others indicate a slight increase in price, possibly up to $500. To be conservative, a cost of $400 per device has been assumed. As with the business as usual approach, it is assumed that after initial installation, devices would continue to be used for 10 years on average.

[6] All metropolitan taxis are currently required by regulation to transmit GPS information about their location. Currently, this is only feasibly possible through dispatch devices, which in turn require affiliation.

- Ongoing costs—compared to Option 1, this option would have substantially less ongoing costs. This is mostly due to the removal of the requirement for recording and transmission of audio announcements, and the removal of the need for service providers to establish and maintain back office data collection and reporting functions. Overall, industry has provided information which would indicate an ongoing cost of around $180 per device per year. This includes around $90 per year for data transmission.

Avoided fare update costs and costs to government would be the same as Option 1.

The table below summarises the costs of Option 2.

Table 4: Costs of Option 2

	Annual cost	**NPV over 10 years***
Cost of new Fare Devices	$2.3 million first year only	$2.2 million
Less avoided cost of base case replacements	*-$173,400 per year*	*-$1.4 million*
Annual operational costs of new Fare Devices	$1.0 million per year	$8.4 million
Less business as usual cost	*-$244,000 per year*	*-$2.0 million*
Costs to government	$3.1 million in first year; then $400,000 per year	$5.8 million
Total incremental cost	**$6.0 million in first year; then $1.0 million per year**	**$13.1 million**

* NPV uses a real discount rate of 4 per cent.

In net present value terms, the additional cost of the new Fare Devices is estimated to be around $1.3 million per year averaged over the next ten years (using a real discount rate of 4 per cent). If this were reflected in full in an increase in taxi fares, it would represent an increase of about 0.16 per cent, or an additional 4 cents on an average $20 fare.

Benefits

This Option has been designed to directly address the problems identified and detailed in Section 2. Like Option 1, it was not possible to quantify these benefits; however there was widespread agreement that the relatively small cost of new Fare Devices were more than offset by the benefits. It is noted that while meeting the broad objectives similar to Option 1, the less onerous requirements for this option is likely to mean there is a slightly higher incidence of device failure, incomplete data transfer than Option 1. These impacts are discussed in further detail in the multi-criteria assessment in Section 5.

As with Option 1, there is a cost saving related to avoided affiliation costs. As this option includes embedding GPS capability in the Fare Device, obviating the need for affiliation merely to meet GPS requirements, the savings to the industry would be around $700,000 per year, with a net present value of around $5.7 million over ten years, assuming the very conservative estimate of 100 vehicles becoming unaffiliated.

Costs and benefits of Option 3

It has not been possible to precisely quantify the costs or benefits of Option 3. Essentially, the starting point is the same as for Option 2, as a device manufactured and used under Option 2 would be a compliant device for the purposes of Option 3.

However, Option 3 enables a far wider range of solutions to be developed. By its nature, the manner and form of those solutions is not known, as the TSC has deliberately designed Option 3 to be agnostic to any particular solution. For example, under options 1 and 2 it was assumed that the least cost approach to meeting the requirement to process MPTP payments was by a 'plugged in' card handset, at a cost of up to $100 per device; under this option, there may be a technical solution for the device to read card information directly. Additionally, this option allows for electronic solutions to guarding against tampering or improper use, which may eliminate the need for the types of security seals currently used.

It is expected, therefore, that any such alternative solution under this option would necessarily be at lower cost than Option 2 (otherwise the market would remain using only traditional taximeters). The point of difference for Option 3 is that it allows innovative technological solutions where the same outcomes can be achieved at lower cost.

The results of Option 2—a present value of costs of $1.3 million per year averaged over 10 years—is considered an upper limit, with significant downside opportunity.

The benefits are also assumed to be the same as Option 2, however there is likely more scope for product innovation that could improve customer and driver experience beyond the minimum requirements in the specification.

Questions for stakeholders

Are there other costs or benefits that have not been discussed above?

Are the assumptions about the costs valid? Is it reasonable to assume that there will be opportunities under Option 3 to lower costs?

Are there alternative approaches to assessing the costs and benefits of different options?

5 The preferred approach

The *Victorian Guide to Regulation* requires that a 'decision tool' be used to determine whether the benefits of a regulatory option outweigh its costs, and to 'rank' different options.

As noted above, the benefits of the various options, and to a lesser extent the costs, are difficult to quantify. However, TSC believes that all the options analysed are expected to have benefits that outweigh the costs.

Multi-criteria analysis (MCA) is a decision tool that is used when it is not possible to quantify and value the main costs and benefits of an option. This includes situations where some data are available, but they provide information at too broad a level to enable the specific (narrower) effects of the proposal to be isolated.

MCA involves:

1. specifying a number of assessment criteria
2. assigning a 'weighting' to each criterion
3. assigning scores for each option in relation to each criterion
4. calculating a weighted score for each option.

MCA allows a decision to be made based on the weighted scores. The option assigned the highest weighted score is the 'preferred option'.

This RIS employs a qualitative MCA approach to determine the preferred option. The assessment criteria and weightings are set out below.

Table 5: MCA criteria and weightings

Criterion	Description	Weighting
Customer experience	Passengers should have confidence that they are being offered quality service, being charged correctly and fairly	15%
Safety	The ability to better monitor and analyse incidents	15%
Improved decision making	Provision of better data to inform decision making at both a policy and operational level	10%
MPTP Competition	Competition for MPTP processing	10%
Costs	Reflects all costs relative to the base case, including costs to the industry, passengers and government	50%

The criteria are drawn from the discussion of the objectives in Section 2 of this RIS. The weightings given to the criteria reflect the importance given to each by the TSC, which in turn reflects the judgment TSC has placed on the relative significance of each of the problems to be addressed. Giving a weighting of 50 per cent costs allows trade-offs between benefits and costs to be compared between options.

Each option is 'scored' against each criterion, relative to the base case (see Section 4) which is set at zero. Positive scores reflect an outcome better than the base case, while negative scores reflect an outcome worse than the base case. Scores may range from -100 to +100.

Table 6: Multi-criteria analysis outcomes

Option	Criteria	Assessment	Score	Weighted score
Option 1	Customer experience	Proposed specification directly addresses the problem identified and is likely to make a substantial contribution to passenger information about trips and fares	80	12
	Safety	Provides substantial new data about taxi activity in both real time and comprehensive historical record. Data will be robust	30	4.5
	Improved decision making	Substantial increase to the available data set to support better policy decision, more effective regulation and enforcement across the sector, and better operational planning	80	8
	MPTP Competition	Achieves the objective of opening MPTP to competition	100	10
	Costs	A significant increase in costs, however, relatively small compared to other costs and negligible impact on taxi fares. It therefore has received a moderate score of 50 on this criterion	-50	-25
		Total weighted score		**9.5**
Option 2	Customer experience	Addresses the problem identified and is likely to make a substantial contribution to passenger information about trips and fares. The difference between the options should not materially affect the customer experience element, therefore this criterion is scored the same as Option 1	80	12
	Safety	Provides new data about taxi activity in both real time and comprehensive historical record, but will have lower level of system integrity (assurance of complete and accurate data) compared to Option 1—therefore it has received a slightly lower score	25	3.75
	Improved decision making	Increase to the available data set to support better policy decision, more effective regulation and enforcement across the sector, and better operational planning, however is likely to be less complete and less reliable than Option 1	75	7.5
	MPTP Competition	Achieves the objective of opening MPTP to competition	100	10
	Costs	Costs are broadly about half of Option 1, and therefore scored proportionally	-25	-12.5
		Total weighted score		**20.75**

Option	Criteria	Assessment	Score	Weighted score
Option 3	Customer experience	Directly addresses the problem identified and is likely to make a substantial contribution to passenger information about trips and fares, to the same extent as Options 1 and 2	80	12
	Safety	Expected to be the same as Option 2	25	3.75
	Improved decision making	Expected to be the same as Option 2	75	7.5
	MPTP Competition	Same as other options, as this has the same MPTP requirements as the proposed specification	100	10
	Costs	Additional cost in unknown, however the costs of Option 2 are considered to be an upper limit, with significant scope for innovative technological solutions to result in lower overall costs. Therefore, this option has been scored slightly better than Option 2 on the cost criterion.	-20	-10
		Total weighted score		**23.25**

The preferred approach is therefore Option 3.

It is noted that a positive score does not necessarily demonstrate an overall net benefit; however the weightings of the criteria have been designed to give 50 per cent to costs, allowing the trade-off between achieving the objectives and the costs of new devices to be more easily compared. It is apparent from the above analysis that the cost of achieving a highly prescriptive approach (Option 1) is a critical factor in preferring more flexible approaches.

The TSC notes that the above scores between Option 2 and 3 are close, partly reflecting that Option 3 encourages solutions that cannot be anticipated at this stage, and therefore the conclusion that Option 3 is the preferred option is based on the choice of criteria, weightings and the policy judgment of the TSC in the scores assigned. Changes in these choices may result in a different preferred outcome.

Groups affected

Groups directly affected by the proposed regulations include taxi operators and taxi drivers, Fare Device manufacturers, and taxi networks. As noted in Section 4, the costs of the meeting the new specification falls initially on the manufacturer, however the cost of the new devices and any additional ongoing operating costs fall to taxi owners/operators. Subject to future price determinations and competition within the sector, some additional costs may be passed through to passengers through taxi fares. As noted in Section 4, this impact, even under an unlikely assumption of full pass-through, is expected to be very small.

Impacts on competition

Competition is a state of ongoing rivalry between firms – rivalry in terms of price, service, technology and quality. Market participants are mutually constrained in their pricing, output and related commercial decisions to some extent by the activity of other market participants (or potential market participants). In other words, the greater the degree of competition in a market, the less market power each market participant will possess.

Any regulatory proposal needs to be scrutinised carefully to assess whether it is having an adverse impact on the ability of firms or individuals to enter and participate in the market.

As a matter of good public policy, it is a fundamental principle in Victoria that any new legislation (both primary and subordinate) will not restrict competition unless it can be demonstrated that:

- the benefits of the restriction, as a whole, outweigh the costs; and
- the objectives of the legislation can only be achieved by restricting competition.

A measure is likely to have an impact on competition if any of the questions in the table below can be answered in the affirmative.

Table 7: Competition questions

Test question	Assessment
Is the proposed measure likely to affect the market structure of the affected sector(s) – i.e., will it reduce the number of participants in the market, or increase the size of incumbent firms?	Possibly
Will it be more difficult for new firms or individuals to enter the industry after the imposition of the proposed measure?	Negligible
Will the costs/benefits associated with the proposed measure affect some firms or individuals substantially more than others (e.g., small firms, part-time participants in occupations, etc.)?	Negligible
Will the proposed measure restrict the ability of businesses to choose the price, quality, range or location of their products?	Yes
Will the proposed measure lead to higher ongoing costs for new entrants that existing firms do not have to meet?	No
Is the ability or incentive to innovate or develop new products or services likely to be affected by the proposed measure?	No

The new Fare Device specification may affect competition in a number of ways.

It will add to the costs of operating a taxi. However this is expected to be a negligible increment and will have no material impact on entry into the taxi market.

It may limit the ability of taxi operators to choose the product (the Fare Device) they have in their taxis. This is already somewhat restricted, as Fare Devices must be approved by the TSC. The restriction is considered justified based on the TSC's judgment that the benefits outweigh the costs. Compared to the business as usual case, the additional platforms in the new specification (e.g., GPS, real time data) may even promote new value-add opportunities in the Fare Device products offered, which may improve product choice.

The primary risk in terms of competition is in the market for manufacture of Fare Devices. Currently there are five manufacturers in Australia, four of which supply the

current Victorian fleet. The majority of this supply (around 85 per cent) is from two manufacturers, who are smaller businesses (the other manufacturers have a small market share in taximeters but supply other products inside and outside the taxi industry). The manufacturers may be at different 'starting positions' to meet the new specification, and as such, an immediate introduction of the new requirements has a potential risk of some existing manufacturers exiting the market. While market exit of some individual suppliers is not of itself a concern of sound competition policy, there is a risk that an overall reduction in the number of suppliers may shift the supply market to a monopoly or duopoly, which could lead to uncompetitive pricing. On the other hand, clearly beneficial changes should not be held back merely because it may disturb current market shares.

It is relevant that the proposed specification need not be a single 'box' solution, nor even in the form of a traditional taximeter, but can be met by incorporating a range of linked elements that provide the overall required functions. One possible market solution may be an app-based program using existing mobile phone devices.[7] This could allow for more innovative solutions than in the past. As such, the proposed specification is not regarded as reducing the ability for market entry (vis-à-vis the base case of the continuing the current arrangements) and may even promote increased product innovation and new market entry. New approaches could be offered by a party outside the traditional taximeter manufacturers such as app developers. Apps that could be relatively easily adapted to the specification are already in use in non-taxi services and in other countries. The new specification may therefore result in a definition of 'the market' expanding from the small number of traditional manufacturers to other types of businesses, in which case the proposed new Fare Device specification is an opportunity to expand a market rather than shrink it.

The TSC proposes to allow sufficient time to meet the new specification, with a staggered introduction of various parts of the specification, based on the implementation times achievable from consultation. The transition timing is discussed further in section 6.

Questions for stakeholders

Do you agree with the assessment of options in this RIS? Should more weight be given to another criterion?

Are there other groups that could be adversely affected that have not been discussed in this RIS?

Do you think the new specification is likely to increase or decrease competition?

[7] A smartphone-type device used to meet the specification would still need to associate and interact with equipment installed in the vehicle, to enable full Fare Device functionality to be achieved. It would still require the device to be 'sealed' – i.e., to be linked to an individual vehicle and protection from tampering (which could be an electronic solution within the device itself).

6 Implementation plan

The new Fare Device specification will have significant implementation issues to be managed.

Table 8: Implementation matters

Issue	Approach
Communication with regulated entities	The TSC has established communication avenues with the sector participants, as well as other stakeholders who will be interested in the new specification. The new specification has already been provided to manufacturers in draft form throughout an extensive consultation phase. The TSC will provide guidance to service providers in meeting the new requirements.
Transitioning to the new regime	Consultation with the sector raised concerns about the implementation timelines. In response, the TSC proposes a staggered implementation based on the three functional areas: 1. Customer service functionality - tolls captured, audio announcements - January 2016 2. Data streaming - July 2016 3. MPTP processing - January 2017 Manufacturers will have the option to install complete systems from October 2015 and remotely activate the other elements at later dates, or to install Fare Devices that comply with the initial requirements but allow modification at a later date (e.g., the MPTP processing could be effected by linking a payment device to a taximeter). In this latter case, Fare Devices could be offered to the market that include provision for future enhancements.
Achieving compliance	TSC will approve particular Fare Device types before they can be used. TSC will consult with Fare Device service providers at the compliance date in order to verify that new Fare Devices or functionality are in place across the taxi fleet.
Establish clear accountabilities between the Department and regulator	The TSC is an independent statutory authority, responsible to the Minister.
Implementation risks and monitoring	The TSC will consult with the sector in the lead up to the introduction date to make sure the sector is on track to transition to the new Fare Devices. As part of this tracking, TSC will rely on its legislation and powers, existing compliance arrangements, ongoing consultation and engagement, and dedicated project management to oversee the transition.

A certificate of compliance with the Charter of Human Rights will be prepared.

7 Evaluation strategy

Consistent with the government's commitment to continuous improvement, ex-post evaluations of regulatory activities are conducted with a view to enhancing the efficiency and effectiveness of meeting government objectives.

Table 9: Approach to evaluation

Element	Strategy
Outline the objectives of the regulatory proposal	The objectives of the new Fare Device specification are: • to improve customer experience in the use of taxis • to improve passenger and driver safety • to improve policy decision making • to promote competition.
Identify baseline data	Baseline data is complaints (relevant to the identified objectives), number of incidents and their resolution
Outline the KPIs that will be used to measure progress towards the objectives	Specific measures and targets will be determined after an initial 12 month period, during which time data will be assembled. The indicators will be designed to measure the impact of the new requirements in deterring or assisting in the detection and responses to taxi theft or MPTP fraud; reducing the rate of incorrect fares being charged; and use by the TSC/ESC in policy development/price-determination. On the cost side, the TSC will also collect data to test key assumptions in the RIS regarding the costs of new Fare Devices, operational costs, and government costs.
Outline the methodology, including the quantitative and/or qualitative methods that will be used for the evaluation	The evaluation strategy will involve monitoring the costs of implementing the new Fare Devices across all Victorian taxis, and compliance with the specified dates. Existing data sources (e.g., complaints) will be used. For new data sources to be generated from the new Fare Devices, a comprehensive data management plan will be developed.
Detail the plan to collect any data required for the evaluation	Existing data will be used from current sources of collection. New data sources will be collected through the implementation of the specification itself, with a data management plan to be developed as part of the implementation. If suitable, surveys may be developed to collect data periodically on views of the effectiveness of the new Fare Devices.

Outline a plan for consultation with relevant stakeholders	The TSC will regularly consult with the sector to ascertain progress in meeting the introduction date, and the costs being incurred in purchase of new Fare Devices and costs to Fare Device Service Providers in fulfilling their obligations.
Identify the department/agency/team responsible for conducting the evaluation	The Taxi Services Commission will be responsible for the evaluation.
Timing	Aside from ongoing close monitoring through the implementation and transition, an initial evaluation of the effectiveness of the measures will be conducted within 5 years of implementation.

Appendix A – Consultation

Stakeholder engagement for the development of the new Fare Device specification has been extensive, and has been ongoing for some time.

All of the objectives identified in the RIS were discussed at length during the Inquiry in 2011 and 2012. The Inquiry undertook a comprehensive investigation into all aspects of the taxi and hire car industry and recommended a set of reforms to the government focusing on achieving better outcomes for the travelling public. The Inquiry involved detailed consultation with the industry. Following the release of the Inquiry's final report in December 2012, further consultation on the final recommendations was undertaken to 30 January 2013.

Following the government response to the inquiry, a Stakeholder Reference Group (SRG) was established to provide information to the industry. The SRG assisted the TSC in testing assumptions, refining approaches to implementation and contributing to discussion. The SRG members were drawn from the taxi and hire car industries, as well as representatives of key related organisations. The SRG was informed of the proposed new specification features and provided valuable views on its development.

Communication with top tier stakeholders from business, industry, government and organisations comprising regular taxi users was conducted through a Consultative Committee that met quarterly. The TSC outlined the key new features of the proposed specification to the Consultative Committee in 2014.

Pre-RIS consultation

Consultation with identified stakeholders commenced in October 2013. As the consultation process progressed, additional entities that ought to be consulted were identified and engaged with.

The TSC sought advice from several organisations with no direct interest in the taxi industry but who are involved in the electronic payments sector. These organisations were Giesecke & Devrient Australasia, Medicare, Westpac and Australian Payments Clearing Association (APCA). Discussions were also held with Transport Certification Australia, a government-owned company with expertise in telematics.

Consultation took the form of one-on-one meetings or teleconferences with each of those consulted.

<u>Taximeter manufacturers</u>

The TSC has engaged with taximeter manufacturers on reform implementation matters since October 2013. The TSC needed to ascertain if current taximeters could handle price notification, or if newer taximeter models that could handle auto-tolling would be available in time for the next fare update. The next generation of taximeters would also need to include speech synthesis as per the inquiry's recommendation.

The TSC consulted with all four taximeter manufacturers that supply taximeters in use currently in Victoria. It was established that all current taximeter models could handle price notification and advertised discounts, but that auto tolling and other enhanced features – while imminent – would not be available in time for the next fare change (which took effect in May 2014).

In the process of speaking to taximeter manufacturers, each was asked about the thoughts and plans *vis-à-vis* other Inquiry recommendations, specifically with regard to data streaming and opening up MPTP. Each indicated that their next models will essentially be fully-fledged modern computers and that they expected their data streaming capabilities to be on a par, in terms of quality and frequency, with MDTs.

Asked about their capacity to interface with EFTPOS terminals wirelessly in a way that might facilitate the opening of MPTP, all of the taximeter manufacturers said there was a range of connectivity protocols that could be included to achieve this. The manufacturers also confirmed that the taxi number could be transmitted from the taximeter to the EFTPOS terminal.

The project team was aware that, depending on the nature of new MPTP arrangements that might be adopted, driver shift data may not be feasibly delivered through EFTPOS terminals. The taximeter manufacturers were, therefore, asked if there was any possibility that the next-generation of taximeters might be able to record driver log-on details through smartcard reader capability. The manufacturers responded in the affirmative, and in fact, the technology was already available in some current models.

Smartcard reading capability also gave rise to the possibility that taximeters themselves could be used to manage MPTP transactions, thereby bypassing the need for EFTPOS terminals in MPTP arrangements. Each of the taximeter manufacturers affirmed that this was possible. However, if the TSC were to replace the MPTP card with a debit card (as proposed by the Inquiry's Information Systems Review), enabling taximeters to process MPTP would be difficult since the taximeters would then be required to gain certification from the Australian Payments Clearance Association (APCA) to process debit cards, which could prove overly expensive.

Taxi operators

Operators have been informed of the planned implementation of new taximeter specifications and what these will entail through: the Inquiry draft and final reports and the government's response; articles in Taxi Talk (the magazine published by the Victorian Taxi Association) and Taxi eNews; and, fora including the TSC's Stakeholder Reference Group and Consultative Committee. The TSC has received no feedback or objections from taxi operators on plans for the new taximeter specification.

Consultation of Fare Device specification

Specific consultation on an initial specification began in June 2014, with an information session with manufacturers held by TSC and TCA.

A first draft of the specification was distributed to all taximeter manufacturers approved for use in Victoria as part of consultation and feedback to the development of the specifications and confirming the capability of the market.

A key change that emerged from this consultation is that Fare Device service providers will no longer be required to establish and maintain back office support to manage the Fare Device data, as originally envisioned. Instead, the specification now provides for data to be collated and housed by the TSC, which can then provide data back to other stakeholders as needed.

Consultation in preparation of this RIS

In preparation of the RIS, the five device manufacturers were consulted (the four currently supplying taximeters in Victoria as well as one Australian manufacturer not presently in the Victorian market). This consultation was for the purpose of identifying the costs of meeting the new Fare Device specification and implementation and competition matters. The manufacturers generally considered that, while some elements of the specification were unnecessary and likely to push up costs, the requirements were ultimately feasible provided there was sufficient time allowed to bring products to market (including testing, certification and approval).

Manufacturers provided data used in this RIS on Fare Device and associated costs. It is noted that some manufacturers had divergent views about who would ultimately bear the additional costs, and who should bear the additional costs. It was noted that the majority of additional costs to be imposed have their initial incidence on manufacturers, however the effects of the market mean that costs are likely to be passed on to taxi owners, and then, subject to ESC considerations, likely to flow through to some extent to taxi passengers. Some concern was raised about relative advantages and disadvantages between manufacturers in meeting the new specification. These are discussed in the competition section of this RIS.

In addition, the recording and transmission of the audio messages being played was planned (for benefit of verifying messages were indeed being played), but consultation revealed this was a large contributor to costs (in particular would increase data cost substantially). As a consequence, the TSC determined these requirements would not be pursued at this time.

Victoria Police (VicPol) was consulted in the preparation of this RIS about the proposed specification. VicPol indicated that it was supportive of the new measures and validated the expected benefits related to passenger and driver safety. In particular, VicPol supports changes that will enable it to more readily access data independent of taxi networks. VicPol stated that, “Digital data is one of our first avenues of enquiry in any crime investigation, and consolidated, accurate information about taxi use would be another valuable digital avenue of inquiry. Examples of how VicPol might use data from the new meters include establishing the location and movements of a specific taxi at a specific time (in the context of a suspect, victim or witness) and the identity of passengers via in-vehicle cameras. A major benefit to VicPol will be the single point of contact (TSC) to retrieve data, thus expediting the process.”

Other stakeholders were also consulted to identify the benefits expected with the new specification.

During stakeholder consultation, it was identified that while the proposed specification addressed the needs of many taxi users (such as voice announcements for vision impaired), there would remain a small segment of taxi users that may not be better off. In particular deaf-blind passengers, many of whom rely on taxis regularly, would gain little benefit from either voice announcements or printed trip receipts. A suggestion was made that the Fare Devices could be made to transmit information via Bluetooth to a passenger’s personal device, which could then be stored by the passenger electronically and accessed by other means (for example, a braille machine linked to an iPad). There are some additional system requirements that would be necessary, from both a hardware and a software perspective. Earlier consultation with manufacturers indicated that a Bluetooth capability within a Fare Device would be relatively straight forward. However, specific applications were not discussed. For the type of function contemplated, special software would likely need to be developed in order for the Fare Device to generate the correct type of data packet to ‘talk to’ a wide range of other devices. For the purposes of the proposed specification, care was taken that trip receipts are to be ‘provided’, without necessarily prescribing the form. This would allow electronic receipts to be sent, however this would not be mandated at this time. The TSC notes that the proposed specification does not prohibit providers from introducing other capabilities including Bluetooth as part of market competition.

Feedback from these parties confirmed the benefits identified in this RIS, although these benefits were not able to be quantified in most cases. There was support of the proposed specification by all parties, as well as suggestions for further benefits by

including additional requirements in the specification. Some of these are examined in this RIS, although overall it is noted that Fare Device manufacturers, through the demand for devices by taxi owners/operators, can offer functions over and above those included in the proposed specification where the market determines there is additional value to customers.

This RIS and the proposed Fare Device Specification will now be available for a period of 28 days to allow public feedback. TSC will consider all submissions made prior to making a final decision on the new specification.