

**For discussion  
on 5 January 2021**

## **Legislative Council Panel on Transport**

### **Free-Flow Tolling System at Government Tolled Tunnels and Tsing Sha Control Area**

#### **PURPOSE**

This paper seeks Members' views on the Government's plan to implement free-flow tolling system ("FFTS") at government tolled tunnels<sup>1</sup> and Tsing Sha Control Area ("TSCA") (hereafter collectively referred to as "Tolled Tunnels").

#### **BACKGROUND**

2. The Hong Kong Smart City Blueprint published in 2017 promulgated, among others, the development of toll tag (previously known as "in-vehicle unit") for allowing motorists to pay tunnel tolls by remote means through an automatic tolling system without stopping at toll booths, namely FFTS.

3. In gist, FFTS will bring convenience to motorists by enabling toll payment with ease using toll tags. It enables motorists to pay tolls more efficiently without the need to stop or slow down at a toll booth for manual toll payment, thereby minimising disruption to traffic flow at toll plazas. After implementation of FFTS, the existing toll booths at toll plazas will be demolished, potentially freeing up space for other transport-related purposes such as enhancement of existing bus stops. Further, while technically FFTS is similar to the existing service offered by the Autotoll Limited, motorists will not be required to pay administrative fees on a recurrent basis for using FFTS in future. Implementing FFTS at Tolled Tunnels is an important milestone of building Hong Kong into a world-class smart city.

---

<sup>1</sup> Covering Cross-Harbour Tunnel, Eastern Harbour Crossing ("EHC"), Lion Rock Tunnel, Shing Mun Tunnels, Aberdeen Tunnel, Tate's Cairn Tunnel as well as the two Build-Operate-Transfer ("BOT") tunnels, viz. Western Harbour Crossing and Tai Lam Tunnel, upon expiry of their BOT franchises in August 2023 and May 2025 respectively.

## PROPOSED IMPLEMENTATION OF FFTS

4. FFTS is a technology-based solution to enable collection of tunnel tolls without requiring a motor vehicle to stop at a toll booth, mainly by making use of the Radio Frequency Identification (“RFID”) technology, with the support of the Automatic Number Plate Recognition (“ANPR”) technology<sup>2</sup>. Upon implementation of FFTS, the use of a Tolled Tunnel by a motor vehicle will be detected by the FFTS field equipment through reading of a toll tag (which is a self-adhesive RFID chip) affixed on the windscreen of the motor vehicle<sup>3</sup> (as shown at **Annex A**).

### Toll Collection

5. Under FFTS, the Government will issue a toll tag called the vehicle-specific toll tag (“VTT”). As suggested by its name, each VTT is related to a specific vehicle. A VTT will only store two pieces of digital information, namely tag identification number<sup>4</sup> and encrypted vehicle identification number<sup>5</sup>, without any personal particulars of the vehicle owner or the driver. A VTT will be issued to the registered owner of a vehicle on application and the first issue of a VTT to a particular vehicle will be free-of-charge. Re-issuance, including replacement, of VTT will in general be at a cost to the vehicle owner on a full cost-recovery basis.

6. A vehicle owner may register a payment means in association with the VTT, including a bank account, a credit card or a stored-value facility; and appropriate toll will be debited from the payment account direct when the vehicle passes a Tolled Tunnel upon implementation of FFTS. Alternatively, if a vehicle owner has not set up an automated payment account for the VTT or

---

<sup>2</sup> ANPR technology will capture the images of a vehicle’s number plate and revise its format so as to enable the backend system of the FFTS to recognise the vehicle registration mark (“VRM”) automatically.

<sup>3</sup> For a very small portion of motor vehicles, the material of the whole windscreen contains a metal oxide which may affect the detection by the FFTS field equipment. For these vehicles, their VRMs can be recognised through ANPR technology.

<sup>4</sup> Each RFID tag has a unique serial number called tag identification number, which is imprinted by the manufacturer at the factory.

<sup>5</sup> Vehicle identification number is a unique identification number assigned by TD to each vehicle registered in Hong Kong, which is currently shown on the paper vehicle licence. It is not equivalent to VRM, commonly known as “car plate number”, of a vehicle. The vehicle identification number of the Toll Tag will be encrypted.

if the automated payment cannot be successfully made<sup>6</sup>, toll payments may be made in arrears through designated channels within a grace period of seven business days<sup>7</sup>.

7. To suit individual motorists' needs, the Government is prepared to provide an alternative of issuing to them a toll tag for the class of the vehicle concerned ("TT") (e.g. private cars, goods vehicles, light buses, etc.), though it will not be linked to the specific vehicle. It will also have to be affixed on a vehicle as shown at **Annex A**. Since the Transport Department ("TD") or its Toll Service Provider ("TSP") cannot ascertain whether a TT is the first one issued to a particular vehicle as it is not linked to a specific vehicle, a person (including but not limited to a vehicle owner) may procure a TT of a particular vehicle class at a fee charged on a full cost-recovery basis.

8. When a vehicle affixed with a TT passes a Tolled Tunnel after implementation of FFTS, appropriate toll will be charged to the stored-value account associated with the TT. Similar to a standard Octopus, a TT can be procured at certain designated outlets without proof of relationship with a vehicle, and can be topped up anonymously at designated service outlets. If there is insufficient balance in the stored-value payment account of a TT, toll payment may be made in arrears through designated channels within the same grace period, i.e. seven business days.

9. In case a vehicle is not affixed with either a VTT or a TT, its use of a Tolled Tunnel will be detected by the ANPR technology. After the detection, the data of the vehicle would be sent to the backend system of FFTS for requesting toll payment from the vehicle owner within the grace period. The ANPR technology will also be used for audit checks for ensuring the accuracy of detection by toll tags<sup>8</sup>. Illustrations showing the workflow of detection and payment for vehicles with and without toll tags are at **Annex B**.

10. TD will engage its TSP through open tender for handling toll-related

---

<sup>6</sup> For instance due to rejection from financial institutions or other technical/operational reasons.

<sup>7</sup> Counting from the date when the vehicle enters the Tolled Tunnel.

<sup>8</sup> When a Tolled Tunnel is used, apart from reading the toll tags, FFTS will verify the vehicle data by cross-referencing with the data obtained by ANPR through random checking, so as to ensure that the toll tags function properly and are not misused. If no discrepancy is found, appropriate tolls will be deducted from the designated payment accounts linked to the toll tags. In case the VRM identified through ANPR does not match with the toll tag read, TSP will be notified to take necessary follow-up actions (e.g. verifying the data again manually, issuing toll payment notification to the vehicle owner concerned, etc.).

matters under FFTS, including issuance of toll tags (for both VTT and TT), toll collection, toll recovery as well as provision of account management and customer services.

11. Privacy impact assessments (“PIA”) on the preliminary design of the FFTS indicate that no personal data privacy issues are envisaged. TD would conduct further PIAs during the detailed design and development stage to address any personal data privacy risks in consultation with the Office of the Privacy Commissioner for Personal Data.

### *Responsible Person*

12. Under the existing legislation, the toll payment liability rests with the driver. After implementation of FFTS, since the field equipment will only capture and store data of VTTs / TTs and images of vehicles passing through a Tolloed Tunnel, there is practical difficulty to identify the driver at the time the vehicle passes through a Tolloed Tunnel. It is thus proposed that the person who is responsible for paying tolls under FFTS will be the vehicle owner<sup>9</sup>.

13. Notwithstanding the broad principle that the toll payment liability should rest with a vehicle owner, it is proposed that certain protection be offered to the owners, including -

- (a) express legislative provision will be provided in a bill which provides legal backing for FFTS (“the FFTS Bill”) to the effect that the right of a vehicle owner to seek recovery of toll and surcharge from the hirer/driver is not prejudiced by the principle of imposing toll liability on vehicle owners; and
- (b) the offence against toll evasion in the existing legislation<sup>10</sup> will be revised to the effect that failure to pay toll would no longer be subject to penalty on imprisonment.

---

<sup>9</sup> This proposal has made reference to the Fixed Penalty (Traffic Contraventions) Ordinance (Cap. 237) where fixed penalty tickets are issued to the registered owner who may not be in charge of the vehicle concerned at the time of a prescribed traffic contravention (e.g. parking contravention).

<sup>10</sup> Pursuant to the Road Tunnels (Government) Regulations (Cap. 368A), toll evasion at government tolloed tunnels is an offence and is liable to a fine of \$5,000 and to imprisonment for six months. As regards TSCA, the Tsing Sha Control Area (Tolls, Fees and Charges) Regulation (Cap. 594B) provides that a convicted driver is liable to a fine at level 2 (\$5,000) and to imprisonment for six months.

## **Toll Recovery Mechanism**

14. After a vehicle affixed with a VTT or TT passes through a Tolled Tunnel, appropriate toll will be charged to the designated payment account. If the transaction is not successful, toll payment notification by electronic means will be issued to the vehicle owner, reminding him to pay toll within the grace period.

15. Similar to the requirements currently prescribed in the Tsing Sha Control Area (Tolls, Fees and Charges) Regulation (Cap. 594B), we propose the following mechanism for surcharges and dispute -

- (a) we will impose a surcharge against a responsible person who fails to pay tolls according to the stipulated timeframe. If the toll remains unpaid after the grace period, TSP will send a surcharge notice to the responsible person, imposing two tiers of surcharges with respective payment deadlines<sup>11</sup>;
- (b) if the outstanding payment (i.e. the toll and surcharges) remains unsettled and the responsible person has not informed TSP that he wishes to dispute the toll liability, TD will make an application to the magistrate, which may issue a court order in the absence of the responsible person demanding him to settle within 14 calendar days the outstanding payment plus a penalty amount which equals to the amount of the second surcharge. On the other hand, when a responsible person has been notified of the toll payment liability within the grace period (i.e. seven business days), he may seek clarification and dispute against the toll payable with TSP before a surcharge notice is issued. The responsible person also has the statutory right to appeal against his toll liability within 42 calendar days from the date of issue of the surcharge notice;

---

<sup>11</sup> The first surcharge is to be set on the basis of cost recovery (tentatively at \$175 applicable to all government tolled tunnels and TSCA) whereas the second surcharge is to be set with punitive effect (tentatively doubling the first surcharge, i.e. \$350). The unpaid toll plus the first surcharge should be settled within 21 calendar days from the date of issue of the surcharge notice. After the expiry of the 21-day period, the second surcharge will be in force. The unpaid toll plus the first and the second surcharges should be settled within another 21-day period.

- (c) if the responsible person disagrees with the appeal outcome, TD will make an application to the magistrate for issuing summons to the responsible person for a court hearing at the magistrate's court. For convicted cases, the magistrate will order payment of the outstanding payment plus a penalty amount equals to the amount of the second surcharge or an amount not more than \$5,000; and
- (d) the magistrate may also order TD to take no actions on the responsible person's application for vehicle transfer and vehicle licence, and order the responsible person to pay the cost of the court proceedings. TD may also make an application to the magistrate for an order directing that the sum adjudged to be paid and additional sum and costs in the proceedings be levied on any goods and chattels of the person by distress and sale thereof.

16. Considering that TSP will normally keep usage records of Tolled Tunnels for at most 90 calendar days after the appropriate toll is settled, we propose specifying in the law that any request for review of usage records and paid tolls must be lodged within 60 calendar days from the date on which such records are created.

### **Collection of Email Address or Mobile Phone Number from Vehicle Owners**

17. FFTS is part of the Government's effort in making Hong Kong a smart city and quick settlement of toll is expected at the instance when a vehicle passes through a Tolled Tunnel (as in the case of manual toll booth). In line with this, we consider it not efficient to inform a vehicle owner of the outstanding toll for settlement before the expiry of the grace period by post. It is proposed that, if appropriate toll has not been paid through automated payment using VTT or TT, a toll payment notification will be issued to the vehicle owner by electronic means after usage of a Tolled Tunnel to remind him to pay toll within the grace period of seven business days.

18. Hence, we propose making it a mandatory requirement for all vehicle owners to provide to TD their email addresses or mobile phone numbers in vehicle-related licensing applications under the Road Traffic (Registration and Licensing) Regulations (Cap. 374E) to enable TSP to issue electronic toll payment notification as necessary. TD plans to collect email addresses or mobile phone numbers from vehicle owners upon enactment of the FFTS Bill and starting around 13 months before the first implementation of FFTS, such

that all vehicle owners will have an opportunity to provide such information to TD when renewing their vehicle licences before FFTS rolls out.

## **Facilitation Measures for Toll Splitting between Vehicle Owners and Drivers**

19. TD is actively exploring special administrative measures and technologies that will facilitate toll splitting or toll payment diversion between a vehicle owner and a driver, particularly to cater for the needs of rentee-drivers of commercial vehicles (e.g. taxis, red minibuses or goods vehicles) as these vehicles are often leased to multiple drivers during different periods or different shifts of a day. Such measures include provision of statement of transaction records to vehicle owners<sup>12</sup>, diversion of payment accounts using mobile apps<sup>13</sup> and the adoption of “two-piece device”<sup>14</sup>.

## **Empty Taxi Lane at EHC**

20. Currently, taxis carrying no passengers using EHC will be charged at a concessionary toll of \$15 (as opposed to the normal toll of \$25 for taxis with passengers), and drivers of empty taxis need to pay at manual toll booths to facilitate visual inspection by toll collectors in order to enjoy the concession. To enable empty taxis to continue to enjoy the concessionary toll at EHC, there will be an exclusive lane (“empty taxi lane”) designated as a prohibited zone for all vehicles except taxis carrying no passengers at EHC. Enforcement actions will be taken against misuse of the empty taxi lane on two fronts, namely “contravention of traffic signs” similar to the handling of other traffic offences, as well as “underpayment of appropriate toll” according to the toll recovery procedures set out in paragraphs 14 to 16 above.

## **Other Related Offences**

21. Apart from the aforementioned proposed arrangements to facilitate toll collection and recovery whilst reducing toll evasion cases after

---

<sup>12</sup> The vehicle owner will be allowed to extract transaction records of a period specified by him and with a monthly statement summarising the monthly transaction records and tolls paid.

<sup>13</sup> With such a diversion function, tolls can be automatically charged to a pre-registered payment account of a driver for a specific period with prior authorisation by the vehicle owner (or his agent, e.g. staff of the vehicle-hire firm) who has registered an account with VTT.

<sup>14</sup> TD is actively exploring the feasibility of the two-piece device, where tolls would be charged automatically to a pre-registered payment account of the driver when the driver’s component of the two-piece device is used in a vehicle affixed with a VTT.

implementation of FFTS, we also propose providing the following offences in the FFTS Bill, which are essential to the smooth and effective operation of FFTS -

- (a) forging or interfering with toll tags;
- (b) preventing the use of Tolled Tunnels from being detected by FFTS;
- (c) causing any tolling facilities to operate in a manner that results in underpayment of appropriate toll;
- (d) tampering of, interfering with, damaging, etc. FFTS equipment / facilities / records;
- (e) affixing incorrect toll tags (e.g. affixing a TT of a wrong vehicle class or affixing a VTT assigned to another vehicle);
- (f) driving a motor vehicle with incorrect toll tags;
- (g) not affixing toll tags in accordance with guidelines promulgated by TD; and
- (h) failing to provide an updated email address or mobile phone number within 72 hours of change to the Commissioner for Transport (“the Commissioner”)<sup>15</sup>.

### **Exemption of Toll Payments**

22. Similar to the existing non-FFTS arrangements, certain types of vehicles, such as vehicles driven by disabled persons, government vehicles, vehicles used by tunnel operators in the course of duty, franchised buses<sup>16</sup>, and any other vehicles with approval from the Commissioner, are proposed to be exempted from toll payment after implementation of FFTS. The toll exemption applicable to these specified categories of vehicles will be effected at the FFTS backend system through detection of their VTTs.

23. Further, to cater for special circumstances (e.g. in case of emergency), we propose empowering the Commissioner to waive payment of tolls, in whole or in part, for certain description of vehicles under circumstances considered suitable by the Commissioner, irrespective of whether FFTS has been

---

<sup>15</sup> Similar to the existing statutory requirement for provision of address proof, TD may suspend the processing of an application if the applicant is unable to provide an email address or a mobile phone number (with supporting proof or validation at the time of submission). Similar to the offence for failing to notify the change of address as stipulated in regulations 19(1) and 60 of the Road Traffic (Registration and Licensing) Regulations (Cap. 374E), it is proposed to be an offence if the responsible person fails to update the Commissioner on any subsequent change of his email address or mobile phone number within 72 hours of such change.

<sup>16</sup> While toll for franchised bus is exempted, the exempted toll is saved under the Franchised Bus Toll Exemption Fund for reducing the magnitude of fare increase during application.



implemented. We also propose specifying that the Commissioner may exercise discretion to extend the grace period for settlement of unpaid tolls for special cases.

### **Mandating the Use of Toll Tags in Future**

24. It is the Government's vision to mandate the use of toll tags with automated payment for all motor vehicles in future. Subject to the penetration rates of toll tags and the then prevailing circumstances, the mandatory requirement of using toll tags will be effected on a date to be specified by the Commissioner upon full implementation of FFTS at all Tolled Tunnels.

### **LEGISLATIVE AMENDMENTS**

25. In order to provide the requisite legal backing for implementing FFTS at Tolled Tunnels, we plan to introduce into the Legislative Council in March 2021 the FFTS Bill, which amends the Road Tunnels (Government) Ordinance (Cap. 368), the Road Traffic Ordinance (Cap. 374), the Tsing Sha Control Area Ordinance (Cap. 594) and their subsidiary legislation. The proposed legislative amendments will enable toll collection by FFTS through toll tags and provide for the necessary implementation details and procedures for FFTS as set out in paragraphs 4 to 24 above.

26. As a prelude, TD has launched a public engagement exercise starting from December 2020 to enhance public awareness and understanding of toll tags and FFTS.

### **IMPLEMENTATION PLAN**

27. After the passage of the FFTS Bill, TD, in collaboration with relevant departments, will complete the necessary preparatory tasks, including the engagement of TSP, continued development of the backend system and procurement of field equipment of FFTS<sup>17</sup>, collection of email addresses or mobile phone numbers of vehicle owners, etc., before the first implementation of FFTS. To ensure a smooth transition from the existing booth-mode toll

---

<sup>17</sup> A funding of around \$946 million has been secured in the 2019-20 Estimates for (a) development and modification of the backend software system; (b) procurement and installation of field equipment and facilities; (c) essential modification of existing toll plazas of government tolled tunnels and TSCA; and (d) procurement of toll tags and readers.

collection to the boothless mode under FFTS, TD plans to start rolling out FFTS in around end 2022 by phases. Tentatively, the first batch will cover the Lion Rock Tunnel, Shing Mun Tunnels and TSCA, which currently charge flat tolls and are in geographical proximity. The remaining ones, including Aberdeen Tunnel, Cross-Harbour Tunnel, EHC and Tate's Cairn Tunnel would be implemented as the second batch. FFTS at the Western Harbour Crossing and Tai Lam Tunnel will be implemented after the Government's takeover of their respective ownership in August 2023 and May 2025.

## **ADVICE SOUGHT**

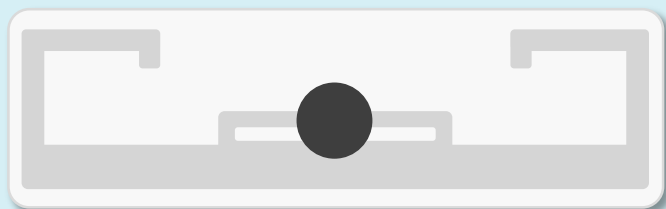
28. Members are invited to offer views on the proposed implementation of FFTS.

**Transport and Housing Bureau  
Transport Department  
December 2020**

# Toll Tag

## Toll Tag

The self-adhesive sticker Toll Tag is affixed on the windscreen of vehicle



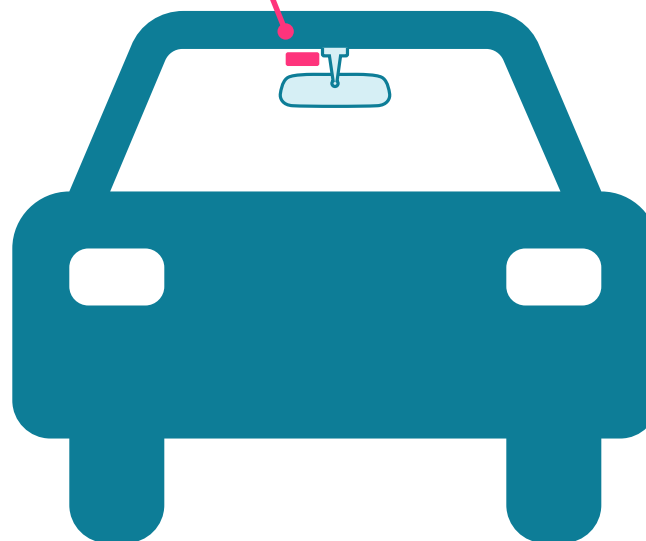
## Size Comparison



Toll Tag



Credit Card



Private Car

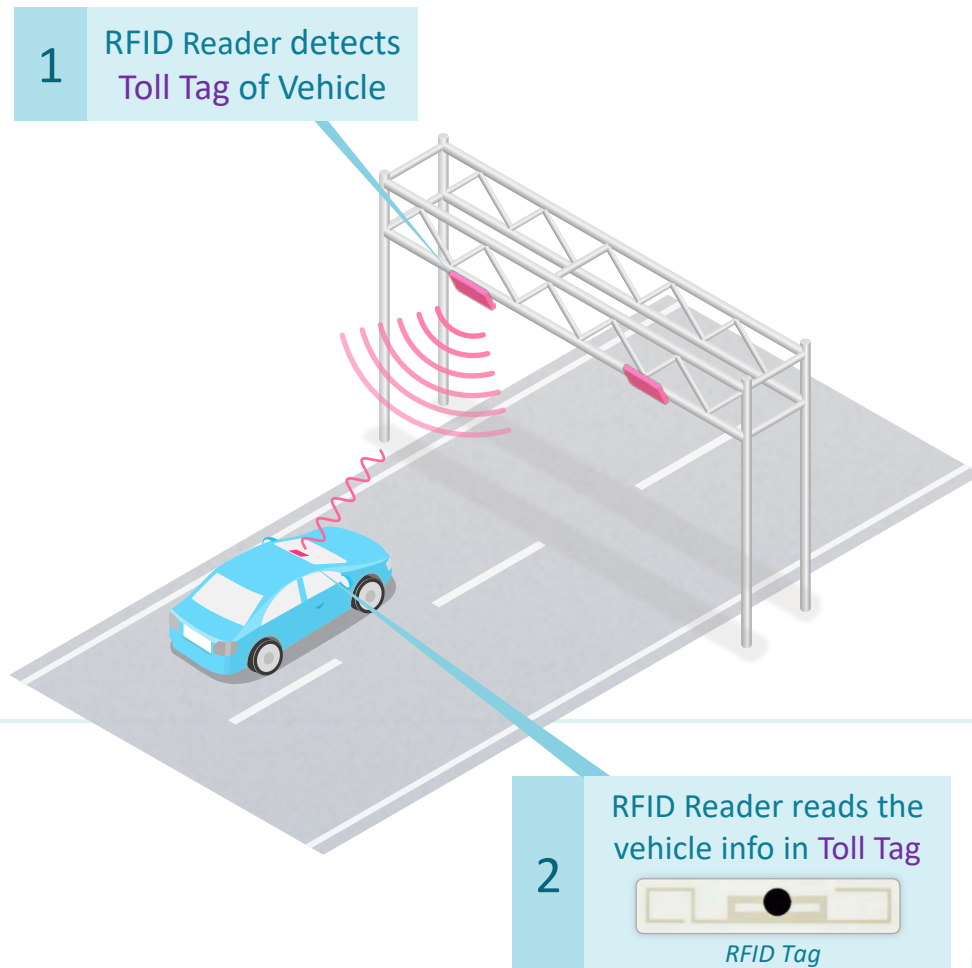


Motorcycle

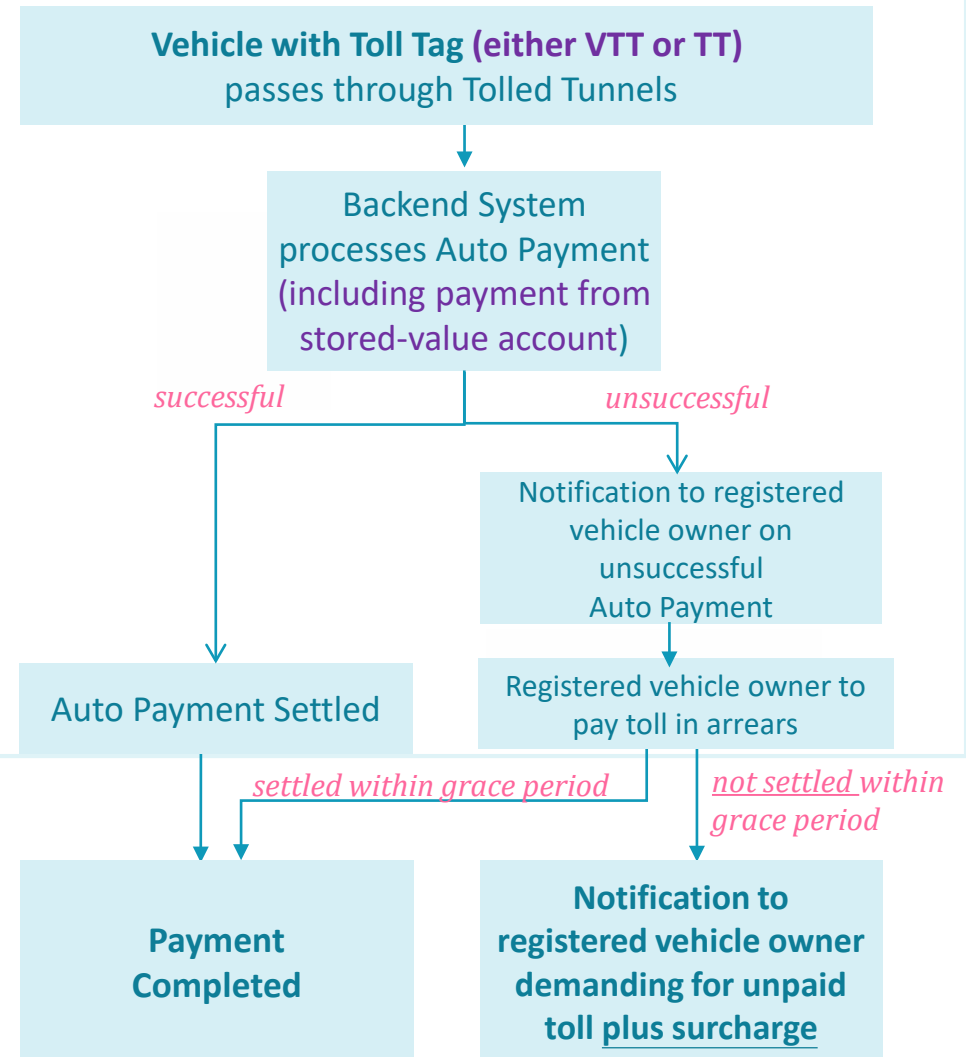
# Free-Flow Tolling System

## Vehicle with Toll Tag

### Vehicle Detection



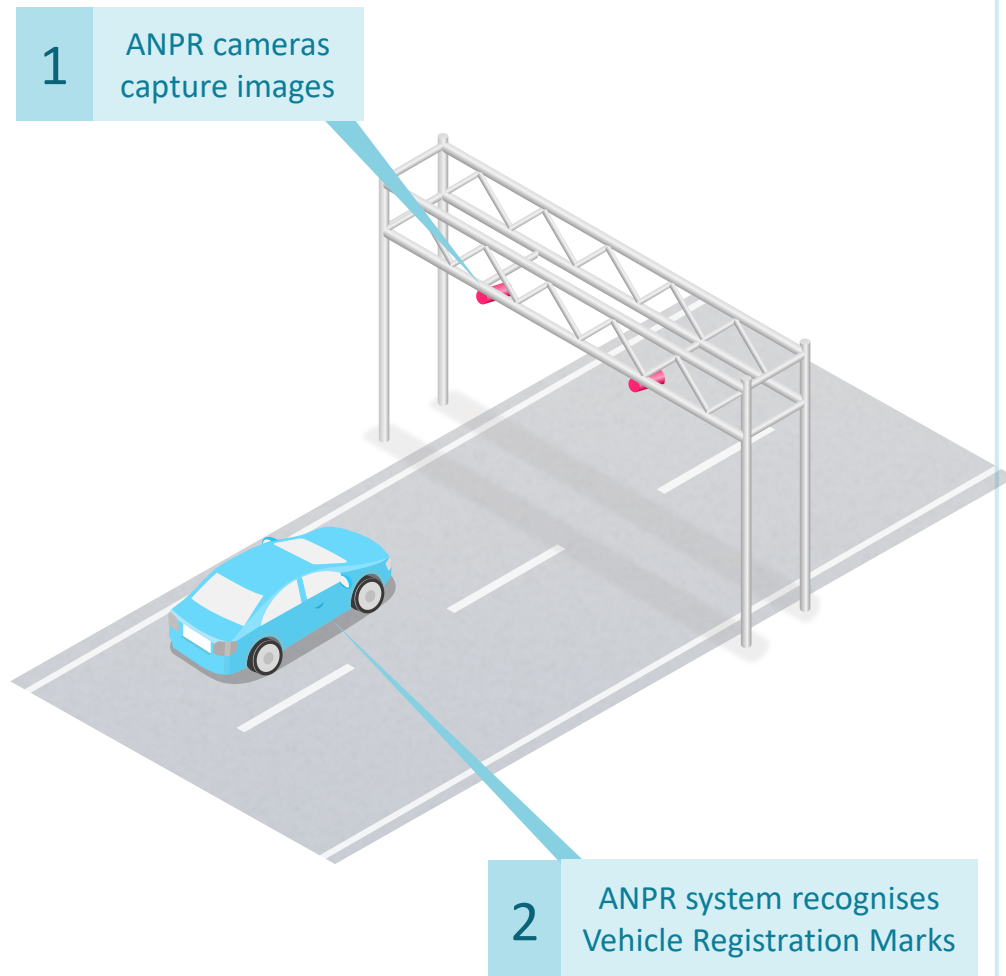
### Toll Payment



# Free-Flow Tolling System

## Vehicle without Toll Tag

### Vehicle Detection



### Toll Payment

