



## VIVA/YRT FARE POLICY

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DOCUMENT CONTROL # - O-03-000866 - VIVA  
VERSION 5.7  
MAY 18, 2005

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## 1. INTRODUCTION

The purpose of this paper is to document the proposed fare policy and fare collection system for the VIVA, specifically the initial "Quick Start" phase scheduled for implementation in fall 2005, and to outline a strategy for integrating the "Quick Start" with the current YRT fare policy and fare collection system.

Section 2 describes the VIVA Quick Start fare policy, advantages of off-board fare collection system, proof of payment and time-based transfers, and proposed VIVA automatic fare collection system with strategies for migration towards implementation of smart cards in the future.

Section 3 describes the existing YRT fare policy, fare collection system, and proposed modifications to the existing fareboxes.

Section 4 identifies the issues to providing inter-operability between VIVA and YRT fare collection systems based on the initial responses received from the fare collection vendors.

Section 5 provides an analysis of the various options considered to provide inter-operability between VIVA and YRT fare collection systems and describes the preferred options.

Section 6 identifies and addresses other issues such as fraudulent use of tickets, integrated fare media, revenue tracking for VIVA and YRT, and upgrade to smart card in the future.

The VIVA fare policy and the YRT integration strategies provide the basis for the specifications of automatic fare collection equipment to be procured for Quick Start.

This document has been updated based on a series of meetings between VIVA and YRT staff and representatives.

## 2. VIVA QUICK START FARE POLICY

The Quick Start phase of the VIVA will provide an early introduction of bus-rapid-transit service on the major transit corridors of York Region. To support this "higher order" service, a new advanced YRTP fare policy and fare collection system has been developed and will be implemented as part of Quick Start. This policy is intended to achieve the following objectives:

- Minimize the impact of fare collection on rider travel times and operation of VIVA and YRT;
- Be easy to understand and use while travelling on VIVA and/or YRT;
- Minimize the probability of fraudulent usage of transfers on YRT; and
- Be fully integrated with the YRT fare system and, thus, provide barrier-free and seamless transit service throughout the Region.

To meet these objectives, the new fare policy and fare collection system will include a number of elements that are discussed in more detail in the sub-sections that follow and are summarized as follows:

- Off-board fare payment, using automated ticket vending machines and other sales outlets;
- “Proof-of-payment” (POP) fare collection, with roving fare enforcement inspectors;
- Time-based transfers, with unlimited travel in any direction for a fixed period of time (subject to further consideration of the impact on YRT direction-based transfer policy);
- Two fare zones (subject to further consideration of the YRT three zone plan); and
- Full fare integration with YRT, including continuation of existing YRT fare categories and media.

## 2.1 Off-Board Fare Collection

The most significant new feature of the Quick Start service regarding fares will be the pre-payment of fares using automated ticket and pass dispensing and ticket validation equipment. Thus, all fare payment would be made before boarding the transit vehicle. This would involve either purchasing a validated single-ride ticket or validating a pre-purchased ticket at the stop or terminal where the transit trip begins. Pass holders would not have to carry out any specific pre-boarding procedure.

This policy will allow for all doors to be used for both alighting and boarding, just like on a subway or other form of rapid transit system, and will eliminate the need for passengers to queue past the driver when boarding. It also means there will be no need for conventional fareboxes on the vehicles. This approach is expected to drastically reduce vehicle dwell times at stops and, as a result, overall travel times for passengers.

## 2.2 Proof-of-Payment (POP)

To support the off-board fare collection policy, a Proof-of-Payment (POP) system will also have to be included in the VIVA fare policy. This is essentially to facilitate the all-door boarding, so that the passengers do not have to queue through the front door past the driver and so that the driver does not have to check the validity of the fare media.

The POP system requires that the VIVA customers retain some form of proof that a fare has been paid, namely, a validated ticket, a pass or a valid transfer. The customer may be required to show this proof while on the VIVA vehicle, typically on a random basis to a roving fare inspector. Failure to show proof-of-payment will result in the levying of a fine, which should be sufficiently high enough to be an effective disincentive against fare evasion. A review of enabling legislation and POP enforcement framework is discussed in the following sections.

## 2.3 Time-Based Transfers

The POP policy will be further enhanced and simplified with a transfer policy that is “time-based”, rather than “route-based”, as part of the overall VIVA fare policy. This would allow unlimited transferring in any direction within a valid period of time, currently proposed to be 120 minutes; however, the actual time transfer allowances will be set as an operational parameter. The time of expiry would be indicated on the validated ticket or on a transfer so that an inspector or a driver is able to determine its validity.

This policy is required to support the proof-of-payment and off-board payment procedures so that any ticket vending machine can issue fare media for any trip and the passenger does not have to enter a specific direction at the machine. It also offers several advantages, including:

- Increased attractiveness and more travel flexibility for passengers and potential new passengers by allowing stopovers (e.g. dropping children off at day-care) and facilitating more than one short trip (e.g. a quick return trip) that might otherwise be considered by potential riders as uneconomical by transit (i.e. two fares to go a few blocks and return);
- Greater simplicity to passengers and potentially fewer fare disputes;
- Greater ease of fare inspection for the “proof of payment” policy;
- Easier for YRT drivers to determine the validity of validated tickets or transfers; and
- More compatible with the proposed automated ticket validation machines being proposed for the VIVA stops.

Timed-based transfer policies have been introduced in several Canadian cities in recent years, including Vancouver, Victoria, Edmonton, London, Kitchener-Waterloo and Mississauga, among others. Although not quantitatively conclusive, the general experience, reported anecdotally, has been that operators enjoyed increased ridership, significant in some cases, with little or no revenue loss. Detailed results of research with other transit operators across the country to substantiate this assertion will be provided in Appendix “A” (to be provided). The public response has been very favourable towards timed-based transfer policies

## 2.4 Fare Zones

To meet the second overall objective mentioned earlier, the VIVA fare policy and fare collection system have been designed to be fully integrated and consistent with the comprehensive transit fare plan recently developed as part of the YRT Five-year Service Plan. This will maximize the attractiveness of the service, ensure customer convenience and understanding, and support all aspects of Region-wide transit service integration.

The YRT fare plan maintained the existing fare categories and various forms of fare media (discussed in the next section), but added a new 3-zone fare structure. The 3-zone policy was intended to generally relate fare levels to the variance in trip lengths and cost of providing longer trips, be comparable to other carriers (e.g. GO Transit) and to maximize revenue without significantly losing ridership. The 3-zone structure, however, has not yet been implemented on YRT conventional bus operations because YRT services do not now cross any of the proposed 3<sup>rd</sup> zone boundaries.

The VIVA fare policy proposes a zone fare structure but it would only include two zones, in that the VIVA services would only operate within two of the three zones identified in the YRT fare plan (the third YRT zone was for the Town of Georgina). The proposed zones for Quick Start are the same as those in the YRT Five-year Service Plan and are as follows:

- Zone 1 – South York Region (south of Bloomington and 15th Side Road), including Markham, Vaughan, Richmond Hill, and the communities of Stouffville, King City, and Nobleton. Also includes the portion of the City of Toronto travelled by YRT buses between the York border at Steeles and the Finch, Downsview and Don Mills TTC Subway stations. Oak Ridges is part of both Zones 1 and 2.

- Zone 2 – Newmarket, Aurora, East Gwillimbury and the portions of King and Whitchurch-Stouffville north of Bloomington and 15th Side Road. Oak Ridges is part of both Zones 1 and 2.
- Zone 3 – Georgina.

Under Quick Start, only the Yonge-Richmond Hill-Newmarket line has the potential for multi-zone rides, with a two-zone fare required for trips between Zone 1 (South York Region) and Zone 2 (Newmarket and Aurora). All other Quick Start services will remain within Zone 1.

The specific fares for the various zones and their respective fare categories and fare media are described in the following section.

## 2.5 Fare Categories and Fare Media

The VIVA fare structure is proposed to be consistent with the YRT fare structure that will be in effect at the opening of Quick Start, as detailed in Table 1.

**Table 1 - VIVA Fare Categories and Fare Media**

| <b>Fare Media</b>                                                          | <b>Adult</b> | <b>High School Student</b> | <b>Senior</b> | <b>Child</b> |
|----------------------------------------------------------------------------|--------------|----------------------------|---------------|--------------|
| <b>Travel on Local YRT and/or VIVA Service Within Either Zone 1 or 2</b>   |              |                            |               |              |
| One Zone One Ride Tickets (Validated)                                      | X            |                            |               |              |
| Pre-purchased 10 One Zone One Ride Tickets (Unvalidated)                   | X            | X                          | X             |              |
| One Zone Monthly Pass (unlimited)                                          | X            | X                          | X             |              |
| <b>Travel on Local YRT and/or VIVA Service Within Both Zone 1 and 2</b>    |              |                            |               |              |
| Two Zone One Ride Tickets (Validated)                                      | X            |                            |               |              |
| Pre-purchased 10 Two Zone One Ride Tickets (Unvalidated)                   | X            | X                          | X             |              |
| Two Zone Monthly Pass (unlimited)                                          | X            | X                          | X             |              |
| Zone Upgrade (Validated) with One Zone Pass, Ticket or Transfer            | X            |                            |               |              |
| <b>Travel on Local YRT, VIVA and/or Shuttle Service To/From GO Station</b> |              |                            |               |              |
| Ride to GO (Validated) with GO Transit Ticket or Pass                      | X            |                            |               |              |
| <b>Travel on any Local Transit Service in GTA (YRT, TTC, MT, BT)</b>       |              |                            |               |              |
| GTA Weekly Pass <sup>1</sup>                                               | X            |                            |               |              |

1- GTA Weekly Pass will be accepted on VIVA but will not be vended by the ticket vending machines.

It may be noted that a 2 zone fare policy will require issue of a single or 2 zone transfers for the trips originating on YRT buses and terminating either in the same zone or in a different zone. This is necessary to track if the rider deposited a single or 2 zone ticket while boarding the YRT bus.

It has been suggested that VIVA should look into the option of having a same day return ticket which will have 2 single ride tickets with one being validated at the time of issue and the other unvalidated which the rider will have to validate during their return trip. The option of introducing a day pass (one and/or two zone), either instead of or in conjunction with the return ticket (both for VIVA and YRT) may also be considered. VIVA fare collection equipment will be capable of issuing day passes with only modest software modification. Alternatively, these may be considered in future years in conjunction with the move to a GTA-wide "smart card" system. Neither of these potential new media is currently included in either the YRT fare policy or that proposed for VIVA.

## 2.6 VIVA Premium Fare Consideration

The option of having a premium fare for Quick Start was considered but determined not to be desirable for the following reasons:

- Fare categories and media of YRT local bus and Quick Start services are intended to be fully integrated across the Region. Use of a common ticket and pass on both systems should attract more riders to the system. Having separate fares and tickets would only increase complexity and inconvenience for the riders, who would not only need to purchase and retain two types of tickets or passes but would be required to make additional decisions about whether, how and when to use the system. Different fares will also lead to confusion for riders about which fares to purchase for which routes leading to an expected increased level of customer service complaints.
- Quick Start has been designed to be York Region's backbone transit facility, providing rapid transit service along core trunk routes traversing the entire Region. YRT local bus service will feed the high-capacity Quick Start lines, just as TTC bus and streetcar services seamlessly feed the TTC subway lines in Toronto. Quick Start can even be considered as York Region's "subway".
- Establishing integrated fares and fare policies that encourage the use of Quick Start and encourage transfers to and from YRT local service is central to promoting this concept. Setting a premium fare for Quick Start will just provide riders with a reason *not to use* Quick Start in favour of using local service or with a reason *not to transfer* to Quick Start.
- Supporting a premium fare would be complex and costly to the operation of Quick Start. Additional ticket types would need to be accommodated in Quick Start ticket vending machines and at YRT ticket outlets. This would increase capital and operating costs for both Quick Start and YRT local bus service.
- The enforcement procedures for the Quick Start proof-of-payment system would be complicated with the introduction of additional fare categories. Inspections would be more time consuming and burdensome to both riders and the operator.
- The Quick Start 2 Zone fare structure already establishes an additional/premium fare for the longer routes.
- If for financial reasons, it is deemed necessary for YRT to increase revenues, fares can be increased equally and system-wide on both local bus and Quick Start.

It was therefore determined that the establishment of a single fare structure for both Quick Start and YRT local bus service will encourage ridership on the Quick Start routes and underscore the customer benefits of a fully integrated transit system in the Region.

## 2.7 VIVA Off-Board Fare Collection System

To facilitate the off-board fare payment policy, automated Ticket Vending Machines (oneRide/multiRide) will be installed at each VIVA boarding location. Each oneRide/multiRide machine will be provided with a touch screen display. The touch screen will help the traveller to select the desired ticket, pay the fare and purchase a ticket.

The oneRides located at all bus stops will have limited functionality. More sophisticated multiRides will be located at high-volume multi-modal terminals in addition to the oneRides with limited functionality.

Functionalities of multiRide and oneRide include the following:

### multiRide

- Issue one ride validated tickets
- Issue 10 one ride (unvalidated, similar to YRT) tickets;
- Issue monthly passes;
- Issue validated Zone upgrade and Ride to GO tickets,
- Issue receipts; and
- Accept coins, bills, credit cards and debit cards.
- Provide change (coins)

### oneRide

- Issue one ride (validated) tickets;
- Issue validated Zone upgrade and Ride to GO tickets,
- Issue receipts; and
- Accept coins (exact payment) and credit cards.
- Not provide change

Ticket Validators (vivaNow) will be installed at each VIVA bus stop and multi-modal terminals to validate pre-purchased unvalidated one ride tickets with date and time stamp.

A Revenue Management System (RMS) is proposed to monitor, track, audit, reconcile with the EFT host and manage revenue generated from the sale of tickets at vending machines, including terminal ticket vending machines and bus stop ticket vending machines. The RMS need not be located within the Interim Transit Control Centre (ITCC). If it is located elsewhere, an RMS sub-workstation will be located at the ITCC.

In the event that a oneRide at a particular bus stop is out-of-service and a patron boarding a VIVA vehicle at that particular bus stop is therefore unable to purchase a ticket prior to boarding, that patron will be entitled to take that particular ride on VIVA for free; however, that patron will not be able to transfer to another VIVA or YRT bus without paying the applicable fare. Protocols for

notification to inspectors of out-of-service oneRide and for resulting enforcement procedures will be developed.

## 2.8 Planning for the GTA Smart Card Fare System

On behalf of transit operators across the Greater Toronto Area and City of Hamilton, GO Transit is currently designing and will soon be implementing an electronic purse based contactless smart card Fare System that will be accepted for fare payment at all GTA and Hamilton transit operators. While it is presumed that YRT and VIVA will eventually accept the GTA fare card for fare payments, there is a possibility that the implementation of the GTA Fare System may be delayed or altered. It is not finally determined whether all future fare payments on YRT and VIVA will be using the GTA Fare Card. Therefore, VIVA will proceed to implement its paper based POP fare system adhering to the following philosophies:

- Automatic Fare Collection devices will be designed to minimize feature and equipment obsolescence when the GTA Fare System is implemented; and
- No additional current costs will be incurred by VIVA to accommodate the future GTA Fare System

This translates into the following detailed design considerations:

- oneRide /multiRide will be designed to permit the addition of an ISO 14443 type A/B contactless smart card reader as a low cost future retrofit
- vivaNow may be designed to permit the addition of an ISO 14443 type A/B contactless smart card reader as a low cost future retrofit
- oneRide /multiRide communications link to the RMS will be readily upgradeable to an on-line Ethernet connection
- RMS will be readily able to connect to the GTA Fare System Central System

## 2.9 POP Fare Enforcement Framework

POP fare enforcement on Quick Start requires the following policies, processes and guidelines to be in place at the start of the service:

- A Regional By-law to provide the legal basis for Quick Start POP Enforcement,
- A Set Fines framework and approved procedures for various offences,
- Roving POP fare enforcement inspectors,
- Supporting organization and equipment,
- Arrangements for York Regional Police Service emergency backup, and
- Internal operational guidelines for the enforcement inspectors.

Based on a detailed review of Quick Start requirements for proof-of-payment enforcement and the survey of POP enforcement policies in place at the twenty transit authorities across North America

that currently operate POP based fare collection systems, the is the recommended framework for the POP enforcement policy:

- Ticket inspections will be performed by enforcement teams consisting of one ticket inspector and one special constable working together to inspect all customers on a particular bus.
- Enforcement teams will vary their route and schedule and conduct targeted inspection and blitzes.
- Quick Start operates 18 hours a day. A minimum of 4 teams is required to achieve 18/7 coverage. To achieve a target of 5% ticket inspections (consistent with best practices survey) a minimum of 6 teams will be required.
- By its very nature, the act of asking a passenger to produce a valid proof-of-payment backed up by the potential of charging that passenger with a fine creates a potential confrontation. While enforcement inspectors will be fully trained in the skills and procedures required to keep these confrontations contained, in a small percentage of instances, the situation can escalate. For this reason, most transit authorities surveyed have determined that having a special constable with the perceived power of arrest present at the time of inspection tends to de-escalate situations before they even start. Approximate difference in hourly rate of a special constable and an enforcement inspector is \$ 9.
- One full time POP Enforcement Supervisor will be required to oversee the Quick Start enforcement activities.
- One full time Enforcement Data Analyst will be required to maintain the database of repeat offenders, to assemble the enforcement reports and prepare required records for court proceedings. The database will be designed to remove offender names after a predetermined time period.
- Enforcement teams will be able to check the repeat offender database from the bus.
- Each member of the enforcement team will be equipped with a mobile radio to call for the backup special constable or the YRPS.

With respect to operational guidelines, it is recommended that:

- Citations and summonses will be issued to customers on board the buses while the bus is traveling.
- In the event that a customer is non-compliant when challenged to produce a valid ticket or proper identification or does not compliantly accept the citation or summons, an enforcement escalation protocol will be followed. This enforcement escalation protocol is still under development
- The enforcement procedure for "failure to have a valid ticket" is for the enforcement officer to check the repeat offender database to determine if the customer is a repeat offender. A first time offender will be issued a citation to pay a fine. Unless provision is made in the Set Fine Application for higher fines for second and multiple offences, a repeat offender will be issued a summons to appear in court.

- The enforcement procedure for “possession of a counterfeit ticket” is for the enforcement officer to issue a summons to appear in court.
- It is recommended that the Set Fine Application establish a base fine of \$105 and sharply escalating fines for repeat offences, which is consistent with fines enforced elsewhere in Canada according to the survey of best practices.
- VIVA and YRT will monitor and review enforcement performance metrics quarterly
- VIVA and YRT will conduct a complete review and analysis of enforcement performance metrics and enforcement guidelines annually and report to Council.

### 3. YRT FARE POLICY

As noted above, a major objective of the VIVA fare policy is to be fully integrated with YRT, to ensure that all services within the York Region are seamless to the transit rider. The approved YRT fares for year 2005 are categorised in the groups as shown in Table 2A.

**Table 2 - YRT Fare Categories and Fare Media**

| <b>Fare Media</b>             | <b>Adult</b> | <b>Student</b> | <b>Senior</b> | <b>Child</b> |
|-------------------------------|--------------|----------------|---------------|--------------|
| Cash Fare                     |              |                | X             |              |
| Strips of 10 One Ride Tickets | X            | X              |               | X            |
| GO Cash Supplement            |              |                | X             |              |
| Express Fare Ticket           |              |                | X             |              |
| Monthly Pass (Unlimited)      | X            | X              |               | X            |
|                               |              |                |               |              |
| GTA weekly pass               |              |                | X             |              |

The approved YRT fares for year 2005 are shown in the TABLE 2A.

**Table 2A – Year 2005 VIVA/YRT Fares**

| <b>Fare Category</b>         | <b>Fare</b> |
|------------------------------|-------------|
| ONE ZONE ADULT TICKET        | \$2.10      |
| TWO ZONE ADULT TICKET        | \$3.10      |
| ONE ZONE CASH FARE           | \$2.25      |
| TWO ZONE CASH FARE           | \$3.25      |
| ONE ZOZE STUDENT TICKET      | \$1.50      |
| TWO ZOZE STUDENT TICKET      | \$2.50      |
| ONE ZONE SENIOR/CHILD TICKET | \$1.20      |
| TWO ZONE SENIOR/CHILD TICKET | \$2.20      |
| EXPRESS CASH                 | \$2.50      |
| EXPRESS TICKET               | \$2.30      |

|                            |          |
|----------------------------|----------|
| GTA WEEKLY PASS            | \$41.25  |
| ONE ZONE STUDENT PASS      | \$52.00  |
| TWO ZONE STUDENT PASS      | \$92.00  |
| ONE ZONE MULTIPASS         | \$78.00  |
| TWO ZONE MULTIPASS         | \$118.00 |
| ONE ZONE SENIOR/CHILD PASS | \$35.00  |
| ONE ZONE SENIOR/CHILD PASS | \$65.00  |
| ZONE UPGRADE               | \$1.00   |
| GO SUBSIDY / SUPPLEMENT    | \$0.50   |

In addition to the above categories, YRT buses also accept tickets and passes from Brampton Transit and transfers from TTC buses operating in York Region under contract with YRT (and vice versa). YRT has also adopted a 3-zone fare system in principle, as noted earlier, but has not yet implemented it because YRT routes do not yet cross the proposed zone boundaries (these connections are made by GO Transit, which uses a separate fare system that is not integrated with YRT).

The Adult, Student, Child, Senior and Express cash fare tickets are sold in a sheet of 10 tickets through the concession counters and numerous fare media outlets (85 outlets). The various passes are also sold through the same outlets. Some outlets sell the entire selection of tickets and passes, while others sell a reduced selection. YRT does not sell their tickets through any automated Ticket Vending Machines; however, consideration may be given to replacing some sales outlets with multiRide should there be an acceptable business case.

### 3.1 YRT Fare Collection System

The existing YRT fare collection system is based on the verification of payment at the time of boarding. The bus driver verifies passenger fare payment at the time of boarding either by displaying a valid pass to the driver or depositing a cash fare payment (coins and banknotes) or pre-purchased ticket into an electronic registering farebox, except on the buses operating on the Newmarket-area routes which are equipped with gravity (non-registering) fareboxes and for which fare category classification is not possible. With the electronic fareboxes, the driver registers the cash fares and various passes by pressing the pre-assigned buttons on the farebox keypad, with the exception of the adult cash fare which is the default registration. The acceptance and classification of adult, student, child, senior and express tickets is done automatically by the fareboxes, based on the dimension of the tickets as described below:

Adult – 1-1/2" x 1-1/2"  
Student – 2" x 2"  
Senior/Child – 2-1/2" x 2-1/2"  
Express – 1-1/4" x 1-1/4"

Data from the registering fareboxes are transferred to the contractor computer at the end of each day at the garage by means of a data downloading probe. In addition to other usage, these data are used to obtain ridership information on various YRT routes.

As of December 31, 2003 YRT will have a fleet of approximately 231 buses equipped with 3 different kinds of fareboxes as described below:

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- Gravity type fareboxes on the Newmarket buses (27 buses). These are “non-registering” mechanical fareboxes that do not classify cash fare or tickets into the categories such as adult, student, child, senior and express fare. YRT is considering upgrading these fareboxes; however, the new fareboxes may not be “registering” type fareboxes.
- Registering fareboxes with Windows based software on the buses acquired from GO Transit (74 buses as of now). These buses have a 16 button keypad on the fareboxes out of which 4 buttons are currently not used. These buttons could be easily programmed to classify the new VIVA tickets into categories such as adult, student, child and senior.
- Registering fareboxes with DOS based software (approx. 130 Buses). These buses have a 12 button keypad (similar to telephone buttons) on the fareboxes. All the buttons are being currently used to classify the YRT cash fares and passes. YRT is in the process of upgrading these to Windows based fareboxes which will have 16 buttons.

**Table 3 - Existing 12 Button Keypad Layout**

|                                    |                                 |                             |
|------------------------------------|---------------------------------|-----------------------------|
| <b>1</b><br>Student Cash<br>\$1.50 | <b>2</b><br>GTA<br>Pass         | <b>3</b><br>Student<br>Pass |
| <b>4</b><br>Senior Cash<br>\$1.25  | <b>5</b><br>Adult Multi<br>Pass | <b>6</b><br>Senior<br>Pass  |
| <b>7</b><br>Child Cash<br>\$1.00   | <b>8</b><br>GO Rail<br>\$0.25   | <b>9</b><br>Transfer        |
| <b>*</b><br>Brampton<br>Passes     | <b>0</b><br>HOLD                | <b>#</b>                    |

## 4. YRT – VIVA INTEGRATION

### 4.1 Proposed Approach to Fare Integration

The proposed VIVA automated approach to fare collection has been designed to be fully integrated with the current YRT fare collection system and policy. This policy will cover all those riding VIVA

services, either as a VIVA fare-paying passenger or a transfer passenger from a YRT or other service, along with those riding the YRT and other local services (e.g. TTC and Brampton).

When taking a trip on VIVA, all passengers are to be in possession of validated one ride ticket, a monthly pass, or a valid YRT transfer as proof of payment. This is summarized briefly in Table 4.

**Table 4 - Fare Integration Approach**

|                      | <u>Trip Starts on YRT</u>                                                                       | <u>Trip Starts on VIVA</u>                                                                                     |
|----------------------|-------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Cash Fare            | Fare deposited in farebox and transfer issued – transfer accepted as proof of payment on VIVA   | Fare deposited in oneRide /multiRide and validated one-ride ticket issued – ticket accepted as transfer on YRT |
| Pre-purchased Ticket | Ticket deposited in farebox and transfer issued – transfer accepted as proof of payment on VIVA | Ticket validated in Ticket Validator – validated ticket accepted as transfer on YRT                            |
| Pass                 | Pass shown to driver – accepted as proof of payment on VIVA                                     | Pass accepted as proof of payment                                                                              |

For the above, 2-zone payments will be accommodated. VIVA oneRide will be able to issue 2-zone tickets and Zone upgrades to one-zone tickets or transfers. YRT transfers will be able to designate the payment of a 2-zone fare.

#### **4.1.1 INTEGRATION WITH OTHER CARRIERS**

Both TTC and Brampton Transit operate services in York Region that are effectively part of the YRT system and are compatible with the YRT fare system. Each has designations on their transfers to incorporate YRT fares. For the purposes of VIVA-YRT integration, TTC and BT services may be considered the same as YRT services.

Brampton Transit shares one route (77) with YRT and both systems accept each other's fares. Brampton transfers from Route 77 will be accepted as YRT transfers on VIVA and VIVA tickets may be accepted as transfers on BT Route 77.

TTC operates services into York Region under contract with YRT. Within York Region, TTC buses act as YRT buses, but separate TTC fares must be paid to cross the Toronto-York boundary. TTC transfers are designed to indicate the payment of TTC-only fares, YRT-only fares and double fares for both jurisdictions. TTC transfers showing payment of a YRT fare will be accepted like a YRT transfer as proof of payment on VIVA. VIVA tickets will be accepted on TTC like a YRT transfer for the YRT fare, but an additional fare will still be needed for those trips crossing into Toronto.

All the specific combinations of trip elements and fare payments among all transit systems in York Region are illustrated in the integration matrix provided in Appendix B. Note that, except in the instance of the GO Transit Local Fare Agreement in Aurora, there is no fare integration between YRT and GO Transit, other than the Ride to GO, noted above.

## 4.2 Fare Collection Integration Issues

For the acquisition of automated fare collection equipment for VIVA, specifications have been designed to facilitate full integration with YRT as described above. These have been sent to equipment suppliers as part of the tendering process. In the first round of tendering, the responses received from the vendors have raised the following as significant issues:

- Issuance of strips or booklets of 10 one ride tickets from the multiRide similar to the existing YRT tickets (different sizes as described above) will either be cumbersome and expensive (requiring multiple storage areas and transport mechanisms) or will not be possible. Associated with this are many other issues such as maintenance of ticket transport systems inside the multiRide that will be fed from different tickets stocks and may cause frequent ticket jams.
- The Ticket Validator will not be able to accurately and consistently cancel different sizes of pre-purchased one ride tickets, if the existing YRT tickets or equivalent are used. This requires insertion of tickets in a predefined way and may lead to smaller tickets not being cancelled on the ticket validators.

Generally, the ticketing solutions for the new VIVA fare system proposed by suppliers should allow for full integration of the VIVA and YRT fare systems, with the exceptions noted above. If the existing differences in ticket size are retained for the YRT system, VIVA Ticket Validators will not be able to cancel at least some of the existing YRT tickets, regardless what ticket size or format is issued by the VIVA multiRide, or even if a decision is made not to have the multiRide issue pre-purchased unvalidated tickets.

If YRT retains variable-sized tickets and the VIVA multiRide issues single-size tickets (which may be the only feasible choice), other difficulties will result, including:

- VIVA pre-purchased tickets will not be classified into different categories by the YRT fareboxes;
- Many customers will need to purchase and retain two distinct types of tickets and the concept of a single unified set of fare media will be compromised.

If only single-sized tickets are used by both YRT and VIVA, the above problems should be solved and a fully integrated fare system will result. This could, however, result in some operational or classification problems for YRT and VIVA. These and possible solutions are discussed in the next section.

## 5. REMEDIAL APPROACHES TO INTEGRATION

### 5.1 Analysis of Options

Considering the above issues, and notwithstanding potential impacts on YRT, a number of approaches were identified and analyzed to resolve the integration and equipment issues noted above. These centred primarily on either moving to a single size ticket common to both VIVA and YRT or, alternatively, reducing the number of ticket sizes to those compatible with the validator.

The options considered are as follows:

- Use a single-size ticket and reduce the level of YRT ridership classification;
- Use a single-size ticket and upgrade YRT fareboxes to a 16-button keypad;
- Use a single-size ticket and reduce/simplify the fare categories;
- Use tickets with a common width and variable lengths.

A few other options were also identified but not fully considered due to agreed-upon deficiencies. These included changing YRT fareboxes to 2-digit codes (for classification), relying on surveys for ridership classification and optically classifying tickets (e.g. bar-codes) in the YRT fareboxes (this was not readily available from the manufacturer).

## 5.2 Recommended Fare Integration Option

The recommended approach is a combination of two of the main options considered, with the following features:

- A 16-button keypad; and
- 3 distinct sizes of tickets, one square adult ticket, and two rectangular tickets with the same width as the adult ticket and each with the length longer than the width (one for students and the second for seniors and children).

Because the DOS-based registering fareboxes are already planned to be upgraded to a 16-button keypad, all manual (button) classification options will thus be accommodated on all YRT buses except those in Newmarket. But, to minimize the impact on drivers and to ensure reasonably accurate classifications, three sizes of tickets would ensure that the fareboxes can automatically classify approximately 91% of tickets (adult and students). The only manual intervention required for tickets would be for seniors, children and express fares, all of which comprise approximately 9% of ticket transactions and less than 3% of all fare transactions.

The following data has been obtained from YRT and represents ticket use by fare category for May 2003:

Adult Tickets (124083) – 68%  
Student Tickets (42061) – 23%  
Senior Tickets (14192) – 08%  
Child Tickets (1328) – 01%

Table 5 provides projected ridership by fare category for the end of Year 2004.

**Table 5 - Year 2004 Projected Ridership**

| <b><u>Fare Category</u></b> | <b><u>Estimated 2004 Year<br/>End Ridership</u></b> | <b><u>Percentage</u></b> |
|-----------------------------|-----------------------------------------------------|--------------------------|
| Adult Ticket                | 2,947,947                                           | 22.90%                   |
| Adult Cash                  | 5,574,576                                           | 43.30%                   |
| Student Ticket              | 711,863                                             | 5.53%                    |
| Student Cash                | 468,643                                             | 3.64%                    |
| Child Cash                  | 82,962                                              | 0.64%                    |

## VIVA/YRT Fare Policy

|                      |                   |                |
|----------------------|-------------------|----------------|
| Child Ticket         | 48,874            | 0.38%          |
| Express Cash         | 0                 | 0.00%          |
| Express Ticket       | 163,622           | 1.27%          |
| GTA Weekly Pass      | 1,230,531         | 9.56%          |
| Student – 7 Day Pass | 115,102           | 0.89%          |
| Multi Pass           | 666,442           | 5.18%          |
| Senior Cash          | 128,737           | 1.00%          |
| Senior Ticket        | 151,138           | 1.17%          |
| Senior Pass          | 80,040            | 0.62%          |
| Student – 5 Day Pass | 253,354           | 3.64%          |
| Student – 5 Day Pass | 215,820           | School Board   |
| GO Train \$0.25      | 34,088            | 0.26%          |
| <b>Total</b>         | <b>12,873,741</b> | <b>100.00%</b> |

The sample assignment of buttons on 16-button keypad is shown in

Table 6.

**Table 6 - Sample 16 Button Keypad Layout**

|                                    |                                 |                             |                                |
|------------------------------------|---------------------------------|-----------------------------|--------------------------------|
| <b>1</b><br>Student Cash<br>\$1.50 | <b>2</b><br>GTA<br>Pass         | <b>3</b><br>Student<br>Pass | <b>A</b><br>Senior<br>Tickets  |
| <b>4</b><br>Senior Cash<br>\$1.25  | <b>5</b><br>Adult Multi<br>Pass | <b>6</b><br>Senior<br>Pass  | <b>B</b><br>Child<br>Tickets   |
| <b>7</b><br>Child Cash<br>\$1.00   | <b>8</b><br>GO Rail<br>\$0.25   | <b>9</b><br>Transfer        | <b>C</b><br>Express<br>Tickets |
| <b>*</b><br>Brampton<br>Passes     | <b>0</b><br>HOLD                | <b>#</b>                    | <b>D</b>                       |

The sizes of tickets still need to be compatible with both the VIVA ticket validators and the YRT fareboxes. This could be done without modifying the fareboxes, as long as the length of the rectangular tickets is longer than the width of the farebox opening (the width of a bill). This may, however, result in fairly large tickets.

The three ticket formats need to be sized to not only ensure interoperability but also minimise fraudulent use of validated tickets. They are proposed as follows:

#### **multiRide**

- Adult Unvalidated 10 One ride tickets of dimension 2 ½ inches (63 mm) x 2 ½ inches (63 mm);
- Student Unvalidated 10 One ride tickets of dimension 2 ½ inches (63 mm) x 3 inches (76 mm); and
- Senior/Child Unvalidated 10 One ride tickets of dimension 2 ½ inches (63 mm) x 3 ½ inches (89 mm).

In addition multiRide will also issue validated one ride tickets of dimension 2.3 inches x 6 inches when issued without a receipt and 2.3 inches x 8 inches when issued with a receipt using the receipt printer. The quality of paper shall be very similar to the existing transfer to avoid customer confusion.

#### **oneRide**

- Validated one ride tickets of dimension 2.3 inches x 6 inches when issued without a receipt and 2.3 inches x 8 inches when issued with a receipt. The quality of paper shall be very similar to the existing transfer to avoid customer confusion.

An alternative that was considered was to modify the throat of the existing fareboxes to allow a reduced width of tickets and provide more options for the ticket lengths for classification. The acceptance of bills was be a cause of concern with the reduction in the throat in that the bills would have to be inserted folded lengthwise or quarterly. This, however, will require driver inspection of the folded bill. In view of BT buses operating in York Region and accepting YRT tickets and vice-versa the option of reducing the throat of fareboxes was not felt to be desirable as BT will likely not modify the throat on their fareboxes. In any event, YRT has determined that it currently collects a very small number of bills in the fareboxes.

A further issue was that any slipping during the insertion could lead to an error in reading the length of the ticket, which is the basis for the classification by fareboxes. GFI Genfare was requested to provide a copy of specifications for the ticket material, but they later responded that they do not have a copy of specifications. To reduce the possibility of slippage, VIVA will require that the tickets issued by the multiRide will be functionally similar to the tickets currently issued by YRT.

It was also confirmed by GFI Genfare that there would not be any upgrade to the bill acceptors during the proposed upgrade of existing fareboxes.

## **6. OTHER ISSUES**

### **6.1 Fraudulent Use of Validated Tickets**

The following concerns have been raised during the meetings regarding fraudulent use of tickets in an integrated system:

- Validated tickets (one ride tickets issued by oneRide or pre-purchased tickets validated on vivaNow) being deposited in the farebox with date and time stamp not visible to the driver (tickets flipped upside down) and
- Validated tickets being passed on to, or picked up by, other people at transfer points if sufficient travel time window is still available.

To curb the fraudulent use of validated tickets in fareboxes, the following is proposed:

- The oneRide will issue validated one ride tickets of dimensions and quality that will be visually and materially very different from the unvalidated tickets issued by the multiRide. This is will allow easy and apparent visual differentiation between validated tickets and unvalidated tickets;
- The multiRide will issue validated one ride tickets same as issued from the oneRide machines as the printer on the multiRide can be used to issue these tickets. ; and
- The vivaNow will validate the tickets in such a way that there is apparent visual differentiation between validated tickets and unvalidated tickets. This is proposed to be achieved by printing zone, vivaNow id, date and time on both faces of the unvalidated tickets issued by the multiRide: and clipping one of the corners of the unvalidated ticket issued by the multiRide in such a way that the clipped ticket is easily discernible based on the shape by a bus driver in the viewing window of the existing YRT electronic registering farebox.

It is very difficult to prevent the fraudulent sale or passing on of validated tickets to other people at transfer points. To minimize such fraudulent use, in the event that a time-based transfer is adopted the valid travel time window will be reviewed and modified if necessary.

It was also considered that passengers may unwittingly deposit a pre-purchased ticket which was validated at a vivaNow validator within the acceptable time transfer validity period, into the registering farebox, despite clear instructions not to do so. The driver will be encouraged to exercise discretion before requiring an additional fare to be paid if he/she is convinced that the passenger made an honest mistake.

## 6.2 Integrated Fare Media Issues

The issues described in Table 7 have been raised during the meetings regarding use of fare media in an integrated system:

**Table 7 - Integrated Fare Media Issues**

|    | Issue                                                                                                                       | Policy                                                                                                                                                                                                                                                                                                                          |
|----|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | How will a customer be able to travel to zone 2 due to an enroute change in decision while travelling with one zone ticket? | The customer will be required to alight the bus to purchase a validated Zone upgrade from the oneRide and board the next available bus. Due to the short headway between the buses, this will not cause a lot of inconvenience to the customer, recognising the fact that it was a late change in the decision by the customer. |

## VIVA/YRT Fare Policy

|    | Issue                                                                                                                                                                                                                                     | Policy                                                                                                                                                                                                                                                                                      |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2. | Will a first time boarding on a YRT bus with validated VIVA ticket be recorded as revenue boarding or transfer?                                                                                                                           | TBD – based on the final governance and business arrangement review, financial reconciliation and settlement between YRT and VIVA may be required.                                                                                                                                          |
| 3. | Will a customer be allowed to travel over 2 zones with 2 one-zone validated tickets?                                                                                                                                                      | The customer will be permitted to travel over 2 zones with 2 one-zone validated tickets however, it will be a costlier option for the customer as the combined cost of 2 one-zone validated tickets is more than a single 2-zone ticket.                                                    |
| 4. | How will 2-zone transfers be issued by YRT for 2-zone unvalidated VIVA tickets deposited on YRT fareboxes.                                                                                                                                | The transfers are common for both one zone and two zone as both tickets have the same permitted time window for travel.                                                                                                                                                                     |
| 5. | Will VIVA be selling Tickets from concession counters?                                                                                                                                                                                    | The VIVA fare policy does not envisage sale of VIVA Tickets from concession counters. Since the VIVA/YRT will be one unified system, where YRT tickets will be available from the concession counters, there is no need to sell VIVA tickets from concession counters.                      |
| 6. | Should YRT require passengers to surrender all transfers and validated tickets when a customer transfers to another system and obtain a new transfer if they wish to continue their trip?                                                 | This would allow another valid travel time window for the customers to complete their trip and the customer will be travelling in the system for longer time than that for which they have paid. YRT does not intend to issue such additional transfers.                                    |
| 7. | Time based transfer concept may lead to revenue loss.                                                                                                                                                                                     | TBD. VIVA will contact other Transit agencies where this policy has been implemented and share their experience with YRT. Note that the time-based system is important to support the off-board pre-payment format for VIVA.                                                                |
| 8. | Ensuring integration has led to a complex fare collection system which may be difficult for the customers to understand, especially understanding when they are expected to keep a ticket as a POP/Transfer or deposit it in the farebox. | The customers will be educated to differentiate between validated and unvalidated tickets. All validated tickets must be used as either POP on VIVA or transfer of YRT. All unvalidated tickets must be either validated before the trip starts on VIVA or deposited in the farebox on YRT. |

## 6.3 Revenue Tracking

It is recognized that the perfect tracking of paper tickets and transfers over an integrated paper ticket based system is impossible for revenue tracking arrangements. This will be further discussed and an acceptable revenue tracking methodology will be devised.

Depending on the governance model adopted for VIVA, there may be a need for detailed revenue and ridership tracking between the two systems. It is highly desirable to view YRT and VIVA as part of a single, seamless and fully integrated regional transit system. A single system would enable one central revenue collection destination, thus making the tracking of revenues between systems a secondary issue to the more important issue of overall system operability.

The central RMS will track, manage and report on all fare validations at stops and all fare media purchase transactions whether using coins, bills, credit or debit.

## 6.4 Upgrade to Smart Card

Considering the smart card initiatives being taken in the GTA and the likelihood of a new system being implemented in the next 5 years, the multiRide/ oneRide will be designed to enable the later addition of contact smart card acceptance for payment and contactless smart card reload functionality in a cost effective way. Refer to Section 2.7.

## **APPENDIX A**

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### **TIME-BASED TRANSFER – LESSONS LEARNED**

## **Background**

For the implementation of the Quick Start phase, VIVA is proposing an advanced fare-collection system that features off-board pre-payment of fares using ticket vending machines and validators at stops and terminals, along with a “proof-of-payment” policy where fare inspectors would carry out random checks. Both the off-board payment and proof-of-payment policy are designed to speed up the service overall by reducing time spent at stops, especially by allowing boardings by all doors and eliminating fare transactions with drivers.

Another feature of the proposed fare policy is the move to a “time-based” transfer policy, where riders can transfer in any direction, any number of times, including stopovers (e.g. to drop-off a child at day-care), within a fixed time limit. In order to be fully integrated with YRT local services, it is proposed that this policy apply to both VIVA and YRT.

The primary advantage of the open transfer policy is that, when combined with an effective marketing campaign, it attracts the casual rider, who isn't necessarily transit captive. By providing an attractive alternative for short trips, the transit ridership base expands, as more people become more familiar with the benefits of the system and increase their use accordingly.

Typically, 90 minutes is used as the time window for transferring on systems with the time-based policy. At times where service is substantially reduced, many operators allow for increased times either formally or informally at the discretion of the driver to accommodate the reduced service/headways.

On conventional systems, this window represents the time allowed between original fare payment, and the time the transfer is made. For VIVA, the window would need to be set to cover the time from original ticket validation before bus arrival, the transfer, and the length of the local trip to which the transfer is made or, alternatively, in initial local trip and full length of the VIVA trip that would follow.

## **Analysis of Canadian Experiences**

A number of transit systems nationwide have implemented an open, time-based transfer policy. Such a policy provides riders with unlimited use of the system during a set period of time, typically 90 minutes from when they pay their fare, and receive a time-stamped/marked transfer.

Based on the experiences of the above transit systems, open, time-based transfer policies have been well received both by operators and riders. Generally, the initiative has resulted in an overall increase in ridership, particularly during off-peak periods when there is usually plenty of excess capacity on the system, with little-to-no impact on revenue. The belief is that the net-gain in riders taking advantage of the more liberal policy, particularly for short, round trips offsets the revenue lost by allowing those additional trips.

Specific experiences are summarized in the following sections:

### **Grand River Transit (Kitchener-Waterloo)**

Grand River Transit currently operates using a 60-minute, open transfer policy. This policy dates back to 1996 before all regional Kitchener-Waterloo services were amalgamated. Generally, the results have been well received with ridership increasing by 22% following the implementation of the new policy, with no quantified impact on net revenue. It is generally believed that the policy has been successful in attracting casual riders, and an ongoing information campaign has been maintained to emphasize the benefits of the open transfer. Since the service amalgamation, the

possibility of increasing the time window to 90 minutes is being considered to reflect the greater regional trip lengths.

Contact: John Cicuttin - Manager, Transit Development

### **London Transit**

Between 1997 and 2000, London Transit implemented a number of service initiatives, including a 90-minute open transfer. During this period, London Transit realized a 24% increase in ridership and, even though it is not known for sure how much of this was attributable to the open transfer, the change in transfer policy was one of the more significant rider initiatives during this period.

Reference: The London Transit Commission Business Plan, 2001-2003

### **Mississauga Transit**

Mississauga Transit operates with a 2-hour (120 min.), open transfer policy. While Mississauga Transit has indicated that they have experienced no measurable change in revenue or ridership, they are generally pleased with the policy and intend to maintain it. Mississauga Transit noted that the policy has drastically reduced driver/passenger conflicts, but that they have noted an increase in passenger fraud, specifically the passing of transfers to other riders.

Contact: Maureen Hurren - Manager, Service Delivery

### **OC Transpo (Ottawa):**

OC Transpo implemented a 90-minute, open transfer in 1999. Response to the policy change has been positive, although no detailed analysis quantifying the effects has been conducted. Generally, it is estimated that any lost revenue has been recovered through increased ridership, capitalizing on the flexibility the transfer offers to make short round-trips. OC Transpo feels this flexibility is an asset in marketing their system, and intend on emphasising the policy in future marketing campaigns.

Contact: Joel Kauffman - OC Transpo Planning

### **Calgary Transit:**

Calgary Transit switched to a time-based transfer policy in January, 2000. While they have not quantified the results, they believe there has been an overall increase in ridership, particularly during the off-peak periods. During implementation, there was a marketing initiative undertaken to inform riders of the policy, which was considered successful. Calgary Transit has recently discussed a further marketing initiative to attract new riders, with a focus on the time-based transfer policy.

Contact: Dave Colquhoun – Manager, Service Planning

### **Edmonton Transit**

Edmonton has experimented with a number of transfer policies, with varying degrees of success. In 1988, Edmonton Transit restricted transfers to a single direction within 60 minutes from their previous 90-minute policy. This change led to significant problems and complaints from both drivers and riders. In 1989, they switched to an open policy, with transfers allowed in any direction

within 90 minutes. This was far better received and has remained in place. Primary benefits cited were increased ridership and easier enforcement by operators. During late-night and Sunday service, the 90 minute policy is left up to driver discretion, to allow for greater headways in service.

Contact: Ken Koropeski, Director of Service Development

#### **Translink (Vancouver)**

Translink has experienced a number of issues relating to its fare and transfer policies. During the period after implementation of the open transfer policy, Translink revenue dropped 6%. It should be noted that during the same period, Translink has identified other issues affecting revenue, specifically fare evasion, relating to their proof-of-payment policies and enforcement.

Reference: [www.translink.bc.ca](http://www.translink.bc.ca)

#### **BC Transit (Victoria)**

BC Transit in Victoria had recently proposed a switch to an open, time based transfer policy in an effort to attract new riders. This proposal was rejected due to concerns of potential revenue impacts, citing the experiences in Vancouver. While the decision was made for financial reasons, BC transit recognizes the benefits of the open transfer, and would prefer to implement such a policy, providing revenue assurances could be made.

Contact: Ron Drolet - Vice President, Planning & Marketing

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## **APPENDIX B**

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### **FARE MEDIA INTEGRATION MATRIX**

|                      |                                                                | 1                                                                                                                                                                                                | 2                                                                                                                                                                                                                                                                                                                                 | 3                                                                                                                                                                                                                                                                           | 4                                                                                                                                                                                                                                                                          | 5                                                                                                                                                                                                                           |
|----------------------|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                      |                                                                | TRIPS TRANSFERRING TO                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                             |
| TRIPS ORIGINATING ON |                                                                | VIVA Zone 1                                                                                                                                                                                      | VIVA Zone 2                                                                                                                                                                                                                                                                                                                       | YRT                                                                                                                                                                                                                                                                         | BT                                                                                                                                                                                                                                                                         | TTC                                                                                                                                                                                                                         |
| A                    | VIVA Bus with One Zone VIVA Ticket (validated)                 | Retain validated VIVA ticket as POP while on VIVA System. Discard the ticket after completing the trip.                                                                                          | Purchase validated Zone upgrade at oneRide /multiRide. Retain validated Zone upgrade with validated One Zone VIVA ticket as POP while on VIVA System. Discard both tickets after completing the trip.                                                                                                                             | Show the validated One Zone VIVA ticket to YRT driver as transfer and retain it. The driver records the transfer on the farebox. Discard the ticket after completing the trip.                                                                                              | Show the validated One Zone VIVA ticket to BT driver as transfer and retain it. The driver records the transfer on the farebox. Discard the ticket after completing the trip.                                                                                              | Show the validated One Zone VIVA ticket to TTC driver as transfer and retain it. Discard the ticket after completing the trip.                                                                                              |
|                      | VIVA Bus with Two Zone VIVA Ticket (validated)                 |                                                                                                                                                                                                  | Retain validated 2 Zone VIVA ticket as POP while on VIVA System. Discard the ticket after completing the trip.                                                                                                                                                                                                                    | Show the validated 2 Zone VIVA ticket to YRT driver as transfer and retain it. The driver records the transfer on the farebox. Discard the ticket after completing the trip.                                                                                                | Show the validated 2 Zone VIVA ticket to BT driver as transfer and retain it. The driver records the transfer on the farebox. Discard the ticket after completing the trip.                                                                                                | Show the validated 2 Zone VIVA ticket to TTC driver as transfer and retain it. Discard the ticket after completing the trip.                                                                                                |
| C                    | VIVA Bus with YRT Ticket (unvalidated)                         | Validate YRT ticket at VIVA Ticket Validator. Retain validated YRT ticket as POP while on VIVA System. Discard the ticket after completing the trip.                                             | Validate YRT ticket at VIVA Ticket Validator and purchase validated Zone Upgrade at oneRide /multiRide. Retain validated YRT ticket and validated Zone Upgrade as POP while on VIVA System. Discard both tickets after completing the trip.                                                                                       | Validate YRT ticket at VIVA Ticket Validator. Show the validated YRT ticket to YRT driver as transfer and retain it. The driver records the transfer on the farebox. Discard the ticket after completing the trip.                                                          | Validate YRT ticket at VIVA Ticket Validator. Show the validated YRT ticket to BT driver as transfer and retain it. The driver records the transfer on the farebox. Discard the ticket after completing the trip.                                                          | Validate YRT ticket at VIVA Ticket Validator. Show the validated YRT ticket to TTC driver as transfer and retain it. Discard the ticket after completing the trip.                                                          |
| D                    | VIVA Bus bound for GO Station                                  | Purchase validated Ride to GO at oneRide /multiRide and retain with GO Ticket/Pass as POP while on VIVA System. Discard the ticket after completing the trip.                                    | Purchase validated GO at oneRide /multiRide and retain with GO Ticket/Pass as POP while on VIVA System. Discard the ticket after completing the trip.                                                                                                                                                                             | Show the validated Ride to GO with GO Ticket/Pass to the driver when transferring to YRT bus and retain both. The driver records the transfer on the farebox. Discard the local supplement after completing the trip.                                                       | Show the validated Ride to GO with GO Ticket/Pass to the driver when transferring to BT bus and retain both. The driver records the transfer on the farebox. Discard the local supplement after completing the trip.                                                       | Show the validated Ride to GO with GO Ticket/Pass to the driver when transferring to TTC bus and retain it. Discard the local supplement after completing the trip.                                                         |
| E                    | YRT Bus with VIVA, YRT or BT Ticket (unvalidated) or Cash Fare | Deposit VIVA, YRT or BT ticket or Cash Fare in YRT farebox and obtain YRT transfer. Retain the transfer as POP while on VIVA System. Discard the transfer after completing the trip.             | Deposit VIVA, YRT or BT ticket or Cash Fare in YRT farebox and obtain YRT transfer. Purchase validated Zone Upgrade at oneRide /multiRide while boarding VIVA. Retain the transfer and 2 Zone cash supplement as POP while on VIVA System. Discard the transfer and validated Zone Upgrade after completing the trip.             | Deposit VIVA, YRT or BT ticket or Cash Fare in YRT farebox and obtain YRT transfer. Show the transfer to the driver when transferring to YRT bus and retain it. The driver records the transfer on the farebox. Discard the transfer after completing the trip.             | Deposit VIVA, YRT or BT ticket or Cash Fare in YRT farebox and obtain YRT transfer. Show the transfer to the driver when transferring to BT bus and retain it. The driver records the transfer on the farebox. Discard the transfer after completing the trip.             | Deposit VIVA, YRT or BT ticket or Cash Fare in YRT farebox and obtain YRT transfer. Show the transfer to the driver when transferring to TTC bus and retain it. Discard the transfer after completing the trip.             |
|                      | YRT Express Bus with YRT Express Ticket or Express Cash Fare   | Deposit Express Ticket or Express Cash Fare in YRT Express Bus farebox and obtain YRT transfer. Retain the transfer as POP while on VIVA System. Discard the transfer after completing the trip. | Deposit Express Ticket or Express Cash Fare in YRT Express Bus farebox and obtain YRT transfer. Purchase validated Zone Upgrade at oneRide /multiRide while boarding VIVA. Retain the transfer and 2 Zone cash supplement as POP while on VIVA System. Discard the transfer and validated Zone Upgrade after completing the trip. | Deposit Express Ticket or Express Cash Fare in YRT Express Bus farebox and obtain YRT transfer. Show the transfer to the driver when transferring to YRT bus and retain it. The driver records the transfer on the farebox. Discard the transfer after completing the trip. | Deposit Express Ticket or Express Cash Fare in YRT Express Bus farebox and obtain YRT transfer. Show the transfer to the driver when transferring to BT bus and retain it. The driver records the transfer on the farebox. Discard the transfer after completing the trip. | Deposit Express Ticket or Express Cash Fare in YRT Express Bus farebox and obtain YRT transfer. Show the transfer to the driver when transferring to TTC bus and retain it. Discard the transfer after completing the trip. |

|                      |                                                                                     | 1                                                                                                                                                                                   | 2                                                                                                                                                                                                                                                                                                                    | 3                                                                                                                                                                                                                                                              | 4                                                                                                                                                                                                                                                             | 5                                                                                                                                                                                                                     |
|----------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                      |                                                                                     | TRIPS TRANSFERRING TO                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                       |
| TRIPS ORIGINATING ON |                                                                                     | VIVA Zone 1                                                                                                                                                                         | VIVA Zone 2                                                                                                                                                                                                                                                                                                          | YRT                                                                                                                                                                                                                                                            | BT                                                                                                                                                                                                                                                            | TTC                                                                                                                                                                                                                   |
| G                    | YRT Bus Bound for GO Station                                                        | Deposit Ride to GO Fare in YRT farebox and obtain transfer. Retain transfer with GO Ticket/Pass as POP while on VIVA System. Discard the transfer after completing the trip.        | Deposit Ride to GO Fare in YRT farebox and obtain transfer. Retain transfer with GO Ticket/Pass as POP while on VIVA System. Discard the transfer after completing the trip.                                                                                                                                         | Deposit Ride to GO Fare in YRT farebox and obtain transfer. Show the transfer with GO Ticket/Pass to the driver when transferring to YRT bus and retain the transfer. Discard the transfer after completing the trip at.                                       | Deposit Ride to GO Fare in YRT farebox and obtain transfer. Show the transfer with GO Ticket/Pass to the driver when transferring to BT bus and retain the transfer. Discard the transfer after completing the trip.                                          | Deposit Ride to GO Fare in YRT farebox and obtain transfer. Show the transfer with GO Ticket/Pass to the driver when transferring to TTC bus and retain the transfer. Discard the transfer after completing the trip. |
|                      | BT Bus with VIVA, YRT or BT Ticket (unvalidated) or Cash Fare                       | Deposit VIVA, YRT or BT ticket or Cash Fare in BT farebox and obtain YRT transfer. Retain the transfer as POP while on VIVA System. Discard the transfer after completing the trip. | Deposit VIVA, YRT or BT ticket or Cash Fare in BT farebox and obtain YRT transfer. Purchase validated Zone Upgrade at oneRide /multiRide while boarding VIVA. Retain the transfer and 2 Zone cash supplement as POP while on VIVA System. Discard the transfer and validated Zone Upgrade after completing the trip. | Deposit VIVA, YRT or BT ticket or Cash Fare in BT farebox and obtain YRT transfer. Show the transfer to the driver when transferring to YRT bus and retain it. The driver records the transfer on the farebox. Discard the transfer after completing the trip. | Deposit VIVA, YRT or BT ticket or Cash Fare in BT farebox and obtain YRT transfer. Show the transfer to the driver when transferring to BT bus and retain it. The driver records the transfer on the farebox. Discard the transfer after completing the trip. | Deposit VIVA, YRT or BT ticket or Cash Fare in BT farebox and obtain YRT transfer. Show the transfer to the driver when transferring to TTC bus and retain it. Discard the transfer after completing the trip.        |
| I                    | TTC Bus on Contracted Routes within York Region with VIVA, YRT Ticket (unvalidated) | Deposit VIVA, YRT ticket in TTC farebox and obtain TTC transfer. Retain the transfer as POP while on VIVA System. Discard the transfer after completing the trip.                   | Deposit VIVA, YRT ticket in TTC farebox and obtain TTC transfer. Purchase validated Zone Upgrade at oneRide /multiRide while boarding VIVA. Retain the transfer and validated Zone Upgrade as POP while on VIVA System. Discard the transfer and validated Zone Upgrade after completing the trip.                   | Deposit VIVA, YRT ticket in TTC farebox and obtain TTC transfer. Show the transfer to the driver when transferring to YRT bus and retain it. The driver records the transfer on the farebox. Discard the transfer after completing the trip.                   | Deposit VIVA, YRT ticket in TTC farebox and obtain TTC transfer. Show the transfer to the driver when transferring to BT bus and retain it. The driver records the transfer on the farebox. Discard the transfer after completing the trip.                   | Deposit VIVA, YRT ticket in TTC farebox and obtain TTC transfer. Show the transfer to the driver when transferring to TTC bus and retain it. Discard the transfer after completing the trip.                          |
|                      | TTC Bus (Operating in York Region on contract) with TTC Ticket and Cash Supplement  | Deposit TTC ticket and cash supplement in TTC farebox and obtain TTC transfer. Retain the transfer as POP while on VIVA System. Discard the transfer after completing the trip.     | Deposit TTC ticket and cash supplement in TTC farebox and obtain TTC transfer. Purchase validated Zone Upgrade at oneRide /multiRide while boarding VIVA. Retain the transfer and validated Zone Upgrade as POP while on VIVA System. Discard the transfer and validated Zone Upgrade after completing the trip.     | Deposit TTC ticket and cash supplement in TTC farebox and obtain TTC transfer. Show the transfer to the driver when transferring to YRT bus and retain it. The driver records the transfer on the farebox. Discard the transfer after completing the trip.     | Deposit TTC ticket and cash supplement in TTC farebox and obtain TTC transfer. Show the transfer to the driver when transferring to BT bus and retain it. The driver records the transfer on the farebox. Discard the transfer after completing the trip.     | Deposit TTC ticket and cash supplement in TTC farebox and obtain TTC transfer. Show the transfer to the driver when transferring to TTC bus and retain it. Discard the transfer after completing the trip.            |
| K                    | VIVA Bus from a GO Station                                                          | Purchase validated Ride to GO at oneRide /multiRide and retain with GO Ticket/Pass as POP while on VIVA System. Discard the local supplement after completing the trip.             | Purchase validated Ride to GO at oneRide /multiRide and retain with GO Ticket/Pass as POP while on VIVA System. Discard the local supplement after completing the trip.                                                                                                                                              | Show the validated Ride to GO with GO Ticket/Pass to the driver when transferring to YRT bus and retain it. The driver records the transfer on the farebox. Discard the local supplement after completing the trip.                                            | Show the validated Ride to GO with GO Ticket/Pass to the driver when transferring to BT bus and retain it. The driver records the transfer on the farebox. Discard the local supplement after completing the trip.                                            | Show the validated Ride to GO with GO Ticket/Pass to the driver when transferring to TTC bus and retain it. Discard the local supplement after completing the trip.                                                   |

| L                         |                                                                                                                                                                                                                       |                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                        |
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|                           | 1                                                                                                                                                                                                                     | 2                                                                                                                                                                                                                     | 3                                                                                                                                                                                                                                                                      | 4                                                                                                                                                                                                                                                                     | 5                                                                                                                                                                                                                      |
|                           | TRIPS TRANSFERRING TO                                                                                                                                                                                                 |                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                        |
| TRIPS ORIGINATING ON      | VIVA Zone 1                                                                                                                                                                                                           | VIVA Zone 2                                                                                                                                                                                                           | YRT                                                                                                                                                                                                                                                                    | BT                                                                                                                                                                                                                                                                    | TTC                                                                                                                                                                                                                    |
| YRT Bus from a GO Station | Deposit Ride to GO Fare in YRT farebox and obtain transfer indicating payment of GO cash supplement. Retain transfer with GO Ticket/Pass as POP while on VIVA System. Discard the transfer after completing the trip. | Deposit Ride to GO Fare in YRT farebox and obtain transfer indicating payment of GO cash supplement. Retain transfer with GO Ticket/Pass as POP while on VIVA System. Discard the transfer after completing the trip. | Deposit Ride to GO Fare in YRT farebox and obtain transfer with validated Ride to GO indicated on it. Show the transfer with GO Ticket/Pass to YRT driver as transfer. The driver records the transfer on the farebox. Discard the transfer after completing the trip. | Deposit Ride to GO Fare in YRT farebox and obtain transfer with validated Ride to GO indicated on it. Show the transfer with GO Ticket/Pass to BT driver as transfer. The driver records the transfer on the farebox. Discard the transfer after completing the trip. | Deposit Ride to GO Fare in YRT farebox and obtain transfer with validated Ride to GO indicated on it. Show the transfer with GO Ticket/Pass to TTC driver as transfer. Discard the transfer after completing the trip. |

Note:

This matrix equally applies to the VIVA, YRT and GTA weekly passes except they will always be retained by the customer. Boarding with a validated ticket or transfer on every vehicle other than VIVA will be a consideration of O & M Contractor procedure whether to surrender the ticket/transfer to drivers as an alternative procedure. Boarding VIVA bus with YRT Express ticket is not permitted.