

YRTP Quick Start

Service Plan

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1 SERVICE OBJECTIVES AND PRINCIPLES

The overall service objective of the *Quick Start* program is to introduce an initial phase of rapid transit in all four corridors of the overall YRTP program, namely, Yonge Street, Highway 7 and the two north-south connectors in Markham and Vaughan. These corridors are those identified in the York Region Transportation Master Plan, which would connect the designated Regional Centres (Vaughan Corporate Centre, Richmond Hill Centre, Markham Centre and Newmarket Centre) and be the Regional “backbone” transportation corridors with sufficient densities and appropriate land use to support rapid transit.

1.1 SERVICE DESIGN PRINCIPLES – BRT SERVICES

The *Quick Start* phase of the YRTP program will be “bus-rapid-transit” (BRT), but with buses operating in mixed traffic with traffic signal priority and right-turn-lane “queue jumpers”, rather than an exclusive busway, which is planned to be the orientation of the later full-build phase. Other features will include off-board fare payment and limited stops (typically 1 km. spacing), which, along with the priority measures, will help ensure operating speeds considerably higher than conventional transit services. The vehicles will also be designed with wide doors and aisles to facilitate quick boardings and alightings and, as a result, very short dwell times at stops. The off-board fare payment and “proof of payment” fare policy, in particular, will allow passengers to board at any door, further speeding up the service.

The initial routing is designed to keep the BRT services on the BRT corridors. This is primarily intended to ensure high frequencies on all parts of the network, including some portions where two or more routes will overlap to provide a higher combined level of service than the individual routes. The *Quick Start* phase does not include BRT branches leaving the main alignments, primarily due to the need for ticket dispensing equipment at all BRT stops to support the off-board ticketing and proof-of-payment fare policy. Also, neither overlayed express services nor other stopping variations are contemplated until ridership and service levels grow to a point where they can support multi-operational strategies while still maintaining high service frequencies on all service elements.

The service design, both for *Quick Start* and the full build system, is intended to include a policy of operating rapid transit services frequently enough so that passengers have a high comfort level with the service and can arrive at stations without having to consult timetables or risk long waiting times. Frequent services along the rapid transit corridors are also important to facilitate convenient transfers with connecting local services, which typically are not of a high frequency. High service levels are particularly important during peak periods, but should also be in place at other times, including mid-day periods, evenings, and weekends.

1.2 SERVICE DESIGN PRINCIPLES – YRT ROUTES ON BRT CORRIDORS

Since the BRT services will be making limited stops, they will be complemented by local YRT services running in parallel on the BRT corridors and making all local stops. These are intended primarily to provide service to local stops between the BRT stations and to feed the BRT stations. Also, this Service Plan assumes that the GO Transit Yonge “B” route will continue to operate, although it is recognized that its operation and service levels may be modified by GO to reflect the overall transit needs on the Yonge corridor.

The existing YRT standards include both “core” and “feeder (local)” standards that were developed for the YRT 5-Year Service Plan in 2002, and these are described in Appendix A for reference. This section proposes amendments to existing YRT service standards related to the introduction of *Quick Start*, specifically for the YRT local services that will parallel and complement YRTP services.

Since these routes will not be providing the “line haul” service and will not play a “core” role in the overall network, they should play a similar role to other feeder or local services and only need to be of a level of service sufficient to meet the local stop needs. These, however, also need to reflect the traditional levels of service on these established corridors, specifically for those areas that are not close to the BRT stops.

Because of the strong transit orientation of the BRT corridors, however, the local routes on these corridors should operate during the full spans of service normally used for core services, even though their minimum frequencies will be more similar to the standards for local services. On that basis, the local routes in the BRT corridors are proposed to have the following standards:

- **Route Structure** – operate on the major BRT corridors, primarily Yonge Street and Highway 7, making all local stops in parallel with the limited-stop BRT service.
- **Service Levels** – minimum service frequencies on clock-face schedules and minimum spans of service as per the following:

Weekdays	30 minutes	6:00 am to 9:00 am / 3:00 pm to 7:00 pm
	30 minutes	9:00 am to 3:00 pm
	60 minutes	7:00 pm to 11:00 pm
Saturdays	30 minutes	6:00 am to 7:00 pm
	60 minutes	7:00 pm to 11:00 pm
Sundays/Holidays	60 minutes	9:00 am to 11:00 pm

- **Vehicle Loadings** – average maximum loads per bus will not exceed the following standards (frequencies will be increased if the loading standard is exceeded):

During peak periods	150% of seating capacity over maximum 60 minute period
During off-peak periods	100% of seating capacity over a 60 minute period

- **Performance Targets** – as for feeder routes, these are expected to meet or exceed the following performance levels:

Weekday Peak Hours	25 passengers per service hour
Other times	15 passengers per service hour

1.3 SERVICE DESIGN PRINCIPLES – YRT FEEDER ROUTES

The routings of many YRT services are also proposed to be modified where appropriate to effectively provide a feeder service between the BRT stations and the adjacent residential and employment areas, while also meeting other local needs. For the feeder services to be effective, the following service design principles are proposed:

- Ensure all built up urban parts of the Region that can support transit service are within 500 meters of a direct no-transfer connection to a BRT stop (note that, in general, most of the built-up areas in the five urban municipalities of York Region are within 4 kilometres of one of the BRT corridors).
- Generally orient local bus routings that are intended to connect with BRT to be geographically perpendicular to the BRT corridors, that is, an east-west orientation along the Yonge corridor and a north-south orientation along the Highway 7 corridor.
- Provide a series of “core” services that generally follow the major arterials, typically, the 2-kilometre arterial street grid, and connect BRT with more intensive land uses that are likely to be more oriented to transit (commercial, institutional, higher-density residential and specific transit-oriented streets in newer higher-density developments); such core services would have higher levels of service, consistent with the YRT “core” service standards.
- Complement the core services with “local” routes that would penetrate other, less intensive residential and employment areas, such that all built-up areas that can support transit are within 500 metres of a direct bus connection to a BRT stop; such local routes would typically have lower levels of service than core routes and would follow the YRT “local” service standards, although service levels could increase where warranted by ridership demand.
- For those areas close to a major destination point (e.g. Finch Station, York University), maintain the direct local transit connection in order to avoid forcing a transfer, as long as the service meets the required ridership performance and can support the minimum service standards.

2 YRTP SERVICE DESIGN SPECIFICATIONS

This section describes the service design specifications for initial implementation of the *Quick Start* BRT services, scheduled for the fall of 2005. They generally follow the descriptions contained in the 2003 *Quick Start* Project Identification Report and provide the required detail for service scheduling and other service implementation activities.

2.1 ROUTINGS

The routings for the *Quick Start* services will generally follow the four YRTP corridors. To better serve the high demand areas in the south-central part of the Region, however, there will actually be 6 distinct *Quick Start* routes during Monday to Friday peak periods, several of which will overlap with other routes on the busier parts of the corridors to provide both greater routing options and a higher level of service frequency. The 6 peak-period routes are shown in Exhibit 1 and are described as follows:

Yonge-Richmond Hill-Newmarket – From Finch Subway Station via Yonge Street and Yonge-7 Connector to the new Langstaff Terminal; then via Yonge-7 Connector, Yonge and Eagle to Newmarket GO Terminal. Return via Eagle, Millard, Yonge and same route in reverse.

Yonge-Richmond Hill – From Finch Subway Station via Yonge Street and Yonge-7 Connector to the new Langstaff Terminal; then via Yonge-7 Connector and Yonge to Bernard Terminal. Return via Bernard, Yonge and same route in reverse.

The schedules of the two Yonge routes would mesh so that a higher combined level of service would be provided between Finch and Bernard, where the demand is expected to be much higher.

Yonge-Markham (peak-period route only) – From Finch Subway Station via Yonge Street and Yonge-7 Connector to the new Langstaff Terminal; then via Yonge-7 Connector, Highway 7, South Town Centre, IBM access road, Warden, Enterprise, new connector road (unnamed), Helen to Unionville GO Station. Return via same route in reverse.

This route will follow the inner portions of the Yonge and Highway 7 routes where demand and per-vehicle ridership levels are expected to be high. It will also provide a no-transfer connection between Finch Station and the employment areas in Beaver Creek and the Allstate-Valhalla area (including the planned new Seneca College campus), which is currently a high-demand link serviced by YRT Route 1.

Highway 7 – From a new YRT terminal next to Markham-Stouffville Hospital via Church, Ninth Line, Highway 7, Kennedy, Helen, new connector road (unnamed), Enterprise, Warden, IBM access ramp, South Town Centre, Highway 7, Yonge-7 Connector to a new Langstaff Terminal; then via Yonge-7 Connector, Highway 7, Bathurst-7 Connector, Bathurst, Centre to Promenade Terminal; then via Centre, Highway 7, Keele, York Blvd., Ian Macdonald Blvd. to a new terminal at York University; then via Ian Macdonald Blvd, Shoreham, Jane, Interchange Way, Highway 7, Woodstream, Martin Grove to Highway 7. Return direct via Highway 7 (eastbound) and same route in reverse, except eastbound routing between Ian Macdonald Blvd. and Keele would be via Chimneystack instead of York Blvd.

For some peak trips, the western end of the route may terminate at York University, looping via Keele, York Blvd., Ian Macdonald Blvd., to the terminal, returning via Chimneystack, Keele and regular route beyond.

The route is primarily east-west along Highway 7, but includes a few significant diversions, especially to York University, Promenade Mall (and the high-density residential developments nearby) and the new

Markham Centre (Enterprise Blvd. to be the primary commercial corridor). These diversions are expected to considerably increase the ridership potential on this route, as has been determined by the ridership model forecasts.

Markham North-South Connector – From Don Mills Subway Station via Don Mills, Finch, Gordon Baker, Pharmacy, Esna Park, Denison, Warden, Enterprise, new connector road (unnamed), Helen, Kennedy, Highway 7, Ninth Line, Church to a new YRT terminal next to Markham-Stouffville Hospital. Return via the same route in reverse, with the routing to Don Mills Station via Don Mills, Fairview Mall Drive and Sheppard.

During peak hours, all trips in the “reverse commute” direction (northbound in the morning and southbound in the afternoon) will loop to the stop at IBM west of Warden and Enterprise to serve IBM, looping via the IBM access ramp, South Town Centre and turning at the existing YRT bus loop at IBM, returning via the IBM access road to Warden and Enterprise.

The routing between Enterprise and Don Mills Station is designed both to be a quick connection (minimize traffic congestion) and to serve major employers and key destinations along the corridor, including Seneca College (Newnham Campus on Finch at Don Mills), IBM (Esna Park and Steeles), American Express (Warden north of Denison) and Motorola (Warden north of Highway 407).

Vaughan North-South Connector – From Downsview Subway Station via TTC access road, Sheppard, Tuscany Gate, St. Regis, Keele, York Blvd. to a new terminal at York University; then via Ian Macdonald Blvd, Shoreham, Jane, Interchange Way, Highway 7, Woodstream, Martin Grove to Highway 7. Return direct via Highway 7 (eastbound) and same route in reverse.

Similar to the Markham route, the Vaughan North-South Connector routing is designed primarily to minimize travel time between Highway 7 and York University and between York University and Downsview Station.

2.1.1 Peak-Period Route Overlays

During peak periods, several portions of the *Quick Start* network (in addition to Yonge Street, described above) will have two routes operating on the same routing (as shown in Exhibit 1). This results in a higher level of service on these built-up portions of the corridors and provides a direct no-transfer service, typically, to two distinct destinations. The areas where this occurs are:

- **Highway 7 corridor between Martin Grove and York University** – provides service in Woodbridge to both Downsview Station (Vaughan North-South Connector) and the full Highway 7 corridor (Highway 7 route), including connections to Yonge at Langstaff;
- **Highway 7 corridor between Markham-Stouffville Hospital and Warden** – provides service in east Markham and Unionville to both Don Mills Station (Markham North-South Connector) and the full Highway 7 corridor (Highway 7 route), including connections to Yonge at Langstaff;
- **Highway 7 corridor between Unionville GO Station and Yonge** – provides service in the Highway 7 and 404 employment areas to both Finch Station (Yonge-Markham) and the Highway 7 corridor west of Yonge (Highway 7 route).

In all these cases, schedules would be meshed to provide a more frequent service overall (e.g. two 10-minute services combined for an overall 5-minute service).

2.1.2 Off-Peak Route Streamlining

Because of the relatively low demand expected outside of peak periods, it is proposed that the off-peak routings be adjusted to eliminate the areas where the peak routes overlap. This will result in significant economies by eliminate duplication of routes and better tailoring service to expected demand, while still retaining the minimum 15-minute service level throughout the network. As noted above, the combination of the Quick Start routes and the parallel YRT local routes will still be a sizable increase in service levels overall.

The areas where these route modifications would take place are as follows:

- Truncating the west end of the Highway 7 route at York University, looping via Keele, York Blvd., Ian Macdonald Blvd., to the terminal, returning via Chimneystack, Keele and regular route beyond (timed connections would be provided with Vaughan North-South Connector for those travelling beyond, as described below under Off-Peak Service Design).
- Truncating the east end of the Markham North-South service at Unionville GO Station, connecting to the regular route via the Unionville GO station access road to/from Helen and the new connector road between Helen and Enterprise (timed connections would be provided with Highway 7 route for those travelling beyond, as described below under Off-Peak Service Design).
- Not operating the Yonge-Markham route outside of peak-periods;
- Not operating the Yonge-Bernard short-turn, as all Yonge trips would go to Newmarket.

The net result of these routings would be to have a full 15-minute service on all routes without overlap, as described below under Off-Peak Service Design. These would also be scheduled to have timed connections at the truncation points (York University and Unionville) as well as at Langstaff. The proposed off-peak route network is shown in Exhibit 2.

2.2 STOPPING POLICY

For *Quick Start*, all routes would stop at all YRTP stops, as indicated in Exhibit 1 (i.e. there would be no “express” routes or route portions). This is to ensure reasonably frequent service throughout the network. In the longer term, when ridership grows further, there will likely be sufficient demand to provide express services or otherwise vary the stopping policy (e.g. when a 5-6 minute service can be provided on both an express and an all-stops operation).

The stop spacing will be that of a “rapid transit” service, typically about 1 km between stops (or more in relatively undeveloped areas). The BRT services, however, will be complemented by YRT local routes on these corridors that will serve all local stops between the BRT stops.

In Toronto, including stops at Steeles Avenue, the stopping policy would allow drop-off’s only in the southbound direction and pick-ups only in the northbound direction. Thus, YRTP services would not accommodate trips that are wholly within the City of Toronto (these are provided exclusively by the TTC).

At the Downsview and Don Mills subway stations, a drop-off stop near the pedestrian entrance will be provided so that all passengers will be required to leave the YRTP vehicle, before the vehicle enters the station, which is a controlled “TTC fare-paid” zone. At each location, an additional pick-up stop will also be provided for those passengers who are not coming from the subway or other TTC service.

2.3 HOURS (SPAN) OF SERVICE

The span of service for all *Quick Start* services is planned to be about 20 hours, or from about 5:00 a.m. to about 1:00 a.m. The start times on Saturdays may be slightly later and on Sundays will be later still (e.g. 8:00) or early Sunday morning service may be less frequent, similar to late evening service (e.g. as much as 30 minutes). This span of service will apply to all services in order to ensure transfer opportunities at all times and to make the service consistent and understandable for passengers.

Overall, the daily spans of service will be very similar to those now in effect on the existing Yonge services (Route 99 and the GO “B” route) as well as the TTC subway, to which most routes connect.

2.4 VEHICLE ALLOCATION

Because of the high demand forecast for the Yonge corridor and the two Yonge routes in particular, as described in the next section, the Yonge-Newmarket and Yonge-Bernard routes will be operated with 18-metre articulated buses.

Because of the relatively lower demand on the other lines and the need to provide frequencies high enough to make the service attractive (allow random passenger arrivals at stations with minimal waiting time), the other *Quick Start* routes will be operated with 12-metre standard length buses, but the vehicles will still be of a high-quality advanced design.

2.5 SERVICE FREQUENCIES – PEAK PERIODS

Service levels generally have to be related to demand, especially during peak periods. Reasonably high service levels should be feasible on all of the *Quick Start* corridors based on existing demand, existing service levels, anticipated growth (both population and employment), and an anticipated modal shift to rapid transit. Table 2.1 summarizes the projected 2006 peak-direction ridership at the maximum load point on the *Quick Start* routes during the morning peak hour. The projected ridership is based on modelling forecasts, derived from population and employment targets, the 2001 Transportation Tomorrow Survey data, and the proposed *Quick Start* service levels detailed below. These figures are also for the “mature state” of the new services, which is expected to take two to three years to achieve.

Table 2.1: 2006 Projected Ridership – AM Peak Hour, Peak Point, Peak Direction

Route	Ridership
Yonge-Richmond Hill-Newmarket (combined)	1150
Yonge-Markham (peak only)	300
Highway 7	270
Markham North-South Connector	270
Vaughan North-South Connector	280

These figures assume:

- Only alternate Highway 7 trips continue west of York University to Woodbridge, with one-third of the Highway 7 ridership in this area forecast by the model re-assigned to the Vaughan North-South Connector; if all Highway 7 trips routed to Martin Grove, the peak-hour riders on the Vaughan North-South Connector would be about 210;
- Schedules on the Highway 7 and Yonge-Markham routes would be set to balance demand between the two routes in the section between Beaver Creek and Yonge; this results in the above figures being slightly closer to each other than in the original model forecast.;
- The ridership on the Yonge corridor includes that which would continue on the GO Transit Yonge “B” service, which is assumed to continue operation with service levels similar to those at present (8 to 10 minute service, with about 300 riders per peak hour at the peak point in the peak direction).

Based on the overall service objectives and principles noted earlier and the 2006 ridership forecasts, the minimum service frequencies proposed for the *Quick Start* program are shown in Table 2.2, along with the projected peak-point, peak-direction average passenger loads per vehicle. As noted above, these frequencies assume that 18-metre articulated vehicles would be used on the Yonge line (both to Richmond Hill and to Newmarket) and 12-metre standard vehicles would be used on the other lines.

Table 2.2: Proposed Peak-Period Frequencies

Route	Routing	Frequency	Peak Load
Yonge-Newmarket	Finch Terminal to Newmarket Terminal	10 minutes	71 (combined)
Yonge-Bernard	Finch Terminal to Bernard Terminal	10 minutes	
Yonge-Markham	Finch Terminal to Unionville GO Station	10 minutes	50
Highway 7	Martin Grove to Markham-Stouffville Hospital	10 minutes	45
Markham N-S	Don Mills Station to Markham-Stouffville Hospital	10 minutes	45
Vaughan N-S	Downsview Station to Highway 7 & Martin Grove	10 minutes	47

In the Yonge Street corridor, the schedules of the Yonge-Newmarket trips and the Yonge-Bernard trips will combine to provide a 5-minute peak service between Finch and Bernard. On Yonge between Finch and Langstaff, the two Yonge services and the Yonge-Markham route will further combine for an overall combined frequency of about 3 to 4 minutes.

Similarly, the schedules for the Vaughan North-South Link, Markham North-South Link and Yonge-Richmond Hill-Markham services would be coordinated with the Highway 7 service in order to provide a combined 5-minute peak service on the overlapping portions of these routes (as described earlier).

In all corridors, the *Quick Start* routes will be complemented by local YRT routes. These would be similar to the current YRT route structure, but at a lower frequency because of the addition of the Quick Start routes. The Yonge local service (YRT Route 99) in particular would be significantly reduced from its current 3-to-4 minute frequency (see next section), as most of these passengers would likely shift to the Quick Start service. Also, Route 99 currently goes only to Bernard, with the GO Transit Yonge “B” route

serving the section between Bernard and Newmarket. The YRT Yonge service is to be extended along the entire length of the corridor (see next section) to provide a fully integrated local service as a complement to the BRT service.

The above service levels assume the continuation of the GO Yonge “B” route, although the nature of the service and/or its service levels may be modified if deemed appropriate by GO Transit. For example, the combination of the new BRT service and a local YRT service on Yonge may preclude the need for GO to serve all stops on Yonge and, thus, could provide the opportunity for the “B” route to become a true point-to-point express service and offer faster travel times for those making longer trips to Finch Station. Additionally, “B” trips could become extensions of existing trips from Barrie-Bradford or Keswick and provide those patrons with fast, no-transfer service to Toronto. All these possibilities, of course, would be the decision of GO Transit.

2.6 SERVICE FREQUENCIES – OFF-PEAK PERIODS

The off-peak service design is also intended to place a high emphasis on frequency of service, again to operate like true “rapid transit” and maximize passenger confidence of not having to plan trips or risk long waiting times. To achieve this during off-peak times, the frequencies will be set by policy rather than specifically tied to forecast demand. This means that ridership levels will typically be below capacity but should build as more new riders respond to the high quality of service. The proposed off-peak service levels are shown in Table 2.3.

Table 2.3: Proposed Off-Peak Frequencies

Route	Routing	Frequency
Yonge-Newmarket	Finch Terminal to Newmarket Terminal	15 minutes
Highway 7	York University to Markham-Stouffville Hospital	15 minutes
Markham North-South	Don Mills Station to Unionville GO Station	15 minutes
Vaughan North-South	Downsview Station to Highway 7 & Martin Grove	15 minutes

As it is for the peak design, the off-peak services on Yonge will be operated with 18-m articulated buses, while all other services will be operated with 12-m conventional buses.

The only exceptions to the 15-minute service would be during late evenings (after about 11:00) and very early mornings on weekends, where the frequency could transition to as much as a 30-minute service at the latest or earliest times on all corridors. The specific schedule times would be based on expected demand patterns.

In all corridors, as in peak periods, the *Quick Start* routes will be complemented by local YRT routes. These would be similar to the current YRT route structure, which now includes a 15-minute service on Yonge (may likely change to a 30-minute service with the addition of Quick Start) and 30-minute services on both the east and west portions of Highway 7. Thus, the addition of the Quick Start routes will be a significant addition of service although, again, the frequent and high quality of service is expected to increase off-peak ridership significantly.

As in the peak periods, the local YRT service on the Yonge corridor currently goes only to Bernard, with the GO Transit “B” route serving the section between Bernard and Newmarket. The YRT Yonge service is to be extended along the entire length of the corridor (see next section) to provide a fully integrated local service as a complement to the BRT service.

For the purposes of this Service Plan, it is assumed that the GO “B” route would be designed to service the point-to-point demand from Newmarket and places further north, although the high level of service on the Quick Start route may make it unnecessary to operate the “B” route outside of peak periods. That decision, of course, would be made by GO Transit.

3 YRT SERVICE CHANGES RELATED TO QUICK START

With the introduction of Bus-Rapid-Transit on the major York Region transit corridors, the YRT local routes generally no longer need to perform long-distance line-haul roles on those corridors. With the BRT services becoming the “backbones” of the total integrated York Region transit network, the local routes will need to play the most important role of effectively feeding the BRT services, as well as continuing to meet other local service demands.

Significant changes will be required to the YRT routes currently operating on the Quick Start corridors, recognizing that they will play a key complementary role of providing local service between BRT stops. Their service levels will generally need to be reduced, however, because of the role of BRT in providing the line-haul service on the corridors. Other changes will be needed to YRT routes intersecting the BRT corridors in order to facilitate their increased roles as feeder services to the BRT. These changes will involve both routing re-alignments and service level improvements.

The proposed changes to YRT services to facilitate the introduction of the Quick Start BRT services have been developed in close collaboration with YRT staff and are described in the sections that follow.

3.1 YRT ROUTES ON BRT CORRIDORS

The YRT local routes proposed to complement the Quick Start routes along the Quick Start corridors are intended to be the existing YRT routes operating on these corridors. These are the current YRT Routes 1, 77 and 99. Also, the GO Transit Yonge “B” service currently provides local service between Newmarket and Bernard and changes in service levels and operating policy are expected, although this is currently under review by GO Transit.

3.1.1 Routing Changes

Only a few routing changes are proposed for the YRT local routes on the YRTP corridors related to the introduction of Quick Start, which are described as follows:

Route 99 Yonge – would be extended to Newmarket, following the Quick Start BRT routing, although some trips would terminate at Bernard at certain times of the day or days of the week (as described in the next section).

Route 1 Highway 7 – would stay on Highway 7 essentially all the way between Yonge and Ninth Line, except for the current diversion to High Tech. This would require the following changes:

- Operating all trips to Yonge and eliminating the Route 1-Bayview routing, which provides better connections with the strategically important Langstaff focal point and allows the improved 91 Bayview route to meet Bayview’s service needs;
- Moving the diversion to High Tech from Silver Linden to Bayview, to provide an improved accessible transfer to the Bayview service;
- Operating both ways on Highway 7 between Markham Road and Ninth Line, removing service from Church Street.

3.1.2 Service Level Changes

To set service levels for the YRT local routes on the BRT corridors, two criteria have been used, namely:

- Minimum service level standards (as noted above);
- Providing sufficient service to meet total corridor capacity requirements.

The following are proposed service levels for the YRT routes operating on the Quick Start BRT corridors:

Table 3.1: YRT Local Routes on BRT Corridors – Proposed Frequencies

Route	Peak Periods		Daytime (Mon.-Sat.)		Sundays / Late Eve.	
	Existing	Proposed	Existing	Proposed	Existing	Proposed
99 – Yonge-Newmarket (existing provided by GO)	7-10	30	30	30	60	60
99 – Yonge-Bernard (including Newmarket trips)	3-5	10	15	30	30	30
1 – Highway 7 East	10-15	30	30	30	60	60
77 – Highway 7 West	15	15	30	30	60	60

For Route 99, some trips at certain times of the day would only go as far as Bernard to meet the higher service needs on the southern part of the route. At other times, all trips would go to Newmarket. The times when some trips would short-turn are as follows:

- Peak periods – 10-minute service to Bernard, 30-minute service to Newmarket;
- Sundays and late evenings – 30-minute service to Bernard, 60-minute service to Newmarket.

The proposed frequencies for the YRT local routes on the BRT corridors generally follow the minimum service standards, but some exceed the standards. These, and the reasons for them, are as follows:

- Route 99 – 10-minute peak service between Finch and Bernard to meet the overall capacity requirements and to not overly lessen the quality of service at non-BRT stops, which currently varies from about 3 to 5 minutes.
- Route 77 – 15-minute peak service retained, because Route 77 will be the only service on Centre Street between Yonge and Bathurst as well as west of Martin Grove to Brampton, where it is well utilized.
- Route 99 – 30-minute service south of Bernard on Sundays and late evenings because of the traditional good service and ridership on the southern Yonge corridor.

The following tables provide analyses of the overall corridor capacity requirements, particularly on the various sectors of the Yonge corridor, which traditionally has high ridership and where service levels are driven by demand.

Table 3.2a: Screenline Capacity – Vehicles/Hour (40' bus equivalent) – Yonge at Steeles

Route	Peak Hour	Mid-Day
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	Existing	Quick Start	Existing	Quick Start
BRT – Yonge (incl. Yonge-Markham)		24		6
Local – YRT Route 99	15	6	4	2
GO Yonge B (assumed for Quick Start)	8	6	2	
Local – YRT Route 1	6	2	2	2
TOTAL	29	38	8	10
Increase		31 %		25 %

Table 3.2b: Screenline Capacity – Vehicles/Hour (40' bus equivalent) – Yonge north of Langstaff

Route	Peak Hour		Mid-Day	
	Existing	Quick Start	Existing	Quick Start
BRT – Yonge		18		6
Local – YRT Route 99	15	6	4	2
GO Yonge B (assumed for Quick Start)	8	6	2	
TOTAL	23	30	6	8
Increase		30 %		33 %

On Yonge Street, both at Steeles and north of Langstaff, the proposed service levels for BRT and local service will provide a total capacity increase in the order of 30 percent, which is consistent with the forecast ridership increases for the initial period of Quick Start.

Table 3.2c: Screenline Capacity – Vehicles/Hour (40' bus equivalent) – Yonge north of Bernard

Route	Peak Hour		Mid-Day	
	Existing	Quick Start	Existing	Quick Start
BRT – Yonge		9		6
Local – YRT Route 99		2		2
GO Yonge B (assumed for Quick Start)	8	6	2	
TOTAL	8	17	2	8

Increase		113 %		300 %
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North of Bernard, the total capacity of that portion of the Yonge corridor will more than double, but this is intended, because the BRT vehicles will need to have considerable excess capacity so that they are able to also meet the rider demands of the busy part of the corridor through Richmond Hill and Thornhill. During the off-peak, the high capacity increase is due to the 15-minute base frequency required to provide true “rapid-transit” service on the Quick Start BRT.

Table 3.2d: Screenline Capacity – Vehicles/Hour (40’ bus equivalent) – Highway 7 east of Bayview

Route	Peak Hour		Mid-Day	
	Existing	Quick Start	Existing	Quick Start
BRT – Highway 7 (incl. Yonge-Mkm.)		12		4
Local – YRT Route 1 (note that not all existing Route 1 trips go to Yonge)	6	2	2	2
TOTAL	6	14	2	6
Increase		133 %		200 %

On the eastern part of Highway 7, the peak capacity increase is due to the Quick Start services providing both a Finch route and a full Highway 7 route. This corridor is projected to have considerable ridership increases, both because of these added service choices and the opening of the new Seneca College campus adjacent to Highway 7 and Allstate. The off-peak capacity increase will also better service the new campus and will provide a 15-minute “rapid-transit” frequency on the Highway 7 BRT corridor.

The western part of Highway 7 will only have the new BRT services added with no change to the Route 77 local service. As noted above, the retention of the current Route 77 service levels is because it will remain the only route to Brampton and on the eastern part of Centre Street and, thus, it is not being set by an overall corridor capacity requirement.

3.2 YRT ROUTES – ROUTING CHANGES

This section of the Service Plan reviews the YRT local route structure, specifically in the vicinity of the BRT corridors, and proposes routing realignments that will improve the effectiveness of the YRT bus system as a feeder network to extend the benefits of the new BRT services to the adjacent residential and employment areas. The analysis and service change proposals in this section are organized by service area and orientation to BRT corridors, typically by municipality or by logically identified sub-areas within municipalities.

In general, the YRT route structure follows a grid pattern, where “core” services are provided on the major arterials of the 2-kilometre street grid. In the areas adjacent to the BRT corridors, reasonably good services are provided on most of these arterials, with east-west routes crossing the Yonge corridor and north-south routes crossing the Highway 7 corridor (many of these being TTC routes operated under contract to York Region). Service levels generally follow the “core” service standards described earlier and, thus, are of a fairly good quality, although there are many exceptions. Most improvements needed for the core arterial services, then, relate to service levels, which are covered in the next section. There are

some routing issues for the core routes, however, including the need to provide core services on major transit-oriented streets in new developments (e.g. Bur Oak). These are addressed in this section.

Services between the major arterials are generally considered “local” services and follow the available streets, usually collector streets. Their routing alignments vary and often do not provide direct connections to the BRT corridors. The routing changes proposed for local services are intended to follow the principles described earlier and primarily focus on re-aligning routings to more directly feed the BRT corridors, that is, east-west routings along the Yonge corridor and north-south routings along the Highway 7 corridor. The service levels for these routes follow the less frequent “local” service standards and, thus, many may need improvement to provide adequate feeder service. Improvements proposed for the local services, then, will focus both on routing realignments, covered in this section, and on service levels, covered in the next section.

The changes proposed for YRT routes in this section will be preliminary in nature in that they will only include those routes that will be affected by the implementation of Quick Start and will be described to the extent that they relate specifically to their support of the Quick Start BRT services. They will propose general routing orientations but specific street-by-street routings will be subject to further review by YRT, including non-BRT considerations and design elements that will ultimately have to be included. The operating cost estimates for the proposed route changes will be based on this limited degree of detail and will be subject to further service design and detailed scheduling done by YRT, along with other non-BRT-related changes that will also make up the final YRT Service Plan.

The specific routing changes proposed in this section are currently under development and discussion with YRT and will be fully described in the final draft Service Plan document.

3.3 YRT ROUTES – SERVICE LEVEL IMPROVEMENTS

This section of the Service Plan reviews the service levels on YRT routes, specifically in the vicinity of the BRT corridors, and proposes service improvements that will improve the effectiveness of YRT routes as a feeder network to the new BRT services. The service level changes proposed for YRT routes are also intended to follow the principles described earlier and primarily focus on addressing service frequencies that currently do not meet the minimum service standards, especially during off-peak times.

As noted earlier, the YRT route structure includes “core” services on the major arterials of the 2-kilometre street grid and “local” services that penetrate the residential and employment areas within the 2-kilometre sections. Service levels on the major arterials generally follow the higher-quality “core” service standards described earlier and, thus, are of a good quality, although there are many exceptions. Improvements proposed for the core arterial services focus primarily on the exceptions, where service levels fall short of the core standards, especially off-peak service and, in some cases, on certain days and time periods where no service exists at all, typically on weekends and evenings.

Local (non-core) services follow the less frequent “local” service standards but many still fall short of even the local standards and may need improvement to provide adequate feeder service. Improvements proposed for the local services are designed to bring the most notable service deficiencies up to or close to the service standards. They will also reflect the local service routing re-alignments proposed in the previous section.

As for the route re-alignment proposals, the service improvement changes in this section will also be preliminary in nature in that they will only include improvements related to the implementation of Quick Start and they will describe improvements by approximate time of day and day of the week. The operating cost estimates for service frequency changes will be based on this limited degree of detail and

will be subject to further service design and detailed scheduling done by YRT, along with other non-BRT-related changes that will also make up the final YRT Service Plan.

The analysis and service change proposals in this section are organized by service area and orientation to BRT corridors, typically by municipality or by logically identified sub-areas within municipalities. The core routes and local routes are addressed separately because of the different standards and the unique approaches that may be required for each. Existing service levels are shown in the exhibits in this section, with a description of the most notable deficiencies. They are followed by the proposed improvements for the Quick Start implementation.

The specific service level changes proposed in this section are currently under development and discussion with YRT and will be fully described in the final draft Service Plan document.

4 RESOURCE REQUIREMENTS

4.1 YRTP VEHICLE REQUIREMENTS

The total vehicle requirements for the Quick Start phase of the YRTP project are based on the estimated peak-period round trip times for each route along with the proposed peak service frequencies determined in Chapter 2. Table 4.1 lists the Quick Start route components and shows how the vehicle requirements for each component have been determined.

Table 4.1: Peak Vehicle Requirements - YRTP

Route	Termini	Distance 1-way (km)	Round Trip (min)	Average Speed (kmh)	Frequency (min)	Sched Peak Vehicles
Yonge	Finch-Bernard	13.9	65	25.7	10	6.5
Yonge	Finch-Newmarket	32.3	125	31.0	10	12.5
Yonge-Mkm	Finch-Unionville	18.2	90	24.3	10	9
Hwy 7	Martin G. or York U.- MS Hosp.	38.9 (average)	180 (average)	25.8	10	18
Vaughan N-S	Downsv.-Martin Gr.	19.0	100	22.8	10	10
Markham N-S	Don Mills-MS Hosp.	22.1	110	24.1	10	11

Note that the vehicle requirements for the two Yonge routes are 6.5 and 12.5 respectively. This means that they would be interlined at Finch (each bus alternates between the two routes) such that the overall need would be 19 vehicles for the two combines routes.

For all routes except Finch-Newmarket, average travel speeds range from 25 to 29 kmh, excluding recovery, and 22 to 26 kmh, including recovery (which are those noted in the table above). The average speed for the Finch-Newmarket route is 34 kmh, excluding recovery, and 31 kmh, including recovery. These speeds are conservative for this analysis and are assumed to be only somewhat faster (15-20%) than current speeds. The faster speed assumes significant benefits from limited stops, short dwell times (due to off-board fare payment), queue jumpers and signal priority, but also recognizes the likely negative impact of increased congestion.

For Quick Start, a full service is proposed on all routes. Initially, however, there may be less than a full service with only alternate trips on Highway 7 extending beyond York University to Martin Grove, due to budget constraints. The Quick Start budget now includes the latter option (as does Table 4.1), with a total of 77 buses, but it is intended to move to the full option as soon as additional funds are available (either as part of Quick Start or shortly following the implementation of Quick Start). Table 4.2 shows the comparison between the two Highway 7 routing options

Table 4.2: Peak Vehicle Requirements

Option		Distance 1-way (km)	Round Trip (min)	Average Speed (kmh)	Frequency (min)	Sched Peak Vehicles
1	Martin Gr.-MS Hosp.	45.1	210	25.8	10	21
2	York U.-MS Hospital	32.6	150	26.1	10	15

Table 4.3 summarizes the peak vehicle requirements for each of the above service scenarios (Option 1 shows the full service and Option 2 shows the “constrained” scenario).

Table 4.3: Vehicle Requirement Summary

Option	18 m. Vehicles			12 m. Vehicles			Total Vehicles
	Sched.	Total	Spares	Sched.	Total	Spares	
1	19	22	15.8%	51	59	15.7%	81
2	19	22	15.8%	48	55	14.6%	77

During off-peak times, the service would be 15 minutes on all routes (except 30 minutes on Yonge north of Bernard to Newmarket), with the routings streamlined to avoid duplication, as described in Chapter 2. Also during off-peak times, running times would be reduced slightly and average speeds increased accordingly to reflect the reduced traffic congestion.

Table 4.4 shows the off-peak vehicle requirements for the YRTP services by route.

Table 4.4: Off-peak Vehicle Requirements - YRTP

Route	Termini	Distance 1-way (km)	Round Trip (min)	Average Speed (kmh)	Frequency (min)	Sched Off-peak Vehicles
Yonge	Finch-Newmarket	32.3	120	32.3	15	8
Hwy 7	York U.-MS Hospital	32.6	135	29.0	15	9
Vaughan N-S	Downsv.-Martin Gr.	19.0	90	25.3	15	6
Markham N-S	Don Mills-Unionville	14.0	60	28.0	15	4

4.2 YRT VEHICLE IMPACTS

These will be determined by the final proposed YRT routing and service level changes, which are currently under development and discussion with YRT and will be fully described in the final draft Service Plan document.

4.3 ANNUAL OPERATING COSTS

The annual operating costs for the implementation of the Quick Start phase of YRTP will be a combination of costs for the YRTP services and some savings from reducing YRT services, especially the local service on Yonge Street (Route 99) which now is very frequent (up to 3-4 minutes) and much of which will be replaced by the YRTP service. The YRT savings will also be tempered somewhat by the proposed improvement in local feeder services to complement the YRTP service.

The detailed annual operating costs will be determined by the final proposed YRT routing and service level changes, which are currently under development and discussion with YRT and will be fully described in the final draft Service Plan document. They will also be used as required for the Regional budgeting activities.

APPENDIX A – EXISTING YRT SERVICE STANDARDS

This section reviews existing YRT service standards. The “core” and “feeder (local)” standards described below are as they were developed for the YRT 5-Year Service Plan in 2002 without change.

Core Route Standards

Core routes will operate in the major travel corridors on the main arterial roads in the urban transit service area. They will form a grid route network that can provide a basic level of mobility to all residents in the urban transit service area. Core routes will have the following standards:

- **Route Structure** – straight-line route structures focused on the main transit centres in or near the urban transit service area including the GO Stations, the TTC subway stations, and any designated transit terminals such as those in major shopping malls.
- **Service Levels** – minimum service frequencies on clock-face schedules and minimum spans of service as per the following:

Weekdays	15 minutes	6:00 to 9:00 am / 3:00 to 7:00 pm
	30 minutes	9:00 am to 3:00 pm / 7:00 to 11:00 pm
Saturdays	30 minutes	6:00 am to 11:00 pm
Sundays/Holidays	30 minutes	9:00 am to 11:00 pm

The above minimums for evenings, Saturdays, Sundays and holidays will not necessarily apply in industrial or business areas during times when businesses are closed.

It is recognized that many of the routes in York Region operated by the TTC are not on clock-face frequencies due to the need to integrate the York trips with the other trips on a given route. The clock-face standard should remain, however, and schedules should be adjusted to clock-face frequencies wherever possible and whenever the opportunity arises.

- **Vehicle Loadings** – average maximum loads per bus will not exceed the following standards (frequencies will be increased if the loading standard is exceeded):

During peak periods	150% of seating capacity over maximum 60 min. period
During off-peak periods	100% of seating capacity over a 60 minute period

- **Performance Targets** – core routes are expected to meet or exceed the following performance targets:

Weekday Peak Hours	30 passengers per service hour
Other times	20 passengers per service hour

- **Service Warrants** – routes will become core routes if they can complement the grid route network and meet the above criteria. Their spans of service will be extended outside the above core hours if a minimum performance level of 15 passengers per vehicle service hour (25% cost recovery) can be maintained after a one year trial period.

Feeder (Local) Route Standards

Feeder routes will circulate the various communities in the urban transit service area and will connect the communities to the major local activity centres and to the core network where transfers between routes can be made. They will provide a feeder or neighbourhood circulation function in the transit system supplementing the core route network to bring most residences within the route coverage standard, as described above. Feeder routes will have the following standards:

- **Route Structure** – operate primarily on collector and local roads, focused on a transit focal point or main activity centre.
- **Service Levels** – minimum service frequencies on clock-face schedules and minimum spans of service as per the following, when operating:

Weekdays	30 minutes	6:00 am to 9:00 am / 3:00 pm to 7:00 pm
	60 minutes	9:00 am to 3:00 pm
	60 minutes	7:00 pm to 11:00 pm
Saturdays	60 minutes	6:00 am to 7:00 pm
	60 minutes	7:00 pm to 11:00 pm
Sundays/Holidays	60 minutes	9:00 am to 11:00 pm
- **Vehicle Loadings** – average maximum loads per bus will not exceed the following standards (frequencies will be increased if the loading standard is exceeded):

During peak periods	150% of seating capacity over maximum 60 minute period
During off-peak periods	100% of seating capacity over a 60 minute period
- **Performance Targets** – feeder routes are expected to meet or exceed the following performance levels:

Weekday Peak Hours	25 passengers per service hour
Other times	15 passengers per service hour
- **Service Warrants** – feeder routes are dependent on the demand both in residential areas and in industrial or business areas. They can operate during weekday peak periods only, or can be extended to other periods and days depending on their ability to maintain the minimum performance targets after a one year trial period. They can start earlier or operate later than the designated core hours if a minimum performance level of 15 passengers per vehicle service hour (25% cost recovery) can be maintained after a one year trial period.