1
12-YEAR CONVENTIONAL TRANSIT BUS LIFE REVIEW PROVINCIAL FUNDING CHANGES

The Transportation Services Committee recommends the adoption of the recommendations contained in the following report, dated October 19, 2011, from the Commissioner of Transportation Services.

1. RECOMMENDATIONS

It is recommended that:

1. The York Region Transit conventional and Viva bus life be increased from 12 years to an average of 18 years.

2. Major structural and mechanical refurbishing costs be included in future capital budgets to support the increase to 18 years.

3. The retirement of the following bus types be maintained at 12 years:
   - 18.3-metre articulated buses (Viva)
   - Orion V and Orion V1, 12.2-metre conventional buses (YRT)

2. PURPOSE

This report updates Regional Council on the impact of the withdrawal of provincial subsidy funding for replacement buses and seeks approval to extend the age of retirement on designated bus types.

3. BACKGROUND

Regional Council approved retirement of conventional buses after 12 years of service in November 2009

In November 2009, Regional Council approved the retirement of conventional transit buses after 12 years of service instead of 18 years, subject to continuation of the provincial subsidy program. The 12-year bus life, with support from the subsidy program, resulted in capital and operating cost savings and improved air quality with bus engines meeting stringent emission standards, and improved service amenities.

The Ontario Bus Replacement Program, which provided up to a one-third subsidy on replacement buses, was eliminated in 2010

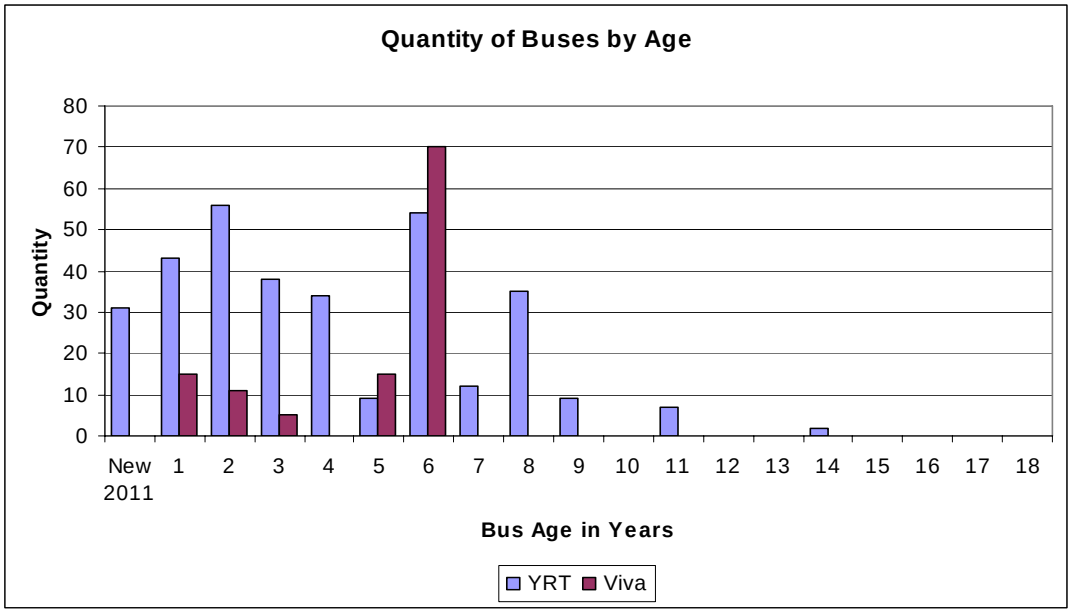
Regional Council received an information report in June 2010 regarding the elimination of the Ontario Bus Replacement Program (OBRP). The OBRP had been providing up to one-third funding on the purchase of replacement buses. The OBRP funding for York Region Transit (YRT) replacement buses in 2010 was honoured by the Province. Although there were no replacement buses delivered in 2011, there is a need to assess the impact of this funding change for future years.

Historically, the Province has provided subsidy to transit agencies to support the retirement of buses. The former program permitted the retirement of buses at 12 years of service

From 1974 to 1995, the Province of Ontario provided 75 percent capital funding to municipalities for the replacement of transit fleets at 18 years of age. The Province had also provided between 33 percent to 75 percent capital funding to perform major structural refurbishing to extend the bus life beyond the design life of 12 years. In recent years, the Province has introduced various programs for transit funding and, until 2010, supported the replacement of transit buses after 12 years of service. In 2007, the Province eliminated the subsidy to conduct major structural refurbishing to extend a bus life beyond the normal 12 years.

There are currently 330 conventional transit buses in the YRT fleet and 116 rapid transit buses in the Viva fleet. The fleet is relatively new with an average fleet age of 4.2 years. Exhibit 1 illustrates the age and quantity of the YRT conventional and Viva fleet by year-end 2011.

Exhibit 1



The fleet includes buses (target 25 percent) that are needed for operational contingencies, maintenance and capital programs.

A recent study of 15 Ontario transit systems indicates that the loss of subsidy funding will affect bus replacement schedules

The Ontario Public Transit Association had conducted a survey of 15 Ontario transit systems to determine if there was an impact from the removal of the OBRP subsidy program. YRT/Viva staff had participated on the task force conducting the assessment. The results of the survey indicated that almost two-thirds of the transit systems polled estimate that the OBRP funding loss will affect their bus replacement schedules and delay fleet renewal programs.

4. ANALYSIS AND OPTIONS

A number of factors were assessed to determine if there are benefits to retiring buses at 12 years of service

The factors assessed include:

- Life cycle cost analysis
- Customer service amenities
- Environmental considerations by reducing exhaust pollutants through the use of cleaner engine technology
- Bus mileage
- Impact on the 10-year capital budget

An 18-year bus life results in approximately $67,500 in overall savings per vehicle

The life-cycle cost for a typical YRT 12.2-metre bus was calculated to compare the 18-year versus the 12-year bus life cycle. Key findings are as follows:

- Removal of the Provincial subsidy funding which provided up to one-third of the replacement bus cost has a major impact on cost for the Region.
- The number of replacement buses that need to be purchased increases significantly with a 12-year bus life.
- All heavy-duty buses are designed and tested for a 12-year life cycle. Major structural refurbishing and mechanical overhauls are needed to extend the bus life to 18 years. This cost is avoided if the bus retires at 12 years.
- Costs are based on a conventional bus; however, a Viva bus would produce similar results.
- The operating cost of a bus in years 13 to 18 is slightly higher due to the age of the bus.

A life cycle cost calculation over an 18-year time frame is summarized in Table 1.

Table 1
Life Cycle Cost Comparison

Bus Life	Cost for the First 12 Years	Cost for an additional 6 Years		Total
18 years	Unit bus cost $553,000	All program costs for major rebuild	$180,000	$756,500
		Higher operating cost	$ 24,000	
		Less salvage value	$ (500)	
12 years	Unit bus cost $553,000	50 percent of cost of new bus	$276,500	$824,000
		Less resale value	$ (5,000)	
	Cost benefit to retain buses to 18 years			$ 67,500

Three bus models should continue to be scheduled for retirement at 12 years due to customer service, technical and environmental considerations

There are 56 articulated buses that operate on the Viva service. Of these, 41 were purchased between 2005 and 2009 and have the highest utilization rate in the fleet. The 2005 model buses have accumulated, on average, over 450,000 km. Conducting major refurbishing of these vehicles is extensive due to the high utilization rate and complexity of the articulation assembly (section of bus which bends). Articulated buses should continue to be scheduled for retirement commencing in 2017 when the buses reach 12 years of age.

There are 26 Orion V conventional buses and two Orion VI conventional buses that operate on the YRT service. These buses were purchased between 1997 and 2003. This includes 16 buses which were purchased used when York Region assumed GO Transit service on Yonge Street and Bayview Avenue in 2003. The Orion V is a high-floor bus which requires an external under-floor wheelchair lift. Although these vehicles are considered to be wheelchair-accessible, the use of the lift and the need to adjust the interior seating is onerous. Also, the exterior lift has a higher failure rate and the vehicle is placed out-of-service if the lift is not functioning. It takes approximately seven to eight minutes to adjust the interior seating, utilize the lift and secure the customer and mobility aid inside the high-floor bus. The boarding time on a low-floor bus for a customer in a wheelchair is approximately four minutes. Also, emergency evacuation on a low-floor bus is quicker as there are no steps at both exit doors.

Other factors which support maintaining the retirement of the Orion buses at 12 years are:

- Both buses are no longer in production and parts will be difficult to obtain if the bus is retained beyond the 12-year life.

- Retiring buses at 12 years of service will decrease bus emission levels. There have been continued upgrades to new engine emissions regulations for heavy-duty transit buses that have gone into effect in 2004, 2007 and 2010. All Orion buses have engines that have emission levels that date back prior to 2004. There are 35 buses that were delivered in 2003 with engines that date back prior to 2004. However, these buses are low-floor design, currently in production and fully supported by the bus manufacturer.

Further analysis will be conducted prior to the scheduled retirement date to determine if an extended bus life can be accomplished

Prior to the scheduled retirement of a bus and as part of a routine inspection program, buses are assessed to determine a suitable retirement age. Buses in reasonable condition will continue in service beyond the respective 12 and 18 year retirement age based on assessment of the vehicles at that time.

Link to Key Regional Council-approved Plans

From Vision to Results: 2011 to 2015 Strategic Plan
Priority Area – Continue to Deliver and Sustain Critical Infrastructure – use of comprehensive life-cycle infrastructure asset management.

5. FINANCIAL IMPLICATIONS

The former Ontario Bus Replacement Program (OBRP) had provided $16.5 million in Provincial subsidy to the Region between 2007 and 2010 to replace 108 YRT buses. The loss of the subsidy in 2010 requires an adjustment to the bus replacement strategy and associated budget.

Estimated capital cost savings of $19.4 million by extending bus life on selected vehicles from 12 years to 18 years over the next ten years

The 2012 draft Ten-Year Capital Budget was analyzed to determine the impact of a 12 and 18-year bus life program. Factors and values used in this analysis included:

- Removal of provincial subsidy from the former OBRP, previously worth up to one-third the value of the replacement vehicle.
- Major mid-life structural refurbishing and overhaul of mechanical components for 362 buses at a unit cost of $180,000.
- Average salvage value of $500 on sale of a vehicle after 18 years.
- Average resale value of $5,000 on sale of a vehicle after 12 years.

Table 2 compares 18 and 12-year bus life cycles over the next ten-year plan.

Table 2
Ten Year YRT Capital Budget Cost Comparison
Bus Replacement

Item	18-year life cycle	12-year life cycle
Quantity of replacement buses 2012 to 2021	94	296
Total 10-year cost of replacement buses	$81,584,000	$167,568,000
Total 10-year cost to refurbish buses to extend life to 18 years	$65,160,000	$0
Total revenue from resale of retired buses	($47,000)	($1,480,000)
Total 10-year net capital cost	$146,697,000	$166,088,000

Extending the bus life to 18 years will require funding and resources to develop and manage a major refurbishing program

In order to extend the bus life from 12 to 18 years, the buses will need to undergo a major structural refurbishing and mechanical overhaul program. Starting in 2013, an average of 30 buses would be in the overhaul program per year. The cost to develop, administer and conduct quality assurance inspections is included in the $180,000 unit cost per bus.

6. LOCAL MUNICIPAL IMPACT

There is no local municipal impact associated with this report as the proposed retirement of buses after 18 years does not have an affect on the number of buses that are available to serve the communities.

7. CONCLUSION

With the loss of the Provincial subsidy to assist in the funding of replacement bus purchases, there is a cost benefit to extend the YRT conventional and Viva bus life from the current 12 years to an average of 18 years. Three designated bus types should continue to be retired at 12 years due to mileage, customer service, maintenance and environmental considerations.

For more information on this report, please contact Rick Takagi, Manager, Capital Assets at Ext. 5624.

The Senior Management Group has reviewed this report.