

# TORONTO TRANSIT COMMISSION REPORT NO.

**MEETING DATE:** August 19, 2014

**SUBJECT:** Low Floor Streetcar Key Features and  
Service Launch Preparedness

## **INFORMATION ITEM**

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### **RECOMMENDATION**

It is recommended that the Board receive the Low Floor Streetcar Key Features and Service Launch Preparedness presentation, for information.

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# Toronto's new streetcars

August 19, 2014



# Toronto's Streetcars -- Since 1860's



- Proud past, proud future





# Toronto's Streetcars -- Since 1860's



- 1930's – 1950's:
  - PCC:
  - new image
  - improved reliability and maintenance



SWIFT!

SAFE!

SMOOTH!

SILENT!



### New Streamlined Cars Are Here

Special arrangements have been made to secure two of the one hundred and forty new streamlined cars which will shortly be in operation, to show at the Canadian National Exhibition. It was there that America's first electric car was displayed fifty-five years ago.

The new cars are the result of years of research and exhaustive testing of preliminary models. In actual operation they have proved their performance and their rider-appeal has been attested by the greatly increased passenger traffic they have won. Our passengers will have a new experience when they ride on the streamlined cars.

**THEY'RE SWIFT.** The acceleration, the pick-up, is surprisingly fast. The four motors supplying 220 horsepower move the new car from a standing position with surprising swiftness. The free-running speed will keep the car in place under any traffic conditions.

**THEY'RE SAFE.** Three braking systems combine automatically to keep the car under masterful control in any weather. A dynamic brake, a track brake which grips the rail with a pressure of twenty-six tons, and finally an air brake slows the car to a cushioned stop.

**THEY'RE SMOOTH.** The new 99 notch combined three braking systems and a car lift rubber result in a smooth, gliding ride which is to be appreciated. Air-conditioning, thermoelectric heating, no-glare, no-shadow interior, whole interior design and equipment produced that equal and in some respects

**THEY'RE SILENT.** Rubber, sound, has been used in abundance. rubber and rubber mountings ride practically zero. The new hypoid oil. The close attention devoted to in an amazingly restful and silent

Illustrations and explanatory features of the new streamliner in future issues. Meanwhile at the Exhibition. One is the convenience of person other car is conveniently



Vol. 13, No. 11.

Published monthly by and for everyone in The Toronto Transportation Commission, Toronto, Canada.

## MODERNIZATION

OUR present day civilization seems to measure much of its advancement through improvements in the more material things. Modern advertising has taught us to expect not only increasingly greater satisfaction from articles we use but also to look for and expect constantly greater beauty in the appearance of articles themselves.

Attention on an article approaching mechanical perfection is shifted to the improvements made in its appearance until we tend to judge the general suitability of the article itself more from its appearance than from its ability to meet our actual needs.

So it is that the old gives place to the new. The rather ugly-looking wash tub is gone. To-day we have the sleek-looking and efficient electric washer. The old cumbersome radio has been made obsolete, from a purely style view-point, by the modern, streamlined cabinets with coloured and subdued lighting effects. Tenants naturally gravitate to new ultramodern apartments, as out of date buildings fail to attract them. Everything from jam jars to railroad trains and bridges have been streamlined, made more beautiful to better appeal to our artistic sense and pride.

Keeping pace with this demand for modernization is costly whether it be in our homes or our business. It is particularly expensive in the Transit Industry where the large investment in equipment and facilities must be spread over many years.

However, if a business is to survive it must prosper and no business can hope to prosper to-day unless it keeps pace with the demands of the times.

Our equipment and facilities must continue to appeal to the wishes and desires of prospective passengers if our industry is to meet its competition successfully.

Large amounts of money must be spent constantly, to-day, to-morrow and the next day, to keep our equipment looking smart, modern and up-to-date with current demands.

Nor is improvement in equipment alone sufficient. It is just as essential that passengers attracted by its modern appeal should also be impressed with the high degree of courteous treatment and service we associate with modernization.



# Toronto's Streetcars -- Since 1860's



- 1970's – 1980's:
  - CLRV's, ALRV's
  - Updated technology
  - Replaced worn out PCCs



Cover Story

# New 'bendable' streetcar launched

TTC History took a new twist on January 19 when the first "bendable" streetcar entered revenue service on the 507 Long Branch route.

A ribbon-cutting ceremony at the Humber Loop for Toronto's first Articulated Light Rail Vehicle (ALRV) was presided over by Chairman Jeffery Lyons and Lloyd Berney, General Manager — Operations.

Following the ceremony, the guests, including media representatives, took a demonstration ride to Roncesvalles Carhouse. Here, the ALRV was joined by one of the TTC's new Orion-Ikarus 60-foot articulated buses, which recently entered service on Finch East.

A total of 30 articulated buses are scheduled to be in service by this April. They have 61

seats and carry as many as 107 riders — almost twice that of a standard 40-foot bus. The cost per bus is \$310,000.

Visitors were allowed to inspect and photograph the new bus, and rode it back to Humber. Shortly afterwards, the ALRV returned and headed out towards Long Branch, picking up surprised passengers and beginning a new era in public transportation.

Currently, five cars in the 52-unit ALRV order have been received in Toronto, although only one car has been accepted for service during rush hours.

The remaining ALRVs are expected to be on property by the end of this year and will be operated on routes such as 501 Queen and 502 Downtown.



"Our slogan for this launch", Lyons said, "is that the TTC is 'bending to meet ridership.' We believe these new streetcars will go a long way to improve service, particularly on heavily travelled routes."

The Chairman acknowledged the TTC's partners in developing the ALRV project, the Ministry of Transportation and Communications,

and the Urban Transportation Development Corporation. He noted that Toronto had begun its 127-year history with horse-drawn streetcars. Toronto love he added.

The 76-foot

## TTC's New ALRVs, Subway Cars on Assembly Line at Factory in Thunder Bay



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## First Articulated Light Rail Vehicle arrives; displayed at City Hall

The first TTC ALRV, car 4200, was unloaded at St. Clair Carhouse on June 12, after being trucked in from the UTDC plant at Kingston. Subsequently, it was transported to Nathan Phillips Square where a brief hand-off ceremony took place. 4200 remained on display on the west side of Bay Street during the recent APTA Conference.

The Commission has purchased 52 of the 75-foot long articulated cars, at a unit cost of \$1,369 million; all of them are scheduled to be on the property by late summer 1988. They are the first articulated cars bought by the TTC (the orange ALRV that operated on Route 501 Queen five years ago was a UTDC-owned demonstrator, subsequently returned to the manufacturer). The only other Canadian city to operate articulated street cars was Montreal, which ran a

small number of such vehicles until the early 1950s. Modern articulated LRVs of German design currently run in Calgary and Edmonton.

Our ALRVs are initially intended for replacement of the remaining PCs which are nearing 40 years of age. Early in 1988 they will be placed in service on the 511 Bathurst route on a two-for-three substitution for service evaluation. In October of that year, it is planned to convert the 501 Queen, 502 Downtown and 503 King-ston Road Tripper to the articulated cars.

"These new vehicles will be ideal for heavily travelled routes," said Chairman Jeffery Lyons. They seat 61 riders and have a total capacity of approximately 155 passengers, compared to 46 seats and approximately 100 riders for a

CLR.V. Although the ALRV resembles the CLR.V, a number of design changes have been made to improve operation and reduce maintenance time. The car has two sets of chopper controls, rather than one, so that it can still function when one system is "down"; inside frame trucks with SAB resilient wheels; and four silent motors rather than two. Also featured are an Operator's public address system; relocated and enlarged roof vents; and front and rear safety skirts (no couplers are provided). Unlike the demonstrator ALRV, the new cars have standard foot controls.

The delivery of the first ALRV continues Toronto's street car tradition that dates from 1861, and ensures that the popular vehicles will be serving our city into the next century.



The arrival of ALRV 4200 called for a variation on traditional 'Key to the City' ceremony. Here, Bay (left) Centre President, UTDC Chairman Jeffery Lyons (right) is Toronto Mayor Gilson.



## ALRVs undergo exhaustive testing

The TTC currently has 52 Articulated Light Rail Vehicles on order from the Urban Transportation Development Corporation Inc., a division of Lavalin Industries. The cars are being built at the company's plant near Kingston, with some component work being performed at its Thunder Bay facility.

To date, two cars (4200

and 4204) have been received in Toronto and acceptance testing is under way in areas such as ride quality, energy consumption, acceleration and braking, high performance operation, noise and vibration (interior and exterior) and the spin-slide system. The ALRVs are also undergoing disabled tests, involving being pushed or pulled by another

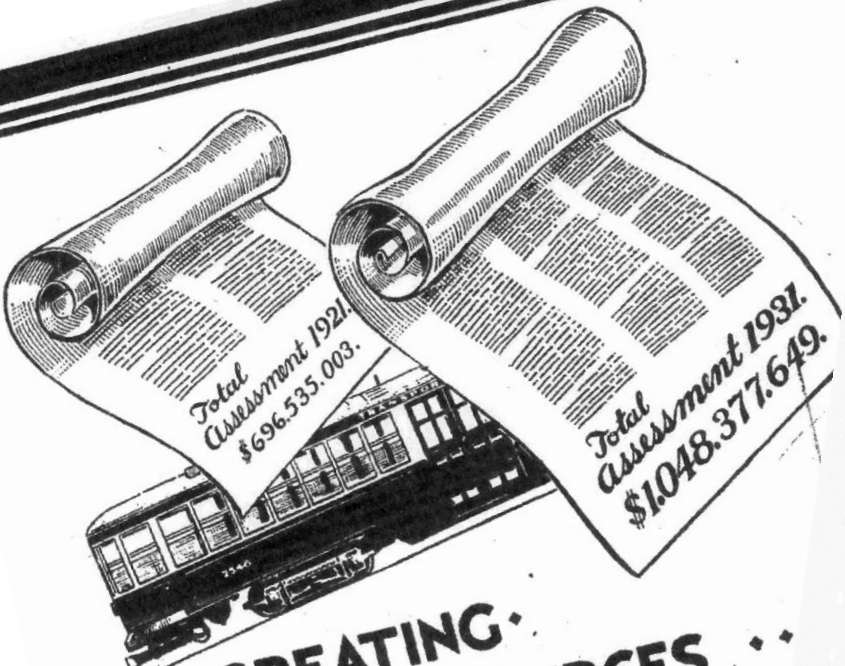
ALRV or CLR.V. System-wide clearance and track switch tests have been completed.

The testing will continue through November, subject to favourable weather conditions. As the ALRVs are accepted they will be placed in operation on the 511 Bathurst route, during 1988.

inCar  
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PHOTOS/UTDC





Total Assessment 1921  
\$696,535,003.

Total Assessment 1931  
\$1,048,377,649.



# ... CREATING ... CIVIC RESOURCES ...

THE unification, rehabilitation and expansion of Toronto's public transportation system commenced on September 1st, 1921.  
The greatest period of increased resources and progressive development Toronto has experienced commenced on September 1st, 1921.  
There is more than mere coincidence in these events. There is conclusive evidence of cause and effect.  
The day that the one-fare public transportation system—formerly restricted to serving an area of only 17 square miles—was extended to serve the entire 34 square miles of the city's area, an immense surge of development spread to the city's boundaries in all directions.

Vast territories of the city that had ductive for many years offered a development.  
Today—after ten years—the thriving residential, commercial, Kingston Road, Gerrard East, St. Clair West, Dundas West and Millions upon millions of dollars Toronto's Assessment Rolls.  
As the Tenth Anniversary transportation enterprise approach Toronto is mindful of the modern public transportation resources on which a

## TORONTO TRANSPORTATION

# HARBOUR DEVELOPMENT STIMULATED by T.T.C. SERVICES



TORONTO'S long cherished ambition to become a really important shipping port was the incentive to the undertaking of a huge programme of harbour developments that are now at an advanced stage. Even the laymen, without strain on his imagination, can see the modern lake port facilities already in use and can readily visualize ocean shipping brought to Toronto Harbour with the development of Canada's inland waterways.

Included in the harbour developments was the reclaiming of an extensive area of formerly waste shoreline to provide for warehousing and industries the advantages of sites served by all of the modern transport routes,—water, rail, highway and air.

As the harbour developments progressed, some new industries attracted to the City established themselves on harbour sites. It then became apparent that the harbour facilities and the industrial sites could be fully utilized only if and when public transportation would become available to make the

harbour areas conveniently accessible to the thousands of people travelling to the docks, warehouses, shipping offices, and to industrial employment.

Toronto's publicly-owned transportation system has recognized this new field of public service and has extended its one-fare system to include the harbour territories.

Ten years ago there were no public transportation services south of Front Street, west of the Don River.

During its ten years of service, since September 1st, 1921, the T.T.C. has inaugurated services to and in the harbour districts with seven street car and bus routes,—BAY, FLEET, SPADINA, FORT, ASHBRIDGE, BATHURST, and DUNDAS.

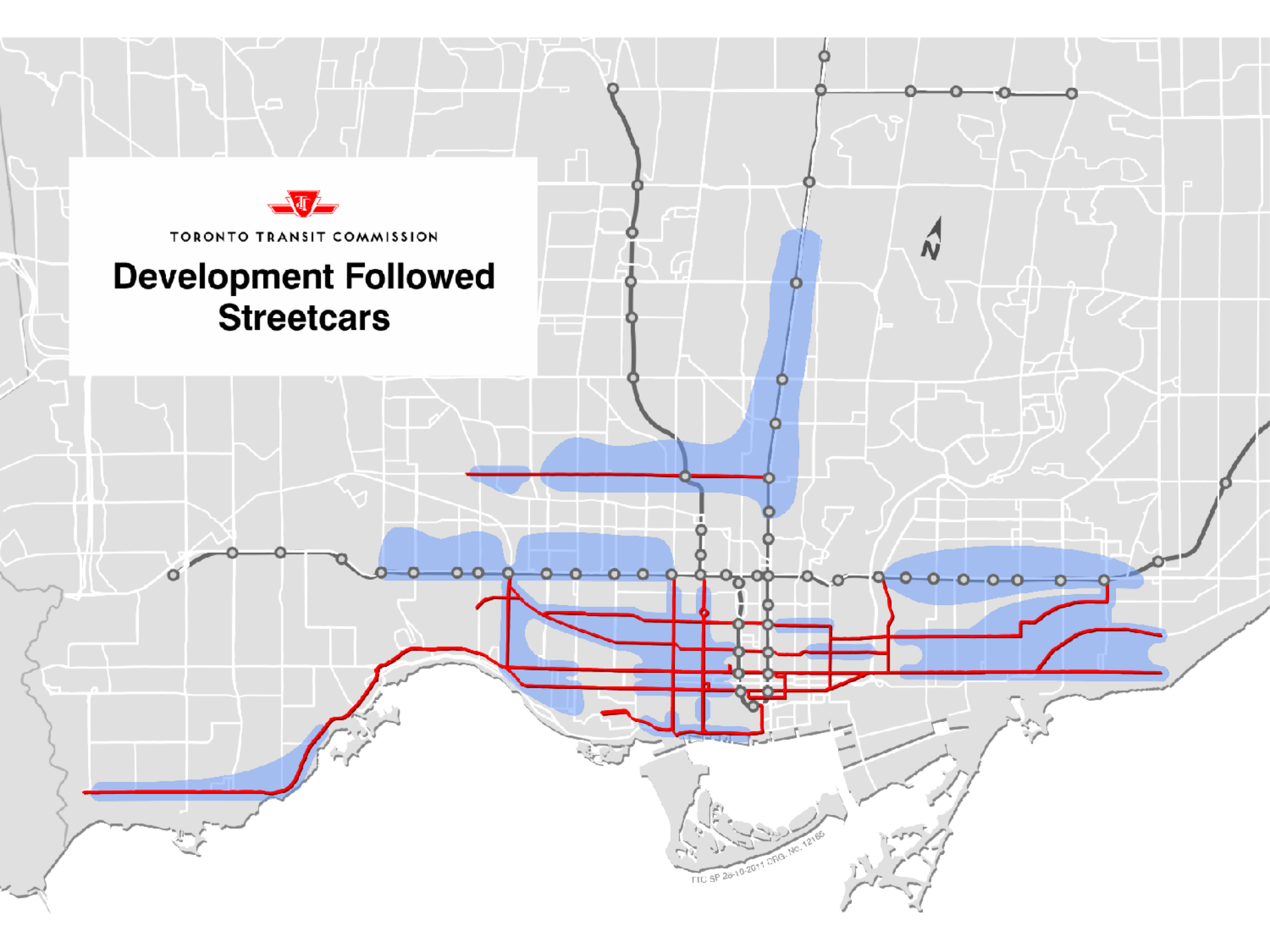
These services have steadily increased the flow of energizing traffic that carries the surge of the whole City's commerce and industry to the harbour developments of the future great Port of Toronto.

## TORONTO TRANSPORTATION COMMISSION



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# Development Followed Streetcars



# Toronto's Streetcars Today



## Streetcar network



# Toronto's Streetcars Today



- 11 routes = 305 km of service
- Busiest 3 routes in TTC system:
  - 504 King = 57,000/day
  - 510 Spadina/Harbourfront = 55,000/day
  - 501 Queen = 52,000/day

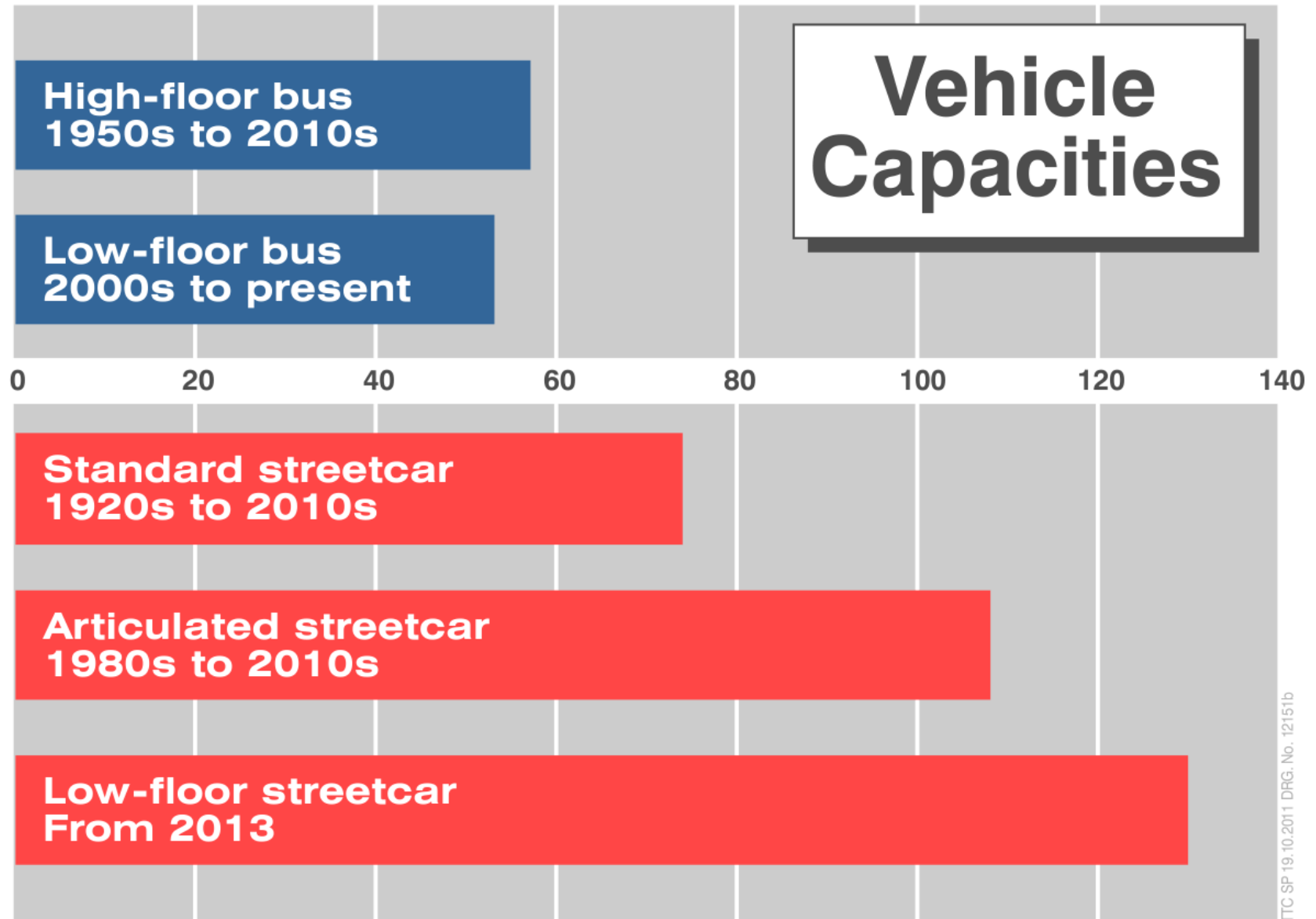




- Efficient mover of customers – vehicle size
- Increase land values, attract development
- High quality: quiet, comfortable
  - Customer Satisfaction Scores higher for variety of items
- Environmentally-friendly: zero local emissions
  - Lend themselves to vibrant streetscape
- Established, known symbol of Toronto



# Toronto's Streetcars - Efficiency



# Toronto's Streetcars Today



- 64 million customer trips per year:
  - 6% of total route kilometres
  - 12% of total operating hours
  - 15% of total TTC passengers

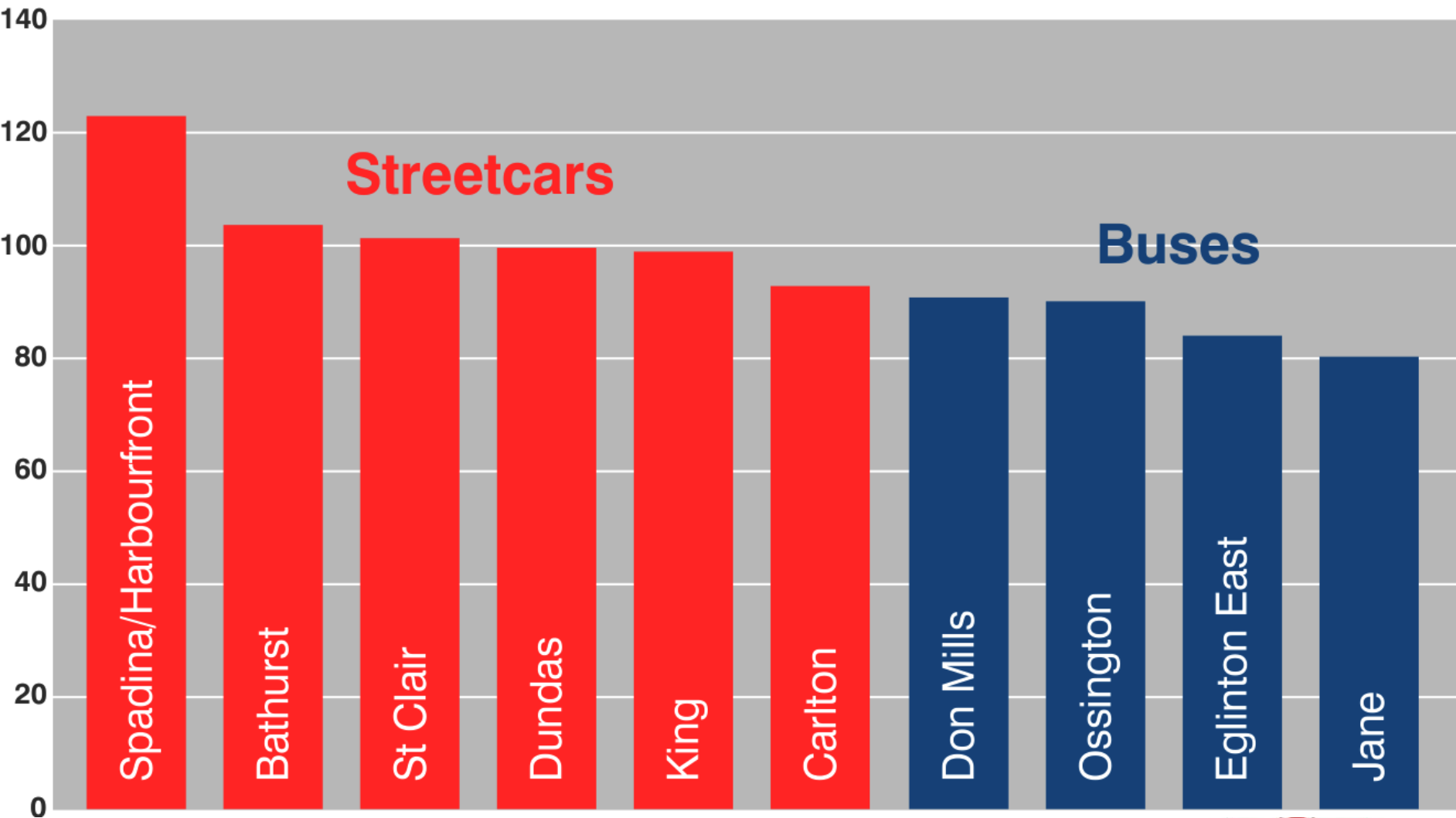


# Toronto's Streetcars Today



## TTC's 10 Most Productive Routes

Passengers Per Service Hour

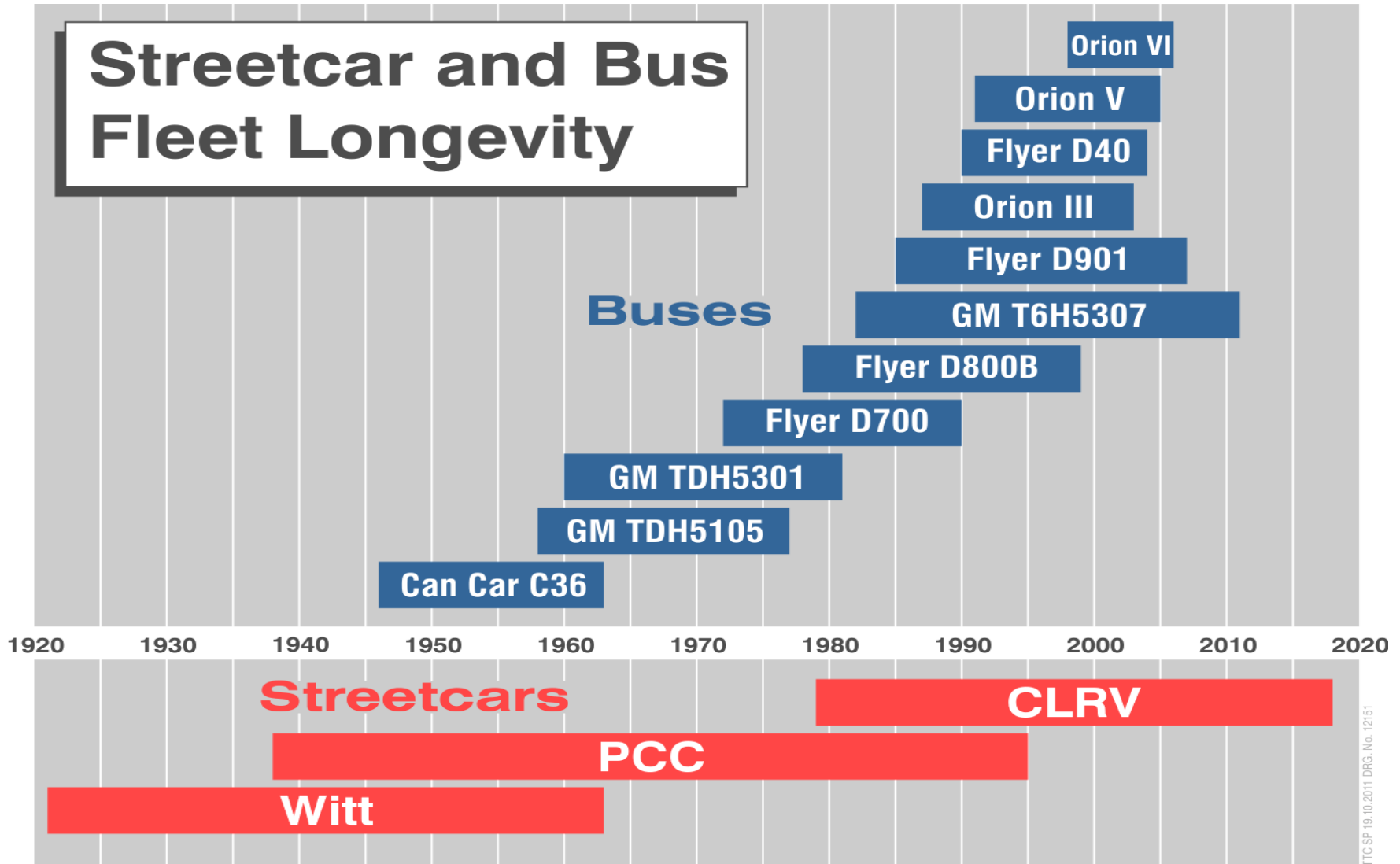




# Toronto's Streetcars Today



## Streetcar and Bus Fleet Longevity



TTC SP 19.10.2011 DRG. No. 12/151



# Main Objectives of New Streetcars



- These 204 low floor streetcars will:
  - Replace aging fleet, relieve congestion & accommodate natural (and suppressed) ridership growth
  - Provide accessible, safe and customer-friendly vehicles; attract ridership
  - Improve fleet reliability, availability & maintainability
  - Increase capacity by ~ 40%



# Extensive consultation and testing



# Customer Experience: Fare Payment



## THE FUTURE IS GIVING YOU CHOICES

THE NEW STREETCAR IS COMING TO SPADINA  
ON AUGUST 31<sup>ST</sup>

### FARE PAYMENT OPTIONS

New streetcars are equipped with two on-board fare vending machines and ticket validators located across from each of the centre double doors. The 510 Spadina streetcar route will now run on a Proof-of-Payment (POP) system. Customers will need to show their POP receipt to a TTC fare inspector upon request.

#### PASS HOLDERS:

Customers with a Metropass, Day Pass or Weekly Pass will be able to board the new streetcar through any door. Your Pass is your POP receipt.

#### TOKENS:

Customers using tokens will need to pay at an on-board or curbside fare vending machine to receive a POP receipt. Your POP receipt can also be used as your transfer.

#### TTC TICKET HOLDERS:

Customers using Senior/Student or Child tickets are required to have their tickets stamped at a ticket validator located beside the on-board or curbside fare vending machines. Your stamped ticket is your POP receipt and can be used as your transfer.

#### TRANSFER HOLDERS:

Customers with a transfer can board the streetcar through any door. Your transfer is your POP receipt.

#### CASH FARES:

The fare vending machines accept coins only (change is not provided), and will issue a POP receipt. Your POP receipt can be used as your transfer.

#### CURBSIDE FARE VENDING MACHINES:

Customers can also purchase fares and validate their tickets at new curbside fare vending machines installed at the busiest stops along the route, such as College and Spadina. Fare vending machines accept coins only, change is not provided.

The new fare vending machines and ticket validators are unique to the 510 Spadina route. There will be a transition period when both new and regular streetcars will run on the 510 Spadina route. Customers boarding regular streetcars will pay their fare as usual and will now be required to show a POP receipt upon request.



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# Customer Experience: Accessible



## THE FUTURE IS ACCESSIBLE

THE NEW STREETCAR IS COMING  
TO SPADINA ON AUGUST 31<sup>ST</sup>

### FEATURING:

- Low floor — no stairs to climb
- Extendable ramp gives customers easy access
- Operator deploys ramp upon request
- Request ramp by pressing the illuminated blue accessibility button on the inside or outside of the streetcar
- Ramp deploys quickly
- Priority seating on-board for 15 people (for people with disabilities, the elderly and pregnant women)



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# Customer Experience: Accessible



# Customer Experience: Comfortable



## THE FUTURE IS COMFORTABLE

THE NEW STREETCAR IS COMING  
TO SPADINA ON AUGUST 31<sup>ST</sup>

### FEATURING:

- Modern design and feel
- Spacious interior
- Climate control with air conditioning
- All-door boarding
- On-board fare vending machines / ticket validators
- Natural lighting from large windows
- Holds up to 251 passengers — almost double capacity of current streetcars



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# Customer Experience: Informative



- Automatic audible and visual announcements for all stops





# Customer Experience: Service



- Overall large improvements to service
  - Around 40% more capacity at full roll-out
  - Regular service and space on vehicles will dramatically increase customer satisfaction
- Peak periods:
  - most routes retain 5'00" or better service
  - POP time savings not reflected in planned service levels
- Off-peak periods:
  - most routes retain 8'00" or better service
  - POP time savings not reflected in planned service levels
- Still examining options for keeping pace with growth
  - More new streetcars (storage available for 60 more)
  - Extending lives of ALRVs for short term



# Where Will New Streetcars Go First, and Why?



- Technical requirements
  - accommodate bigger power requirements
  - access to / from / between maintenance / storage facilities
- Timing requirements
  - Short routes – faster, easier to prepare, convert
  - fewer cars required for complete conversion
  - fewer sidewalk ramp construction (accessibility)
  - fewer ticket vending machines (fare payment)
- Will continue to adapt as other changes occur



# Where Will New Streetcars Go First, and Why?



510 Spadina	2014
511 Bathurst	2015
509 Harbourfront	2015
505 Dundas	2015/2016
501 Queen	2016/2017
508 Lake Shore	2016/2017
504 King	2017
512 St Clair	2017/2018
502 Downtowner	2018
503 Kingston Rd	2018
506 Carlton	2018/2019



# Customer Experience - Safety

- Warning lights on doors engage before doors open



# Customer Experience - Support



- Customers will get support to understand fare payment now, and transition to PRESTO
- Customers will get support to understand all door boarding and POP
- Customers will get support on vehicles and on street

## Your new ride is here

Say hello to TTC's brand new streetcar



### MEET YOUR NEW RIDE

Accessible, air conditioned, quiet and smooth, with all-door boarding and exiting and new fare payment system – your new streetcar is designed for the streets of Toronto. This brand new streetcar is part of creating a transit system that makes Toronto proud.

*The new streetcars are funded by the City of Toronto, Province of Ontario and Government of Canada.*

### HOW TO PAY YOUR FARE

The speed and convenience of all-door boarding means Proof-of-Payment (POP) will be required. Here's what you need to know:

**Metropass/Day Pass/Weekly Pass:** Board the new streetcar through any door. Your pass is your proof of payment.

**Token:** Deposit your token into one of the two on-board fare vending machines which will provide a POP receipt that can also be used as a transfer.

**Cash Payments:** The fare vending machines accept coins only (machines cannot give change) and will provide a POP receipt. Your POP receipt can also be used as a transfer.

**Tickets:** Have your ticket stamped at a ticket validator beside the on-board fare vending machines. Your stamped ticket is your POP receipt and can also be used as a transfer. When connecting to another route, deposit your validated ticket into the farebox and receive a conventional transfer.

**Transfers:** Board the streetcar through any door. Your transfer is your proof of payment.

**Curbside Fare Vending Machines:** You can also purchase and validate tickets at new curbside fare vending machines installed at the busiest stops along the route (such as the corner of College and Spadina streets).

### ACCESS FOR ALL

The new low-floor streetcar is accessible to all and features a ramp that is deployed by the operator when requested. You can request the ramp by pressing the illuminated blue accessibility button located by the second set of doors on both the interior and exterior of the streetcar.

There is a designated Priority Area to accommodate customers with wheelchairs or other mobility devices.

As with all TTC vehicles, priority seating areas are located near all doors. These areas, identified by blue seats, are for people with disabilities, the elderly and pregnant women.

### BRING YOUR BIKE

Convenient on-board bike storage is available for up to two bikes on a first-come, first-served basis during off-peak hours (Monday to Friday before 6:30 a.m., 10 a.m. to 3:30 p.m., and after 7 p.m.; weekends and statutory holidays).

For more information, visit [ttc.ca](http://ttc.ca)



# Conclusion



## THE FUTURE IS COMING

### THE ALL NEW STREETCAR FLEET IMPLEMENTATION

The vehicle rollout schedule for all streetcar routes will take several years to complete. Here is the most current schedule.

- 510 Spadina - **NOW**
- 511 Bathurst - 2015
- 509 Harbourfront - 2015
- 505 Dundas - 2015/2016
- 501 Queen - 2016/2017
- 508 Lake Shore - 2016/2017
- 504 King - 2017
- 512 St Clair - 2017/2018
- 502 Downtowner - 2018
- 503 Kingston Rd. - 2018
- 506 Carlton - 2018/2019



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