

June 3, 1952

Study of Future Surface Car Requirements and  
Recommendation to Purchase Additional Used P.C.C. Cars

The Service Change Committee has recently given careful consideration to the street car equipment which will be required in 1954 after completion of the Yonge Street Subway. It considers that the requirement for surface car operation at that time will total 883 street cars, based on maintenance of the present volume of traffic.

Future Volume of Passenger Traffic

I attach herewith Mr. W.F. Irwin's most recent forecast of revenue passengers dated May 27, 1952, marked Exhibit No. 1. This shows that the volume of passenger traffic on the City and Suburban systems may be expected to increase to a peak of about 330,000,000 passengers in 1960. For the ensuing decade, 1960-1970, the trend will be downwards, but the total volume will still be above the present level until the end of this period.

It is considered, therefore, that the Service Change Committee's estimate of surface car requirements for 1954 based on present traffic conditions is a reasonable basis from which to continue a study of future requirements.

Present Fleet

The present fleet consists of the following street cars and trailers:

|                        |       |
|------------------------|-------|
| P.C.C. Cars            | 591   |
| Small Witt – pay-enter | 100   |
| Large Witt – pay-enter | 75    |
| Large Witt – 2-man     | 173   |
| Trailers               | 105   |
| Total                  | 1,044 |

Of these cars, 105 trailers and 50 Brill cars (large Witt, 2-man) will be scrapped as unsuitable or unfit for rehabilitation as soon as the Yonge Street Subway is in operation. This will leave 889 cars available for service, which is practically identical with the estimated requirements in 1954.

Authority has already been obtained to carry out the necessary rehabilitation of the 175 pay-enter Witt cars to fit them for another 10 years' service and this work will be completed before the end of 1953.

Unless additional cars are purchased, it will be necessary also to rehabilitate and convert to pay-enter operation the 123 large Witt 2-man cars. Authority has already been obtained to proceed with this work on 50 of these cars.

The decision on the remaining 75 cars has been postponed pending consideration of the purchase of additional cars. The immediate determining factor appears to be the equipment requirements for handling the ever-increasing load on the Bloor route.

Bloor Street Multiple Unit Service

The Service Change Committee estimates that after the subway is in operation the Bloor service will require 138 cars for through service over the whole route, plus 36 cars for short-turn service between Yonge and Coxwell, or a total of 174 cars.

There are now on this route 100 P.C.C. cars equipped for multiple unit operation and we, therefore, require 74 cars to complete the quota. It is considered that all these cars should be equipped for multiple unit operation to enable the growing traffic on Bloor Street to be handled efficiently and expeditiously.

There are two ways of arranging this:

(a) By conversion of 74 of our existing P.C.C. cars to multiple unit operation

This would involve withdrawing 74 P.C.C. cars from regular service on other routes and replacing them with rehabilitated and converted Witt cars or trolley coaches. An auxiliary bus service has been considered but rejected because combined bus and street car operation on Danforth Avenue and Bloor Street would be undesirable and there is no suitable parallel street.

1. Because of the age and obsolescence of the Witt cars as compared with P.C.C. equipment, it is felt that substitution of such cars would be unacceptable to the public on routes now served by more modern equipment. The cost of rehabilitating and converting 75 large Witt cars for this purpose would be as follows:

|  |              |
|--|--------------|
| 75 large Witt cars rehabilitated and converted to pay-enter operation at \$4,300.00 each | \$322,500.00 |
| Cost of conversion of 75 P.C.C. cars to multiple unit operation at \$6,000.00 each       | \$450,000.00 |
| Total Cost   | \$772,500.00 |

2. The conversion of any major route to trolley coach operation – necessary to provide sufficient cars for Bloor Street – would be extremely expensive both in capital expenditure and in operating cost, and would make such substitution prohibitive at the present time.

For example: Conversion of the Harbord route would release 60 P.C.C. cars but the cost of conversion would be as follows:

|  |                |
|--|----------------|
| Capital Cost   | \$2,097,000.00 |
| Increased operating cost \$112,000.00 per annum<br>capitalized at 3% | \$3,190,000.00 |
| Total Equivalent Capital Expenditure                                 | \$5,287,000.00 |

(b) By purchase of additional P.C.C.cars

It is understood that Cleveland is about to dispose of 75 P.C.C. cars of which 50 are equipped for multiple unit operation.

These cars are all-electric, P.C.C. cars in good condition about 5 to 6 years old and can probably be purchased at a price of around \$20,000.00 each at Cleveland.

The cost delivered and ready for service at Toronto would be as follows:

|   |                |
|---|----------------|
| Purchase price in Cleveland   | \$20,000.00    |
| Duty 20%  | 4,000.00       |
| Freight   | 500.00         |
| Sub-total   | \$24,500.00    |
| Sale Tax 10%  | 2,450.00       |
| Conversion to Toronto gauge etc.                                    | 2,000.00       |
| Cost delivered in Toronto each                                      | \$28,950.00    |
| Cost of 75 cars delivered   | 2,171,250.00   |
| Cost of conversion to multiple unit<br>25 cars @ \$6,000.00         | 150,000.00     |
| Total for 75 multiple unit cars delivered                           | \$2,321,250.00 |
| Less scrap value of 75 Witt cars not required at<br>\$1,500.00 each | 112,500.00     |
| Net cost for Cleveland cars   | \$2,208,750.00 |

Long Term View

While it would undoubtedly be cheaper for the immediate purpose in view to convert existing P.C.C. cars to multiple unit operation and replace them on other routes with rehabilitated Witt cars, it is believed that on the long term basis such a course would be harmful to the future well-being of the system.

It is almost certain that the purchase of new standard P.C.C. cars – now economically undesirable – will eventually become impossible on this continent owing to the cessation of mass production due to lack of demand elsewhere. While it might still be possible to obtain such cars in Europe, the cost would be prohibitive.

At the present time, however, there are available good, used P.C.C. cars of recent manufacture which are suitable for operation in Toronto. This situation will obviously only continue for a limited time. It is believed that the Commission should seize the opportunity to protect its future by the purchase of some of these cars.

It might be asked why Toronto should consider buying additional street cars when so many of the transit properties on this continent are giving them up and turning to trolley coaches, buses or rapid transit operation. It is, therefore, necessary and useful to examine the practice of vehicular service, past and present, of other transit properties to determine what course should be followed in this city.

It is more or less true that there has been a gradual abandonment of street cars in a substantial number of large American cities and smaller Canadian cities.

There is obvious justification for the abandonment of streetcars in smaller communities but the policy of the abandonment of the use of this form of transportation in the larger communities is decidedly open to question. In fact it is hardly too much to say that the results which have occurred in a good many of these larger cities leaves open to serious question the wisdom of the decisions made.

It may be not wholly accurate to attribute the transit situation in most large American cities to the abandonment of the streetcars. Nevertheless the position in which these utilities have now found themselves is a far from happy one. Fares have steadily and substantially increased, the quality of the service given, on the whole, has not been maintained, and the fare increases have not brought a satisfactory financial result. Short-haul riding, which is the lifeblood of practically all transit properties, has dropped to a minimum and the Companies are left with the unprofitable long hauls. Deterioration of service has also lessened the public demand for public passenger transportation. The result is that the gross revenues of the properties considered, if they have increased to any substantial degree, have not increased anything like the ratio of the fare increases, and in most cases have barely served to keep pace with the rising cost of labour and material. It is difficult to see any future for most large American properties unless public financial aid comes to their support.

These facts being as they are, Toronto should consider carefully whether policies which have brought these unfortunate results are policies which should be copied in this city. Unquestionably a large part of the responsibility for the plight in which these companies find themselves is due to the fact that the labour cost on small vehicles is too high to make service self-sustaining at practically any conceivable fare.

Why then did these properties adopt this policy? It is not unfair to suggest that this policy was adopted in large part by public pressure upon management exerted by the very articulate group of citizens who own and use motor cars and who claim street cars interfere with the movement of free-wheel vehicles and who assert that the modern generation has no use for vehicles operating on fixed tracks but insists on "riding on

rubber". If there is any truth in the above suggestion it is an extraordinary abdication of responsibility by those in charge of transit interests. They have tailored their service in accordance with the demands of their bitter competitors rather than in accordance with the needs of their patrons.

In fairness there is another important feature to consider, that in most of these cities maintenance of equipment and plant has not been carried out with a thoroughness that Toronto is accustomed to. These properties found themselves with trackwork and overhead either worn out or obsolete and the cost of replacement of fixed equipment was a major factor in the decision to abandon street cars. There was also the plausible argument that initially free-wheel vehicles were less expensive to purchase, and the question of the ultimate utility of the vehicle for the purpose for which it was required was placed more or less in the background.

Few, if any, cities in the United States have rush hour loadings on surface lines comparable to those on major routes in Toronto. Where such heavy concentrations do occur, parallel street systems generally permit distribution of traffic to two or more routes and reduce the individual loadings to those which can be handled by buses or trolley coaches.

On the other hand, many of the rush hour loadings in Toronto are beyond the capacity of free-wheel vehicles and the track and overhead system is still in good condition and capable of many years of useful service. Under these circumstances our studies show that street car operation is the only available form of transportation for city routes with a capacity greater than 4,000 passengers per maximum hour, and the cheapest form of transportation for many lesser routes. It is believed, moreover, that the continued use of this economical form of operation has been responsible in a large measure for the lower fares which Toronto has enjoyed as compared with American cities.

Even if the Queen Street subway is constructed within the next decade the situation will remain unchanged, because the initial operation of the subway will be by street car and not by rapid transit car. It would, moreover, be desirable to operate the Queen route through this subway with multiple unit P.C.C. cars.

#### Future of Track System

I attach a memorandum from Mr. W.A. MacRae dated May 23<sup>rd</sup>, 1952, and marked Exhibit No. 2, showing anticipated track replacements during the next 25-year period. From this you will note that the peak of obsolescence will occur between the years 1960 and 1974 with the greatest expenditure in 1965. The great majority of this work affects major routes such as Bathurst, Bloor, Carlton, Dundas, King, Queen, St. Clair and Kingston Road, and only a comparatively small proportion of the work affects routes such as Church, Parliament, Coxwell, Dupont, etc., which might reasonably be abandoned before then.

### Future of present Street Car Fleet

I attach herewith memorandum from Mr. J.G. Inglis dated May 14<sup>th</sup>, 1952, and marked Exhibit No. 3, regarding the estimated lifetime of the street cars now owned by the Commission, assuming that the rehabilitation and conversion of all Witt cars is carried out before the end of 1953. From this you will note that in 1963 the 298 Witt cars will be 40 years old and will have reached the end of their useful life. By 1968 the first 139 P.C.C. cars will be 30 years old and will also be due for retirement and thereafter year by year the fleet will gradually be reduced to the vanishing point as indicated in the following table:

| Year | No. of Cars Retired | No. of Cars Remaining |
|------|---------------------|-----------------------|
| 1953 | 0                   | 1044                  |
| 1954 | 155                 | 889                   |
| 1963 | 298                 | 591                   |
| 1968 | 139                 | 452                   |
| 1969 | 27                  | 425                   |
| 1970 | 50                  | 375                   |
| 1971 | 60                  | 315                   |
| 1973 | 15                  | 300                   |
| 1975 | 25                  | 275                   |
| 1977 | 25                  | 250                   |
| 1978 | 100                 | 150                   |
| 1979 | 100                 | 50                    |
| 1981 | 50                  | 0                     |

The critical period will come around 1963 when we are approaching the peak of track obsolescence and when all the Witt cars will be retired, leaving only 591 P.C.C. cars available for service, as shown on the attached chart marked Exhibit No. 4.

### Possible Conversion to Free-Wheel Operation

From our experience with trolley coach operation, it has been deduced that the maximum capacity of free-wheeled vehicles is not more than 4,000 passengers per hour. On this basis the following routes might reasonably be converted to bus or trolley coach operation within the next decade:

| Route                       | Passengers per<br>Maximum Hour | Street Cars Released |
|-----------------------------|--------------------------------|----------------------|
| Church                      | 1,000                          | 5                    |
| Coxwell                     | 1,600                          | 5                    |
| Dupont                      | 2,000                          | 20                   |
| Harbord (west end)          | 2,700                          | 37                   |
| Lake Shore                  | 1,700                          | 21                   |
| Parliament                  | 2,200                          | 6                    |
| Queen (east of<br>Woodbine) | 1,900                          | 15                   |
| St. Clair (east of Yonge)   | 1,300                          | 9                    |
| York Township Lines         | 2,000                          | 11                   |
| Total                       |                                | 131                  |

Of these cars, 118 are P.C.C. and the remaining 13 are Witts.

### Routes which should be continued with Street Cars

It is considered that the following routes have maximum passenger demands greater than free-wheeled vehicles can handle, and should be continued in street car operation for at least 20 years.

Major track reconstruction where required should therefore, be undertaken on these routes as set out in the attached memorandum from Mr. W.A. MacRae, and as shown on the accompanying plan, marked Exhibit No. 5.

| Route                | Passengers per<br>Maximum Hour | Street Cars Required |
|----------------------|--------------------------------|----------------------|
| Bathurst             | 6,100                          | 70                   |
| Bloor                | 9,000                          | 174                  |
| Carlton              | 4,200                          | 101                  |
| Dundas               | 4,200                          | 53                   |
| Harbord (east end)   | 3,900                          | 25                   |
| King                 | 5,400                          | 88                   |
| Queen – Kingston Rd. | 7,900                          | 152                  |
| St. Clair            | 6,200                          | 70                   |

|   |     |
|---|-----|
| Sub-total of Street Cars Required               | 733 |
| Allowance for maintenance – 6%                  | 45  |
| Total number of Street Cars required after 1963 | 778 |

As pointed out above, there will only be available for service in 1963 591 P.C.C. cars. There will, therefore, be a shortage at that date of 187 cars.

Any conversion made on minor routes between now and 1963 will reduce this shortage to some extent by extending the lifetime of the Witt cars by a few years. This modification will, however, have little effect on the long term prospects unless additional Rapid Transit lines are constructed in the meantime.

### Summary

To summarize the above considerations:

1. It is estimated by Mr. Irwin that the traffic demand during the next 20 years will equal or exceed the present level.
2. In 1954 the Bloor Street service should be supplied with 74 additional cars equipped for multiple unit operation.
3. These cars can be obtained by withdrawing 74 P.C.C. cars from regular service and converting them to multiple unit, replacing them on the present routes with large Witt cars, rehabilitated and converted to pay-enter operation. This will cost a total of \$772,500.00.
4. Alternatively, 75 used P.C.C. cars from Cleveland can be purchased at an estimated cost of \$2,321,250.00.
5. It is considered essential to maintain street car operations on the 8 major routes for at least 20 years and to rehabilitate the tracks where required for this purpose.
6. By 1963 all Witt cars will be retired and there will only be available for service 591 P.C.C. cars. At the same date 778 cars will be required to furnish service on the 8 major routes.
7. This will result in a shortage of 187 cars which will increase progressively as P.C.C. cars are retired.
8. There is no known alternative to continuation of street car operations on the 8 major routes unless Queen or Bloor are converted to rapid transit operation.

For these reasons it is considered that the Commission would be wise to take advantage of the present opportunity of purchasing good, used, P.C.C. cars rather than of rehabilitating at considerable expense obsolete Witt cars for service on major routes.

### Recommendation

It is recommended, therefore, that negotiations be commenced with the Cleveland Transit System with a view to purchasing the 75 used P.C.C. cars, 50 of which are now equipped for multiple unit operation at an estimated cost delivered in Toronto of \$28,950.00 each, and at a total cost for the 75 converted and ready for use of \$2,321,250.00.



It is also recommended that negotiations be reopened with Birmingham Transit Company for the purchase of 48 used P.C.C. all-electric cars as offered to us in August, 1951, at an estimated cost of \$18,500.00 each f.o.b. Birmingham and at a total cost delivered in Toronto ready for use of \$1,344,000.00.

Estimated Net Cost

If these recommendations are accepted for the purchase of 123 additional cars, it will be possible to eliminate entirely the conversion and rehabilitation of 123 large Witt crs which was estimated to cost \$528,000.00. We have already purchased some \$50,000.00 worth of equipment for this work so that the net saving would be approximately \$478,000.00.

The net cost for equipment would be as follows:

|   |           |                |
|---|-----------|----------------|
| 75 Cleveland cars, converted to multiple unit operation and ready for service           |           | \$2,321,250.00 |
| 48 Birmingham cars, ready for service   |           | 1,344,000.00   |
|   | Sub-total | \$3,665,250.00 |
| Less cost of converting 123 large Witts, say  |           | 478,000.00     |
|   | Sub-total | \$3,187,250.00 |
| Less scrap value of 123 Witt cars at \$1,500.00 approximately                           |           | 187,250.00     |
| Estimated net cost of 123 additional P.C.C. cars at an average cost of \$24,400.00 each |           | \$3,000,000.00 |

(Signed) W.E.P. Duncan, Operations Manager