

A rail freight spur runs south from the rail corridor to the East Bayfront/Port Industrial Area, connecting there to a number of freight spurs. Most of the other rail freight lines that served industries in the Central Waterfront have followed the exodus of industrial customers.

The other significant transportation facility on the Central Waterfront is the Gardiner Expressway/Lake Shore Boulevard, which also cut across the waterfront as far east as Woodbine Avenue. This part of the waterfront is also served by arterial and local roads that form a network that is sparser south of Front Street than the more closely spaced urban streets north of it; that reflects the industrial and institutional uses that predominated south of the rail corridor during most of the past century.

The team studied the use of the corridor over the past 15 years (and, in one case, the past 30 years) by analysing traffic volumes and movements in a number of categories (truck, automobile, transit, and person), including origins and destinations. The analysis was based on data supplied by Metropolitan Toronto, the City, the Province, the TTC, and GO Transit. It included traffic counts for the peak morning hour (7:45 a.m. to 8:45 a.m.), the peak morning three-hour period (7:00 a.m. to 10:00 a.m.) and the 12-hour daily period (6:30 a.m. to 6:30 p.m.), as well as origin and destination surveys. (The team was not able to obtain comparable vehicular traffic data for the full 24-hour period.) As already mentioned, the team developed travel demand projections to the year 2021, based on population, employment, and land-use scenarios.

When combined with the land-use analysis, the traffic analysis showed clearly

that the Central Waterfront is in transition, not only as a place but as a corridor. In particular, its corridor function is undergoing modal change to a degree that has hitherto escaped notice, and the projections indicate that changes are permanent and must be taken into account if the waterfront's full potential is to be achieved. The following is a description of the directions and the trends of the modal changes.

GOODS MOVEMENTS

Depending on the time of day, these make up between 10 and 15 per cent of the road traffic in the corridor; over the past 15 years, the number of trucks on roads in the corridor increased slightly (by three to five per cent) but there was a significant decline (by more than 70 per cent from 870 to 210 peak-hour trips) in the number of heavy trucks (those having three or more axles), which was offset by an increase of 70 to 85 per cent (from 880 to 1,630 peak-hour trips) in the number of more mobile light trucks.

PERSON TRAVEL

According to the Transportation Tomorrow Survey (TTS), in 1986 in the Greater Toronto region (extended to include Hamilton-Wentworth), there were almost two million trips during the morning peak period (trips starting between 6:00 a.m. and 8:49 a.m.); some 318,000, or 16 per cent, were destined for Toronto's Central Area. Of the 318,000, approximately 36,000 were from the Central Area, 218,000 from the remainder of Metro, and the rest from regions outside Metro.

The TTS revealed that about 65 per cent of the total a.m. peak period travel in the Greater Toronto region was by private

car; 25 per cent by public transit; and the remaining 10 per cent by foot, bicycle or other means. However, of trips to the Central Area, only 36 per cent were by automobile whereas 58 per cent were by public transit, and the rest by other modes.

About 40 per cent of trips in the Central Area itself were by other modes: walking — 36 per cent; cycling — two per cent; and taxi/motorcycle — two per cent; while 34 per cent was by public transit and 26 per cent by automobile. The survey showed that walking is the most common mode for trips within the Central Area.

Using information from the Toronto Transit Commission to supplement these data, it was possible to examine trends as far back as 1960; since that time, there has been a tendency for the total person trips entering the Central Area in the a.m. peak period to increase, while the number of persons entering in automobiles has actually declined slightly.

According to Metropolitan Toronto's traffic counts, between 1975 and 1990 the number of vehicles travelling into the Central Waterfront was virtually stable in the a.m. peak hour; increased slightly in the a.m. peak period (by six per cent); and rose somewhat more in the 12-hour daily period (by 15 per cent). This suggests that the road network in the waterfront corridor has been operating at near-capacity since 1975, restricting increases in vehicular traffic during the peak periods. The more significant growth in the 12-hour vehicle traffic may reflect a spread in the a.m. and p.m. peak periods in the waterfront corridor.

There were similar traffic trends on the Gardiner Expressway/Lake Shore Boulevard facility: between 1975 and 1990,

auto traffic on the Gardiner/Lakeshore grew two per cent (from 10,580 to 10,780 vehicles) in the a.m. peak hour; five per cent (from 27,500 to 28,900) in the a.m. peak three hours, and 17 per cent (from 75,200 to 87,600) in the 12-hour day-time period.

In those same years, however, auto occupancy in the a.m. peak period declined from 1.31 persons per car to 1.22: in other words, the same number of vehicles were carrying seven per cent fewer people in 1990 than they carried in 1975.

Person trips into the waterfront corridor had a very different growth pattern, growing substantially in all three periods: by 32 per cent in the a.m. peak hour, 28 per cent in the a.m. peak period, and 22 per cent in the 12-hour daytime period. These figures also show that, in contrast to the surface transit and automobile traffic trends, the concentration of total person trips into the Central Waterfront during the morning peak hour and the peak three-hour period actually increased.

With the exception of the 12-hour period, in which auto person trips grew discernibly, the growth in person trips in the 15 years under study was due mainly to growth in the number of persons carried by GO Transit commuter rail services, which increased 259 per cent (from 10,000 to 36,190) passengers in the a.m. peak three-hour period. However, between 1975 and 1990, the number of persons entering the Central Waterfront by other forms of public transit declined in all three periods. (This occurred despite an increase in the number of persons travelling by transit into the entire Central Area.)

The study team estimated that the number of persons entering the Central



The central waterfront viewed from the east

Waterfront could grow from about 46,900 in the peak hour in 1990 to between 79,200 and 111,000 in 2021 (an increase of between 69 and 137 per cent). This is a range of about 32,000 to 64,000 additional trips per hour, with the lower end corresponding to scenarios with relatively more housing in the Central Area and the higher end corresponding to scenarios with relatively less housing there.

PEDESTRIAN AND CYCLE TRAFFIC

Unfortunately, statistics on volumes of pedestrian and cycle traffic in the Central Waterfront and adjacent areas are not collected in as much detail as those for vehicular travel by road and transit. However, the 1986 Transportation Tomorrow Study revealed that, during the a.m. peak three hours, about 12,600 or 36 per cent of

total person trips made entirely within the Central Area were pedestrian trips. This was the most-used method of travel for trips within the Central Area, more than the number of transit trips within the area, and almost half again as high as the number of auto trips. There were only 870 peak-period cycle trips, about two per cent of the total.

THE DIMINISHING ROLE OF THE GARDINER

The Gardiner Expressway, designed and built in phases between the mid-1950s and the mid-'60s in what was then a largely industrial area, serves a dual function: it is an efficient route for moving goods, in particular by heavy trucks going between the Port area, industrial sections of southern Etobicoke, and other industrial parts of the Central Area; and it offers a radial route for truck and automobile traffic entering the

CARS AND OUR QUALITY OF LIFE

At about the time the first automobiles appeared, the horse-and-buggy industry confidently predicted that their number would be limited by the chauffeurs who could be trained to drive them. How right they were: today hundreds of millions of drivers around the world sit behind the wheels of 400 million cars, an eight-fold increase since 1950.

This tremendous growth reflects the obvious improvements cars have made to the quality of people's lives. They offer convenience, flexibility, comfort, privacy, speed, and independence. They have altered our very perceptions of time and space: we speak not of the distance to another place, but of the time it takes to arrive there by car. We think of places being nearby that, a century ago, involved arduous overnight journeys. And for many people today, there are no alternative modes of transportation.

Despite these positive benefits, however, cars contribute to the deteriorating health of our planet and erode the quality of life in urban centres in many ways. They consume roads, resources, and — increasingly — the environment.

Cars are the biggest single source of the greenhouse gases that threaten global climatic patterns. Even "clean" cars produce nearly two and half kilograms of carbon dioxide for each litre (20 pounds per gallon) of gas used. Other gases released from the end of a tailpipe include nitrogen oxides, volatile organic compounds, hydrocarbons, carbon monoxide, and suspended particulates.

In addition to their greenhouse effect, these emissions contribute to acid rain, reduce crop yields, and affect human health. For example, by inhibiting the photosynthesis process, accumulations of ground-level ozone, which are produced when nitrogen oxides and hydrocarbons react in sunlight, reduce crop production. The Ontario Ministry of the Environment estimates that meeting ozone standards could increase crop production in Ontario by an average of \$39 million per year (in 1986-87 dollars).

Our excessive dependence on the automobile has affected our quality of life by encouraging the separation of work, recreation, home, and shopping. "The great emancipator" has given us long commutes and daily traffic chaos, and increased stress levels. It has affected the form and structure of our cities by eating up at least a third of the land for roads, parking lots, and other elements of car infrastructure.

There is a wide range of strategies to reduce the cumulative effects of individual car use. Technical improvements such as alternative automobile fuels, and cleaner and more efficient vehicles, are among the first steps. However, to deal with such problems as congestion, we must move beyond technical solutions towards innovative transportation management policies in which cars complement other forms of transportation. Finally, distances between daily destinations must be reduced so that biking, walking, and transit are feasible and enjoyable alternatives to the car.

Sources: Carson, P. and J. Moulden. 1991. *Green is gold: business talking to business about the environmental revolution*. Toronto: Harpercollins Publishers; Pearson, R. G. and J. A. Donnan. 1989. "Impact of ozone exposure on vegetation in Ontario". In *Proceedings environmental research: 1989 technology transfer conference*. Toronto: Ontario. Ministry of the Environment; Renner, M. 1988. *Rethinking the role of the automobile*. Washington, D.C.: Worldwatch Institute; Schaeffer, R. 1990. "Car sick". *Greenpeace* 14.

Central Area from west and east, as well as being a through connection to and from the lower end of the Don Valley Parkway. Much of the expressway is elevated; in the central and eastern portions, Lake Shore Boulevard runs underneath it at grade.

A 1986 survey of Gardiner Expressway users, carried out by the City of Toronto, showed that about 22 per cent of those coming from the west between 7:00 a.m. and 9:00 a.m., and 39 per cent of a much smaller volume from the east (about 1,100 to 1,200 vehicles per hour in each direction), were through traffic.

In terms of truck traffic, totals for both light and heavy trucks on the Gardiner/Lakeshore facility grew by eight to 12 per cent in the 15 years from 1975 to 1990. Specific heavy/light truck counts for the Gardiner/Lakeshore were not available, but the trends are probably consistent with those for the Central Waterfront mentioned earlier: heavy truck traffic declined while light truck traffic increased.

Based on the downward trend in heavy truck traffic in the Central Waterfront as a whole, it can be argued that one of the original purposes of the Gardiner Expressway — carrying heavy truck traffic in a largely industrial area — has been significantly decreased because of economic and land-use changes described earlier.

The other major purpose of the expressway — as a radial commuter route for trips from outside Metro Toronto and within Metro to the Central Area — has continued, but is declining, relatively and absolutely. Its role as a commuter route has diminished compared to that of its major competitor, GO Transit. While the number of a.m. peak-hour person trips to the Central Area, using the Gardiner Expressway, declined

from about 10,500 to 8,000 between 1975 and 1990, the number carried by GO Transit increased from about 6,800 to about 21,600, and in 1991 increased further to about 26,000.

In relative terms, the proportion of total person trips carried by the Gardiner Expressway to the Central Area declined between 1975 and 1990: from 8.4 per cent to 5.4 per cent of the total during the a.m. peak hour; from 10.4 per cent to 6.9 per cent during the a.m. peak three hours; and from 13 per cent to 10 per cent of the total during the 12 hours between 6:30 a.m. and 6:30 p.m.

In absolute terms, reflecting the reduction in average vehicle occupancy, the number of persons carried by auto on the expressway also declined in the same period: by 24 per cent in the a.m. peak hour; by 21 per cent in the peak three hours; and by four per cent in the 12 hours from 6:30 a.m. to 6:30 p.m.

Approximately one-third of commuting trips crossing the Metro boundary are destined for the Central Area, with the rest going elsewhere in Metropolitan Toronto. In particular, there is strong pressure for automobile commuting to the Central Area, from Peel and Halton, with less pressure from Durham in the east; these trips rely heavily on the Queen Elizabeth Way/Gardiner Expressway from the west and the Don Valley Parkway from the east and north-east. GO Transit serves the same commuter market and has captured an increasing share of it as rail service improved while roads became increasingly congested.

In summary: while the Gardiner Expressway continues to be used as a through route, its role as a heavy truck carrier and a commuter route is declining in both relative and absolute terms, as the result of a