CITY WIDE IMPLICATIONS

CITY OF HAMILTON

PUBLIC WORKS DEPARTMENT
Transit Division

Report to:	Chair and Members Public Works Committee	**Submitted by:**	Scott Stewart, C.E.T. General Manager Public Works Department
Date:	June 23, 2008	**Prepared by:**	Don Hull Extension 1860

SUBJECT: **Free Transit, Deep Discount Fare Policy and Other Strategies Employed to Create a High Ridership Transit System (PW08082) - (City Wide)**
Emergency & Community Services Committee Outstanding Business Item

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RECOMMENDATION:

(a) That staff continue with the implementation of Council's Ridership Growth & Asset Management Plans (2006) strategy to promote Transit Ridership Growth and Council's current discount fare policies;

(b) That staff undertake an expansion of the Employer Commuter Pass Program for the City of Hamilton and introduction of the Employer Commuter Pass for Hamilton employers in 2009 in accordance with the prior recommendation of the Transit Steering Committee and subsequent endorsement by Council.

(c) That Committee provide direction to staff as to which Free Transit initiatives identified in the Executive Summary of this report, or others, to include in their 2009 Business Plan and Budget submission;

(d) That the Emergency and Community Services Committee be reqeusted to remove the item respecting feasibility of providing full or partial free transit to Hamilton residents from their Outstanding Business List.

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Scott Stewart, C.E.T.
General Manager
Public Works

EXECUTIVE SUMMARY:

At its meeting on December 12, 2007 Council approved Motion 7.1., directing staff to: "investigate the feasibility and impacts of the costs for the entire public transit system being paid for by the general levy in order to provide free public transit to the citizens of Hamilton and report back to the Emergency & Community Services Committee."

At the same meeting Council also received Item 11(i) of the Public Works Committee Report 07-16 (December 3, 2007) - Transit Fare Increase in which Staff subsequently received direction from the Committee to: "explore the impact of fare reductions on Ridership in terms of increasing Ridership."

This report addresses Free Transit (Part 1), and Deep Discount Fare Policy (Part 2). This report also comments on various other strategies employed by Transit programs to promote Ridership growth revealed in the course of our research and relates them to Ridership growth initiatives either planned or underway in Hamilton (Part 3) in accordance with Council's Ridership Growth & Asset Management Plan (2006) strategies and Council's current Discount Fare policies.

Increasingly, public transit Ridership supports a broad range of public policy goals, including:

- air quality improvement,
- energy conservation,
- congestion reduction,
- provision of mobility to the transportation-disadvantaged,
- access to jobs,
- promotion of economic development,
- and promotion of liveable communities.

Research Findings

PART 1 - FREE TRANSIT

Free transit would no doubt attract more passenger trips with some modal shift from other modes of transport (auto, cycling, walking, taxi), however, the research does not offer any estimates of how much and there is no Canadian system-wide experience to draw from. The extent of Ridership increases is conservatively estimated to be in the order of 20%, but might reach as high as 50%.

For the HSR, the increase in operating budget expenditure requirement, through the levy or other tax supported funding, associated with a 20% increase in Ridership and elimination of fare box revenue would be in the order of $30.9 million. This would require an additional tax per household of about $161 per year based on a residential assessment of $250,000 (in 2008 dollars). A capital expenditure in the order of $5 to10 million for fleet expansion and facilities accommodations would be required to implement additional service requirements contained within the noted $30.9 million increase in operating cost.

For the ATS program, which is already operating at capacity, the minimum impact of free fares would be the lost 2008 budgeted fare box revenue of $900,000. New operating expenditures would be dependent on Council's desired service level.

Increased operating expenditures could reasonably be expected to be in the order of several million dollars if it were Council's decision to raise service levels to accommodate 100% of all trip requests. Additional capital costs would be in the order of 10% of the additional operating costs.

The research indicated that that initially most new Ridership arising from a free transit policy would be as a result of existing users travelling more frequently rather than from a significant displacement of automobile users.

Several municipalities in Canada have undertaken free transit demonstrations, none of them on a system-wide scale but more related to specific events or specific routes.

Hamilton currently has one free fare program. The Downtown to Waterfront Shuttle, operates free of charge from June 24 to September 3 utilizing the recently acquired replica trolleys.

Other free fare transit strategies in conjunction with tourism, environmental and mobility strategies may prove effective in specific applications. Typical examples for Hamilton might include:

- On the basis of a scaled system-wide pilot implementation free fares could be offered for the period from Canada Day to Labour Day (summer schedule) inclusive. This initiative could be piloted by running regular HSR service during the noted period at an additional net operating cost of about $5M and an additional staffing requirement for 6 FTE's. Free fares during this time period would provide a specific environmental benefit through increased accessibility to public transit during those months. The desire for free transit on smog days and heat alert days would be virtually fully accommodated. There would be an added general environmental benefit of attracting existing auto users through a heavy incentive to make a change in their mode of transportation. As well, there would be a strong social benefit through provision of greater access for all members of the community, allowing broader participation in events and public services throughout the City that are geared to the summer months.

- Initiating free fare transit on smog/heat alert days in combination with increased parking rates in our municipal parking lots at a cost in the order of $50,000 per weekday smog/heat alert day in lost transit revenue from tickets and passes. A Community Heat Response Committee (CHRC) comprised of City staff and community stakeholders was convened in August 2007. In a recent report to Council (ECS08027), the committee recommended Council's consideration of free transit on heat alert days. Further, consideration of how to compensate those who prepay through monthly or other passes would have to be considered for both the HSR and the Hamilton Parking Authority. Partially offsetting the transit revenue loss with increased parking rates accomplishes two goals - mitigation of revenue loss to Transit, as well as achieving a double benefit in reducing greenhouse gas emissions (reduced automobile usage and increased transit ridership).

- Initiating free fare transit for Council endorsed "special" events such as during the week of Commuter Challenge. The estimated loss in revenue would be in the order of $350,000 per week.

- The Neighbourhood ECO-Pass is a deep discount annual transit pass purchased by a neighbourhood organization for all members of participating households. The transit agency charges an annual fee per housing unit, accounting for the number of eligible housing units, amount of transit availability and usage. In recent history, Environment Hamilton has requested consideration of such a program through their representation on the Transit Master Plan Steering Committee. The program cost would be determined by the size of the catchment area and the level of subsidy set by Council.

- Expanding the scope and frequency of the service of the Waterfront Shuttle (Route 99) operating between Jackson Square and the Parks Canada Discovery Centre combined with a new free downtown circulator, essentially a doubling of the existing service frequency at an estimated cost of $50,000 annually. As a "summer-only" program there would be no associated capital cost as HSR would be on summer schedules with reduced fleet requirements that could be allocated to this program.

- Free downtown circulators are among the most frequently mentioned Ridership Growth initiatives highlighted in the research. Downtown destinations would include the Farmer's Market, the Library, City Hall, Downtown BIA retail, etc. This would require one additional all day bus at an estimated cost of $175,000 annually. Again, if offered as a summer program, as above, there would be no associated capital cost. If operated year-around, consistent with the operating cost estimate provided, one additional bus would be required with a Capital cost in the range of $100,000 to $450,000, dependent on the type of vehicle chosen to provide the service.

- Initiating and expanding free transit service for special events (eg. Ti-Cat shuttle service). Each year, free transit shuttle service is provided to and from selected park-n-ride lots in each sector of the City. Operation of this service costs $20,000 with an offsetting promotional and advertising benefit to the City. Expanding special event service on the same basis with other interested participants could be explored.

- Increasing the level of subsidy for the current Employer Commuter Pass program for City employees. The current level of enrolment is about 170 employees. The home Department of the employee subsidizes 50% of the cost of the Pass at an annual cost of about $75,000. If Council were to increase the subsidy to 75%, for example, the additional impact on the City departments is estimated to be in the order of $35,000 to $50,000, when taking into account that take-up would likely be disproportionate to the level of subsidy increase.

- Expanding the current Employer Commuter Pass program to private City employers. For example, Council has previously approved a pilot program for Hamilton Health Sciences in which the enrolment is capped at 250 employees for the duration of the pilot. The pilot was initiated on February 1, and has already achieved the maximum enrolment. The pilot provides for a 20% discount from the regular monthly pass price. Hamilton Health Sciences funds 50% discounted

pass price. The 20% discount is being funded from Provincial Gas Tax for the duration of the pilot.

- Free weekday service by day of week. Lost revenue and other considerations would be similar to that for free fare transit on smog days. The lost revenue depending on day of the week and time of the year would be in the order of $40,000 to $60,000.
- Free weekend service such as Sunday to encourage using transit for shopping. The budget impact would be in the order of $40,000.
- Free Senior's transit in the off-peak periods would encourage greater use of Transit by Seniors. Consideration of appropriate pricing of the Senior Annual Pass currently used by some 5,000 users would be required along with consideration of pricing during the peak periods so as not to limit the ability of users to travel at the time of their choosing.
- Age-related free Senior's transit, for example free transit for those over age 80. Alternatives and costing will require some detailed analysis.
- Subsidized service to business parks could be pursued on a Public Private Partnership basis through seed money contributions by business partners to launch new services.

PART 2 - DEEP DISCOUNT FARE POLICY

Experiments with deep discount and free fare programs have been applied in Transit programs system-wide to specific routes and special events, and a variety of operating periods. The main objectives are generally to promote Ridership and enhance mobility for specific groups.

In 1992 HSR began offering fare reductions for prepaid tickets and passes; deep discount fare programs were started a few years later. Deep discount fares provide a group of people with unlimited ride transit passes in exchange for some contractual payment for or on behalf of pass users by an employer or other governing organization.

Most HSR passengers are using some form of ticket or transit pass. There has been a gradual decline in the percentage of passengers paying cash. Revenues from cash fares have accordingly dropped but their percentage of total revenues is still significant. Cash paying customers are generally infrequent users, contributing 26% of the revenue. To boost Ridership (deep) discount fare programs are often aimed at infrequent users.

The total number of trips has increased from approximately 20.3 million in 2000 to 21.1 million in 2006 and 2007, an increase of about 4 percent. But fare box revenues have increased from $24 million in 2000 to $29 million in 2007, an increase of some 20%.

The effect of the current deep discount fares is evident by comparing Ridership and revenue percentages for U-Pass holders: Ridership grew from 5% to 13% of total HSR Ridership between 2000 and 2007 while revenue increased from 3% to 7% of total revenue.

The University College Transit Pass (UCTP) program is a deep discount fare program benefiting University and College students whose U-pass fares are part of their student

fees irrespective of whether or not they travel by transit. The UCTP program is the source of about $1.7 million in annual revenues to the City. Students using the U-Pass take approximately 2.5 million trips on HSR annually, resulting in revenues of about 70 cents per trip.

Since November 2001 an Employee Commuter (EC) Pass is available to full-time City employees who do not have employer-paid parking. The cost of the pass for the average worker is about $12 a week, i.e. an approximate discount of 29% of the actual costs. The EC Pass is available through payroll deductions and requires a six-month commitment to the program. Currently there are 150 City employees people enrolled in the EC program. A major objective of the program is to improve air quality and reduce traffic in downtown Hamilton.

Recently Hamilton City Council approved a twelve month pilot project to assess the cost of providing low-income citizens a reduced transit fare pass at 50% of the regular monthly fares. The purpose of this Affordable Transit Pass Program is to mitigate the potential impacts of the 2007 and potential future transit fare increases for low-income citizens. The program will run from March 1, 2008, until February 28, 2009.

The research would suggest that with it's low traffic congestion, abundance of cheap long-term parking and an increasing number of people working outside the City, further deep discount or free transit fares in Hamilton would not be expected to significantly affect a mode shift away from the single occupant vehicle travel.

New users to transit are attracted by travel times that are competitive with the private automobile such as from High Order Transit including Bus Rapid Transit, Light Rail, Rail and Subway.

PART 3 - STRATEGIES, BOTH INTERNAL AND EXTERNAL TO THE TRANSIT PROGRAM, TO CREATE RIDERSHIP GROWTH

The research study revealed a number of Transit Ridership growth initiatives employed by Transit agencies throughout North America. Below is a list of the initiatives and comparable activities either completed, underway or planned for Hamilton:

Routing/coverage adjustments

- Increased route coverage; - will be achieved through implementation of Council's five year service enhancement plan (2007) and Ridership Growth & Asset Management Plans.
- Route restructuring and consideration of reallocation of existing service hours to most productive routes; - is included in the Terms of Reference for the Operational Review approved by Council in the 2008 Capital Budget.

Scheduling/frequency adjustments

- Improved schedule/route coordination utilizing feeder services to timed transfers; - services to be introduced in Waterdown and Keith Neighbourhoods (2008).
- Increased frequency on specific routes; - B-Line (2007).
- Longer service hours (e.g., late night/weekend); - harmonization of specialized transit service hours with conventional transit (2007).

- Improved reliability/on-time performance through the implementation of GPS/AVL, transit signal priority, transfer connection protection; - replacement of GPS/CAD/AVL systems was recently approved by Council.

New types of service

- Improved travel speed/reduced stops through the introduction of express services including BRT and Rail; - improvements to the B-Line and introduction of the "A-Line" as advocated in the recent $29.8 million commitment to Hamilton from Metrolinx.
- Targeted services; - University-oriented service, Special events such as the Ti-Cat shuttle program, Route 99 Waterfront Shuttle.

Improved amenities

- Passenger facility improvements; - as advocated in the recent $29.8 million commitment from Metrolinx for the B-Line and introduction of the A-Line; construction of a new Multi-modal downtown Transportation Terminal.
- New/improved vehicles; - with its transition to a twelve year bus life, Hamilton maintains one of the most current fleets in the Country.
- The introduction of Articulated buses; - B-Line (2007).
- Increased security; - the creation of a Safety and Security plan currently underway made possible through a FCM grant.
- Increased safety; - the promotion of safety features on vehicles including the future planned installation of Surveillance Cameras on entire fleet.

Partnerships

- University/school pass programs; - Hamilton maintains one of the broadest scope programs in the Country.
- Travel demand management strategies such as employer pass/voucher programs, van-pooling, ride-matching, parking cash-out; - under development in Hamilton with the creation of a new Travel Demand Management position in 2007 within CPI.
- Subsidized service to office parks or other activity centres; - Staff has in the past, assisted Ward Councillors with proposals for subsidy for transit start-ups from the Business Park employers at the Airport and the Ancaster Business Parks without success. Free transit from Downtown to Waterfront (Route 99 Waterfront shuttle) is an existing example of a subsidized service to support tourism.

Coordination

- Consistent regional (inter-agency) operating policies; - Hamilton's Fare integration agreements with GO Transit and Burlington Transit.
- Coordination with social service agencies; - introduction of the Transit Affordability Pass program (2008).
- Coordination with other transportation agencies, roadway or parking management strategies including HOV/transit lanes, parking management strategies, downtown transit malls and bus lanes; - introduced with the creation of the Public Works Strategic Plan (2007).

- Promotion of transit-oriented design requirements for bus stops/shelters at new developments; - introduced with the creation of the Public Works Strategic Plan (2007).

Marketing/promotional initiatives

- Targeted marketing/promotions and individualized marketing; - for 2008 will be focused on the introduction of the service expansions approved by Council.
- General marketing/promotions Agency image advertising, special promotions, cooperative advertising; - this included Media releases, Transit Employee newsletters, Bus Beat publications, Bus News, newspapers and magazine articles, On-bus Take Ones, brochures, special ads - Tiger Cat Yearbook, McMaster University and ATS Chats Newsletters (2007).
- Information improvements; - a completely redesigned and easier to read printed system and route maps/schedules (2008).
- Improved customer information and assistance; - telephone and web-based customer information upgrades for both the specialized and conventional transit operations (2007).
- Automated web-based pre-trip planning and en-route information including real-time information; implemented (2007).

Fare collection improvements

- Improved payment convenience; - automated Fare Card currently under development in partnership with the Province through Metrolinx.
- New prepaid fare options; - Family Day Pass
- Expanded fare media distribution/reload options; - Debit Card at GO Station and MTC (2007).

Fare structure changes

- Fare reduction/deeply discounted options, reduced base fare, free transfers, free fare zones; - free transfer policy.

In isolation of all other goals, the primary goal of a Transit Manager is to maximize Ridership. System-wide free fare transit would be the fastest and most effective means of achieving the goal. However, given the City's current concern with the rate municipal tax increases, extraordinary budget drivers unique to transit programs that include fuel prices and insurance, coupled with the general lack of experience with system-wide free transit applications anywhere, free transit may not be appropriate for Hamilton in the immediate future, notwithstanding fares should be kept as low as financial circumstances permit.

BACKGROUND:

The information/recommendations contained within this report have City-wide implications.

Evaluating Ridership success is complicated by the fact that transit agencies must deal with the reality of competing goals and constraints; in particular, every agency must inevitably make tradeoffs between trying to increase Ridership and needing to (i) increase, or at least maintain, operating revenue and (ii) control, if not reduce, costs. Increasing absolute Ridership levels is not the sole or even primary criterion for

"success" across the industry. Success can be and is defined in a variety of ways. Frequently, Ridership is combined with or even subordinated to financial and budgetary objectives. Relatively few systems are free to pursue increased Ridership with unconstrained resources; relatively few systems can sustain the quality and performance of expanded service without increased funding. This tension between Ridership and revenue goals often constrains consideration of fare-related initiatives, for example. While an agency may be tempted to reduce fares, or perhaps introduce a new low-priced pass in an effort to attract riders, budget constraints may prohibit consideration of such an option. In light of these competing goals, "success" is often defined informally as minimizing the Ridership losses from measures taken to increase revenues or constrain costs.

Studies found that several external factors (per capita income, automobile ownership, suburbanization of residences and employment locations, immigration, population demographics) had a greater impact on demand for transit than did internal factors (i.e., annual transit miles and average fares) which for Hamilton means:

- External factors that inhibits transit growth in Hamilton relative to GTA comparators in recent years would include:
    - Modest population growth and general growth in the City
    - Minimal traffic congestion and ample lane capacity in the core of City
    - Low parking pricing/subsidy and high availability relative to transit
    - Availability of commuter benefits programs by employees
    - Land use/development patterns and policies
    - Density of development
    - Relative locations of major employers and residential areas (eg. Increasing suburbanization)
    - Land use/zoning controls and incentives

- External factors that positively contribute to transit growth in Hamilton would include:
    - Public policy/funding initiatives
    - Provincial transit funding levels (capital and operating)
    - Federal transit funding levels (capital)
    - Environmental commitment to air quality
    - High/increased immigration
    - High/increased number of seniors driving demand for specialized transit
    - Increased tourism
    - High numbers of University, College and foreign trained students
    - Economic conditions
    - Lower per capita income levels
    - Household auto ownership levels
    - Cost and availability of alternative modes
    - Fuel pricing
    - Taxi fares
    - Auto purchase and ownership costs
    - Travel conditions
    - Climate/weather patterns
    - Low traffic disruptions (eg. From major construction projects)

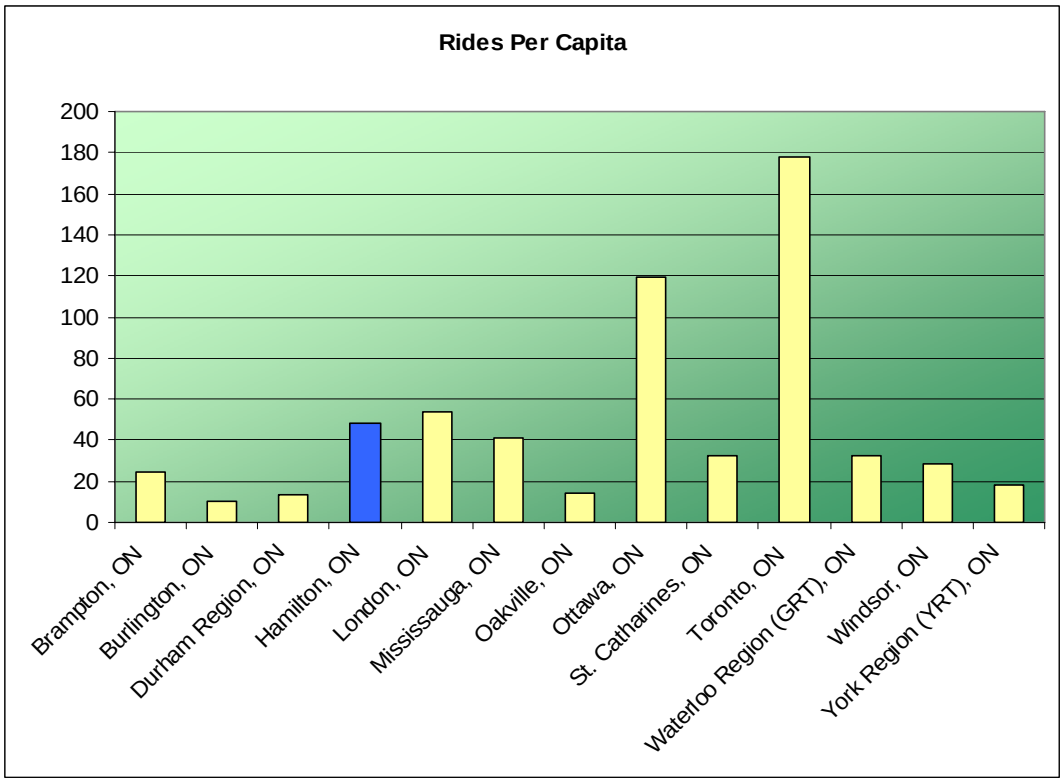
The Table below relates Transit Ridership performance (Trips/Capita) to key influencers of Transit Ridership: internally - average fare, revenue service hours/capita, service types, and externally - Population growth, Demographics, Congestion, Parking Policy, etc. The Table helps to qualify Hamilton's overall Ridership/capita rank relative to other selected municipalities throughout the GTA and Ontario.

Key Transit Ridership Drivers (Selected GTA transit properties, 2006)

City	*Pop. of Service Area (# K)*	*Service Hours/ Capita*	*Trips (# M)*	*Average Fare ($)*	*Trips/ Capita*	*Key Ridership Drivers (-) deterrent (+) generator*
Burlington	160	0.78	1.7	2.08	10	- High fare - Low service level - High income - Low population + Commuter service
Oakville	166	1.09	2.4	1.76	15	- High fare - Low service level - High income - Low population + Commuter service
London	346	1.49	22.7	1.34	54	+ Low fare + High post secondary education enrolment
Brampton	414	1.32	10.2	2.03	24	- Low service hours - High average fare + Rapid expansion underway + Commitment to high order transit
Hamilton	441	1.47	21.2	1.33	48	+ Low average fare + Service quality + Transit image + Partnerships (passes) + Lower av. Income + Amenities (fleet, shelters, terminals, etc.) + Public information - Low median service level - Low congestion - Low population growth - Low cost parking - Median service level - High sprawl - High order transit
Durham	501	0.65	6.9	1.82	13	- Low service hours - High average fare + Rapid expansion underway + Commitment to high order transit

City	*Pop. of Service Area (# K)*	*Service Hours/ Capita*	*Trips (# M)*	*Average Fare ($)*	*Trips/ Capita*	*Key Ridership Drivers* *(-) deterrent* *(+) generator*
Mississauga	704	1.45	29.0	1.81	41	+ Low average fare - Low service hours - Low high order transit - High income
Ottawa	770	2.25	91.9	1.31	119	+ High Revenue + Hrs/Capita + Low average fare + High Order Transit + Congestion
York	950	1.05	17.1	2.24	18	- Low service hours - High average fare + Rapid expansion underway + Commitment to high order transit
Toronto	2,503	3.42	444.5	1.66	178	+ High Order Transit + High Congestion + High Cost of Parking + Low availability of parking + High density

Based on estimates of initial Ridership growth in the order of 20 to 50%, Hamilton's rides per capita could be expected to rise from the current level of 48 rides/capita to in the order of 55 to 70 rides/capita.



PART 1 - FREE TRANSIT

Experiments with free fare transit have been applied system-wide or to:

- a variety of operating periods, all-day, on-peak or off-peak
- specific transit routes
- downtown areas
- educational campuses and airports
- shuttles between railway stations and ferries
- special events

Fare-free transit experiments have been mainly funded by municipalities but also by businesses to boost sales or as a benefit to their employees.

Free transit would no doubt attract more passenger trips with some modal shift from other modes of transport (auto, cycling, walking, taxi), however, the research does not offer any estimates of how much and there is no Canadian system-wide experience to draw from. The extent of Ridership increases is conservatively estimated to be in the order of 20%, but might reach as high as 50% as has been the case with one Transit Agency (Chapel Hill, North Carolina) that has offered system-wide free transit (Case Study Attached as APPENDIX “B”).

To estimate the Ridership and cost impact of free fares and deep discount fare policies, many transit operators use the “Simpson Curtin Rule” as the standard to measure the relationship between fares and Ridership termed the “fare elasticity”. This rule approximates a 10% fare increase with a 3% drop in Ridership (denoted as: -0.3) , and vice versa (+0.3). Thus, a 100% decrease, i.e. free fares, would result in a Ridership increase of 30% (or + 3.0). According to some researchers though the range of this measure can vary from 10% to 50% dependent on factors such as the size of the transit system and the order of magnitude of the fare change.

Research of on-line reports and the Canadian Urban Transit Association library reveal that most free fare and deep discount fare experiments were conducted between the late 1970’s and early 1990’s. Subsequent research studies have mostly relied on these experiments. The findings in terms of Ridership, costs and other factors are not very detailed; in many cases they are anecdotal and/or are advocacy bent. In some cases changes to free fare transit were done at the same time as other transit service changes, making their merits difficult to evaluate. In particular there is a lack of reliable data on system-wide application of free fare transit for medium sized municipalities such as Hamilton. It appears that only smaller scale demonstrations with specific objectives (e.g. environmental) have been undertaken in the last fifteen years.

The following observations are taken from on-line research and other studies. A reduction in transit fare levels will generate higher Ridership but the extent of such Ridership increase is uncertain and largely influenced by local characteristics such as level of congestion and parking policy. Revenue and cost data are not readily available. There does not seem a significant impact on single occupant vehicle travel during peak hours, specifically from free and deep discount fares, the majority of increased Ridership is derived from more frequent use by existing users. There was a reported increase in vandalism and concerns from bus operators about problem riders particularly in larger urban areas. Service frequency, service area coverage, safety,

cleanliness, convenience of routes, professional service delivery are more important factors than cost for potential patrons. Fare reductions in conjunction with environmental and mobility strategies may prove effective in site specific applications. Free fare transit is more applicable to smaller municipalities close to a metropolitan area (e.g. Chapel Hill, North Carolina). Some successful applications in Europe (Hasselt, Templin) indicate that new patrons are not auto drivers but other sustainable transportation users.

Table 1 lists selected free fare transit demonstrations on a system wide scale. The most successful demonstration in terms of Ridership in North America seems to be the free transit program in Chapel Hill, North Carolina, a small town adjacent to the metropolitan area of Durham. Since 2003 Chapel Hill Transit operates free for conventional and specialized transit services in partnership with a neighbouring town (Carrboro) and the University of North Carolina (27,000 students). Initially intended to create a free transit policy to address on-campus parking shortages, it was decided to make all regular routes free to both students and the general public. Transit service was also increased on some routes. Costs have increased due to the need for additional vehicles and drivers. Chapel Hill Transit increased their Ridership by 52 percent between 1999 and 2003. There were 92 annual rides per capita in 2003. At this level, the rate transit Ridership is several times the norm for comparable America cities and comparable with transit Ridership in Canada's largest cities.

TABLE 1: Selected free fare transit programs, system-wide operations

City/Town Date	***Time of day and Objective***	***Reported results***
Denver CO 1978-9	Off-peak Socio-economic	Ridership: 36% increase
Trenton NJ 1979	Off-peak Socio-economic	Ridership: 16% increase Service terminated within one year: lost 25% of revenue; extra buses required; driver objections
Salt Lake City UT 1979	All day Promotion and Education	Ridership: 13% Ridership increase
Austin TX 1989-90 (15 months	All day Promotion and Education	Ridership: 75% increase claimed but actually approximately 10% due to concurrent U-Pass program. Some problem riders Increased operating cost: 15% fare box recovery.
Commerce CA, 1991-on-going	All day Mobility	Population: 42,000 Ridership: 1 million trips annually 5 routes; 11 buses
Logan UT 1992-ongoing	All day Mobility	Population 48,000 Ridership: 1.5 million trips annually Transit share: 2.8% of all trips
Chapel Hill NC, 2002 – Ongoing	All day Mobility	Population: 52,000 at the edge of a metro area Ridership: 5.7 million annually 52% Ridership increase from 1999-2003
Templin Germany	All day Mobility	Population:14,000 Results are positive, benefits outweigh costs. New customers are former passengers, pedestrians and cyclists; minimal effect on auto drivers.
Hasselt Belgium	All day Mobility	Population:70,000 Ridership 3.7 million (2001); increase 8-12 fold Integrated TDM mobility strategy.

Several municipalities in Canada have undertaken free transit demonstrations, none of them on a system-wide scale but more related to specific events or specific routes.

Table 2 lists selected demonstrations conducted in recent years. The demonstrations indicate local municipal rather than federal or provincial government initiatives.

The exception is the "Smog Days" pilot project in Windsor in 2003. The City of Windsor and Environment Canada co-funded free transit on smog days for a period of one month until the budget was used up. In that experiment Transit Windsor reported that Ridership increases were in the order of 30% to 40% over the four smog days that free transit was offered. Demand on some routes exceeded planned capacity and extra buses were brought into service. Similar "bad air "projects have been conducted in some US cities, e.g. Austin , TX ("Ozone Action Days" and San Francisco CA ("Spare the air day"). The reported Ridership increases in those two US cites are approximately 10% and 15%.

TABLE 2: Selected fare-free transit programs, specific applications in Canada

City/Town	***Eligibility***	***Location***	***Details***
Calgary	Anyone	Downtown	Anytime
Halifax	Disadvantaged		July 2005
Halifax	Anyone	Downtown	July 7- Oct 27, 2007
Hamilton	**Anyone**	**Waterfront**	**June 24- Sept 3, 2007**
Milton	Anyone	All	Off peak, 2007, 9 a.m. to 3 p.m. Funding: two developers
Ottawa	Seniors 65+	All	Wed in July and August 2007
Whitehorse	Disadvantaged	All	July 2003
Windsor	Anyone	All	Smog days pilot project, summer 2003 Funding: Environment Canada and City
Various	Anyone		Special 1-day or weekend events

PART 2 - DEEP DISCOUNT FARE POLICY

For several decades transit authorities in North America and other parts of the world have been operating fare reduction programs in an effort to increase transit Ridership. This report explores the implications of transit fare reductions based on research of on-line transit reports and articles retrieved from the Canadian Urban Transit Association (CUTA) library.

Research indicates that deep discount and free fare programs can increase Ridership but need to be selectively implemented to avoid major revenue losses. Ridership increases are difficult to estimate. The findings in terms of Ridership, costs and other factors from available studies are not well documented in detail.

Discounted fare programs include senior passes, student passes (elementary and secondary school) and programs that foster integration among adjacent transit systems (e.g. the GTA fare card) and time based special fares other than day, monthly and annual passes. Discount fare programs have become standard in most municipalities.

All major transit operators in Canada provide special discounts for senior passes.

University/College pass programs have become standard for transit properties in many University and College cities in Canada and the US. U-pass fares are part of a student's fees irrespective of whether or not the student travels by transit. The terms and

conditions of U-pass programs across Canada are similar, with minor variations based on local conditions.

Employment based programs come under a variety of names and characteristics, such as E-pass, ECO-pass and Employment Transit Pass. Generally, an employee buys a discounted annual pass and pays through automatic payroll deduction. TABLE 3 presents a list of employment based discount transit programs in Canadian cities. Participation in these programs ranges from a few to many employers and employees. The percentage of people who used to drive to work and take transit instead is fairly modest in most cities but significant in larger cities such as Vancouver, Edmonton and Toronto.

Based on the success with U-Pass and E-Pass programs in the US some communities have now embraced residential-based programs. The most notable programs are currently in Denver, Colorado and Santa Clara County, California but no evaluations seem to be readily available.

The Neighbourhood ECO-Pass is a deep discount annual transit pass purchased by a neighbourhood organization for all members of participating households. The transit agency charges an annual fee per housing unit, accounting for the number of eligible housing units, amount of transit availability and usage.

TABLE 3: Employment-based discount transit fare programs, Canadian cities

City	***Program Name***	***Discount***	***Participation***			***Modal shift ****
		(%)	***%***	***# Employers***	***# Employees***	***%***
Edmonton 2003	Employee Transit Discount	Municipal employees	17	1	4000	11
Gatineau 2003	Passe-partout Plus	10	25	15	570	2.5
Hamilton 2001	Employee Commuter (EC) Pass	Municipal employees 29	n/a	1	150	n/a
Ottawa 2006	ECO Pass	15	25	75 Federal <50 other	17,000	7
Quebec C. 2003		18	25	5	750 100 family	1
Regina 2006	Employment Transit Pass	17	No	18	170	5
Toronto 2006	Volume incentives Program	10	50	27	27,000	5
Vancouver 1996	Employer Pass	15	25	200	13,000	16
Victoria BC	Propass	14	25	65	3000	n/a
Waterloo (GRT) 2003	Corporate Pass	15	25	4	<100	n/a
Winnipeg 2005	ECO Pass	30 - 10 **	10	14	1000	n/a

City	*Program Name*	*Discount*	*Participation*			*Modal shift **
		(%)	*%*	*# Employers*	*# Employees*	*%*
Windsor 2006	Green Employee Plan	Municipal employees	5	1	20	Minor
* Modal shift from auto driver to transit ** 30% to employees; 10% rebate to employer						

Conditions, however, have to be conducive for such behavioural changes. With its low traffic congestion, abundance of cheap long-term parking and an increasing number of people working outside the City, further deep discount or free transit fares in Hamilton would not be expected to significantly affect a mode shift away from the single occupant vehicle travel. While rising fuel and insurance prices, for example, may reduce auto travel somewhat, potential transit customers often view frequency of service, duration of service, convenience and a sense of security as more important than cost.

Experiments with deep discount and free fare programs have been applied system-wide to specific routes and special events, and a variety of operating periods. The main objectives are generally to promote Ridership and enhance mobility for specific groups.

In 1992 HSR began offering fare reductions for prepaid tickets and passes; deep discount fare programs were started a few years later. Deep discount fares provide a group of people with unlimited ride transit passes in exchange for some contractual payment for or on behalf of pass users by an employer or other governing organization.

The University College Transit Pass (UCTP) program is a deep discount fare program benefiting University and College students whose U-pass fares are part of their student fees irrespective of whether or not they travel by transit. The UCTP program is the source of about $1.7 million in annual revenues to the City. Students using the U-Pass take approximately 2.5 million trips on HSR annually, resulting in revenues of about 70 cents per trip.

Since November 2001 an Employee Commuter (EC) Pass is available to full-time City employees who do not have employer-paid parking. The cost of the pass for the average worker is about $12 a week, i.e. an approximate discount of 29% of the actual costs. The EC Pass is available through payroll deductions and required a six-month commitment to the program. Currently there are 150 City employees enrolled in the EC program. A major objective of the program is to improve air quality and reduce traffic in downtown Hamilton.

Recently Council approved a twelve month pilot project to assess the cost of providing low-income citizens a reduced transit fare pass at 50% of the regular monthly fares. The purpose of this Affordable Transit Pass Program is to mitigate the potential impacts of the 2007 and potential future transit fare increases for low-income citizens. The program will run from March 1, 2008, until February 28, 2009.

Most HSR passengers are using some form of ticket or transit pass. There has been a gradual decline in the percentage of passengers paying cash. Revenues from cash fares have accordingly dropped but their percentage of total revenues is still significant. Cash paying customers are generally infrequent users, contributing 26% of the revenue. To boost Ridership (deep) discount fare programs are often aimed at infrequent users.

The total number of trips has increased from approximately 20.3 million in 2000 to 21.1 million in 2006 and 2007, an increase of about 4%. But fare box revenues have increased from $24 million in 2000 to $29 million in 2007, an increase of some 20%.

The effect of the current deep discount fares is evident by comparing Ridership and revenue percentages for U-Pass holders: Ridership grew from 5% to 13% of total HSR Ridership between 2000 and 2007 while revenue increased from 3% to 7% of total revenue.

TABLE 4: HSR transit fare and revenue per trip percentages - 2000, 2006 and 2007

Type of Fare	***2000***		***2006***		***2007***	
	Ridership	***Revenue***	***Ridership***	***Revenue***	***Ridership***	***Revenue***
Cash	19	32	16	27	15	26
Ticket Adult Student	19 9	24 8	20 8	26 7	21 7	27 7
Pass Adult /month Student	24 10	21 6	24 9	20 6	23 9	21 6
Pass/yr Senior	13	5	8	3	8	3
U-pass	**5**	3	**12**	8	**13**	7
Other	1	1	3	3	4	4
Total (million)	20.3 trips	$ 23.9	21.2 trips	$ 28.2	21.1	28.9

ANALYSIS/RATIONALE:

This report discusses various methods for increasing Transit Ridership that include free transit, deep discounted transit fares as well as internal/external incremental strategies for increasing transit use. Free transit creates the greatest opportunity for the Transit program to meet the Vision 2020 goal of 100 rides/capita with the greatest corresponding impact on the tax levy. Deep discount fare policies encourage more frequent use of Transit, are less expensive to implement and contribute to more frequent use by regular users. Various internal strategies including on-time reliable performance, increased service frequency and service duration, positive image of Operators and Fleet, convenient access to routes, a sense of safety/security, good multiple sources of transit information all contribute to increased transit use often at a modest or no additional cost and can largely be achieved through effective quality control programs. External contributors to increased transit use include parking price policies that are competitive with the cost of taking transit while contributing to increased corporate revenues, traffic congestion, and a community commitment to an improved environment.

Transit demand results from a combination of a broad range of factors, some within an agency's direct control and others not. The basic considerations involved in mode choice decisions are the characteristics of the mode and the characteristics of the individual traveller and can be summarized as follows:

- Price and availability of each mode. The availability and cost of transit (i.e., fare, employer or other subsidy, if any, and parking cost, if applicable).
- Quality of service of each mode. This includes factors such as: travel time, convenience, comfort, service reliability, perceived personal security/safety; and perceived overall "image".
- Trip characteristics for each particular trip. This includes factors such as: Trip length and purpose.
- Number of people to be making the trip, and whether there are multiple destinations involved.
- Personal (socio-demographic) characteristics of the traveller. This includes factors such as: Income, origin and destination locations; and status (e.g., employed, student, or retired).

Clearly, the majority of the specific parameters in these categories lie outside of the transit agency's direct control and thus represent external factors.

The crux of the challenge in generating high Ridership for transit services is to make transit as competitive as possible in the areas of *pricing* and *service quality*.

ALTERNATIVES FOR CONSIDERATION:

The elimination of fare box revenues would require additional funding from municipal taxes. In 2006 (the most current CUTA statistics available for comparison) some 21.2 million regular service area passenger trips were made. Total operating expenses amounted to $50.8 million. The current operating budget expenditures associated with fare collection are approximately $1.4 million annually.

Assuming a 20% Ridership increase, Table 5 below, illustrates the estimated performance impact on the HSR. Generally, the system has sufficient spare passenger-capacity during the off-peak hours. If the Ridership increases occurred mainly during the peak periods additional buses and operators would be required on an ongoing basis. There would also be Capital requirements associated with expanding the Maintenance and Operations facility. The municipal tax increase per household in the transit service area can only be expressed as a "best guess" and is estimated to be in the order of $160 per year (in 2008 dollars) based on a residential assessment of $250,000.

TABLE 5: HSR Free fare conventional transit operational scenarios, 2006

Performance indicator	*Existing*	*20% Ridership growth*
Annual passenger trips	21.2	25.5
Passenger trips/capita *	48	57
Passenger revenues ($ mil)	28.2	0
Financing contributions in 2006	22.6	22.6
Total operating cost ($ mil)	50.8	51.5
Revenue/cost ratio (%)	57	0
Average Fare ($)	1.33	0
Shortfall: cost – revenue ($ mil)	0	28.9
Additional tax /household ($)	0	161

FINANCIAL/STAFFING/LEGAL IMPLICATIONS:

The increase in operating budget expenditure requirement, through the levy or other tax supported funding, associated with a 20% increase in Ridership and elimination of fare box revenue would be in the order of $30.9 million. This would require an additional tax per household of about $161 per year based on a residential assessment of $250,000 (in 2008 dollars). A capital expenditure in the order of $5 to 10 million for fleet expansion and facilities accommodations would be required to implement additional service requirements contained within the noted $30.9 million increase in operating cost.

It would be reasonable to speculate that transit demand would grow on an on-going basis and we should contemplate achieving the goals set out in the Transportation Master Plan (TMP):

> "Achieving the goals and targets set out in the TMP will require a significant influx of Capital for transit projects and fleet expansion. The TMP estimates that the conventional fleet will need to expand from the current fleet of 211 buses to approximately 440 buses by 2031. Based on current bus costs, this equates to $91 million, or $3.6 million per year over 25 years. Other major costs, relate to transit facilities and the implementation of Bus Rapid Transit. These are estimated at $51 million and $159 million respectively. In total it is estimated that approximately $300 million will need to be invested in the conventional transit system over the next 25 years, or approximately $12 million per year."

The Public Works Department is completing a Yards Rationalization Study that will include Transit facility needs under various growth scenarios. A decision to implement free fares for Transit would trigger a decision to implement the expansion of Transit facilities to include re-occupation of the former 330 Wentworth Street transit facility. The various cost scenarios are in the order of millions dependent on the rate of Transit growth. Council has previously approved reserving $2.5 million in gas tax capital funding towards this initiative pending recommendations arising from the Study.

POLICIES AFFECTING PROPOSAL:

Vision 2020 policies recommend increasing public transit Ridership by providing efficient and convenient public transit. The Hamilton Transportation Master Plan (2007) adheres to these policies by placing a high emphasis on significantly improving transit services and other sustainable transportation modes such as cycling and walking and optimizing existing road capacity before considering major road expansions.

The Public Works Strategic Plan (2007) is regarded as a compass for the Public Works Department to follow to 2017. Our vision is to be recognized as the centre of environmental and innovative excellence in Canada. The Plan sets high level goals for the entire Department that as achieved will continuously enhance the quality of Public Works services provided to the Community. The Departmental Plan further requires that each Division also have its own continuous improvement plan for their program. This report has attempted to inform and share the vision of the Transit Division for continuous improvement in the Public Transit services delivered to the community.

RELEVANT CONSULTATION:

This is a research report. Research was sourced from the Canadian Urban Transit Association (CUTA) library, the American Public Transit Association (APTA) library and the Internet. Input to the report has been provided by the Capital Planning & Implementation Division, Corporate Finance and Community Services.

CITY STRATEGIC COMMITMENT:

By evaluating the **"Triple Bottom Line"**, (community, environment, economic implications) we can make choices that create value across all three bottom lines, moving us closer to our vision for a sustainable community, and Provincial interests.

Community Well-Being is enhanced. ☑ **Yes** ☐ **No**
Transit Ridership growth achieved through various strategies contributes to improved access to the community for work, recreation, education and medical trips. Reduced automobile trips contribute to reduced traffic congestion.

Environmental Well-Being is enhanced. ☑ **Yes** ☐ **No**
Conversion of auto trips to transit reduces overall emissions. One bus load takes as many as 50 cars off the road. Transit tailpipe emissions from modern fleet are the lowest of all large vehicle tailpipe emissions.

Economic Well-Being is enhanced. ☑ **Yes** ☐ **No**
The community benefits from increased Transit use. Increased fare box revenues contribute to lower reliance on the tax base to fund public transit.

Does the option you are recommending create value across all three bottom lines?
☑ **Yes** ☐ **No**

Do the options you are recommending make Hamilton a City of choice for high performance public servants? ☐ **Yes** ☑ **No**

APPENDIX "A"

Other Studies

A number of other studies have considered the relative impacts of internal and external factors on transit Ridership. For example, Gomez-Ibanez (*"Big-City Transit Ridership, Deficits and Politics Avoiding Reality in Boston,"* 1996) analyzed Ridership changes at the MBTA (Boston), and found that the agency's Ridership to be considerably more strongly influenced by downtown employment levels and real per capita income levels than by changes in service levels or fares. He estimated that, for each 1% drop in employment, MBTA Ridership would be lowered by 1.24 to 1.75%, and that each 1% rise in per capita income would result in a 0.70% drop in Ridership. In contrast, Gomez-Ibanez determined that a 1% increase in the amount of service provided would result in a gain of 0.30 to 0.36% in Ridership, and a 1% reduction in fares would generate 0.22 to 0.23% in additional Ridership.

A study by Kain and Liu (*Secrets of Success: How Houston and San Diego Transit Providers Achieved Large Increases in Transit Ridership,* 1995) analyzed data (for the years 1968-1992) to ascertain why Ridership in both cities generally increased during the early 1990s - a time when many transit systems were suffering significant Ridership losses. The researchers attribute much of the increases in both cities to a combination of two internal transit factors (average fares and revenue vehicle miles of service) and three external factors (ie. Regional employment levels, fuel prices, and automobile ownership levels). In an earlier study of transit in Portland (OR), Liu (*Determinants of Public Transit Ridership: Analysis of Post World War II Trends and Evaluation of Alternative Networks,* 1993) considering the same types of variables (using data from 1976-1990, found that several external factors (per capita income, automobile ownership and suburbanization of residences and employment locations) had a greater impact on demand for transit than did internal factors (i.e., annual transit miles and average fares).

In considering the factors affecting transit demand and productivity, the WMATA study also concluded that "for bus routes" and indeed for transit in general, perhaps the most important single factor affecting Ridership is the density of development in the corridor served by the route. Density is so important because a fixed-route service has, by definition, a limited service area. It is limited because people (1) do not like to walk and (2) do not like to transfer. (WMATA Regional Bus Study - Comprehensive Operational Analysis Summary Report, February 2001, p.67)

Based on the cases where sufficiently detailed data were available, it was determined that the most significant direct impacts on Ridership have come from different types of operating/service adjustments (particularly increased route coverage, route restructuring, and increased service frequency) and as a result of partnerships with various local entities (particularly universities). Although marketing/promotions and information improvements seldom had a major direct effect on Ridership, they invariably represented important complements to the introduction of any service improvements - and were often instrumental in the establishment of key partnerships. For example, establishing and maintaining a positive image of the transit agency in the community

was seen by several agencies as a crucial element both in attracting/retaining riders and building key partnerships. Fare collection and fare structure initiatives similarly were not typically seen as having major Ridership impacts on their own, but also represented important "pieces of the overall puzzle."

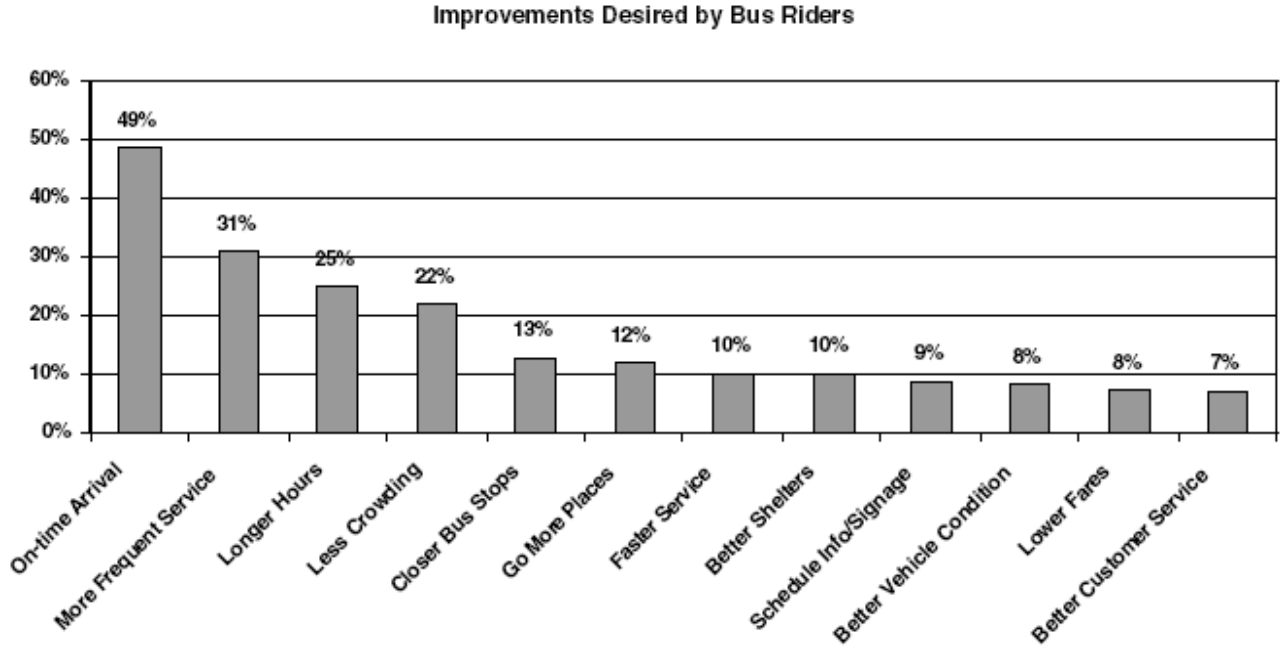
Key Market Segments

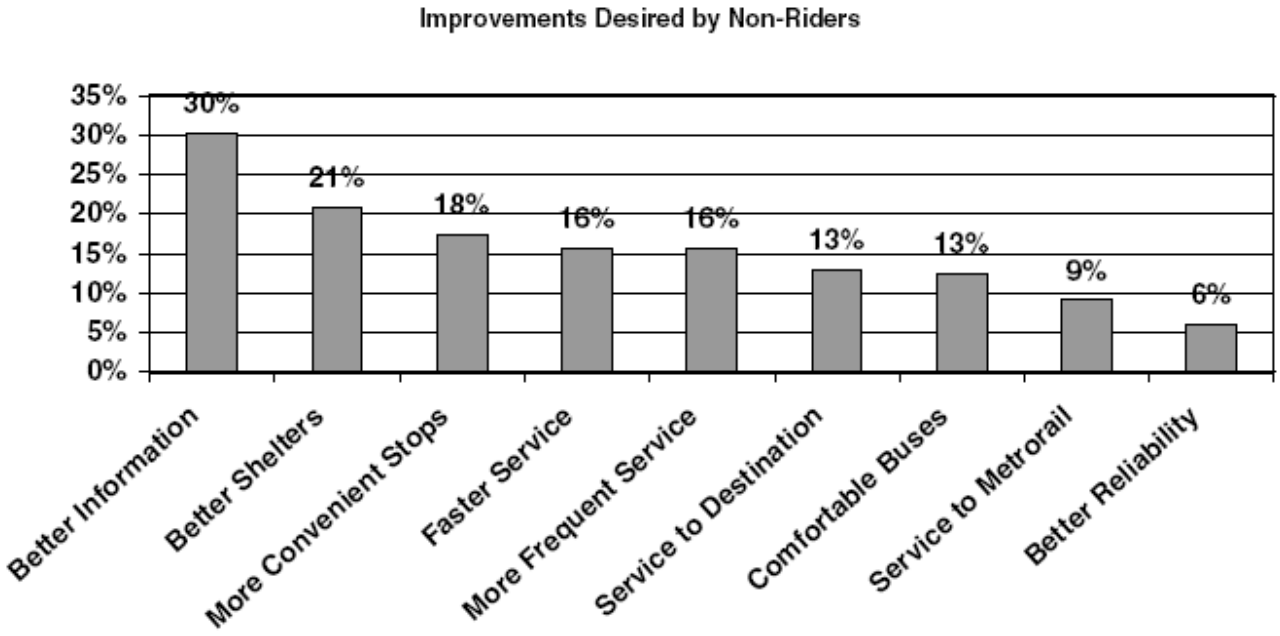
With regard to identifying specific market segments, a report recently prepared for APTA (B. Hemily, *Trends Affecting Public Transit's Effectiveness: A Review and Proposed Actions*, November 2004) identifies four key segments for transit, based on an analysis of demographic, socioeconomic, and land use trends; these segments are

•Commuters;
•Immigrants (particularly in older inner suburbs);
•Serving the mobility needs of an aging population; and
•Access for customers with special needs (i.e., persons with disabilities and economically disadvantaged).

Hemily argues that these are the market segments most likely to yield significant Ridership increases in future years and transit agencies must therefore recognize and understand the different needs of these markets in developing service and marketing strategies.

There may also be distinct differences in the types of strategies an agency should consider in targeting existing riders versus new riders. Surveys from the recent regional bus study in Washington, DC identified the types of transit improvements desired by both existing riders and non-riders.




Improvements Desired by Non-Riders
35%
30%
25%
20%
15%
10%
5%
0%
30%
21%
18%
16%
16%
13%
13%
9%
6%
Better Information
Better Shelters
More Convenient Stops
Faster Service
More Frequent Service
Service to Destination
Comfortable Buses
Service to Metrorail
Better Reliability

APPENDIX "B"
CHAPEL HILL CASE STUDY

MEMORANDUM

TO: Mayor and Town Council

FROM: W. Calvin Horton, Town Manager

SUBJECT: Information Report: January 2002 – September 2002, Chapel Hill Transit Ridership

DATE: October 21, 2002

In January 2002, Chapel Hill Transit implemented modifications to the transit system, including service changes and a fare free policy. This memorandum reviews the impacts of those changes on transit system ridership. Between January and September, 2002 system ridership increased 38.6% over the same period in 2001. During that same period, fixed route ridership increased 43.1%.

DISCUSSION

The information presented below summarizes the changes in transit ridership since the implementation of the fare free policy in January 2002 and related service changes instituted in January and August 2002. Chapel Hill Transit traditionally implements major changes in service in August of each year. Table 1 below summarizes the changes in service levels between August 2001 and August 2002.

Table 1

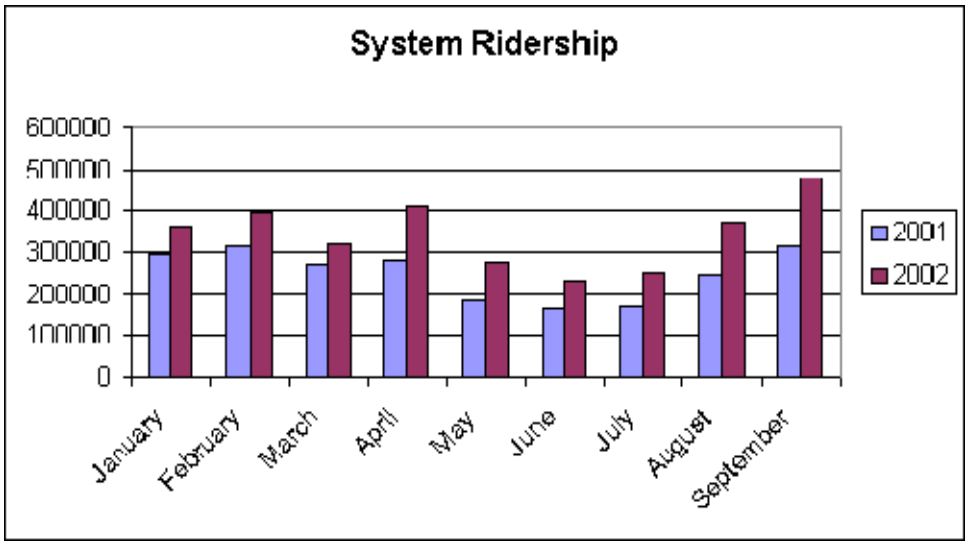
	August 2001	August 2002	% Change
Weekday Fixed Route Service Hours	457.26	556.4	+21.6%
Number of Routes	18	22	+22%
Weekday Peak Buses Required	47	62	+31.9%
Saturday Fixed Route Service Hours	47.09	56.96	+20.9%
Sunday Fixed Route Service Hours	15.23	15.23	0%

During the period between January and September 2002, there were several changes in service levels. With the implementation of the fare free policy in January 2002, some modifications to service were also instituted. Daily fixed route service hours were increased to 509.20. In addition, Chapel Hill Transit reduces service hours slightly between mid May and mid August.

<u>System Ridership</u>

System ridership includes boardings for all services provided by Chapel Hill Transit. This includes fixed route service, demand responsive services such as EZ Rider and Shared Ride and special shuttles, such as those provided for football or basketball games. During the period between January 2002 and September 2002, the transit ridership system including fixed route, demand response, and special services increased approximately 38.6% compared to the same period in 2001. Ridership increased from 2,240,664 in 2001 to 3,106,369 in 2002. The chart below shows monthly ridership during this period.

Chart 1



As noted above the overall ridership during the January 2002 and September 2002 reflects different service levels. The table below provides ridership summaries for the period between January 2002 and September 2002. The period between January and April 2002 included a modest increase in service levels from August 2002, approximately 11.3%. The period May through July represents the summer "reduced" service period. During this summer period, Chapel Hill Transit ends most fixed route transit services at 8:00 pm. The table also includes ridership summaries for August and September 2002, which includes implementation of increased service levels, including several route modifications, the implementation of new routes and increased service hours. Beginning in August, Chapel Hill Transit also implemented a completely revamped Saturday services plan.

Table 2

System	2001	2002	% Change
January- September	2,240,664	3,106,369	+38.6%
January- April	1,162,173	1,489,685	+28.1%
May – June	515,543	765,167	+48.4%
August - September	562,949	851,517	+51.26

Fixed Route

Fixed route service represents the bulk of transit service provided by Chapel Hill Transit. services experienced an increase of 43.12% during the period January and September 2002 compared to the same period in 2001. Chart 2 below illustrates the increases by month.

Chart 2

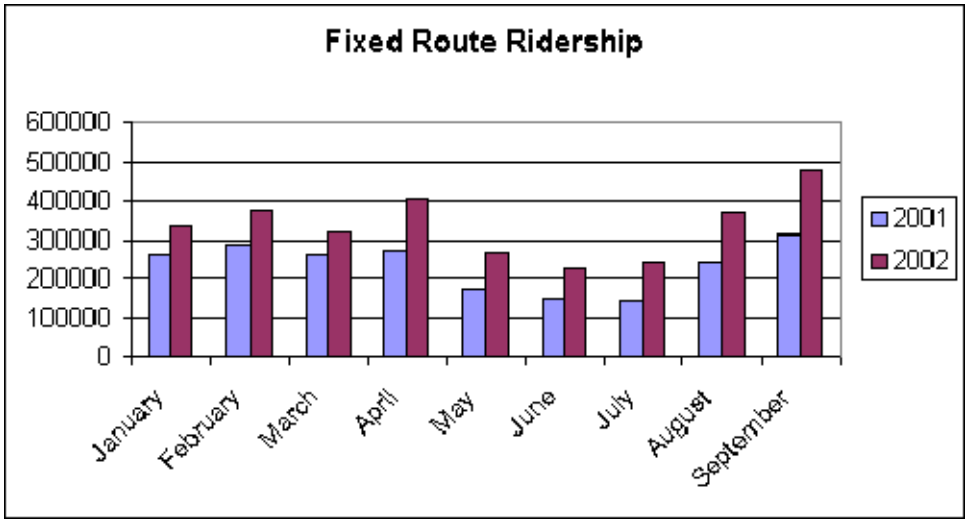


Table 3

Fixed Route	2001	2002	% Change
January-September	2,100,866	3,006,798	+43%
January- April	1,080,876	1,429,007	+32.2%
May – June	467,776	731,545	+56.3%
August - September	552,214	846,246	+53.2%

We note that the August and September 2002 ridership totals do not include service to the Jones Ferry Road and Friday Center park ride lots. Due to construction delays, service to those facilities is expected to begin in October 2002.

CONCLUSION

The impact of the fare free policy and related service changes has been a significant increase in transit ridership. We expect overall system ridership to increase with the opening of the Jones Ferry Road and Friday Center park ride lots. The increase in transit demand has resulted in some overcrowding along transit routes. We have responded to this increased demand by adjusting some route schedules and by scheduling additional buses along certain routes. We have also retained for continued use 13 buses that had been replaced in 2001 and were scheduled to be sold. We are working to secure funding to purchase new buses to replace those 13 buses. We will continue to monitor transit services and respond as needed to increased passenger demand.