

The GTA Farecard: A Seamless Fare Collection System

Organization

GO Transit, the Ontario Ministry of Transportation and eight municipalities

Status

Started 2002, ongoing

Overview

The GTA Fare System will provide a common fare card to allow customers to ride on any participating GTA transit service provider without pre-purchasing tickets or passes. Using “smart card” technology, the system will be transparent to the customer and provide one common fare that accommodates the fare policies of all GTA transit service providers, including intersystem transfers, discounts and customer loyalty schemes.

Budget:

- Phase I of the project was completed at a cost of \$160,000
- Phase II is nearly complete with funding of approximately \$1.5 million.

Human Resources:

- Phase I of the project consisted of a steering committee with 13 partner representatives and a working committee with 16 partner representatives. Only the working committee has continued onto Phase II. The core project team is made up of four full-time project staff from GO Transit, two municipal representatives and several external consultants.

Contact

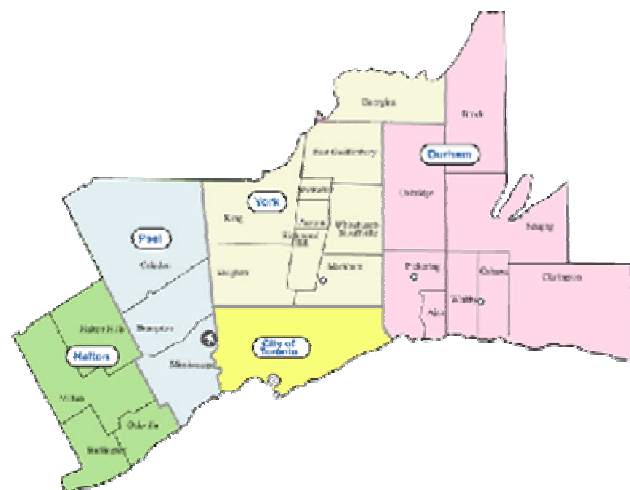
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Resources

- GTA Fare System (www.gtafaressystem.ca)
- GO Transit (www.gotransit.com)
- Ontario Ministry of Transportation (www.mto.gov.on.ca/english/about/transit)

Community context

The Greater Toronto Area (GTA) is the largest metropolitan area in Canada and the fourth largest in North America. As one of the continent’s fastest growing regions, the GTA consists of 25 municipalities and four regions in a total area of over 7,000 square kilometres.



Fourth Largest Region in North America	
NAME OF CITY	POPULATION
Los Angeles	9.5 million
New York	9.3 million
Chicago	8.2 million
Toronto	5.3 million
Philadelphia	5.1 million
Washington	4.9 million
Atlanta	4.1 million
Boston	3.4 million

The GTA is the fourth largest region in North America, with a combined population of 5.3 million

Interregional public transit connects the GTA with an extensive network of trains and buses that carry over 44 million passengers annually. The majority of these are suburban commuters, almost all of whom travel to and from Toronto’s downtown. The automobile continues to dominate since only 30% of all commuting trips taken in the GTA are by public transit or other modes (cycling, walking, carpooling). In an effort to reduce congestion and improve air quality, many of the municipalities in the GTA have set goals to increase public transit’s share of commuter trips to 50% or greater.

Travel across the GTA, however, presents existing and potential new transit customers with several barriers. For example, since fares vary depending on the GTA transit service provider, passengers may not be aware of the difference in fares when transferring from one provider to the next. The pre-purchase of tickets or passes, or the need for exact cash fare, can also be perceived as a barrier to new customers.

Policy context

The Province of Ontario is committed to promoting a more balanced transportation system. It is committed to:

- Expanding GO Transit services
- Investing in municipalities to renew and expand their transit fleets to improve reliability, reduce operating costs and emissions, and improve accessibility and passenger comfort

The province also intends to improve and expand transit systems by investing in:

- New rolling stock, tracks (or transitways), signal systems and related infrastructure to support service intensification or expansion including projects that introduce rapid bus systems on dedicated lanes
- Station infrastructure to support transit-oriented development and inter-modal transfer opportunities such as park-and-ride facilities
- Advanced transit technology, including advanced fare collection systems
- Investing in dedicated lanes for high occupancy vehicles, bus bypass shoulders and carpool lots

Rationale and objectives

Transit systems around the world are moving to electronic farecards for several reasons. The benefits of the new technology include better financial performance, faster boardings, improved customer service, and the ability to replace lost or stolen cards. Farecard systems can also collect customer information that can be used by GTA transit service providers to tailor services or create targeted marketing campaigns.

As the main proponent of this project, the Ontario Ministry of Transportation saw a seamless fare collection system as one piece of the puzzle in its long-term goal to integrate transit in the GTA.

GO Transit welcomed the opportunity to participate in the project because its fare collection system, which was costly to maintain, was due for replacement. Similarly, many of the GTA's transit service providers are also planning to replace their aging fare collection systems as they reach the end of their useful lifecycle and can no longer be repaired.

These two factors created a unique opportunity to introduce an integrated approach to transit fare collection in the GTA.

GO Transit and the Ontario Ministry of Transportation recognized the importance that the Toronto Transit Commission (TTC) would play in the proposed fare collection system. In Phases I and II of the project, however, the TTC is acting as an observer (due to other financial priorities) but is expected to come on board at a later date.

The objective of the project is to document the feasibility of a seamless fare system for the GTA, and to subsequently design and implement such a system. Given the observer status of the TTC, the project will largely serve suburban commuters (those people residing outside of the City of Toronto proper) in the near term.

Actions

Phase I

Late in 2001, GO Transit and the GTA transit service providers formed a coalition to study a seamless fare collection system. Phase I commenced shortly thereafter and was considered as the "high level" design phase to create consensus among the partners and to undertake the necessary research into fare collection and farecard systems.

Creating working and steering committees. The working and steering committees consist of one staff member from each GTA transit service provider as well as representatives from GO Transit, the Ontario Ministry of Transportation, Moving the Economy, and the Toronto Transit Commission, for a total of 24 people for each committee. A total of 10 full-time staff members from GO Transit, the TTC and the Ontario Ministry of Transportation were also dedicated to working on the project.

The committees' mandate was to design a GTA fare collection system. The partners discussed various concepts from around the world and engaged speakers from San Francisco and Hong Kong to share their experiences of "smart cards" and integrated fare systems.

Led by GO Transit, the committees also developed an operational concept of the system, and conducted a governance and business model review (sponsored by the Government of Ontario) to explore long-term management options for the GTA Fare System and the role of the public and private sectors.

Conducting extensive research. Using transportation data from 1996 (the last year for which comprehensive transportation data was available), the partners estimated the potential environmental impact of a GTA fare collection system. In order to fully understand the impact, project partners also analyzed how modal shift (e.g., from single passenger vehicle to transit) and transit ridership were affected after similar systems were implemented in other cities in North America and abroad.

A municipal business case analysis, funded in part by Moving the Economy and led by Mississauga Transit, was then performed to quantify the potential effects of different fare collection systems on GTA transit service providers.

The results of this analysis were included in the January 2003 report entitled Regional Feasibility Study of Integrated Mobility Systems in the Greater Toronto Area. That report also included a study of the environmental impacts of integrated mobility systems (IMS) in the GTA, authored by staff from the University of Toronto and the Victoria Transport Policy Institute.

As noted previously, the TTC was an observer in this phase. The project is designed, however, to allow for the TTC to enter into the fare collection system at a later date.

Phase II

Upon completion of the design and research phase, the steering and working committees then moved into Phase II, which is concentrating on fleshing out the concepts, components, and technology options studied in Phase I.

Smart card principle. The working and steering committees developed a concept of a common farecard for use by the GTA transit service providers that was based on the “smart card” principle. A smart card contains a computer chip that is “flashed” over a computerized terminal as a passenger enters a transit vehicle or terminal.

Smart cards work this way: A consumer purchases a farecard containing an “e-purse,” the equivalent of cash. Customers will load value (or dollars) onto the card and fares will be deducted by fare readers on buses and at train stations. Loading value onto the card can occur at a number of access points but not at automated teller machines.

Unlike phone cards, smart cards can be used in more than one application. In other cities that have implemented similar systems, consumers use smart cards for transit as well as for discounts in retail stores or for promotional offers.



San Francisco uses smart card technology. Customers simply “flash” the card over a terminal to enter a train or subway station.

Service provider systems. Each GTA transit service provider would install a system of on-board and back office equipment and software to accommodate and administer the GTA fare collection system. GO Transit would also need to install a similar system.

A central system. A centralized system would link to all of the independent GTA transit service providers, acquire all farecard transaction data, hold the farecard travel values (purchased by consumers) in a separate bank account, and disburse those travel values to each GTA transit service provider on a daily basis. The system would also provide centralized customer services and technical support.

Fare box replacement. To implement the GTA fare collection system, old fare boxes would need to be replaced with electronic ones, like the one shown below.



Electronic fare boxes read farecards and transfer data to a central system

Farecard readers. Farecard readers are devices that will be located at bus entrances, and potentially linked to the new fareboxes. At GO train stations, readers would be located throughout.

Results

Operational concept. In Phase I the partners agreed upon an operational concept for the GTA fare collection system with all of the components—central system, new fare boxes, etc.—clearly outlined. Cost options were also identified and brought back to each municipality. Business and governance models for the system continue to be evaluated by the steering and working committees.

Environmental benefits. Since the TTC is only an observer at this point, environmental benefits were calculated with and without its participation. The chart below summarizes the amounts of greenhouse gas emissions that would be reduced with, and without, its involvement. With TTC involvement, it was estimated that transit modal share could increase by 11%.

Emission Type	Base Emissions (tonnes)	Emissions Reductions			
		With TTC Involvement		Without TTC Involvement	
		Tonnes	%	Tonnes	%
CO ₂	5,560,000	126,000	2.3	31,900	0.57
CO	143,000	3,320	2.3	826	0.58
NO _x	11,500	256	2.2	66	0.57
HC	18,700	444	2.4	109	0.58

Source: *Regional Feasibility Study of Integrated Mobility Systems in the Greater Toronto Area, January 2003*

Economic benefits. By implementing a fare collection system that used smart cards, the single greatest economic benefit to GTA transit service providers would be in lower fare evasion. Consumers would already have paid for their transit by putting a set travel value on the farecard.

Government funding required. The overall cost of implementing the GTA fare collection system is officially estimated at between \$46 and \$62 million and the steering and working committees recommended the Province of Ontario fund the development of the central system.

Participants

Ontario Ministry of Transportation

GO Transit

Transport Canada's Intelligent Transportation Systems (ITS) program (Phase I and II only)

Moving the Economy (Phase I only)

City of Mississauga

City of Burlington

Oshawa Transit Commission

York Region Transit

Town of Whitby

The Hamilton Street Railway Company

Ajax Pickering Transit Authority

Oakville Transit

Brampton Transit (not currently a member but expected to join in near future)

Resources

Budget. Phase I funding of \$160,000 came primarily from the Ontario Ministry of Transportation, with some contribution from Transport Canada. The majority of Phase II funding, \$1.5 million, came from the Ontario Ministry of Transportation.

Staff resources. The steering and working committees comprise 13 and 16 partner representative respectively. Both committees also have staff representatives from GO Transit, the Ontario Ministry of Transportation, and the TTC. The GTA Fare System project staff consists of four members from GO Transit, two municipal representatives and several independent consultants.

Timeline

January 2002. Approval received by all partners to proceed with Phase I.

January 2003. Phase I complete, including the regional feasibility study.

May 2003. Ontario Ministry of Transport announces funding of \$1.5 million for the project. Phase II begins.

December 2004 (expected). End of Phase II. Completion of an integrated procurement document for a private sector company to design, build and implement the GTA fare collection system.

December 2004 (expected). Begin Phase III, selection of a company to implement the system.

Lessons learned

Partnerships are critical. The GTA fare collection system is an ambitious project that will integrate transit for the country's largest metropolitan area. The project will require some alignment of transit fare policies (although each GTA transit service provider will continue to have different fare structures and rules) and the implementation of a central computerized system. To create the GTA fare collection system, it was obvious to GO Transit and the Ontario Ministry of Transportation that strong partnerships would be required.

The lead partners, therefore, took a multi-stakeholder approach and believed that “doing it right” should take precedence over “doing it fast.” Dozens of municipalities, GTA transit service providers, and other key stakeholders were involved in different aspects of Phase I and continue to be involved in Phase II. Using this approach, the partners achieved a remarkable degree of consensus and cooperation, which bodes well for when the GTA fare collection system is ultimately implemented.

Funding will be critical. The GTA fare collection system will require an investment of between \$46 and \$62 million (not including the TTC) and will require the involvement of all levels of government (federal, provincial, and municipal). The lead partners have already been successful in obtaining funding from the Ontario Ministry of Transport and Transport Canada for Phases I and II. They also received Green Municipal Funds, administered by the Federation of Canadian Municipalities, which helped fund a portion of the regional feasibility study.

Do your homework. An enormous amount of research into farecards and fare collection systems was required and, as a result, Phase I took longer than expected. But without the solid research background—that included forecasts, business and governance models, and recommended options—there would have been substantially less cooperation and interest from the GTA transit service providers.

Fare policies. Each GTA transit service provider will have their own fare structures and loyalty program. While fare policy alignment would reduce variations to the software, it is not a limitation to the new system. The lead partners believe, however, that the collaboration and consensus reached to date will be the key to ensuring that this will not become a contentious issue.

Next steps

GO Transit and the GTA transit service providers have signed an administrative accord and since February 2004, have completed the terms of reference to engage a consultant to assist in the design and procurement process. The partners are also designing the work plan for system design and deployment (Phase III).

The partners intend the GTA fare collection system to be procured and implemented in a single joint procurement contract. A procurement document is being developed and will be forwarded to municipal decision-makers for their comments and approval. Once approved, the procurement phase will follow with development, design, testing, and implementation of the system.

It is also the intent of the partners to have the GTA transit service providers replace their existing fare boxes at about the same time as the fare collection system is implemented. The procurement contract may include some provision for these fare box replacements.