

Transit for small urban areas

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Abstract

Many small communities face unique challenges when providing transit services for their citizens. Transit revenues are rarely self-sustaining and operational funding is often required from municipality coffers. Traditional transit models applicable for larger cities have often been employed in small communities with limited success. There are a number of communities in Atlantic Canada that sustain transit services and many have launched innovative alternatives to provide public transportation. The population in these communities ranges between 30,000 and 400,000 citizens. An overview of several of these programs is provided in this paper.

In tandem to its commitment to the Kyoto Accord, the Federal Government of Canada has initiated a program to encourage communities to develop new and innovative ways to reduce their greenhouse gas emissions through a mixture of technology applications, infrastructure enhancements and behavioural change. Among the communities involved in the Urban Transportation Showcase Program are three small cities in Atlantic Canada: Halifax, Moncton and Saint John. Proposals submitted by these communities for the program developed alternatives to maximize the passenger carrying capacity of existing corridors that provide access to their cities. Initiatives include shifting road infrastructure from the automobile for transit use, transportation and land use planning decisions, parking strategies and the integration of services with non-traditional transportation modes. Other communities have recently established trans-cab services by structuring their transit system around existing transportation service infrastructure.

This paper provides a summary of experience gained through the development of several of these initiatives and discusses their potential impact on common themes faced by small urban communities when providing transit.

Keywords: transit, small communities, Urban Transportation Showcase Program, planning, strategies, Canada.



1 Transit challenges

Small communities often struggle with unique challenges when providing transit services. Within Canada, both public and private transit agencies typically receive both operational and capital funding from their municipalities. These funds can often constitute the majority of operational revenues and the bulk of capital funding. Most small transit agencies have limited resources that can be devoted to strategic future planning. Boyle and Ouderkirk [1] discuss a methodology for strategic planning for transit agencies in small-urbanized areas. Martinelli et al [2] identify several key differences between small and large transit agencies.

- Because of their size, small agencies tend to have limited staff available to develop dedicated programs for strategic planning. In small agencies, strategic planning teams often must incorporate personnel from other organisations to fully represent stakeholder input. Staff resources also affect the strategic planning process by limiting its ability to collect information, to coordinate discussion, and to monitor implementation strategies.
- Large agencies are usually of sufficient complexity to have developed a defined framework to conduct the strategic planning process. Smaller agencies lack the resources for such structure and have smaller fleet sizes, simpler route structuring and smaller scale operations. Typically the small agency has never developed a long-range strategic plan or has conducted planning in an unstructured, reactive manner.
- Small agencies typically serve populations that live in areas that have little congestion, have access to ample parking facilities and are accustomed to short travel times. The service is primarily serving the transportation disadvantaged and the elderly. This is a much more competitive environment in which to operate transit service and the agency must entice non-captive riders with improved levels of service and other improvements.

There are a number of small communities in Atlantic Canada who maintain transit services. Transit in many of these communities has evolved from a traditional transit model applicable for larger cities. Jurisdictions working under traditional models have attempted to develop innovative strategies to optimize these services given their structural and financial constraints. Other jurisdictions have pursued alternative transit service structures to serve the public. Many of these communities see a greying trend in their population's age demographic and recognise their transit services will become increasingly important for their citizens.

This paper provides a summary of the proposed initiatives of some of these communities. The paper is meant to be a complement to the presentation to be made in Dresden, and provides background material and discussion of some of the alternatives available to small communities who wish to operate and sustain their transit services.



1.1 The Urban Transportation Showcase Program

In addition to struggling with transit operational challenges, Canadian communities initiated a dialogue with the Federal government to better understand their potential contribution to reducing the nation's greenhouse gas (GHG) emissions. A mechanism was sought that aided municipalities with capital and restructuring funding for their transit programs and also helped meet the country's Kyoto Accord commitments.

Successful transit systems can provide both mobility options for those who require it, and a transportation alternative for non-captive travellers. The latter represents an environmental gain if transit is chosen. The Federal Government of Canada wished to encourage communities to develop new solutions to help reduce their greenhouse gas emissions. The program, the Urban Transportation Showcase, allowed communities to submit proposals for funding that outline their transportation improvement options and their impact on emissions. The "showcase" of eight selected cities is designed to promote alternative strategies for reducing GHG emissions in municipalities. Subsequent phases will support other cities to implement similar strategies. Proposals tended to be composed of a variety of transit improvements, technology applications, infrastructure enhancements and citizen behavioural change strategies. [3]

While the magnitude of proposal's impact on national GHG emissions was directly affected by the size of the municipality and the composition of the proposal, small communities were encouraged to participate. In Atlantic Canada, the three small cities of Halifax, Moncton and Saint John submitted proposals for the demonstration stage of the program. While Halifax was the only successful applicant during the first stage of the program, the proposals developed by all three communities merit review. These communities developed distinct alternatives that maximize the passenger carrying capacity of existing corridors, streamline transit services and improve access to the transit system. The following sections will discuss each of the cities' efforts briefly, and the final section will synthesize the experiences of these communities into some generalized transit planning guidelines for small communities.

1.1.1 Halifax, Nova Scotia, Canada

The Halifax Regional Municipality (population 360,000) is the largest city in Atlantic Canada, is the economic centre for Nova Scotia and forms an important gateway into Canada. Recent planning efforts have been focussed to combat urban sprawl and to develop integrated sustainable transportation systems. The showcase proposal described a strategy to increase the carrying capacity of several main corridors servicing satellite communities. Rapid bus transit routes are proposed to carry passengers on these corridors and allow some of the downtown core's 25,000 workers to gain access to a transit alternative that would provide competitive travel times for the commuter. [3]

The two proposed corridors link commuter residential areas with key employment centres (Halifax Centre and Burnside). The low travel times were deemed essential to attract non-captive commuters. The proposal also included real time bus arrival information at stations, improved bus-only lane facilities



and traffic management systems that optimise signalization for the buses as they approach intersections. Pickup and drop off services, bicycle lockers and park-and-ride facilities are also included in the project.

1.1.2 Saint John, New Brunswick

Saint John, New Brunswick is an industrial centre that has experienced an exodus of its working population to several commuter communities [6]. Saint John Transit enjoys relatively strong existing transit ridership, and seeks to increase the services it provides to these outlying areas. Like Halifax, these efforts are focussed on gaining market share of the non-captive traveller. The proposal submitted to the Urban Transportation Showcase Program is designed to establish commuter bus services to these communities while encouraging integrated transportation patterns. The proposal calls for park-and-ride facilities to be constructed in these satellite communities and for the establishment of express commuter transit connections into the city centre. The proposal also encourages commuters to include walking and bicycling in their commute by integrating an existing trail system with the proposed express transit system.

Table 1: Performance Indicators for Moncton, New Brunswick.

Performance Indicator	City of Moncton	National Average
Population Served	87,000	50,000-150,000
Ratio of Buses to Population	1:3355	1:2833
Average Age of Fleet in Years	13.5	12.7 (est.)
Weekly hours of service	78:00	109:20
Average Speed (km/hr)	19.81	22.10
Vehicle Utilization (km/yr)	39,600	53,900
Average Fare	\$0.94 (\$0.71)	\$1.14 (\$0.86)
Passengers / Capita	16.57	21.30
Passengers / Vehicle Hour	26.77	24.85
Revenue / Cost	56%	53%
Municipal Operating Contrib. / Capita	\$11.82 (\$8.87)	\$23.06 (\$17.30)
Net Direct Operating Cost/Passenger	\$0.77 (\$0.58)	\$1.12 (\$0.84)
Labour Productivity	0.95	0.76
Top Operator's Wage	\$14.54 (\$10.91)	\$16.29 (\$12.22)
Mechanic Wage	\$15.17 (\$11.38)	\$19.07 (\$14.30)
Mean Vehicle Maintenance Expense	\$16,300(\$12,200)	\$25,200 (\$18,900)

Source: Codiac Transit Commission [7]

Note: \$CAN (\$US)

1.1.3 Moncton, New Brunswick

Moncton's Codiac Transit serves three communities (Moncton, Dieppe and Riverview) with a catchment population of 87,000. In 1999-2000, the transit



agency partnered with the City and conducted a public consultation exercise. The survey conducted public meetings, interviewed transit riders and surveyed the general population. The results provided valuable feedback and highlighted potential improvements to the transit service. In addition to the survey, the agency reviewed a number of performance indicators to compare itself to other similar jurisdictions in Canada. A selection of these figures can be found in Table 1.

The study resulted in 22 service improvement recommendations that included routing changes and several sustainable transportation initiatives. (e.g. bicycle racks on buses). These recommendations were compiled into a five-year strategic plan. Moncton's transit agency offered limited evening service and this was reflected in the hours of service, vehicle utilization and passengers per capita figures. In 1996, Codiac Transit initiated an aggressive fleet replacement program to modernize their equipment that is still ongoing. Routing alternatives were also evaluated to improve the average speed of service.

Nineteen of the study's recommendations have been implemented over the past three years and only three remain to be completed. These are:

- Establishment of additional evening services to better serve non-traditional worker schedules;
- Restructuring of the route system around a central core shuttle service;
- Transit services on Sunday;

These three outstanding issues were incorporated into the city's showcase proposal. The transit component was augmented with bike-and-ride, park-and-ride and transcab facilities to further extend the transit system's multi-modal integration. Employer based transit participation programs were also proposed and several local large employers who had significant parking constraints were identified as good candidates. The transit strategies were one component of the showcase proposal. Other aspects of the proposal included road infrastructure improvements, traffic management system improvements, parking strategic planning, and other GHG reduction strategies [8].

1.2 Other communities

In small communities, the alternatives to transit are often very enticing because travellers live in an environment of short travel times and low population densities. Taxibus services are often best suited for these communities because they can minimize overcapacity costs during slow periods and provide an effective alternative to personal mobility options (walking, biking personal automobile). In Canada, communities such as Welland, Ontario, supplement their conventional transit system with a transit taxi service for low-density areas [4]. Clients in areas not served by transit who wish to gain access to the transit system can call for a fixed-fare taxi to deliver them to the nearest transit stop.

In contrast, Rimouski, Quebec, a city of 32,000 citizens, established a taxi based transit system, that is fully integrated with the city's existing taxi service. The Taxibus program began in the early 1990's, and was implemented following



the termination of a conventional transit service that was provided by a private carrier. The new service was selected because it provided a higher quality of service than other alternatives and resulted in a lower overall financial contribution by the city when compared to a conventional “bus-oriented” system [5].

Registered transit passengers are picked up at defined stop locations. Each passenger must reserve a taxibus at least one hour in advance of his or her desired travel time. The taxi tracks the total fare from the origin to the final destination of the last passenger. Multiple passenger trips are common and passengers pay a fixed fare while the remainder of the total fare is subsidized by the City of Rimouski. The service is demand responsive and is increasingly accepted and supported by the general population.

2 Effective strategies

Given the experiences of the above communities, several potential strategies have been identified for small communities. These can be summarized below:

- Integration with other modes at transfer sites (walking, bicycle, auto);
- Real-time vehicle tracking systems;
- Traffic control synchronization;
- Transit specific infrastructure;
- Employer based transit participation programs;
- Parking management strategies;
- Route restructuring for improved services in high volume corridors;
- Rapid transit corridors to service satellite communities;
- Transcab services for low density areas;
- Public consultation for strategic planning;
- Service time extension to service key clients;

It is important to note that a community’s transit success story may not be transferable. Each community has unique characteristics that have a direct impact on the transferability of a specific option. The age demographics and mobility of a population and the urban planning history of a community clearly have a direct effect on the potential for public participation in transit. Communities must carefully consider these issues when evaluating transit options. For example, environmental considerations have led some agencies to consider the addition of smaller vehicles on less congested routes to minimize capital and operating costs and improve transit GHG emissions. Smaller vehicles may require a smaller initial capital investment, however, they may have significantly lower life spans in some operating environments and will represent an incremental increase in maintenance costs. Skolnik and Schreiner [9] provide a case study and methodology to assess the benefits of transit in small areas.

Transit ridership is composed of both a captured market (the transportation disadvantaged), and those who have an alternative but choose transit. Transit



marketing strategies are typically targeted to the latter group, while schedule and routing changes can affect both groups' decision to use transit. Cost disincentives, which prohibitively discourage driving, may be the most effective method to incline drivers to transit, but it is often the least politically palatable.

3 Summary comments

Many small communities are assessing their transit service options. Transit agencies must develop strategic plans that allow them to optimise their services. The purpose of this paper was to provide a brief overview of the efforts of several small communities in Atlantic Canada who are attempting to provide transit services within the context of changing demographic trends and increased focus on sustainable transportation systems. Halifax, Moncton and Saint John have all developed proposals that are designed to improve transit services while allowing the transit agency to reduce their level of greenhouse gas emissions. Some of the proposed alternatives will certainly be transferable to small communities facing similar challenges.

References

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