

Traveller Information Issues and Opportunities for Rural Areas

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## ABSTRACT

The paper reviews the unique opportunities and challenges associated with developing a comprehensive traveller information system for a jurisdiction such as New Brunswick. While New Brunswick is not faced with the traffic congestion issues that challenge some other jurisdictions, it does have its unique traveller information needs that should be addressed as part of its overall effort to make transportation safer and more efficient.

The paper includes:

- Rationale and potential benefits of improved traveller information
- Opportunities for Improved Traveller Information in New Brunswick
- The traveller information priorities for New Brunswick and other similar jurisdictions
- The options in terms of improving traveller information
- Review of some of the recent advances in traveller information systems

## **What is Traveller Information?**

Traveller information involves a broad range of information for the purpose of assisting travellers to make better use of the transportation system. The most common types of traveller information include:

- Winter road and driving conditions
- Road and ferry closures
- Construction and maintenance activity
- Traffic congestion and delays
- Weather conditions and forecasts
- Transit and other public transportation schedules and routes
- Parking information
- Visitor and tourist attractions
- Commercial vehicle information

From the list above, it becomes apparent that traveller information can include all modes of transportation and can be targeted at specific types of road users including commercial vehicle operators, tourists, or commuters.

Traveller Information Systems (TIS) have traditionally focused on high traffic urban areas where information on congestion and high impact traffic incidents was of utmost importance to commuters. Now with the wide range of information in demand by the travelling public, in addition to recent advancements in the technologies related to the collection and dissemination, rural areas can benefit from Traveller Information Systems in much the same way as the big cities.

## **Why Provide Traveller Information?**

Two of the main reasons to provide traveller information are to improve efficiency and safety of the transportation system. Transportation system operators, in addition to transportation users, can garner benefits from timely and accurate traveller information. Recent developments in communications and internet technology have created new opportunities to deliver even more value to the public and transportation operators with respect to the transportation system.

Transportation users can benefit from traveller information in terms of improved safety, reduced travel times and lower costs. Users who are better equipped with the information necessary to plan departure times and routes can avoid high risk driving situations associated with poor weather or construction zones. They can also avoid time consuming delays due to construction activity or road / ferry closures.

TIS can be used by transportation infrastructure and service providers to improve efficiency, productivity and levels of service while saving costs. Savings in administrative and clerical effort can be realized through reducing the manual effort used for data recording, compiling and dissemination. Automated record keeping and archiving features of traveller information systems eliminate the need for existing manual procedures. A system that is automatically updated

through input from a portal reduces the number of calls received by staff (whether from maintenance or highway supervisors or the general public).

The development of one system to collect and disseminate information on road conditions, construction or maintenance activity, etc can be more efficient than a number of individuals throughout an organization each doing some or all of these tasks. This also provides the opportunity for increased teamwork within an organization. Information provided by one division can be used by another without the need for additional collection and dissemination.

TIS can provide current and historical information necessary for effective planning and operations. The information maintained by the TIS allows performance monitoring of operations and maintenance and construction activities. The predictive and performance information from an advanced TIS can be used in a decision support model for maintenance and construction, as well as in identifying trouble spots on a highway network.

There are additional economic advantages to implementing a Traveller Information System. Direct economic benefits can be obtained by improving the efficiency of the transportation system that serves major economic sectors. Traveller information can improve the efficiency for freight and passenger transportation and can lower transportation costs for individuals, public sector and businesses. Traveller information can assist export industries to select the most efficient modes of transportation and routes for their products and can also provide information on border delays for cross-border shipments.

Traveller information is an important element of tourism development. Visitors are less familiar with the transportation system, transportation services, attractions and lodging. In this sense, TIS could be used as a key marketing tool for the tourism industry. Identifying areas of construction, road closures, and ferry services are opportunities to improve service to visitors. It also presents opportunities for the private and public sector to market tourism attractions and services.

## **New Brunswick Traveller Information Needs and Opportunities**

Traveller information is often focused on reducing the impact of traffic congestion and delays in major urban areas. This is not a serious issue in New Brunswick. However, there are other opportunities to improve transportation efficiency through the use of TI in a primarily rural jurisdiction such as New Brunswick. Some of the benefits to providing TIS were discussed in the previous section. This section focuses on the needs and opportunities for providing TIS in a largely rural jurisdiction, which coincidentally include some of those already discussed.

Safety is a common concern for all jurisdictions and is top of the list in New Brunswick. New Brunswick strives to provide and maintain a safe and reliable highway network. Ensuring public safety during the winter months is a particular challenge due to the harsh winter conditions and unpredictable weather. Providing accurate and timely winter road and driving conditions is a key element of the public safety program for the provincial department of Transportation (NBDOT). TI allows New Brunswick highway travellers to better plan their travels to avoid poor weather and road conditions, or adjust their routes and driving behaviours during poor

conditions. TIS is also seen as an important planning and evaluation tool by providing a safety database, identifying problem areas for collisions or areas of snow drift, effectiveness of maintenance activities, etc.

New Brunswick, with its relatively small population and extensive transportation system is constantly challenged to deliver comparable levels of service to other jurisdictions. The provision of TI presents the same challenge. New Brunswick needs to carefully examine its unique TI needs and the most efficient means to meet them. Implementing a TIS with unnecessary “bells and whistles” becomes a waste of resources and may take away from the more important information provided in the system. New Brunswick has to identify opportunities to provide useful TI over its extensive and diverse transportation system at a cost that its 750,000 residents can afford. New Brunswick is not only looking at the net benefits to the transportation users but recognizes that improving TI can be an effective means to making the operation of the transportation system more efficient.

Tourism development is a common goal in most jurisdictions. New Brunswick is looking to TI to play an important role in growing its tourism industry. New Brunswick is often referred to as the drive through province in that many tourists pass through on their way to their ultimate destination in Prince Edward Island, Nova Scotia or Newfoundland. New Brunswick tourism officials are looking to a TIS to provide information to tourists on attractions and festivals, lodging, scenic routes, etc. These types of information could help in attracting some of the pass-by tourists to make a stop in New Brunswick. Tourism officials refer to this as its intercept program. Also providing information regarding construction activity and road or ferry closures ensures minimum impact and frustration on the traveller, which help them remember New Brunswick as being a positive travel experience and may entice them to return.

New Brunswick is the most export oriented economy in Canada in terms of its relationship between the value of its exports and the size of the economy (GDP). Maintaining a competitive edge for exports is key to the prosperity of these industries. Efficient transportation between major economic centres and our export markets is critical to maintain a competitive advantage for industries such as forestry, manufacturing, food processing and fishing. Traveller information can assist NB export industries in selecting the most efficient modes of transportation and routes to better move these products. The impact of delays at U.S. border crossings in New Brunswick, especially at the Calais-St. Stephen border could be minimized with TIS conveying wait times to drivers in advance. The logistics of intermodal shipment of goods in New Brunswick could be easily facilitated with information of all modes available in one TIS.

Maintaining efficient transportation systems through the use of TIS makes New Brunswick an attractive trading partner, creating increased economic ties with other jurisdictions, especially those of Eastern Canada and the New England States (Atlantica). Strong economic ties in one respect (import/export) can lead to new partnerships with these jurisdictions in other realms. Tourism partnerships, for example, are assisting in the marketing of New Brunswick as a destination, which can be enhanced through TIS.

New Brunswick possesses a mix of both rural and urban residents. The mobility of urban residents is not a major concern. Commercial taxis, public transit, private vehicle use and the

close proximity of amenities provide many options for urban residents to go about their daily tasks and access critical services. Public transit use in urban New Brunswick is not used to the extent it is in larger urban areas. The lack of traffic congestion makes alternative modes relatively attractive. However, the need to meet our Kyoto targets, coupled with rising fuel prices may soon lead to a shift in attitude toward public transportation. When this time comes there may be a need to improve the levels of service of public transit using TI. While it is not likely that public transit programs in New Brunswick will be leaders in terms of state of the art TIS, consumer demand will lead to improvements of service using TI.

A lack of options for rural residents and the vast geographical area over which they are dispersed poses more of a challenge. Residents requiring goods and services from the major economic centres are faced with long drives, sometimes in poor weather. Older drivers could be faced with an even greater challenge if they are either unable or unwilling to drive a personal vehicle. Often times rural residents require the use of one of New Brunswick's river ferries to make their commute. Conveying information on road and ferry closures, as well as poor weather, becomes of great importance to rural residents in order for them to make their commute safely and efficiently.

New Brunswick, being largely rural, has the significant challenge of delivering centralized services such as healthcare and education to a widely dispersed population. The transportation costs of education and healthcare are not widely considered by most. But the point is that a cancer patient in Campbellton incurs a great travel expense for treatments received in Saint John. Ensuring the efficiency and reliability of this travel becomes of great value in minimizing costs for these trips.

Many school children must travel anywhere in upwards of two hours daily on a school bus to attend classes. Although the School board already uses some form of TI to decide on school cancellations due to poor driving conditions, this could be enhanced for dynamic route selection and tracking as well so that travel to school is less daunting on young children.

### **What types of TI would best benefit New Brunswick?**

New Brunswick, to achieve its objectives of providing valuable, affordable and cost effective TI, will need to carefully plan and develop its TIS and focus on its critical issues, challenges and needs. The following are the content items that will need to form the core of the NB TIS:

- **Winter road and driving conditions:** Winter road and driving conditions comprise the elements of the existing NB TI program. They will remain the primary focus of the system and can be improved in terms of quality, coverage and dissemination through the use of existing information technology and communications systems. There are also opportunities for improved efficiency in terms of the collection and dissemination of the information as well as greater integration of traveller information into highway operations and winter maintenance.

In addition, improved winter road condition information can benefit the transportation agencies through data sharing and record keeping practices. Problem areas can be

identified, such as those areas requiring more frequent salt, sanding or plowing. The level of service of snow removal or treatment can also be improved by tracking the conditions on the highway supervisor's designated areas. A system that is updated automatically with the input information reduces the manual efforts currently used to provide conditions information.

- **Road and ferry closures and restrictions:** Lane, road or bridge closures occur due to flooding, construction or maintenance, oversize movements by truck, accidents and special events, to name a few. Conveying this information to the travelling public can better equip them to make decisions regarding their travel, making it safer, more efficient, or both. TIS could also provide information on a ferry service being off-schedule and the anticipated crossing times. TIS would also alert travellers of the re-openings or return to regular service, as well as possible alternate routes. Closure information becomes of particular importance during the summer months when construction and maintenance activity, as well as highway traffic, are at peak levels. The high volume of tourists during this time creates an even greater need to provide the expected duration of the delay as well as alternate routes of which visitors would not be familiar.

The road agency can also benefit from an improved system of road and bridge closures. Performance monitoring and effective planning can make use of the data stored by TIS. Effective budgeting of construction and maintenance activities can result from the use of TIS in NB. Also in New Brunswick there is the unique situation of two sections of the Trans-Canada being operated by private sector consortiums (Brunway and MRDC). Since NBDOT itself is not responsible for the maintenance of these sections, it becomes important to have an easily accessible database of the conditions of these sections and the work being done under NBDOT confidence. TIS are an easy way for NBDOT to monitor these sections. Calls from the public to NBDOT regarding closures and delays can be reduced by providing all relevant information on a website or central phone system.

- **Construction activity:** Construction activity does not always result in road or lane closures. Therefore, this content could be offered in its own category. It becomes important to convey construction activity to motorists, even if it doesn't result in closures so that they can anticipate slowing of traffic and a driving environment of which they are unfamiliar. This is of especially great importance to older drivers in New Brunswick who may become confused by the different markers on the road. Having this knowledge in advance of travel can eliminate some of the surprise of the situation.
- **Weather:** Current and forecasted conditions of both origin and destination of travel are important pieces of information for travellers. Adverse weather conditions can sway a decision to travel at a certain time. Snow and rain are usually crucial elements in the decision to make a trip. Route specific weather information can help travellers select the best route and travel schedule.
- **Traveller services:** Bus, air, rail and marine ferry are all important to the travelling public in New Brunswick. Information on the services provided, schedule, price, availability and booking system for each of these modes are provided through various

internet and telephone systems. A central system (one-stop shop) would prove beneficial for the selection of the most efficient travel of the public in New Brunswick. Visitors may be unfamiliar with some of the transportation services available in NB to effectively meet their transportation needs.

- **Tourism attractions and activities:** Traveller information is particularly important to visitors who are generally less familiar with the transportation infrastructure and services. TIS can provide useful information to visitors to ensure their travel in New Brunswick is positive and hopefully entice them to return. The widespread development of TIS in North America and the rapid rate of advancement will lead to the growing expectation that TI is also a source for tourism information. TI in New Brunswick can be a way of attracting some of the pass-by traffic destined to other jurisdictions, through marketing of scenic routes, special events, attractions and activities.
- **Commercial vehicle operations (CVO) information:** Commercial vehicle operations require a great amount of information for efficient traverse of a highway network. Size and weight restrictions, permit fees, changes to exit and route numbers and important contact information are just a few of the pertinent information truckers would require. The complex and technical nature of CVO related information limits what can be effectively provided through a TI phone system. The internet, however, can provide a quick and easy portal to obtain all necessary information to improve the efficiencies of this competitive industry.

## **Developing and Operating a TIS in NB: Challenges and Opportunities**

The TI needs and opportunities specific to New Brunswick were outlined in this document. New Brunswick transportation requirements and traffic volume do not justify some types of TI such as urban traffic congestion conditions. However, New Brunswick does have high priority TI needs in other areas that should form the focus of TIS development. It is therefore necessary to develop priorities, implementing a system that provides the most valuable and useful information first. Success of the high value system could only encourage the further development of the system to include more content and components.

Improving the timeliness and quality of existing traveller information provided is a manageable first step for an agency new to the implementation of TIS. Once improvements are made to the quality and value of existing TI, enhancements can be implemented in terms of new content based on the public needs.

An initial system may not warrant the common interactive voice response (IVR) methods of telephone interface used by many other TIS. Preliminary evaluation may show the current method of a call centre can be cost effective in the first year or so of operation. This, however, would require further consideration of the cost implications of adding IVR to the system subsequent to initial development. Before development of a TIS in New Brunswick, evaluations in terms of safety benefits, time savings and vehicle operations should be included in the process. Content which does not address these may not be of great worth to the NBTIS.

Traveller Information Systems are advancing at an extremely rapid rate, with jurisdictions all over North America implementing TIS. The benefits resulting from improved TI, while they are logical, have been difficult to quantify. The development of subsequent systems, including that in New Brunswick, should consider how best to monitor and evaluate them both quantitatively and qualitatively. Time, safety and vehicle operations and costs require tangible results to show the full benefits of TIS. Obtaining initial conditions prior to implementation of TIS should be considered as part of the development process.

There are numerous information and communications technologies available to support TIS, with refinement and development happening continuously. An agency in the process of implementing a TIS should research as many of the options as possible. The institution of a new technology is a large investment, one in which the agency should be certain will be able to grow with the evolving information needs and opportunities.

### **Institutional Challenges and Issues**

There are a number of institutional challenges and issues associated with the development and operation of TIS, for which discussions follow:

**Leadership:** There are many stakeholders involved with the provision of TIS. Many organizations could benefit from the public's ability to access information regarding travel in New Brunswick. In the implementation of TIS, however, there is usually only one responsible for taking the leadership role in the project. This most often and logically falls on the provincial or state transportation department. In order for NBTIS to successfully get off the ground, it is necessary for NBDOT to take the reins and see the project through to completion.

**Interoperability:** With the multitude of TIS in North America already, users have developed expectations of what the systems should entail. A user from Michigan, for example, would expect the same properties of a New Brunswick TI system as they are used to with that of their home state. More and more TI systems are being developed in Canadian jurisdictions. It is likely that, over time, the various systems would be able to interface with each other so that travellers would not have to contact each different jurisdiction for information on their inter-jurisdictional trip. This would require the development of various guidelines related to data, software and other components. As of now each Canadian jurisdiction is taking its own approach and timetable to develop TI systems. While it is unlikely that New Brunswick would be able to develop a TIS that would "fit" seamlessly with neighbouring jurisdictions, it is expected that as more jurisdictions develop these comprehensive systems, interoperability will become a higher priority and standards will emerge.

**Partnerships:** Traveller information encompasses a wide range of information and interests. It is also part of the much larger information technology field. Thus, there becomes an objective to define agreements that may be used between TI implementers and public and private sectors. The profile of traveller information as a source for weather, road conditions, transportation services, and visitor services and attractions means partnerships will evolve between NBDOT and these other stakeholders. New Brunswick Tourism and Parks and other provincial

organizations will be interested parties, leading to partnership opportunities which should be explored.

The telephone service providers, of course, play a major role in traveller information, often providing both telephone and internet services. This makes telephone companies key partners in the development of and implementation of TIS, identifying improvement opportunities and integrating the TIS with other similar systems. Partnerships should be the preferred approach for the long term development of a NBTIS as opposed to the telephone companies treating NBTIS as a customer.

**Data Sharing:** The NBTIS would be using information from a number of different sources. It would be necessary to develop agreements with the information sources on how the information would be acquired and used. The same types of agreements would be required when providing the traveller information to other organizations such as the media and other information systems, including other TIS implementers.

**Liability:** Traveller information is intended to assist travellers to make more informed decisions on how to safely and efficiently use the transportation system. To this end, the NBTIS would need to ensure that appropriate care is taken to collect, capture and report accurate and timely TI. However, TI is not intended to relieve transportation users of their responsibilities to operate their vehicles in a safe manner, given the road and other driving conditions. TI is seen as an extension of the services currently provided by the NBDOT and thus entails some liability in terms of taking reasonable care to provide accurate TI to users. It would be important to convey to the users the limitation of the information and the need to apply sound judgment as a vehicle operator. Winter driving conditions, for example, help drivers make their travel plans in terms of departure time, route, estimated travel time etc. It is not telling them the safe vehicle operating speed for a specific section of road. That must be done by the drivers based on the ongoing observations of road and driving conditions as well as the capabilities of the vehicles and operators.

Legal advice would be required to determine what liability statements and other liability provisions should accompany a NBTIS. For example, many TIS advise drivers to only contact the phone system when it is safe to use their mobile telephones. Providing information on the currency (date stamp) of the traveller information is also standard.

**Privacy:** NBTIS users, both telephone and internet users, would expect that their identity and other personal information would not be maintained in a database or used in any manner without their expressed permission. Some data would be collected concerning the number of users, location of the users, and the types of information accessed. However, policies and procedures would need to be established to ensure that the identity/telephone numbers of the users are not maintained or provided to any other organization. This would be consistent with existing policies of the Federal and Provincial Government. It should be the duty of the implementing agency to protect any databases of information. If users' privacy is invaded or even if privacy is perceived to be invaded, there would be a loss of confidence in the system and a breach of Government privacy policy and legislation.

In summary, the NBTIS should adhere to national privacy regulations set out in the two federal privacy laws: Personal Information Protection and Electronic Documents Act and the Privacy Act, as well as any applicable provincial privacy regulations in the New Brunswick Protection of Personal Information Act

## **The Future**

The future of TIS in New Brunswick holds many exciting advancements. Implementing agencies are constantly modifying their service and adding new special features. The technology available for traveller information is continuously evolving with major breakthroughs of yesterday becoming nearly obsolete. While this could be cause for concern of outdated equipment and technology, it is also encouraging to know the field of traveller information is only moving forward.

OnStar and other on-board navigation and information systems will be able to interface with the TI of participating jurisdictions. Some information that is now only available pre-trip on the internet will be accessible en-route in the vehicles. This becomes of particular importance to the commercial trucking industry where improved efficiencies are the backbone of competitiveness.

Customizing information for each user could be made possible in New Brunswick in the future. Customers could select which information is important to them and how they would like the information presented (by route, geographical area, etc). This would most likely be an internet option, much like receiving weather information to your desktop.

Upon initial implementation in New Brunswick, the TIS could evolve to include dissemination methods other than the basic methods of internet and telephone if value can be found in doing so. TI Systems in other jurisdictions include other information dissemination media such as Low power FM or satellite radio, Dynamic message signs and Email, voice mail, or PDA. These methods are commonly associated with traffic congestion or traffic incident reporting in larger urban areas but could be used for any type of traveller information. These methods are not complicated to add once the initial system is up and running. Therefore these media for traveller information in New Brunswick could be closer than some would expect.

Vehicle location identification could be used to provide en-route TI that is location or route specific. This may be possible through vehicles equipped with GPS or during a cell call to the TIS, from which the location information could be obtained from the nearest cell tower.

There is great potential for tourism development and marketing using Traveller Information Systems. Partnerships with the implementing agency would enable the widespread distribution of targeted tourist information to travellers. Coupled with vehicle location technology, or even linked to a user's query, traveller information can be targeted to those attractions and points of interest in a specific area. For example, a caller in the Saint John area could receive a message to the effect of "while in the Saint John area, be sure to check out the Reversing Falls. For more information..."

Value-added user pay services could be considered once a basic TIS is established in New Brunswick. These services could include providing detailed directions, reservation services, or extensive trip planning counselling.

### **Summary and Conclusion:**

1. New Brunswick and other primarily rural jurisdiction face much different transportation challenges than those of large urban areas. While traffic congestion and public transportation are relatively small issues for New Brunswick, it does face significant challenges in providing safe and efficient transportation.
2. New Brunswick, like most other jurisdictions, recognizes that traveller information is part of the solution to achieving its transportation goals and objectives. The differences are in terms of the types of information that best meets New Brunswick's needs and priorities as well as the challenges faced by the geography and traffic characteristics.
3. Recent developments in information management and communications technology have created exciting opportunities to improve the quality, scope and availability of traveller information.
4. Traveller information is now seen as an important tool for all transportation users, including commercial vehicle operators, tourists, emergency services, and the delivery of public services such as health and education.
5. Transportation system providers recognize that traveller information is a critical input to safe and efficient operations of highways, transportation services and other facilities.
6. There remain numerous technical, operational, administrative and legal challenges to developing and operating traveller information systems. However, none should be seen as impediments to proceeding to take advantage of the opportunities.
7. The future opportunities to improve traveller information are particularly exciting and will be driven by the users as they begin to understand the opportunities and benefits.