

CHAPTER 6

MANAGING TRANSPORTATION INFRASTRUCTURE: THE INSTITUTIONS

INTRODUCTION

In Chapter 4, we applied our principles to transportation infrastructure such as terminals, links and traffic control. We observed that:

- since carriers and other users will be asked to pay the full cost of transportation infrastructure, it is particularly important that what is provided is only what is needed;
- where there is an adequate degree of competition among various facilities in a regional market, the forces of competition should be allowed to determine levels of investment and charges, provided that such charges include the costs of accidents and environmental damage; and
- where competitive forces are not sufficient and/or users are in a weak bargaining position, regulation of prices and investment will be necessary.

Under our principles, we noted that governments would act primarily as referees in the passenger transportation system. Their role would be to:

- set and enforce standards;
- maintain competition, including assuring access to monopoly facilities by competing carriers;
- regulate prices charged by monopolies; and
- provide for research, accountability and transparency.

Where a government continues to own or operate transportation infrastructure, its refereeing responsibilities should be at arm's length from its ownership and operating responsibilities. Appointing a referee should be done in a way that enhances the referee's independence and ensures the arm's length relationship.

In Chapter 5, we developed pricing and investment approaches for infrastructure that would best achieve our objectives of fairness and efficiency. We recommended that when governments or industries consider investing in such infrastructure, they use benefit-cost analysis where, if possible, prices and revenues provide the basic measure of benefits.

In this chapter, we turn to the question of who should make investment decisions, set prices, and manage, build and maintain transportation infrastructure. We consider which features of institutions would, in general, help achieve the principles we set out in Chapter 4. We then consider a number of major institutional issues concerning specific types of infrastructure, including:

- the ownership and management of airports;
- the ownership and management of the air navigation system;
- the type of government institution that could be responsible for roads, and a possible national highway system; and
- the ownership and management of rail track.

ALTERNATIVE INSTITUTIONAL ARRANGEMENTS

Where transportation infrastructure is provided on a monopoly or near-monopoly basis, government intervention in pricing and investment may be required. Monopoly owners can charge higher prices than those required to recover an efficient level of costs, including normal profits. These higher prices can, in turn, lead to smaller facilities, or less use of facilities, and less use of the mode of travel, than

in non-monopolistic situations. Our concerns over monopoly profits apply to both privately owned and government-owned infrastructure. In the latter case, the infrastructure manager may have monopoly power over prices and little incentive for profit. This reduces the pressure to keep costs under control.

Where monopoly power is a concern, the challenge is to establish mechanisms that limit the exercise of this power without reducing the pressure for public and private firms to provide their services efficiently. There are many types of institutions that can regulate or intervene in monopoly or near-monopoly situations. In some cases, government institutions monitor private companies; in others, independent institutions monitor public companies.

PRIVATE-SECTOR PROVIDERS OF TRANSPORTATION INFRASTRUCTURE

Examples in Canada and Other Countries

The private sector provides transportation infrastructure largely to meet carriers' needs. Railways tend to own their track, bus companies generally own their terminals, and ferries frequently provide their own docks and wharves. While few carriers own air and road infrastructure, in the United States major air carriers have entered into residual financing arrangements with airport authorities. Under such arrangements, an airline assumes the airport's financial risk in return for long-term agreements that provide it with considerable control over investment and operations at the airport.

Governments in several countries have been attracted by the prospect of private-sector ownership of transportation infrastructure as commercial ventures. France, Italy and Spain have set up extensive systems of tolled highways under private or mixed ownership. The United Kingdom and some U.S. states, notably California, have invited private firms to participate in developing and operating a number of tolled roads, bridges and tunnels. In 1987, the governments of the United Kingdom and France awarded a monopoly franchise

to a private company, Eurotunnel, to build and operate a 50-kilometre rail tunnel between Dover and Calais. There are also examples of private-sector involvement in airports.

The fixed crossing under consideration between Cape Tormentine, New Brunswick, and Borden, Prince Edward Island, is a potentially important Canadian experiment in private-sector involvement in a transportation link. The federal Department of Public Works has received bids from private-sector consortia that are prepared to build the crossing, operate it for 35 years and then transfer it to the Department. The project, estimated to cost up to \$1 billion, is to be privately financed. Private investors will derive revenue from toll charges to be indexed to the provincial Consumer Price Index and from a 35-year federal subsidy. This subsidy is not to exceed the estimated cost to the federal government had it continued to operate the Cape Tormentine to Borden ferry service at the current subsidy level plus inflation.

Are private firms more efficient than governments in providing transportation infrastructure? In the case of European toll roads, where governments have had extensive experience with private-sector involvement, the evidence is mixed. Private firms appear to have performed well in managing road construction, but governments have had difficulty establishing long-term arrangements that offer sufficient incentive to private companies to maintain such roads and operate them efficiently.¹

We also note that efficiency is not necessarily the main reason that governments turn to the private sector to provide this infrastructure. Governments are attracted by the opportunity to avoid borrowing, rather than by the possible gains in efficiency that result from transferring investment decisions and risk-taking to private operators.

Problems with Private-Sector Providers

We believe that private ownership of transportation infrastructure can be compatible with our principles with respect to pricing and equal treatment of the modes. Transportation infrastructure, however,



often requires large amounts of highly specialized investment. The result is that, in some cases, owners may gain considerable monopoly power. Government regulation will often be necessary to control the power of private firms, or autonomous public firms, and to ensure that carriers have equal access to infrastructure.

Problems of equal access arise particularly when a carrier, or a number of carriers, own or control infrastructure and can prevent entry by potential competitors. At some U.S. airports, a single carrier may have substantial influence under the residual financing arrangements. There, major carriers with long-term exclusive leases and the sole right to use scarce airport gates may block expansion of the airport and thus impede the entry of new carriers and competition.²

Problems of access are not exclusive to transportation, but arise in other industries such as electric utilities, natural gas and telecommunications. Governments have recognized the need to ensure access to essential infrastructure in all sectors of the economy. While there is no universally accepted definition of essential, one review of U.S. regulatory decisions³ found that regulators tended to apply four criteria when defining essential facilities:

- The facility is controlled by a monopolist or a group of competitors with monopoly power.
- Duplicating the facility is not commercially viable.
- Denying access to the facility, or imposing restrictive terms of access, has a substantial adverse effect on competition.
- There is no valid business reason for denying access.

Based on these criteria, if a potential entrant to the market could provide its own parallel infrastructure at the same or lower cost, access would not be a problem and the infrastructure would not be considered essential. For most transportation infrastructure, however, these criteria apply and access is an issue. In the case of intercity bus terminals, new entrants denied reasonable access to an existing

bus terminal can often make their own arrangements for passenger pick-up and delivery. In some locations, however, bus terminals may be essential infrastructure. The advantages of the location of the central bus terminal in a major city may be such that carriers denied access would be at a considerable competitive disadvantage.

Governments can attempt to regulate fair and equitable access, but may not be able to enforce it effectively. Transportation infrastructure owners who have an interest in preventing competition may be able to hamper new entrants with subtle impediments. The question then arises: is carrier ownership undesirable where transportation infrastructure is essential? Governments must weigh the risks of anti-competitive conduct against the gains that may result from allowing a single organization to provide both carrier and infrastructure services. Such gains could exist where there are efficiencies in making carrier and infrastructure investment decisions together, or in jointly managing infrastructure and carrier operations. This issue is particularly relevant to the current institutional arrangements for passenger rail services, which we discuss later in this chapter.

PUBLIC-SECTOR PROVIDERS OF TRANSPORTATION INFRASTRUCTURE: THE OPTIONS

A Government Department

In Canada, most public transportation infrastructure, including roads, air traffic control and most airports, is the direct responsibility of government departments. This has advantages in some circumstances. It allows a high degree of political direction, which may be desirable when government objectives vary and cannot be clearly articulated in advance. When close political direction is necessary, however, it is important to find ways to increase transparency and improve accountability in order to sustain our basic principles for pricing and investment decisions.

A government department is at a disadvantage when it operates infrastructure such as roads and airports. Hierarchical and bureaucratic decision making can be costly and slow, particularly when departments

need to respond rapidly to changing economic circumstances (for example, in carrying out functions with large operational or commercial components). In addition, the nature of centralized budgeting means that when more spending is part of the appropriate response to circumstances, departments will not be able to provide the funds because of other political priorities, even if the users are willing to pay.

Some of the problems of government departments can be addressed by contracting out certain activities to private firms. At present, most provincial and territorial government departments contract for road construction, and many contract for road maintenance. The federal government contracts with private firms to operate some of its smaller airports.

A government department is likely to be the best choice as a provider of transportation infrastructure where the benefits of satisfying a need for close policy direction outweigh the costs of a less-efficient operating environment. A government department may also be preferred if financing the infrastructure requires taxation, which governments closely control.

A Crown Corporation

Crown corporations have greater autonomy than government departments. They generally have boards of directors that help ensure that decision making occurs at arm's length from governments. Governments, however, may provide general direction through legislation that establishes the Crown corporation and may retain the power to give it directives on key issues.

Using Crown corporations can facilitate implementing and enforcing our principles, can promote financial transparency and can provide greater efficiency than is likely with a government department. Efficiency may increase because of the advantages of decentralized decision making and the corporation's freedom from standardized departmental rules and bureaucratic procedures. The corporation may also put an increased emphasis on commercial objectives and internal incentives to promote improved commercial performance.

The advantages of a Crown corporation, however, may not be realized if governments fail to establish an adequate regime of accountability and control. Governments must include mechanisms for monitoring the corporation's performance to ensure that its board and management are fulfilling their responsibilities and not abusing market power. At the same time, we stress that monitoring and control must be oriented toward achieving general objectives and must not become a means by which governments micro manage Crown corporations. Where effective control can be exercised, a Crown corporation may be a better institutional choice for managing some transportation infrastructure. We caution against the politicization of Crown corporations by governments, which would detract from the usefulness of a Crown corporation for managing transportation infrastructure.

An Independent Authority

An independent authority has greater autonomy than a Crown corporation. It generally has a board of directors composed of interested parties such as users, local or regional governments, professional associations, environmental group representatives and related interest groups. The board is not subject to government directives and has full authority for pricing and investment decisions, possibly subject to a regulatory review. One type of independent authority is the Local Airport Authority established to operate some federally owned airports. Similar independent authorities could be established to operate link and control components.

User-groups represented on the board of directors can directly influence levels and quality of service. Their influence also reduces the risk that fees will be set at monopolistic levels. We note, however, that an independent authority may make decisions contrary to the wishes of groups under-represented or not represented on its board. Such groups may include carriers who desire access to a particular facility. Since government does not monitor an independent authority's performance as it does a Crown corporation's, we believe it is extremely important that the independent authority's board

membership adequately represent all interested parties. This would ensure that sufficient pressure could be generated within the organization for efficient performance.

An independent authority is a good choice for providing transportation infrastructure where there would be considerable gain from limiting government influence, and where interested parties could be adequately represented on the board. These factors were influential in the creation of Local Airport Authorities, which we discuss later in this chapter.

Choosing the Appropriate Public-Sector Institution

There is no ideal institutional structure that should be used for all types of transportation infrastructure. The appropriateness of the organization will differ depending on the mode of transportation and the type of infrastructure. The choice also depends on the nature of government objectives and the inefficiencies that may result when government is involved in activities that require frequent decisions on operational issues.

In addition, the adequacy of an institution depends not just on its type — government department, Crown corporation or independent authority — but also on the mechanisms available to promote transparency and to increase the accountability of those making decisions. We believe, however, that there are advantages in moving away from governments' current reliance on their own departments for providing transportation infrastructure. Later in this chapter, we examine the type of institution that best matches certain modes and types of infrastructure.

PUBLIC-SECTOR PROVIDERS OF TRANSPORTATION INFRASTRUCTURE: RELATED ISSUES

Earmarking Revenues, Borrowing, and Controlling Charges

In Chapters 4 and 5, we stated that charges for the use of infrastructure should cover the full, efficient costs of operating the infrastructure.

This in turn suggests that the revenues raised from such charges be earmarked to cover the costs of such infrastructure. Costs should include payment to governments for a return on their investment in infrastructure. As well, owners of infrastructure might need to borrow in order to finance new construction (particularly in the case of an expanding operation). The interest and principal costs of borrowing should be paid for from revenues from charges to travellers.

Earmarking revenues and undertaking project-related borrowing are natural activities of Crown corporations and independent authorities. Although such activities are not as characteristic of government departments, departmental operations in the past have made some use of earmarked funds. These include revolving funds, a limited number of earmarked taxes such as the Air Transportation Tax, and social insurance charges such as the Unemployment Insurance premium.

Many Canadians will view charges to travellers as similar to taxes, particularly when such charges are not closely related to the benefits received and where the monopoly is powerful — as in the case of providing roads. In cases such as this, government may wish to maintain direct control over pricing. If government does not maintain direct control, then an independent regulatory body would be required to review charges proposed by the road owner.

Advisory Arrangements

Advisory bodies may be useful supplements to any type of institution, but may be especially appropriate where a government department provides transportation infrastructure. Advisory bodies offer an independent source of counsel on pricing and investment decisions, and/or provide the public with independent information on the management of the infrastructure. Advisory groups have no power to make decisions and are not sufficient if the main goal is to separate decision making from the political process. An advisory body, however, may be a realistic first step toward institutional change when issues involve policies over which governments have closely guarded their authority.

An independent source of advice can also be beneficial for public agencies or independent authorities. It can provide some balance to the natural tendency on the part of management to empire-build — to increase their scope of activities wherever possible. In addition, advisory bodies that report publicly can make an important contribution to improving the transparency of financial arrangements and decision making.

AIRPORTS

In Canada, the federal government currently owns the major national and regional airports as well as a number of the airports used by commercial air services in small communities and remote regions. Some of the major airports are now being transferred to Local Airport Authorities.

Federally owned airports operate under various types of management. Some, including the larger airports, are being managed directly by the federal Department of Transport or by Local Airport Authorities. Some are operated by private firms under contract. Others are leased out to regions or municipalities, with or without federal subsidies. Terminal 3 at Lester B. Pearson International Airport in Toronto is unique. It was developed and financed, and is being operated, by a private firm under a long-term lease agreement with the federal government.

As well, there are municipally owned airports such as Edmonton Municipal (one of the ten busiest airports in Canada) and privately owned airports such as Buttonville in Toronto.

Many other countries do not use government departments to operate major airports. Institutional arrangements vary:

- In the United States, major airports are run by municipal or county governments, or by airport or port authorities.⁴

- In the United Kingdom, seven major airports — Heathrow, Gatwick, Stansted, Prestwick, Glasgow, Edinburgh and Aberdeen — are now owned and operated by a private sector company (BAA plc). Smaller U.K. airports are owned by local city councils, private firms or, as in Liverpool, by both.
- In Germany, the 11 main airports are operated by independent companies, with the federal government as a minority shareholder in each airport corporation.
- Australia has a centralized institutional structure, but since 1986 the major airports have been managed by the Federal Airports Corporation, a Crown corporation with a commercial mandate.

LOCAL AIRPORT AUTHORITIES (LAAs)

In Canada, the federal government is reducing its role in airport operations by transferring the operation of several major airports to Local Airport Authorities. Its objectives in so doing are "to make airports serve local community interests better and to allow our national airport system to operate in a more cost-efficient and commercial manner."⁵ Currently, federally owned airports in Vancouver, Calgary, Edmonton and Montreal have been or are being transferred to LAAs, and several other large federal airports are expected to be considered for transfer.

The Role of LAAs

LAAs are independent bodies that can enter into contracts, issue debentures, sue and be sued. Unlike private corporations, LAAs do not have shareholders. The Board of Directors runs the LAA and has responsibility for establishing objectives and policies, approving plans and budgets, and overseeing the performance of management. The enabling legislation or articles of incorporation for an LAA specify which governments and organizations may appoint board members. The nomination of elected government officials or government employees is prohibited.

The federal government has a continuing responsibility for air navigation and safety at LAA airports, and remains a landlord, leasing airports to the LAA on a long-term basis. The LAA operates the airport and assumes full responsibility for any financial liabilities it incurs. LAAs are expected to achieve financial viability by setting their own rates and developing the commercial potential of the airport. LAAs have 60-year leases with a rental formula that allows the federal government to share in any growth in gross revenue above a base-case forecast. Under this formula, the federal government should be no worse off financially, and potentially better off, than it would have been had it continued to operate the airport.

Potential Monopoly Power of LAAs and Other Major Airports

Federal policy concerning LAAs does not include any explicit provision to control monopoly power. We believe that it is important to look at the potential for non-competitive pricing of landing rights by local authorities.

The potential for non-competitive pricing is enhanced by the fact that landing fees generally constitute a small portion of flight costs; this tends to cause carrier demand for landing rights to be relatively unresponsive to increases in landing fees. The market power of the LAAs also depends on the opportunity for carriers and other users to switch to another airport. For example, if Airport B is a close substitute for Airport A, any attempt by A to unilaterally raise its landing fees would have a detrimental effect on its traffic. In practice, however, the ability of airlines in Canada to use alternative airports is limited. For non-connecting traffic, which constitutes around 70 percent of the traffic at most Canadian airports, airlines have an alternative only when a second relatively uncongested airport is in close proximity. Few Canadian centres have two or more airports that are in a position to compete with each other for such traffic. The result is that, in general, airlines have few opportunities to switch airports if LAAs abuse their market power by setting excessively high landing fees.

The possibility that carrier access could be restricted at airports under LAA control also warrants examination. Transport Canada officials argue that the interest of the local community is in promoting access by as many carriers flying to as many locations as possible. An LAA might, however, find that, in principle, it could maximize its own revenue by awarding a long-term exclusive lease to a single carrier who would be willing to pay a price for the exclusive lease, which would allow it to earn monopoly profits. This arrangement would limit local residents' choice of airlines. Under these circumstances, the onus would be on the Director of Investigation and Research in the federal Department of Consumer and Corporate Affairs to enforce the prohibitions in Canada's *Competition Act* against exclusive contracts and discrimination in supply.

We believe that the nature of LAA boards and the *Competition Act* provide considerable protection against monopoly pricing and, in particular, limitation of access to competing carriers. At this stage, we do not recommend establishing a referee with review powers over LAA pricing. LAA pricing, however, should be monitored by the National Transportation Agency on behalf of the federal government.

THE IMPACT OF FEDERAL POLICIES ON COSTS

Federal control may increase operating costs at Canadian airports because of:

- delays in making new investments where expansion is justified;
- administrative overhead;
- operating standards that are inappropriate for and that substantially increase costs at smaller federal airports; and
- inflexibilities associated with federal labour practices.

The problem of inappropriate common standards is illustrated by the government policy of having separate Emergency Response Services (ERS) available on-site at even the smallest federally operated airport with scheduled commercial flights. For example, at Yarmouth, Nova Scotia (a federally operated airport), approximately one fifth of operating expenditures are associated with maintaining on-site ERS. By comparison, Oshawa, Ontario (a non-federally operated airport with similar traffic levels) relies on the local fire department and incurs no ERS expenses. Oshawa's total operating expenses are about one-quarter Yarmouth's. The higher ERS costs at Yarmouth are not due to poorer performance by airport staff, but to costs associated with federal airport policy.⁶

The impact of federal work rules was illustrated in a 1985 report by the Auditor General of Canada that compared airport maintenance at three U.S. airports with that of three similar Canadian, federally operated airports. The report found that labour requirements at the U.S. airports were 40 percent lower. While employees at U.S. airports performed a variety of functions, Canadian workers were hired for specific maintenance functions. The result was lower labour productivity and higher operating costs.⁷

GUIDELINES FOR AIRPORT REFORM

Investment in federal airports has been influenced by the federal government's financial position. We believe it is important for the airports to be self-financing in all aspects, including air traffic control.

Local control of federal airports will alleviate some of the problems of the current system. Decentralized decision making will allow airport management to pay greater attention to the preferences of residents of the region served by the airport, who are also the primary users of the airport and bear the consequences and reap the benefits of new airport development. Decentralized decision making

should also contribute to greater transparency. Users can see more clearly what they are paying for in a system where there is a direct connection between charges to travellers and capital spending.

Therefore, we **recommend** that:

6.1 The federal government proceed quickly with the transfer of all remaining federal airports to local airport authorities and/or to other types of local operators.

AIR NAVIGATION

Canada's air navigation system has been under increasing pressure from the growth in air traffic following deregulation of the airline industry and increased activity at certain hub airports. In our hearings, speakers expressed concern that air traffic operations are underfunded and, therefore, cannot adequately respond to market demands. In July 1991, the Air Transport Association of Canada, the Canadian Airline Pilots Association, the Canadian Air Traffic Controllers Association and the Canadian Business Aircraft Association observed, in a letter to the federal Minister and Deputy Minister of Transport, that "the present Air Traffic Control System is not serving the interests of the travelling public, pilots nor the aviation industry and is creating a progressively higher level of frustration in employees working the system who wish to perform a professional service."

The federal government has responded. In particular, Transport Canada is looking at ways to increase the number of licensed air traffic controllers, and has developed a comprehensive plan to meet requirements for controllers by July 1994.

We believe, however, that these issues reflect fundamental deficiencies in Canada's current organizational arrangements for air navigation. Stress on the system would be reduced in an environment where

managers had greater operational freedom and access to revenue that allowed them to respond to changing requirements. The 1991 final report of the Ministerial Task Force on Aviation Matters expressed the issue thus: "The public service environment with its restraints, slow and complicated processes, uncertainty of funding within the government's competing demands and lengthy decision-making processes seemingly inherent in a civil service does not correspond to the dynamic environment in which aviation operates. All of these factors combine to limit the flexibility of the department and reduce its ability to respond quickly and effectively to the ever-growing demands of the aviation community."⁸

In the United States, the Federal Aviation Administration (FAA) has somewhat greater operational freedom than its Canadian counterpart, although it is still part of the U.S. Department of Transportation. A number of other countries — Australia, New Zealand, the United Kingdom and Germany — are establishing their air navigation systems with independent status. The Ministerial Task Force on Aviation Matters also favours this general approach.

We therefore **recommend** that:

6.2 The federal government convert the air navigation system from a departmental organization to either a Crown corporation or an independent institution.

An independent institution, separate from government, is consistent with, and complementary to, our proposal in Chapter 5 that airline companies pay the full costs of air navigation. Such an organization might be a publicly owned independent authority or a private corporation owned jointly by airline companies. A user-funded institution free from the restrictions that apply to government departments would be in a better position to meet the requirements of the airline industry.

THE ROLE OF THE FEDERAL GOVERNMENT

Under our proposal, Transport Canada would continue to ensure that the air navigation system meets appropriate safety standards. The federal government must also be in a position to ensure that international obligations to provide access to foreign carriers, and to comply with international technical standards, are met.

In addition, if air navigation is assigned to a Crown corporation, the federal government would be responsible for monitoring activities and reviewing performance, as it does with all federal corporations subject to the *Financial Administration Act*. Since the proposed agency would be a monopoly, albeit a public monopoly, one of the purposes of federal review would be to ensure that the agency did not abuse its monopoly powers.

AN INDEPENDENT INSTITUTION

An alternative to a Crown corporation would be a private corporation, jointly owned by the users, with the federal government still responsible for regulating safety. Since such a corporation would be responsible to its owners, who are also users, it would be less likely to exploit its monopoly position. Its owners and users would want the highest level of service at the lowest possible cost.

We see advantages in a privately owned, user-operated air navigation system that is subject to government safety regulation. Before such a system could be implemented, however, the federal government must ensure that the interests of all stakeholders are adequately represented. For example, those with a minor, or no, position in the corporation (such as small carriers or general aviation) must not be discriminated against. The system must also be set up in a way that precludes it from being able to put potential new entrants to the airline industry at a disadvantage. If the independent institution's charter does not give adequate representation to all these interests, the federal government should appoint a referee. If the federal

government is unable to establish a private corporation that gives adequate protection to all interested parties, a Crown corporation would be preferable to an independent institution.

ROADS

Highway networks are unlikely to be privatized or turned over fully to independent authorities in the near future. A major role for Crown corporations with a considerable degree of independence holds more immediate promise. Governments have traditionally retained close control over the extent and location of roads and the charges for their use. Road pricing will probably continue to take the form of fuel charges and licence fees, supplemented by weight-distance charges on trucks. All of these charges are generally uniform within a province.

With uniform charges, prices and revenues provide limited guidance in assessing specific road investment decisions. Toll roads are the exception. Pricing can then be specific to individual links, and prices and revenues can provide a basis for investment decisions.

While governments are likely to retain responsibility for decision making, they should be more accountable and the nature and implications of decisions should be more transparent. Road users should have information that will enable them to assess whether the highway system is being efficiently managed through appropriate decisions on investments and maintenance.

TRANSIT NEW ZEALAND: A MODEL

In 1989, the New Zealand government created Transit New Zealand, an institution established outside the departmental structure in order to remove political influence from expenditure decisions. Transit New Zealand coordinates road planning and provides independent advice on road revenue policy and road expenditures. Although the Minister of Transport must approve its annual revenue and

expenditure proposals, these proposals carry considerable weight as a result of Transit New Zealand's extensive system of consultation and highly transparent system of road planning.

Transit New Zealand develops an annual National Land Transport Programme, drawing on plans developed in each of the 14 regions of New Zealand. These plans are based on decisions made at the local level. The Land Transport Fund, managed by Transit New Zealand, finances expenditures and provides all participants in the system with a clear picture of revenues and expenditures.⁹ Revenues come from fuel taxes, other charges to road users (including a weight-distance charge for heavier trucks), and motor-vehicle registration and licensing fees.

GUIDELINES FOR PROVINCIAL AND TERRITORIAL ROAD AGENCIES

New Zealand's approach shows how a Crown corporation can be used to encourage greater efficiency, and to increase accountability and transparency in pricing and investment decisions.

We therefore **recommend** that:

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- 6.3 Each provincial and territorial government establish a Crown corporation, supplemented by an advisory group, to provide roads more efficiently and to make road pricing and investment decisions more transparent.**
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The advisory bodies should include specific user-groups as well as other groups that have system-wide interests, such as those concerned with the environment. The mandate of the advisory body should be broad enough to include links between the roads and other modes of transport.

We expect that most provincial or territorial governments would wish to retain final authority over levels of fuel tax, motor-vehicle licence fees and weight-distance charges. But we suggest that provincial and territorial governments make decisions on these charges in response to proposals from their road agencies, which would recommend levels for the charges together with road investment plans.

Under our principles, revenues from charges to travellers transferred to a road agency should be related to use of the roads for which the agency is responsible. For example, if a road agency is responsible for building and maintaining provincial but not municipal roads, revenues related to the use of municipal roads should be handled separately.

The provincial government would allocate, as accurately as possible, the portion of total fuel-tax revenues in a province to a "road account." It should also consider applying a fuel tax to cover road-related policing costs, traffic control and some health system costs (Chapter 8). In addition, the provincial or territorial government may be the appropriate level of government to apply some environmental charges (Chapter 7).

THE NATIONAL HIGHWAY SYSTEM PROPOSAL

The Federal-Provincial Council of Ministers Responsible for Transportation and Highway Safety is currently studying a National Highway Policy proposal. The proposal would designate, as the National Highway System (NHS), a network of highways linking provincial and territorial capital cities, other main population centres, major ports and U.S. border crossings. The network would be almost 25,000 kilometres in length, compared with 7,300 kilometres for the Trans-Canada Highway.

The proposal suggests that the network be upgraded "to bring cohesiveness, prestige and uniformity of standards to the major

highway transportation linkages of national significance in Canada.”¹⁰
Minimum standards would include:

- a design speed of 100 kilometres per hour — that is, highway alignment and shoulders sufficient to allow 100 kilometres per hour operating speed;
- sufficient capacity to handle the volume of traffic expected without average speed falling below 90 kilometres per hour;
- bridge and road strength adequate to handle traffic without seasonal weight restrictions; and
- road surfaces to meet a consistent measure of ride smoothness.

According to studies performed for the Council of Ministers Responsible for Transportation and Highway Safety, many existing highways that would form part of the intended network do not meet these standards. They found that:

- about one third of its length does not meet the proposed minimum standard for 100 kilometres per hour design speed because of inadequate width, alignment, or shoulders;
- about 19 percent of the network is at times too congested to allow 90 kilometres per hour continuous operation;
- almost 16 percent of the network has load restrictions and requires pavement or bridge reconstruction to handle the maximum loads allowed under national standards; and
- about 16 percent of the network needs resurfacing to meet the proposed standard for ride smoothness.

In total, about 9,500 kilometres of the proposed 25,000-kilometre network would not meet one or more of the proposed minimum standards, and 790 bridges would need strengthening.

The Costs of Upgrading the NHS Network

The National Highway Policy proposal has identified all of the upgrades that would be required to meet these standards — some

2,000 separate projects with a total estimated cost of \$12.7 billion in 1989 prices. A secondary proposal under consideration would add the twinning of all remaining sections of the Trans-Canada Highway for an additional cost of \$4.8 billion in 1989 prices.

The Council of Ministers Responsible for Transportation and Highway Safety is examining whether the federal, provincial and territorial governments can reach a cost-sharing agreement to allow adoption of these proposals.

Assessing the NHS Proposal Using Our Principles

We believe that governments should assess the NHS proposal using our principles for investment decisions, and provide financial support for component projects only if the benefits exceed the costs and if the project can be paid for by the travellers who use it. Governments should also compare these projects with possible investments in other modes and other locations. Approved NHS projects should then be financed by charges to road users.

An analysis of the NHS showed that the proposal as a whole would not meet the benefit-cost test.¹¹ Using Transport Canada's standard valuations of benefits, it appears that the costs of upgrading the network to the proposed uniform standards exceed expected benefits, and that the additional proposal to twin the remainder of the Trans-Canada Highway would increase the net loss substantially.

Some of the projects, however, could produce substantial net benefits over their costs. For example, many of the maintenance projects for existing roads, such as bridge rehabilitation and highway resurfacing, are more beneficial than many proposed investments in building new lanes or widening existing highways. In addition, the proposed improvements most easily meet the benefit-cost test for the more intensively used parts of the network, (generally located in more populated regions of the country).

We believe that, rather than trying to make a decision on the proposal as a whole, projects should be rigorously evaluated on an individual

basis. Governments should establish priorities for those projects that pass a benefit-cost test. We see the National Highway Policy proposal as an example of the potential for excessive spending that can arise when common national standards and engineering conventions are emphasized, but little attention is given to assessing the economic benefits and costs of individual projects.

Recommendations for the National Highway System

The proposed minimum standards would require a substantial expansion of capacity for many low-volume roads. The failure of many of the proposed projects to meet a benefit-cost test, however, demonstrates that the proposed engineering standards are not appropriate to all highways and traffic conditions. On those parts of the network with less traffic, some more-modest upgrading projects, to meet standards of capacity and performance somewhat less rigorous than those applied to roads with higher volumes of traffic, might be sufficient. To achieve efficiency, governments should tailor solutions to local conditions.

Therefore, we **recommend** that:

6.4 The extent of restoration and upgrading of the national highway network be guided by comparison of benefits and costs on individual projects, rather than by uniform engineering standards.

Our rejection of the minimum engineering design standards in the NHS proposal does not mean that the entire proposal should be abandoned. We believe there are advantages to be gained from designating a National Highway System and giving it maintenance priority, special markings and uniform signs. Both carriers and travellers would gain from using a system of interconnected roads of predictable quality.



We believe the proposed network is viable because it could generate sufficient revenue from users to pay for maintenance and upgrading. We do not believe, however, that all of the upgrading in the current proposal is necessary. Outside the most populated areas, there is substantial excess capacity in Canada's highway system. It would not make sense to increase that capacity still further to meet arbitrarily set minimum engineering standards. Upgrading should concentrate on the existing and potential problem areas.

The National Highway System could be operated by a Crown corporation, raising its funds through charges to travellers using the designated network or receiving appropriate transfers of the fuel taxes and registration fees from governments. Such an agency could provide users with a clear picture of road costs and provide a mechanism for formal consultations. We believe, however, that the key improvements in this highway network could be achieved by simpler forms of coordination on the part of provincial and territorial governments and/or their road agencies.

Therefore, we **recommend** that:

6.5 A National Highway System (NHS) be identified by the Council of Ministers Responsible for Transportation and Highway Safety, and the system be operated and maintained through cooperative action of provincial and territorial governments and/or their road agencies.

We also believe that the rationale is weak for funding projects through a national charge to all travellers or federal-provincial cost-sharing. The projects on the proposed network that meet a benefit-cost test are concentrated in Central Canada, where the population is densest, rather than spread equally across the country. The funding of such projects should be the responsibility of travellers in those regions that benefit from these investments.

Therefore, we **recommend** that:

6.6 Provincial and territorial governments meet the costs of their highway system, and any agreed upon National Highway System projects within their borders, through fuel taxes and other charges.

Under our principles, the federal government would no longer raise revenues from fuel taxes, except as an environmental charge on fuels (Recommendation 5.4).

We expect that examining the benefits and costs of all road projects will indicate that most worthwhile NHS projects can be financed by provincial or territorial governments using monies that might have been spent on other, lower-priority road projects.

CONTROL OF RAIL TRACKS, STATIONS AND TRAINS

Rail is different from other modes of transportation because individual carriers often own the rights-of-way, track, and train-movement control systems. We are concerned about two rail issues:

- how ownership of the track influences competition to provide rail passenger and freight services; and
- how the need for rationalization of track networks can be met. Such rationalization raises the issue of rights-of-way abandonment, which we highlighted in our Interim Report.

OWNERSHIP AND COMPETITION ISSUES

Is open access compromised when rail carriers own essential transportation infrastructure? Under our principles, open access to essential facilities is intended to promote competition. While we realize that it will often be impractical in all cases to provide competing rail

infrastructure, we believe that considerable benefits of competition may still be obtained by allowing more than one carrier to use the existing track.

A freight or passenger carrier that owns track may create an entry barrier to new rail carriers and may impede the operations of competitive carriers. A new carrier can only enter passenger rail or freight carriage if it can negotiate reasonable terms of access with a track owner who may also be a competitor. Rail carriers thus tend not to be subject to the discipline that, in other modes, comes from the threat of entry.

Direct competition is less likely to occur in passenger rail than in freight carriage because unsubsidized passenger service has not been profitable. We are still concerned, however, that there be sufficient access for new carriers in passenger rail should they wish to enter the markets. Convenient entry for a carrier would ensure that passenger rail is given the opportunity to demonstrate its strengths in instances where it has a chance of being viable.

Passenger rail can be complementary to freight, because both services share the cost of the track. It can, however, compete with freight on heavily used segments of the track where the two users have conflicting requirements. This conflict accounts for some of VIA Rail's difficulties in obtaining optimal track access. As well, the federal government requires VIA Rail to service certain markets, putting VIA Rail in a weak bargaining position. It cannot refuse to deal with CN or CP simply because their services or rates for track usage are unacceptable.

IMPROVING ACCESS TO RAIL TRACKS

Steps can be taken to improve access to rail tracks for new entrants and others willing to pay their share of the costs, by:

- establishing stronger legislative provisions and regulatory procedures to promote access; and

- if such legislation proves insufficient, separating ownership of track and carrier operations by restructuring CN and CP.

Separation could be achieved by creating a public or a private track corporation that would own and manage the national track network.

Improving Access through Legislation and Regulation

Running rights, the rights that allow one railway company to operate over the tracks of another company, have a long history in Canada. Legislation on running rights from the earlier *Railway Act* was incorporated into the *National Transportation Act, 1987*. Under this Act, the National Transportation Agency can order one railway company to provide running rights to another if the two railway companies cannot work out an agreement on their own, and if the Agency deems access to be in the public interest. This provision, however, is contained in a section of the NTA, 1987, that applies exclusively to rail freight.

Therefore, we **recommend** that:

6.7 Legislation on track access also apply to passenger rail, so that all qualified carriers willing to pay for what they use have a right of access to essential rail infrastructure and to equal treatment in movement of rail traffic.

Unless the owner can prove that running rights would create unresolvable operational problems in a particular situation, the legislation should require the National Transportation Agency to agree to an application for access by all carriers that are "fit, willing and able" to use the infrastructure.

The technological, dispatch and traffic control issues associated with opening the track to multiple users are not a problem unless the owner of the track also happens to be a user in competition with other users of that same track. As for other modes, especially air, sophisticated techniques of traffic control are available. In addition, the rail industry has had considerable experience with trackage rights and joint agreements that raise many of the same issues. In negotiating these arrangements, railway companies have had to work out operating rules, establish track priorities and apportion liability. We see little evidence that the resolution of these issues has resulted in operational problems.

Improved legislation, however, may not be sufficient to solve certain problems of access. For example, a railway company could allow other carriers access to its tracks but establish rates or conditions that would make use of the track highly unattractive. A host railway can also substantially disadvantage a potential competitor through its traffic control and dispatch operations.

While the National Transportation Agency can attempt to guard against such anti-competitive practices, a track owner could abuse its monopoly position in subtle ways. In addition, it is difficult for a regulator to determine a reasonable track charge that is fair to the owner but does not disadvantage the user.

A number of countries require their state-owned railways to develop separate accounts that identify the costs of the track and control components of their operations. The Council of the European Communities is asking member states "to ensure that the accounts for business relating to the provision of transport services and those relating to the management of railway infrastructure are kept separate. . . ." ¹² The Council believes this separation will promote fair charges to travellers and facilitate cross-border movement by the carriers of member countries.

Appropriate legislation, combined with adequate enforcement of regulations, provides the most direct solution to problems of access.

By strengthening and broadening existing provisions on running rights, the federal government would be building on an approach that is well understood by the railways and the National Transportation Agency. Nevertheless, we are not entirely convinced that legislation and regulation will prove adequate. Where a railway has an interest in restricting access, the regulatory authority might find it difficult to ensure that the new entrant is provided with a neutral opportunity, including fair treatment by the dispatch system.¹³ We expect that the track owner will have more information than the regulator, and the regulator will be at a disadvantage in attempting to enforce equal access.

Improving Access by Separating Ownership of Track and Carrier Operations

We considered the possibility of restructuring CN and CP to divide ownership of track and carrier operations (as in the road and air modes). Such a separation has its precedents:

- The earliest railways in the United States operated fixed ways that others paid to use, as did the other transportation modes of the era (turnpikes and canals).
- In 1989, the Swedish government split its state railway into two separate organizations: a public enterprise that is responsible for offering railway transportation services, and a second public agency, the National Rail Administration that is responsible for providing rail track and control systems. Sweden's restructuring was intended to put rail on a basis more comparable with the road mode, and the National Rail Administration is modelled on that country's National Road Administration. The Swedish government believes that separating track ownership from commercial carrier services, and the greater transparency resulting from the new arrangement, will increase pressure on the national rail carrier to improve operating efficiency. The government also hopes that, over the long term, new rail carriers will enter the market and consumers will benefit from the introduction of competition.

A system of separate ownership would result in the loss of savings, if any, associated with the joint provision of rail track and carrier

operations. Government would have to decide whether such savings are important enough to offset the benefits from enhanced competition. The available evidence, while limited, does not suggest that there are major economies when carriers own railway track.

While we believe it is feasible to establish a separate track corporation, a structural reform of this nature is a major undertaking. Sweden's experience is not entirely applicable to Canada, because Canadian track is owned by a number of public and private corporations, rather than just one public corporation. Rail restructuring is much less complicated when there is a single public carrier, and when the national government has the authority to implement the reorganization required to improve use of the track.

If the Government of Canada were to undertake such an initiative, and if it felt the infrastructure should be publicly owned, it would have to acquire track that it does not already own. This process could entail difficult negotiations with owners over compensation. Both CN and CP would be primarily freight carriers with neither owning railway track. At that point, CN should be privatized to create fair competition for CP, and the proceeds of the sale would help pay for the purchase of the CP infrastructure.

Determining appropriate charges for track use would also be difficult. CN and CP own extensive track in the United States. Track fees and charges at a level required to cover the costs of a track corporation might result in CN and CP diverting traffic to alternative U.S. routes. This diversion could be greater on some network segments (primarily traffic to and from the west) than on others (traffic that moves within Ontario, Quebec and the Maritimes).

Should a Separate Rail Track Agency be Public or Private?

If experience with enhanced track access is unsatisfactory and the federal government determines that separation of rail ownership and carrier operations should be implemented, the government would have to decide if track ownership would be best transferred to a Crown corporation or a private corporation. Whether public or private, the



new organization must be regulated in such a way that it could not abuse its monopoly position.

In the case of a private corporation, the federal government would have to put together a package that appealed to private investors and could attract the large amount of financial capital required. The federal government would otherwise have to make certain commitments to reduce the risks from unanticipated policy change that the corporation would otherwise face. With a Crown corporation, the federal government would not have to limit its freedom in this way. In addition, the federal government's extensive holdings of track and rights-of-way through CN and VIA Rail could be transferred to the public track agency and provide the assets required to launch its operations. We thus conclude that, should separation be favoured, a public track agency is likely to prove appropriate.

In Canada, separating ownership of rail track and carrier operations is more important as a freight issue than as a passenger issue, because freight traffic dominates Canadian rail activity. Freight transportation is not the focus of our mandate, and we have not attempted to investigate, or explore with the various parties involved, the full range of questions that must be answered before a decision on separation can be made. Nevertheless, we view effective open access and equal treatment of traffic as vital. Should the application of Recommendation 6.7 — that legislation on track access be strengthened and apply to passenger rail as well as freight — not prove satisfactory, then we would recommend that the federal government separate ownership of track and dispatch from carrier operations.

If the federal government decides that separation is necessary, the best approach may be a step-by-step introduction of change. The process could begin with a segment of the network that would be a good choice for rail rationalization. For example, a public track agency could be established with responsibility for CN's and VIA Rail's rights-of-way and track in the Toronto–Ottawa–Montreal triangle. At the same time, the federal government could negotiate with CP so

that the authority of the new agency could extend to all track in the region. The intention would be to rationalize track use in that region.

This first step would allow the federal government to test separation, and at the same time initiate rationalization of track use in the Toronto–Ottawa–Montreal triangle. If this experience shows that separation is beneficial, the scope of the track agency's operations could be extended to include the rail network running through Quebec and the Maritimes, where rationalization also seems warranted. The federal government could then consider a final phase of reform involving transferring track in the rest of the country to the track agency.

RAIL RATIONALIZATION

Rationalization is not a new issue. As far back as 1931, the Royal Commission on Railways and Transportation in Canada found significant duplications among CN and CP railway systems. The Commission noted that there were twice as many miles of track per capita in Canada as in the United States, and that changing markets, competition and technology had decreased the need for railway infrastructure.

Canada's railways still suffer from low traffic density. On all but a few routes, Canadian railways could handle many more trains on their tracks. There are two ways to improve the financial position of the railways: increase traffic and operations and rationalize the track system.

With respect to increasing traffic, we expect that when governments apply our recommendations concerning road pricing, the competitive position of the railways will improve. Some freight that now moves by truck would shift to rail.

Rationalization and joint track usage have been the subject of sporadic, unsuccessful negotiation between CN and CP for many decades. The *Canadian National–Canadian Pacific Act, 1933*, that followed the 1931 Royal Commission, encouraged cooperation between the

railways, including joint track usage. The NTA, 1987, included provision for joint track usage, but has not stimulated significant rationalization.

Rationalizing the track system could be approached in three non-exclusive ways that could vary from region to region. These are:

- line abandonment and joint track usage;
- divestiture of the local branch-line systems of each or both companies, and their reorganization as local short-line companies; and
- consolidation of CN's and CP's freight operations, either regionally or nationally.

Line Abandonment and Joint Track Usage

The distinction between line abandonment and disposition of rights-of-way should be clear. We have no quarrel with the right of a railway to abandon part or all of a line. Our concern is what happens to that corridor after it has been abandoned as a functioning line; in the past, too many corridors have been sold for commercial purposes or for usage other than transportation. We firmly believe that these should be conserved for future transportation use, for example in the form of linear parks, and that governments or other railways should have first call when corridors are abandoned.

To what extent might abandonment improve the financial positions of the railways? In terms of branch lines, abandoning the lines in the prairie network that compete with road to serve the grain industry alone would generate important savings. A recent estimate suggests that abandoning selected prairie lines could result in annual savings of about \$25 million.¹⁴ For the rest of the networks, the prospects for saving through abandoning local branch lines, as opposed to abandoning whole regional systems such as in the Maritimes, are limited to a few million dollars annually.

Joint usage of main lines would boost efficiency and savings for the railways more than abandoning low-density branch lines. Closing branch lines causes traffic to shift from rail to road, but main lines

could be rationalized with little loss of traffic. A more efficient railway track system might actually lead to an increase in the use of railway transport.

Substantial savings would occur if rationalization took place on the track that stretches from Winnipeg to the Ottawa Valley. For a capital investment of approximately \$100 million, CN and CP could operate through this region over common track, saving 2,200 kilometres of mostly main-line track and eventually realizing savings of \$50 million annually.¹⁵

We believe that this rationalization is desirable. We noted in our Interim Report, however, that line abandonment could lead to the loss of transportation corridors for future use.¹⁶ Potentially important corridors in and near urban areas have already been lost through abandonment and cannot be replaced.

The *National Transportation Act, 1987*, contains a provision, which expires in 1993, whereby railway companies can apply to the National Transportation Agency to abandon up to 4 percent of their non-grain-related trackage annually. The Agency must agree to an abandonment application if the rail line is not economically viable and has no reasonable probability of becoming so in the future. As we noted in our Interim Report, under the NTA, 1987, the Agency determines the role and value of rail infrastructure in terms of its contribution to the movement of freight.¹⁷

The abandonment application procedures have recently been amended. A railway applying to abandon operation of a line must formally notify, among others, the federal and relevant provincial and municipal governments, other railways operating nearby and VIA Rail.

The legislated process does not provide for the long-term implications of the loss of track for passenger service or for rights-of-way for future transportation use.

We want to ensure that there are formal procedures for the disposal of rights-of-way after a rail line has been abandoned, and that this process gives governments an opportunity to acquire the rights-of-way if appropriate. Although railway officials told us that they offer abandoned rights-of-way to successive levels of government, the process is informal and inconsistent. In addition, the railways do not always put abandoned rights-of-way in urban areas up for sale. Instead, they retain and develop the lands commercially themselves. It is these urban rights-of-way that cause us the most concern.

We conclude from our review of line abandonment that:

- there should be formal procedures, regularly followed, by which all abandoned rights-of-way are offered to governments;
- governments should have established policies by which they are able to identify, acquire and retain rights-of-way that may be valuable for future use; and
- there should be rules to ensure that the price to governments of acquiring identified rights-of-way is reasonable, considering the historical use of the land as a corridor.

We believe that railways should be allowed to cease unprofitable activities, but rights-of-way that may be useful to others must be preserved.

Transport Canada has brought the concerns that were raised in our Interim Report to the attention of a federal-provincial steering committee that has been asked by the federal and provincial/territorial ministers of transport to identify a national rail network. The mandate of this committee includes reviewing policies and procedures to address concerns with rail line abandonment. Transport Canada has also indicated that it hopes to put in place an interim notice and response process and to develop long-term policy options. Although it is too early to say what the outcome of all this work will be, we believe that changes are required.

Therefore, we recommend that:

6.8 Any railway company be allowed to abandon any amount of track without a limit and that clause 159(4) of the *National Transportation Act, 1987* not be reenacted.

We further recommend that:

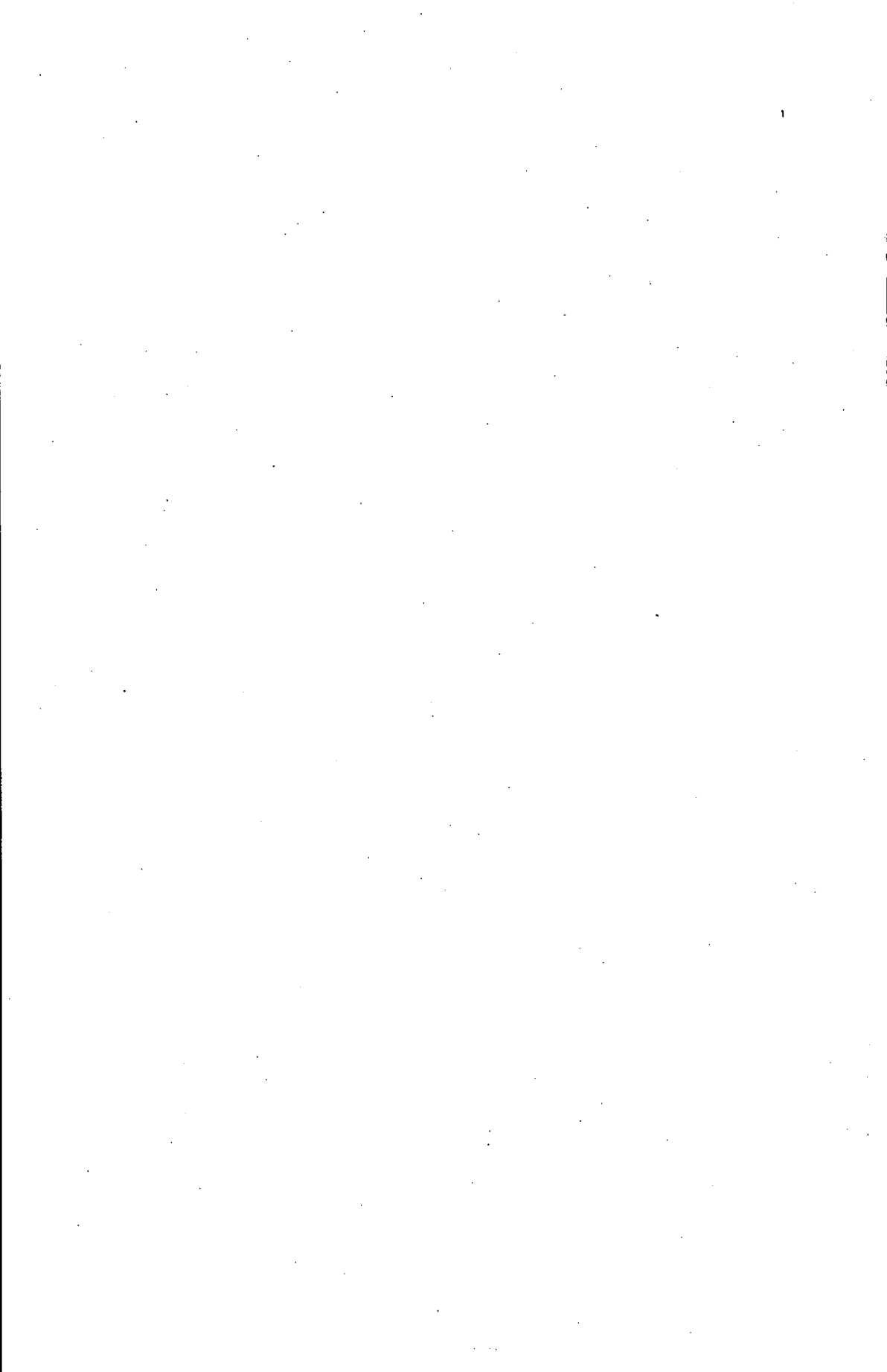
6.9 Adequate protection of rights-of-way of potential value as future transportation corridors be assured by requiring that:

- (a) as a condition of track abandonment, the abandoned right-of-way be offered in all cases, formally and in writing, to each level of government (federal, provincial, local), in succession, and then to other railway companies at a price equal, in all cases, to the railway's historical acquisition cost of the land adjusted for inflation, with an adequate time period for response;**
 - (b) the National Transportation Agency be a referee to ensure that the price at which the land is offered is reasonable;**
 - (c) only if no government or railway company wishes to purchase the corridor could the railway either convert or sell the land for purposes other than transportation;**
 - (d) all levels of government develop a policy, based on explicit criteria, for deciding which corridors they wish to retain; and**
 - (e) governments or railway companies maintain land so acquired as a corridor. Should they no longer wish to maintain the corridor in the future, the land be first offered back to the railway from which it was purchased, at the original purchase price plus inflation.**
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ENDNOTES

1. Jose A. Gomez-Ibanez and John R. Meyer, "Toll Roads and Private Concessions in France and Spain," Interim Report for the U.S. Department of Transportation, February 1992.
2. U.S. General Accounting Office, *Airline Competition*, GAO/RCED-90-147, August 1990.
3. William B. Tye, "Competitive Access: A Comparative Industry Approach to the Essential Facility Doctrine," *Energy Law Journal* 8, 2 (1987).
4. The distinction is that an airport authority is responsible only for an airport, while a port authority operates a variety of facilities (which may include airports, harbours, bridges and toll roads).
5. Statement by Transport Minister John Crosbie in announcing new policy, "New Management for Canadian Airports," Transport Canada Information No. 61/87, April 9, 1987.
6. Gordon B. Hamilton, "Cost Competitiveness of Canadian Airports," paper presented to ATAC 57th Annual General Meeting, Vancouver, Canada, November 10-12, 1991. Additional data provided by Transport Canada.
7. *Report of the Auditor General to the House of Commons, Fiscal Year Ended 31 March 1985* (Ottawa: Supply and Services Canada, 1985).
8. Transport Canada, Ministerial Task Force on Aviation Matters, *Final Report*, 1992, p. 21.
9. New Zealand Ministry of Transport, *Land Transport System*, 1990.
10. See Council of Ministers Responsible for Transportation and Highway Safety, National Highway Policy Steering Committee, *National Highway Policy Study for Canada, Steering Committee Report on Phase 3* (Ottawa: September 1990).
11. See ADI Limited, *National Highway Policy User Benefits Analysis Final Report*, prepared for National Highway Policy Study Committee, 2567-4, (Ottawa: November 1989); and ADI Limited, *Analysis of National Highway System Proposals*, a report prepared for the Royal Commission on National Passenger Transportation, RR-12, March 1992.
12. *Official Journal of the European Communities*, Council Directive of 29 July 1991 on the development of the Community's railways (91/440/EEC), Section III, Article 6.
13. Train movements on modern rail networks are coordinated centrally, usually through the signal system. The dispatcher decides which trains proceed towards their destinations, and which trains must wait on sidings.
14. T. Reynolds, "Projected Cost Reductions and Efficiencies through Abandonment of Selected Rail Segments," *Proceedings of the 27th Annual Meeting of The Canadian Transportation Research Forum*, Banff, Canada, June 9-12, 1992.

15. These are rough estimates by Royal Commission staff, based on potential reduction in track length and average annual track costs per kilometre. Initially, these savings would not be fully achieved. Employment security provisions in the contracts of senior shopcraft and maintenance-of-way employees would come into play until these employees were reabsorbed or reached retirement.
16. *Getting There: The Interim Report of the Royal Commission on National Passenger Transportation*, (Ottawa: Supply and Services Canada, April 1991) pp. 208-209.
17. *Getting There: The Interim Report of the Royal Commission on National Passenger Transportation*, (Ottawa: Supply and Services Canada, April 1991) p. 209.



CHAPTER 7

PROTECTING THE ENVIRONMENT

INTRODUCTION

Passenger transportation affects the environment locally, nationally and globally. Noise pollution disturbs city residents and those living near airports; air pollution damages buildings and affects the health of people, animals and vegetation; and the greenhouse effect threatens the world's ecosystems.

One of the key objectives of our proposed passenger transportation framework is to achieve a system that automatically gives weight to the need to protect the environment. We believe that this can best be accomplished if users pay for the full costs of passenger transportation — including the environmental costs associated with different modes of travel.

At present, travellers and carriers do not pay for all the damage they cause to the environment. In fact, they cover only some of the costs of their transportation choices. Often, the decisions they make concerning how they will travel and which vehicle to purchase do not take into account the environmental repercussions of these choices. Meanwhile, others bear the costs of the damage done by travellers. As noted in Chapter 6, agencies that evaluate transportation investment proposals should consider the costs of environmental damage.

There are, however, many difficulties in trying to measure environmental damage, estimate costs and determine how users should be charged. We realize that protecting the environment may require more than charges to travellers. Regulations, particularly in the area of motor-vehicle emissions, have been instrumental in reducing gases and particulates that damage the environment.

We examined ways of assessing environmental damage and estimating costs. We asked ourselves how much governments should regulate and how much travellers should pay. Then we looked for solutions that would impose an even burden on each mode of travel and that would help Canadians achieve a balance between their passenger transportation needs and the need to protect the environment.

HOW TRANSPORTATION CONTRIBUTES TO ENVIRONMENTAL DAMAGE

We studied environmental effects and conferred extensively with environmental experts. Much of the information we gathered, including how transportation contributes to environmental damage and the nature of that damage, can be found in Volume 2 of this report. In this chapter, we would like to focus attention on the three transportation-related environmental problems that we consider to be the most significant: low-level ozone, urban sprawl and global warming. Other significant transportation-related environmental problems, including those associated with carbon monoxide and particulates, receive very limited mention in this chapter because they are fundamentally problems of urban, rather than intercity, passenger transportation.

LOW-LEVEL OZONE INDUCING EMISSIONS

Low-level ozone, an important component of smog, is formed when two types of chemicals in fuel emissions — nitrogen oxides (NO_x) and volatile organic compounds (VOCs) — act together in the presence of heat and sunlight. Low-level ozone causes respiratory problems, particularly among asthmatics, and damages the foliage of crops and trees.

Transportation contributes about 40 percent of Canada's non-natural emissions of VOCs and 60 percent of its NO_x. Diesel-engined trucks and buses make a disproportionately large contribution, yet are subject to far less stringent emission controls than cars.

Although low-level ozone breaks down over a period of hours or days, concentrations can build up where industrial and transportation emissions of NO_x and VOCs are greatest. In addition, low-level ozone, which is wind-borne, can accumulate city by city, polluting entire regions.

In most of Canada's large cities, summer concentrations of low-level ozone occasionally exceed the maximum acceptable National Ambient Air Quality Objectives. In three regions of Canada, however, these concentrations regularly exceed acceptable levels during the summer months. These are the Lower Fraser Valley of British Columbia; the corridor between Windsor, Ontario, and Quebec City, Quebec; and the area surrounding Saint John, New Brunswick.

Ozone can be created locally and can also come from sources upwind. In British Columbia, the ozone is nearly all produced locally. In Southern Ontario and Quebec, the ozone created by local sources is supplemented by ozone from the Great Lakes states of the United States. In southeastern New Brunswick and Nova Scotia, nearly all the ozone moves in from the U.S. Atlantic seaboard, Quebec and Ontario. As mentioned, low-level ozone tends to break down into harmless components after a day or more, so shifting winds, variations in sunlight and other factors account for high pollution levels.

These three regions have been designated as "ozone non-attainment areas" by the Canadian Council of Ministers of the Environment. (Non-attainment areas do not meet Canada's National Ambient Air Quality Objectives.) The federal and provincial governments have targeted non-attainment areas for special control measures as part of a national NO_x /VOCs Management Plan (see Volume 2 for a description of current and announced control measures). In the decades ahead, if more action is not taken, additional regions of Canada could face similar problems.

URBAN SPRAWL

Non-attainment areas are often areas where land use and development patterns, transportation, and pollution are intimately tied together. For example, urban sprawl causes increased fuel consumption and exacerbates environmental pollution problems.

Non-attainment areas often have the following characteristics:

- development is dense;
- urban development spreads to rural areas rather than becoming more concentrated;
- the single-family, lower density, suburban housing pattern is specifically designed around the car and encourages its use; and
- more public transportation is provided than in attainment areas, but public transportation services are concentrated much more in the urban core. For example, transit use is very high in Toronto (use, per capita, is the second highest in North America, after New York City), but outside the city core, cars move the people with some help from buses.

The urban sprawl pattern has disadvantages for public transportation carriers, who require high population densities along their routes in order to be efficient. In turn, lack of public transportation encourages car use, and this becomes the easiest and seemingly most natural choice for short to medium-distance intercity trips.

GLOBAL WARMING

Although scientists continue to debate the effects of global warming, the Intergovernmental Panel on Climate Change has confirmed the existence of the phenomenon known as the greenhouse effect. The Panel agrees that human activities are creating increased atmospheric concentrations of greenhouse gases: carbon dioxide (CO₂), chlorofluorocarbons (CFCs), methane, and nitrogen oxides (NO_x). Transportation is a major source of CO₂ and CFCs.

CO₂ emissions: Transportation contributes about 25 percent of Canada's CO₂ emissions from non-natural sources, and these originate as by-products of the combustion of carbon-based fuels. Such emissions cannot be controlled by treating exhaust gases, but must be reduced through decreasing fuel consumption or using non-carbon energy sources such as solar energy and hydro-electric power or nuclear energy. Unlike the emissions that contribute to low-level ozone, CO₂ can last in the atmosphere for as long as 200 years. Therefore, the cycle of CO₂ increase and decrease is much longer, and its potential impact more persistent, than that of low-level ozone. Canada has adopted a goal of stabilizing total greenhouse gas emissions at 1990 levels by the year 2000. This requires a substantial reduction in CO₂ from the level that is anticipated if current trends continue unchecked.

CFCs: Transportation also adds CFCs to the atmosphere, primarily through leakage from vehicle air conditioners, which have recently contributed about 25 percent of total Canadian CFC emissions. CFCs play a major role in the destruction of the protective high-level ozone layer in the stratosphere (see Volume 2 for a summary of differences between high-level and low-level ozone). Canada is in the forefront of international action on CFCs, having made a commitment to eliminate CFCs by 1997. At present, manufacturers are starting to use other chemicals in car air conditioners.

The Canadian Climate Program Board predicts that, if global warming continues into the next century, Canada's climatic zones may shift northward and sea levels may rise; both effects would have economic and social consequences. Although scientific evidence is not clear regarding global warming, prudence suggests that efforts be made to further reduce fuel consumption. Such efforts can be successful. Despite an increase in traffic and the number of cars, total annual gasoline consumption in Canada today is lower than it was in 1975.

ASSESSING ENVIRONMENTAL DAMAGE

Scientists find it extremely difficult to measure the effects of transportation on the environment. Use of land for transportation disrupts wildlife habitats, but ecologists cannot gauge the full effects of these changes. Chemicals in vehicle emissions affect people, plants, animals and buildings, but medical scientists, botanists, biologists and chemists cannot determine with accuracy the relationships between doses of chemicals and responses in sickness or damages. Global warming is changing our weather patterns, but atmospheric scientists are unable to predict how much warming to expect, how regional temperatures will change, and how these changes will affect growing seasons, rainfall and sea levels.

Canadians experience the effects of environmental damage from transportation in unequal ways. For example, those living close to major airports must live with noise pollution from airplanes, even though they may never travel by air; their properties are also cheaper for the same reason — noise. Similarly, people who live close to freeways and railway tracks must live with noise pollution and lower property values. Farmers and foresters who work far from urban areas must deal with the effects of foliage damage from air pollution created many kilometres away. Those who live outside cities often travel further to get to educational, vocational, cultural and commercial services than do people living near the centre of the city, yet it is the city-dwellers who must live with the resulting air pollution, noise, disruption from traffic, and inconvenience.

It is difficult to estimate the costs of environmental damage. In rare cases, it is possible to make a direct link between cause and effect, and then estimate the costs. For example, when crop values are diminished due to low-level ozone, a market price for the loss can be calculated.

Some researchers have asked individuals what they would pay in hypothetical situations for improvements in environmental conditions. Others have suggested that clean-up costs be used as a basis for

estimating environmental damage. There are examples of public agencies' willingness to bill companies for the costs of treating chemical discharges into waterways. Unfortunately, this approach cannot be applied to all types of damage, particularly irreversible damage. What price can be charged for the loss of a species or in cases where clean-up options do not exist? How can a dollar figure be assigned to the damages caused by global warming? What value can be put on the social and psychological effects of environmental problems caused by transportation? Can a link be made between actions taken by travellers in one region and damage that occurs in another region?

Since researchers cannot advise governments, with certainty, on how much effort it will take to solve environmental problems, the amount of effort to expend remains a question of judgement. In other words, one must judge whether or not the damage reductions are worth the costs while being uncertain about both damage reductions and costs. The trade-offs between costs and damage reductions in current solutions may have to change as knowledge of environmental damage increases. As costs become more measurable, the basis for setting prices for environmental damage will improve.

It is therefore important that governments continue to study, monitor and set goals to reduce environmental damage at the local, provincial, territorial, national and international levels. In addition, more research funding should be directed toward the study of environmental damage effects and costs.

CONTROLLING ENVIRONMENTAL DAMAGE

At present, there are three ways to reduce the environmental damage associated with transportation.

The first way is to reduce the amount of fuel emissions per unit of travel by improving the technology of vehicles — increasing engine efficiency, treating exhaust to trap or chemically eliminate pollutants, and reducing vehicle weight in order to lower fuel consumption.

The second way is to reduce the volume of traffic by encouraging travellers to switch from cars to public modes in situations where public modes are less environmentally damaging, to reduce the number of trips they take, or to shorten their trips.

The third way is to reduce the effects of damage with remedial clean-ups or by shielding those who are affected (with noise barriers, for example).

Controlling environmental damage is expensive. All three methods cost individuals either as travellers or as taxpayers. Individuals pay for environmental clean-up, motor-vehicle control equipment and its maintenance,¹ administering and enforcing environmental regulations, and subsidizing public modes of travel. Travellers also pay a cost in time and inconvenience if they change modes or types of travel, or relocate residences or places of work.

These costs are likely to increase if the controls on environmental damage become more stringent. The technology to improve fuel consumption or reduce engine emissions further may be very expensive.

Individuals and governments balance the benefits of travel against the costs of controlling environmental damage. Individuals do this when they make travel decisions, purchase vehicles and buy homes. Governments do this when they adopt measures to reduce environmental damage, thus supplementing and modifying individual decisions. Governments take measures such as these because they believe that:

- travellers, who create the environmental damage, do not adequately consider the damage to non-travellers when they make travel decisions;
- many individuals are unable to assess potential damage because of the scientific complexity and uncertainty associated with environmental causes and effects; and

- individual actions may not be extensive enough or coordinated enough to achieve the desired change.

COORDINATION AND COOPERATION

All levels of government should coordinate their approaches to environmental issues. We support the adoption of explicit goals, such as the national goals for reductions in CFCs, CO₂, NO_x and VOCs, for control of environmental damage. We believe, however, that current government decisions can be made more consistently and can achieve these goals at lower costs. We encourage governments to ensure that such goals are realistic, that all concerned are committed to the goals, and that the costs and effectiveness of measures taken to realize these goals are carefully and thoroughly examined.

Governments must be careful about when, where and how they apply environmental controls. For some problems, governments may have to look for regional or local solutions. This is particularly true for pollution problems that occur in specific locations or at certain times. For example, the concentration of carbon monoxide (CO) and diesel particulates is greatest in city centres when traffic is concentrated during windless conditions.

We are particularly concerned about low-level ozone damage in the Lower Fraser Valley in British Columbia, in the corridor between Windsor, Ontario, and Quebec City, Quebec and around Saint John, New Brunswick. As discussed earlier in this chapter, these three areas of Canada have concentrations of low-level ozone that regularly exceed acceptable levels during the summer. It may be costly and unfair to implement uniform national standards to ease this regional problem. The most cost-effective solutions may involve regional controls on vehicle use, travel restrictions at times of greatest damage, or controls on non-transportation sources. British Columbia recently addressed this issue by implementing annual vehicle emission control checks in the Greater Vancouver area. By forcing people to keep cars tuned-up, they are able to reduce emissions without adding special equipment.

Because these areas are especially vulnerable, we recommend that:

7.1 Governments consider regional solutions to ozone non-attainment areas, including special regional regulations such as speed limits or periodic motor-vehicle emissions testing for all classes of vehicles, and higher emissions surcharges at times of the year when ozone is a problem.

We recognize that it may not always be practical to administer and enforce a regional standard — for example, ensuring that all cars within a region are fitted with emissions-control equipment may be difficult. Governments must try to find a balance between obtaining low-level ozone reductions in target regions and imposing unnecessary costs on travellers outside those regions.

For other problems, the strategy for environmental controls must be as broad as possible, encompassing all sources throughout the country, and the world, and extending across all sectors. The potential damage from global warming brought about by CO₂ emissions cannot be solved only by local fuel conservation programs. It is a global problem, and all sources of CO₂ must be examined to find the most efficient and effective ways to reduce these emissions. We believe that the passenger transportation sector should do its part but not be penalized more than other sectors that also produce CO₂. Governments should examine which controls can be applied at the lowest cost for the greatest benefit.

An international strategy to control global warming is being developed under the United Nations Convention on Climate Change, signed by some 150 countries at the Rio Conference in June 1992. Canada's national goal to stabilize CO₂ emissions at 1990 levels by 2000 is more stringent than the commitment required so far under that convention.²

We therefore **recommend** that:

7.2 Canada continue to strive for development of an effective international strategy to control global warming, and seek to harmonize domestic policies and taxes with those of the international community.

PROTECTING THE ENVIRONMENT THROUGH REGULATION AND EDUCATION

In Canada, regulation and education play important roles in reducing environmental damage caused by transportation. Provincial and municipal governments have combined environmental objectives with those of urban and transportation planning. They regulate driving behaviour through traffic restrictions and parking controls, and run campaigns to persuade people to change modes or travel less.

The regulatory approach of the federal government includes controls on vehicle technology — primarily through setting motor-vehicle emissions standards, and obtaining voluntary agreements for improvements — particularly to meet fuel-consumption targets. The federal government also undertakes information campaigns to persuade travellers to change their travel behaviour.

This regulatory approach contributes substantially to lowering emissions. Regulators, however, often concentrate on what is easiest to administer and enforce, rather than on reducing damage for the lowest cost. For example, federal regulation focusses on motor-vehicle emissions, and, in particular, on passenger car emissions. As a result, pollution control is stricter for motor vehicles than for non-vehicular sources.

Governments, however, must be cautious when using a regulatory approach to reduce pollutants. While federal regulatory control of car

emissions has been successful, governments should pay equal attention to emissions from other transportation vehicles such as buses, trucks, trains, airplanes and ferries.

Therefore, we **recommend** that:

7.3 Governments continue to improve and apply regulations for effective control of environmentally damaging emissions. In doing so, they should ensure that:

- (a) regulations be set so as to impose similar obligations (in terms of costs per unit of abatement) on each mode in a cost-effective manner;**
 - (b) non-transportation sources of pollutants be treated similarly to those in transportation; and**
 - (c) the costs of deciding, implementing and administering transportation regulations be paid for by the users of the transportation system.**
-

Although urban transportation is beyond our mandate, we believe that Canadians should choose where they want to live on the condition that they pay the full cost of those choices. We note that if, as a result of Canadians facing the full costs of their choices, urban land-use patterns were to change, different travel behaviour might follow. For example, if development in a region were dense and consisted of mixed commercial and residential properties — unlike urban sprawl development — the following would likely occur:

- home-to-work trips would be far shorter, encouraging other means of commuting including walking and bicycling;
- densities would be higher making public transportation more viable;

- land values would be higher and parking scarcer and more expensive, discouraging car use and ownership; and
- the mix of residential and commercial establishments would encourage doing errands by means other than the car.

Reduced levels of car use would also lead to a greater use of any available public transportation for intercity trips. This would result in lower levels of emissions per capita.

PROTECTING THE ENVIRONMENT THROUGH PRICING

While regulations will continue to play a significant role in protecting the environment from pollution caused by travel, we do not believe that regulation alone will be sufficient. Regulations should be supplemented by charges to travellers, which provide an efficient way of encouraging travel behaviour that will limit damage to the environment. When travellers pay for the damages they inflict on the environment, they will make choices and may change their travel behaviour.³ Some will travel less to save money. Others will switch to modes that are cheaper because of lower environmental charges. Still others will choose to pay the higher price to travel on the less environmentally friendly mode. Owners of transportation equipment and infrastructure will change their equipment or otherwise adjust to decrease the pollution they cause in order to reduce the environmental costs they have to pay, and, therefore, have to charge.

In addition, environmental charges will encourage transportation providers to conserve fuel or switch to less-polluting fuels. In all cases, travellers would choose their own mix of solutions at the least cost to themselves, but would take into account the damage they impose on the environment.

How should travellers be charged for the damage they inflict on the environment? Like many other aspects of passenger transportation, the issues are complex and the solutions are not easy. It is impossible to estimate the costs of all environmental damage precisely, and

therefore to charge travellers accurately for all the damage they cause.

It may be possible, with future technology, to charge passengers directly for the emissions of air pollutants and noise created by their vehicles. This may be done either through monitoring vehicles continuously or through monitoring the distances travelled and combining this with an emissions rating for particular vehicles. The technology to measure vehicle emissions and noise, however, is not yet in general use.

Emissions charges could be what is required to meet Canada's national goals for the environment. We suggest that a practical means of determining prices for emissions charges would be to estimate the charges required to meet Canada's national goals for reducing CO₂, NO_x and VOCs. When dealing with emissions charges, it is imperative that the following recommendation be read in conjunction with what we say in Chapter 17 on environmental charges based on global damages and their implications for international competition.

We believe that, for the immediate future, emissions surcharges should be placed on fuel sales.⁴ Such emissions surcharges are presently the best and fairest means of charging passenger transportation users for the environmental damage they cause. If imposed at the same rate per unit of emissions from all sources, these surcharges would affect all modes and all fuel sources equally and would be fair. For NO_x and VOCs emissions, the surcharges would apply only in the ozone-sensitive regions, and only during those summer months when ozone levels are damaging. An alternative solution for NO_x and VOCs in sensitive regions might be vehicle registration fees based on estimated annual emissions from the specific vehicle.

We therefore **recommend** that:

7.4 Users of transportation pay for the environmental consequences of their actions, such as:

- (a) actual government costs for creating policies and regulations to prevent damage;**
- (b) environmental clean-up costs or mitigation (e.g. noise abatement);**
- (c) compensation for those affected by environmental damage, where this can be determined; and**
- (d) best estimate of damage where costs cannot be compensated because it is not possible to accurately identify individually those who are affected by environmental damage or the extent to which they have been affected.**

In some cases, estimates of the cost may not be available, but governments may continue to judge it prudent to set goals for pollution control, presumably guided by the social costs of the environmental damage in question. Such goals provide an alternative basis for establishing levels of charges.

We therefore **recommend** that:

7.5 Where environmental goals have been established in the absence of reliable information on damage costs, charges and/or changes in regulations be set at the levels expected to induce the behavioural change that will meet the goals.

7.6 Environmental emission charges be applied equally to all modes of transportation and to non-transportation sources, on as close to a per-unit-of-emission basis as practical.

We further **recommend** that:

7.7 Government clearly separate the revenue that comes from emissions charges from the revenue that comes from other passenger transportation charges, and ensure that:

- (a) revenues raised from emissions charges be first used to clean up environmental damage from transportation and to compensate those affected, if they can be identified;**
 - (b) remaining revenues be used to lower general tax rates; and**
 - (c) revenues from emissions charges not be used for transportation system expansion or maintenance.**
-

For example, compensation could take the form of screens around transportation structures to reduce noise levels or the provision of a safe means of crossing highways or railways. We also believe that it would be fair to use the funds to provide improved public transport in the inner city, where residents are affected disproportionately from traffic caused, in large part, by those living in the suburbs. Such funds could be used for research into pollution prevention and for education on protecting the environment.

Although urban and freight transportation are beyond our mandate, we believe that these principles of cost-effective regulations and emissions charges should be adopted in urban and freight transportation planning and in other sectors of the economy.

COMPARISON OF POTENTIAL EMISSION CHARGES BY MODE

For the purposes of illustration, we obtained estimates of emissions for the different modes and calculated the surcharges that might be required to meet Canadian government objectives of reducing CO₂ to 1990 levels in the year 2000, and reducing NO_x and VOCs in

non-attainment areas in summer. Cars, airplanes, buses and trains emit different amounts of the gases that contribute to air pollution and global warming. Table 7-1 and Chart 7-1 show emissions per passenger-kilometre on two sample intercity routes, a short trip from Toronto to Montreal and a longer trip from Saskatoon to Halifax, for the four passenger modes.

Table 7-1
EXAMPLES OF EMISSIONS BY MODE ON TWO INTERCITY ROUTES

EMISSIONS PER PASSENGER-KILOMETRE IN GRAMS, 1989 — TORONTO TO MONTREAL							
Type of emission	Car	Public transportation with current occupancy rates ^a			Public transportation with all seats filled		
		Bus	Train	Airplane	Bus	Train	Airplane
CO	5.20	0.18	0.34	0.17	0.14	0.21	0.11
VOCs	0.94	0.05	0.14	0.10	0.04	0.09	0.07
NO _x	0.75	0.40	1.54	0.34	0.31	0.96	0.23
CO ₂	128	30	76	220	23	47	148

EMISSIONS PER PASSENGER-KILOMETRE IN GRAMS, 1989 — SASKATOON TO HALIFAX							
Type of emission	Car	Public transportation with current occupancy rates ^b			Public transportation with all seats filled		
		Bus	Train	Airplane	Bus	Train	Airplane
CO	5.20	0.24	0.77	0.13	0.14	0.54	0.09
VOCs	0.94	0.07	0.32	0.08	0.04	0.23	0.05
NO _x	0.75	0.54	3.52	0.26	0.31	2.46	0.17
CO ₂	128	41	173	167	23	121	113

Sources: VHB Research and Consulting Inc., "Environmental Damage from Transportation," Volume 4 of this report, and Royal Commission staff estimates.

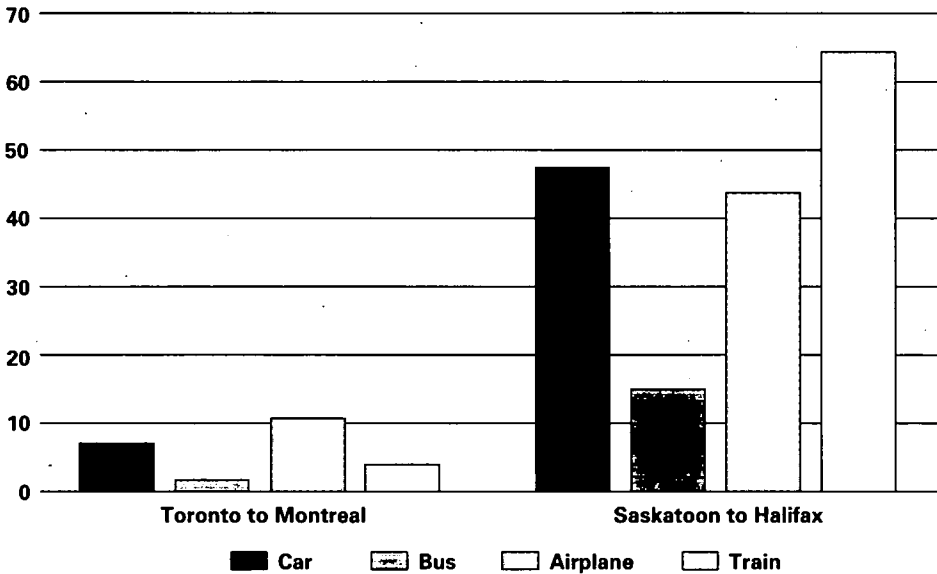
- a. Rates at which seats are currently occupied on public transport vehicles are estimated for the Toronto to Montreal route at 77 percent for bus, 62 percent for train and 67.5 percent for airplane. For cars, the occupancy rate is 1.8.
- b. On the Saskatoon to Halifax route, the estimated occupancy rates are 57 percent for bus, 70 percent for train and 67.5 percent for airplane.

Note: Only direct emissions are included, arising from the trip alone, with no inclusion of indirect emissions from equipment and infrastructure construction. All emissions calculations are based on current vehicles and equipment. If vehicles such as cars and trains were powered by electricity, emissions would depend on the source of electric power.

Chart 7-1

CARBON DIOXIDE EMISSIONS PER 100 PERSON-TRIPS, BY MODE, TORONTO TO MONTREAL AND SASKATOON TO HALIFAX

Carbon dioxide emissions (tonnes)



Sources: VHB Research and Consulting Inc., "Environmental Damage from Transportation," Volume 4 of this report, and Royal Commission staff estimates.

Note: Only "direct" emissions are included, arising from the trip alone, with no inclusion of "indirect" emissions from equipment and facilities construction.

Table 7-1 shows that:

- on the shorter Toronto to Montreal trip, airplanes have the lowest emission of CO and NO_x, while buses have the lowest emission of VOCs;
- for both long and short trips, buses have the lowest fuel consumption and, therefore, the lowest CO₂ emissions;
- on the longer Saskatoon to Halifax trip, airplane emissions are lower per passenger-kilometre than on the shorter trip, while those of buses are higher due to lower occupancy and those of trains are higher due to the use of sleeping cars; and

- current-technology trains have higher emissions of NO_x than any of the other modes, and this would remain the case even if all train seats could be filled.

Tables 7-2 and 7-3 illustrate potential emissions charges and how they might differ by mode for the two trips, Toronto to Montreal and Saskatoon to Halifax. These sample routes are representative of all the types and lengths of trips taken on the transportation system.

We caution readers to be aware that the results shown in Tables 7-2 and 7-3 are extremely speculative. While the federal government has adopted national goals for global warming protection and for ozone control, a method for achieving them through emissions charges has not been designed thoroughly. Governments would have to set charges carefully to induce the appropriate responses by travellers. For our illustration, we have calculated the surcharges on the basis of the government pursuing its announced national goals, relying mostly on charging instead of additional regulation of emissions. As a result, our example charges are high.

For purposes of this illustration, we used a CO_2 charge based on \$120 per tonne of carbon, which becomes \$32.70 per tonne of CO_2 emissions, or 7.7¢ per litre of gasoline. This charge would apply everywhere, and year-round. For NO_x and VOCs, we made the assumption that charges would be imposed only in the ozone non-attainment areas, which include the whole of the Toronto to Montreal trip, but only a small portion of the Saskatoon to Halifax trip. The NO_x and VOCs charges should also be applied only during those periods when ozone levels become unacceptably high. We have assumed that, in order to be practical, the charges would need to be applied uniformly throughout the summer months (probably May through August). The illustrative charges in Tables 7-2 and 7-3, therefore, are different for winter and summer.

Table 7-2

ILLUSTRATIVE EMISSIONS CHARGES, IN DOLLARS PER PERSON-TRIP, TORONTO TO MONTREAL

Carrier	Winter	Summer		
	CO ₂ charge (\$)	CO ₂ charge (\$)	NO _x /VOCs charge (\$)	Total (\$)
Car	2.20	2.20	4.60	6.80
Bus	0.50	0.50	1.20	1.70
Train	1.30	1.30	4.50	5.80
Airplane	3.50	3.50	0.80	4.30

Notes: For this trip, we have assumed the following:

- Toronto to Montreal emissions per passenger-kilometre are as estimated for Table 7-1, based on emissions by current vehicles at current average occupancies (the actual surcharge would vary with the fuel consumption and the occupancy rate of the particular vehicle);
- CO and particulate emissions are not priced for intercity trips, as their damage is urban;
- All levels of government declare it necessary to control ozone by reducing summertime emissions of VOCs and NO_x in this non-attainment area beyond the reductions scheduled in the NO_x/VOCs Management Plan, and to a level that they can forecast will be met if a charge of \$5,000 per tonne is levied, on all sources in the region; and
- CO₂ is charged for separately at a rate of \$33 per tonne, or \$120 per tonne of carbon, an amount that, if applied to all sectors in Canada, is predicted to achieve stabilization at 1990 levels in 2000.

The above are illustrative estimates of charges that would be associated with existing services. These charges would be lower if emissions were reduced through improved technology. In particular, as discussed in the text below, if trains powered by electricity were used, the charges applicable to trains could be very low (or nil) if the electric power were generated mainly (or entirely) from non-fossil-fuel sources.

The figures for the Toronto to Montreal trip show that:

- year-round charges for CO₂ would be lowest for bus passengers and highest for air passengers;
- summer charges for NO_x and VOCs would be lowest per passenger-trip for bus passengers and highest for car passengers;
- total summer charges at the assumed levels would be lowest for bus and highest for car;

- charges would not be large when compared with fares for the public modes;
- the winter charge for CO₂ emissions of \$2.20 for a car traveller would amount to \$3.80 per car (with about 1.7 occupants on average), or 7.5¢ per litre of gas if charged through a gasoline tax. The summer charge of \$6.80 for a car traveller would amount to \$11.80 per car, or about 23¢ per litre of gas;⁵ and
- the summer charge for a car traveller would be only about \$1.00 higher than that for a train passenger on this trip.

We recognize that environmental arguments are advanced in favour of introducing conventional or high-speed trains powered by electricity on this route. We obtained estimates of the possible electricity consumption of such trains and considered possible sources of that electricity. To the extent that the electricity could be supplied from hydro-electric plants or nuclear generating stations, trains would produce none of the CO₂ or air pollutants created by the other modes. For a high-speed train, if the electricity were generated from fossil-fuelled power stations, it would produce per passenger-kilometre about 64 grams of CO₂, 0.3 grams of NO_x and 0.8 grams of sulphur dioxide.⁶ Using our illustrative charges, this worst case would create an environmental charge of about \$3.60 per passenger-trip in winter and \$4.50 in summer.⁷ More reasonably, if the electricity was provided from fossil-fuelled plants in proportion to their forecast contribution to the Ontario and Quebec electricity grids in 2000, the surcharge indicated would be only about one tenth of these levels — that is, only about 40¢ per passenger-trip. For an electrified conventional train, power requirements per passenger-kilometre would be even lower, and emission surcharges correspondingly less.

Electrified trains would thus, on average, produce lower environmental costs than any other mode. However, this cost advantage would not be large as a portion of total trip costs. Furthermore, the estimates are only of damage from CO₂ and air pollutants, ignoring other environmental damage from hydro-electric and nuclear stations.

Table 7-3

ILLUSTRATIVE EMISSIONS CHARGES, IN DOLLARS PER PERSON-TRIP, SASKATOON TO HALIFAX

Carrier	Winter	Summer		
	CO ₂ charge (\$)	CO ₂ charge (\$)	NO _x /VOCs charge (\$)	Total (\$)
Car	19	19	5	24
Bus	6	6	2	8
Train	25	25	8	33
Airplane	19	19	1	20

Note: The emission factors per unit of fuel consumed are assumed to be the same as in the Toronto to Montreal case, but fuel consumed per passenger differs through different load factors and types of equipment. It is also assumed that the charge per tonne of NO_x and VOCs would only be imposed within the part of the trip through designated ozone-sensitive areas. Other assumptions are the same as for the Toronto to Montreal trip.

The figures for the Saskatoon to Halifax trip show that:

- CO₂ charges would be lowest for bus passengers and highest for train passengers;
- NO_x and VOCs charges would be small relative to CO₂ charges, as most of the trip would be outside the ozone non-attainment areas; and
- charges in winter and summer would be lowest for bus passengers and highest for train passengers.

Although transportation will continue to contribute to environmental damage, our recommendations will limit this damage. Implementing regional solutions to ozone non-attainment areas, developing an international strategy on global warming, improving regulations on emissions control and charging fairly for environmental damage will all contribute to protecting Canada's environment.

ENDNOTES

1. The costs of vehicle-emissions controls are estimated to be about \$500 per vehicle, or 0.5¢ per vehicle-kilometre annualized over an average vehicle-lifetime of about 160,000 kilometres.

2. The Convention's objective reads in part (Article 2):

"The ultimate objective . . . is to achieve . . . stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner."

Its "commitments" in Article 4 include:

"Each of the developed country parties shall adopt national policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs. These policies and measures will demonstrate that developed countries are taking the lead in modifying longer-term trends in anthropogenic emissions consistent with the objectives of the Convention, recognizing that the return by the end of the present decade to earlier levels of anthropogenic emissions and other greenhouse gases . . . "would contribute to such modification. . . ." and

"In order to promote progress to this end, each of these Parties shall communicate, within six months of entry into force of the Convention for it and periodically thereafter . . . detailed information on its policies and measures . . . as well as on its resulting projected anthropogenic emissions . . . with the aim of reducing individually or jointly to their 1990 levels these anthropogenic emissions of carbon dioxide and other greenhouse gases. . . ."

United Nation's Framework Convention on Climate Change, New York, May 15, 1992.

3. Research has proven that collective reactions to gasoline prices are like the reactions for most goods: as the price goes up, the amount bought goes down. In the short term, it does not go down much: a 10 percent price increase might bring only a 2 percent reduction in sales; but over the long term — maybe a few years — the reduction is much larger, perhaps of the order of 8 percent.

This research might seem contrary to experience. Prices have been continuously rising, but sales don't seem to be falling. This is because we are referring to real increases in prices, that is, in addition to general inflation, and to sales reductions as compared with the level of sales that would have occurred otherwise. When prices are changing routinely because of inflation, and growth in population and vehicle ownership is causing continuous increases in gasoline sales, it is not easy to recognize real price increases and the gradual reduction in sales they produce. But we are confident that the relationships will hold, and that if pollution charges are added to real gasoline prices, sales will be lower.

Researchers cannot definitively explain the difference between the short-term and long-term effects of price increases, but they suggest that, in the short term, people are locked in patterns of business and social activities. They cannot adjust easily to price increases by driving less or immediately purchasing a different car. Over the longer term, however, when their car comes up for renewal they can replace it with one that is more fuel efficient, and they can change houses or jobs to alter their patterns of car use. They may or may not be aware that they are weighing the price of gas in all these decisions.

4. This would work most effectively for CO₂ because its emission rate per unit of fuel is constant. Charging for other air pollutants through fuel-price surcharges would be a less efficient way of changing people's behaviour. This is because the charges could not be tailored to each vehicle's actual emissions, but would have to be averaged for the entire class of vehicles using a particular fuel type — that is, gasoline-fuelled motor vehicles, diesel-fuelled motor vehicles, trains and jet aircraft.

Such charges could not be reduced by a traveller's or carrier's actions to lower the amount of emissions per unit of fuel, though charges could still be reduced by limiting vehicle use. They would essentially constitute another incentive to reduce fuel consumption.

5. We remind the reader that if our recommendations were implemented in their totality, the result would be a more efficient passenger transportation system, and that while the cost to some travellers would go up, the overall cost to Canadians would be lower. We also caution the reader that this price increase is for gas used only in non-attainment regions in summer.
6. Estimates for a 300 km/hr service, with 75 percent load factor, requiring about 0.10 kilowatt hours per passenger-kilometre.
7. This includes a cost of \$6,000 per tonne of sulphur dioxide, derived from the report to the Royal Commission by VHB Research and Consulting Inc., cited in Table 7-1.

CHAPTER 8

IMPROVING SAFETY

INTRODUCTION

Airplane, bus, train and ferry accidents often command eye-catching headlines, but in reality, public transportation is much safer than private transportation. During 1990, 103 Canadians died as a result of an air, train or ferry accident, while 3,957 travellers died and 263,000 were injured in road accidents.¹

We studied the safety of different modes of travel, and the health and damage costs of accidents. We found, overall, that the safety of our transportation system is improving. The number of accidental deaths from all transportation was lower in 1990 than it was in any year since 1962. Nevertheless, transportation accidents of all kinds cause grief and suffering for many Canadians and are a substantial burden on our society in health and damage costs.

Our principle — that travellers should pay the costs of transportation — means that they should also pay the costs of accidents that are associated with their mode of travel. We have therefore examined safety and accident costs by mode, and who pays for the cost of accidents, safety measures and programs.²

INTERCITY PASSENGER TRANSPORTATION SAFETY

We measured safety by comparing fatalities for each mode relative to passenger-kilometres of travel. We limited our measure to fatalities because comprehensive data on injuries are available only for road vehicles.

Two different measures of safety in passenger transportation are used in this chapter:

- passenger fatality rate: the number of passengers killed per billion passenger-kilometres; and
- fatality rate in passenger operations: the number of persons killed per billion passenger-kilometres, including passengers, crew and others such as bystanders, cyclists and occupants of other vehicles.

AIRPLANE SAFETY

How safe is commercial aviation? Commercial air travel in Canada is organized into three categories of carriers based primarily on the number of passengers carried annually:³

- Level 1 carriers each transport more than one million passengers annually;⁴
- Level 2 carriers each transport 50,000 to one million passengers annually;⁵ and
- Levels 3 to 6 carriers include all other small commercial operations.⁶

Table 8-1
FATALITIES DUE TO COMMERCIAL AIRPLANE ACCIDENTS, 1981-1990

Level of carrier	Number killed
Levels 1 and 2	68 (57 passengers, 11 crew)
Levels 3 to 6	539 (270 passengers, 269 crew)
Total	607

Source: Transportation Safety Board of Canada.

From 1981 to 1990, 607 people died in accidents involving Canadian-owned commercial air carriers. The figures for levels 1 and 2 carriers in Table 8-1 include single accidents at Cincinnati, Ohio, in 1983⁷ and Dryden, Ontario, in 1989 that dramatically raised the fatality rate in the years those accidents occurred. Such accidents make it difficult to calculate fatality rates that indicate trends in aviation safety. Nevertheless, to identify the risks to air travellers in recent years, we averaged total fatalities relative to the number of passenger-kilometres travelled over the decade (Table 8-2).

Table 8-2

COMMERCIAL AIRPLANE FATALITIES PER BILLION PASSENGER-KILOMETRES, 1981-1990

Level of carrier	Percentage of passenger-kilometres flown by all commercial carriers	Passenger fatality rate (passenger deaths only) per billion km	Fatality rate in passenger operations (passenger and crew deaths) per billion km
Level 1	88.0	0.05	0.05
Level 2	8.5	0.7	1.0
Levels 1 and 2	96.5	0.11	0.13
Levels 3 to 6 ^a	3.5	14.0	28.0

Sources: Fatalities are from Transportation Safety Board of Canada. Passenger-kilometres are from Statistics Canada, Catalogue No. 51-002 and 51-006.

- a. Passenger-kilometres are available only for levels 3 and 4 carriers, but passenger traffic carried by levels 5 and 6 operators is likely so small that it would not affect these rounded fatality rates.

The figures in Table 8-2 show that:

- Level 1 carriers had a passenger fatality rate equivalent to one death in every 20 billion passenger-kilometres;⁸
- Levels 1 and 2 carriers had a passenger fatality rate equivalent to one death every 9 billion passenger-kilometres; and
- Levels 3 to 6 carriers had the largest passenger fatality rate, equivalent to one death every 0.07 billion passenger-kilometres.

While fatality rates for all commercial aviation fell between 1981 and 1990, the observed improvement in safety was among smaller carriers. Accidents involving levels 1 and 2 carriers are so rare and vary so much from year to year that it is impossible to determine whether or not the carriers' safety improved during this decade. Nevertheless, it is clear that levels 1 and 2 carriers remain much safer than levels 3 to 6 carriers.

From 1981 to 1990, 556 people died in accidents involving private airplanes. There are no figures for passenger-kilometres flown for private aviation. The only indicator of annual activity is the total number of hours flown for all private aircraft regardless of the number of passengers. This figure reveals that private flying has declined during the last decade. The number of fatal accidents per year also appears to have fallen, but the figures are so variable that it is not possible to establish any trends in the accident rates during the decade.

Risks in private flying can be compared with those of commercial aviation, using average rates of fatal accidents per million flying hours. As Table 8-3 shows, there were 33 accidents per million hours of private flying and only 1 accident per million hours for levels 1 and 2 carriers.

Table 8-3

NUMBER OF FATAL ACCIDENTS PER MILLION FLYING HOURS,^a 1981-1990

Type of carrier	Number killed per million flying hours
Private flying	33.0
Levels 1 and 2 carriers	0.9
Levels 3 to 6 carriers	17.0

Source: Transportation Safety Board of Canada.

- a. This ratio is a customary measure in the aviation industry of airframe and engine performance, but note that it refers to the number of accidents (crashes) in which deaths occurred, rather than the number of people killed, used otherwise throughout this chapter. This is believed to be appropriate as no measure of passenger activity is available for private flying.

No official statistics exist for fatality rates per passenger-kilometres for private aircraft, and no distinction can be made between their use for transportation and recreation. However, based on the number of flying hours, the fatality rate for private aircraft appears to be much greater than the 20 deaths per billion passenger-kilometres for cars.⁹

Has airline deregulation affected commercial air carrier safety? Airline deregulation — the removal or relaxation of economic regulation of airline operations, such as easing entry to markets and removing price constraints — began in Canada in 1984. Regulation of airline safety, however, remained and has been strengthened since then. To date, there is no evidence that economic deregulation has affected airline safety. We note, though, that it takes a substantial period of time (a decade or more) to identify changes in safety trends, because accidents involving larger carriers are so rare.

Since we did not have sufficient statistics to determine with confidence how airline deregulation has affected Canadian air carrier safety, we turned to research in the United States, where economic deregulation began in 1978, six years before it was introduced in Canada. U.S. research suggests that deregulation in that country has not affected airline safety, and that accident rates continue to follow the downward trend established before deregulation.¹⁰ Furthermore, the increase in air travel, which resulted partly from travellers flying instead of driving, substantially reduced the number of trips by car (a more dangerous mode) and improved overall safety.¹¹

TRAIN SAFETY

We found it difficult to determine any meaningful trends in fatalities per passenger-kilometre for intercity passenger trains. Deaths in collisions and derailments are too rare to determine accurately the safety trends for short periods. For example, there were no passenger deaths in eight of the years from 1981 to 1990. In 1986, however, there were 16 passenger deaths and 8 crew deaths in the Hinton, Alberta, crash (Table 8-4).

Table 8-4

TRAIN FATALITIES PER BILLION PASSENGER-KILOMETRES, 1981-1990

Passenger fatality rate (passenger deaths only)	Fatality rate in passenger operations (deaths of passengers, crews and others) ^a
0.8	13.8

Sources: Fatalities are from Transportation Safety Board of Canada. Passenger-kilometres are from Statistics Canada, Catalogue No. 52-003 and 52-215, and unpublished data.

- a. 175 people died in rail-grade crossing accidents, usually in motor vehicles, and 133 were killed trespassing on rail property. Many trespassing deaths may have been suicides, but the Transportation Safety Board's statistics do not distinguish them.

BUS SAFETY

Statistics describing the safety of intercity bus operations are scarce. Only five provinces — Saskatchewan, Manitoba, Ontario, Nova Scotia and Newfoundland — have recorded intercity bus accidents separately from those of city transit buses.

Table 8-5 presents data from these five provinces, but the available information does not cover the decade from 1981 to 1990 — only the three years from 1985 to 1987. Clearly, these data do not provide a sufficient basis to identify any long-term trends.

Table 8-5

FATALITIES AND INJURIES INVOLVING INTERCITY BUSES, 1985-1987
(SASKATCHEWAN, MANITOBA, ONTARIO, NOVA SCOTIA, NEWFOUNDLAND)

	Passenger	Driver	Others ^a	Total
Deaths	0	0	7	7
Injuries	73	27	165	265 ^b

Source: Transport Canada special tabulation.

- a. Primarily drivers and passengers in cars and light trucks that collided with buses.
b. Only 4 of the bus occupants and 17 of the other victims were injured severely enough to require hospitalization.

We could not obtain the number of passenger-kilometres travelled by bus for the five provinces and, therefore, could not accurately determine the rates of death and injury per vehicle-kilometre and passenger-kilometre. Based on data for the number of bus trips and kilometres travelled throughout the entire bus industry, we have estimated an average fatality rate for this three-year period. From 1985 to 1987, there were roughly two deaths per billion passenger-kilometres for all victims, whether passengers, drivers or others. Although there were no passenger deaths in the five provinces from 1985 to 1987, bus crashes can cause passenger fatalities.¹²

We have made a rough estimate of bus safety in order to compare it with the other modes: across the whole country and over a longer period of time, the true number of fatalities from travelling by bus could be placed between 0 and 50 percent of all bus-related deaths. This results in a passenger fatality rate of 0.0 to 1.0 deaths per billion passenger-kilometres (Table 8-6).

Table 8-6
ESTIMATED INTERCITY BUS FATALITIES PER BILLION PASSENGER-KILOMETRES, 1985-1987

Passenger fatality rate ^a (passenger deaths only)	Fatality rate in passenger operations (deaths of passengers, crew and others)
0.0-1.0	2.0

Source: Passenger-kilometres are from Royal Commission staff estimates.

a. Not calculated from actual fatalities, but estimated as noted in the text.

The majority of victims of bus accidents are not the bus passengers but the drivers and passengers of cars and light trucks involved in the accidents. Improvements to cars and light trucks and seat-belt use have assisted occupants of those vehicles to avoid and survive crashes. As cars and light trucks continue to become safer, travel by intercity bus will be safer primarily for others, but also for bus passengers.

FERRY SAFETY

There were only six passenger deaths on ferries from 1981 to 1990, four of which were suicides. Crew deaths were even more rare. In all ferry operations, crew deaths averaged one third of the number of passenger deaths.

The annual numbers of fatalities on ferries are much too small and variable for trends to be recognized, or risks to be computed with confidence. Combining the average fatalities per year during the decade with the estimated traffic of 850 million passenger-kilometres in 1988, we were able to estimate the risks. Excluding suicides, the fatality rate in ferry operations (in crew, as well as passengers) was about 0.5 deaths per billion passenger-kilometres. The passenger fatality rate was 0.2 deaths per billion passenger-kilometres (Table 8-7).

Table 8-7

FERRY FATALITIES PER BILLION PASSENGER-KILOMETRES, 1981-1990

Passenger fatality rate (passenger deaths only)	Fatality rate in passenger operations (deaths of passengers and crew)
0.2	0.5

Sources: Fatalities are from Transportation Safety Board of Canada. Passenger-kilometres are from carrier annual reports and Royal Commission staff estimates.

CAR SAFETY

People driving private cars, vans and light trucks account for around 80 percent of intercity travel and 98 percent of the deaths related to intercity travel. Based on available data, we have calculated the passenger fatality rate and the fatality rate in passenger operations for 1989 (Table 8-8).

Table 8-8

CAR FATALITIES PER BILLION PASSENGER-KILOMETRES, 1989

Passenger fatality rate (drivers and passengers)	Fatality rate in passenger operations
10.0	13.0

Sources: Highway car fatalities are from Transport Canada. Passenger-kilometres are from Royal Commission staff estimates.

While the high rate of fatalities from road accidents concerns us, there are positive trends in road safety. The growth in fatalities has been much less than the growth in traffic. Although there are 14 times as many cars on the roads today as there were in 1930, the number of road deaths has only tripled. Improvement has been especially rapid in the past 20 years. Since 1973, the risk of death from car use has fallen faster than traffic has grown. The result is that the number of people killed has decreased annually.

COMPARISON OF SAFETY BY MODE

Table 8-9 illustrates the passenger fatality rate and the fatality rate in passenger operations for all modes.

Table 8-9

ESTIMATES OF RECENT^a INTERCITY FATALITY RATES BY MODE (PER BILLION PASSENGER-KILOMETRES)

Mode	Passenger fatality rate ^b	Fatality rate in passenger operations ^c
Air — Level 1 carriers ^d	0.05	0.05
Air — Level 2 carriers ^d	0.7	1.0
Air — Levels 3 to 6 carriers ^d	14.0	28.0
Train	0.8	13.8
Bus	0.0-1.0	2.0
Ferry	0.2	0.5
Car	10.0	13.0

Sources: Tables 8-2, 8-4, 8-6, 8-7 and 8-8.

- a. Based on the 1980s as a whole or recent years in 1980s; see text and source tables.
- b. Includes only passengers killed.
- c. Includes passengers, crew and bystanders killed during passenger operations.
- d. Includes all Canadian-registered carrier operations, domestic and international.

The figures show that:

- It is safer to travel on Level 1 air carriers than on any other mode.
- Cars cause about 12 times as many passenger deaths over the same distance as trains; at a minimum, 10 times as many deaths as intercity buses that operate on the same road system; and about 90 times as many deaths as levels 1 and 2 air carriers combined.
- Travel using major airlines, buses, trains or ferries is safer than travel by private car or private airplane. Private flying is probably much more dangerous than intercity car travel.

Table 8-9 includes only system-wide averages. The risks of travel also depend on the type of trip and its length. When governments contemplate transportation investment, they should take into account these system-wide safety rates, and should recognize that other factors, such as type of trip, can affect the contribution to safety of individual projects. We believe that traffic on intercity routes would, on average, be safer if some travellers switched from travelling by car to bus, train, or airplane. There might also be safety gains if some travel shifted from train to airplane, or from bus to airplane.

THE COSTS OF ACCIDENTS

Most estimates of losses caused by transportation accidents are for road accidents.

In this section, we use Transport Canada's calculations of the property damage, lost work and health care costs associated with all road accidents and casualties. They are as follows:

Property damage costs: Data come from the claims records of insurance companies, and include allowances for unclaimed damage.

Lost work costs: Data come from durations of disability and average expectations of lifetime income, with allowance made for unpaid work performed in or outside of the home.

Health care costs: Estimates of these costs are derived primarily from records of payment by provincially owned motor-vehicle insurance administrations in British Columbia and Quebec.

Table 8-10 illustrates the estimated minimum loss per victim for death or injury. The losses arise mainly from lost work (including unpaid work at equivalent market values).

Table 8-10
ESTIMATED MINIMUM AVERAGE LOSSES PER VICTIM (ROAD), 1990

Severity of injury	Loss per victim (\$)
Fatal	330,000
Non-fatal	10,000

Sources: J.J. Lawson, "The Costs of Road Accidents and Their Application in Economic Evaluation of Safety Programs," *Transportation Forum of the Roads and Transportation Association of Canada, V.2 (1980)*, pp. 53-63; J.J. Lawson, *The Valuation of Transport Safety* (Ottawa: Transport Canada, May 1989) Report TP 10569.

Table 8-11 provides data on the components of costs, averaged per accident. Because accidents on average have more than one victim, the average costs per accident are higher than those per victim. There are about 115 fatalities for every 100 fatal accidents, and nearly 150 injured victims for every 100 injury accidents.

Table 8-11
ESTIMATED MINIMUM AVERAGE LOSSES PER ACCIDENT BY TYPE OF LOSS (ROAD), 1990

Class of accident	Number of accidents	Health care (\$)	Work loss (\$)	Property damage (\$)	Total (\$)
Fatal	3,440	(few)	400,000 ^a	10,000	410,000 ^a
Injury	178,854	2,000-3,000	12,000	10,000	25,000
No injury	650,000	nil	nil	5,000	5,000

Sources: J.J. Lawson, "The Costs of Road Accidents and Their Application in Economic Evaluation of Safety Programs," *Transportation Forum of the Roads and Transportation Association of Canada, V.2 (1980)*, pp. 53-63; J.J. Lawson, *The Valuation of Transport Safety* (Ottawa: Transport Canada, May 1989) Report TP 10569.

a. "Work loss" and therefore "totals" are uncertain.

Table 8-12 estimates the minimum total losses for all road accidents in 1990, indicating that health care accounted for \$500 million, work losses for \$3.5 billion, and property damage for \$5 billion.

Table 8-12

ESTIMATED MINIMUM TOTAL LOSSES IN ALL ACCIDENTS BY TYPE OF LOSS (ROAD), 1990

Class of accident	Number of accidents	Health care (\$ billions)	Work loss (\$ billions)	Property damage (\$ billions)	Total (\$ billions)
Fatal	3,440	(few)	1.4	(few)	1.4
Injury	178,854	0.5	2.1	1.8	4.4
No injury	650,000	nil	nil	3.2	3.2

Sources: J.J. Lawson, "The Costs of Road Accidents and Their Application in Economic Evaluation of Safety Programs," *Transportation Forum of the Roads and Transportation Association of Canada, V.2 (1980), pp. 53-63*; J.J. Lawson, *The Valuation of Transport Safety (Ottawa: Transport Canada, May 1989) Report TP 10569*.

The value of improved safety can be determined by estimating what people are willing to pay to reduce or avoid the risk of death. To do this, calculations are made using the following sources:

- additional wages received by workers in risky jobs;
- amounts paid by consumers for safety devices; and
- amounts individuals say they would pay to reduce a risk.

Some researchers have suggested that the value of life is in the \$1 million to \$3 million range. The debate on the value of life remains unresolved. The result is that governments around the world plan safety investments using different values.¹³

Transport Canada currently uses \$1.5 million as a value per death avoided. If this amount reflects the social costs of the grief and suffering caused by an accident, as well as the costs of physical damage, lost work and health care, it would raise the total estimated annual accident cost shown in Table 8-12 from \$9 billion to \$14 billion.

WHO PAYS FOR ACCIDENT COSTS?

Transportation vehicle users, owners and carriers today pay for 95 percent of the costs that result from property damage and work loss caused by road accidents. They pay through:

- mandatory third-party liability insurance to cover the losses of others in accidents;¹⁴
- personal collision insurance, which is optional;
- payment of deductible amounts in their insurance policies; and
- payment for uninsured damages.

Travellers pay the cost of accidents if their insurance compensates all losses fully and if the annual premium accurately represents the expected loss per year. The insurance company charges an annual premium based on the expected loss that year. In this manner, travellers facing similar risks share the costs occurring in any one year.

Do travellers pay for all the accident costs they incur? Not entirely, for three reasons:

- Insurance companies do vary the premium rates with different accident experiences but not by enough to avoid all cross subsidization. They spread risks too broadly among travellers with different accident experiences. While the *Canadian Charter of Rights and Freedoms* and some provincial legislation deter insurance companies from varying their rates according to sex and age, there remains scope for greater differentiation of insurance rates according to such factors as previous accident claims and traffic violations, area of residence, model of vehicle and annual distance travelled.
- Compensation to victims is not complete. Insurance pays only for losses deemed to have occurred, and the method for determining such losses differs from province to province. For example, the motor-vehicle insurance agency in Quebec provides generous

compensation for income losses to victims who are not employed. In Ontario, the no-fault system has low limits on many classes of compensation. Other provincial or territorial insurance systems also have caps on levels of compensation.

- Some accident costs are paid by others and not by those responsible. This is particularly true of health care costs, which are paid primarily by taxpayers. In 1990, the total health care cost from accidents was about \$500 million (Table 8-12). Of this total, about \$300 million was paid by provincial health-insurance plans, and only \$200 million was recovered from motor-vehicle insurance companies.

The \$300 million not recovered from transportation users is small in relation to total accident losses of \$9 billion, and represents only 5 percent of total accident damage. Charging this amount to users would add 0.25¢ per vehicle-kilometre, or about \$40 per vehicle per year to insurance premiums.

WHO PAYS FOR THE COST OF ACCIDENT PREVENTION?

INFRASTRUCTURE DESIGN AND SERVICES

When transportation providers design infrastructure to accommodate traffic capacity, they also build in a substantial amount of safety. The design of runways includes lengths and widths that are safe for landings and take-offs, and the design of roads has alignments, shoulders, and medians to provide safe driving conditions. Transportation infrastructure also includes navigation equipment, road barriers, markings and traffic control devices — all designed for both capacity and safety. Some services, such as emergency response systems, are strictly safety-oriented.

In general, the infrastructure provider bears the initial costs of design and safety features. Who ultimately pays depends on the extent to which the infrastructure provider tries to recover costs from travellers.

In general, taxpayers pay for the unrecovered costs of government-provided infrastructure through federal, provincial, territorial and municipal taxes.

REGULATION OF OPERATORS AND PERFORMANCE

Government regulation of vehicle operators and vehicle performance is based on concerns that the marketplace alone cannot protect society's safety interests. For example, there are regulations to:

- protect innocent bystanders from reckless operators;
- protect passengers on public transportation from risks over which they have no control;
- protect vehicle purchasers who are unable to ascertain the safety performance of vehicles and equipment;
- overcome manufacturers' resistance to the expense of incorporating safety innovations in their equipment; and
- ensure that individuals protect themselves. For example, they require car drivers and passengers to use seat belts, motorcyclists to wear helmets, and children to use seats with child restraints.

In general, travellers today do not pay directly for the costs that governments incur in developing, monitoring and enforcing regulations. These costs include administering registration systems, testing vehicles and craft, and, most significantly, enforcing traffic regulations. In 1987, the most recent year for which we have data, the cost of police enforcement in Canada for safety regulations was approximately \$450 million.

RECOMMENDATIONS

As set out in Chapter 4, safety is an objective of the passenger transportation system. Therefore all safety costs should be incorporated into the price paid by travellers in each mode.

The health care system in Canada is intended to provide universal coverage. User-pay is consistent with this principle. We believe that charges can be levied on specific activities that contribute to health care costs. This will reduce the funds that need to be provided to the health care system from general tax revenues and health care taxes and premiums. The Canadian taxpayer also bears most of the government cost of developing, monitoring and enforcing regulations that promote transportation safety. We believe that travellers should also pay for these costs.

We therefore recommend that:

8.1 Travellers pay for all safety and accident costs, including:

- (a) health care costs related to passenger transportation currently borne by the health insurance system; and**
 - (b) the cost of safety services provided by governments.**
-

Provincial and territorial authorities may already be setting their vehicle licence fees to include regulation costs, particularly for police enforcement. If they are doing so, these costs are not evident to the public. We believe that it is feasible for the provinces to account for those costs more specifically and to include them in the prices they charge to transportation users.

Until recently, Transport Canada used widely differing values for the different modes in assessing safety improvements and evaluating spending proposals. For example, the values of life and of various injuries used in aviation safety decisions were several times higher than those used in road safety decisions. Whether this difference in values led to any large distortion in government spending by mode is not clear. We think it likely, however, that government spending priorities would have been different if, for example, the aviation values had been used to assess investments, regulations and other policies across all modes.

Furthermore, it appears that the provinces also made spending decisions on improvements for road safety based on Transport Canada's road values. Had aviation values been used instead, highway safety investments might have increased substantially.

This possible federal bias towards aviation safety and against road safety may be eliminated now that the Department has proposed a uniform value for all modes.

To ensure this, we **recommend** that:

8.2 All responsible agencies use comparable values for injury and loss of life when evaluating spending proposals for safety improvements in different modes.

ENDNOTES

1. Other accidents in private vehicles are excluded from these figures (for example, those killed or injured in private flying, private boating and non-passenger shipping).
2. For more detailed information on the modes of travel, general developments in safety, and comparisons of safety risks by mode, see Volume 2.
3. The following statistics describe the safety of Canadian-registered carriers, including their foreign as well as domestic operations, and do not represent operations in Canada of foreign carriers. Note that carriers can also be designated as level 1 or 2 on the basis of tonnes of freight carried.
4. This category includes the two major airlines, Air Canada and Canadian Airlines International Ltd., and two feeder airlines, Air BC and Time Air.
5. This category currently includes 24 major (feeder and charter) air carriers, including for example, Nationair, Canada 3000 Ltd., Air Nova and Air Ontario.
6. This category currently includes some 844 smaller operators, including such companies as Air Creebec, Labrador Airways and Athabaska Airways. Only a minority of these companies appear to provide scheduled passenger service. Few data are available on the almost 600 operators in levels 5 and 6.
7. These statistics include accidents to Canadian carriers whether occurring in Canada or abroad.
8. A death rate of 0.05 per billion passenger-kilometres converts to 1 death per (1 billion ÷ 0.05 =) 20 billion passenger-kilometres.
9. In the decade 1981 to 1990, 9.6 million hours of private flying time were logged. If the aircraft averaged 250 to 300 kilometres per hour and 2 to 3 passengers, the 556 private-flying deaths during the decade would indicate a fatality rate of 60 to 120 deaths per billion passenger-kilometres.
10. Some U.S. observers had been concerned that deregulation would increase accident risks because traffic from the safer major carriers would switch to less-safe commuter carriers. This fear has not been substantiated. While switching has occurred, most traffic shifted to larger commuter carriers, whose accident rates were below the average for commuter carriers.

Also, the higher fatality rates for commuter carriers reflect, in general, their shorter trip lengths and greater number of take-offs and landings, which is when airplanes are at most risk of crashing. Following deregulation, commuter airlines became part of the hub-and-spoke pattern of airline routing, whereby travellers fly to a central airport (the hub) and change planes to travel to other destinations via the spokes. The somewhat unexpected result was that the overall number of stops on a typical passenger's flight was reduced, thereby improving the commuter carriers' safety.

Overall, researchers conclude that, while the increase in commuter traffic possibly worsened average risks per passenger-kilometre compared with what might have been achieved without deregulation, air safety continued to improve.

11. See L.F. Bylow and I. Savage, "The Effect of Airline Deregulation on Automobile Fatalities," *Accident Analysis and Prevention* 23 (5), October 1991, pp. 443-52.
12. Verbal communication from those responsible for Transport Canada's motor vehicle accident investigation teams.
13. Until recently, different values were even used within Transport Canada. Aviation investment analysts placed a value on death avoided that was several times higher than the value used in evaluating motor vehicle regulations and highway investments. Uniformity was established when the Department adopted a standard value of \$1.5 million (in 1991 dollars). That figure is essentially a median value among those previously used, and Transport Canada makes no claim to have resolved the problems of measuring the value of life.
14. There are provincial variations regarding insurance. Some provinces have no-fault insurance programs: Ontario for all third-party damage, Quebec for all injury, and others with elements of no-fault in agreed payment schedules for specified damages.

In addition, British Columbia, Saskatchewan and Manitoba have provincial insurance companies for all motor-vehicle insurance, and Quebec has a provincial scheme for injury damage, leaving property damage to private-sector insurance companies. All provinces have no-fault hospital-medical insurance schemes that provide health care for victims regardless of who was responsible for the accident.

CHAPTER 9

EASING THE WAY: ACCESS TO TRANSPORTATION FOR PEOPLE WITH DISABILITIES

INTRODUCTION

Our public hearings and review of submissions made us keenly aware that many Canadians with disabilities must struggle to gain access to transportation services. For example, some feel cut off from public transportation because it is difficult to find appropriate seating or to get on and off buses, trains and airplanes. Others have problems moving around terminals, hearing announcements or reading signs. For many, travel becomes so arduous that they are unable to use public transportation at all.

Canadians with disabilities believe that equal access to transportation will allow them to lead more independent and productive lives. When these Canadians spoke with us about their difficulties with the transportation system, many said that they are unable to travel to educational, vocational, cultural and commercial facilities in and beyond their communities. They asked for the same access, comfort and dignity that other Canadians take for granted. They also made numerous suggestions on how access to the passenger transportation system could be improved.

THE CURRENT SITUATION: FRUSTRATION AND PROGRESS

THE PEOPLE MOST AFFECTED

Chart 9-1 shows the relationship between the adult Canadian population, the component composed of people with disabilities, and the number of Canadians in this smaller population who have

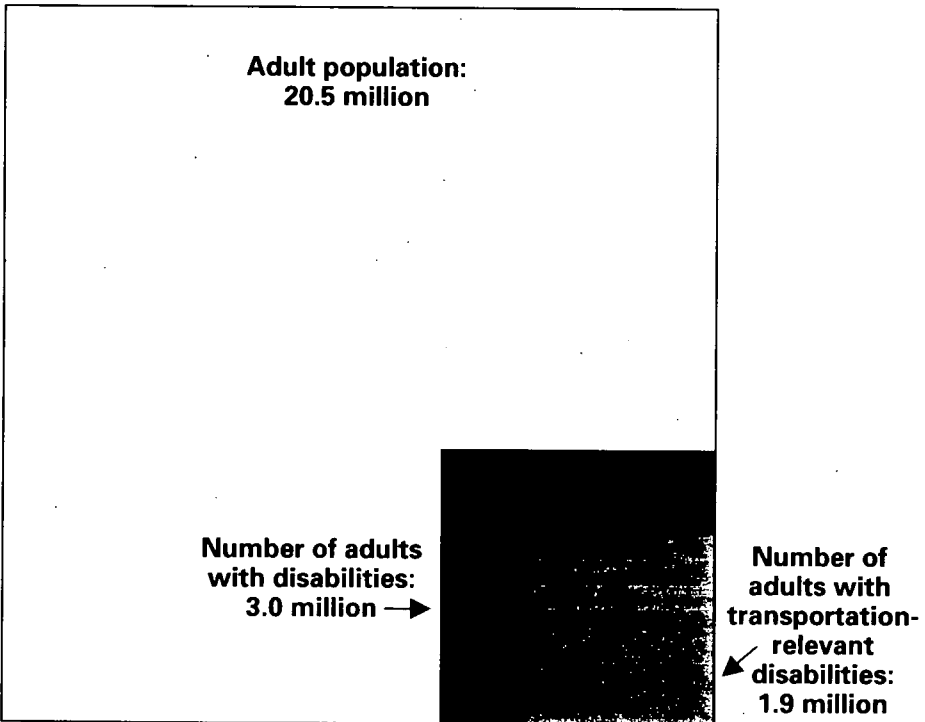
transportation-relevant disabilities.¹ This latter group accounted for nearly 10 percent of the adult population, and 63 percent of adults with disabilities (or about 1.9 million people) in 1990.²

The amount of change required to improve accessibility for people with disabilities differs depending on the nature of the disability. In some cases, specialized training of transportation personnel is sufficient; in others, additional or modified equipment is necessary.

Table 9-1 provides an estimate of the number of Canadians with transportation-relevant disabilities, by type of disability. In 1990,

Chart 9-1

NUMBER OF ADULTS WITH DISABILITIES AND WITH TRANSPORTATION-RELEVANT DISABILITIES, 1990



Source: Hickling Corporation, *Transportation for People with Disabilities: A Policy Review and Analysis*, a report prepared for the Royal Commission on National Passenger Transportation, RR-01, March 1991.

adult Canadians who have to use wheelchairs or walkers when they travel numbered an estimated 132,660, or 7.1 percent of those with transportation-relevant disabilities.

Table 9-1

NUMBER OF PERSONS WITH TRANSPORTATION-RELEVANT DISABILITIES, BY TYPE OF DISABILITY, 1990

	Number	Percent ^a
All Canadians aged 15 and over with transportation-relevant disabilities	1,879,615	100.0
Mental disability	714,398	38.0
Hearing impairment	648,780	34.5
Sight impairment	417,990	22.2
Speech impairment	159,843	8.5
Wheelchair or walker use	132,660	7.1
Blindness	42,176	2.2
Disability unspecified	37,052	2.0

Sources: Hickling Corporation, using data from Statistics Canada's Health and Activity Limitation Survey, 1987, with projections to 1990; *Transportation for People with Disabilities: A Policy Review and Analysis*, a report prepared for the Royal Commission on National Passenger Transportation, RR-01, March 1991, p. 5.

- a. Figures will add to more than 100 percent because some people have multiple disabilities. Figures include people living in institutions but exclude those confined to the home (an estimated 37,600).

Today, Canadians over 65 years old make up only 11 percent of the population but account for nearly 37 percent of those with disabilities.³ By the early part of the next century, that 11 percent will rise to 18 percent — about 6 million people. It is likely that there will be a proportionate increase in the number of Canadians with disabilities.⁴ This poses challenges for governments today, and for transportation providers who must plan for the future use of transportation infrastructure and services.

EXPECTATIONS FOR IMPROVEMENT IN ACCESS

There have been several pieces of legislation in Canada and the United States in recent years that raised expectations of rapid improvements in access to transportation for people with disabilities. In Canada, Parliament passed the *National Transportation Act, 1987*, which states that no carrier or mode of transportation under federal jurisdiction "so far as practicable" should allow "an undue obstacle to the mobility of persons, including those persons who are disabled."⁵ The Act also gives the National Transportation Agency responsibility for "eliminating undue obstacles in the transportation network governed by this Act to the mobility of disabled persons."⁶ In the United States, Congress passed the *Americans with Disabilities Act of 1990*. With respect to passenger transportation, this Act requires carriers to meet, over specified time periods, standards of accessibility for people with disabilities.⁷

In Canada, people with disabilities expected that the Canadian legislation plus the influence of the American legislation would bring about quick and considerable improvements in their access to passenger transportation. This did not happen. It has taken five years for the federal government to publish, for comment, proposed regulations aimed at improving access to transportation services for people with disabilities. These proposed regulations apply only to the domestic carriage of people with disabilities in aircraft with 30 or more passenger seats and to programs for carrier personnel training.⁸

WHAT PROGRESS HAS BEEN MADE?

People with disabilities and those who support their efforts to improve accessibility are putting pressure on governments and industry in different countries to recognize that they are entitled to equality with those who do not have a disability. In the United States, for example, Vietnam veterans' groups were active in the movement that led Congress to enact the *Americans with Disabilities Act of 1990*.

In Canada, several pieces of legislation address issues of importance to those with disabilities. Two that provide a measure of protection are the *Canadian Charter of Rights and Freedoms* and the *Canadian Human Rights Act*.⁹ The provisions relevant to transportation, however, require the traveller with a disability to seek access, rather than placing the onus on service providers to ensure it. Furthermore, under this legislation, knowledge of lack of access is not sufficient grounds to seek redress — a person with a disability must first have been refused access. In contrast, the *National Transportation Act, 1987* provides authority to initiate action to require transportation carriers to eliminate undue obstacles.

Government and industry are improving access, but progress is slow. Although legislation and regulation provide incentives, we have found that improvements are often begun hesitantly and implemented slowly. We note, however, the following efforts on behalf of travellers with disabilities.

The National Transportation Agency¹⁰

In line with the responsibilities given to it in the *National Transportation Act, 1987*, the Agency has initiated several activities:

- The Agency issued several individual orders to improve access after complaints were lodged.¹¹
- The Agency reported on May 27, 1991 on an inquiry into the policies of Canadian air carriers regarding people with disabilities.¹² The inquiry found that one airline had a policy of not accepting travellers with certain disabilities on specific aircraft and asked the airline to comment on the inquiry's finding that this policy may constitute an "undue obstacle to the mobility of disabled persons."

In general, the inquiry found that the policies of large carriers do not appear to pose major problems to passengers with disabilities. It noted, however, that these policies are discretionary and subject to change by the companies without notice, and could lead to

obstacles to the mobility of travellers. The inquiry suggested that future obstacles could be avoided if an overall policy with uniform terms and conditions for all air companies were put in place.

- The Agency announced an inquiry on March 19, 1991 into the accessibility of ferry services under federal jurisdiction. This inquiry is expected to recommend regulations that remove barriers to mobility that arise from the construction or design of ferry equipment and terminals, operating policies, training of ferry staff and communication of information to people with disabilities. The inquiry issued its interim report on January 17, 1992, and requested further comments, suggestions or new information from ferry operators and other interested parties.¹³
- Another inquiry is examining the accessibility of Canada's inter-provincial bus system. This inquiry, which commenced in the spring of 1992 and includes public hearings in centres across the country, will report to the Minister of Transport in the spring of 1993.¹⁴
- On March 21, 1992, the Agency published its proposed regulations in two areas.¹⁵ The first area covers the services to be provided to people with disabilities travelling in airplanes with 30 or more passenger seats. The second area discusses the training to be provided to personnel employed by all federally regulated carriers and terminal operators to enable staff to assist travellers with disabilities in the most appropriate ways.

Recent Legislative Initiatives

On May 5, 1992, the Secretary of State tabled Bill C-78, which was aimed at improving accessibility to various services for people with disabilities by amending six Acts. The Acts are the *Canada Elections Act*, the *Access to Information Act*, the *Privacy Act*, the *Criminal Code*, the *Citizenship Act* and the *National Transportation Act, 1987*.

The bill was passed on June 18, 1992. The preamble to the *National Transportation Act, 1987* (NTA, 1987) now includes access for

people with disabilities as part of the overall objectives for Canada's transportation system.¹⁶

In the news release announcing the tabling of the Bill, the Secretary of State noted that the NTA, 1987 amendment was in addition to the recent pre-publication of two sets of regulations to improve access to the federally regulated transportation system. He announced that "Additional CDRC [Canadian Disability Rights Council] proposals for improving transportation accessibility will be considered as part of an independent review of the *National Transportation Act, 1987* to be completed next year."¹⁷

The Secretary of State also indicated that Treasury Board will strengthen and promote its policy regarding the way in which the federal government communicates with persons with disabilities. This should result in more information concerning government programs and services — including transportation services — becoming available in alternative formats such as braille, large print, computer-readable diskettes and TDDs (Telecommunications Devices for the Deaf).

Federal Government Programs

The federal government has provided funding for demonstration projects, workshops, communications projects and research to improve accessibility for people with disabilities. In 1990, funding for these projects totalled \$1.5 million. One major demonstration project for intercity busing was funded by Transport Canada and implemented through Canada Coach Lines between the Ontario cities of Kitchener, Cambridge, Hamilton, St. Catharines and Niagara Falls. Use of this service, however, was low.¹⁸

The National Strategy for the Integration of Persons with Disabilities, announced in the fall of 1991, provides \$24.6 million over a five-year period to help carriers improve access to their vehicles, and to develop training programs that encourage employees of federally regulated carriers to develop more positive attitudes and practices towards people with disabilities.¹⁹

Municipal, Provincial and Territorial Government Programs

Although municipal governments are not generally concerned with intercity transportation, we recognize that they play an important role in ensuring that people with disabilities are able to reach air, rail, bus and ferry terminals.

Accessible taxis and para-transit are generally the responsibility of municipal governments but are, in many instances, funded jointly with provincial governments. Although provincial governments have acted in various ways to improve access, most of their funding goes for para-transit services that provide specialized transportation, such as vans with wheelchair lifts, in urban areas.

Other provincial and territorial activities have included financial support for vehicle retrofits of hand controls and lifts, special parking permits, transportation assistance for people with disabilities in rural areas, and demonstrations of wheelchair-accessible taxis.

Industry Initiatives

Canada's major scheduled airlines, their affiliates and other independent airlines have voluntarily put in place services to assist travellers with disabilities. These services include reduced fares for attendants on flights within North America; in-flight wheelchairs and oxygen; wheelchair-accessible washrooms on many aircraft; and a toll-free telephone number in Canada for those with a Telecommunications Device for the Deaf.

For people with disabilities, access to major ferry and rail services is generally easier than to intercity bus services. Many ferry, rail and major bus companies do not charge for an attendant accompanying a person with a disability.

RECOMMENDATIONS

While governments and industry have taken steps to improve access to intercity passenger transportation for people with disabilities, still

more must be done. We make the following recommendations so that the pace of improvement will increase.

RIGHTS TO ACCESS

We firmly believe that the transportation independence of all Canadians is important. When people with disabilities have access to jobs and educational facilities, they have a better chance of becoming productive and participating citizens who add to the vitality and diversity of Canadian society.

Therefore, we recommend that:

9.1 Governments establish a goal that all travellers in Canada have access to public transportation in a safe, reasonably comfortable and dignified fashion, irrespective of physical or mental ability.

9.2 The National Transportation Agency establish minimum national standards of passenger accessibility. As with other related initiatives, these should be developed in consultation with groups representing people with disabilities, carriers and operators of transportation infrastructure.

MAKING EQUIPMENT AND INFRASTRUCTURE ACCESSIBLE

We recognize that there are many obstacles to providing accessible transportation for people with disabilities. Currently, people with transportation-relevant disabilities form only 10 percent of Canada's adult population. Even though that percentage is expected to rise, the proportion of Canadians with disabilities who wish to travel will remain low compared with the rest of the population. As a result,

their demand for specialized transportation services may never be enough to lead to the provision of these services on a purely market-driven basis. In addition, individual point-to-point services and modification of equipment and services to improve accessibility — especially for the few travellers with ambulatory disabilities — are expensive.

The range of physical abilities that should be considered when providing access to passenger transportation services has been expanding. We wish that all obstacles to accessible transportation could be removed immediately, but recognize that imposing costly, immediate requirements upon Canadian carriers could undermine their viability.

At present, it may be more practical for some modes to operate accessible services parallel to existing public transportation (for example, the para-transit bus services in some municipalities). We believe, however, that people with disabilities should be as fully integrated into Canadian life as possible, and that one system to handle all travellers should be the long-term goal.

We believe that improved accessibility can often be accomplished at modest additional cost, by changing operating rules, sensitizing carrier staff, improving the design of new equipment and infrastructure, and modifying existing equipment and infrastructure. Other changes, unfortunately, are more costly.

Therefore, we **recommend** that:

9.3 Carriers and providers of infrastructure begin now to ensure that their specifications for new equipment and infrastructure will provide people with disabilities with continuing improvements in accessibility to their services. They should also implement, where practicable, retrofitting programs for their equipment and infrastructure.

Implementing this recommendation will result in substantial improvements in access for most individuals who currently find intercity travel either difficult or impossible. In some cases, further efforts are needed to ensure that the technologies and operating procedures devised to assist travellers with disabilities are appropriate, yet cost-effective.

We want to ensure that regulations dealing with accessibility for people with disabilities lead to continuing improvements.

Therefore, we **recommend** that:

9.4 The *National Transportation Act, 1987* be amended to require that the National Transportation Agency take more active responsibility for ensuring that transportation services become more accessible to those with disabilities.

CARRIER COSTS

Improving accessibility for travellers with disabilities will undeniably add costs to carrier operations, which will be passed on to all travellers. We considered how our recommendations for the treatment of travellers with disabilities would affect carriers' operations in a competitive market, and wanted to ensure that the modes do not face unforeseen costs in the short term.

Therefore, we recommend that:

9.5 The National Transportation Agency, in taking more active responsibility for ensuring that transportation services become more accessible to those with disabilities, give carriers and operators of transportation related infrastructure:

- (a) the freedom to decide how best to meet performance standards, rather than giving them detailed directions on how accessibility is to be achieved; together with**
- (b) a reasonable period of time to improve accessibility to new equipment and to infrastructure.**

ATTENDANTS AND IDENTIFICATION CARDS

We are aware of the stress and frustration that people with disabilities often experience because of administrative obstacles when trying to obtain or use specialized services. Some carriers, for example, have required clients with disabilities to obtain documentation regarding their ability to travel before accepting them as passengers, and sometimes required that this documentation be shown before each trip. Other carriers have insisted that passengers with disabilities must travel with an attendant, even though the passenger did not feel that an attendant was needed. On the other hand, for some people with disabilities, safe and comfortable travel can only be achieved with the help of an attendant.²⁰

Whatever the special needs or services required by people with disabilities, we feel that these should be determined privately, prior to the trip. Wherever possible, we would like to eliminate what are sometimes embarrassing discussions at check-in counters and other points of departure about special arrangements and services.

Government, industry and groups representing people with disabilities should develop a mechanism that allows travellers with permanent

or long-term disabilities to eliminate the need for discussion and questioning on each travel occasion.

We recognize that the condition of an individual with a permanent disability is not necessarily stable and, in some cases, the requirement for an attendant could change. The mechanism created should allow for periodic reviews of some decisions. One way of handling decisions relating to the needs of travellers with disabilities could be through the use of coded identification cards.

Therefore, we recommend that:

9.6 Through consultation among groups representing people with disabilities, carrier associations and the National Transportation Agency, a mechanism such as a coded identification card system be devised that would indicate quickly to carrier personnel the kinds of services needed by each traveller with a disability, including whether or not the traveller requires an attendant for safety or other reasons.

Coded identification cards could:

- identify those travellers requiring assistance with such activities as boarding, eating and using the washroom;
- indicate whether a traveller requires an attendant on some or all types of trips;
- indicate whether the need for an attendant applies to one or more modes of transportation;
- identify those travellers who do not require an attendant, so that such passengers are not refused access because they are unaccompanied; and
- be valid for use on all carriers.

We recognize that there may be situations where a carrier requires that, for safety reasons, a person with a disability be accompanied by an attendant.

Therefore, we recommend that:

9.7 The National Transportation Agency be appointed as the referee to mediate quickly disputes over the need for an attendant. In situations that are difficult to decide, the safety of all travellers, including the traveller with the disability, should be given primary consideration.

9.8 When the National Transportation Agency or the carrier concludes that, for safety reasons, an attendant is needed during a trip to assist an individual with a disability, the attendant's fare be borne by the carrier. Otherwise, the traveller should bear the cost. To ensure consistency, carriers should coordinate their policies in this area.

TRAINING OF TRANSPORTATION PERSONNEL²¹

During our hearings and in the written submissions we received from groups representing people with disabilities, we were told many times how important the attitudes of transportation personnel were in their dealings with travellers with disabilities. We learned that negative and uncooperative attitudes often result from lack of knowledge, experience or training on the part of transportation staff.

Therefore, we **recommend** that:

9.9 Carriers ensure that personnel who are in a position to assist travellers with disabilities be trained to deal with such passengers with sensitivity and understanding.

COMFORT

Travellers with disabilities need both access to transportation infrastructure and services and the ability to travel with comfort and dignity. We recognize that levels of comfort for travellers with disabilities may not be equal to those for travellers without disabilities, but we believe that carriers must show reasonable efforts to improve these levels.

INTERCITY BUSES

We are concerned that intercity buses, which are provincially regulated, are not always as accessible as airplanes, trains and ferries, which are federally regulated. Differences exist among the provinces and territories in their efforts to improve transportation access. We want to see improved accessibility to this important mode of passenger transportation — and a reduction of the disparities across the country.

Therefore, we **recommend** that:

9.10 Provincial and territorial governments implement more-uniform and adequate minimum accessibility standards for intercity buses for travellers with disabilities, or, if that does not occur, the federal government take back its delegated responsibility for nationally applied accessibility standards in order to ensure more uniformity.

COORDINATION OF EFFORTS

Various committees and groups provide a forum for the discussion of accessible transportation. The federal Minister's Advisory Committee on Accessible Transportation is composed of groups representing individuals with physical and mental disabilities as well as representatives from the transportation industry such as air and bus carrier associations, VIA Rail and Marine Atlantic Inc. The National Transportation Agency also has an equipment accessibility advisory committee, whose members include representatives of people with disabilities, and air, rail, bus and ferry carriers.

Over the next few years, a delicate balance must be struck. While it is in everyone's interest in the long term to improve the integration of people with disabilities into Canadian society, in the short term some changes can be implemented more quickly than others. In recognition of this, we believe that advisory committees, with members representing a broad spectrum of interests, will play a critical role in finding this balance. For instance, we recognize that improving accessibility to small vehicles may be more difficult or proportionately more costly than doing so with large ones. And yet we also do not want to undermine the development of a highly flexible system to meet the transportation needs of all Canadians (including those living in sparsely populated areas) by creating a bias against small vehicles such as minivans and small aircraft.

In addition, members of these committees can bring to the government's attention examples of where government policies and regulations in non-transportation areas impede improved accessibility to transportation. We believe that these advisory committees provide an important communications link in the development of accessible transportation for those with disabilities.

Therefore, we recommend that:

9.11 Canadians with disabilities, governments, carriers and manufacturers actively use advisory and coordinating groups to ensure that new services, equipment and infrastructure adequately serve those for whom they are intended, and to ensure that Recommendations 9.1 to 9.10 are implemented.

Access to passenger transportation will allow Canadians with disabilities to lead more independent and productive lives. We believe our recommendations will help ensure that access. When people with disabilities have more access to educational and vocational facilities, they will become more independent and productive. The Canadian economy will benefit and this will go a long way to offset society's expenditures on improvements. In other words, an investment in accessibility has good potential for return.

ENDNOTES

1. The adult population includes people 15 years of age and over. People with transportation-relevant disabilities are those who, because of a physical or mental condition, cannot use one or more passenger transportation services, or experience more than average difficulty doing so. See Hickling Corporation, *Transportation for People with Disabilities: A Policy Review and Analysis*, a report prepared for the Royal Commission on National Passenger Transportation, RR-01, March 1991, p. 3.
2. These data are drawn from a survey carried out by Statistics Canada in 1986 and 1987 and reported in *The Health and Activity Limitation Survey. Highlights: Disabled Persons in Canada*, Catalogue No. 82-602, March 1990. The survey was repeated in 1991 and the data are being released in phases. Several questions were added to the transportation section of the questionnaire. These data are scheduled for release in the summer of 1993.
3. These data are also from Statistics Canada's *Health and Activity Limitation Survey* of 1986 and 1987. The 1991 survey data relating to the discussion of the size of the population with disabilities will be available in the fall of 1992.
4. As mentioned in our Interim Report, disability increases dramatically with age in the "over 65" category — that is, from 36.7 percent for those aged 65 to 74 years, to 53.6 percent for those aged 75 to 84, and to 82.1 percent for those over 85 years of age. See *Getting There: The Interim Report of the Royal Commission on National Passenger Transportation* (Ottawa: Supply and Services Canada, April 1991), p. 114.
5. Section 3.(1) of the *National Transportation Act, 1987*. This is reprinted in Volume 2 of this report.
6. This responsibility is given in sections 63.1 to 63.3 of the *National Transportation Act, 1987*. The sections are reprinted in Volume 2 of this report.
7. Further details of the U.S. accessibility standards for persons with disabilities are noted in Volume 2 of this report.
8. Further details regarding these regulations may be found in Volume 2 of this report.
9. The relevant sections of the *Canadian Charter of Rights and Freedoms* and the *Canadian Human Rights Act* are reprinted in Volume 2 of this report.
10. Further details of the Agency's activities are included in Volume 2 of this report.
11. These agency orders are noted in Volume 2 of this report.
12. National Transportation Agency of Canada, *Communiqué*, May 27, 1991.
13. Kenneth A. Mozersky, Anne M. Hampel and Paul Lacoste, *Interim Report of the Inquiry into Level of Accessibility of Ferry Services* (Ottawa: National Transportation Agency of Canada, January 17, 1992).
14. National Passenger Transportation Agency of Canada, *Communiqué*, March 11, 1992.
15. *Canada Gazette*, Part I, March 21, 1992, pp. 706-24.

16. The preamble now reads as follows (addition in italics):

3.(1). It is hereby declared that a safe, economic, efficient and adequate network of viable and effective transportation services *accessible to persons with disabilities* and making the best use of all available modes of transportation at the lowest total cost is essential to serve the transportation needs of shippers and travellers, *including persons with disabilities*, and to maintain the economic well-being and growth of Canada and its regions and that those objectives are most likely to be achieved when all carriers are able to compete, both within and among the various modes of transportation, under conditions ensuring that, having due regard to national policy and to legal and constitutional requirements. . . .

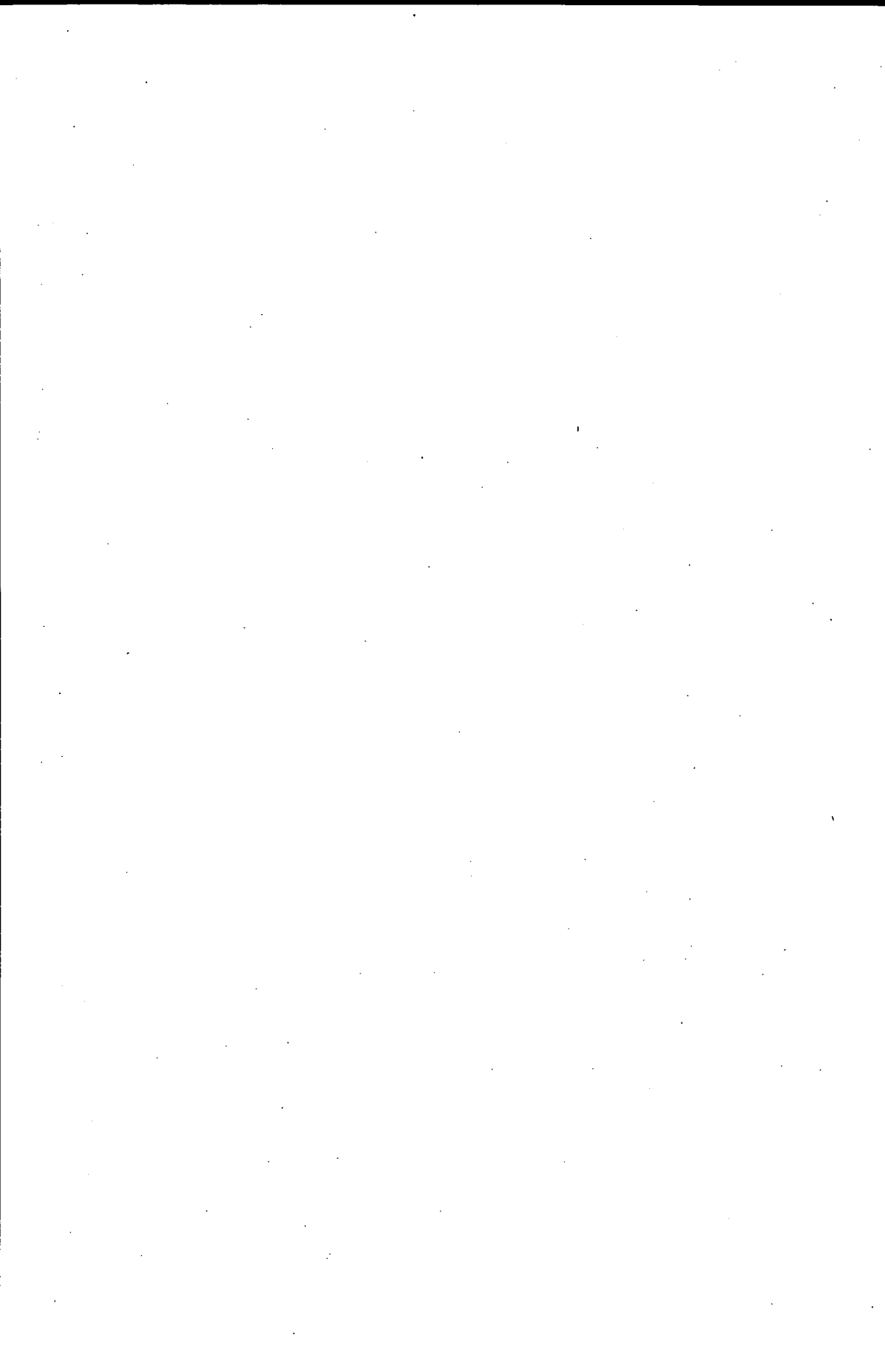
17. Secretary of State of Canada, news release 92-010, May 5, 1992.

18. The purpose of this demonstration project was to assess the demand for an accessible intercity bus service and the economics of such a service. During the first 21 months of the project, 242 trips were made by people with disabilities (an average of 12 trips per month). Of these trips, 97 percent were made by passengers in wheelchairs. Forty-one people with disabilities used the service but two individuals made 47 percent of all the trips. The number of trips taken by people with disabilities equalled approximately 0.04 percent of the total trips taken. Further details are provided in Volume 2 of this report.

19. Further details are provided in Volume 2 of this report.

20. The proposed National Transportation Agency regulations published on March 21, 1992, indicate that "an air carrier shall accept the determination made by or on behalf of a person that the person does not require any extraordinary service during a flight." In this case, however, "extraordinary service" means "any service related to a disability that is not required by [the regulations] to be provided by an air carrier or any service that is not normally provided by an air carrier."

21. On March 21, 1992, the National Transportation Agency published its proposed regulations on the training to be provided to personnel employed by carriers and transportation related premises and facilities to enable them to assist travellers with disabilities in more appropriate ways. These have not yet been put into effect.



CHAPTER 10

APPLYING THE PRINCIPLES TO CARRIERS: AN OVERVIEW

INTRODUCTION

In previous chapters, we set out our principles and applied them to the providers of infrastructure and to governments, who are responsible for promoting environmental protection and transportation safety and for ensuring that the needs of people with disabilities are addressed. In this and the next four chapters, we apply our principles to the providers of passenger transportation services. In Chapters 11 to 14, we deal exclusively with public carriers — firms offering services to the public. We discuss the changes in federal and provincial/territorial policies that are necessary to achieve pressures for efficient performance. In addition, we set out transitional mechanisms for carriers requiring time to adjust to our principles. In this chapter, however, we also note the role of private carriers — individuals and firms that provide their own transportation using private cars and aircraft.

PRIVATE CARRIERS

In Canada, private passenger carriers include the users of about 10 million cars, 3 million vans and light trucks, and 10,000 private aircraft.¹ In addition, passenger travel to points not served by road, mostly small islands and settlements along rivers and lakes, is provided by private boats.

Taxpayer expenditure for private boat passenger travel, as distinct from recreational boating, fishing and freight shipping, is not substantial. Operators usually know local waters well and require few navigational aids, and they pay fuel (mostly gasoline) tax. Taxpayer involvement with the private car and private plane is more important.

TRAVEL BY PRIVATE CAR

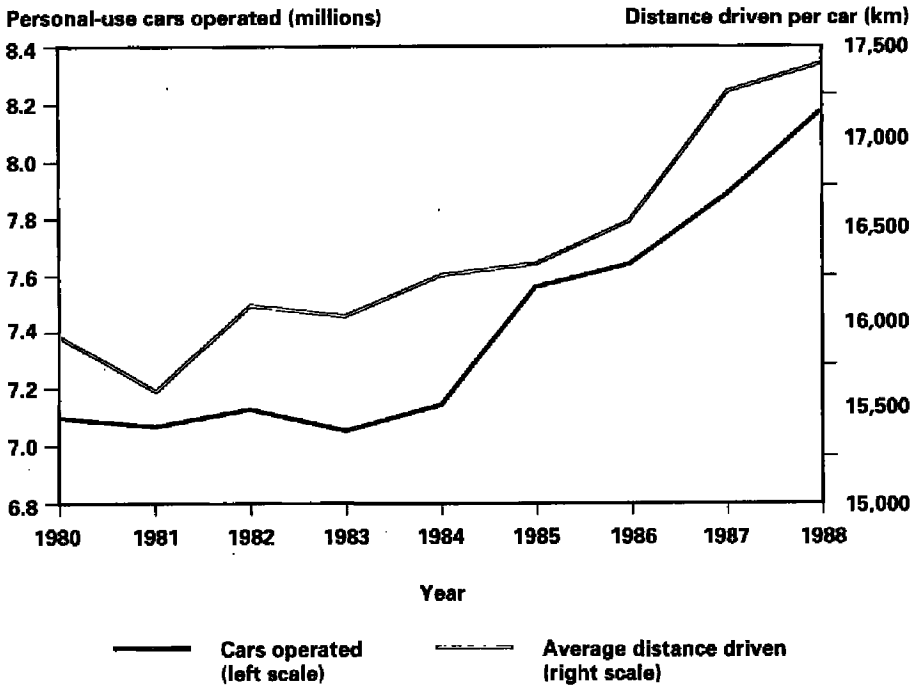
Statistics show that the car is Canadians' preferred mode of intercity travel:

- in 1991, about 83 percent of all households owned one or more cars (including vans and light trucks), and 39 percent of all households owned two or more cars;
- in 1990, 68 percent of the population and 88 percent of the population 16 years of age and over, were licensed to drive;
- in 1990, household expenditures on cars for both urban and intercity purposes amounted to 84 percent of total personal expenditures on transportation, and about 11 percent of overall personal expenditures;
- in 1990, 91 percent of all domestic intercity round trips were by car;² and
- in 1990, around 80 percent of all domestic intercity kilometres travelled were by car.³

Chart 10-1 shows that both the number of cars and the use of these cars — as measured by estimates of average kilometres driven — increased between 1980 and 1988. (The data on which the chart is based are restricted to personal-use cars — not including personal-use vans and light trucks. The trends shown, however, are believed to be representative for "cars" as the term is used in this report.) Some transportation observers believe that public transit and electric vehicles will become increasingly attractive means of travel within cities. While this development could reduce the popularity of the car and its importance in intercity travel, current evidence indicates that the dominant position of car travel is increasing, rather than diminishing.

Chart 10-1

AVERAGE DISTANCE DRIVEN, BY PERSONAL-USE PASSENGER CARS, 1980-1988



Sources: 1980-Third Quarter 1983: Statistics Canada, *Fuel Consumption Survey*, Catalogue No. 53-226, December 1987; Fourth Quarter 1983: Statistics Canada, *Passenger Car Fuel Consumption Survey*, October 1984; 1984-1988: Statistics Canada, *Fuel Consumption Survey*, Catalogue No. 53-226, February 1990, summary tables in Parts 1-5.

Note: This chart shows data for personal-use cars, rather than for cars, vans and light trucks in all private uses. In general, the text refers to data on the latter basis.

Under our principles, each traveller should pay the full cost of his or her travel, and travellers, in total, should pay the full cost of the passenger transportation system, including those costs related to safety, accidents and protecting the environment.

Therefore, car users should pay for the costs they impose on roads, the health system and the environment. The proposed system of charges will require:

- adjusting licence fees and fuel charges so that road users pay for all road costs;

- introducing charges that pass on to car users the costs that the health care system and provincial/territorial systems of vehicle safety regulation and enforcement incur on their behalf; and
- increasing emission controls and charges in order to reduce vehicle pollution and to pass on to car users the costs of any remaining environmental damage they cause.

When car users pay the full costs of their travel, they will be more sensitive to the way their travel affects health care and the environment. Since cars form a major part of the passenger transportation system, changes in car travel and purchasing behaviour, based on an appreciation of the true costs of car use, will contribute substantially to the efficiency of the passenger transportation system.

TRAVEL BY PRIVATE AIRPLANE

It is estimated there are 10,000 registered and active private aircraft in Canada. They fly an average of 80 hours a year. Apart from being limited to a small number of landing slots at the busy Vancouver and Toronto airports, private aircraft do use the public services designed for the aviation industry.

There are some 32,000 holders of private pilot licences in Canada. These licences are renewable without fee every one or two years, depending on the age of the pilot, and subject to medical examination.

Private aircraft, by virtue of provisions in the federal fee schedules, pay only a small portion of the costs of aviation services. With the exception of Vancouver and Toronto international airports, piston aircraft — and 98 percent of private aircraft are piston driven — pay no landing fees; instead, at federal airports they pay a per-litre fuel concession fee. The annual revenue from this 5¢-per-litre charge is about \$2 million and is the only air infrastructure charge levied on private aircraft. This charge can easily be avoided by confining fuel purchasing to non-federal airports.

Private aircraft pay no terminal building fees because this fee schedule exempts aircraft with fewer than 10 seats. Private aircraft also do not pay the Air Transportation Tax, because the tax is applied to the selling price of a passenger's airline ticket. The Air Transportation Tax is used in substantial part to cover the costs of the local/tower aircraft control and enroute air navigation systems. About 95 percent of private aircraft use towered airports and more than 90 percent of private aircraft use different enroute navigation services from those used by the commercial airlines.

The level and structure of charges to private aircraft clearly require revision. Private aircraft operators, like all other users of the transportation system, should pay for what they get.

The changes in the charging systems for use of airports and of air navigation and traffic control systems, which we recommended in Chapter 5, will increase charges to private aircraft operators if they continue to use the air navigation and traffic control services currently provided.

PUBLIC CARRIERS

In Chapters 5 to 9, we examined public and private carriers' use of transportation infrastructure, the responsiveness of their services to the needs of people with disabilities, and the environmental and accident costs of their transportation activities. In Chapters 11 to 14, we apply our principles to the operations of public carriers (airplane, train, bus and ferry) and examine major policy issues that arise regarding direct subsidies to carriers, economic deregulation and government ownership. The remainder of this chapter provides an overview of the issues to be discussed in Chapters 11 to 14. These chapters concentrate on issues of particular importance to the mode in question. We reiterate, however, that the principles for carriers (stated in Chapter 4) apply to all modes.

In this report, we are examining the conditions necessary to achieve a transportation system that is fair and efficient and meets appropriate standards of safety and environmental protection. The first condition is that all travellers, whether using public or private carriers, pay the true costs of their activities. The second is that public carriers face market pressures to respond to consumer preferences and to reduce costs, improve efficiency, and pass the resulting savings on to travellers.

Our aim of creating a truly competitive environment for intercity passenger transportation is consistent with the principle of the *National Transportation Act, 1987*, that "all carriers [be] able to compete both within and among the various modes of transportation."

In Chapter 4, we emphasized the importance of a competitive environment for public carriers and the need to:

- allow anyone who is "fit, willing and able" an opportunity to supply passenger carrier services;
- provide all carriers who are willing to pay their share of the costs with equal access to infrastructure; and
- permit carriers to withdraw their services, without undue delay, subject to adequate notice.

"FIT, WILLING AND ABLE"

When we recommend that operators be "fit, willing and able" before entry to Canada's public passenger transportation industry, for the most part, we are not specific as to the appropriate screening criteria. In general we have in mind any operator who complies with safety regulations and has proof of adequate insurance coverage.

In the Canadian air passenger industry, except in the North, market entry regulation is restricted to fit, willing and able criteria. Under the *National Transportation Act, 1987*, in domestic service, an applicant must:

- meet Canadian ownership and control requirements;
- hold a Canadian aviation document in respect of the service to be provided — issued after the technical qualifications of the key personnel are established; and
- have prescribed liability insurance coverage or evidence of such insurability.

Here, we note the implications of the Commission of Inquiry into the Air Ontario Crash at Dryden, Ontario — that both fitness and ability should be monitored on an ongoing basis, and not be simply requirements that must be (temporarily) satisfied when the licence is first obtained.

Under the *Railway Act*, incorporation of a company that wishes to construct or operate a railway in federal jurisdiction using new track must prove “public convenience and necessity,” including:

- economic feasibility;
- financial responsibility; and
- public interest.

If the company proposes to operate over existing tracks, it is subject to “fit, willing and able” criteria that are also applied by the National Transportation Agency.

Under the *NTA, 1987*, however, a candidate passenger rail operator does not enjoy the rights of track access that apply to freight railways. We addressed this constraint on entry in Chapter 6. Of course, the presence of a heavily subsidized Crown carrier in Canada’s passenger rail sector restricts the practicality of entry by others.

Entry into Canada’s intercity scheduled bus industry, which is tightly regulated under public convenience and necessity criteria, is much more restrictive than the “fit, willing and able” approach would be.

Passenger ferries in Canada are not subject to restrictive economic regulation. As for all operations in Canadian waters, safety regulation under the Canadian Coast Guard includes vessel design and maintenance, and the certification of ship's officers (vessels of more than 5 gross tons require a certified master). Use of harbours and ports is subject to approval of the local authority. Imported vessels are subject to import duties (which are sometimes waived). Crown carriers dominate both the west and east coasts, and some provincially funded ferry services are provided without charge. Under such circumstances, freedom of entry does little to enhance competition.

A competitive environment is not possible where there are barriers to market entry and exit, or where government subsidies give an advantage to particular carriers or modes. For example, the carrier costs of passenger rail and ferry operators are heavily subsidized. The result is that market prices do not accurately reflect costs. In addition, such subsidies cushion passenger rail and ferry operators from the market pressures to achieve cost efficiency.

AIR CARRIERS

For more than a decade, federal policies have been aimed at expanding the role of market forces in the airline industry. The *National Transportation Act, 1987* clearly states that market forces, rather than economic regulation, should govern the supply of air services. The NTA, 1987, however, did not remove restrictions on the foreign ownership of Canadian carriers, or on the activities of foreign-owned carriers in Canada. In addition, Air Canada and Canadian Airlines International are experiencing financial difficulties, and there are many changes taking place in the international airline industry.

In Chapter 11, we examine current government policies with respect to air travel and whether these policies protect travellers, given the major restructuring of this industry.

RAIL CARRIERS

While there is little competition among passenger rail carriers in Canada, passenger rail does compete with other modes, particularly the bus and private car. The large contribution made by taxpayers to rail travel, however, distorts the passenger rail market. As we observed in Chapter 3 (Table 3-1), rail travellers pay, on average, only one quarter of the capital and operating costs of passenger rail service. This situation raises a number of questions, which we discuss in Chapter 12:

- Are there special considerations that apply to passenger rail service that may justify some departure from the objectives and principles we set out in Chapter 4?
- If it is desirable to eliminate the taxpayer contribution to passenger rail travel, what type of transition mechanisms are needed to give carriers and travellers a reasonable amount of time to adjust to non-subsidized operations?
- Is public ownership of passenger rail carriers desirable?
- If public ownership of passenger rail continues, what mechanisms are required to ensure that those responsible for operations are accountable for their performance?

INTERCITY BUS CARRIERS

Intercity bus carriers in Canada are subject to provincial/territorial regulations covering pricing and entry to the market. The *National Transportation Act, 1987* did not apply to the bus industry, although it did initiate a process of regulatory reform in trucking — another industry subject to provincial/territorial economic regulation. While a few provinces, notably Alberta, New Brunswick and Prince Edward Island, have somewhat relaxed their regulations, most bus carriers operate in a more regulated market than most other transportation businesses in the economy.

We believe that it is time to critically examine the basis for the economic regulations on the intercity busing industry. In Chapter 13, we examine whether there are any special factors that distinguish this industry and that justify continued economic regulation, and, if not, what policy reforms are required.

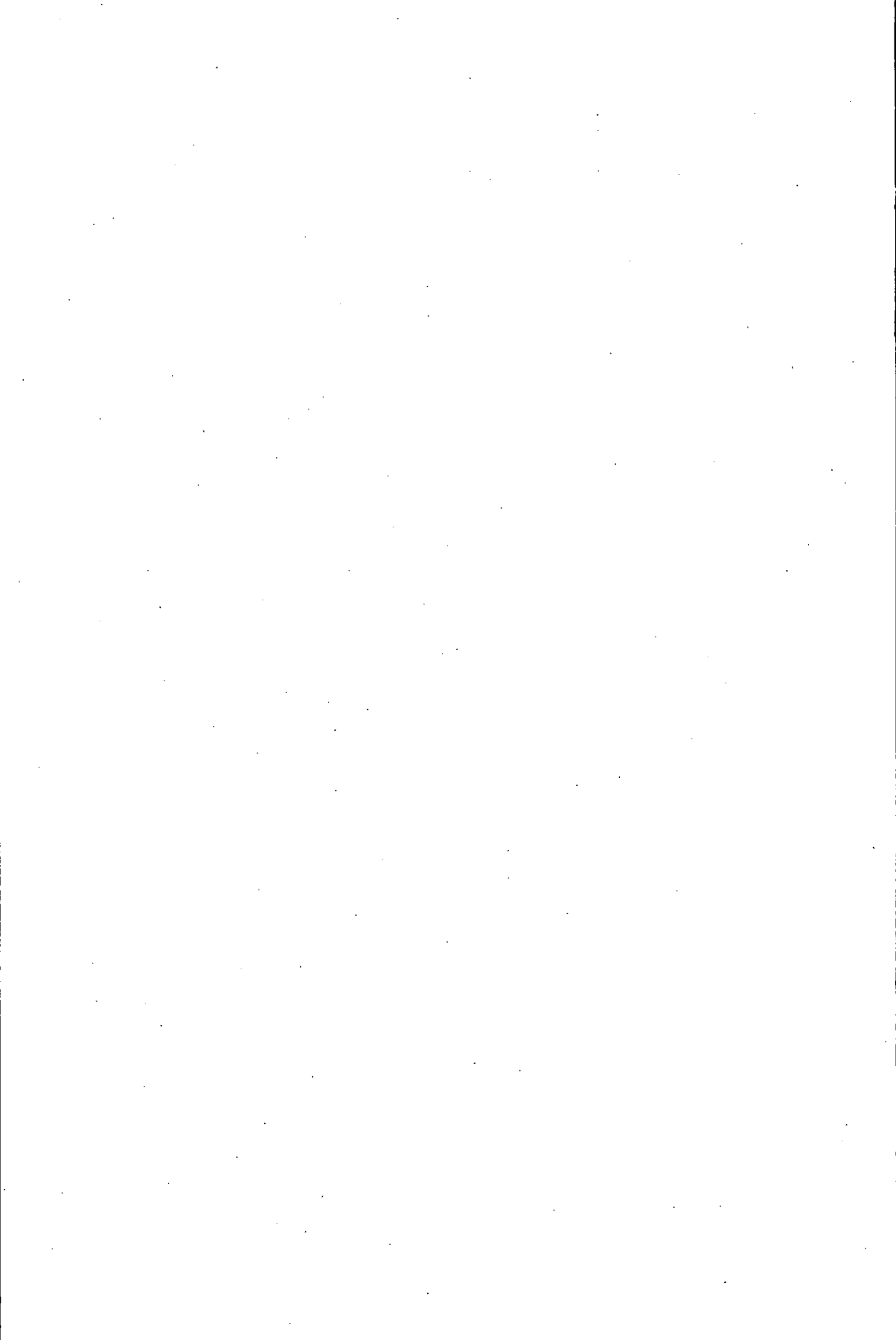
FERRIES

In ferries, as in passenger rail, travellers benefit from major direct taxpayer contributions to their travel on average, although — unlike passenger rail — some major ferry services come close to covering their costs. Ferry travellers cover, on average, about 60 percent of total costs, which is much higher than the 25 percent covered by rail travellers. If supply of, and demand for, ferry service solely influenced the price charged, fares would tend to be substantially higher and traffic somewhat lower.

As with other modes, we believe it is necessary to consider whether, and to what extent, taxpayers should bear some of the costs of travel by ferry passengers. It is also necessary to examine governments' relationship to the federal Crown corporation, Marine Atlantic (the main ferry operator on the east coast), and the provincial Crown corporation, BC Ferries (the main ferry operator on the west coast).

ENDNOTES

1. See Notes to Chapter 2, Volume 2 of this report for discussion of estimate of size of private vehicle fleet.
2. This figure is based on Canadian Travel Survey data (Statistics Canada, Catalogue No. 87-504).
3. This figure is based on Royal Commission analysis (see Notes to Chapter 1 and Notes to Chapter 2, Volume 2 of this report). As noted in Chapters 1 and 2 of this report, there is a range of possible definitions of intercity travel.



CHAPTER 11

APPLYING THE PRINCIPLES TO AIR CARRIERS

INTRODUCTION

In the airline industry, recent reforms have been very much in the spirit of our principles. The *National Transportation Act, 1987* largely completed the process of economic regulatory reform that began in the late 1970s for air carriers. The privatization of Air Canada during 1988 and 1989 further helped to level the playing field. As a private-sector enterprise, Air Canada now competes in the market in a similar way to other firms, neither benefiting from special preferences nor burdened by special constraints on routes or equipment.¹

Canadian experience with the new air-carrier regulations is still limited. Some benefits are obvious, such as more flights. Poor financial performance of carriers in recent years, however, has raised concerns about the viability of the Canadian air carrier industry in the future.

WHAT CANADIANS TOLD US

We heard opposing views on the impact of regulatory reforms in the airline industry. Some shared the position put forward in submissions by the major carriers that these reforms have been highly beneficial to Canadian travellers. For example, Canadian Airlines International Ltd. stated that "deregulation of the airline industry has resulted in greater efficiency, better service, lower prices, and balanced competition." The International Association of Machinists and Aerospace Workers, on the other hand, represented a different view: "Contrary to the promises of its proponents, transport deregulation in the United States increased concentration and lessened competition in all sectors. Our experience in Canada has closely followed the American example."

There were different responses to the issue of airline concentration. For example, proponents of the new reforms said that the industry, "after undergoing major structural changes brought on by deregulation, has finally found its equilibrium with two highly competitive national carriers which are both supported by equally competitive affiliated regional carriers" (Bernard Juteau, Air Alliance). It was emphasized to us, however, that "the survival of Canada's major carriers cannot be taken for granted" (Claude I. Taylor, Air Canada). At the same time, the Commercial Travellers' Association of Canada argued that the National Transportation Agency should promote "competition amongst airlines." Some interveners pointed to remote communities where traffic is insufficient to sustain service by more than one carrier.

The proposed open skies policy between the United States and Canada was another source of controversy. Under the current bilateral air agreement between Canada and the United States, scheduled air carriers can fly travellers only between their home country and designated destinations in the other country. They are not allowed the rights of cabotage; that is, to take on passengers within the foreign country and transport them to another destination in that country.

Some groups viewed open skies as an opportunity for improved air service between and within the two countries. Others were concerned that it would threaten the existence of Canada's major carriers. Some short-haul carriers are uncertain if they will be able to survive in an open skies environment. In addition, some warned that open skies could increase congestion and create more delays at airports.

GOVERNMENT POLICIES OF THE PAST

Historically, Canadian air carriers did not operate under the same rules. The primary instrument of federal airline policy was the government-owned airline, Air Canada.² Protected against competition from private carriers, it was for many years the only Canadian transcontinental air carrier. It used the profits it earned on transcontinental and

international routes to subsidize service to some smaller and more remote communities, and to comply with assorted government directives.

Canadian Pacific Airlines (CP Air) was allowed entry into the international market in 1948 and was awarded a transcontinental route in 1959 (one return flight per day), but these concessions did not allow the private carrier to become a serious competitive threat to Air Canada. Although the constraints limiting CP Air's activities on transcontinental routes were gradually relaxed after 1967, the government believed that there was a need to protect Air Canada from "undue competition."

The 1966 Regional Air Carrier Policy represented a further government effort to control the structure of the industry and to limit the degree of competition among carriers. It established one airline as the preferred carrier to provide local and regional service in each of the five regions of the country. To ensure that the regional carriers provided scheduled services that supplemented, but did not compete with, the services provided by the two national carriers, the federal air regulator was given authority to screen regional carrier purchases of aircraft. The strict regulatory policy was reasonably successful in establishing price equality between the high-cost and low-cost routes.³

In the late 1960s and 1970s, however, the government found it increasingly difficult to balance the demands from CP Air and the regional air carriers for less regulation with the desire to preserve Air Canada's historic role as an instrument of government policy.

This pressure coincided with public concerns about the accountability of federal Crown corporations. Of particular concern was the difficulty of monitoring the performance of Crown corporations such as Air Canada, which benefited from special concessions and were at the same time asked to meet vague objectives. The 1978 *Air Canada Act* attempted to eliminate this problem. Air Canada was now to "have due regard to sound business principles, and in particular the contemplation of profit." The following year, all constraints limiting CP Air's activities as a transcontinental carrier were removed.

The United States deregulated its airline industry in 1978, resulting in lower costs and increased service. Research in the United States, prior to 1978, had pointed to the high costs resulting from controls administered by the Civil Aeronautics Board (CAB). The studies showed that resources were being wasted because regulated prices gave carriers misleading signals about the type and quality of service to provide, and that airline costs and fares were substantially higher than they would be in an unregulated environment. In a fully competitive environment, high labour costs could not be passed on to consumers as easily as they could in a regulated market. Furthermore, an unregulated environment would give airline managers the freedom to structure their operations in the most efficient manner.

The results of deregulation in the United States generally confirmed these expectations. After the relaxation of price controls and the opening of entry, air service expanded considerably and average fares, adjusted for inflation, declined substantially under the pressure of intense carrier competition. Since the mid-1980s, a number of airline failures, acquisitions and mergers has resulted in a major restructuring of the industry. Notwithstanding the high degree of industry concentration, most airline markets are subject to competition. Recent studies found that consumers, overall, benefited substantially from deregulation — which has brought increased airline efficiency, air fares that better reflect airline costs, airline service to more locations, and more flights.⁴

After deregulation in the United States, pressures mounted to end economic regulation in Canada. The experience in the United States with deregulation highlighted the gains that a more competitive airline industry brought to consumers. In addition, deregulated U.S. carriers appeared to attract a significant share of Canadian business in some markets.⁵

Price competition in the Canadian market intensified in 1980 under the more liberal charter regulations introduced by the Canadian Transport Commission. In 1984, a new Canadian Air Policy eliminated the

remnants of the Regional Air Carrier Policy, substantially eased the conditions of entry into airline markets in southern Canada, and gave carriers more freedom to set fares.

CURRENT GOVERNMENT POLICIES

The *National Transportation Act, 1987* (NTA, 1987), which came into effect on January 1, 1988, states that "economic regulation of carriers and modes . . . will not unfairly limit the ability of any carrier or mode of transportation to compete freely with any other carrier or mode of transportation." The Act distinguishes between airline activity in southern and northern Canada.

Economic regulation of airline activity in southern Canada has been almost completely dismantled. To enter the market, a prospective carrier must simply establish that it can meet basic safety, insurance and Canadian-ownership requirements. Carriers do not require permission to exit from a market, although they must notify the National Transportation Agency 120 days in advance of their intention to reduce (to less than one flight per week) or eliminate a service that had been offered once a week or more for six months. Fares must be published, but they are not subject to regulation. There is, however, a provision that allows the public to appeal to the Agency about basic fare increases on monopoly routes. The Agency may disallow all or part of the increase if "there is no other alternative, effective, adequate and competitive transportation service," and if the increase is found to be "unreasonable." This provision, in respect to southern markets, has had, as yet, little use and no complaints have reached the formal investigation stage.

Airline activity in and to northern Canada is still subject to some economic regulation. Those objecting to the entry of a new carrier can challenge that entry, but the onus is on the opponents to demonstrate that entry would jeopardize the quality of existing services. Exit from a northern market is subject to the same advance-notice provisions as exist in southern Canada. Fares are also not regulated, but the

provision for appeal is somewhat broader. Objectors may ask the Agency to investigate either an unreasonable basic fare increase or an unreasonable basic fare level. There have been a number of investigations of northern rates, but in none of these cases, since 1988, did the Agency find that the levels or increases were unreasonable.

Foreign ownership of Canadian air carriers is limited by law. The NTA, 1987 requires that at least 75 percent of the voting shares of Canadian air carriers be owned by Canadian residents, and that control of these airlines is held by Canadians.⁶ In addition, ownership restrictions are incorporated in the legislation that provided for the privatization of both Air Canada and Pacific Western Airlines (PWA), the parent of CP Air, now Canadian Airlines International Ltd. The federal *Air Canada Public Participation Act* limits the holdings of any one person or group to 10 percent of voting shares, and the holdings and control of non-residents in aggregate to 25 percent of voting shares. The Alberta government's *Pacific Western Airlines Act* restricts the holdings of any one person or group to 10 percent of the voting shares, and since the *National Transportation Act, 1987* also applies to PWA, its foreign ownership and control are also restricted.⁷

CHANGES UNDER ECONOMIC DEREGULATION

In the early 1980s, the main providers of air passenger service were:

- two transcontinental carriers — Air Canada and CP Air;
- four regional carriers — PWA, Nordair, Eastern Provincial Airways and Quebecair — that also provided scheduled jet service; and
- one charter carrier — Wardair.

In 1982, government-owned Air Canada earned two and a half times more revenue than CP Air and carried three times the number of passengers.

During the second half of the 1980s, there was a dramatic restructuring of the industry. PWA acquired CP Air in 1987 and gained control of those regional carriers that had already been absorbed into the CP Air system — Eastern Provincial Airways and Nordair. Canadian Airlines International Ltd., the new consolidated operation owned by PWA, acquired Wardair in 1989. Wardair, formerly a charter carrier, ran into financial difficulties shortly after its 1986 entry into the domestic market for scheduled service. Also in the 1980s, Air Canada acquired interests in a number of regional airlines — Air Ontario, Air BC, and NWT Air.

While these reorganizations were under way, the federal government was evaluating its own position as owner of Air Canada. By the early 1980s, the carefully designed system of cross subsidization was eroding, and it was difficult to distinguish Air Canada from private carriers. Air Canada was privatized by two share offerings — in September 1988 and July 1989.

Today, the airline industry is dominated by two large private-sector corporations, Air Canada and Canadian Airlines International (the "majors"). Both corporations have established feeder affiliates and integrated them into their operations. Integration has involved the coordination of flight timetables and the incorporation of the feeders into the baggage, reservation and frequent-flyer systems of the majors. Table 11-1 provides a snapshot of the two "airline families" as of the end of 1991.

The majors have similar shares of domestic traffic, although Air Canada continues to predominate in international markets. Independents and smaller commuter airlines not connected to the majors also provide scheduled service. In 1991, there were 288 level 1 to 4 air carriers (having annual gross revenues of \$250,000 or more). Along with the majors and their affiliates, and independent scheduled carriers, level 1 to 4 carriers include charter carriers (for example, Nationair, Canada 3000 and Air Transat) that are an important source of competition on many major routes. Independent airlines enjoyed a period

of growth in the 1980s, but a number of the more important independents (Intair, City Express) have failed. The majors' affiliates, however, have enjoyed strong growth as the majors have streamlined their operations and withdrawn from markets they could not profitably service with their large aircraft.

Table 11-1
STRUCTURE OF THE AIRLINE "FAMILIES," 1991

Airline ^a	Points served	Percentage ownership by parent/subsidiary	Fleet
Air Canada^b	48	Parent	115 jets
Air Nova	16	100	5 jets; 9 non-jets
Air Alliance	14	75	15 non-jets
Air Ontario	10	75	21 non-jets
<i>Air BC</i>	26	85	5 jets; 33 non-jets
Pacific Coastal Airlines	9	50	18 non-jets
NWT Air ^c	5	100	2 jets; 1 non-jet
PWA Corporation^d	—	Parent	—
Canadian Airlines International ^e	42	100	76 jets
<i>Canadian Regional Airlines^f</i>	—	100	—
Inter-Canadien	26	70	12 non-jets
Ontario Express	25	100	26 non-jets
Calm Air	22	45	8 non-jets
Time Air	29	100	7 jets; 29 non-jets
Air Atlantic ^g	19	45	3 jets; 13 non-jets

Source: National Transportation Agency, *Annual Review 1991*, pp. 22-23.

- a. Parent companies appear in white type. Firms indented once are owned by the parent. Firms indented twice are owned by the preceding firm in italics.
- b. In April 1991, Air Canada established Air Canada Regional Airline Holdings to manage its regional carrier interests.
- c. NWT Air has code-sharing agreements with five affiliated carriers (which serve 21 points).
- d. PWA Corporation is a holding company and thus does not operate its own services.
- e. Canadian Airlines International includes the division Canadian North, which serves 23 additional destinations in the Northwest Territories, Quebec, Manitoba, and Alberta using 8 jets.
- f. Canadian Regional Airlines is a management company and therefore does not operate its own services.
- g. Air Atlantic is 45 percent owned by PWA Corp., but is managed by Canadian Regional Airlines.

Under deregulation, the hub-and-spoke system replaced some direct flights. Passengers from various cities increasingly travel by spoke routes into a centralized airport — the hub — from which they take connecting flights to their destination. Hubbing consolidates traffic at a central location, allowing airlines to put more passengers on each flight. Pooling of passengers also allows airlines to provide more flights to more locations than would be possible under the alternative point-to-point system.

To take advantage of the economies of hubbing, airlines require sophisticated scheduling and passenger handling systems that enable them to move a number of aircraft through a connecting point at about the same time. A successful hubbing system also requires a large network, so that incoming flights can provide the passengers needed to achieve large passenger loads on departing flights.

The economies to be realized from a hub-and-spoke system are fewer in Canada, where the population is concentrated along the Canada-United States border, than in the United States, where the population is more dispersed. Nonetheless, the realignment of flight patterns and the integration of operations in each carrier family have supported the development of some hub-and-spoke systems in Canada.

Changes in traffic patterns have had a major impact on Canadian airports. Lester B. Pearson International Airport in Toronto, which has become Canada's major hub, experienced a 58 percent (7.9 percent average annual growth rate) increase in commercial aircraft movements between 1984 and 1990.

Similarly, Vancouver and Halifax, which emerged as important regional hubs, have also experienced greater air traffic. Hubbing results in increased demands on both air and ground facilities of an airport. At Pearson, the completion of Terminal 3 has helped the airport cope with the increase in ground traffic but, to alleviate the pressure from the growth in air traffic, air movements have been capped. The cap

is 82 air movements per hour as of July 1992, up from 76. There are plans to increase the number of air traffic controllers and to expand runway capacity at Pearson, as well as at Vancouver.

AIRLINE PERFORMANCE UNDER ECONOMIC DEREGULATION

PRICES AND COSTS

Average air fares, adjusted for inflation, have fallen in Canada during the past decade, as shown by airline yield, which is calculated by dividing passenger revenue by passenger-kilometres. This decline (Chart 11-1) is the result of several factors: a restructuring in rates due to market pressures, which led to an elimination of the cross subsidy from long-haul to short-haul flights; an increase in long-haul flights; and an increase in the importance of discount fares (Chart 11-2).

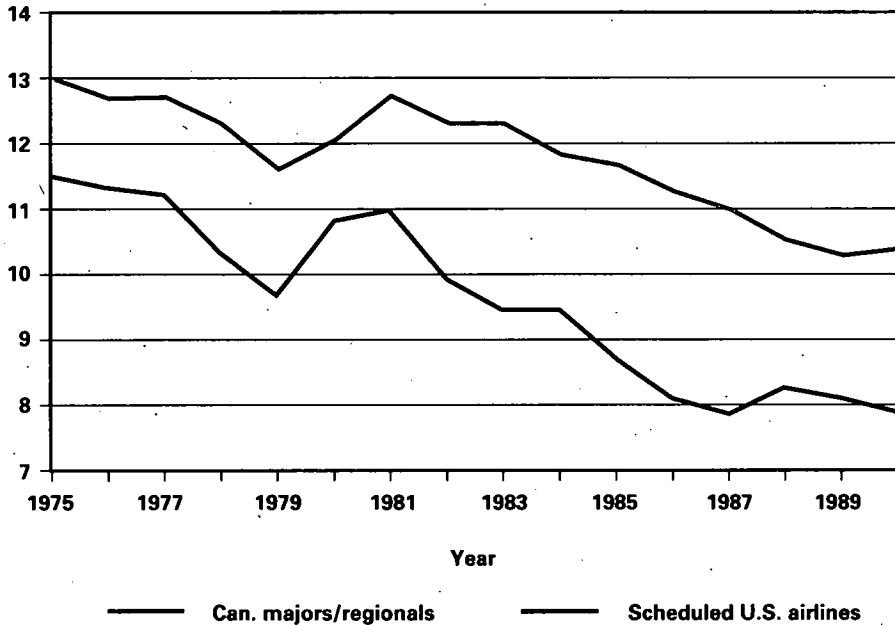
Since regulatory reforms were introduced, air fares have come to more closely reflect airline costs. Travellers flying long distances pay less per kilometre than passengers on short-distance flights because some airline costs do not increase with distance. Costs per passenger-kilometre are also lower if an airline can spread its fixed costs over more passengers by using larger airplanes and achieving higher load factors. This benefits passengers flying on high-density routes as compared with those flying between small centres.

Discount fares are more important in some markets than in others. The proportion of travellers flying on discount fares is high in long-haul, trans-border and international markets, where competition is intense. Discount fares are also more important on flights with a high proportion of leisure (as distinct from business) travellers. Discounting is an important component of the major airlines' yield management systems.⁸ Airlines have become adept at fine-tuning their use of discount fares (adjusting their number, the size of the discount and the restrictions applying to their use) so as to increase passenger loads and maximize flight revenue.

Chart 11-1

REVENUE YIELDS PER PASSENGER-KILOMETRE, MAJOR CANADIAN AND U.S. AIRLINES, 1975-1990

Cents (Canadian or U.S. currency at 1990 prices)



Sources: Canada: unit-toll passenger revenue data are from Statistics Canada, *Air Carrier Financial Statements/Canadian Civil Aviation*, Catalogue No. 51-206, 1975-1990 editions; passenger-kilometre data are from Statistics Canada, *Air Carrier Operations in Canada*, Catalogue No. 51-002, October-December issues, 1975-1981 and Catalogue No. 51-206, 1982-1990. Data on the Consumer Price Index for all items are from Statistics Canada, CANSIM, matrix 1922.

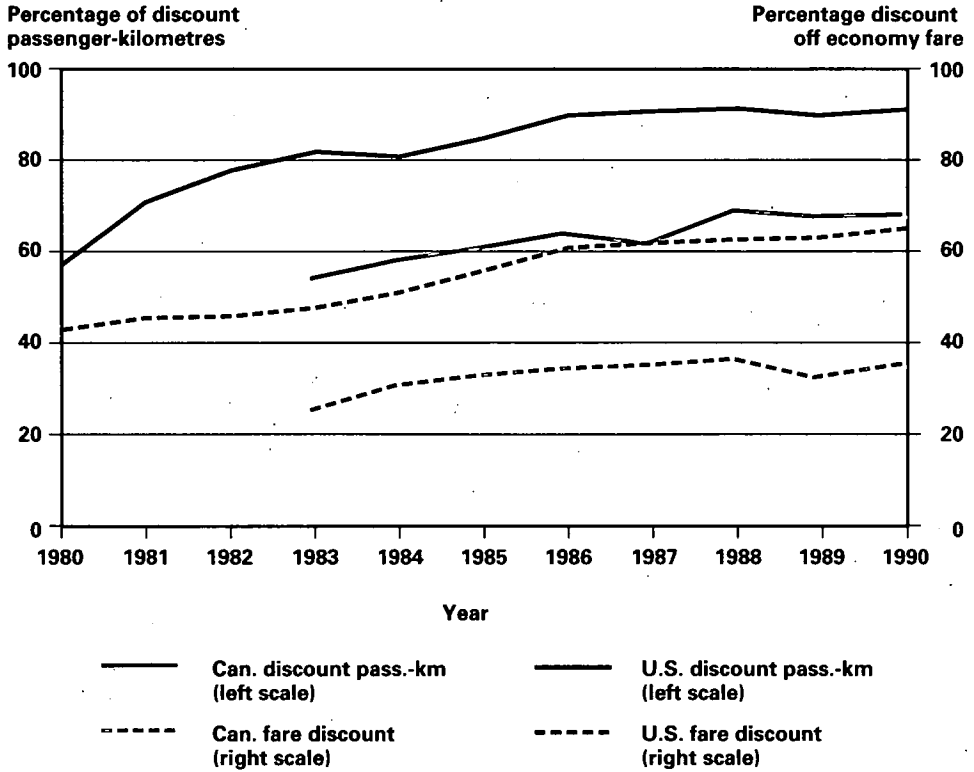
United States: all data are from Air Transport Association of America, *Air Transport: The Annual Report of the Scheduled Airline Industry* (Washington: ATA of America), 1986 and 1991 issues. The U.S. consumer price index is taken from *Economic Report of the President* (Washington: U.S. Government Printing Office, 1991), Table B-60.

Notes: Canadian data refer to unit-toll services of Level 1 and Level 2 carriers for 1975-1981 and of Level 1 carriers for 1982-1990. Unit-toll passenger revenues were unavailable for 1982-1986 but yield data were provided in Table 1 of the 1987 edition of *Canadian Civil Aviation*.

Nominal yields are deflated by the Consumer Price Index for all items, which has been re-based to 1990 = 100.

Chart 11-2

THE EXTENT OF DOMESTIC DISCOUNT AIR FARES IN CANADA AND THE UNITED STATES, 1980-1990



Sources: Canada: The percentage of discount passenger-kilometres for 1983-1989 is from L. Di Piéto and G. Baldwin, "Discount Air Fares in Canada: Price Competition and Price Differentiation," in *Proceedings of the 26th Annual Meeting of the Canadian Transportation Research Forum*, May 28 to 31, 1991, p. 517; 1990 data are from Statistics Canada, *Canadian Civil Aviation 1990*, Catalogue No. 51-206, November 1991, Table 6.3, p. 31. The percentage discount off the economy fare is taken from Table 2 of the first source mentioned and from unpublished data from Statistics Canada's Fare Basis Survey.

United States: Air Transportation Association of America, *Air Transport: The Annual Report of the Scheduled Airline Industry* (Washington: ATA of America), various issues.

In the United States, the decline in air fares after 1978 was made possible; in part, by the ability of the airlines to exercise greater control over their labour costs. This involved tough negotiations both to reduce wage and salary expectations of airline employees, and to

eliminate those work practices that were lowering productivity. The impact of deregulation on labour markets has been less pronounced in Canada.

Increases in productivity, however, have helped to restrain labour costs. The productivity of airline workers has increased at an impressive rate during the past decade (Chart 11-3). While part of this increase must be attributed to technological improvements, also important was the lifting of economic restrictions on the activities of Canadian carriers.⁹

QUALITY OF SERVICE

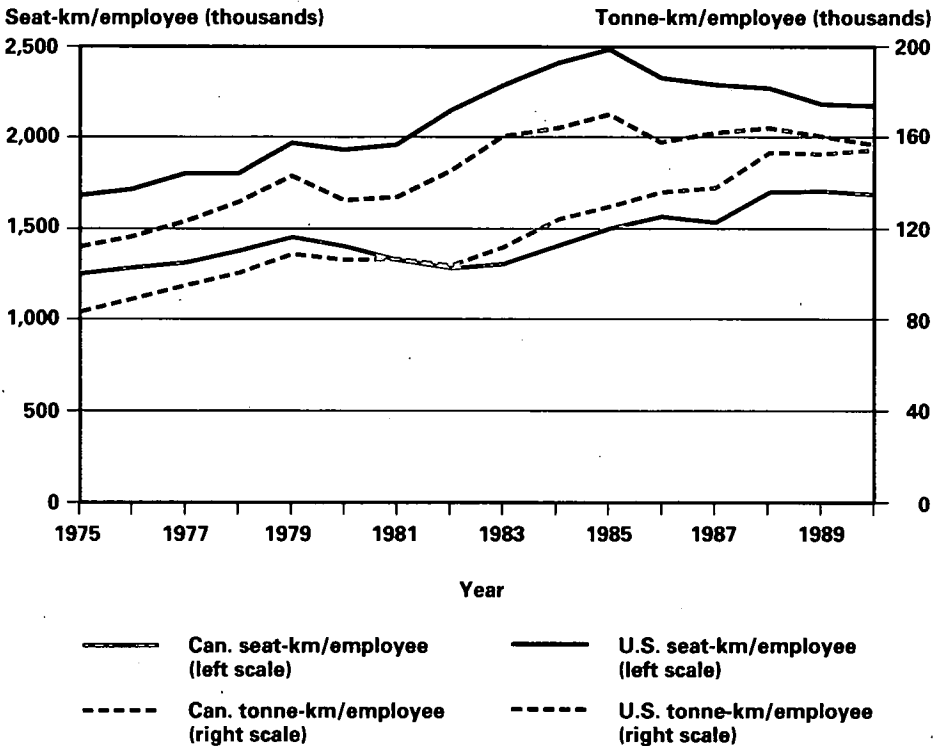
Under deregulation, carriers have the flexibility to customize services. They can provide a no-frills service for passengers who want low fares, while offering a premium service for passengers who value booking freedom and in-flight amenities.

As a result of the organizational and routing changes that have occurred under deregulation, some short-haul regional routes once served by jet aircraft are now being served by turboprop aircraft operated by an affiliate of one of the major airlines. In addition, some passengers who had been able to fly directly to their destination under the point-to-point routing system must now make connections through a hub airport. While connecting and indirect (same plane, one or more stops) services have increased, there has also been a net increase in the number of direct (non-stop) services.

Travellers now benefit from a greater choice of flights. Air services have expanded as more and more communities have become tied to one or more hub-and-spoke networks. The number of Canadian cities and towns with scheduled air service rose by approximately 60 percent between 1983 and 1990. Flight frequency also increased substantially during this period. In Canada's top 25 city-pairs, there were 51 percent more flights in 1991 than in 1983, while available seats increased by 20 percent. Researchers in the United States have

Chart 11-3

PRODUCTIVITY INDICATORS, MAJOR CANADIAN AND U.S. SCHEDULED AIRLINES, 1975-1990



Sources: Canada: Available seat-kilometres for 1975-1980 are from Statistics Canada, *Transcontinental and Regional Air Carrier Operations*, Catalogue No. 51-001, December issues; for 1981-1986, data are from Statistics Canada, *Air Carrier Operations in Canada*, Catalogue No. 51-002, October-December issues, Table 4; for 1987-1990, data are from Statistics Canada, *Canadian Civil Aviation*, Catalogue No. 51-206, 1988-1990 issues, Table 2.3.

Total tonne-kilometres for 1975-1981 are obtained from Statistics Canada, *Air Carrier Operations in Canada*, Catalogue No. 51-002, October-December issues; data for 1982-1990 are from Statistics Canada, *Canadian Civil Aviation*, Catalogue No. 51-206, 1982-1990 issues.

Employee statistics for 1975-1987 are from Catalogue No. 51-002; for 1988-1990, Catalogue No. 51-206, Table 4.2.

United States: Air Transport Association of America, *Air Transport: The Annual Report of the Scheduled Airline Industry* (Washington: ATA of America), various issues.

Notes: Canadian data refer to unit-toll services of Level 1 and Level 2 carriers for 1975-1981 and of Level 1 carriers for 1982-1990.

Seat-kilometres for regular, irregular and specific point service were estimated for 1975-1986 by applying the average load factor on scheduled services of the regional airlines. Nordair's seat-kilometres were unavailable for 1983 and 1984 and were estimated using the above method.

Tonne-kilometre statistics include both passenger and freight weights.

found that because travellers, especially business travellers, place a high value on finding flights that correspond to desired departure times, the increase in numbers of flights is one of the most important benefits of deregulation. Surveys conducted by the National Transportation Agency confirm the importance of convenient departure and arrival times to Canadian business travellers.

Air service to northern and remote communities has also increased. Regional affiliates established their own local connections to serve these markets. The result is more frequent service and links that allow travellers in these communities to connect with the country's main airline networks. The number of weekly scheduled direct flights increased by 163 percent on 60 northern air routes monitored by the National Transportation Agency between 1983 and 1991, and the number of scheduled indirect flights (same plane, one or more stops) increased by 61 percent.

There is no evidence that deregulation has lowered airline safety. Economic deregulation did not extend to safety regulation. In Canada, as in the United States, the federal government continues to set and enforce standards for safe airline operation. Opponents of deregulation believed that airlines would cut back on safety precautions because of the pressure to reduce costs and become more competitive. As we discuss more fully in Chapter 8, it is difficult to separate the effects of economic deregulation from all the other influences on air safety. Nevertheless, there is no evidence in the overall statistics on air accidents, in either Canada or the United States, that deregulation has lowered safety levels.

MARKET STRUCTURE AND COMPETITION

In both Canada and the United States, the airline industries have become highly concentrated. In the United States, low-cost, innovative airlines that provided an important competitive stimulus in the early years of deregulation have disappeared. Today, three airlines — Delta, American and United — control more than half the market. In

Canada, the airline industry is controlled by two airlines. Air Canada and Canadian Airlines International and their networks account for approximately 95 percent of the revenue for scheduled services and 90 percent of total industry revenue. Are competitive forces in the market sufficient to impose pressure on carriers to increase efficiency and to pass on the resulting gains to consumers?

Studies of city-pair markets suggest that there has been an increase in competition. The development of the Canadian Airlines International network overcame the market imbalance that previously existed because of the dominance of Air Canada. In 1983, one carrier alone served about 20 percent of the largest communities in the country. By 1991, the two major carriers served all 43 of the largest communities that account for over 95 percent of originating and terminating traffic. Independent carriers provided scheduled service in 30 of these communities.

Consolidation in the Canadian air carrier industry, however, may not yet be over. Several charter and independent airlines have left the industry or become part of the majors' families. For example, Wardair was taken over by Pacific Western Airlines (PWA) in 1989. Intair, the largest independent, filed for bankruptcy, and its turboprop operations in Quebec were acquired by PWA in 1991.

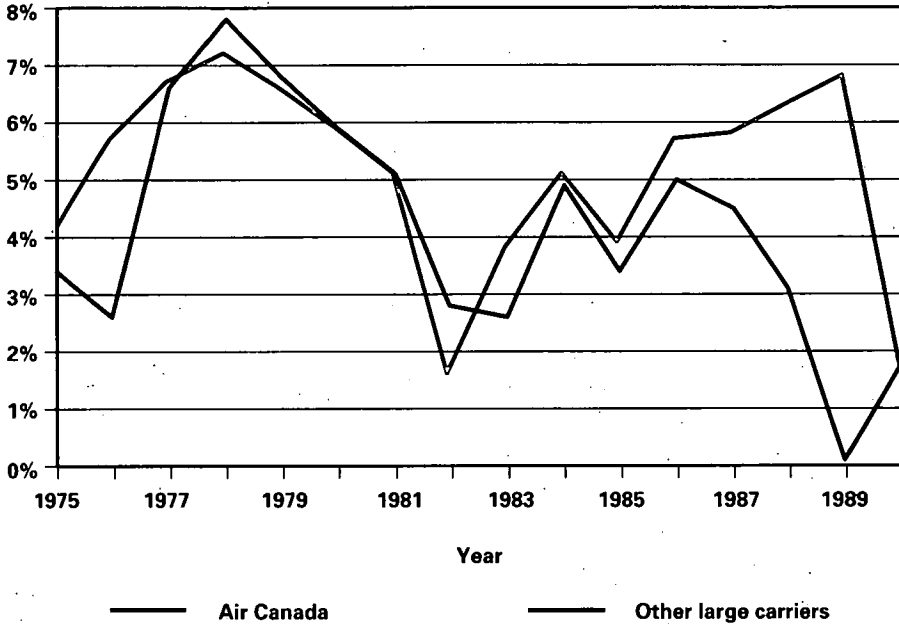
The recent financial performance of Air Canada and Canadian Airlines International has been unimpressive (Chart 11-4). Their lower revenues are a result of several factors, including the recent economic slowdown in Canada and other countries, and the heavy debt load and high interest expenses from the purchase of \$6 billion worth of aircraft since 1986. In addition, with the privatization of Air Canada and with PWA's acquisition of Wardair, both majors have had to undertake considerable re-organization.

Markets with at least two competing carriers enjoy lower fares. In the United States, it is difficult for new airlines to enter fortress hubs — those dominated by one carrier. For air travellers who cannot bypass

Chart 11-4

RATES OF RETURN ON INVESTMENTS FOR MAJOR CANADIAN AIRLINES, 1975-1990

(Net income + interest expenses)/total assets



Source: Statistics Canada, *Air Carrier Financial Statements/Canadian Civil Aviation*, Catalogue No. 51-206, 1975-1990 editions.

Note: Other large carriers include CP Air, the major regional carriers and Wardair for 1975-1986 and Canadian Airlines International Ltd./Wardair thereafter.

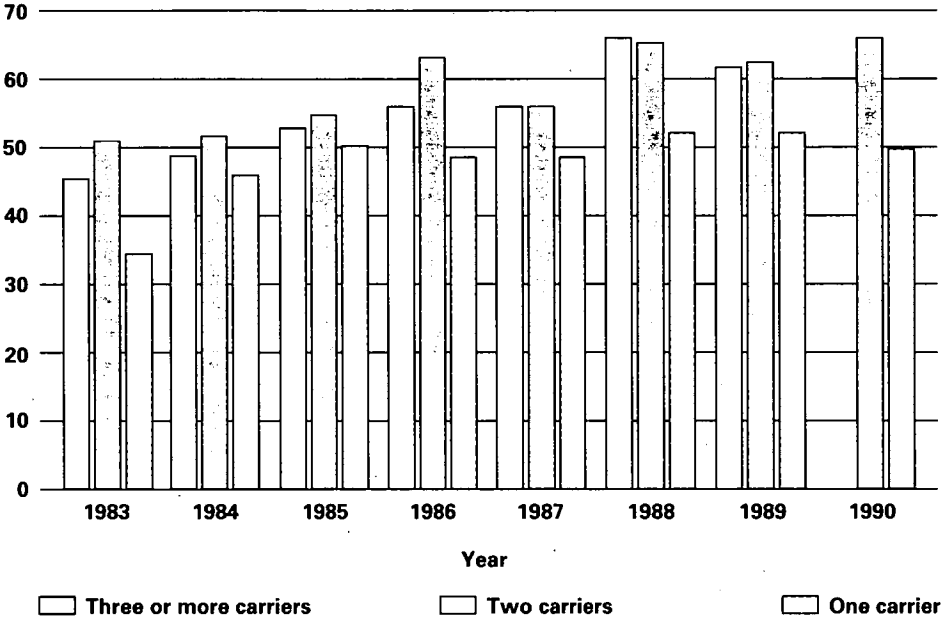
these hubs, fares have been higher than for other travellers. In Canada, fares are higher in city-pair markets served by only one carrier, although these markets account for a small percentage of total traffic. Chart 11-5 shows that the proportion of travellers obtaining discount fares is somewhat lower in city-pair markets served by only one carrier. Chart 11-6 shows that large discounts are more common in city-pair markets served by two carriers than those served by one carrier.

Experience under deregulation has shown that the majors and their affiliates have a number of advantages over potential new entrants. Their large and well-integrated networks allow them to satisfy most

Chart 11-5

PASSENGERS TRAVELLING ON DISCOUNT FARES, BY NUMBER OF CARRIERS SERVING CITY-PAIRS, 1983-1990

Percentage of passengers with discount fares



Source: Unpublished data from Statistics Canada's Fare Basis Survey.

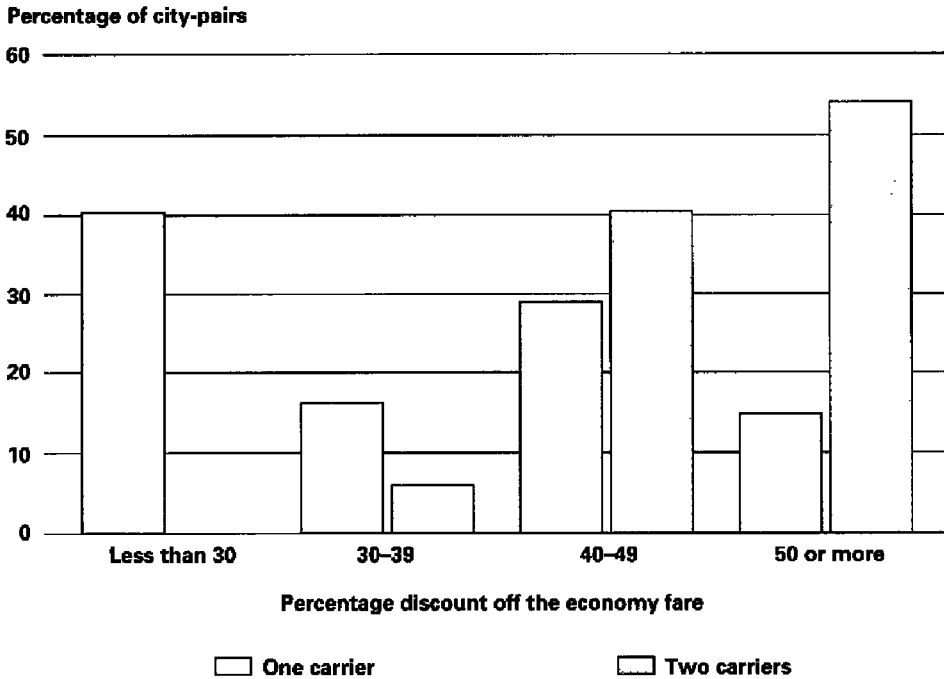
Note: Only Air Canada and Canadian Airlines International Ltd. were included in the survey for 1990.

travellers' preferences for single-line service from origin to destination. Marketing innovations, particularly computer reservation systems (CRSs), but also frequent-flyer programs (FFPs) and various travel agent incentives, have also reinforced the strong position of the majors. Large carriers also have deeper pockets, and are therefore in a better position than a smaller rival to sustain the losses that sometimes result from a competitive battle. There is a debate as to whether large airlines have cost advantages over smaller airlines. It seems clear, however, that a high-volume route has lower costs than a low-volume one.

The extent of the majors' networks may make it difficult for a new airline to enter the market. Air Canada and Canadian Airlines International have been successful in bringing most feeder carriers

Chart 11-6

PERCENTAGE DISCOUNT OFF ECONOMY FARE, BY NUMBER OF CARRIERS SERVING CITY-PAIRS, 1990



Source: Unpublished data from Statistics Canada's Fare Basis Survey.

Note: Only Air Canada and Canadian Airlines International Ltd. were included in the survey for 1990.

into their networks. A potential carrier could have difficulty establishing itself if it could not gain access to feeder traffic. The relevant authorities must ensure that restrictive agreements between the majors and their feeders have not created a barrier preventing entry of a new carrier.

Reservations systems could also give the majors an advantage over new airlines. Air Canada and Canadian Airlines International jointly own the Gemini Computer Reservation System, which, in 1989, accounted for 82 percent of air segments (a segment being one takeoff and landing) booked in Canada. Participation in a CRS has become a necessity for airlines. Without some public monitoring,

Air Canada and Canadian Airlines International could use their control of the dominant CRS system in Canada to put their potential rivals at a disadvantage.

Canada's *Competition Act* has provided a basis for addressing both the potential anti-competitive effects of CRSs and the general problem of exclusive contracts and "refusal to supply."¹⁰ The Canadian Competition Tribunal issued rules to govern the conduct of the Gemini CRS, and an interdepartmental government committee is developing permanent regulations to be administered and enforced by the National Transportation Agency. These safeguards are adequate and appropriate.

We are firmly convinced that Canadian air travellers are better off as a result of economic regulatory reforms. Problems certainly exist under deregulation, but these should be put into perspective. Airline markets may be imperfect today, but they were even more imperfect in the past, when they were controlled by rigid economic regulations. We believe that a number of measures are available to assist in achieving the benefits of competition or to respond should competition decrease. These measures involve different elements of international air policy, to which we now turn.

INTERNATIONAL AIR POLICY¹¹

BILATERAL AIR AGREEMENTS

International air markets are regulated through international agreements. Foreign carriers in Canada and Canadian carriers in international markets are subject to restrictions in their operations. Countries with their own domestic airlines generally do not allow foreign carriers to operate within their borders. Bilateral air agreements between countries provide a system for regulating entry and for controlling pricing, capacity, frequency and other matters in international markets. Canada's international air policy is governed by such agreements.

An objective of bilateral agreements is the sharing of air markets between the carriers of the countries involved. Moreover, the existence of bilateral air service agreements means that Canada cannot move unilaterally to deregulate international air services to and from Canada.

The international air market is tightly regulated. Canada takes part in about 60 international bilateral air agreements. Some include limits to the capacity (seats) that each country's designated airline can offer, and require both airlines to agree to any change. Some have restrictions on fares; again, the airlines must agree to the changes. The agreement with France concerning Martinique and the now-expired, experimental, trans-border agreement with the United States were the only agreements where tariff changes could be made rapidly in response to market shifts.

In agreements under which routes are operated solely by foreign carriers, Canada requires revenue sharing or other benefits to the Canadian carrier. Finally, two thirds of the agreements limit the ability of either country to designate more than one carrier on a route.

Bilateral air agreements assume that each country has at least one national airline. If there were no international Canadian air carrier, Canada would be forced to depend on foreign carriers for international airline service. The result could be a monopoly in markets to and from Canada if other countries were to assign a single national carrier to the route. For example, the Canada-France bilateral agreement allows Canadian air carriers to operate between Canada and France in competition with Air France, but does not permit Canada to designate a non-Canadian carrier for that route. In the absence of a Canadian carrier, the Canada-France market would become an Air France monopoly. Canada would have the option, however, of withdrawing from the bilateral agreement, but then Canadians wishing to travel to France would have to make their way to France via a third country.

In the context of the existing system of bilateral agreements, we want to examine the potential for Canada's international air policy to give Canadians access to competitive air services in international and domestic air markets. To achieve this, Canada requires two or more actual or potentially competing carriers operating between destinations within Canada, and between Canadian and foreign destinations.

RECOMMENDATIONS

OWNERSHIP AND CONTROL

Although there are no national restrictions on ownership for the other transportation modes, air carriers are protected from foreign ownership and control under the *National Transportation Act, 1987*. This protection is consistent with the Chicago Convention, which sets the requirements of the world's bilateral air agreements. Under the Chicago Convention, there must be substantial national ownership and effective control of an airline designated as national. For an airline to be a national Canadian air carrier, substantial ownership and effective control must be held by Canadians — citizens, permanent residents, a government or government agent, and entities in which Canadians own and control at least 75 percent of the voting interests or "such lesser percentage as the Governor in Council may by regulation specify."¹²

If a Canadian air carrier that flies international routes were, by virtue of foreign investment, no longer owned and under effective control by Canadians, its designation as a national airline under the relevant bilateral agreements could be challenged. This challenge could come from the remaining Canadian air carriers, the other country party to the bilateral agreement, or from carriers in competition with the newly controlled airline. Under the existing international rules, this challenge would probably succeed.

Foreign control may also affect the ability of the government to ensure the availability of domestic service in emergency situations. The *Emergencies Act* provides the Canadian government with the power to requisition the use of any equipment, which includes aircraft on Canadian territory, in times of a declared emergency. Other governments have similar laws. A foreign government might act on prior knowledge, however, and order aircraft owned, or even operated, by its nationals, to be returned to its territory (in a manner similar to the control over shipping demonstrated in the days preceding World War II).

Restricting foreign ownership and control may reduce choices to the consumer. This would be of particular concern if a situation arises where only one domestic carrier remains viable. We recognize that there are instances when a relaxation in foreign ownership controls may be necessary to preserve domestic competition (we return to this later). For the most part, though, we believe existing restrictions on foreign ownership and control of Canadian air carriers are appropriate, given the current bilateral air agreement regime.

Therefore, we **recommend** that:

11.1 The federal government retain the existing limits on foreign ownership and control of air carriers.

Canada also restricts individual ownership of air carriers. These restrictions ensure that shares in the air carriers remain widely held and that control by current management is preserved. We believe that such restrictions are undesirable. The unrestricted trading of shares exerts an important check on corporate management. In equity markets that function well, excellent management is more likely because badly managed companies are more easily taken over.

Therefore, we **recommend** that:

11.2 The 10 percent ceiling on individual holdings, which currently applies to Air Canada and Pacific Western Airlines (the parent of Canadian Airlines International), be eliminated.

CONSOLIDATION OF THE INDUSTRY

Since we commenced our studies, dramatic changes have occurred in the airline industry. As we move through this decade and into the 21st century, the number of international carriers may well shrink, and changes will continue. These changes will have a profound effect on Canada's carriers and domestic airline services. As well, Canadian air carriers will face more formidable competition in their international operations.

The world's airlines are undergoing major restructuring. In part, this restructuring has taken the form of a shift toward partial or full private ownership of several airlines that were previously government-owned. In addition, a severe recession in North America has hastened the collapse of several U.S. carriers, resulting in the emergence of three super-carriers in that country. Through inter-carrier equity investment and the sharing of resources, management, labour, equipment and bases, several more super-carriers will likely emerge worldwide.

It is well to remember, however, that there are over 200 member airlines in the International Air Transport Association (IATA), and that many of these companies will continue providing essential services throughout the world. Will Canada's national carriers be included in this group? We believe that they will as long as their vision takes into account new pressures, challenges and opportunities.

It is possible that Canadian carriers will be able to operate successfully as independent carriers in the new mega-carrier world. On the other hand, they could become pivotal partners of one of seven or

eight world-scale airlines. The outcome for Canadian air carriers — between these two possibilities — will depend on the evolution of national, continental and world markets, as well as improvements in technology, but, above all else, on their ability to be competitive, to change, to improvise, to find a special role, and to provide superior service.

We are optimistic that Canadian air carriers will have the realistic and creative energies to meet this challenge as Canada enters the 21st century.

We have considered the arguments of those who believe that the Canadian market can sustain only one major carrier, and that a merger of Air Canada and Canadian Airlines International is desirable. In 1989, the airline resulting from such a merger would have ranked 11th out of the top 50 airlines in the world in both passengers and passenger-kilometres. The advantage of such a merger is that the resulting carrier would carry more passengers and could thereby incur lower operating costs per passenger. The disadvantage of a merger is that, despite the freedom of other carriers to enter the market, domestic air transportation could become dominated, once again, by a single carrier monopoly.

We believe that the federal government should not attempt to restructure the airline industry. Rather, government policy should permit Canadian air carriers to increase their efficiency and to develop whatever market niche they can most effectively fill in the evolving airline industry.

To this effect, we **recommend** that:

11.3 The federal government invite Canadian air carriers to make public proposals for future international air route designations, with the airline offering the best package to be granted the route and the reasons to be made public.

Further, we recommend that:

11.4 Canadian air carriers be allowed to sell designated international air routes to one another.

Given our view that carriers will make the required adjustments toward efficiency and market niches without interference or assistance, we recommend that:

11.5 Governments abstain from making any financial contribution that is intended to ensure the survival of air carriers.

This recommendation, of course, does not preclude purchase by governments of designated services on market terms. The federal government should be prepared, however, to prevent a situation that would require a return to economic regulation, which would be the likely outcome if only one major Canadian air carrier emerges. At the time of writing, discussions were under way regarding a potential merger between Air Canada and Canadian Airlines International. The presence of only one major airline in the domestic market is inadvisable. While we are concerned with the survival of the airline companies, our overriding policy consideration is to maintain competition between at least two air carriers. We believe that Canadian travellers will be best served if there are two or more major competing carriers in Canadian skies. Maintaining competition should be the overriding policy consideration.

Therefore, we recommend that:

11.6 If faced with a potential reduction to only one major Canadian air carrier, the federal government exercise its authority under sections 67, 72 and 73 of the *National Transportation Act, 1987* to override limitations on foreign ownership and control for the explicit purpose of, and to the extent required for, ensuring competition in the domestic market.

OPEN SKIES

The term "open skies" has been used to indicate a considerable opening of the United States-Canada border to flights to and from both countries. Increasing trade and visitor traffic have put pressure on both countries to renegotiate the United States-Canada bilateral air treaty.

There has been much discussion in the media over the past few years about the concept of open skies, in particular with the United States. One version of open skies would mean a continental free market for airlines. Carriers from each country would be allowed to fly any routes in either country. This would specifically include cabotage rights where airlines of both countries are permitted to transport travellers from one destination in the other country to another destination in that same country.

At our hearings, it was apparent that, other than representatives of airlines and a few others with closely related interests, members of the public generally were not talking about this version of open skies. What they did want, and strongly argued for, was direct service from their communities to additional destinations in the United States.

Canadians are interested in better access to foreign airline networks. They want more and better air service. This presents a real problem in negotiating a sound bilateral agreement with the United States that will meet the wishes of Canadian consumers and at the same time preserve the viability of Canada's two major carriers.

Equality of opportunity and equality of benefits for Canada's airlines are almost impossible to attain. To counteract the current dominance of U.S. carriers flying into major Canadian cities, Canadian carriers must be given the same access to all major U.S. cities, with guarantees of slots and gates. This might more accurately be termed an "open borders" policy, or "point-to-point" open skies. Under this arrangement, cross-border access would be eased considerably and Canadian consumers would get the additional service they have been demanding. U.S. airlines would benefit by adding new Canadian spokes to their hubs in the northern United States. Canadian air carriers could create Canadian hubs that would add spokes to the United States. Canadian firms would still retain all domestic flights and their international connections.

While we are in favour of open borders, we believe that Canadian carriers will require some time to prepare to meet the expected U.S. competition, which will likely concentrate on one or more of the three major centres, Vancouver, Toronto and Montreal. This period need not be prolonged. Canadian carriers must be prepared, as soon as possible, to meet this and other challenges developing worldwide. It is also well to remember that the Canada-United States Free Trade Agreement is being phased in over 10 years.

Canadians also want one or more Canadian airlines. We believe that the interests of the nation and of Canadian travellers will be best served if there are two or more major competing Canadian carriers. This should be a primary policy consideration in the renegotiation of the United States-Canada Bilateral Air Treaty.

If easing the restrictions on access to the Canadian air market and relaxing foreign ownership limits are not sufficient to maintain two major Canadian carriers, then the availability of competing services should continue to be the overriding consideration. In this event, Canada should seriously consider ways and means to ensure competition on domestic routes. This would entail one or more of the following:

- favouring alliances between Canadian and foreign carriers;
- favouring easier access for new entrants to terminals and landing slots; or
- relying on the Bureau of Competition Policy if there is abuse of monopoly power.

If all efforts to create domestic competition fail, we would recommend that the federal government consider opening up certain domestic routes to foreign airlines.

ENDNOTES

1. Both Air Canada and Pacific Western Airlines (PWA) are subject to restrictions — including ownership restrictions and head office location — under their respective Acts.
2. Air Canada was created in 1937 but was called Trans-Canada Airlines until 1965.
3. By contrast, regulations administered in the United States by the Civil Aeronautics Board (CAB) did not afford the trunk carriers the protection they required to carry out an effective program of internal subsidization. (Many of the major routes were served by more than one trunk carrier.) U.S. carriers could not engage in price competition since the CAB regulated the level and structure of fares. But they could compete by increasing flight frequency, improving the comfort of aircraft and offering in-flight amenities. This non-price competition, which occurred in long-haul markets, ultimately eliminated the surplus that was necessary to sustain service on unprofitable routes.
4. For example, a recent review of available research on U.S. deregulation concludes:

“At the outset of deregulation only about 20 percent of city-pair markets had three or more competitors; this share has grown to 40 percent. City-pair markets with three or more competitors serve about two-thirds of passenger trips. To date, this competition has generated many benefits for consumers. The freedom given to managers by deregulation to realign their routes and costs has resulted in a more efficient industry. Average fares have increased more slowly than costs, although most bargains occur in markets in which three or more carriers compete for service, especially when one of those competitors is a low-cost, new-entrant airline. The development of hub-and-spoke networks, spurred by deregulation, has expanded the frequency and availability of service in most parts of the country. In addition, rural areas, which used to receive subsidized jet-carrier service, continue to receive air service, though now via smaller turboprop aircraft. Substantial improvements in the frequency and timeliness of service have occurred in most rural areas. Even while the industry has evolved and service has expanded, accident and fatal accident rates have been lower than during the period before deregulation.”

Transportation Research Board, National Research Council, *Winds of Change: Domestic Air Transport Since Deregulation* (Washington, D.C., 1991), Special Report 230, p. 2.

5. There is anecdotal evidence of Canadians driving several hours to take advantage of substantially lower U.S. airfares on international and transcontinental flights and other flights to U.S. destinations.
6. “Canadian” includes Canadian citizens, permanent residents within the meaning of the *Immigration Act*, a government or government agent, and entities that are 75 percent controlled by Canadians.
7. The *Pacific Western Airlines Act* was recently amended. The previous provision regarding holdings restricted the holdings of any one person or group to 4 percent of the voting shares.
8. The objective of yield-management systems is to maximize revenues by, in part, minimizing the number of empty seats on flights. Computer programs allow the airlines to predict the number of empty seats on each flight and to determine the nature of the discounts that are required to attract sufficient new passengers to achieve full capacity. The yield-management system will also help airlines determine the nature of the restrictions or discount fares (such as advanced booking, advanced purchase, minimum and maximum stay, no cancellation) required to reduce the diversion of potential full-fare passengers to

discount fares. The computer keeps a running check on actual bookings compared with expected bookings on each flight and flags those flights for which there is a need to attract additional passengers or make other adjustments.

9. Changes in revenue tonne-kilometres per employee reflect changes in load factor, and hence capture the results of the innovations in load management discussed above. They also incorporate the effect of efforts to increase seat-km per employee; using this latter measure, labour productivity increased by 3.4 percent annually between 1984 and 1990, compared with only 0.4 percent annually between 1975 and 1983.
10. The *Competition Act* provides for a remedial solution when competition is precluded because someone is withholding an essential input. In these circumstances, the Competition Tribunal can order that the required input be made available to the aspiring competitor on the usual trade terms.
11. Air transportation to, from and within Canada accounts for slightly more than 2 percent of all global air markets. The mix of domestic and international passenger traffic varies considerably from one country to another. The United States has a low proportion of international service, about 24 percent, while the United Kingdom's carriers depend on international traffic for 97 percent of their revenue.

For Canada, the mix is more balanced. In 1990, Canadian carriers, scheduled and charter together, carried some 37 million passengers, of which approximately 65 percent travelled between domestic and international destinations. Travel to and from the United States (measured by number of one-way trips) was 50 percent of Canada's total international market.

The report of a task force established by the Minister of Transport to review Canada's international aviation policy to prepare for emerging global trade and travel patterns, published in January 1992, provides more detailed information on the importance of the Canada-United States trans-border air market and overseas markets.

12. This is the definition of "Canadian" under section 67(1) of the *National Transportation Act, 1987*.

CHAPTER 12

APPLYING THE PRINCIPLES TO RAIL CARRIERS

INTRODUCTION

In this chapter we review the rail industry in Canada, the railway companies that provide intercity, remote access, tourist and extended commuter services and the views Canadians expressed to us on passenger rail issues.

We then undertake a more detailed examination of the operations, financial performance and future prospects of VIA Rail, including a comparison of VIA Rail with Amtrak, the United States' national passenger rail service. We conclude this section with our recommendations for the main passenger rail operations and for remote rail services.

We then consider the issues raised by proposals for new high-speed rail services, and make recommendations about how to approach high-speed rail decisions.

THE PASSENGER RAIL INDUSTRY IN CANADA

In Canada, passenger rail's share of the intercity travel market has declined. As in Europe and the United States, where car travel predominates and air travel has increased substantially for longer trips, the share of rail travel has declined and rail is now used primarily for shorter trips.

VIA Rail accounts for more than 90 percent of intercity passenger rail travel in Canada. VIA Rail inherited most of the nation's passenger rail operations by the late 1970s, when the federal government relieved Canadian National Railways (CN) and Canadian Pacific Ltd. (CP) of the responsibility for these services. Unlike the passenger railways

of other countries, including Amtrak in the United States, VIA Rail does not own large quantities of track, but rents track from the freight railways.

Other railways also provide intercity passenger services in Canada. The Ontario Northland Railway (ONR) is provincially owned. It provides service six days a week between Toronto and Cochrane (776 kilometres), and, three days a week, a mixed freight and passenger train service in the remote area between Cochrane and Moosonee (300 kilometres). The ONR also provides daily tour service between Cochrane and Moosonee during the summer.

The Ontario government's subsidy for ONR includes capital financing and approximately \$15 million annually for operating expenses. The \$15 million includes a federal subsidy (\$2 million in 1989) paid through CN and the ONR to the government of Ontario for the Toronto to North Bay part of the Cochrane service.

The Algoma Central Railway (ACR) provides service between Sault Ste. Marie and Hearst (476 kilometres) six days per week during summer and three days per week during winter. Most of this route is without road access. Algoma Central Railway also operates tours on this route that account for the majority of its passenger revenues. During the 1980s, ACR received \$15 million under the terms of a joint federal-provincial agreement. In addition, federal taxpayers pay approximately \$2.5 million per year for this service.

The provincially owned British Columbia Railway (BCR) offers daily service between North Vancouver and Lillooet (254 kilometres). Trains continue through to Prince George (490 kilometres) three days per week and daily during the peak season. Over half of the ridership consists of tour groups. British Columbia taxpayers provide approximately \$3 million a year for operations, with separate funding for the purchase and upgrading of passenger equipment as required.

The Quebec North Shore and Labrador Railway (QNS&L) provides twice-weekly mixed train service from Sept-Iles to the Schefferville-Labrador City area (about 600 kilometres through an area without road access). The federal government pays approximately \$1 million in annual subsidies for this service.

Ontario's GO Transit and the Montreal commuter services provide shorter distance intercity services, and there are small tourist services in the Yukon Territory, Alberta, Ontario, Quebec and New Brunswick. Also, Rocky Mountaineer Rail Tours, a private-sector company, operates two routes: one between Vancouver and Calgary, through Banff, and the other between Vancouver and Jasper. Rocky Mountaineer Rail Tours receives no subsidy.

Amtrak offers daily trains between Toronto and Chicago, via Sarnia, and between Toronto and New York, via Niagara Falls. Amtrak's Toronto trains, which carry passengers between cities within Canada, are operated by VIA Rail and subsidized as part of the VIA Rail network. There are no Canadian subsidies for Amtrak's two services between Montreal and New York or Washington, D.C., since they do not carry passengers from point to point within Canada.

Most passenger rail services in Canada are subsidized (Table 12-1). Federal taxpayers cover 100 percent of VIA Rail's losses and 80 percent of the losses for federally chartered carriers required to provide passenger rail services. Provincial taxpayers pay for losses incurred by provincially owned railways. Although passenger rail systems in most other countries recover a somewhat greater percentage of their costs than does VIA Rail, they are government-owned and operated and require substantial taxpayer support in terms of funding.

Table 12-1

DIRECT GOVERNMENT SUBSIDIES PAID FOR PASSENGER SERVICES IN CANADA, 1987^a

Company	Operating subsidy (\$ millions)	Passengers (\$ thousands)	Passenger-km (\$ millions)	Revenue per passenger-km (¢)	Subsidy per passenger-km (¢)
VIA Rail	499.0	5,865.0	2,092.6	9	24
BCR	2.5	78.9	18.2	9	14
ONR	16.1	132.4	53.6	8	30
ACR	2.3	39.8	9.0	10	26
QNS&L	1.0	18.7	5.4	n/a	18

Source: Information from carriers.

- a. Amounts are approximate. In addition, there were losses and capital contributions borne by shareholders (including governments) or cross-subsidized by the freight traffic.

WHAT CANADIANS TOLD US

By far, the majority of people who appeared at our public hearings spoke about passenger rail service. The views on passenger rail were the most strongly held views that we heard. There was a belief among most interveners that passenger rail had served Canadians well in the past, that it was necessary for the future, and that it was faltering today because it had not been given a fair chance by the federal government.

Canadians' reasons for supporting passenger rail vary. Rail support groups and environmental groups argued that rail is the most environmentally friendly mode of travel, and is also the safest and most accessible mode of travel. Some local governments, especially in regions whose services were cut in 1990, saw passenger rail service as vital to their local economies. The tourism industry noted passenger rail's value in attracting foreign visitors. Unions argued for the necessity of preserving existing rail jobs. Still others argued, especially in the case of new high-speed train technology, that greater investment in passenger rail service will provide a general boost to the economy.

Many Canadians see rail service as a right. They made the point that rail had played a key role in building Canada, and continues to play a role in holding the country together. Those who had been directly affected by the VIA Rail cuts often expressed outrage at what they saw as the loss of an important transportation option. Even communities that had not been served by passenger rail for many years called on the federal government to reinstate VIA Rail services.

Many interveners felt that passenger rail had been set up to fail and that the solution lies in fixing VIA Rail. Many supporters of rail, and VIA Rail itself, argued that rail service cannot succeed until VIA Rail is given the freedom to manage without federal government interference. Rail unions stated that VIA Rail had been mismanaged from the beginning. Some groups, such as the Western Rail Passenger Restoration Committee, suggested that VIA Rail would be much better off if it were modelled after Amtrak. One widely expressed view was that an infusion of capital would allow VIA Rail to succeed, and that this expenditure would be justified because governments in Canada now subsidize the other modes of passenger travel. Few interveners suggested how Canadians could pay for passenger rail service if its potential ridership would not support it.

Other interveners pointed to high-speed rail service in Europe as an example of how passenger rail can be successful. It was suggested that, in addition to passenger transportation benefits, a high-speed rail project in the Toronto to Montreal corridor would boost the economies of both Ontario and Quebec. Few interveners felt that high-speed rail could succeed without taxpayer help — at least in providing the necessary infrastructure.

VIA RAIL

FINANCIAL PICTURE

During the 1980s, VIA Rail's passenger volume and average trip length declined. Table 12-2 shows VIA Rail's financial and operational performance from 1980 through 1991. Annual passenger volume dropped

from 7.6 million in 1980 to 6.5 million by 1989, and passenger-kilometres dropped from 3,104 million to 2,442 million in the same period, reflecting shorter average trip lengths. The 1990 and 1991 figures reflect the cuts to service in January 1990, and those for 1990 include some costs associated with the transition to less service.

Table 12-2
VIA RAIL: FINANCIAL AND OPERATIONAL RESULTS, 1980-1991

Results	Year						
	1980	1983	1986	1988	1989	1990	1991
Passengers (thousands)	7,586	6,541	6,286	6,415	6,457	3,536	3,633
Passenger-km (millions)	3,104	2,411	2,261	2,299	2,442	1,263	1,320
Operating deficit per passenger-km (¢)	10	19	21	25	22	31	28
Total subsidy (\$ millions)	408	598	506	637	532	382 ^b	368 ^c
Subsidy (percent) ^a	74	75	71	74	68	73	71

Source: VIA Rail annual reports and corporate plan summaries.

- a. Government funding, including capital funding, as a percent of total expenditures.
- b. Does not include \$60 million for network restructuring.
- c. Does not include \$25 million for network restructuring.

VIA Rail's subsidy grew from \$408 million in 1980 to \$637 million in 1988. After the federal government cut routes in 1990, the subsidy fell to \$382 million. Adjusted for inflation, the increase prior to the VIA Rail cuts was small — only 5 percent in 10 years. Despite an increase in revenues, the operating deficit per passenger-kilometre (adjusted for inflation) increased by 27 percent.

From its inception through 1991, VIA Rail cost Canadian taxpayers \$5.6 billion in operating losses and \$1.2 billion in capital expenditures — for a total of \$6.8 billion in subsidies.

SERVICES AND COSTS

In 1989, before the cutbacks, VIA Rail offered more than 35 different passenger rail services. We have grouped the non-remote services as follows:¹

- Toronto–Ottawa–Montreal (Tor–Ott–Mtl);
- Southwestern Ontario (SO);
- Western Transcontinental (WT), Vancouver to Toronto;
- Eastern Interprovincial (EI), between Montreal and the Maritimes;
and
- Regional, Maritime and others.

Could VIA Rail's services recover more of their costs in the future and become self-sufficient? To answer this question, we examined non-remote service groupings, including services terminated in January 1990. We considered a scenario (Table 12-3) in which VIA Rail increased ridership, raised fares and brought in greater revenues. We adjusted VIA Rail's recent actual service costs to reflect anticipated improvements that could result from better labour practices, modern equipment and reduced overhead costs. For example, we assumed engine and train crew reductions for certain services. In addition, we reduced equipment maintenance costs to reflect anticipated economies from recent and planned equipment investment and renovation.

As far as was feasible, we used the same financial parameters in our calculations for passenger rail as were used for the other modes. We included depreciation and interest on the investment in passenger locomotives and cars, and the costs of using the track are included as these are direct payments by VIA Rail to the track owners. We did not include full capital charges for the investment in stations, maintenance shops and other publicly provided infrastructure; therefore, VIA's costs are slightly underestimated.

Even with the assumed improvements shown in Table 12-3, no VIA Rail service could recover its costs without steep price increases. Modernized, efficient equipment, improvements in crewing practices, and other economies would reduce the cost of passenger rail operations. The result, shown in Table 12-3, would be a major improvement in VIA Rail's cost recovery and, consequently, a significant

reduction in subsidies from Canadian taxpayers. Such economies, however, would not result in any of the services approaching self-sufficiency.

Table 12-3

VIA RAIL SERVICES — ADJUSTED FOR ANTICIPATED IMPROVEMENTS, \$1990^a

	Tor-Ott-Mtt	SO	WT	EI	Maritime Regional
Annual passengers (thousands)	2,004	1,326	202	297	275
Average trip length (km)	351	183	1,430	716	229
Load factor (percent)	70	47	79	64	36
Passenger-km/train-km	191	122	158	183	43
Revenue (\$ millions)	76	31	31	19	5
Revenue per passenger-km (¢)	11	13	11	9	8
Costs of operations (\$ millions)	83	44	63	45	14
Customer service (\$ millions)	31	18	12	10	4
Administration (\$ millions)	13	7	8	6	2
Capital charges (\$ millions)	20	15	20	20	5
Total costs (\$ millions)	146	84	103	81	25
Deficit (\$ millions)	70	54	72	62	20
Cost recovery (percent)	52	36	30	24	20
Subsidy (percent)	48	64	70	76	80
Deficit per passenger (\$)	35	40	356	209	73
Deficit per passenger-km (¢)	10	22	25	29	32

Source: Royal Commission staff estimates from data provided by VIA Rail.

- a. Where available, 1990 data were adjusted for assumed improvements in costs, ridership and revenues (see text). The "Maritime Regional" column is based on data for VIA Rail's (pre-cuts) 1989 Maritime regional services with similar adjustments. Totals do not always add up due to rounding.

Most VIA Rail services discontinued in 1990 had particularly low cost recovery. The routes included in the Maritime Regional services column of Table 12-3 were discontinued. Even allowing for reasonable improvement in both costs and revenues, these services would remain far from recovering operating costs.

VIA Rail's remote services have declining ridership and high costs. The federal government contracts with VIA Rail to operate eight mandatory services that include remote locations without access to all-weather roads. A ninth is serviced by the Vancouver to Toronto train. Ridership on remote services is shown in Table 12-4. Demand for these services has been declining, while costs have been increasing. The estimates of the costs to taxpayers of VIA Rail's mandatory services are shown in Table 12-5.

Table 12-4
MANDATORY SERVICES ANNUAL RIDERSHIP, 1985-1990^a

Route	Year					
	1985	1986	1987	1988	1989	1990
Prince Rupert-Jasper	23,334	29,712	26,817	26,665	27,171	16,766
Winnipeg-Churchill	57,493	50,334	52,009	48,847	44,298	30,446
The Pas-Lynn Lake	11,616	9,156	8,660	8,871	7,679	8,603
Wabowden-Churchill	1,631	1,041	952	797	399	210
Winnipeg-Capreol	71,643	65,057	54,616	54,101	48,479	^b
White River-Sudbury	8,598	10,423	9,590	10,195	9,805	4,715
Cochrane-Senneterre	6,815	5,997	5,329	5,043	4,293	1,591
Senneterre-Montreal	54,615	50,798	42,979	43,197	38,131	21,759
Jonquiere-Montreal	37,295	34,416	31,350	31,400	27,248	11,937

Source: Data provided by Transport Canada.

- a. Includes traffic handlings to non-remote segments of routes.
- b. Service to remote area provided by Vancouver-Toronto train since 1990.

There is little potential to improve cost recovery for the mandatory services by increasing revenues. Even a doubling or tripling of fares would have only a minor effect on losses. To reduce subsidies, the costs of providing mandatory services would have to be considerably reduced. VIA Rail could achieve this cost reduction if it limited services to truly remote areas. We do not believe that it is sensible to massively subsidize hundreds of kilometres of passenger railway service in areas where there are parallel road and bus services, and, in some cases, air services.

Table 12-5

MANDATORY SERVICES COST RECOVERY, 1990

Route	Total subsidy (\$000)	Recovery ratio (%)	Subsidy per passenger-kilometre (\$)
Prince Rupert-Jasper	12,688	7	1.24
Winnipeg-Churchill	19,409	8	1.24
The Pas-Lynn Lake	1,267	10	0.78
Wabowden-Churchill	59	8	1.26
Winnipeg-Capreol	Served by the Western Transcontinental		
White River-Sudbury	3,082	3	3.45
Cochrane-Senneterre	1,927	2	11.00
Senneterre-Montreal	9,799	6	1.70
Jonquiere-Montreal	5,587	5	1.92
Total excluding Winnipeg-Capreol	53,818	7	1.44

Source: Royal Commission staff estimate based on data provided by Transport Canada.

COMPARING VIA RAIL WITH AMTRAK

The passenger rail systems of most other countries would not, generally, serve as useful comparisons with Canada's passenger rail services. In Western Europe, rail is used primarily for passengers, with freight being a secondary activity. The opposite is true for Canada. The geography of Europe, with large, densely populated cities in close proximity to each other helps to make train travel preferable to air travel between population centres.

Amtrak operates in a geographic and cultural environment somewhat like that of Canada. Distances between cities in the United States are large, and most Americans prefer car and air travel to passenger rail.

Amtrak's percentage of cost recovery has improved steadily. Table 12-6 shows that Amtrak has had decreasing deficits and subsidies since 1983. Officials from Amtrak state that operating deficits will disappear by the end of the century, but that the government must continue to provide a capital subsidy.

Table 12-6

AMTRAK: FINANCIAL AND OPERATIONAL RESULTS, 1983-1989

Results	Year						
	1983	1984	1985	1986	1987	1988	1989
Passengers (millions)	18.9	19.5	20.8	20.3	20.4	21.5	21.4
Passenger-km (millions)	6,807	7,127	7,768	8,071	8,406	9,142	9,433
Operating deficit per passenger-km (¢)	12	13	10	09	08	07	07
Total subsidy (\$ millions)	977	980	935	776	774	644	619
Subsidy (percent) ^a	60	57	54	48	45	37	33

Source: Royal Commission staff calculations based on data from Amtrak annual reports.

a. Government funding as a percentage of total expenditures.

Why is Amtrak's performance better than that of VIA Rail? We identified a number of reasons why Amtrak is enjoying lower deficits and better cost recovery. To start with:

- Amtrak uses up-to-date, efficient rail equipment.
- Amtrak's labour practices permit higher productivity than VIA Rail's.
- Amtrak has a more favourable formula than VIA Rail for paying the freight railways for use of their track, although the difference only accounts for a 1 to 2 percent difference in total costs.
- From the beginning, VIA Rail had less freedom to make decisions due to the lack of a legislated mandate. Unlike Amtrak, VIA Rail was forced to take over all routes previously served, whereas the least viable U.S. routes were discontinued before Amtrak took over.
- In 1989, Amtrak had \$400 million in general revenue from non-intercity passenger rail business such as commuter services, from equipment maintenance services, from charges to freight railways for use of its track in the northeast corridor of the United States and from carrying mail.

But these reasons do not explain all the differences between VIA Rail's and Amtrak's performance. Some of the remaining difference lies in the nature of the services offered by each company.

VIA Rail offers more services relative to population size. Before comparing individual services, we note that, even after the 1990 service cuts, VIA Rail still provides about 30 percent more passenger-kilometres of service per Canadian than Amtrak does per American. VIA Rail also has about three times the length of route network per capita. Thus, the average number of riders on VIA Rail per kilometre is lower than that of Amtrak, and VIA Rail has many more routes with very low ridership. Amtrak has no services with fewer than 40,000 passengers per route-kilometre, whereas VIA Rail, even after the 1990 cuts, has several such services (Chart 12-1).

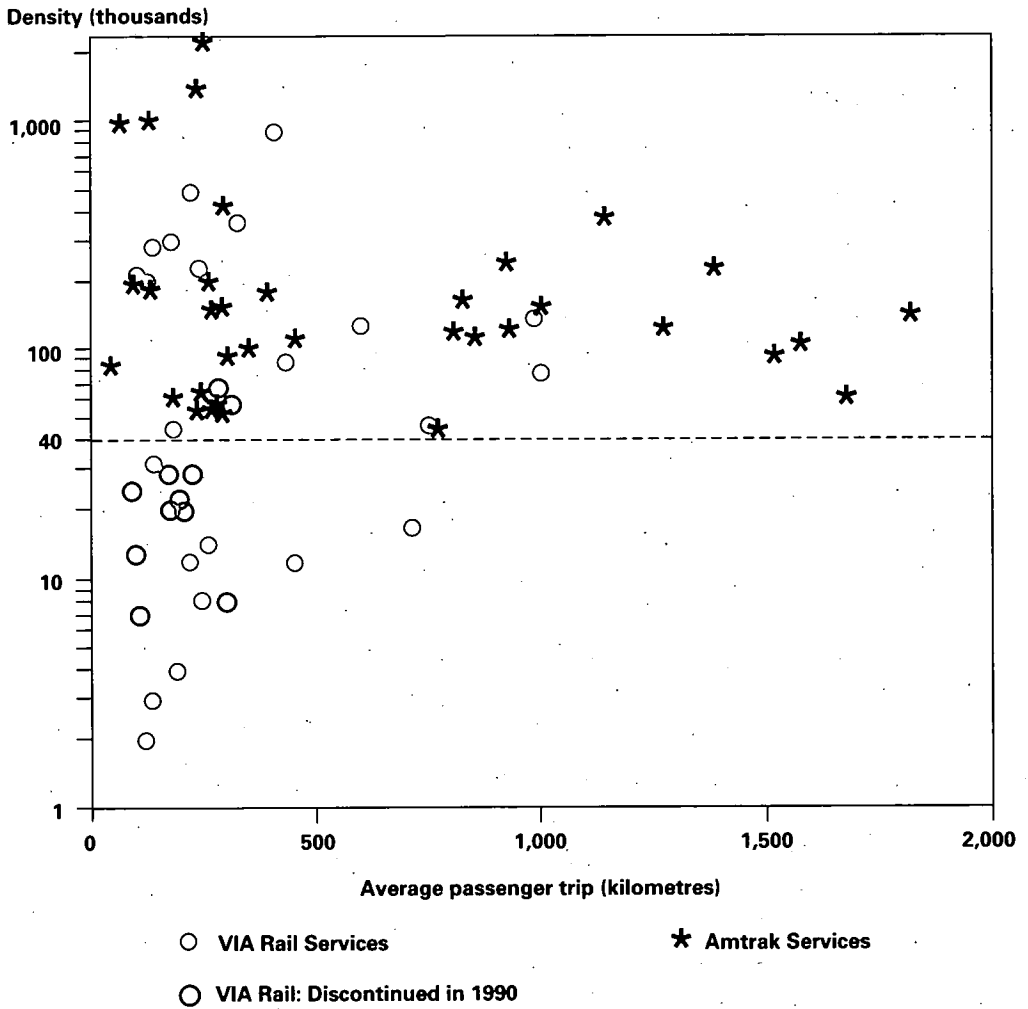
Chart 12-2 shows the operating cost-recovery ratio for selected Amtrak and VIA Rail services. To improve comparability we have excluded Amtrak's Metroliner service between New York and Washington, D.C., services where the average passenger travels less than 100 kilometres, and services where sleeping accommodation is provided. As Chart 12-2 demonstrates, VIA Rail's lowest density services, some of which were eliminated in 1990, have very poor cost recovery and few services recover their operating costs.

Cost recovery for VIA Rail would be improved by eliminating more of the less-used services, and improving service and increasing fares on the high-use routes. This strategy was adopted for Amtrak at its outset.

Some Amtrak services are similar in density and length to some VIA Rail services in the Windsor to Quebec City corridor. In some cases, their cost-recovery rates are also similar; in others, Amtrak's cost recovery is better for various reasons.

Chart 12-1

AMTRAK AND VIA RAIL SERVICES: DENSITY VERSUS AVERAGE TRIP LENGTH, 1989



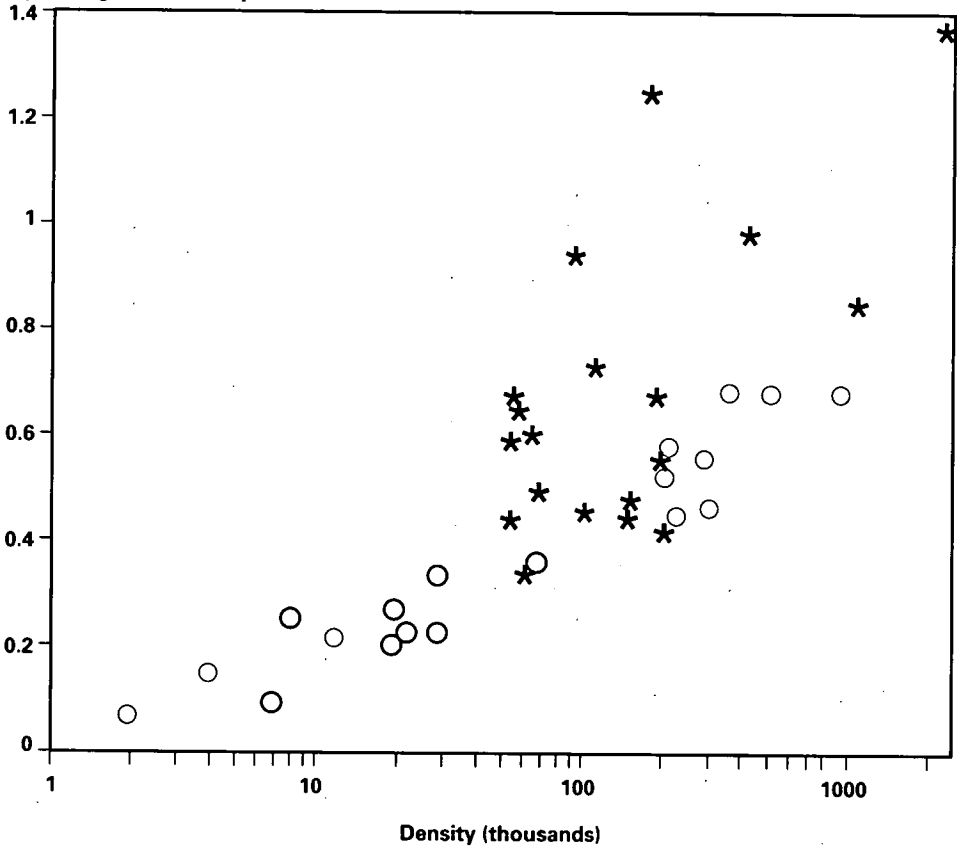
Sources: Data provided by carriers and Royal Commission staff calculations.

Note: Density = pass-km per route-km.

Chart 12-2

AMTRAK AND VIA RAIL: 1989 OPERATING COST RECOVERY FOR INTERMEDIATE DISTANCE
NON-SLEEPER SERVICE

Operating cost recovery



- VIA Rail Services
- VIA Rail: Discontinued in 1990
- * Amtrak Services

Sources: Data provided by carriers and Royal Commission staff calculations.

Note: Density = pass-km per route-km.

**EXAMPLES OF COMPARABLE VIA RAIL AND AMTRAK ROUTES
AND THEIR RATES OF OPERATING-COST RECOVERY**

1) VIA Rail: London–Toronto	53%
Amtrak: Milwaukee–Chicago	55%
Harrisburg–Philadelphia	41%

This similarity in cost recovery indicates that, for certain kinds of routes, VIA Rail can equal Amtrak's financial performance.

2) VIA Rail: Montreal–Quebec City	46%
Amtrak: Oakland–Bakersfield	67%

In this case, the Oakland–Bakersfield route benefits from a substantial capital contribution from the state of California.

3) VIA Rail: Toronto–Ottawa	69%
Amtrak: Niagara Falls–New York	98%

Amtrak's high cost-recovery rate on the Niagara Falls–New York route can be attributed, in part, to high-performance turbo trains, whose capital costs are not reflected in Amtrak's figures.

Unlike Amtrak, VIA Rail has no specific founding legislation. VIA Rail is accountable to the Minister of Transport for providing specified services in exchange for specified payments under the terms of an annual confidential contract. Transport Canada negotiates the terms of the contract and monitors performance. The Minister must approve any departure from the specifications in the contract. The National Transportation Agency has the power to regulate some aspects of VIA Rail's fares, and the federal government approves VIA Rail's operating and capital budgets.

Amtrak, on the other hand, was created by an Act of Congress, and is dependent for its operating deficit and capital funding on appropriation bills passed by Congress. Amtrak must answer to Congress regarding the financial performance of the corporation, and to individual members where its activities are of local interest. The corporation is accountable to the Federal Railroad Administration for safety matters only.

Amtrak's superior financial performance can be partially explained by differences between U.S. and Canadian markets, different accounting treatments and arrangements for payment for access to the track, greater renewal (at taxpayers' expense) of rolling stock, and assets that generate revenue from sources other than intercity railway passengers.

Representatives from VIA Rail, and others concerned about its future, told us that VIA Rail has been hindered by lack of a clear mandate and the authority to manage its own affairs. While we believe that the poor financial performance of Canada's passenger rail system is predominantly due to factors beyond any management's control, we agree that federal government involvement in investment and operations has worsened an already difficult financial situation.

THE FUTURE OF VIA RAIL

Investing in new equipment would reduce VIA Rail's operating costs. The Minister of Transport's (1985) Task Force² stated that new equipment and modernization would be necessary if VIA Rail were to provide effective passenger rail service and to control its deficits. VIA Rail is currently rebuilding 1955-vintage cars at a cost in excess of \$1 million per car, as well as completing a program of upgrading track, equipment, maintenance facilities and stations.

We recognize that VIA Rail's operating costs could be reduced and ridership improved by rebuilding or replacing equipment. Investment in new equipment, however, must be based on more than shifting deficits from the operating accounts to the capital account. Governments must decide whether VIA Rail should continue providing current services, or even continue as an entity, before undertaking any new long-term capital investments.

Heavily subsidized passenger rail is detrimental to competition with other modes. The principles of equal treatment and fair competition in our recommendations would be violated if a subsidized rail service

continued to compete with non-subsidized modes that must face full market pressures. VIA Rail's presence with a subsidy in the market gives it an unfair advantage over both the air and the bus industries. Price competition is especially acute in the region between Windsor and Quebec City, where buses, air carriers and VIA Rail often operate parallel services.

We are also concerned that under-priced rail services might be over-used relative to other goods and services in all sectors of the economy, including other modes of passenger transportation. Although the effect may not be substantial in the VIA Rail case, artificially under-priced transportation generally leads to inefficient decisions about travel and the way Canadians choose residential, business and recreational locations.

Fares based on full cost recovery would greatly increase the price of train travel. Full cost-recovery fares between Toronto and Montreal for one-way travel would average over \$120, more than double the present average. For other VIA Rail routes and services, the required fare increases would be even higher. The average fare for an average (short) rail trip in southwestern Ontario would increase from \$25 to \$65. At such fares, the demand for rail travel would likely drop, requiring even higher fares to recover costs.

Pricing all transportation to include charges for environmental damage would, however, modestly improve rail's relative position on some routes. Some rail advocates suggested to us that if the pricing of all modes included charges for environmental damage, passenger rail might be attractive in terms of price. In terms of smog-creating pollution and carbon dioxide (CO₂) emissions, rail's performance compared with competing modes is mixed.³ Transcontinental trains, with their sleeping and dining cars, consume more fuel per passenger-kilometre and create more CO₂ and other pollutants than airplanes or cars (Chapter 7).

Rail travel is generally less polluting than travel by air or car if enough trains with modern equipment operate at good occupancy rates over

moderate distances — for example, the Toronto–Ottawa–Montreal service. Even with modern trains and good occupancy rates, rail is not less polluting than intercity bus. Compared with all the rail services we examined, and all classes of emissions, intercity bus provides service at a lower environmental cost per passenger-kilometre.

Although rail has not kept pace with the emissions reductions achieved by the car, bus or airplane, we recognize that changes in technology could reduce train emissions. Although the potential for emission reduction in conventional rail is limited in the short term, using improved diesel engines or electric trains could reduce emissions (depending on the source of the electrical power).

The expenditures required for the termination of VIA Rail would cost taxpayers approximately \$300 million, or less than one year of subsidy. As a corporation, VIA Rail has obligations and long-term contracts, but also assets that could be sold. In particular, railway labour contracts negotiated during the late 1980s provide long-term guarantees of income to many employees. These contracts, which are similar to contracts with CN and CP, mean that, after eight years of work, many employees are guaranteed their salary until pension age, regardless of whether they work or not, provided they are available for work. Payments that might be required under these contracts are believed to have a present discounted value of \$350 million.

Other costs for the orderly termination of VIA Rail would relate to lease- and supplier-contracts, unfunded pension liability, losses in revenue during the last months of train operations, payments for environmental damage and other costs of winding down a company. These costs would be offset by approximately \$250 million from the net proceeds of the disposal of assets used in VIA Rail's operations — the sale of cars, locomotives, track, stations, maintenance shops and land.

RECOMMENDATIONS FOR PASSENGER RAIL

The question of the future of passenger rail service and specifically VIA Rail was one of the most difficult — if not the most difficult — that we faced. Historically, Canada has had an enviable nation-wide passenger rail system that played a major role in the development of the country and was an essential service in times of emergency. And yet, changes in overall demand for passenger transportation during the last 40 years (Chart 2-5) have left passenger rail in a precarious position. Not one of VIA Rail's services, at present cost and revenue levels, approaches recovery of its operating costs, let alone capital costs. Nevertheless, significant numbers of Canadians from coast to coast expressed concern about the future of passenger rail and told us that they wanted the trains to continue running. Some interveners strongly supported both transcontinental and regional services. It is unlikely, however, that the VIA Rail operation, as currently structured, could become self-sufficient under our principles and objectives for future passenger transportation in Canada, even with full allowance for environmental charges.

We believe, however, that there may be a future for passenger rail in Canada, and that it should be given a chance under favourable conditions to prove itself in the same competitive market as all other modes.

We considered recommending a system whereby a number of service providers could bid for subsidies below the levels noted in Table 12-3. This would be in keeping with our "fit, willing and able" principle. There is, however, a risk that a permanent system of subsidies would emerge from this approach, or that VIA Rail would find itself dismantled and replaced in part by a number of even more fragile companies. For these reasons, we prefer a transition policy based on a continuation of VIA Rail as the primary provider of intercity passenger rail transportation.

Therefore, we recommend that:

12.1 The federal government pass legislation to give VIA Rail a corporate mandate that allows it to operate on a commercial basis, with such legislation to provide for:

- (a) a "sunset" provision on the general subsidy that allows 10 years to achieve break-even, after which the subsidy would be withdrawn;**
 - (b) a 10-year schedule of declining operating subsidies to VIA Rail so that such subsidies reach zero at the end of the 10-year period;**
 - (c) a 10-year budget for VIA Rail for capital projects that have a reasonable chance of repaying the costs in future revenues;**
 - (d) sufficient freedom to VIA Rail's management to ensure that it can exploit the advantages of the rail mode to the fullest, including investment, route selection, service levels and pricing, but having due regard for competition policies that prohibit predatory pricing;**
 - (e) the ability for VIA Rail to borrow funds in the capital markets, but with no government guarantee, once the government is satisfied that VIA Rail will be viable; and**
 - (f) any long-term commitment by VIA Rail, including wind-down costs, to be accounted for and provided for within the 10-year subsidy schedule.**
-

Adherence to this mandate would be monitored by the National Transportation Agency. VIA Rail management would also, of course, be subject to general competition rules prohibiting anti-competitive behaviour. It would be important that competition policy prevent subsidized rail services from using predatory pricing to undercut bus and air services during the transition period.

VIA Rail can notify the federal government that it intends to abandon a route prior to the end of the transition period. In that event, the federal government should reduce the subsidy to reflect this. VIA Rail management should decide whether or not to have a transcontinental train, its frequency, and what route it should take. Other questions, such as the type of service (luxury, tourist, seasonal or year-round), would be handled the same way.

If a government believed that a different route should be served or that there should be greater service frequency, then that government would be required to say so publicly, to contract with VIA Rail for the service, and pay for the service out of their general tax revenues.

We expect that, on routes that it aimed to make viable, VIA Rail would make major efforts to improve service; these could include a reservation system with seat selection, terminals with better accessibility for travellers with disabilities and elderly travellers, and improved speed and in-train amenities to attract business travellers.

Provinces and regions might choose to operate regional or local passenger railways, or to contribute additional monies (through VIA Rail or another rail carrier) to achieve local objectives, such as reduced highway congestion, and improved urban development.

Therefore, we **recommend** that:

12.2 VIA Rail be free to compete for other services, including operating commuter services and transporting mail.

12.3 VIA Rail be required to file with the federal government and to publish detailed annual operating plans and financial reports that include the costs and revenues related to individual routes.

12.4 At the end of 10 years, all routes be unsubsidized and open to any fit, willing and able new entrant.

REMOTE SERVICES

As we stated earlier, most of the 6,700 kilometres served by mandatory remote trains are not truly remote. Many of the routes are parallel to highways and are served by bus and air carriers, particularly between many of the larger centres. Since passengers have alternative modes of transportation available, rail ridership on these routes has been decreasing. These services have low cost-recovery rates, none recovering more than 10 percent of their costs (Table 12-5).

All remote services should be limited to bringing passengers to the closest convenient point of transfer to a commercial carrier. With few exceptions, a strictly remote route would not be physically connected to VIA Rail's network. These services would not require VIA Rail's marketing, reservations and customer services and might not need to be provided by VIA Rail. An example of such an alternative is provided for one such route in Chapter 18.

Mixed trains (freight trains with a passenger car, or even a combination passenger-local freight car) may be the cheapest way to provide rail passenger service in some remote areas. For example, mixed trains are used on the weekly Wabowden to Churchill service and on some runs from The Pas to Lynn Lake. Historically, the freight railways, which operate these trains, have not charged for crew, locomotives and track access when such passenger accommodations are added, but only for fuel and maintenance for the passenger cars.

Although mixed trains may provide an inexpensive alternative to passenger-only rail service, the combination of freight and passengers does have problems. While passenger service is usually on a fixed

schedule, freight assignments often do not match the passenger schedules or routes. In addition, passenger service requires more stops than freight traffic, causing inefficiencies for shippers. Where mixed train service is appropriate, it may be simpler to have it provided by the freight carrier.

We therefore recommend that:

12:5 Where governments judge that a subsidy for passenger transportation to remote communities is justified:

- (a) the most efficient mode and carrier be used and, where feasible, a competitive bidding process be implemented;**
 - (b) any subsidized remote access service (regardless of mode) be designed to take passengers out to and bring them in from the closest convenient point where transfer can be made to a commercial unsubsidized carrier; and**
 - (c) subsidies and their purposes be open to public scrutiny.**
-

HIGH-SPEED RAIL

Governments and industry have been investigating high-speed rail for the Windsor to Quebec City corridor. The feasibility of high-speed rail in this corridor has been the subject of many studies by potential carriers, equipment manufacturers and governments. It has also had a great deal of promotion in the media. Early research on the viability of high-speed rail was inconclusive, prompting the provinces of Ontario and Quebec, in conjunction with the federal government, to initiate another series of studies. These studies are inquiring into the development, installation and operation of a high-speed rail system in the Windsor to Quebec City corridor. They include:

- assessing market feasibility;

- exploring specific technologies;
- identifying corridors, stops and interconnections with other transportation services;
- defining the roles of the private sector and governments in implementing high-speed rail; and
- assessing industrial benefits.

We have neither the expertise, the time, nor the budget to duplicate such studies and, therefore, cannot comment on the technologies available, the estimated costs, projected ridership or revenues of these systems. On the other hand, it is within our mandate and our resources to examine high-speed rail from the perspective of long-term transportation planning and policy.

There are many high-speed rail technologies on the market and more will become available in the future. In addition to the Swedish, Japanese, French and German high-speed, steel-wheel-on-rail technologies, both the Germans and the Japanese are developing magnetic levitation systems (maglev).

High-speed rail systems have high fixed costs and low variable costs. As a result, they need high ridership to be successful. Otherwise, they run large deficits. Successful high-speed rail operations in France and Japan have had ridership levels that have allowed them to charge moderate fares with a range of discounts. Modestly discounted fares create more demand for travel, which, in turn, leads to increased frequency and convenience in scheduling for travellers. This cycle has led to double-digit increases in ridership. The key issue is whether there would be enough riders in any Canadian corridor to pay the costs for a high-speed rail system.

There are already buses, airplanes and cars operating in these corridors, and a subsidized high-speed rail service would have unfair advantage over these private-sector services, and cause inefficiencies in

the transportation system. In addition, with our recommendations concerning VIA Rail in place, some of VIA Rail's Windsor to Quebec City corridor services might become commercially viable. We believe that a high-speed rail system should be treated consistently with our principles. Any high-speed rail system, like any transportation system project, should be paid for by transportation system users who would benefit and not by the taxpayer. In particular, as we said in our Interim Report:

From the point of view of an integrated transportation system, it is important that further studies give due account to spill-over benefits such as relief of congestion and reduction of accidents. Since there are joint costs and benefits in an integrated system, it is also important to assign each mode its correct costs. For example, some of the cost of building rail underpasses and overpasses should be assigned to highways, since highway users also benefit from the availability of this infrastructure, and since joint costs of intersections can be assigned to a single mode only if the other mode sharing the intersections has been given "right of way."

Therefore, we **recommend** that:

12.6 Governments invest in high-speed rail infrastructure only when the expected transportation system benefits exceed the costs, and taxpayers do not have to pay any operating subsidy.

12.7 The benefits and costs of any high-speed rail project in which a government invests or subsidizes be made public and the public be consulted on the implications of the government's decision.

12.8 The federal government establish the regulations under which any high-speed rail system would operate, including safety and environmental regulations.

In this chapter we have discussed how our principles can be applied to improve the passenger rail sector, a mode of transportation that is presently heavily subsidized.

ENDNOTES

1. Some of VIA Rail's documents pool the results for all operations between Windsor and Quebec City.
2. A Rail Passenger Action Force (H.M. Horner, R. Fortin and N. Vincent) was appointed in November 1984 to report by May 1985. The Action Force's objective was a new national rail passenger plan.
3. This discussion is based on current VIA Rail technology. We discuss elsewhere the possible benefits from alternatives, such as high-speed electric railway technologies.