NATIONAL HIGHWAY POLICY FOR CANADA

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Phase 4:

Funding, Cost Sharing and Implementation

REPRINT

Council of Ministers Responsible for Transportation and Highway Safety

National Highway Policy Study for Canada

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REPRINT

Prepared for the

Council of Ministers Responsible for Transportation and Highway Safety

Prepared by:

National Highway Policy Study Steering Committee

September 1992

Council of Ministers Responsible For Transportation and Highway Safety

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Transportation Association of Canada

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1.0 Introduction

The National Highway Policy Study for Canada was launched by the Council of Ministers Responsible for Transportation and Highway Safety in September of 1987, with the goals of:

- identifying future needs and defining standards for a Canadian primary highway system of national significance

- establishing the benefits and costs of meeting these needs

- establishing funding alternatives for meeting these costs with a view towards recommending adoption of a national policy by their governments

To meet these goals a multi-phased study was proposed and representatives of the provincial, territorial and federal transportation ministries were appointed to a steering committee charged with carrying out the study.

The first phase of the study, completed in 1988, was used to develop broad highway policy objectives, to identify a national highway network, to establish design and operational standards for these highways, and to inventory the nature and condition of the identified network.

The second phase of the study, completed in 1989, assessed the costs of achieving the established highway design and operational standards. These costs were placed within a framework of highway user benefits and the wider economic, social and environmental impacts anticipated from an improved national highway system. As well, these costs and benefits were placed within the context of existing highway revenues and expenditures.

The third phase of the study was completed in 1990, and was used to initiate sectoral consultation on the early results of the study and to review other country's experience in the provision of highways, with particular reference to national highway systems.

Reports on each of the three completed phases of the National Highway Policy Study are available from the Transportation Association of Canada.

The first part of the fourth phase was completed in 1990, and addressed technical issues for which consensus among all jurisdictions was required before a cooperative national policy and program could be initiated. These included:

- establishment of a framework for priority setting within the identified needs of the system,

- preliminary estimates of cash flow requirements and work types initiated within the first three years of an upgrading program

- elaboration of the design and maintenance standards which should apply to routes on the National Highway System

- expenditure types which should be eligible for cost sharing should cooperatively funded upgrading programs on the National Highway System be initiated

2.0 Highlights of Previous Phases

2.1 Phase 1 - Identification of a National Highway System

The first phase of the study, completed in 1988, resulted in agreement on;

- criteria for identifying highways whose functions or characteristics warrant recognition in the national context
- a National Highway System, comprising 25,000 kilometers of existing highways which serve as key linkages between major cities, ports of entry and other transportation modes
- minimum acceptable design and operational standards for these highways

The nature and condition of the identified National Highway System was inventoried, revealing that 75% of the system is two lane paved highway. When evaluated against minimum acceptable standards for design, service, strength and surface condition, 38% of the system was found to be deficient, and 790 of the 3,534 bridges were in need of major strengthening or rehabilitation.

2.2 Phase 2 - Costs of Upgrading the National Highway System

The second phase of the study, completed in 1989, assessed the costs of achieving the established highway design and operational standards. These were evaluated on two bases:

Scenario A - $13 billion
The costs of correcting the identified deficiencies and upgrading, where necessary, to a minimum two lane paved highway standard and to a maximum of a four lane divided highway standard.

Scenario B - $ 18 billion
The costs of Scenario A plus the costs of completing a continuous four lane routing across Canada.

These costs were placed within the context of existing highway revenues and expenditures, revealing that over the period 1983 to 1988:

- federal, provincial and territorial expenditures on highways totaled $24.4 billion (Figure 1)
- road related revenues totaled $32.9 billion over the same period
- federal and provincial fuel taxes account for 90% of road related revenue
- provincial fuel tax revenues remained relatively constant over the five year period
- federal fuel tax revenues doubled over the five year period (Figure 2)
- annual capital expenditures on the National Highway System remained constant at $600 million
- annual maintenance costs of the National Highway System averaged $280 million

In support of the policy and program development, in Phase 2 studies were also completed on:

- the economic impacts of a capital works program to correct the deficiencies
- the benefits to highway users of an upgraded system
- a review of the expected environmental impacts

Figure 1 : Road Related Revenues and Expenditures - Fiscal Year Aggregate

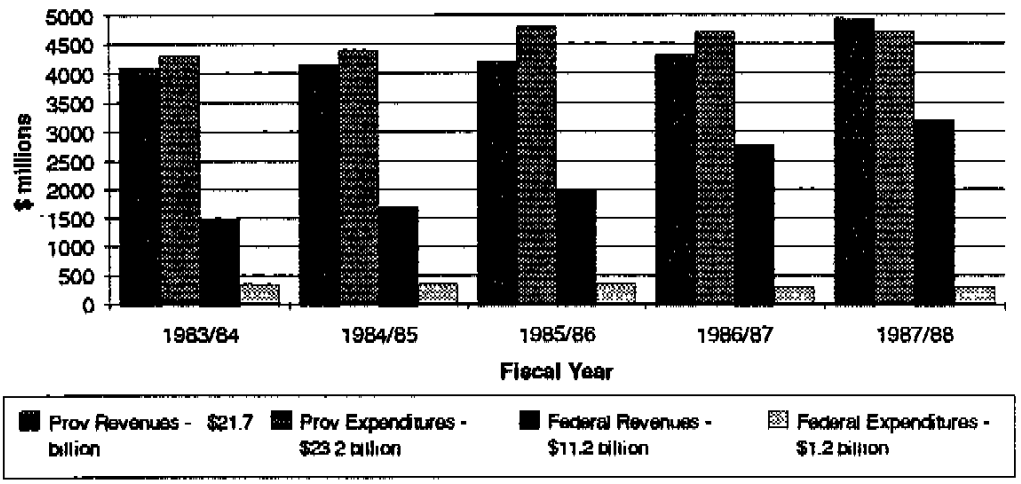
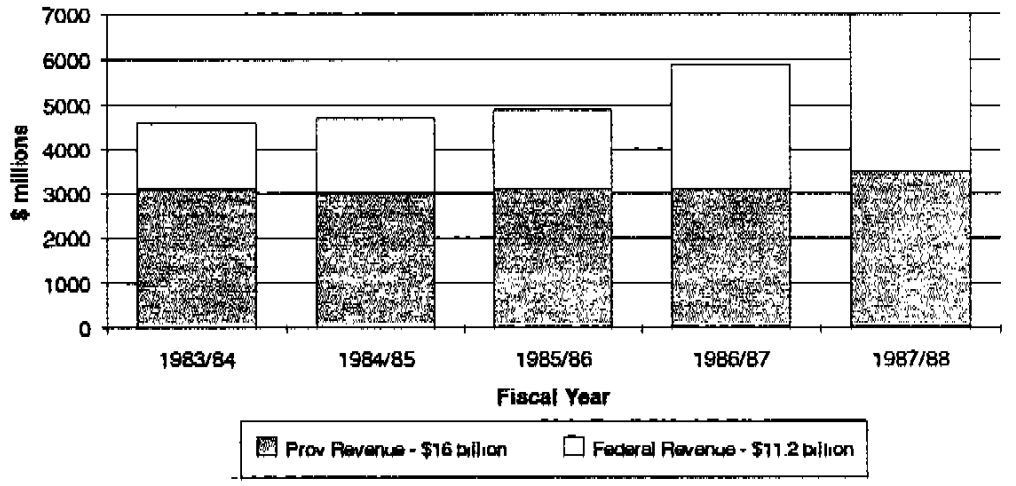


Figure 2 : Federal and Provincial Fuel Revenues - Fiscal Year Aggregate



Highlights of the findings of these studies include:

- employment in the construction and related sectors would be expected to increase between 146,000 person-years (Scenario A) and 205,000 person-years (Scenario B) during a ten year program
- the economy could be expected to grow as a result of the program

- improved market accessibility and trade competitiveness for Canadian industry would be achieved in both east-west and north-south corridors
- increased tourist travel could be expected within Canada
- an improved highway system would provide benefits to highway users in all regions of the country, including:
    - a reduction in vehicle operating costs by $360 million annually
    - a reduction in travel time by 46 million person hours annually
    - a 4% reduction in current annual traffic fatalities (160),
    - a reduction in personal injury accidents by 2300 annually
- minimal social and natural environmental impacts would be expected because the construction would be primarily on existing highway alignments

The report on Phase 2 was endorsed by the Council of Ministers at its meeting in September 1989.

2.3 Phase 3: Solicitation of Public Comment and Review of International Experience

The third phase of the study was completed in 1990, and was used to initiate sectorial consultation on the early results of the study and to review other country's experience in the provision of highways, with particular reference to national highway systems.

Invitations to comment on the National Highway Policy Study and its Phase 1 and 2 reports were extended to national and industry association groups. In general there was a strong expression of support for a National Highway Policy from highway user groups and industry sectors dependent upon highway transportation. The concept of user pay was also generally supported provided:

- all existing road use taxes are applied to road needs
- any new road use taxes are dedicated to road needs

The estimated impacts and benefits of an improved National Highway System were judged to be reasonable or understated by the groups which responded.

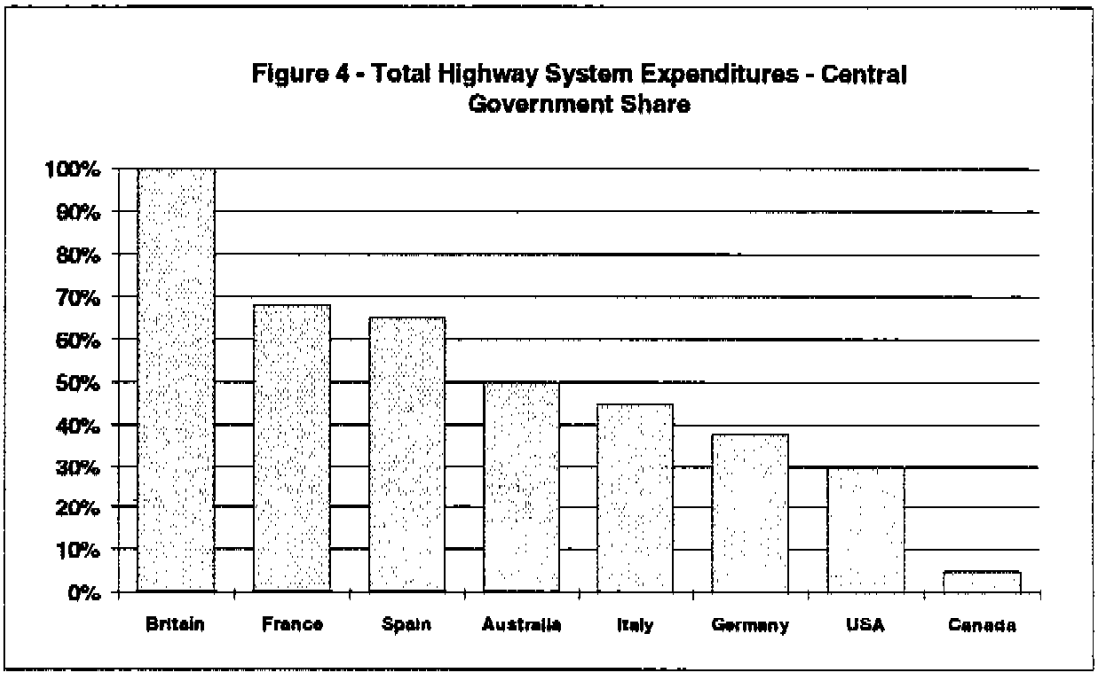
A review of international experience revealed that Canada is the only federal state without a national highway policy or program for major highway links (Figure 3), and is virtually alone in not having national government participation in support of national highway transportation infrastructure (Figure 4). Other findings of the review included:

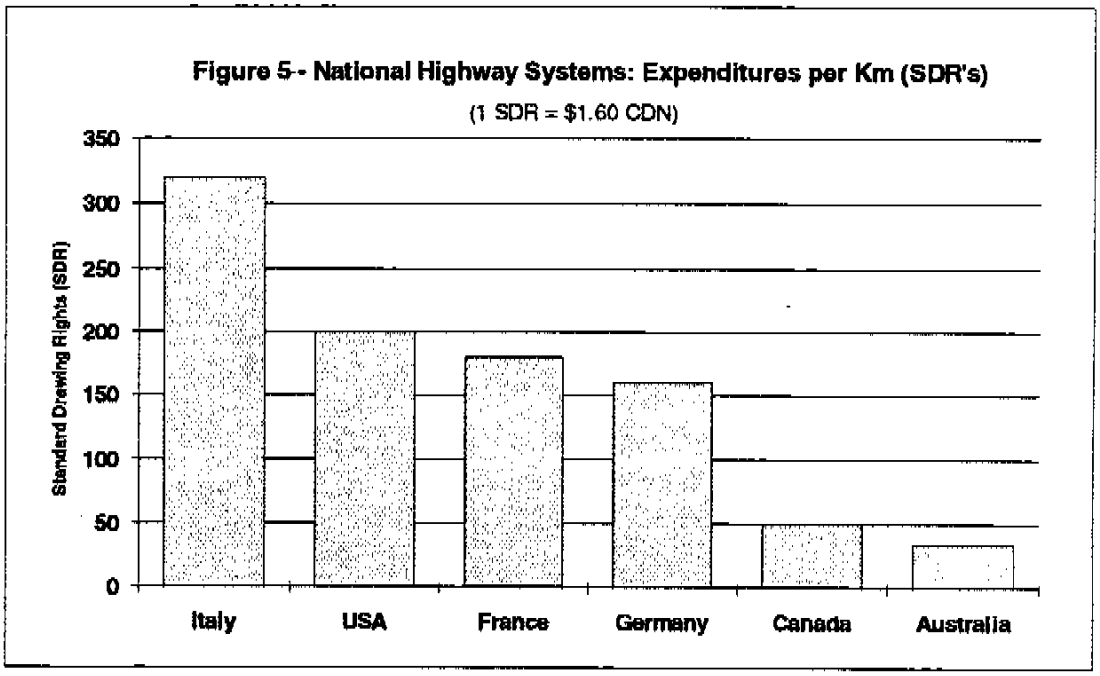
- Canada trails all other federal states (USA, Germany and Australia) in the percentage of road related revenues spent in support of road system
- Canada's level of capital and maintenance investment in highway infrastructure is among the lowest of OECD member countries
- Canada's annual expenditures per kilometer of the National Highway System are among the lowest of other developed countries examined (Figure 5). In the context of North American trade, the United States has historically been spending about six times as much per kilometer of its Interstate System as Canada has on the National Highway System.

The report on Phase 3 was endorsed by the Council of Ministers in September 1990.

Figure 3 - National Highway Systems: Responsibilities and Funding

		Funding Responsibilities			
Country	**Operational Responsibilities**	**Construction**	**Rehabilitation**	**Maintenance**	**Funding Source**
USA	States	90% Federal	90% Federal	100% States	dedicated user taxes / Trust Fund
Germany	States	100% Federal	100% Federal	100% States/ Municipalities	user taxes / general revenue
Australia	States	100% Federal	100% Federal	Varies - States & Federal	partial dedication of user taxes/ Trust Fund
Canada	Provinces	100% Provinces	100% Provinces	100% Provinces	general revenues





2.4 Phase 4-A : Priority Setting, Design Standards and Cost Sharing Eligibility

As the first part of the fourth phase, consensus was sought on a number of technical issues which would be associated with the initiation of a cooperative national policy and program. The agreements reached in this phase included:

- establishment of a framework for priority setting within the identified needs of the system based on the key criteria of safety, highway strength, highway service and economic development, competitiveness and productivity.

- detailed design and maintenance standards for routes on the National Highway System, including such aspects as geometric design, bridges and overpasses, traffic control devices, rest areas

- detailed development of expenditure types which should be eligible for cost sharing should cooperatively funded upgrading programs on the National Highway System. The underlying principle adopted was based on a cost sharing of capital works and associated costs, leaving right of way acquisition and maintenance costs to be borne by the provinces and territories

In addition, this phase included the development of a preliminary work schedule for the first three years of an upgrading program, with the following conclusions:

- an inventory of fully developed projects would be available to proceed immediately upon the launch of a program, with no lag time required for development and engineering
- the nature of the work completed in the first three years would result in substantial immediate benefits to highway users (primarily highway resurfacing and capacity improvements)

The results of Phase 4A were approved by the Council of Ministers in September 1990, and are summarized in Appendix B.

3.0 Phase 4-B : Funding, Cost Sharing and Implementation

3.1 Introduction

In endorsing the work completed on Phase 4-A, the Council of Ministers directed the Council of Deputy Ministers to advance recommendations on three critical issues which remain outstanding:

- an appropriate and sustainable means of funding the needs of the National Highway System

- an appropriate cost sharing formula between the federal and provincial/territorial governments for capital works on the National Highway System.

- an effective and equitable mechanism for implementation of a National Highway Policy.

3.2 Approach

The work which has been undertaken in the final phase of the study was structured around building consensus on principles which are seen to be essential to establishment of a nationally acceptable funding, allocation and implementation strategy. These are as follows:

Issue 1 - An appropriate and sustainable means of funding the needs of the National Highway System

Principles:

- the source of funding to support capital works projects on the National Highway System should be directly linked to road usage, and any new revenues required for an upgrading program should be collected from road users.

Issue 2 - An appropriate cost sharing formula between the federal and provincial/territorial governments for capital works on the National Highway System.

Principles :

- Federal/provincial/territorial cost sharing must:
  - reflect a tangible commitment by all parties to support of the National Highway System
  - reflect a substantive commitment by the national government to the objective of ensuring all regions of Canada are linked by an adequate, efficient National Highway System
  - reflect a substantive continued commitment of the provinces and territories to support of their respective portions of the National Highway System
  - provide a common, equitable basis for participation by all provincial and territorial jurisdictions
  - provide means to address special circumstances where highly deficient sections of the National Highway System are in jurisdictions with limited economic capability
  - recognize the continued obligation of the provinces and territories to protect the capital investment in the National Highway System through responsible and adequate maintenance programs
  - recognize the obligation of jurisdictions to adequately support the components of the provincial/territorial highway systems which, although not part of the National Highway System, are complementary to it

Issue 3 - An effective and equitable mechanism for implementation of a National Highway Policy

Principles:

- the mechanism for implementation of a National Highway Policy must be:
  - acceptable to all jurisdictions
  - administratively simple and easily understood
  - national in scope
  - open and easily verifiable
  - sustainable

Collectively, these principles provide criteria and constraints which were used in the development and evaluation of options for funding, allocation and implementation.

3.3 Funding Sources

All governments in Canada operate in a consolidated revenue accounting environment, and as such do not directly associate taxation revenues derived from users of a particular service or program with the costs of providing that service or program. While this practice has not yet changed, in recent years there has been growing attention paid to the concept of user pay, and to the merits of dedicating program revenues to support program costs.

In considering the options which could be available for financing the required upgrading of the National Highway System, a number of alternatives were explored. These included:

Toll Roads

Toll charges for road usage are used in a number of countries in Europe and in the United States. Most commonly, toll roads are high standard, access controlled freeways which are offered as alternative routings to other public roads. To be financially viable, toll roads must have high traffic volumes, and must be designed to have full control over vehicle access and exit. As a revenue generating mechanism, toll roads are economically inefficient, with the costs of toll collection typically amounting to up to 20% of the revenues generated.

Conventional toll collection facilities would have limited application to the National Highway System in Canada because very little of the system has full access control and most sections would not have sufficient traffic volumes to be economically viable. In the face of already high fuel taxation levels, introduction of toll facilities on only parts of the system would raise the issues of double taxation and regional inequity.

Dedicated Fuel Tax

Fuel taxation has become a major source of revenue for senior governments in Canada, and currently generates about $10 billion annually. It is a remarkably efficient tax to collect (collection costs are typically 1% of revenues) and as a consumption tax, can be directly related to road usage.

While fuel taxes in Canada are already very high relative to the United States, there would appear to be some level of public support for an increase in fuel tax to finance the needs of the National Highway System if the funds were dedicated to that purpose.

Private Sector Financing

Private sector participation in the financing of public highways is often cited as a potential opportunity to assist governments in raising sufficient funds to finance capital works. A review of the literature did produce examples where private sector interests have invested in highway infrastructure, but typically in circumstances where;

- a private sector interest has paid for the construction of road or interchange to provide access from a private facility to a public road

- private sector interests invest in the construction of a toll road facility in exchange for a share in the revenues generated by the facility

While there may be some limited potential for private sector participation in financing some aspects of the National Highway System (eg. interchanges for access to private developments), without a commitment or opportunity for a return on its investment, private sector interest in financing the rehabilitation needs of the National Highway System is highly unlikely.

While the funding needs of the National Highway System should be linked to, and paid for by, road users, in a consolidated revenue environment, there is little merit in identifying the actual source of these funds. In aggregate, road use related revenues in Canada currently exceed the highway related expenditures of all levels of government.

In this context, it is felt that the most appropriate means of financing the National Highway System should be a subject for discussion by the federal, provincial, and territorial Ministers of Finance.

4.0 Recommendations

The recommendations of the Council of Deputy Ministers for consideration by the Council of Ministers Responsible for Transportation and Highway Safety are as follows:

Recommendation 1 - Funding Source:

It is recommended that a National Highway System Fund be established by the federal government based on an amount equal to the revenue generated by 2 cents per litre of fuel consumed for road use nationally.

Rationale:
As a matter of principle, funding of the National Highway System should be derived from road usage. While it is proposed that federal funding for the National Highway System be linked to fuel consumption, in a consolidated revenue accounting environment, the actual source of funds need not be identified and dedicated, and could come from existing fuel taxes (currently about $5 billion federally), new fuel taxes or general revenues. If the deficiencies on the National Highway System are to be addressed within a 10 year horizon, this fund should be based on an amount approximately equal to the revenue generated by 2 cents per litre of fuel consumed for road use nationally (approximately $865 million in 1989).

Recommendation 2 - Funding Allocation:

It is recommended that the National Highway System Fund constitute the federal share of capital works projects on the National Highway System, to be allocated in two components as follows:

Base Allocation - 80% of the fund to be made available to provinces and territories in proportion to the percentage of national road use fuel consumed in each jurisdiction. The annual allocation of these funds would remain available to each jurisdiction for up to four years, after which they would be transferred to the Pool Allocation.

Pool Allocation - 20% of the fund to be made available for projects proposed by jurisdictions, after their base allocation is exhausted.

Rationale:
As a matter of principle, a substantial portion of the capital works funding on the National Highway System should be directed to sections where usage is greatest. Similarly, a portion of the funding should be available as a national, cooperatively sponsored pool to support the varying ability of jurisdictions to pay, the varying extent of deficiencies on the NHS, and to address projects with high national priority. In the event a National Highway System Fund is established on the basis of a new fuel tax, it could be inferred that the Base Allocation constitutes a minimum guaranteed return of a jurisdiction's contribution to the national fund.

Recommendation 3 - Federal - Provincial/Territorial Cost Sharing: Base Allocation Funds

It is recommended that projects undertaken with federal funding from the Base Allocation be subject to a 65% federal/35% provincial/territorial cost sharing formula.

Rationale:
As a matter of principle, support for the National Highway should constitute an equal partnership between the federal government and the provinces/territories. As it has been generally agreed that the provinces and territories should retain sole responsibility for funding of right of way land acquisition and ongoing maintenance costs, a federal share of capital costs in the range of 60% to 70%, would result in an equal partnership on total costs.

Recommendation 4 - Federal - Provincial/Territorial Cost Sharing: Pool Allocation Funds

It is recommended that projects undertaken with federal funding from the Pool Allocation be subject to a 90% federal/10% provincial/territorial cost sharing formula.

Rationale:
A key underlying principle of the Pool Allocation concept is to provide assistance to jurisdictions with high needs and/or limited financial resources. As these funds will only be available to jurisdictions which have fully committed to the National Highway System by consuming all of their Base Allocation, a cost sharing obligation which is within reach of the smaller jurisdictions is essential if the funds for upgrading the National Highway System are to be allocated effectively.

Recommendation 5 - Research and Development

It is recommended that an amount equal to 1/2 of 1% of the total cost of capital works funded under the Base Allocation program be dedicated to the conduct of cooperative research projects in support of enhancing the quality of design, construction, maintenance and operation of the National Highway System.

Rationale:
The division of jurisdictional responsibility for highways in Canada has long impeded the development and maintenance of focused, sustained research and development activities in the highway design and operation fields. With the proposed launch of a capital works program in excess of $1 billion annually, incorporating a means to undertake cooperative research in support of the National Highway System is a responsible necessity.

Recommendation 6 - Policy Implementation Process

It is recommended that interjurisdictional devices, instruments and agreements which are familiar to all jurisdictions be used to move through the implementation phases.

In this context, it is suggested that a Memorandum of Understanding could be used as the first step in seeking endorsement of the principles and the proposed funding and administration mechanisms by the Council of Ministers of Transportation.

Following the signing of an MOU, implementation could proceed as follows:

- a federal/provincial territorial agreement could be established to formalize the commitments of the governments of all participating jurisdictions

- the federal government establish a National Highway System Fund as described

- joint funding of projects under the Base Allocation program would be executed through bilateral agreements between the federal government and each of the provinces and territories

- candidate projects for funding under the Pool Allocation program would be submitted annually for review and assessment by the Council of Deputy Ministers, and a proposed program resulting from this assessment be advanced for approval by the Council of Ministers

- supplemental bilateral agreements could be used to execute Pool Allocation projects

Recommendation 7 - Program Monitoring and Review

It is recommended that an ongoing monitoring and review process be carried out under the auspices of the Council of Ministers of Transportation.

The monitoring and review process should include:

a. An annual report on:

- the status and condition of the National Highway System,
- the effectiveness of the program in meeting the Policy objectives, and
- the program proposed to be carried out under the Pool Allocation for the next year

b. A major policy review at no less than five year intervals to examine and refine as needed, the project eligibility criteria, Base and Pool Allocation levels, cost sharing formulae and research and development needs

Appendix A which follows provides further elaboration on the policy and program proposals and an example upgrading program based on 1989 fuel consumption levels.

5.0 Summary & Concluding Remarks

This report concludes a process initiated by the Council of Ministers in September 1987, which set out with the objectives of establishing federal/provincial/territorial consensus on:

- criteria to define highways which serve national transportation needs

- minimum standards of design, operation and service which should be provided by those highways

- a funding mechanism (or mechanisms) which could ensure that the needs of a national transportation system are met

The work previously completed in Phases 1 through 3 resulted in national agreement on the first two objectives. A National Highway System has been defined and identified, and minimum standards developed and were agreed to for its design, construction, maintenance and operation.

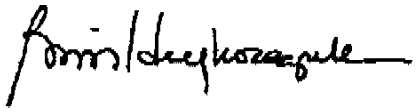
The third and final objective of the study has been addressed by this report. The proposal which is presented provides a sound basis for financing and implementing an equitable and sustainable national policy which will:

- provide a means to accelerate the upgrading of the National Highway System to the minimum acceptable standards

- establish a sustainable mechanism to ensure the needs of National Highway System are given priority and addressed through cooperative programs

- bring national cohesion to the management of the National Highway System, the components of which are the responsibility of thirteen jurisdictions with very diverse scale, economic ability and needs.

Not since the completion of the Trans-Canada Highway system nearly 25 years ago has a cooperative, national level review been taken on the role and needs of highway transportation in Canada. The highway transportation system's potential to contribute to national economic development may now be recognized and fully realized through the establishment of a policy which provides the means and opportunity to establish and maintain standards of service and funding priority.



Boris Hryhorczuk
Chairman,
National Highway Policy Study Steering Committee

Appendix A - National Highway System Cooperative Funding

Description of Proposed Program

and

Example Program and Funding Allocation

National Highway System Cooperative Funding

Description of Proposed Program

National Highway System Fund

A fund established by the federal government equivalent to 2 cents per litre of road use fuel consumed annually (approx $865 million in 1989). This fund serves as the basis for federal cost sharing with the provinces and territories of capital works on the National Highway System.

Allocation of the National Highway System Fund

The fund is allocated in two parts:

Base Allocation:

Reflecting the need for rehabilitation and upgrading of the most traveled sections of the National Highway System, 80% of the National Highway System Fund (approx $692 million in 1989) is made available to the provinces and territories in proportion to the percentage of national road use fuel consumed annually within each jurisdiction.

To receive its base allocation, each provincial and territorial jurisdiction must:

- develop a program of eligible capital works projects on its portion of the National Highway System, and
- assume responsibility for 35% of the cost of this program. The remaining 65% is drawn from each jurisdiction's Base Allocation.

Each jurisdiction is guaranteed to receive its portion of the base allocation, provided sufficient capital works projects are advanced for funding. Funds not consumed by the jurisdiction within an allocation year can be carried over for up to four years, after which the surplus will be transferred to the Pool Allocation portion of the Fund.

Pool Allocation:

Reflecting the need to address rehabilitation and upgrading projects which are:

- of high priority nationally
- within jurisdictions with limited economic ability to support capital works, or
- within jurisdictions where the National Highway System is highly deficient

the remaining 20% of the National Highway System Fund is available for allocation on a project by project basis (approx $173 million in 1989).

All jurisdictions are eligible to receive project funding from the Pool Allocation. To be considered for project funding support from the Pool Allocation, a jurisdiction must:

- have initiated capital works programs which fully commit all funds available from the Base Allocation, and
- be prepared to assume responsibility for 10% of the cost of the proposed project. If accepted, the remaining 90% of the project's cost is drawn from the Pool Allocation.

Projects to be considered for funding from the Pool Allocation are submitted to the Council of Deputy Ministers for review and assessment. The candidate projects will be assessed on the basis of:

- benefit/cost
- regional considerations
- support of other jurisdictions for project
- status of jurisdiction in meeting National Highway System objectives
- relative ability of jurisdiction to sponsor project

Following this assessment, a proposed program of projects to be funded from the Pool Allocation is submitted annually to the Council of Ministers for approval.

Research and Development

To establish and maintain a focus and means for research and development to enhance the quality of the National Highway System, 1/2 of 1% of the total cost of capital works funded under the Base Allocation program will be provided for cooperative research projects (approx $5,000,000 in 1989). This fund will be administered by the Council of Deputy Ministers.

Program Monitoring and Review

An annual report on the status and condition of the National Highway System will be submitted to the Council of Ministers Responsible for Transportation and Highway Safety, along with a proposed program of projects to be funded from the Pool Allocation.

Major reviews of the program will be conducted at five year intervals. These reviews will include assessment of:

- project eligibility criteria
- Base and Pool Allocation levels
- cost sharing formulae
- research and development needs

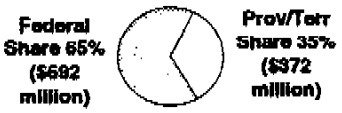
NATIONAL HIGHWAY SYSTEM COOPERATIVE FUNDING PROGRAM

National Highway System Fund
Equivalent to 2 cents/litre of road use fuel consumption (approx $865 million)

Base Allocation - 80%
($692 million)

Pool Allocation - 20%
($173 million)

Base Allocation - Cost Sharing



Pool Allocation - Cost Sharing

Base Allocation

	Allocation 65%	Cost Share 35%	Total Base Funding
	millions	millions	millions
B.C.	$72.6	$39.1	$111.7
Alta.	$81.7	$44.0	$125.7
Sask	$29.8	$16.0	$45.8
Man	$24.9	$13.4	$38.3
Ont	$274.8	$148.0	$422.8
Que	$148.1	$79.7	$227.8
N.B.	$20.0	$10.8	$30.8
N.S.	$22.1	$11.9	$34.0
P.E.I.	$3.2	$1.7	$4.9
Nfld	$11.5	$6.2	$17.7
Yukon	$1.4	$0.8	$2.2
NWT	$1.2	$0.6	$1.8
Base Prgm	$691.3	$372.2	$1,063.5

Pool Allocation

Available for allocation to jurisdictions which have fully committed their base allocation. Candidate projects to be approved by Council of Ministers on recommendation of Council of Deputy Ministers.

	Allocation 90%	Cost Share 10%	Total Pool Funding
	millions	millions	millions
Pool Program	$173.0	$19.2	$192.2

SUMMARY

	Federal	Prov/Terr	Total	
Base Prgm	$691.3	$372.2	$1,063.5	millions
Pool Prgm	$173.0	$19.2	$192.2	millions
Total	$864.3	$391.5	**$1,255.8**	millions

Appendix B - Phase 4A : Summary of Recommendations

a. Framework for prioritization of National Highway System Projects

b. Design and maintenance standards for the National Highway System

c. Expenditures appropriate for cost sharing in cooperative programs

a. Framework for Prioritization of National Highway System Projects

The basis for assigning priorities is consistent with current practices in every highway jurisdiction, and is outlined in the table which follows. The table identifies the four primary bases used for determining highway project priorities:

- safety
- highway strength
- highway service
- economic development, competitiveness and productivity

Common elements used to assess each of these bases are listed accordingly. Methods of quantifying these elements and the weighting assigned to each are relative to jurisdictional requirements and capabilities. The summation of the application of these criteria to the National Highway System will differ to some extent among jurisdictions, but will yield a preliminary schedule of projects.

Project Priority Criteria

Safety	**Highway Strength**	**Highway Service**	**Economic Development, Competitiveness & Productivity**
Accident Experience	National Size and Weight Standards	Traffic Volumes and Growth	Truck Volumes
Potential Traffic Conflicts	Deficient Bridges	% Trucks and Buses	Route Orientation
Inadequate Design	Deficient Pavements	RCI/Pavement Condition	Tourist Travel
		Speed & Level of Service	Construction Industry Capacity

b. Design and Maintenance Guidelines for the National Highway System

Design guidelines for the National Highway System are seen as important means of ensuring that, to the degree possible and necessary, all jurisdictions develop and control the operation of their respective portions of the system in a manner consistent with the expectations of the highway users. The underlying objective of the design guidelines is to ultimately achieve a National Highway System which exhibits a high degree of uniformity in design, operation and aesthetics.

It is recognized, however, that jurisdictions require some degree of flexibility in design to account for local conditions and driver expectations, and as such the guidelines which follow are intended to specify aspects of design for which compliance with specific minimum standards is essential, and aspects which are open to the discretion of jurisdictions to pursue the desired objective in an appropriate manner.

Design or Control Element	Guideline or Desired Objective
A. Geometric Design	
1. Access Control	Complete access control is desired objective for all freeways, limited access is objective for all other road types
2. Design Speed	
Two Lane Highways	Mountainous Terrain - minimum 90 km/hr Rolling and Flat Terrain - minimum 100 km/hr
Four or More Lane Highways	Mountainous Terrain - minimum 100 km/hr Rolling Terrain - minimum 110 km/hr Flat Terrain - minimum 120 km/hr
3. Lane Width	Minimum 3.7 meters
4. Shoulder Width	
Two Lane Highways	Minimum 3.0 meters of which a minimum of 0.8 meters is paved
Four or More Lane Highways	
Right Shoulder	Minimum 3.0 meters of which a minimum of 0.8 meters is paved
Left Shoulder	Minimum 1.5 meters of which a minimum of 0.8 meters is paved
5. Median Width (divided highways)	
Without Barrier Protection	Minimum 15 meters / Desirable 22.5 meters
With Barrier Protection	Minimum 3.7 meters / Desirable 6.6 meters
6. Right of Way	Minimum based on future upgrading to meet standards
7. Horizontal Clearance	Minimum of 10 meters on both sides, unless barrier protection is provided
8. Vertical Clearance	Minimum of 5.0 meters including shoulders
9. Design Load	Minimum based on national standards for vehicle weights and dimensions, all weather operation with no seasonal load restrictions

Design or Control Element	Guideline or Desired Objective
B. Bridges and Overpasses	
1. Design Loads	Minimum based on national standards for vehicle weights and dimensions
2. Vertical Clearance	Minimum 5.0 meters, including shoulders
3. Width	As specified in Manual of Geometric Design Standards for Canadian Roads
C. Other Design and Control Elements	
1. Traffic Control Devices	As specified in the Manual on Uniform Traffic Control Devices for Canada
2. Signing and Pavement Marking	As specified in the Manual on Uniform Traffic Control Devices for Canada
3. Rest Areas	Public or private rest areas should be available or provided at 1 to 2 hour driving intervals along the system
4. Commercial Signing	Private commercial signing should not be permitted within the right of way
5. Illumination	Minimum standards as described in the TAC Illumination Manual
6. Overhead Utility Clearance	Minimum standards as required or recommended by utility authorities

Maintenance Guidelines

As a matter of principle, it is recognized that precise national standards for maintenance of the National Highway System would be inappropriate, as local judgment and conditions should prevail in pursuit of the objective of system wide consistency of service to highway users.

However, each jurisdiction must undertake a responsible program of maintenance on its portion of the National Highway System which ensures the need for further capital investment is not accelerated. The safe operation of the highway system is the primary justification and guiding principle for establishing proper maintenance practices. In this regard, appropriate winter maintenance practice for the National Highway System should be guided by the objective of providing bare pavement and all weather operation.

c. Expenditures Appropriate for Cost Sharing in Cooperative Programs

The principles which should guide consideration of expenditures for eligibility in cost sharing agreements under cooperative program sponsorship are:

- all capital undertakings which involve work designed for, or expected to provide, at least five year's service life must be eligible for cost sharing, including both construction and rehabilitation work

- both in-house and contracted work should be eligible for cost sharing

In addition it is recommended that the need for a sustained Canadian focus in highway research and development be addressed with, and incorporated in, any program to upgrade the National Highway System. It is recommended that a percentage of the total capital costs directed to the National Highway System be established as a central pool for research and development projects, and that the costs of testing and monitoring projects implemented on the system be deemed eligible for cost sharing.

Specific activities and items which should be considered eligible for cost sharing are as follows:

Precontract Activities	Contract Activities
- Functional planning assessment - Environmental assessment - Preliminary design and surveys - Detailed design - Contract package preparation - Project management and supervision	- Contract management and supervision - Construction - Supplied materials - Communications - Incidental utilities relocation - Landscaping - Traffic control devices and signing - Lighting - Construction of rest areas - Environmental mitigation measures (including wells and water supply) - Access control and service roads - Inspection stations for road operations - Crop damage or loss resulting from construction activity - Safety elements (guardrails etc) - Rehabilitation work with life expectancy of 5 or more years (including seals and overlays) - Research and development sites and monitoring programs

It is generally agreed that responsibility for costs associated with property acquisition, routine operation and maintenance should rest with the jurisdiction which owns the system, and should not be eligible for cost sharing. Specific examples of expenditure items of this kind would include:

- acquisition of right of way
- construction of patrol yards
- routine maintenance (eg. crack filling, grass cutting etc.)

Appendix C - National Highway System

System Map