# Transport Canada

**Project: Cost Benefit Study of**
**Electronic Clearance And Roadside Inspection (ECRI) for Canada**

# Executive Summary

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## Executive Summary

This study provides Canadian jurisdictions with the answers to seven questions:

- Is there a business case for electronic clearance solutions in Canada?
- Are there any implications to national security in Canada?
- How strong is the business case?
- Can a nationwide program be implemented?
- Which business model is appropriate for Canada?
- What recommendations have emerged from the study?
- What are the next steps?

In addition, this Executive Summary also responds to a question that was raised at the May 2003 Steering Committee concerning the impact on greenhouse gases. Although this was outside the scope of the study, the response to the question is included. This Executive Summary concludes with a description of each of the remaining chapters that encompass this paper.

## Is There a Business Case?

From the data assessed in this study, implementation of electronic clearance solutions is feasible for high traffic locations (100,000 trucks or more annually) across Canada. Canadian jurisdictions submitted information on 174 stations/portable sites in Canada. 56% of these locations have sufficient traffic to have a cost justifiable business case for electronic clearance including:

| Surveyed Jurisdictions[1] | Total # of Sites Reported | # of Sites With Over 100,000 Trucks Annually | % With Over 100,000 Traffic Annually |
|---|---|---|---|
| Ontario | 41 | 41 | 100% |
| British Columbia | 35 | 30 | 86% |
| Saskatchewan | 12 | 9 | 75% |
| Quebec | 28 | 5 | 18% |
| Manitoba | 10 | 4 | 40% |
| New Brunswick | 6 | 3 | 50% |
| Alberta | 11 | 4 | 36% |
| Prince Edward Island | 2 | 1 | 50% |
| Yukon | 2 | 0 | 0% |
| Northwest Territories | | | |
| Nunavut | | | |
| Newfoundland | 5 | | |
| Nova Scotia | 5 | | |
| Total | 174 | 97 | 56% |

## Is there any implication to national security in Canada?

Given the emphasis on freight security since 9/11, the implementation of an ECRI system has a new emphasis and a security benefit that cannot easily be measured. National security would derive benefits from a nation-wide interoperable system that uses a common transponder registry that identifies vehicles in Canada.

## Is there any effect on greenhouse gases?

[1] Nova Scotia, Newfoundland, Northwest Territories and Nunavut were not surveyed.

Each truck saves an estimated 0.414 litres of diesel per bypass or about 1.12 kg of greenhouse gas (GHG) per bypass. On a system wide basis with 97 stations on ECRI and 7.1 million bypasses/yr, the annual GHG saving is 8 million kg or 8,000 tonnes/year of GHG.

## How Strong is the Business Case?

The study assessed three models, a fully public model, a public/private model and a private model. Each model was assessed from various perspectives and the following table summarizes the economic benefit of each model. The most relevant is the social perspective, with B/C ratios ranging from 2.7 for the Private model to 4.4 for the Public model. The social perspective measures the true value of the project to society irrespective of who pays and who benefits. The other perspectives (Government, Carrier, Concessionaire) measure the benefits and costs, which accrue only within the perspective of these groups. Benefit Cost ratios greater than 1.0 are considered to be economically justified since the benefits exceed the costs.

| | **Model** | | |
|---|---|---|---|
| | Public | Private/Public | Private |
| **Perspective** | **Benefit/cost Ratio** | | |
| Government | 1.1 | 1.9 | 5.0 |
| Carrier | >10.0 | 7.5 | 1.1 |
| Concessionaire | There is no concessionaire in this model | 1.1 | 2.1 |
| Social | 4.4 | 4.4 | 2.7 |

Costs generally include implementation, operation and maintenance of hardware, software, on-board units and marketing and auditing of ECRI operations. Benefits generally include time and fuel savings to carriers, infrastructure savings, safety benefits and improved staff productivity. The largest benefits accrue to motor carriers who save approximately $1.35 ($1.10 in time and $0.25 in fuel costs) each time ECRI enables them to bypass an inspection station where they would otherwise have to pull in.

The benefit cost analysis favours some form of Private/Public model where costs and benefits are shared more equitably between the Public and Private sector. The fully Public model would require the government to pay all the costs while the carrier receives most of the benefit. The fully private model relieves the province of most of the cost but then imposes most of it on the carrier, and may act as a barrier to participation. The fully private model will also be the most costly due to the added expense of managing and billing a private system.

## Can a Nationwide Program Be Implemented?

Yes, there are sites in 8 jurisdictions in Canada that have 97 locations with a feasible business case. In the west these jurisdictions include British Columbia, Saskatchewan, Alberta and Manitoba. In central Canada, they include Ontario and Quebec. In the east they include New Brunswick and Prince Edward Island. A cross Canada solution can be implemented subject to the jurisdictions' ability to harmonize their programs and legislation for electronic clearance.

## Which Business Model is Appropriate for Canada?

The economic analysis in the study indicated that all models created positive benefits overall. However, when budgets are fixed, the best business model should seek to maximise the net benefits (from the social perspective) while achieving equity between the costs and benefits to each sector. No one sector should be disproportionately impacted at the expense of another. The best model to achieve this is the Private/Public Model.

The favourable economic evaluation of the Private/Public model is not the only reason it is being recommended. Other factors that support this model include:

- **Reduced Long Term Financial Commitment** – an ECRI program requires an initial capital investment followed by ongoing operating and maintenance costs. The most significant benefits accrue to the carriers and therefore some form of user fee is appropriate to support on going operating and maintenance costs and reduce the reliance on government funding. The program should be designed to enable private sector participants to minimize their costs with greater efficiencies and to increase their revenues through enhancing the participation rates. Therefore the private sector assumes some of the financial risk of the program but is also in a position to minimise their risk through effective operation of the program. It also means that the government can structure the capital and operating costs such that they have limited commitments in the long term.

- **Industry Interest** – the motor carrier industry would be more receptive to a program that is not entirely government implemented or operated. There are already extensive government regulations with respect to the trucking industry; therefore a totally public ECRI model may be viewed as further intervention by government which would possibly affect participation rates and growth.

- **Flexibility** – jurisdictions would have more flexibility in developing their own model structures if resources could be found both in the public and private sectors.

## What Recommendations have emerged?

- **Interoperability Design** – There must be technical, institutional and operational interoperability across all jurisdictions. For technical interoperability, standards for OBU's and possibly roadside equipment should be adhered to by all jurisdictions. Institutional interoperability requires that reciprocity agreements and data exchange agreements between jurisdictions be established. Finally, operational interoperability assumes that participating jurisdictions will accept all vehicles and that the truckers can expect the similar "rules" regarding ability to bypass and similar fee structures. It is recommended that the technical solution be based upon an open architecture that allows many vendors to supply solutions.

- **Pan Canadian Solution** – It is recommended that jurisdictions harmonize their legislation and programs to enable carriers to operate seamlessly through inspection stations across Canada, as the jurisdictions will be adopting similar rules and fee structures.

- **Program Leadership** – It is recommended that Transport Canada, CCMTA and industry play lead roles in planning and implementing this program to ensure design of a program that meets the needs of both the jurisdictional organizations responsible for road safety as well as industry players that are using the roads to transport cargo across the country.

- **Incentives and Strategies to enable High Participation Rates and Early Uptake** – Government will begin to realize the benefits of implementation once there are high participation rates in the program. Incentives such as no prerequisites for participation,

fee waivers for carriers, a robust marketing strategy, jurisdictional plans to equip their high volume sites, industry participation to build the right program for carriers, funding from the federal agencies, flexibility for regional variances, data privacy and control strategies and generating interest for other potential transponder applications are all required to gain carrier acceptance. Details of these recommendations are included in Section 8.4 of Chapter 4 - Business Models and Cost Benefit.

## What are the Next Steps?

Stakeholder consultation is the next immediate step. Presentation of the findings of this study at the annual CCMTA conference in 2003 has been suggested as a possible venue. Conference participants include representatives from industry, transportation jurisdictions and transportation related vendors. Once stakeholder feedback is obtained, it would be applied to the model and the direction adjusted as required. Once all groups understand the direction, the following types of work need to be planned and assigned to the various participants:

- Definition of roles and responsibilities
- Establishment of a management body
- Review of Legislation, Regulations and Policy
- Design of the overall business program including standards, guidelines, start dates, implementation targets and sunset timelines
- Establishment of the Canadian Inter-jurisdictional agreement for the overall program
- Bi-Lateral agreement with the U.S.
- Development of the proposed funding model
- Data, Systems and Process Harmonization
- Marketing Program Development
- Monitoring Program Development
- Electronic Clearance Program Development
- Carrier Management Programs' Enhancements
- Roadside Inspection Programs' Enhancements
- Jurisdictional Planning
- Clearance Technology Selection
- Information Technology Projects
- Inspection Station Electronic Clearance Design & Implementation Projects
- Compliance Testing
- Interoperability Testing
- Deployment Initiatives

The next step in the process is building the plan that can provide a baseline for all of these activities over the selected implementation timeline.

## What do the other ECRI chapters and appendices encompass?

**Chapter 1 - Summary of Business Requirements –** contains a brief summary of the requirements for electronic clearance from the perspective of carriers, shippers, provincial and territorial jurisdictions and at a national level for Transport Canada.

**Chapter 2 - Technical Requirements** – contains a description of the technical requirements that must be addressed in order to achieve the business requirements stated by the various stakeholders.

**Chapter 3 - Evaluation of Existing Business Models** – contains a comparison of some of the existing business models being applied in the U.S. The primary programs include NORPASS and PrePass, both of which are operational in multiple jurisdictions.

**Chapter 4 - Business Models and Cost Benefit** – This is the core findings of this study. It examines the costs and benefits surrounding three possible business models for Canada, a fully public model, a partly public/ partly private model and a fully private model. These are also compared to NORPASS and PrePass. This chapter includes the final recommendations, implementation and next steps for the project.

**Appendix A – Benefit Cost Model** – contains an electronic costing model in a spreadsheet format that can be manipulated by an analyst to assess various implementation scenarios for ECRI for Canada or for a particular jurisdiction. It is not in a document format and therefore is not included in any printed versions of this report.

**Appendix B – Environmental Scan Summary** – contains 19 scans of electronic clearance and roadside inspection programs that have applicability to Canada's electronic clearance assessment.

**Appendix C – Technology Scan Summary** – contains 30 scans of electronic clearance and roadside inspection technologies that have applicability to Canada's electronic clearance assessment.

**Appendix D – Glossary** – contains a brief description of many of the terms associated with electronic clearance and its supporting technology.