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## Executive Summary

# *Truck Freight Crossing the Canada-U.S. Border*

An Analysis of the Cross-Border Component of the 1999 Canadian  
National Roadside Study

September 23, 2002

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This study, produced by the Eastern Border Transportation Coalition (EBTC), is an assessment of the Canada-U.S. component of Canada's 1999 National Roadside Study (NRS) of trucks traveling throughout Canada. It provides a more expansive and significant view of trade and traffic between the U.S. and Canada than previously available. Canada's exports to the U.S. constitute one-third of its GDP, 87 percent of its exports. U.S. trade with Canada averages \$1.2 billion per day, more than U.S. trade with the entire European Union.

Truck travel in both directions was surveyed throughout Canada and, for the EBTC

study, on the Canadian side of Maine's border crossings with New Brunswick and Quebec; Vermont's crossings with Quebec; New York's crossings with Quebec and Ontario; Michigan's crossings with Ontario; Minnesota's crossings with Ontario; and Washington's crossings with British Columbia. A total of more than 65,000 interviews were conducted. Over 24,000 of them reported U.S.-Canada trips, and more than 12,000 of them were administered at the border crossings.

The information in the full report on U.S.-Canada truck freight covers origin and destination, major Canada-U.S. truck freight routes, commodity classification, weight and

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The members of the EBTC are the State and Provincial transportation agencies of Maine, Michigan, New Brunswick, Newfoundland and Labrador, New York, Nova Scotia, Ontario, Prince Edward Island, Québec and Vermont; the Metropolitan Planning Organizations of the Buffalo and Detroit areas; and the Regional Municipality of Niagara.

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Copies of the full study will be available for download from the EBTC website at <http://www.ebtc.info>. See the last page of this summary for additional background information.

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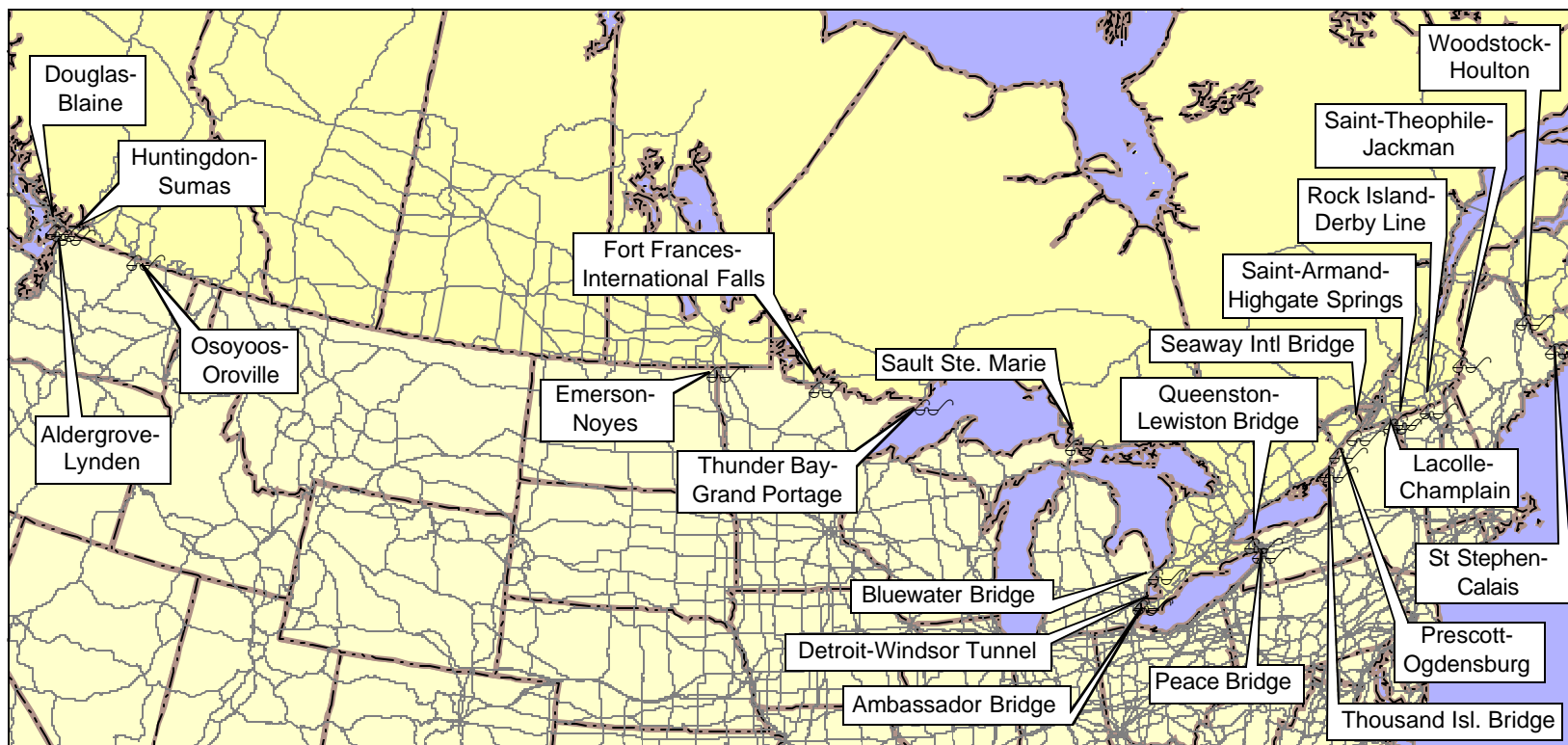
value and truck volumes by state/province and major border crossing.

The following pages display portions of these data for each state and province and the border as a whole, followed by some key Report findings and recommendations.

### **TRADE BY MAJOR CROSSINGS**

Most of the truck flows across the roughly 4,000 mile Canada-U.S. border use 22 principal border crossings, shown in Exhibit 1. Many of these are congested, with queues of idling trucks awaiting inspection, processing and clearance, especially since increased security

Exhibit 1: Major truck crossings on the U.S.-Canada border



procedures have been instituted due to the September 11, 2001 terrorist attacks.

The full report covers each of the provinces and states and 22 principal crossings with tables and graphics that detail exports and imports by commodity group, value, cargo weight and number of trucks. Major export and import origins and destinations are listed by province and state. The data are summarized in Exhibit 2.

A map for each crossing shows its location and the assignment of expanded truck trips by route and volume to a portion of the combined U.S. and Canadian highway sys-

tems for several hundred miles and kilometers surrounding the crossing. The truck trip assignment map for the entire border region is shown in Exhibit 3.

### STATE AND PROVINCIAL DATA

The six states that funded and participated in the study are, from east to west, Maine, Vermont, New York, Michigan, Minnesota and Washington. They and the seven provinces that participated in the study account for about 90 percent of U.S.- Canada motor carrier trade. The seven provinces that participated are Newfoundland and Labrador, Nova Scotia,

Prince Edward Island, New Brunswick, Quebec, Ontario and British Columbia.

A summary of imports and exports by commodity group is shown in Exhibit 4.

### FORECASTS OF TRUCK FLOWS BY MAJOR CROSSINGS

Time-series analysis was used to project truck volumes for each crossing to the year 2020. Exhibit 5 shows current and projected volumes for the 22 crossings, which are projected to grow from 11.8 million in 1999 to 19.2 million by 2020, an increase of 63%.

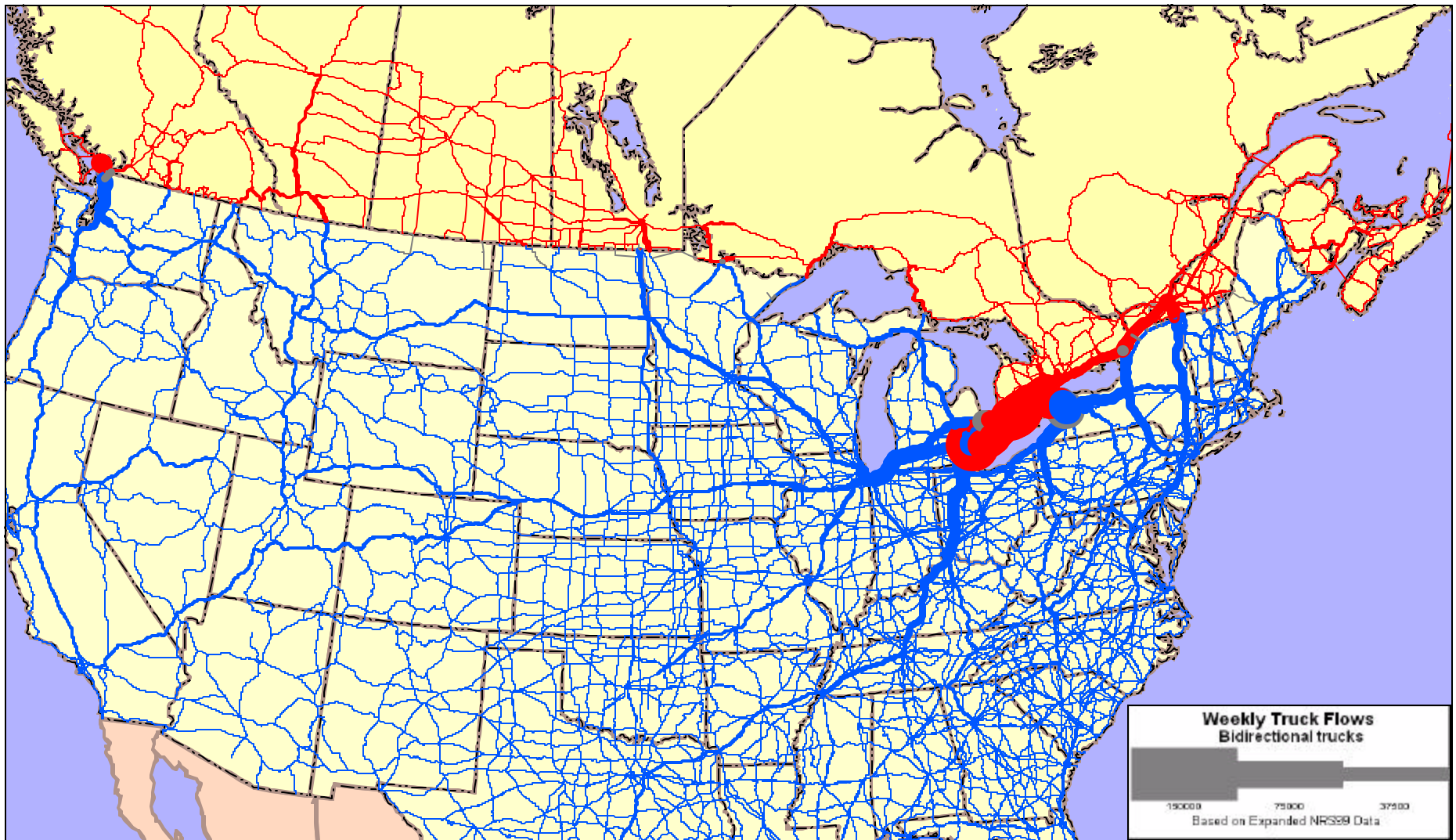
Exhibit 2: Weekly tonnage and trucks crossing at major Canada-U.S. border crossings

Metric tons	Per-cent	Trucks	Per-cent	Prov-ince	Crossing	Metric tons	Short tons	Per-cent	Trucks	Per-cent	State	Short tons	Per-cent	Trucks	Per-cent
71,423	2.6	7,254	2.8	NB	St Stephen-Calais	30,091	33,169	1.1	3,134	1.2	ME	101,914	3.4	8,875	3.4
					Woodstock-Houlton	41,332	45,560	1.5	4,120	1.6					
296,712	10.6	25,744	9.7	PQ	Saint-Theophile-Jackman	21,034	23,185	0.8	1,621	0.6	VT	109,109	3.5	9,063	3.4
					Rock Island-Derby Line	45,961	50,663	1.6	3,765	1.4					
					Saint-Armand-Highgate Springs	53,022	58,446	1.9	5,298	2	NY	989,229	32.1	81,605	31.2
					Lacolle-Champlain	176,695	194,771	6.3	15,060	5.7					
					Seaway International Bridge	23,319	25,704	0.8	2,516	1					
Prescott-Ogdensburg	13,234	14,588	0.5	1,517	0.6										
Thousand Island Bridge	161,131	177,615	5.8	11,789	4.5										
1,887,219	67.6	184,247	70.3	ON	Lewiston-Queenston Bridge	183,612	202,395	6.6	20,098	7.7	MI	1,198,944	39.0	108,086	41.2
					Peace Bridge	339,432	374,156	12.1	30,625	11.7					
					Ambassador Bridge	688,950	759,429	24.7	73,141	27.9					
					Detroit-Windsor Tunnel	37,235	41,044	1.3	3,672	1.4					
					Blue Water Bridge	318,104	350,646	11.4	28,896	11					
					Sault Ste Marie	43,387	47,825	1.6	2,377	0.9	MN	193,689	6.3	15,744	5.9
					Thunder Bay-Grand Portage	33,939	37,411	1.2	2,938	1.1					
					Fort Frances-International Falls	44,876	49,466	1.6	6,678	2.5					
					Emerson-Noyes	96,899	106,812	3.5	6,128	2.3					
					Osoyoos-Oroville	18,290	20,161	0.7	2,133	0.8					
306,158	11.0	30,082	11.4	BC	Huntingdon-Sumas	67,343	74,232	2.4	6,563	2.5	WA	337,478	11.0	30,082	11.4
					Aldergrove-Lynden	36,505	40,239	1.3	3,248	1.2					
					Douglas-Blaine	184,020	202,846	6.6	18,138	6.9					
136,163	4.9	9,142	3.5		All others <sup>a</sup>	136,163	150,093	4.9	9,142	3.5		150,093	4.9	9,142	3.5
2,794,574	100	262,597	100		Total <sup>b</sup>	2,794,574	3,080,456	100	262,597	100		3,080,456	100	262,597	100

a. Includes some small volume crossings in the states and provinces shown, as well as in states and provinces not otherwise listed.

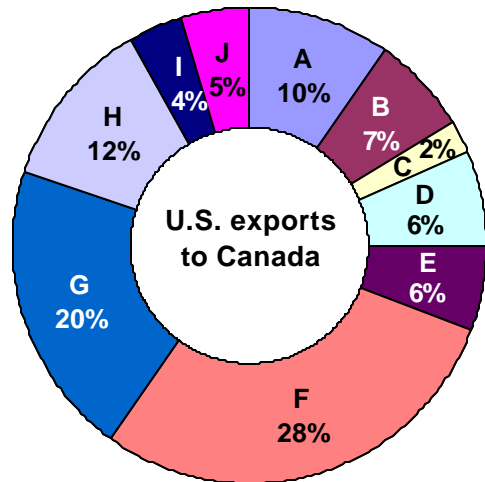
b. Some percentages may not round exactly to 100 percent due to rounding. The totals shown include in-bond shipments passing through each country.

Exhibit 3: Weekly 1999 NRS truck trips crossing the Canada-U.S. border



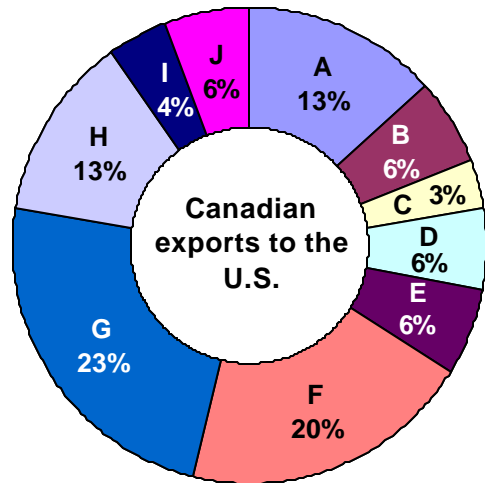
Note: Trip data was expanded and assigned to the combined Canada-U.S. highway system. The bandwidth indicates weekly Canada-U.S. truck trips. The corridor between Detroit, Toronto, and Buffalo is heavily traveled, with the resulting wide bandwidths causing some loss of roadway detail in that area.

Exhibit 4: 1999 cross-border motor carrier commodities by tonnage



Commodity Group Legend:

- A. Agricultural products and fish
- B. Grains, alcoholic beverages, and tobacco
- C. Stone, minerals, and ores
- D. Coal and petroleum products
- E. Petroleum and chemical products
- F. Wood, textile, and leather products
- G. Metal products and machinery
- H. Electronics, vehicles, and precision goods
- I. Furniture and miscellaneous products
- J. Unknown



Note: A portion of commodity groups F and G are automotive-related products.

Note that this exhibit does not illustrate the large number of empty trucks crossing the border in both directions—about 23 percent of the total Canada-U.S. flows and 31 percent of the total U.S.-Canada flows. The percentages at some crossings, however, were considerably higher.

Exhibit 5: Forecasted growth in annual truck volumes by crossing

Crossing	Growth rate <sup>a</sup>	2000 volume	2020 forecast
St Stephen-Calais	5.5%	239,508	482,000
Woodstock-Houlton	6.6%	207,000	356,000
Saint-Theophile-Jackman	4.3%	121,108	169,000
Rock Island-Derby Line	10.2%	266,966	395,000
Saint-Armand-Highgate Springs	8.3%	307,356	408,000
Lacolle-Champlain	5.1%	769,232	967,000
Cornwall-Seaway	4.3%	131,203	191,000
Prescott-Odgensburg	3.0%	57,757	81,000
Thousand Islands Bridge	6.0%	542,703	861,000
Queenston-Lewiston Bridge	4.7%	1,019,492	1,417,000
Peace Bridge	5.0%	1,439,824	2,227,000
Ambassador Bridge	8.3%	3,486,110	5,051,000
Detroit-Windsor Tunnel	-4.1%	170,054	187,000 <sup>b</sup>
Blue Water Bridge	8.2%	1,576,839	2,944,000
Sault Ste Marie	7.3%	137,804	240,000
Thunder Bay-Grand Portage	5.9%	64,193	123,000
Fort Frances-Int'l Falls	3.6%	92,263	147,000
Osoyoos-Oroville	5.6%	64,812	124,000
Huntingdon-Sumas	8.4%	186,513	378,000
Aldergrove-Lynden	6.8%	120,646	232,000
Douglas-Blaine	8.5%	951,995	2,258,000
<b>Total</b>		<b>11,953,378</b>	<b>19,210,000</b>

a. Annual average growth rate for the last ten years in the data.  
 b. Operator forecast used in lieu of forecasting model.

## KEY FINDINGS

- The six highest-volume crossings on the Canada-U.S. border handled almost 90% of the value and three-quarters of the tonnage and truck trips.

### *Six highest volume crossings*

Ambassador Bridge (MI-ON)  
 Peace Bridge (NY-ON)  
 Blue Water Bridge (MI-ON)  
 Lewiston-Queenston Bridge (NY-ON)  
 Douglas (WA)-Blaine (BC)  
 Lacolle (PQ)-Champlain (NY)

- Trucks “transiting” or passing through with both origin and destination elsewhere accounted for one quarter to half of total Canada-U.S. trucks in the border states, and smaller proportions in the provinces—imposing infrastructure and roadway needs and contributing to national interests, but providing little economic potential to the border state or province.
- The border states contributed a third of the value, 40 per cent of the tonnage and more than half of the trucks flowing into Canada. Half of the shipments entering the U.S. from Canada, by all three measures, were bound to the border states.
- The U.S. border states were net importers from Canada while the remaining states were net exporters (see Exhibit 7).
- The relationships among cargo value, cargo weight and the number of truck trips varies by border crossing (see Exhibit 8).
- While the high-volume crossings are of substantial national and international importance, some low volume crossings are of great regional importance; e.g., the Woodstock-Houlton and St. Stephen-Calais

crossings handle almost all Atlantic Canada volumes to the U.S.

- Over 40 percent of truck trip origins and destinations were transportation terminals, including rail, intermodal and marine facilities (see Exhibit 9).
- Some 90% of cross-border trucks are tractor-trailer combinations; the average vehicle and average cargo each weigh about 12.6 metric tons.

## CONCLUSIONS

- The benefits and economic potential of U.S.-Canada trade are distributed broadly throughout the U.S., while the obligations and burdens of border crossing and highway facility improvements are concentrated in the border states and communities.

### *Percent of flows attributable to U.S. states*

Measure	Border states	Non-border states
Value	38	62
Tonnage	43	57
Trucks	53	47

- The assignment of U.S.-Canada truck trips to the combined National Highway Systems provides a rational and objective method for identifying international trade corridors (see Exhibits 3 and 6).
- In Canada, the international component of the data forms only one layer of the complex institutional knowledge gained from the survey data, upon which transportation planners and policy-makers rely heavily. In the United States, of course, additional

### *Exhibit 6: Corridors identified in the NRS data*

- Highway 1 and Highway 9 between Moncton, New Brunswick and I-95 south to Boston, Massachusetts
- Highway 2 and I-95 from Fredericton, New Brunswick to Boston, Massachusetts
- Highway 55, Interstate 91, and Interstate 93 between Drummondville, Québec and Boston
- Highway 35 and Interstate 89 between Montréal, Québec and Boston
- Highway 15 and Interstate 87 between Montréal and the New York City area
- I-81 from Canada across New York to Scranton, Pennsylvania, and I-476 between Scranton and Philadelphia
- I-90 to Route 63 and I-390 in western New York, to I-86, and Route 15 (future I-99) to US-220/I-80 in Williamsport, Pennsylvania.
- The entire length of Highway 401 in Québec and Ontario
- The entire length of Highway 403 and the QEW freeway in the Toronto, Ontario area
- Interstate 90 between Buffalo and Boston, Massachusetts
- Interstate 90 between Buffalo and Toledo, Ohio
- Highway 402 in Ontario and Interstate 69 from Port Huron, Michigan to I-94 at Marshall, Michigan
- Interstate 75 from Detroit, Michigan to Cincinnati, Ohio; Interstate 71 from Cincinnati to Louisville, Kentucky; and Interstate 65 from Louisville to Nashville, Tennessee
- Interstate 94 from Detroit to Chicago, Illinois; and west to Fargo, North Dakota
- Interstate 29 and Highway 16 from Fargo, North Dakota to Winnipeg
- Highway 99 and Interstate 5 from Vancouver, British Columbia to Portland, Oregon

Exhibit 7: Balance of trade by U.S. state

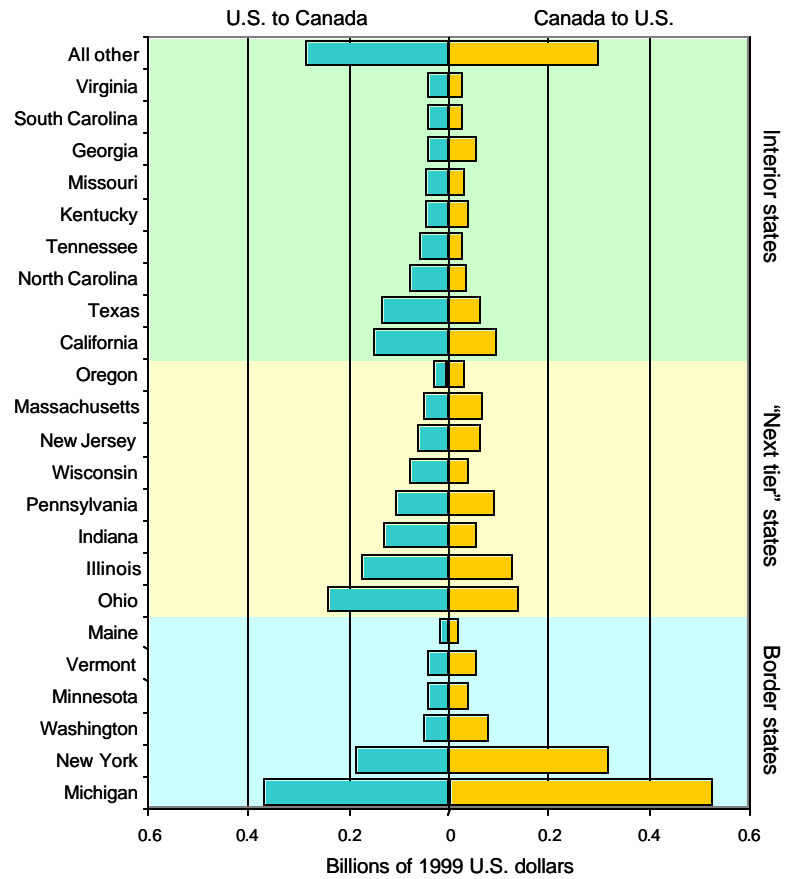


Exhibit 8: Bidirectional weekly flows at major Canada-U.S. truck crossings

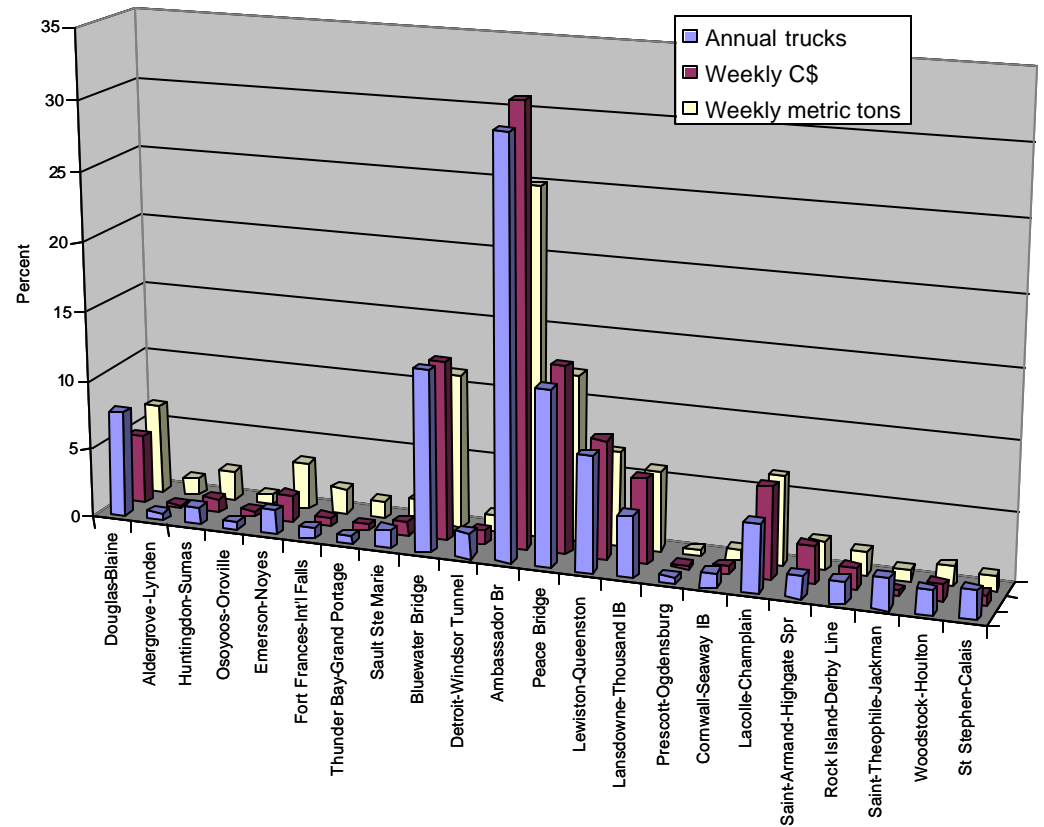


Exhibit 9: Reported facility type at trip start and end

Facility type	Trip start		Trip end		Facility type	Trip start		Trip end	
	Trucks	Percent	Trucks	Percent		Trucks	Percent	Trucks	Percent
Truck terminal	72,282	26.1	68,672	24.8	Manufacturer	92,731	33.5	73,635	26.6
Rail terminal	3,826	1.4	2,541	0.9	Retail	5,654	2.0	16,924	6.1
Marine terminal	3,483	1.3	2,474	0.9	Other	19,765	7.1	16,649	6.0
Airport	1,140	0.4	1,482	0.5	Unknown	9,807	3.5	20,494	7.4
Warehouse/distribution center	42,011	15.2	59,614	21.5	No response	6,352	2.3	6,350	2.3
Primary producer	19,992	7.2	8,208	3.0					

information is required to provide the type of Canada-only data obtained in the NRS.

- Few if any of the border crossings can accommodate the projected increases in truck volumes without substantial investments in infrastructure, technology and staffing. Border security requirements increase further the need for investments and streamlined processes to meet the needs.

## RECOMMENDATIONS

- Make the NRS-EBTC Truck Study data widely available to transportation planners and others who deal with border and international trade issues.
- Conduct a study of rail, truck and intermodal terminals to follow the flow of freight through these facilities.
- Review and if necessary study the frequency and reasons for empty trucks to determine whether this apparently uneconomic phenomenon can be reduced.
- Initiate discussions to determine whether the Province of Clearance issue<sup>1</sup>, which affects the value of imports attributed to Quebec, Newfoundland, Nova Scotia and Prince Edward Island can be resolved.
- Work with Transport Canada, FHWA, Statistics Canada, the Bureau of Transportation Statistics, and others to organize a

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1. Canadian foreign trade data attribute the value of Canadian imports to the Port of Clearance rather than the province of actual destination. As a result, the value of U.S. exports to Québec and the Atlantic provinces are understated, and the value attributed to Ontario is overstated. The full report discusses this anomaly in detail.

workshop or conference to review some of the data issues identified during the NRS/EBTC study.

- Plan to participate in the planned 2004 NRS, recommending modifications to help improve and speed the process.
- The EBTC and recently established Transportation Border Working Group (TBWG)<sup>2</sup> can be helpful in identifying border and corridor needs in both nations and encouraging and participating in planning to meet those needs.

## POSTSCRIPT

The period between administration of the truck freight surveys and the data processing, analysis and projection required for preparation of this report has seen a peaking of the longest period of substantial North American economic growth in history, followed by a decline from that peak.

Moreover, the September 11, 2001 terrorist attack on the U.S. has brought major changes in the inspection and processing of freight crossing the border. This has increased current and future infrastructure, staffing, technology and process improvement needs substantially beyond what would be required to meet projected truck volume increases alone.

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2. The members of the TBWG are Transport Canada; the Federal Highway Administration; and state, provincial, and territorial transportation departments with an interest in U.S.-Canada border issues; and other federal agencies. The objective of the TBWG is to enhance binational communication, coordination, planning, and policy development in order to facilitate the efficient and secure movement of people and goods between Canada and the U.S.

## STUDY BACKGROUND

This study, produced by the Eastern Border Transportation Coalition (EBTC), is an assessment of the Canada-U.S. component of Transport Canada's 1999 National Roadside Study (NRS) of trucks traveling throughout Canada. The NRS, coordinated by the Canadian Council of Motor Transport Administrators (CCMTA) and conducted by the individual provinces and territories, was also conducted in 1991 and 1995. These surveys, designed primarily to capture trucking activity within and between the provinces, captured only 65 per cent of the binational trucking activity

In order to obtain more comprehensive information on truck travel between Canada and the U.S., EBTC developed arrangements with CCMTA, Transport Canada and the Federal Highway Administration (FHWA) of the U.S. Department of Transportation to supplement the planned 1999 NRS with additional surveys at the Canada-U.S. border crossings and to retain a consultant to prepare this report.

FHWA established a pooled account to finance the project with State Planning Research funds provided by the state transportation departments of Maine, Michigan, New York, and Vermont, which are EBTC members, plus Minnesota and Washington. Transport Canada, FHWA, the Michigan Department of Transportation and the Southeast Michigan Council of Governments provided contractual and administrative support.

Copies of the full EBTC report will be available from the EBTC website at <http://www.ebtc.info>.