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BORDER POLICY RESEARCH INSTITUTE
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Border Policy Brief November 2008

Initiating an Investigation of the Border's Performance

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Introduction. In recent months, two distinct projects designed to gauge the performance of the Canada – US border have been initiated. The University at Buffalo Regional Institute (UBRI) proposed the development of a "Border Barometer," which is anticipated to be a set of metrics replicable along the breadth of the 49th parallel. UBRI is our partner in a new consortium that performs border-related research—the Northern Border University Research Consortium (NBURC)—and courtesy of a grant from the Canadian government, the NBURC is launching the Border Barometer project.

Additionally, at its July 2008 meeting the Pacific Northwest Economic Region (PNWER) announced the creation of a Border Solutions Coordination Council, which intends to develop a "Border Report Card" specific to the four BC-Washington ports-of-entry that serve the I-5 corridor. Those ports are Peace Arch and Pacific Highway (both in Blaine), Lynden/Aldergrove, and Sumas/Huntingdon. Collectively, the ports are referred to as the Cascade Gateway.

Our institute has thus begun to consider the different ways in which the "performance" of a border can be gauged. This article includes some initial ideas about possible kinds of metrics, constrained to some degree by the kinds of data that are readily available. In our view, performance at the border (or within a borderland region) should be measured not only by the "hard" metrics that first come to mind, such as the average amount of time needed to inspect one car, but also by "soft" metrics, such as the existence and the effectiveness of cooperative regional initiatives targeted at border-related issues.

Following are several metrics that NBURC might incorporate into its Border Barometer initiative and that also might be of use to regional and federal policymakers, including the PNWER members engaged in creation of the Border Report Card.

Traffic Load. A record of the volume and type of traffic passing through the border is a fundamental metric. Traffic load is sensitive to continent-wide economic trends, as revealed in Figures 1 and 2. In the late 1990s, for instance, a weakening Canadian dollar and a robust North American economy resulted in rising truck-borne commerce and a surge in imports of Canadian goods, while car traffic declined as BC residents avoided trips to the US. However, traffic load is also sensitive to other factors. When the Canadian dollar surged in the post-9/11 period (i.e., from 2002 through 2007), Canadian visitation remained stagnant, showing a significant uptick only in 2007. There is evidence that 9/11-related border protocols hampered Canadian visitation. (See Research Note No. 2 at www.wwu.edu/bpri.)

Figure 1. Yearly Value of US Imports and Exports through Blaine, Lynden, and Sumas

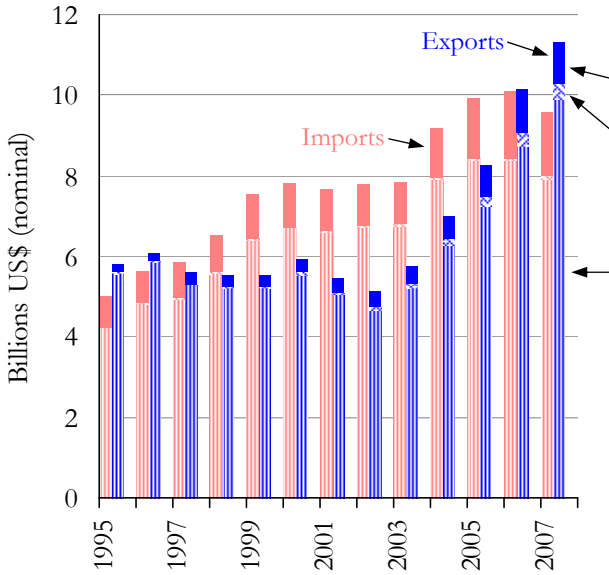
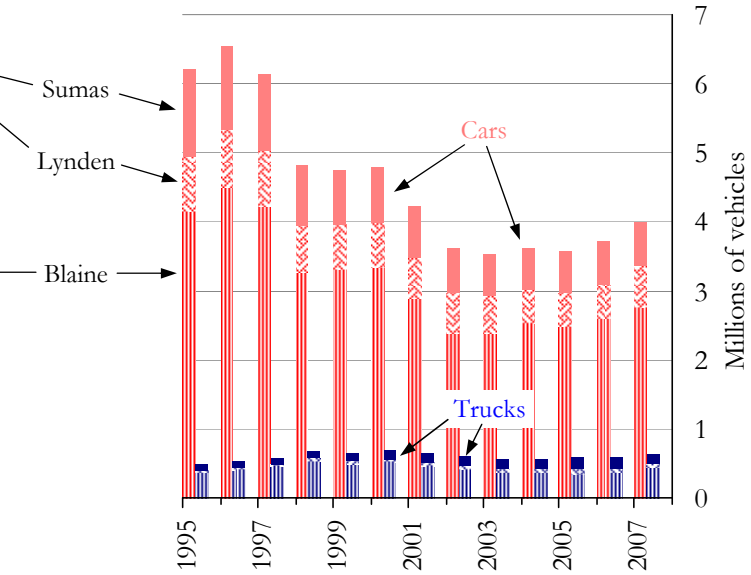


Figure 2. Yearly Southbound Car & Truck Traffic through Blaine, Lynden, and Sumas



Border Infrastructure. Table 1 contains a record of the pavement lanes and the inspection booths installed at the Cascade Gateway as of the date of this article. These are the facilities available to handle the traffic load, and thus constitute a fundamental metric. At Peace Arch the number of booths is temporarily reduced due to facility reconstruction. Upon completion Peace Arch will have 10 lanes, matching its opposite port, Douglas. As at Douglas, the new facility will have the flexibility to convert lanes from NEXUS use to standard use.

Table 1. Infrastructure Installed at the Cascade Gateway

	Lanes					Booths				
	Commercial		Auto		Total	Commercial		Auto		Total
	Std.	FAST	Std.	Nexus		Std.	FAST	Std.	Nexus	
SB - Peace Arch	-	-	2	1	**3**	-	-	3	1	**4**
NB - Douglas	-	-	2	1	**3**	-	-	9-	1+	**10**
SB - Pacific Hwy	1	1s	2	1s	**4**	2	1	5	1	**9**
NB - Pacific	1	1s	1	1s	**3**	2	1	5	1	**9**
SB - Lynden	1s	-	1s	-	**1**	2	-	3	-	**5**
NB - Aldergrove	1s	-	1s	-	**1**	1	-	2	-	**3**
SB - Sumas	2	-	1	-	**3**	2	-	4	-	**6**
NB - Huntingdon	1s	-	1s	-	**1**	1	-	6	-	**7**

"s" denotes a lane shared by two modes. NB Douglas can convert 1 std. lane to a 2nd NEXUS lane.

Table 2. Ratio of Available Booths to Traffic at Blaine, Sumas, and Buffalo

		Annual Traffic 2007	# Booths as of Nov 2008	Booths per million vehicles
Automobiles				
Cascade	Peace Arch SB	1,677,045	4	2.4
Cascade	Peace Arch NB	1,677,045	10	6.0
Cascade	Pacific Hwy SB	1,086,344	6	5.5
Cascade	Sumas SB	634,764	4	6.3
Buffalo	L-Q Bridge SB	1,465,003	6	4.1
Buffalo	Rainbow SB	1,702,138	15	8.8
Buffalo	***Peace Bridge SB*	*2,703,228*	*17*	*6.3*
Buffalo	Peace Bridge NB	2,703,228	15	5.5
Trucks				
Cascade	Pacific Hwy SB	438,001	3	6.8
Cascade	Sumas SB	135,678	2	14.7
Buffalo	L-Q Bridge SB	388,706	4	10.3
Buffalo	***Peace Bridge SB*	*699,732*	*7*	*10.0*
Buffalo	Peace Bridge NB	699,732	*4*	*5.7*

***Peace Bridge SB has 11 auto booths and 7 booths convertible for truck or auto use. Table incorporates max. booths per mode.*

Ratio of Traffic to Booths. The preceding two metrics can be used to investigate whether the border infrastructure available at a crossing is proportional to the traffic load, in comparison to other crossings. Table 2 contrasts the situation present at the Cascade Gateway and in the Buffalo-Niagara region, a heavily traveled region that has received praise for good border performance. The table portrays the ratio of booths to traffic based upon the annual US-bound traffic load in 2007. The US-bound traffic stream is assumed to be equivalent to the Canada-bound stream at each given crossing. Different traffic metrics (e.g., peak-hour) are perhaps more appropriate as a gauge of relative capacity, but annual US-bound traffic was the only data readily available for this analysis.

Until very recently there were 8 booths available both north- and south-bound at Peace Arch, yielding a ratio of 4.8 booths per million, a ratio significantly lower than found at the Rainbow and Peace Bridges. Once 10 booths are available at Peace Arch in each direction, the ratios at the Cascade Gateway will be on a par with those found in Buffalo. At that point the Lewiston-Queenston Bridge, which is today the site of the worst border delays in the Buffalo region, will exhibit the worst ratio.

With regard to truck traffic, south-bound ratios in the Buffalo region are better than at Pacific Highway, the major commercial port at the Cascade Gateway. The north-bound ratio at Peace Bridge is lowest. We are unaware whether north-bound congestion is an issue at that site.

Staffing. Availability of booths is meaningless if there is inadequate staff available to service the booths. Some metric of the adequacy of staffing is crucial, but appropriate data was not readily available. We hope to work with CBP and CBSA to procure a useful data set.

1998
- Cascade Gateway SB. Install license plate readers.

1999
- Peace Arch NB. Extend NEXUS lane.

2000
- Cascade Gateway SB. Install radiation portal monitors. ~$1.5 million

2001
- Sumas SB. Build two truck lanes and staging area. $2 million

2002
- Peace Arch and Pacific Highway NB & SB. Install ATIS. $2.2 million
- Cascade Gateway NB & SB. ITS data archive. $205,000

2003
- Pac. Highway SB. Install ITS/ CVO enhancements. $500,000

2004
- Cascade Gateway NB. Install FAST transponder readers. ~$380,000
- Pac. Highway SB. Construct FAST lane. $1.27 million

2005
- Pac. Highway SB. Construct NEXUS lane. $509,000
- Peace Arch SB. Construct NEXUS lane. $911,000
- Pac. Highway SB. Rebuild 8th Ave/Hwy 15 intersection. $1 million

2006
- Sumas SB. Install 2nd truck booth. $250,000
- Sumas NB. Realign/improve SR-9. $10.3 million

2007
- Peace Arch SB. Rebuild 8th Ave/Hwy 99 intersection. $8.6 million
- Cascade Gateway NB. Install ATIS wait-time equipment. $3.4 million
- Pacific Highway NB. Rebuild SR-543 w/ FAST lane. $50.8 million

2008
- Peace Arch SB. Begin new port facility (to open late 2010). $70 million
- Peace Arch NB. Open new port facility. $44 million

Peak Processing Rate. The duration of the inspection process at the booth is a crucial component of a border's performance. Reliable data is generally unavailable for the Cascade Gateway, except as shown in Table 3. A NEXUS inspection is shorter for two reasons — fewer questions are posed to trusted travelers, and the RFID-enabled document causes information to appear in the booth prior to the car.

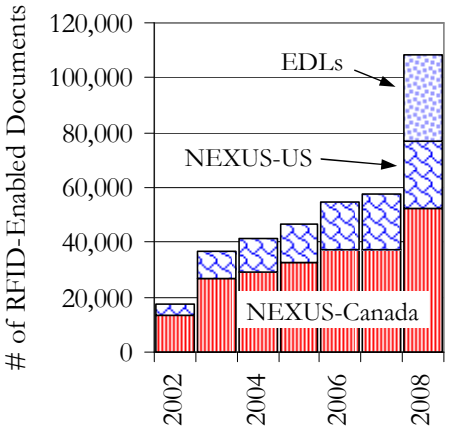
A systematic effort should be launched to measure processing rates over time.

Table 3. Per-Vehicle Processing Rate, Blaine

	Seconds
Automobiles	
2007 Std. lane SB	65
2007 Nexus lane SB	26
2007 Std. lane NB	60
2007 Nexus lane NB	24
Trucks	
2002 Std. lane SB	57
2006 Std. lane SB	120
2006 FAST lane SB	87

Document Uptake. Because RFID-enabled documents shorten the inspection process, a record of the uptake of such documents is useful. Figure 3 reveals the regional uptake of NEXUS cards by Canadian and US citizens, as well as the uptake of EDLs by Washington residents. Regional uptake of the PASS card will be added if data becomes available. The percentage of traffic making use of such documents is also of interest.

Figure 3. Holders of RFID-Enabled Documents (Nov. 2008)



Infrastructure Investment. At the left is a timeline of investments made in border infrastructure over the preceding decade, and Table 4 identifies the cumulative cost of the projects. Documenting costs is a crucial step toward conducting cost-benefit analysis, a task that should be undertaken in the future.

Table 4. Total Cost of Border Infrastructure Improvements

	Buildings & Roads	Technology
In Canada	$58,290,000	$2,480,000
*In US***	*$131,350,000*	$5,658,000
Total	$189,640,000	$8,138,000

*** Includes estimated cost of new Peace Arch facility.*

Date	Table 5. Regional Initiatives
1989	Pacific Enterprise Corridor Council (PACE) is formed in order to advocate for measures that will facilitate the movement of legitimate people, goods, and services across the border.
1991	Pacific Northwest Economic Region (PNWER) is formed. PNWER is a statutorily authorized regional planning organization that now includes five states, three provinces, and one territory.
1993	Cascadia Center for Regional Development (Cascadia Project) is launched in order to tackle development and transportation issues in the cross-border Cascadia corridor.
1997	International Mobility & Trade Corridor project (IMTC) is launched in order to provide a forum at which regional officials from inspection agencies, transportation agencies, NGOs, and the private sector can pursue increased mobility through the Cascade Gateway.
2005 (Jan.)	Border Policy Research Institute formed, focusing on research that informs policy-makers on matters related to the Canada - US border. The Washington state legislature funds the BPRI.
2005 (Oct.)	Gov. Gregoire and Premier Campbell sign the *BC-Washington Memorandum of Cooperation*. They agree to meet periodically to review issues of interest, monitor progress towards cooperative efforts, enter into specific cooperative arrangements on matters of common interest, and designate officials to serve as principal points of contact in order to share information.
2006 (June)	Gov. Gregoire and Premier Campbell sign a joint letter urging both federal governments to address WHTI documentation requirements. They also sign a *Transportation Protocol Agreement* that calls for greater use of ITS at the border, increasing the number of NEXUS and FAST users, and joint research on border traffic needs, and that commits both jurisdictions to improve communication on incidents that affect cross-border travel.
2008 (June)	Gov. Gregoire and Premier Campbell sign an *Action Plan on Border Management* that proposes action on border infrastructure and management, reduction of border wait-times, increased enrollment in FAST and NEXUS, reduction of border emissions, increased compatibility of cross-border communications, development of EDLs, and leadership to secure action by federal authorities. A separate memorandum on *Greening the Border* calls for reduction of idling at the border, increased security and efficiency for cross-border transportation, and support for organizations such as PNWER and IMTC.
2008 (July)	PNWER forms a Border Solutions Coordination Council and plans to develop a Border Report Card.

Regional Cooperation. The specific actions taken to improve a border's efficiency (e.g., new booths and highway lanes, ITS deployment, documentation, staffing) are facilitated by a "soft" infrastructure consisting of the entities that cooperate to tackle issues. Table 5 documents regional cooperative efforts over a 20-year span.

Next Steps. This article represents the BPRI's first step in a long-term effort to measure the "performance" of the Canada – US border. There are metrics we have mentioned for which little data is at hand. Should the metrics be pursued? And if so, how will the necessary data be gathered? There are other metrics that are of obvious interest, such as the benefits provided by effective border enforcement (e.g., the amount of crime interdicted at the border) and the cost-benefit ratio associated with past and future projects. Finally, there are alternate ways to gauge a given impact—e.g., rather than measuring traffic load, booth count, and processing rate, which are the determinants of wait-time, it is instead possible to focus directly on wait-time. We look forward to feedback from our partners within both the academic and the policy communities.

Data Sources. We greatly appreciate the cooperation received from CBP, CBSA, and the Dep't. of Licensing.

- Figures 1 and 2 use data from the US Bureau of Transportation Statistics at <www.transtats.bts.gov>. See the Transborder Surface Freight data and the Border Crossing data.
- Table 2 uses the Border Crossing data noted above, booth counts identified by CBP at <http://apps.cbp.gov/bwt/>, and bridge traffic counts provided by the Niagara Falls Bridge commission at <www.niagarafallsbridges.com/traffic_statistics.php3>
- Table 3 uses truck data found in two reports that were commissioned by IMTC. Both reports are available online at <www.wcog.org/Border/IMTC-Projects/CVO-Border-Evaluation-Study/288.aspx>. For cars, the table uses hourly vehicle-clearance counts provided by CBSA and CBP in July 2007. For certain peak hours when long queues were present and all booths open, we converted the vehicle-counts to clearance rates per car per booth.
- Figure 3 uses NEXUS enrollments provided by CBP and EDL enrollments provided by the WA Dep't. of Licensing.

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