



**BORDER  
POLICY**  
RESEARCH INSTITUTE  
WESTERN WASHINGTON UNIVERSITY

**wcog**  
whatcom council of governments

2013/14

# IMTC Passenger Vehicle Survey

Project Organization &  
Report of Findings

July, 2014

This page is intentionally blank.

## Table of Contents

|  |    |
|--|----|
| Project organization .....   | 1  |
| Surveying in the field .....   | 4  |
| The survey crew .....  | 5  |
| The database .....   | 5  |
| Findings .....   | 7  |
| Geography .....  | 7  |
| Traveler residence .....   | 7  |
| Cross-border trip ends - origin and destination .....                          | 8  |
| Trip purpose .....   | 15 |
| Changing distribution of trip purposes .....                                   | 18 |
| Trip duration & frequency .....  | 20 |
| Duration .....   | 20 |
| Frequency .....  | 21 |
| Traveler tenure and attitude trends .....                                      | 23 |
| Tenure .....   | 23 |
| Perceptions of personal travel trends .....                                    | 23 |
| Individuals' reported reasons for changing cross-border travel frequency ..... | 24 |
| Crossing location choice .....   | 26 |
| Border wait time systems .....   | 28 |
| Border wait time systems at Point Roberts-Boundary Bay .....                   | 33 |
| Radio frequency identification (RFID) .....                                    | 33 |
| Enhanced driver's licenses (EDL) .....   | 33 |
| NEXUS .....  | 35 |
| For more information .....   | 35 |

This page is intentionally blank.

## **Project introduction**

The 2013/14 passenger vehicle survey consists of a questionnaire administered to cross-border personal vehicles at five land border ports-of-entry between Western Washington State and Lower Mainland British Columbia – commonly referred to as the Cascade Gateway. The project is advanced by the International Mobility and Trade Corridor Program (IMTC) and is the third such survey undertaken by this regional cross-border planning coalition since 2000. This report outlines the organization of the project and summarizes high level findings from the summer and winter interviews conducted in July 2013 and February 2014, respectively.

The purpose of the passenger vehicle survey is to gather information about travelers' cross border trip characteristics, trends, perceptions of travel, and perceptions of other border-related topics. The questionnaire is approximately 20-questions long and is administered road-side at each of the five Cascade Gateway ports.

## **Project organization**

### **Agencies involved**

The passenger vehicle survey was a priority of IMTC participating agencies. In addition to project funding from the U.S. Federal Highway Administration (FHWA), Washington State Department of Transportation (WSDOT), BC Ministry of Transportation and Infrastructure (BC MoTI), Border Policy Research Institute (BPRI), and Whatcom Council of Governments (WCOG), critical permissions, cooperative facilitation, and baseline traffic data were provided by U.S. Customs and Border Protection (CBP) and Canada Border Services Agency (CBSA).

### **Management and staffing**

WCOG coordinated project funding and managed the project. WCOG entered into an agreement with the BPRI to partner in undertaking the project. Through BPRI, 23 students and 5 supervisors were hired from Western Washington University (WWU) to enable staffing two shifts per day.



Western Washington University students training with the survey instrument and tablets.

### **The questionnaire and software**

As in the preceding 2007/08 project, survey responses were recorded using PenDragon Forms VI. PenDragon Forms enables direct transfer of collected data to a Microsoft Access database. It also allows the questionnaire to be structured with custom branching – asking designated questions only if certain initially determined traveler characteristics were true or if answers to preceding questions met criteria for follow-up questions.

The survey questions span a wide range of topics, from geographic locations of travel and trip purposes to perceptions of cross-border habits and choices of border-crossing identification. A full list of the questions and their branching behavior can be found [here](#).

## Survey instruments

The survey forms were loaded on to first generation Google NEXUS 7 tablets. These tablets were chosen for their smaller size, their price, and most importantly, their highly-rated battery life. In the field, the tablets' touch-screen ability, battery life, and general durability were highly useful. In order to ensure enough battery to get through second shifts, portable power packs were included in the supplies of each survey date.

The tablets were fastened to wooden boards using Velcro. Next to each tablet on a board was a laminated booklet containing maps of Lower Mainland British Columbia, Western Whatcom County, and the Puget Sound area. These maps were used for survey respondents to indicate their residences, trip origins, and trip destinations relative to specific traffic analysis zones, or TAZ's. These TAZ's enable subsequent origin-to-destination matrix-building.



A surveyor holds an instrument board with a tablet and map. The tablet faces the surveyor and the map faces the respondent.

## Survey seasons

Like the 2007/08 Passenger Vehicle Survey, two seasons of survey dates were scheduled for the 2013/14 project: a summer session and a winter session. The majority of the survey dates scheduled in summer took place in July 2013, with the rest completed at the end of June. Winter dates were almost exclusively in February 2014, with a few days in March.

The following tables show the survey dates for each season, broken up by port, direction of traffic surveyed, type of day (weekday vs weekend), date, as well as the time-slots that surveying occurred.

## Summer

| Port                        | Direction | Day type | Date    | Hours          |
|-----------------------------|-----------|----------|---------|----------------|
| Lynden/Aldergrove           | N + S     | Weekday  | 6-19-13 | 1 pm - 4 pm    |
|                             | N + S     | Weekday  | 6-20-13 | 8 am - 9 pm    |
|                             | N + S     | Weekend  | 6-22-13 | 8 am - 9 pm    |
| Sumas/Abbotsford-Huntingdon | N         | Weekday  | 6-25-13 | 6 am - 9 pm    |
|                             | S         | Weekday  | 6-26-13 | 6 am - 9 pm    |
|                             | S         | Weekend  | 7-6-13  | 7:30 am - 9 pm |
|                             | N         | Weekend  | 7-7-13  | 7:30 am - 9 pm |
| Boundary-Bay/Point Roberts  | N + S     | Weekday  | 6-27-13 | 8 am - 9 pm    |
|                             | N + S     | Friday   | 6-28-13 | 8 am - 9 pm    |
|                             | N + S     | Weekend  | 6-29-13 | 8 am - 9 pm    |
| Peace Arch                  | N         | Weekday  | 7-10-13 | 6 am - 9 pm    |
|                             | S         | Weekend  | 7-11-13 | 6 am - 9 pm    |
|                             | N         | Friday   | 7-12-13 | 7:30 am - 9 pm |
|                             | S         | Weekend  | 7-13-13 | 7:30 am - 9 pm |
|                             | N         | Weekend  | 7-14-13 | 7:30 am - 9 pm |
| Pacific Highway             | S         | Weekday  | 7-17-13 | 6 am - 9 pm    |
|                             | N         | Weekend  | 7-18-13 | 6 am - 9 pm    |
|                             | N         | Friday   | 7-19-13 | 7:30 am - 9 pm |
|                             | S         | Weekend  | 7-20-13 | 7:30 am - 9 pm |
|                             | S         | Weekend  | 7-21-13 | 7:30 am - 9 pm |

## Winter

| Port                        | Direction | Day type | Date    | Hours             |
|-----------------------------|-----------|----------|---------|-------------------|
| Pacific Highway             | N         | Weekday  | 2-4-14  | 7:30 am - 5:30 pm |
|                             | N         | Weekend  | 2-9-14  | 7:30 am - 5:30 pm |
|                             | S         | Weekday  | 2-11-14 | 7:45 am - 5:30 pm |
|                             | S         | Weekend  | 2-15-14 | 7:30 am - 2:30 pm |
|                             | S         | Weekend  | 2-22-14 | 1:30 pm - 5 pm    |
| Lynden/Aldergrove           | S         | Weekday  | 2-6-14  | 8 am - 5:30 pm    |
|                             | S         | Weekend  | 2-8-14  | 8 am - 5:30 pm    |
| Boundary Bay/Point Roberts  | N + S     | Weekday  | 2-13-14 | 8 am - 5 pm       |
|                             | N + S     | Weekend  | 2-22-14 | 8 am - 12 pm      |
| Peace Arch                  | S         | Weekend  | 2-16-14 | 8 am - 1 pm       |
|                             | S         | Weekday  | 2-20-14 | 7:30 am - 5:30 pm |
|                             | N         | Weekday  | 2-27-14 | 7:30 am - 5:15 pm |
|                             | N         | Weekend  | 3-1-14  | 8 am - 5 pm       |
|                             | S         | Weekend  | 3-9-14  | 1:30 pm - 6:30 pm |
| Sumas/Abbotsford-Huntingdon | N         | Weekday  | 2-25-14 | 8 am - 5:15 pm    |
|                             | N         | Weekend  | 3-8-14  | 7:30 am - 5 pm    |

In winter, only one direction of traffic was surveyed at the Lynden-Aldergrove and Sumas – Abbotsford-Huntingdon ports of entry.



## **Surveying in the field**

### **Survey stations**

Surveys were conducted in designated roadside areas at each of the five Cascade Gateway ports. Exact locations were determined through a combination of port visits, aerial photography, and coordination with CBP and CBSA. Surveys were administered to vehicles either as they waited in line-ups before inspection booths or immediately following the vehicles' exit from booths.

Most surveys occurred post-inspection. Survey stations were set up off to the side of a port's exit-way, where cars could be easily directed by the student crew into a survey station.

Pre-inspection surveying occurred when a sufficient queue of cars formed up to the inspection booths and surveyors could safely walk alongside cars and give "rolling" surveys.



Surveyors conducting "rolling" surveys in the queue northbound (NB) at Lynden-Aldergrove.



Surveyors conducting post-inspection surveys off of the main exit arterial NB at Lynden-Aldergrove.

More data was collected from surveying pre-inspection, since respondents seemed to be less likely to refuse the survey when they were already waiting in line. Post-inspection surveying is the more reliable method for sustained data collection, as queue lengths tend to fluctuate throughout any given day.

### **Field equipment**

The equipment necessary to designate survey stations and direct cars into them was loaned from the City of Bellingham and included stop/slow paddles for flagging, hard hats, *flagger ahead* and *be prepared to stop* signs, sand bags for weights, and cones.

### **A day in the field**

Typically one full day of data collection was split into two shifts: a morning crew worked early morning to afternoon and an afternoon crew took over till sundown. Shift crews were made up of 4-6 student research assistants plus one supervisor. Shift sizes generally corresponded to the size of a given port and whether or not both directions of traffic were being surveyed.

Crews met in Bellingham and carpoled to each port, with one vehicle assigned for transporting the crew and one for equipment.



## **The survey crew**

### **Training**

Survey crew members were classroom and field training before the start of the survey. Training included safety and hazards awareness, an overview of the site diagrams, memorization of the questionnaire, and practice with survey-conducting and the branching aspects of the questionnaire. Crew members memorized a multipart introduction that was used to explain to survey respondents the purpose of the survey and to let them know that it is voluntary. Crew and supervisors were also trained as traffic control flaggers, a prerequisite for flagging traffic into the survey stations.

### **Day-to-day supplies**

In the field, members of the survey crew wore reflective safety vests and matching hats. Flaggers, who used the stop/slow paddles to wave cars into the survey stations, wore hard hats as required by Washington state law. Appropriate clothing was recommended for sustained standing in variable weather conditions. A lunch and adequate hydration for a full 6-8 hour shift was also recommended.



Douglas-Peace Arch during winter surveys.

### **Make-up dates**

When weather conditions negatively affected surveying or the flow of traffic, the crew stopped work until conditions improved or an entire day of surveying was canceled to be made up at a later date.

### **Answer categorization**

Many questions, such as those about trip purpose, are open ended – simply asking the traveler what the purpose is rather than giving them a list of categories to choose from. Student surveyors then selected which category best matched respondents' answers.

### **The database**

At the end of each survey day data was uploaded from the tablets to an Access database, adding it to the raw data from previous survey dates. The database was backed-up often in multiple locations. Not until after the last day of survey-conducting was completed for the season was the database manipulated in any way. Crew supervisors, having the most continuous first-hand experience in the field with the data, continued on staff to clean and prepare the database during this latter half of the project.

## Sample size & refusal rates

Through the course of the summer survey wave, students approached 12,848 vehicles. 10,755 drivers agreed to participate in the survey – an 85 percent acceptance rate.

In the winter, the acceptance rate was 80 percent, with 3,325 drivers agreeing to be surveyed out of 4,136 total.

After cleaning out erroneous records, the total number of useable records collected during summer and winter at each port is as follows:

| Port                         | Summer 2013    |                            | Winter 2014    |                            |
|------------------------------|----------------|----------------------------|----------------|----------------------------|
|                              | Sample Records | Expanded to traffic volume | Sample Records | Expanded to traffic volume |
| Boundary Bay-Point Roberts   | 1,871          | 17,835                     | 463            | 4,555                      |
| Douglas-Peace Arch           | 2,929          | 34,233                     | 1,034          | 17,100                     |
| Pacific Highway              | 3,059          | 30,773                     | 986            | 10,525                     |
| Aldergrove-Lynden            | 1,228          | 7,814                      | 428            | 3,141                      |
| Abbotsford-Huntingdon--Sumas | 1,482          | 12,363                     | 376            | 2,646                      |
| Total records                | 10,569         | 103,018                    | 3,287          | 37,967                     |

## Expansion factors

Because the number of surveys that could be collected for a given period of time was relatively fixed and the volume of traffic moving through the ports varied significantly by time and location, sample records were weighted with expansion factors. For example, if 30 records were gathered during an hour in which 400 vehicles transited the port, each of the 30 records would be given a weight (and expansion factor) of 13.3. (30 cars x 13.3 = 400 cars) Hourly traffic totals were provided by U.S. CBP and CBSA for each port.

## Time period

The survey records collected represent border traffic during approximate 12-hour days during the summer and approximate 9-hour days during the winter (less in winter due to decreased daylight). Morning hour coverage varies by location and day of week. Data can be queried to look more specifically at traffic characteristics in those time frames.

## Data cleanup and preparation for analysis

Upon completion of each season of data collection, staff prepared the raw data for analysis. This entailed:

- Logic tests to identify unusable records or records with reparable errors
- Blending of location data fields
- Standardization of time and travel frequency/duration values
- Creation of additional geographic categories
- Creation of lookup tables

## Findings

The remainder of this report will focus on some of the findings that are possible through querying the data. Analyses about cross-border trips are grouped under six themes:

- Geography: residences and trip ends
- Trip purpose
- Duration and frequency of trips
- Traveler tenure and attitude trends
- Border wait time systems
- Opportunities for increasing use of RFID and NEXUS

Each thematic section will include a review of the Cascade Gateway as a whole (Peace Arch-Douglas, Pacific Highway, Aldergrove-Lynden, and Abbotsford-Huntingdon-Sumas), and include port specific summaries as well, including Boundary Bay-Point Roberts.

## Geography

### Traveler residence

Surveyed drivers' reported country of residence is summarized below by port of entry:

| Port                         | Country of Residence |       |       |             |       |       |
|------------------------------|----------------------|-------|-------|-------------|-------|-------|
|                              | Summer 2013          |       |       | Winter 2014 |       |       |
|                              | Canada               | USA   | Other | Canada      | USA   | Other |
| Boundary Bay-Point Roberts   | 91.0%                | 8.8%  | 0.2%  | 89.9%       | 10.1% |       |
| Douglas-Peace Arch           | 77.7%                | 22.0% | 0.3%  | 73.1%       | 26.9% | 0.04% |
| Pacific Highway              | 83.0%                | 16.7% | 0.3%  | 89.0%       | 10.8% | 0.2%  |
| Aldergrove-Lynden            | 86.6%                | 13.3% | 0.2%  | 89.3%       | 10.7% |       |
| Abbotsford-Huntingdon--Sumas | 88.3%                | 11.6% | 0.1%  | 87.6%       | 12.4% |       |
| Average                      | 85.3%                | 14.5% | 0.2%  | 85.8%       | 14.2% | 0.1%  |

These data correspond well with monthly data on country of residence collected by CBSA and compiled by Statistics Canada. The mid-70 percent Canadian residents observed at Peace Arch is lower than others and lower than the corresponding data from Statistics Canada. A couple of possible reasons for this are 1) especially in the summer, more U.S. residents are traveling for recreation and vacation and Peace Arch-Douglas is the default route for these relatively infrequent cross-border travelers and 2) surveying ended at 9:00 PM and 5:30 PM in summer and winter, respectively, which may have missed later northbound traffic which is predominately Canadian residents.

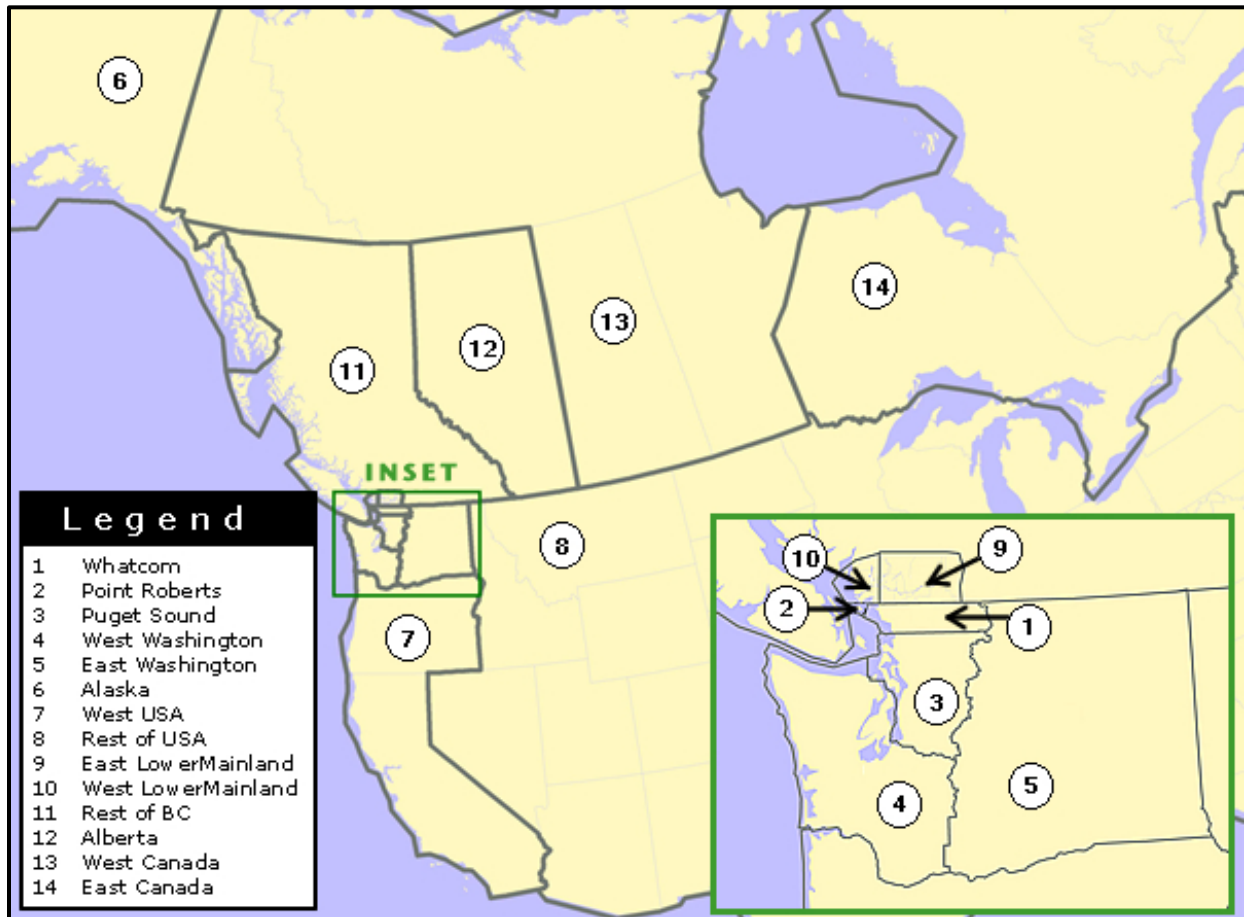
## Cross-border trip ends – origin and destination

For the IMTC passenger vehicle survey, the notion of a “cross-border trip” is not as rigid a definition of “trip” as typically used in traffic modeling. While basic origin and destination data was collected here, our purpose was not to obtain a trip diary from our respondents that would account for intermediary stops. Our interests were in the *primary* destination a traveler had when they left their residence and headed across the border.

For the origin and destination summaries that follow, we started with respondents’ residence (at a larger geographic zone level), designated that as the origin of the cross-border trip, and then assigned the opposite end of the trip (whether initially reported as the trip origin or destination) as the *cross-border* destination.

The “superzone” geography used is the same that was established for the IMTC passenger vehicle survey in 2000 shown on the map below.

### Superzones designation map



Note that Lower Mainland British Columbia is broken up into East and West. The Eastern Lower Mainland is defined here as being the geographical area east of Highway 15 (Pacific Highway), with West being west of Highway 15.

**Residence – Destination matrix: Cascade Gateway Ports (PA, PH, LA, SH), Summer 2013**  
(Excludes Boundary Bay – Point Roberts).

| Crossing at<br>PA, PH, LA, SH<br>Summer 2013 | DESTINATION       |               |                |               |               |              |                |                |                     |                     |               |              |                   |                   | Total          |
|--|-------------------|---------------|----------------|---------------|---------------|--------------|----------------|----------------|---------------------|---------------------|---------------|--------------|-------------------|-------------------|----------------|
|  | Whatcom<br>County | Pt<br>Roberts | Puget<br>Sound | Western<br>WA | Eastern<br>WA | Alaska       | Western<br>USA | Rest of<br>USA | E Lower<br>Mainland | W Lower<br>Mainland | Rest of<br>BC | Alberta      | Western<br>Canada | Eastern<br>Canada |                |
| Whatcom County                               |                   | 0.13%         |                |               |               |              |                |                | 1.61%               | 3.44%               | 0.26%         | 0.03%        |                   |                   | 5.46%          |
| Pt Roberts                                   | 0.01%             | 0.09%         |                |               |               |              |                |                |                     |                     |               |              |                   |                   | 0.10%          |
| Puget Sound                                  |                   | 0.01%         | 0.03%          |               |               |              |                |                | 0.47%               | 3.97%               | 1.10%         | 0.02%        |                   |                   | 5.59%          |
| Western WA                                   |                   |               |                |               |               | 0.00%        |                | 0.07%          | 0.54%               | 0.36%               | 0.01%         | 0.01%        |                   |                   | 1.00%          |
| Eastern WA                                   |                   |               |                |               |               | 0.01%        |                | 0.06%          | 0.25%               | 0.16%               |               |              |                   |                   | 0.48%          |
| Alaska                                       |                   |               |                |               |               |              |                |                |                     |                     | 0.01%         |              |                   |                   | 0.01%          |
| Western USA                                  |                   | 0.01%         |                |               |               | 0.04%        | 0.01%          | 0.05%          | 1.44%               | 0.47%               |               | 0.02%        |                   |                   | 2.05%          |
| Rest of USA                                  |                   |               |                |               |               | 0.02%        |                | 0.12%          | 1.69%               | 0.34%               |               |              |                   |                   | 2.17%          |
| E Lower Mainland                             | 17.71%            | 0.01%         | 2.48%          | 0.14%         | 0.16%         |              | 0.17%          | 0.13%          |                     |                     |               |              |                   |                   | 20.81%         |
| W Lower Mainland                             | 46.04%            |               | 10.81%         | 0.69%         | 0.31%         |              | 1.55%          | 0.36%          |                     |                     |               |              |                   |                   | 59.76%         |
| Rest of BC                                   | 0.78%             |               | 0.70%          | 0.04%         | 0.04%         |              | 0.14%          | 0.06%          |                     |                     |               |              |                   |                   | 1.76%          |
| Alberta                                      | 0.22%             |               | 0.18%          | 0.06%         |               |              | 0.09%          | 0.01%          |                     |                     |               |              |                   |                   | 0.55%          |
| Western Canada                               | 0.05%             |               | 0.03%          | 0.01%         |               |              |                | 0.01%          |                     |                     |               |              |                   |                   | 0.10%          |
| Eastern Canada                               | 0.08%             |               | 0.07%          |               |               |              | 0.00%          | 0.01%          |                     |                     |               |              |                   |                   | 0.17%          |
| <b>Total</b>                                 | <b>64.89%</b>     | <b>0.25%</b>  | <b>14.30%</b>  | <b>0.94%</b>  | <b>0.51%</b>  | <b>0.07%</b> | <b>1.96%</b>   | <b>0.59%</b>   | <b>2.37%</b>        | <b>11.33%</b>       | <b>2.70%</b>  | <b>0.06%</b> | <b>0.04%</b>      |                   | <b>100.00%</b> |

Each box in the matrix represents one specific cross-border trip -- one residence-origin and one destination -- as a percentage of all recorded trips through the designated ports.

For example, it was found that in summer 2013, 46.04 percent of trips passing through the four Cascade Gateway ports of entry were specifically from Western Lower Mainland residents traveling to Whatcom County.

**Residence – Destination matrix: Cascade Gateway Ports (PA, PH, LA, SH), Winter 2014**  
(Excludes Boundary Bay – Point Roberts).

| Crossing at<br>PA, PH, LA, SH<br>Winter 2014 | DESTINATION       |               |                |               |               |        |                |                |                     |                     |               |              |                   |                   | Total          |
|--|-------------------|---------------|----------------|---------------|---------------|--------|----------------|----------------|---------------------|---------------------|---------------|--------------|-------------------|-------------------|----------------|
|  | Whatcom<br>County | Pt<br>Roberts | Puget<br>Sound | Western<br>WA | Eastern<br>WA | Alaska | Western<br>USA | Rest of<br>USA | E Lower<br>Mainland | W Lower<br>Mainland | Rest of<br>BC | Alberta      | Western<br>Canada | Eastern<br>Canada |                |
| Whatcom County                               | 0.02%             | 0.30%         |                |               |               |        |                |                | 1.47%               | 4.32%               | 0.60%         | 0.01%        | 0.04%             |                   | 6.78%          |
| Pt Roberts                                   | 0.21%             | 0.28%         | 0.04%          |               |               |        |                |                |                     |                     |               |              |                   |                   | 0.53%          |
| Puget Sound                                  |                   |               |                |               |               |        |                |                | 0.42%               | 5.70%               | 1.94%         | 0.02%        |                   | 0.02%             | 8.10%          |
| Western WA                                   |                   |               |                |               |               |        |                |                | 0.07%               | 1.18%               | 0.16%         |              |                   |                   | 1.40%          |
| Eastern WA                                   |                   |               |                |               |               |        |                |                | 0.02%               | 0.27%               | 0.08%         |              |                   |                   | 0.37%          |
| Alaska                                       |                   |               |                |               |               |        |                |                |                     |                     |               |              |                   |                   |                |
| Western USA                                  |                   |               |                |               |               |        |                |                |                     | 0.65%               | 0.13%         |              |                   |                   | 0.78%          |
| Rest of USA                                  |                   |               |                |               |               |        |                |                |                     | 0.67%               | 0.26%         |              |                   |                   | 0.93%          |
| E Lower Mainland                             | 14.11%            |               | 1.63%          | 0.18%         | 0.03%         |        | 0.17%          | 0.21%          |                     |                     |               |              |                   |                   | 16.33%         |
| W Lower Mainland                             | 52.08%            |               | 8.11%          | 0.65%         | 0.15%         |        | 0.70%          | 0.44%          |                     |                     |               |              |                   |                   | 62.13%         |
| Rest of BC                                   | 0.83%             |               | 0.64%          |               |               |        | 0.27%          | 0.26%          |                     |                     |               |              |                   |                   | 2.01%          |
| Alberta                                      | 0.15%             |               | 0.11%          |               |               |        |                |                |                     |                     |               |              |                   |                   | 0.26%          |
| Western Canada                               | 0.11%             |               | 0.09%          |               |               |        |                |                |                     |                     |               |              |                   |                   | 0.20%          |
| Eastern Canada                               | 0.11%             |               | 0.06%          |               |               |        |                | 0.02%          |                     |                     |               |              |                   |                   | 0.19%          |
| <b>Total</b>                                 | <b>67.62%</b>     | <b>0.58%</b>  | <b>10.68%</b>  | <b>0.84%</b>  | <b>0.17%</b>  |        | <b>1.14%</b>   | <b>0.93%</b>   | <b>1.98%</b>        | <b>12.79%</b>       | <b>3.17%</b>  | <b>0.03%</b> | <b>0.04%</b>      | <b>0.02%</b>      | <b>100.00%</b> |

The matrix includes the totals for all trips beginning from a specific origin-residence and all trips ending at a specific destination.

For example, 62.13 percent of all cross-border trips in winter 2014 were made by residents of Western Lower Mainland and 67.62 percent of all trips were destined for Whatcom County, WA.

## Residence – Destination matrix: Peace Arch - Douglas, Summer 2013

| Crossing at<br>Peace Arch -<br>Douglas<br>Summer 2013 | DESTINATION       |               |                |               |               |        |                |                |                     |                     |               |         |                   |                   | Total          |
|---|-------------------|---------------|----------------|---------------|---------------|--------|----------------|----------------|---------------------|---------------------|---------------|---------|-------------------|-------------------|----------------|
|   | Whatcom<br>County | Pt<br>Roberts | Puget<br>Sound | Western<br>WA | Eastern<br>WA | Alaska | Western<br>USA | Rest of<br>USA | E Lower<br>Mainland | W Lower<br>Mainland | Rest of<br>BC | Alberta | Western<br>Canada | Eastern<br>Canada |                |
| Whatcom County  |                   | 0.20%         |                |               |               |        |                |                | 0.06%               | 4.73%               | 0.21%         |         |                   |                   | 5.21%          |
| Pt Roberts  | 0.02%             | 0.17%         |                |               |               |        |                |                |                     |                     |               |         |                   |                   | 0.20%          |
| Puget Sound   |                   | 0.03%         |                |               |               |        |                |                |                     | 5.62%               | 1.15%         |         |                   |                   | 6.80%          |
| Western WA  |                   |               |                |               |               |        |                |                |                     | 0.72%               | 0.54%         |         |                   |                   | 1.26%          |
| Eastern WA  |                   |               |                |               |               |        |                |                |                     | 0.41%               | 0.17%         |         |                   |                   | 0.58%          |
| Alaska  |                   |               |                |               |               |        |                |                |                     |                     |               |         |                   |                   |                |
| Western USA   |                   | 0.03%         |                |               |               |        |                |                |                     | 2.24%               | 0.43%         |         |                   |                   | 2.70%          |
| Rest of USA   |                   |               |                |               |               |        |                | 0.04%          | 3.04%               | 0.40%               |               |         |                   |                   | 3.48%          |
| E Lower Mainland                                      | 1.47%             |               | 0.80%          | 0.02%         | 0.03%         |        | 0.02%          | 0.03%          |                     |                     |               |         |                   |                   | 2.37%          |
| W Lower Mainland                                      | 58.03%            |               | 14.17%         | 0.86%         | 0.12%         |        | 1.79%          | 0.41%          |                     |                     |               |         |                   |                   | 75.38%         |
| Rest of BC  | 0.42%             |               | 0.79%          | 0.05%         |               |        | 0.09%          | 0.11%          |                     |                     |               |         |                   |                   | 1.46%          |
| Alberta   | 0.18%             |               | 0.12%          | 0.02%         |               |        | 0.09%          |                |                     |                     |               |         |                   |                   | 0.42%          |
| Western Canada  | 0.03%             |               | 0.03%          |               |               |        |                |                |                     |                     |               |         |                   |                   | 0.06%          |
| Eastern Canada  | 0.02%             |               | 0.06%          |               |               |        |                |                |                     |                     |               |         |                   |                   | 0.08%          |
| <b>Total</b>  | <b>60.19%</b>     | <b>0.44%</b>  | <b>15.96%</b>  | <b>0.95%</b>  | <b>0.15%</b>  |        | <b>1.99%</b>   | <b>0.55%</b>   | <b>0.10%</b>        | <b>16.77%</b>       | <b>2.90%</b>  |         |                   |                   | <b>100.00%</b> |

### Summary observation:

- Over half of all trips in summer at Peace Arch – Douglas (58 percent) are residents of Western Lower Mainland traveling to destinations in Whatcom County.

## Residence – Destination matrix: Peace Arch - Douglas, Winter 2014

| Crossing at<br>Peace Arch -<br>Douglas<br>Winter 2014 | DESTINATION       |               |                |               |               |        |                |                |                     |                     |               |         |                   |                   | Total          |
|---|-------------------|---------------|----------------|---------------|---------------|--------|----------------|----------------|---------------------|---------------------|---------------|---------|-------------------|-------------------|----------------|
|   | Whatcom<br>County | Pt<br>Roberts | Puget<br>Sound | Western<br>WA | Eastern<br>WA | Alaska | Western<br>USA | Rest of<br>USA | E Lower<br>Mainland | W Lower<br>Mainland | Rest of<br>BC | Alberta | Western<br>Canada | Eastern<br>Canada |                |
| Whatcom County  |                   | 0.47%         |                |               |               |        |                |                | 0.09%               | 6.10%               | 0.73%         |         |                   |                   | 7.38%          |
| Pt Roberts  | 0.41%             | 0.46%         | 0.07%          |               |               |        |                |                |                     |                     |               |         |                   |                   | 0.94%          |
| Puget Sound   |                   |               |                |               |               |        |                |                | 0.14%               | 9.61%               | 2.96%         |         |                   |                   | 12.71%         |
| Western WA  |                   |               |                |               |               |        |                |                | 0.10%               | 2.12%               | 0.10%         |         |                   |                   | 2.32%          |
| Eastern WA  |                   |               |                |               |               |        |                |                |                     | 0.41%               | 0.15%         |         |                   |                   | 0.56%          |
| Alaska  |                   |               |                |               |               |        |                |                |                     |                     |               |         |                   |                   |                |
| Western USA   |                   |               |                |               |               |        |                |                |                     | 1.07%               | 0.14%         |         |                   |                   | 1.21%          |
| Rest of USA   |                   |               |                |               |               |        |                |                |                     | 1.29%               | 0.31%         |         |                   |                   | 1.60%          |
| E Lower Mainland                                      | 1.09%             |               | 0.35%          |               |               |        |                |                |                     |                     |               |         |                   |                   | 1.44%          |
| W Lower Mainland                                      | 58.89%            |               | 7.53%          | 0.62%         | 0.11%         |        | 0.91%          | 0.35%          |                     |                     |               |         |                   |                   | 68.40%         |
| Rest of BC  | 0.98%             |               | 0.64%          |               |               |        | 0.46%          | 0.47%          |                     |                     |               |         |                   |                   | 2.55%          |
| Alberta   | 0.13%             |               | 0.22%          |               |               |        |                |                |                     |                     |               |         |                   |                   | 0.34%          |
| Western Canada  | 0.16%             |               | 0.12%          |               |               |        |                |                |                     |                     |               |         |                   |                   | 0.28%          |
| Eastern Canada  | 0.14%             |               | 0.12%          |               |               |        |                |                |                     |                     |               |         |                   |                   | 0.26%          |
| <b>Total</b>  | <b>61.80%</b>     | <b>0.92%</b>  | <b>9.04%</b>   | <b>0.62%</b>  | <b>0.11%</b>  |        | <b>1.37%</b>   | <b>0.82%</b>   | <b>0.33%</b>        | <b>20.61%</b>       | <b>4.39%</b>  |         |                   |                   | <b>100.00%</b> |

### Summary observation:

- Travelers destined for the Puget Sound area are down from 16 percent in the summer to 9 percent in the winter, attributed mainly by a decreased portion of Western Lower Mainland residents traveling there through Peace Arch – Douglas.

## Residence – Destination matrix: Pacific Highway, Summer 2013

| Crossing at Pacific Highway Summer 2013 | DESTINATION    |              |               |              |              |              |              |              |                  |                  |              |              |                |                | Total          |
|---|----------------|--------------|---------------|--------------|--------------|--------------|--------------|--------------|------------------|------------------|--------------|--------------|----------------|----------------|----------------|
|   | Whatcom County | Pt Roberts   | Puget Sound   | Western WA   | Eastern WA   | Alaska       | Western USA  | Rest of USA  | E Lower Mainland | W Lower Mainland | Rest of BC   | Alberta      | Western Canada | Eastern Canada |                |
| Whatcom County                          |                | 0.13%        |               |              |              |              |              |              | 0.72%            | 3.44%            | 0.31%        | 0.06%        |                |                | 4.67%          |
| Pt Roberts                              |                | 0.04%        |               |              |              |              |              |              |                  |                  |              |              |                |                | 0.04%          |
| Puget Sound                             |                |              |               |              |              |              |              |              | 0.39%            | 4.34%            | 1.51%        |              |                |                | 6.24%          |
| Western WA                              |                |              |               |              |              |              |              |              | 0.14%            | 0.68%            | 0.31%        |              |                |                | 1.13%          |
| Eastern WA                              |                |              |               |              |              | 0.02%        |              |              | 0.06%            | 0.24%            | 0.19%        |              |                |                | 0.51%          |
| Alaska                                  |                |              |               |              |              |              |              |              |                  |                  |              |              |                |                |                |
| Western USA                             |                |              |               |              |              |              |              |              | 0.09%            | 1.39%            | 0.63%        |              |                |                | 2.11%          |
| Rest of USA                             |                |              |               |              |              | 0.04%        |              |              | 0.20%            | 1.18%            | 0.42%        |              |                |                | 1.84%          |
| E Lower Mainland                        | 9.31%          |              | 1.91%         | 0.02%        | 0.26%        |              | 0.08%        | 0.09%        |                  |                  |              |              |                |                | 11.66%         |
| W Lower Mainland                        | 52.29%         |              | 12.90%        | 0.71%        | 0.62%        |              | 2.13%        | 0.49%        |                  |                  |              |              |                |                | 69.13%         |
| Rest of BC                              | 0.81%          |              | 0.72%         | 0.03%        | 0.11%        |              | 0.18%        |              |                  |                  |              |              |                |                | 1.85%          |
| Alberta                                 | 0.31%          |              | 0.16%         |              |              |              | 0.14%        | 0.03%        |                  |                  |              |              |                |                | 0.63%          |
| Western Canada                          | 0.01%          |              | 0.02%         |              |              |              |              |              |                  |                  |              |              |                |                | 0.03%          |
| Eastern Canada                          | 0.03%          |              | 0.11%         |              |              |              |              | 0.03%        |                  |                  |              |              |                |                | 0.16%          |
| <b>Total</b>                            | <b>62.74%</b>  | <b>0.17%</b> | <b>15.82%</b> | <b>0.75%</b> | <b>0.99%</b> | <b>0.07%</b> | <b>2.53%</b> | <b>0.63%</b> | <b>1.60%</b>     | <b>11.26%</b>    | <b>3.38%</b> | <b>0.06%</b> |                |                | <b>100.00%</b> |

### Summary observation:

- Pacific Highway has a very similar residence-destination distribution to Peace Arch-Douglas in summer, the main difference being a higher portion of Eastern Lower Mainland residents in the mix (11.7 percent vs. 2.4 percent at Peace Arch-Douglas).

## Residence – Destination matrix: Pacific Highway, Winter 2014

| Crossing at Pacific Highway Winter 2014 | DESTINATION    |              |               |              |              |        |              |              |                  |                  |              |         |                |                | Total          |
|---|----------------|--------------|---------------|--------------|--------------|--------|--------------|--------------|------------------|------------------|--------------|---------|----------------|----------------|----------------|
|   | Whatcom County | Pt Roberts   | Puget Sound   | Western WA   | Eastern WA   | Alaska | Western USA  | Rest of USA  | E Lower Mainland | W Lower Mainland | Rest of BC   | Alberta | Western Canada | Eastern Canada |                |
| Whatcom County                          | 0.07%          | 0.21%        |               |              |              |        |              |              | 1.31%            | 2.89%            | 0.48%        |         | 0.09%          |                | 5.04%          |
| Pt Roberts                              |                | 0.16%        |               |              |              |        |              |              |                  |                  |              |         |                |                | 0.16%          |
| Puget Sound                             |                |              |               |              |              |        |              |              | 0.21%            | 2.35%            | 1.16%        |         |                |                | 3.72%          |
| Western WA                              |                |              |               |              |              |        |              |              |                  | 0.31%            | 0.28%        |         |                |                | 0.59%          |
| Eastern WA                              |                |              |               |              |              |        |              |              |                  | 0.21%            |              |         |                |                | 0.21%          |
| Alaska                                  |                |              |               |              |              |        |              |              |                  |                  |              |         |                |                |                |
| Western USA                             |                |              |               |              |              |        |              |              |                  | 0.26%            | 0.12%        |         |                |                | 0.38%          |
| Rest of USA                             |                |              |               |              |              |        |              |              |                  | 0.05%            | 0.32%        |         |                |                | 0.37%          |
| E Lower Mainland                        | 12.30%         |              | 2.41%         | 0.35%        |              |        | 0.14%        | 0.09%        |                  |                  |              |         |                |                | 15.30%         |
| W Lower Mainland                        | 60.04%         |              | 10.16%        | 0.77%        | 0.21%        |        | 0.59%        | 0.68%        |                  |                  |              |         |                |                | 72.44%         |
| Rest of BC                              | 0.61%          |              | 0.80%         |              |              |        |              |              |                  |                  |              |         |                |                | 1.41%          |
| Alberta                                 | 0.15%          |              |               |              |              |        |              |              |                  |                  |              |         |                |                | 0.15%          |
| Western Canada                          |                |              | 0.10%         |              |              |        |              |              |                  |                  |              |         |                |                | 0.10%          |
| Eastern Canada                          | 0.12%          |              |               |              |              |        |              |              |                  |                  |              |         |                |                | 0.12%          |
| <b>Total</b>                            | <b>73.30%</b>  | <b>0.36%</b> | <b>13.47%</b> | <b>1.12%</b> | <b>0.21%</b> |        | <b>0.73%</b> | <b>0.77%</b> | <b>1.52%</b>     | <b>6.07%</b>     | <b>2.36%</b> |         | <b>0.09%</b>   |                | <b>100.00%</b> |

### Summary observation:

- In winter Pacific Highway saw a higher proportion of travelers destined for Whatcom County as compared to summer. The same is true for Pacific Highway in winter compared to both seasons at Peace Arch - Douglas (consistently over 10 percent).



## Residence – Destination matrix: Aldergrove-Lynden, Summer 2013

| Crossing at<br>Aldergrove - Lynden<br>Summer 2013 | DESTINATION       |               |                |               |               |        |                |                |                     |                     |               |         |                   |                   | Total |
|---|-------------------|---------------|----------------|---------------|---------------|--------|----------------|----------------|---------------------|---------------------|---------------|---------|-------------------|-------------------|-------|
|   | Whatcom<br>County | Pt<br>Roberts | Puget<br>Sound | Western<br>WA | Eastern<br>WA | Alaska | Western<br>USA | Rest of<br>USA | E Lower<br>Mainland | W Lower<br>Mainland | Rest of<br>BC | Alberta | Western<br>Canada | Eastern<br>Canada |       |
| Whatcom County                                    |                   |               |                |               |               |        |                | 4.77%          | 2.49%               | 0.28%               |               |         |                   | 7.54%             |       |
| Pt Roberts  |                   | 0.07%         |                |               |               |        |                |                |                     |                     |               |         |                   | 0.07%             |       |
| Puget Sound                                       |                   |               | 0.27%          |               |               |        |                | 1.45%          | 1.35%               | 0.21%               |               |         |                   | 3.28%             |       |
| Western WA  |                   |               |                |               |               |        |                | 0.08%          |                     |                     |               | 0.05%   |                   | 0.13%             |       |
| Eastern WA  |                   |               |                |               |               |        |                | 0.17%          |                     |                     |               |         |                   | 0.17%             |       |
| Alaska  |                   |               |                |               |               |        |                |                |                     | 0.12%               |               |         |                   | 0.12%             |       |
| Western USA                                       |                   |               |                |               |               |        | 0.12%          |                | 0.25%               | 0.22%               |               |         |                   | 0.59%             |       |
| Rest of USA                                       |                   |               |                |               |               |        |                | 0.26%          | 0.19%               |                     |               |         |                   | 0.45%             |       |
| E Lower Mainland                                  | 48.39%            | 0.08%         | 7.33%          | 0.31%         | 0.09%         |        | 0.27%          | 0.48%          |                     |                     |               |         |                   | 56.95%            |       |
| W Lower Mainland                                  | 23.93%            |               | 4.10%          | 0.19%         | 0.37%         |        | 0.24%          | 0.22%          |                     |                     |               |         |                   | 29.06%            |       |
| Rest of BC  | 0.49%             |               | 0.23%          | 0.05%         |               |        | 0.13%          |                |                     |                     |               |         |                   | 0.90%             |       |
| Alberta   | 0.14%             |               | 0.28%          | 0.09%         |               |        |                |                |                     |                     |               |         |                   | 0.51%             |       |
| Western Canada                                    | 0.07%             |               | 0.05%          |               |               |        |                |                |                     |                     |               |         |                   | 0.12%             |       |
| Eastern Canada                                    | 0.07%             |               |                |               |               |        | 0.05%          |                |                     |                     |               |         |                   | 0.12%             |       |
| <b>Total</b>                                      | <b>73.10%</b>     | <b>0.15%</b>  | <b>12.26%</b>  | <b>0.64%</b>  | <b>0.46%</b>  |        | <b>0.79%</b>   | <b>0.70%</b>   | <b>6.74%</b>        | <b>4.29%</b>        | <b>0.83%</b>  |         | <b>0.05%</b>      | <b>100.00%</b>    |       |

### Summary observation:

- As expected, this port serves a higher share of trips by residents of Eastern Lower Mainland than the western ports.

## Residence – Destination matrix: Aldergrove-Lynden, Winter 2014

| Crossing at<br>Aldergrove - Lynden<br>Winter 2014 | DESTINATION       |               |                |               |               |        |                |                |                     |                     |               |              |                   |                   | Total |
|---|-------------------|---------------|----------------|---------------|---------------|--------|----------------|----------------|---------------------|---------------------|---------------|--------------|-------------------|-------------------|-------|
|   | Whatcom<br>County | Pt<br>Roberts | Puget<br>Sound | Western<br>WA | Eastern<br>WA | Alaska | Western<br>USA | Rest of<br>USA | E Lower<br>Mainland | W Lower<br>Mainland | Rest of<br>BC | Alberta      | Western<br>Canada | Eastern<br>Canada |       |
| Whatcom County                                    |                   |               |                |               |               |        |                | 4.87%          | 1.94%               | 0.36%               |               | 0.16%        |                   | 7.33%             |       |
| Pt Roberts  |                   |               |                |               |               |        |                |                |                     |                     |               |              |                   |                   |       |
| Puget Sound                                       |                   |               |                |               |               |        |                | 1.62%          | 0.53%               | 0.51%               | 0.20%         |              |                   | 2.87%             |       |
| Western WA  |                   |               |                |               |               |        |                | 0.19%          |                     |                     |               |              |                   | 0.19%             |       |
| Eastern WA  |                   |               |                |               |               |        |                |                |                     |                     |               |              |                   |                   |       |
| Alaska  |                   |               |                |               |               |        |                |                |                     |                     |               |              |                   |                   |       |
| Western USA                                       |                   |               |                |               |               |        |                |                |                     |                     |               |              |                   |                   |       |
| Rest of USA                                       |                   |               |                |               |               |        |                |                |                     |                     |               |              |                   |                   |       |
| E Lower Mainland                                  | 41.26%            |               | 5.84%          | 0.16%         |               |        | 0.45%          | 0.97%          |                     |                     |               |              |                   | 48.68%            |       |
| W Lower Mainland                                  | 26.03%            |               | 10.93%         | 0.97%         | 0.25%         |        | 0.53%          | 0.47%          |                     |                     |               |              |                   | 39.18%            |       |
| Rest of BC  | 0.40%             |               | 0.42%          |               |               |        |                | 0.26%          |                     |                     |               |              |                   | 1.08%             |       |
| Alberta   | 0.42%             |               |                |               |               |        |                |                |                     |                     |               |              |                   | 0.42%             |       |
| Western Canada                                    | 0.26%             |               |                |               |               |        |                |                |                     |                     |               |              |                   | 0.26%             |       |
| Eastern Canada                                    |                   |               |                |               |               |        |                |                |                     |                     |               |              |                   |                   |       |
| <b>Total</b>                                      | <b>68.37%</b>     |               | <b>17.19%</b>  | <b>1.12%</b>  | <b>0.25%</b>  |        | <b>0.98%</b>   | <b>1.70%</b>   | <b>6.69%</b>        | <b>2.48%</b>        | <b>0.87%</b>  | <b>0.20%</b> | <b>0.16%</b>      | <b>100.00%</b>    |       |

### Summary observation:

- Perhaps due to its straighter connection to U.S. Interstate 5, or because of recent improvements to WA State Route 539, Aldergrove-Lynden serves a higher percentage of cross-border trips destined for Puget Sound than Abbotsford-Huntingdon – Sumas does.

## Residence – Destination matrix: Abbotsford-Huntingdon—Sumas, Summer 2013

| Crossing at<br>Abb.-Hntgdn. -<br>Sumas<br>Summer 2013 | DESTINATION       |               |                |               |               |              |                |                |                     |                     |               |              |                   |                   | Total          |
|---|-------------------|---------------|----------------|---------------|---------------|--------------|----------------|----------------|---------------------|---------------------|---------------|--------------|-------------------|-------------------|----------------|
|   | Whatcom<br>County | Pt<br>Roberts | Puget<br>Sound | Western<br>WA | Eastern<br>WA | Alaska       | Western<br>USA | Rest of<br>USA | E Lower<br>Mainland | W Lower<br>Mainland | Rest of<br>BC | Alberta      | Western<br>Canada | Eastern<br>Canada |                |
| Whatcom County  |                   |               |                |               |               |              |                |                | 6.27%               | 0.40%               | 0.23%         | 0.05%        |                   |                   | 6.94%          |
| Pt Roberts  |                   |               |                |               |               |              |                |                |                     |                     |               |              |                   |                   |                |
| Puget Sound   |                   |               | 0.04%          |               |               |              |                |                | 1.36%               |                     | 0.44%         | 0.13%        |                   |                   | 1.96%          |
| Western WA  |                   |               |                |               |               | 0.03%        |                |                | 0.06%               |                     | 0.24%         | 0.08%        | 0.06%             |                   | 0.47%          |
| Eastern WA  |                   |               |                |               |               |              |                |                | 0.15%               |                     | 0.14%         |              |                   |                   | 0.29%          |
| Alaska  |                   |               |                |               |               |              |                |                |                     |                     |               |              |                   |                   |                |
| Western USA   |                   |               |                |               |               | 0.27%        |                |                | 0.13%               | 0.11%               | 0.31%         |              | 0.17%             |                   | 0.99%          |
| Rest of USA   |                   |               |                |               |               |              |                |                | 0.04%               | 0.17%               | 0.19%         |              |                   |                   | 0.40%          |
| E Lower Mainland                                      | 65.76%            |               | 5.70%          | 0.72%         | 0.28%         |              | 0.77%          | 0.35%          |                     |                     |               |              |                   |                   | 73.58%         |
| W Lower Mainland                                      | 10.07%            |               | 0.18%          | 0.47%         |               |              | 0.19%          |                |                     |                     |               |              |                   |                   | 10.90%         |
| Rest of BC  | 1.90%             |               | 0.66%          | 0.05%         |               |              | 0.18%          | 0.13%          |                     |                     |               |              |                   |                   | 2.91%          |
| Alberta   | 0.13%             |               | 0.31%          | 0.30%         |               |              |                |                |                     |                     |               |              |                   |                   | 0.74%          |
| Western Canada  | 0.20%             |               | 0.06%          | 0.05%         |               |              |                | 0.05%          |                     |                     |               |              |                   |                   | 0.36%          |
| Eastern Canada  | 0.39%             |               | 0.08%          |               |               |              |                |                |                     |                     |               |              |                   |                   | 0.47%          |
| <b>Total</b>  | <b>78.45%</b>     |               | <b>7.03%</b>   | <b>1.58%</b>  | <b>0.28%</b>  | <b>0.30%</b> | <b>1.13%</b>   | <b>0.53%</b>   | <b>8.00%</b>        | <b>0.68%</b>        | <b>1.54%</b>  | <b>0.26%</b> | <b>0.22%</b>      |                   | <b>100.00%</b> |

### Summary observation:

- Abbotsford-Huntingdon—Sumas serves predominately Eastern Lower Mainland residents (74 percent of traffic). This port also sees the smallest share of travelers heading to the Puget Sound region.

## Residence – Destination matrix: Abbotsford-Huntingdon—Sumas, Winter 2014

| Crossing at<br>Abb.-Hntgdn. -<br>Sumas<br>Winter 2014 | DESTINATION       |               |                |               |               |        |                |                |                     |                     |               |              |                   |                   | Total          |
|---|-------------------|---------------|----------------|---------------|---------------|--------|----------------|----------------|---------------------|---------------------|---------------|--------------|-------------------|-------------------|----------------|
|   | Whatcom<br>County | Pt<br>Roberts | Puget<br>Sound | Western<br>WA | Eastern<br>WA | Alaska | Western<br>USA | Rest of<br>USA | E Lower<br>Mainland | W Lower<br>Mainland | Rest of<br>BC | Alberta      | Western<br>Canada | Eastern<br>Canada |                |
| Whatcom County  |                   |               |                |               |               |        |                |                | 7.08%               | 1.52%               | 0.59%         | 0.15%        |                   |                   | 9.34%          |
| Pt Roberts  |                   |               |                |               |               |        |                |                |                     |                     |               |              |                   |                   |                |
| Puget Sound   |                   |               |                |               |               |        |                |                | 1.67%               | 0.29%               | 0.21%         |              |                   | 0.27%             | 2.43%          |
| Western WA  |                   |               |                |               |               |        |                |                |                     |                     | 0.22%         |              |                   |                   | 0.22%          |
| Eastern WA  |                   |               |                |               |               |        |                |                | 0.22%               |                     |               |              |                   |                   | 0.22%          |
| Alaska  |                   |               |                |               |               |        |                |                |                     |                     |               |              |                   |                   |                |
| Western USA   |                   |               |                |               |               |        |                |                |                     | 0.29%               | 0.29%         |              |                   |                   | 0.57%          |
| Rest of USA   |                   |               |                |               |               |        |                |                |                     |                     |               |              |                   |                   |                |
| E Lower Mainland                                      | 73.77%            |               | 1.66%          | 0.73%         | 0.34%         |        | 1.01%          | 1.21%          |                     |                     |               |              |                   |                   | 78.71%         |
| W Lower Mainland                                      | 6.25%             |               |                |               |               |        |                |                |                     |                     |               |              |                   |                   | 6.25%          |
| Rest of BC  | 1.28%             |               | 0.28%          |               |               |        | 0.47%          |                |                     |                     |               |              |                   |                   | 2.04%          |
| Alberta   |                   |               |                |               |               |        |                |                |                     |                     |               |              |                   |                   |                |
| Western Canada  |                   |               |                |               |               |        |                |                |                     |                     |               |              |                   |                   |                |
| Eastern Canada  |                   |               |                |               |               |        |                | 0.22%          |                     |                     |               |              |                   |                   | 0.22%          |
| <b>Total</b>  | <b>81.30%</b>     |               | <b>1.94%</b>   | <b>0.73%</b>  | <b>0.34%</b>  |        | <b>1.48%</b>   | <b>1.43%</b>   | <b>8.97%</b>        | <b>2.09%</b>        | <b>1.30%</b>  | <b>0.15%</b> |                   | <b>0.27%</b>      | <b>100.00%</b> |

### Summary observation:

- Trips ending at Puget Sound destinations are an even smaller portion in winter at Abbotsford-Huntingdon—Sumas.

## Residence – Destination matrix: Boundary Bay-Point Roberts, Summer 2013

| Crossing at<br>Boundary Bay - Pt<br>Roberts<br>Summer 2013 | DESTINATION       |               |                |               |               |        |                |                |                     |                     |               |         |                   |                   | Total          |
|--|-------------------|---------------|----------------|---------------|---------------|--------|----------------|----------------|---------------------|---------------------|---------------|---------|-------------------|-------------------|----------------|
|  | Whatcom<br>County | Pt<br>Roberts | Puget<br>Sound | Western<br>WA | Eastern<br>WA | Alaska | Western<br>USA | Rest of<br>USA | E Lower<br>Mainland | W Lower<br>Mainland | Rest of<br>BC | Alberta | Western<br>Canada | Eastern<br>Canada |                |
| Whatcom County   | 0.98%             |               |                |               |               |        |                |                | 0.07%               |                     |               |         |                   |                   | 1.04%          |
| Pt Roberts   | 0.50%             |               | 0.02%          |               |               |        |                |                | 0.19%               | 5.12%               | 0.22%         |         |                   |                   | 6.05%          |
| Puget Sound  |                   |               | 0.23%          |               |               |        |                |                |                     |                     |               |         |                   |                   | 0.23%          |
| Western WA   |                   |               |                |               |               |        |                |                |                     |                     |               |         |                   |                   |                |
| Eastern WA   |                   |               |                |               |               |        |                |                |                     |                     |               |         |                   |                   |                |
| Alaska   |                   |               |                |               |               |        |                |                |                     |                     |               |         |                   |                   |                |
| Western USA  |                   |               |                |               |               |        | 0.10%          |                |                     |                     |               |         |                   |                   | 0.10%          |
| Rest of USA  |                   |               |                |               |               |        |                |                | 0.13%               |                     |               |         |                   |                   | 0.13%          |
| E Lower Mainland   |                   | 2.39%         |                |               |               |        |                |                |                     |                     |               |         |                   |                   | 2.39%          |
| W Lower Mainland   |                   | 87.39%        |                |               |               |        |                |                |                     |                     |               |         |                   |                   | 87.39%         |
| Rest of BC   |                   | 1.52%         |                |               |               |        |                |                |                     |                     |               |         |                   |                   | 1.52%          |
| Alberta  |                   | 0.97%         |                |               |               |        |                |                |                     |                     |               |         |                   |                   | 0.97%          |
| Western Canada   |                   | 0.02%         |                |               |               |        |                |                |                     |                     |               |         |                   |                   | 0.02%          |
| Eastern Canada   |                   | 0.15%         |                |               |               |        |                |                |                     |                     |               |         |                   |                   | 0.15%          |
| <b>Total</b>   | <b>1.48%</b>      | <b>92.45%</b> | <b>0.25%</b>   |               |               |        | <b>0.10%</b>   |                | <b>0.19%</b>        | <b>5.32%</b>        | <b>0.22%</b>  |         |                   |                   | <b>100.00%</b> |

### Summary observation:

- Only 6 percent of cross-border trips at Boundary Bay-Point Roberts are made by residents of Point Roberts.

## Residence – Destination matrix: Boundary Bay-Point Roberts, Winter 2014

| Crossing at<br>Boundary Bay - Pt<br>Roberts<br>Winter 2014 | DESTINATION       |               |                |               |               |        |                |                |                     |                     |               |         |                   |                   | Total          |
|--|-------------------|---------------|----------------|---------------|---------------|--------|----------------|----------------|---------------------|---------------------|---------------|---------|-------------------|-------------------|----------------|
|  | Whatcom<br>County | Pt<br>Roberts | Puget<br>Sound | Western<br>WA | Eastern<br>WA | Alaska | Western<br>USA | Rest of<br>USA | E Lower<br>Mainland | W Lower<br>Mainland | Rest of<br>BC | Alberta | Western<br>Canada | Eastern<br>Canada |                |
| Whatcom County   |                   |               |                |               |               |        |                |                |                     |                     |               |         |                   |                   |                |
| Pt Roberts   | 1.38%             |               |                |               |               |        |                |                | 0.44%               | 6.61%               | 0.14%         |         |                   |                   | 8.57%          |
| Puget Sound  |                   |               |                |               |               |        |                |                |                     | 0.22%               |               |         |                   |                   | 0.22%          |
| Western WA   |                   |               |                |               |               |        |                |                |                     |                     |               |         |                   |                   |                |
| Eastern WA   |                   |               |                |               |               |        |                |                |                     |                     |               |         |                   |                   |                |
| Alaska   |                   |               |                |               |               |        |                |                |                     |                     |               |         |                   |                   |                |
| Western USA  |                   |               |                |               |               |        |                |                |                     |                     |               |         |                   |                   |                |
| Rest of USA  |                   |               |                |               |               |        |                |                | 0.10%               |                     |               |         |                   |                   | 0.10%          |
| E Lower Mainland   |                   | 2.20%         |                |               |               |        |                |                |                     |                     |               |         |                   |                   | 2.20%          |
| W Lower Mainland   |                   | 88.30%        |                |               |               |        |                |                |                     |                     |               |         |                   |                   | 88.30%         |
| Rest of BC   |                   | 0.37%         |                |               |               |        |                |                |                     |                     |               |         |                   |                   | 0.37%          |
| Alberta  |                   | 0.24%         |                |               |               |        |                |                |                     |                     |               |         |                   |                   | 0.24%          |
| Western Canada   |                   |               |                |               |               |        |                |                |                     |                     |               |         |                   |                   |                |
| Eastern Canada   |                   |               |                |               |               |        |                |                |                     |                     |               |         |                   |                   |                |
| <b>Total</b>   | <b>1.38%</b>      | <b>91.11%</b> |                |               |               |        |                |                | <b>0.44%</b>        | <b>6.93%</b>        | <b>0.14%</b>  |         |                   |                   | <b>100.00%</b> |

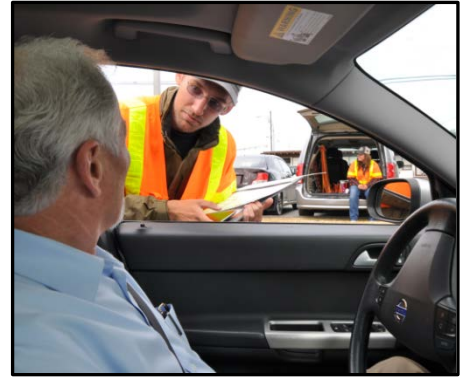
### Summary observation:

- Short, local trips are the vast majority of travel through this port; 88 percent originating in West Lower Mainland.

## Trip purpose

All interviewed motorists were asked to give the primary purpose for their cross-border trip – the main purpose for leaving their place of residence and traveling across the Canada-U.S. border. Responses given were coded with one of 12 pre-defined purposes.

Some notes on the list of purposes: While some *recreation* and *vacation* activities overlap, *vacation* was used for multi-day trips and *recreation* was used for same-day activities. The key difference between *work commute* and *business or work related* is that *work commute* is between home and a permanent work site. Lastly, while it is widely accepted that most travelers to the U.S. purchase gas before returning to Canada, *gas* was listed as the purpose of travel if the traveler said it was the main reason for crossing.



Another willing respondent at Pacific Highway.

The following table breaks out trip purpose by percentage of all Cascade Gateway ports combined (excluding Boundary Bay – Point Roberts).

### Trip purpose for all four Cascade Gateway ports

| Purpose                   | Percent |        | Change |
|---------------------------|---------|--------|--------|
|                           | Summer  | Winter |        |
| Shopping                  | 30.5%   | 32.7%  | 2.2%   |
| Recreation                | 20.6%   | 18.5%  | -2.1%  |
| Gas                       | 14.3%   | 16.9%  | 2.6%   |
| Family Visit              | 7.9%    | 9.9%   | 2.0%   |
| Vacation                  | 15.6%   | 7.2%   | -8.4%  |
| Mail                      | 4.3%    | 6.8%   | 2.5%   |
| Business or work related  | 3.2%    | 4.1%   | 0.9%   |
| Work commute              | 1.1%    | 2.1%   | 1.0%   |
| Airport                   | 1.6%    | 0.9%   | -0.7%  |
| Doctor/dentist/healthcare | 0.2%    | 0.4%   | 0.2%   |
| Church                    | 0.4%    | 0.3%   | -0.1%  |
| School                    | 0.1%    | 0.2%   | 0.1%   |

#### Summary observations:

- As one would expect, the share of vacationing travelers was significantly higher in the summer than in the winter.
- Higher portions of other trip purposes in winter may be attributed to the lack of winter vacationers.

How does trip purpose vary by standard vs. NEXUS travelers, by U.S. and Canadian residents, by U.S. and Canadian residents, and by crossing location? The tables below summarize trip purpose for these specific categories of cross-border travelers.

**Trip purpose by crossing, by country of residence, by inspection-booth type – Cascade Gateway ports (Summer 2013)**

| Summer 2013<br>Trip Purpose | Peace Arch - Douglas |       |       |       | Pacific Highway |       |       |       | Aldergrove - Lynden |       | Abbotsford-Huntingdon–Sumas |       |       |       |
|-----------------------------|----------------------|-------|-------|-------|-----------------|-------|-------|-------|---------------------|-------|-----------------------------|-------|-------|-------|
|                             | Canada               |       | USA   |       | Canada          |       | USA   |       | Canada              | USA   | Canada                      |       | USA   |       |
|                             | Std.                 | NEXUS | Std.  | NEXUS | Std.            | NEXUS | Std.  | NEXUS |                     |       | Std.                        | NEXUS | Std.  | NEXUS |
| Shopping                    | 42.6%                | 32.8% | 3.2%  | 3.9%  | 40.3%           | 27.4% | 1.8%  | 2.7%  | 54.2%               | 6.5%  | 28.0%                       | 18.1% | 2.7%  | 1.4%  |
| Recreation                  | 18.7%                | 19.7% | 24.8% | 24.7% | 19.4%           | 16.7% | 29.6% | 17.1% | 20.2%               | 31.7% | 21.5%                       | 24.3% | 28.4% | 16.0% |
| Gas                         | 11.6%                | 26.2% |       |       | 10.0%           | 26.3% |       |       | 10.0%               |       | 20.7%                       | 26.3% |       |       |
| Family Visit                | 6.5%                 | 4.0%  | 12.9% | 25.6% | 5.1%            | 6.0%  | 20.2% | 31.0% | 5.3%                | 20.7% | 5.1%                        | 3.4%  | 35.9% | 25.7% |
| Vacation                    | 12.0%                | 9.0%  | 48.0% | 8.1%  | 13.5%           | 12.2% | 34.5% | 16.2% | 5.4%                | 17.9% | 13.8%                       | 13.8% | 23.6% | 7.1%  |
| Mail                        | 3.0%                 | 4.9%  |       | 1.1%  | 6.2%            | 6.3%  |       | 1.5%  | 0.9%                |       | 8.1%                        | 10.6% |       |       |
| Business or work related    | 2.6%                 | 1.5%  | 7.4%  | 24.5% | 2.4%            | 1.3%  | 9.2%  | 9.6%  | 1.7%                | 10.3% | 1.5%                        | 0.8%  | 3.1%  | 6.6%  |
| Work commute                | 0.2%                 | 0.4%  | 1.2%  | 7.4%  | 0.2%            | 1.3%  | 2.2%  | 12.8% | 0.9%                | 7.4%  | 0.3%                        | 1.8%  | 4.4%  | 26.4% |
| Airport                     | 2.5%                 | 1.0%  | 1.7%  |       | 2.6%            | 2.1%  | 0.8%  |       | 0.9%                | 1.5%  | 0.7%                        | 0.2%  |       | 1.8%  |
| Doctor/dentist/healthcare   | 0.1%                 | 0.2%  | 0.1%  | 2.6%  | 0.1%            | 0.1%  | 0.4%  | 2.8%  |                     |       | 0.1%                        |       |       |       |
| Church                      | 0.1%                 | 0.4%  | 0.5%  | 1.0%  | 0.1%            | 0.2%  | 1.3%  | 5.8%  | 0.1%                | 1.7%  | 0.1%                        | 0.7%  | 1.8%  | 14.8% |
| School                      |                      |       | 0.2%  | 1.1%  | 0.1%            | 0.1%  | 0.5%  |       | 0.2%                | 2.4%  |                             |       |       |       |

Summary observations:

- U.S. and Canadian residents have a very different distribution of trip purposes – Canadians traveling more for shopping and buying gas and U.S. residents traveling more for recreation and vacation.
- The NEXUS trusted traveler program also shows a different distribution of trip purposes – notably the much higher proportion of gas trips than for standard passenger vehicle traffic.

**Trip purpose by crossing, by country of residence, by inspection-booth type – Cascade Gateway ports (Winter 2014)**

| Winter 2014<br>Trip Purpose | Peace Arch - Douglas |       |       |       | Pacific Highway |       |       |       | Aldergrove - Lynden |       | Abbotsford-Huntingdon–Sumas |       |       |       |
|-----------------------------|----------------------|-------|-------|-------|-----------------|-------|-------|-------|---------------------|-------|-----------------------------|-------|-------|-------|
|                             | Canada               |       | USA   |       | Canada          |       | USA   |       | Canada              | USA   | Canada                      |       | USA   |       |
|                             | Std.                 | NEXUS | Std.  | NEXUS | Std.            | NEXUS | Std.  | NEXUS |                     |       | Std.                        | NEXUS | Std.  | NEXUS |
| Shopping                    | 50.7%                | 32.9% | 3.7%  | 4.8%  | 43.3%           | 34.8% | 5.2%  | 6.4%  | 51.9%               | 3.6%  | 30.8%                       | 18.9% | 13.1% | 4.3%  |
| Recreation                  | 10.3%                | 14.8% | 37.4% | 22.9% | 16.5%           | 14.3% | 43.1% | 20.7% | 26.0%               | 28.9% | 9.9%                        | 15.0% | 28.5% | 30.1% |
| Gas                         | 9.3%                 | 33.5% |       |       | 8.4%            | 27.1% |       |       | 5.1%                |       | 25.6%                       | 34.6% |       |       |
| Family Visit                | 6.1%                 | 4.7%  | 27.4% | 37.3% | 8.1%            | 5.8%  | 14.0% | 28.0% | 6.6%                | 15.2% | 3.5%                        | 0.6%  | 35.5% | 32.6% |
| Vacation                    | 10.8%                | 4.0%  | 17.4% | 5.6%  | 8.4%            | 2.6%  | 20.0% | 3.4%  | 6.3%                | 4.7%  | 6.1%                        | 3.5%  | 12.5% |       |
| Mail                        | 5.1%                 | 7.1%  | 0.3%  |       | 7.7%            | 11.4% |       |       | 1.7%                |       | 20.6%                       | 21.8% |       |       |
| Business or work related    | 4.6%                 | 1.5%  | 10.1% | 6.9%  | 6.0%            | 2.1%  | 9.7%  | 7.8%  | 1.4%                | 12.5% | 2.2%                        | 4.0%  | 2.1%  | 16.9% |
| Work commute                | 0.4%                 | 0.6%  | 1.4%  | 20.2% | 0.3%            | 0.7%  | 4.6%  | 23.7% | 0.8%                | 19.4% |                             | 0.8%  | 5.3%  | 10.2% |
| Airport                     | 2.9%                 | 0.3%  | 1.1%  |       | 1.0%            | 0.7%  |       |       | 0.4%                | 0.2%  | 1.2%                        |       |       |       |
| Doctor/dentist/healthcare   |                      | 0.6%  | 0.3%  | 2.4%  |                 |       |       | 1.1%  |                     | 4.8%  |                             | 0.8%  |       | 5.8%  |
| Church                      |                      |       | 0.4%  |       |                 | 0.5%  | 3.4%  | 5.8%  |                     |       |                             |       | 3.0%  |       |
| School                      |                      |       | 0.5%  |       | 0.3%            |       |       | 2.6%  |                     | 8.4%  |                             |       |       |       |

Summary observation:

- Winter saw a large decrease in the portion of U.S. residents going on cross-border vacations as compared to summer, while the change of seasons affected the share of vacationing Canadians to a much lesser degree.

**Trip purpose by country of residence, by inspection-booth type –  
Boundary Bay–Point Roberts (Summer 2013)**

| Summer 2013<br>Trip Purpose | Boundary Bay - Point Roberts |       |       |       |
|-----------------------------|------------------------------|-------|-------|-------|
|                             | Canada                       |       | USA   |       |
|                             | Std.                         | NEXUS | Std.  | NEXUS |
| Shopping                    | 6.4%                         | 9.7%  | 7.2%  | 17.1% |
| Recreation                  | 16.3%                        | 19.6% | 31.6% | 34.6% |
| Gas                         | 39.8%                        | 39.9% |       | 0.3%  |
| Family Visit                | 2.3%                         | 1.8%  | 3.2%  | 6.6%  |
| Vacation                    | 7.6%                         | 15.0% | 8.2%  | 2.7%  |
| Mail                        | 26.1%                        | 13.0% |       | 1.2%  |
| Business or work related    | 1.3%                         | 0.4%  | 30.8% | 12.9% |
| Work commute                | 0.2%                         | 0.5%  | 16.8% | 12.9% |
| Airport                     |                              |       | 1.7%  | 4.4%  |
| Doctor/dentist/healthcare   |                              |       | 0.6%  | 6.3%  |
| Church                      |                              |       |       | 0.5%  |
| School                      |                              | 0.1%  |       | 0.5%  |

Summary observations:

- Boundary Bay-Point Roberts has the highest share of trips made for buying gas - both among Canadian NEXUS card holders and standard lane traffic.
- Mail is a more common trip purpose at Boundary Bay- Point Roberts than any of the Cascade Gateway ports and, behind buying gas, the second most frequent trip purpose. Interestingly, unlike trips for gas, there is a significant difference in the portion of mail trips made via the standard lanes than through the NEXUS lanes.

**Trip purpose by country of residence, by inspection-booth type –  
Boundary Bay–Point Roberts (Winter 2014)**

| Winter 2014<br>Trip Purpose | Boundary Bay - Point Roberts |       |       |       |
|-----------------------------|------------------------------|-------|-------|-------|
|                             | Canada                       |       | USA   |       |
|                             | Std.                         | NEXUS | Std.  | NEXUS |
| Shopping                    | 10.3%                        | 7.8%  | 24.7% | 32.3% |
| Recreation                  | 7.7%                         | 19.1% |       | 27.0% |
| Gas                         | 39.7%                        | 40.4% |       |       |
| Family Visit                | 1.1%                         | 0.3%  | 18.4% | 15.8% |
| Vacation                    | 1.1%                         | 0.8%  | 9.0%  |       |
| Mail                        | 38.2%                        | 31.4% |       |       |
| Business or work related    | 1.9%                         |       |       | 16.7% |
| Work commute                |                              |       |       | 6.4%  |
| Airport                     |                              |       |       |       |
| Doctor/dentist/healthcare   |                              |       | 11.0% |       |
| Church                      |                              |       |       |       |
| School                      |                              | 0.2%  | 36.9% | 1.8%  |

Summary observation:

- 37 percent of non-NEXUS Americans traveling for school seems high compared to NEXUS travelers and the summer figures. Keep in mind though that there generally isn't school in summer and note that the sample size of non-NEXUS American travelers going through Boundary Bay-Point Roberts in winter was low to begin with, especially compared to the American NEXUS traveler sample size (almost 1 to 6).

## Changing distribution of trip purposes

The 2013/14 IMTC Passenger Vehicle Survey is the third such survey conducted. Early efforts were conducted in 2000 and 2007/8. In addition to showing the distribution of trip purposes captured in July, 2013, and February 2014, the chart below shows how these portions have changed since 2000.

In looking at past years, please note that trip-purpose categories have been added. In 2007/8, the previously used *other* category was split into *airport*, *mail*, *church*, *doctor*, and *school*. *Gas* (trips for the primary purpose of buying gas) was added. Previously, when gas was given as the primary purpose by the driver, it was categorized as *shopping*.

### Relative changes in summer trip purpose in the Cascade Gateway.

| Purpose                   | July 2000 | July 2007 | July 2013 | '07-'13 Change |
|---------------------------|-----------|-----------|-----------|----------------|
| Vacation                  | 24%       | 31%       | 15%       | -16%           |
| Recreation                | 46%       | 22%       | 20%       | -2%            |
| Family Visit              |           | 11%       | 7%        | -5%            |
| Shopping                  | 15%       | 19%       | 27%       | 25%            |
| Gas                       |           |           | 18%       |                |
| Business or work related  | 6%        | 6%        | 3%        | -2%            |
| Work commute              | 3%        | 4%        | 1%        | -3%            |
| Airport                   | 4%        | 3%        | 1%        | -1%            |
| Mail                      |           | 2%        | 7%        | 5%             |
| Church                    |           | 1%        | 0%        | -1%            |
| Doctor/dentist/healthcare |           | 1%        | 0%        | 0%             |
| School                    |           | 0%        | 0%        | 0%             |

#### Summary observation:

- The far right column in the table above shows the percentage change from July 2007 to July 2013. The shift in the share of shopping trips is the main story here for both summer and winter seasons. The increase in trips made to pick up mail is also notable.

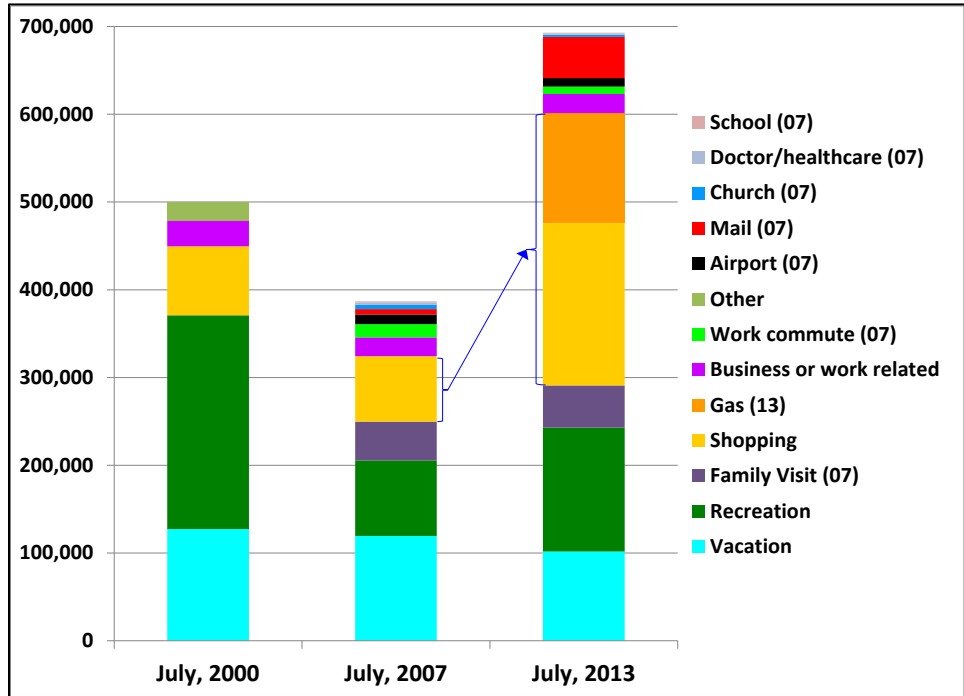
### Relative changes in fall/winter trip purpose in the Cascade Gateway.

| Purpose                   | Nov 2000 | Feb 2008 | Feb 2014 | '08-'14 Change |
|---------------------------|----------|----------|----------|----------------|
| Vacation                  | 9%       | 13.3%    | 7.2%     | -6.2%          |
| Recreation                | 42%      | 27.6%    | 18.5%    | -9.1%          |
| Family Visit              |          | 12.6%    | 9.9%     | -2.7%          |
| Shopping                  | 24%      | 28.1%    | 32.7%    | 21.5%          |
| Gas                       |          |          | 16.9%    |                |
| Business or work related  | 9%       | 7.5%     | 4.1%     | -3.4%          |
| Work commute              | 6%       | 3.1%     | 2.1%     | -1.0%          |
| Airport                   | 10%      | 2.5%     | 0.9%     | -1.5%          |
| Mail                      |          | 2.4%     | 6.8%     | 4.4%           |
| Church                    |          | 0.9%     | 0.3%     | -0.6%          |
| Doctor/dentist/healthcare |          | 0.6%     | 0.4%     | -0.2%          |
| School                    |          | 1.4%     | 0.2%     | -1.2%          |

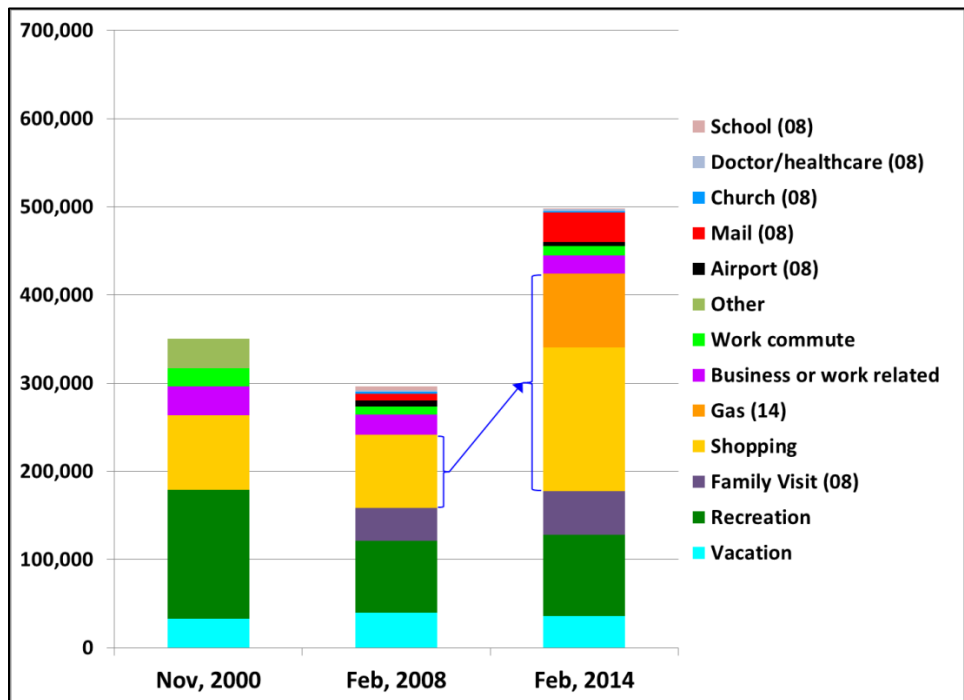


The charts below illustrate these shifts with the share of trip purpose in absolute terms by applying the above percentages to the historic monthly southbound travel volumes through the Cascade Gateway ports-of-entry.

**Absolute volume of different summer trip purposes, July 2000, July 2007, July 2013**



**Absolute volume of different summer trip purposes, Nov 2000, Feb 2008, Feb 2014**





Surveying at Lynden, WA.



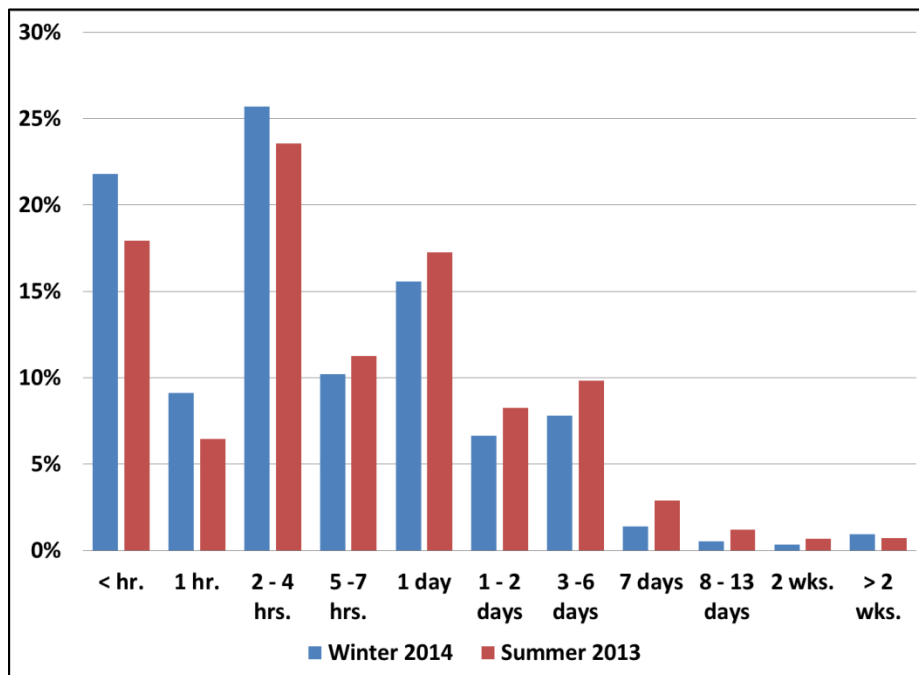
## Trip duration & frequency

The following section summarizes responses to the questions, “How long will you be/have you been across the border?” (duration) and “How often do you cross the border?” (frequency).

### Duration

How long people stay across the border is often broken down between same day travel and multi-day or overnight trips. Respondents in our survey were simply asked to report their trip duration in their own terms. All responses were later converted to days (or fractions of days). The following histograms use 11 bins to illustrate how trip duration is distributed across the population of travelers in summer 2013 and winter 2014.

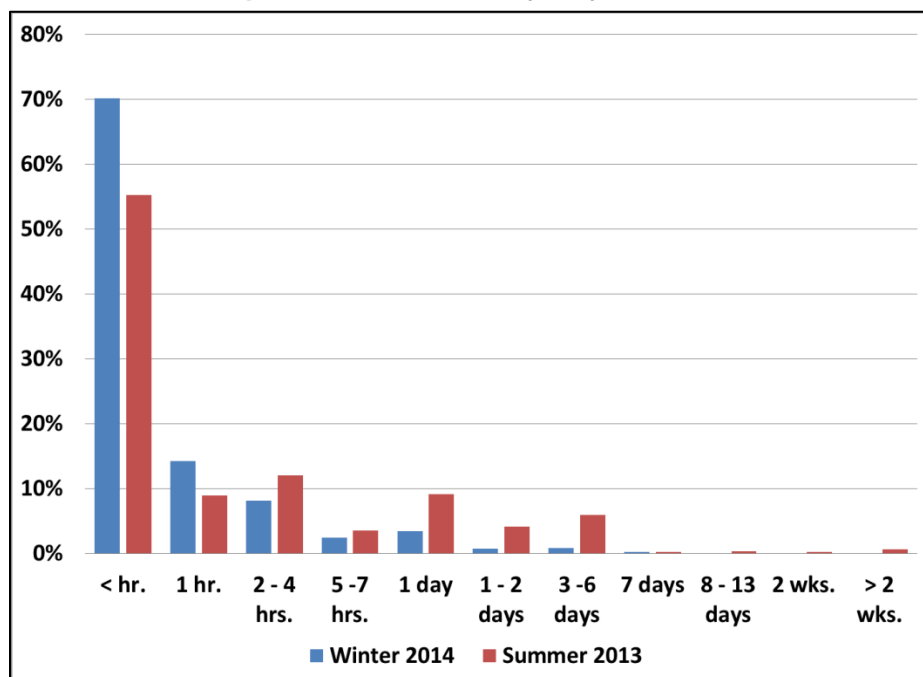
#### Distribution of trip duration: All Cascade Gateway Ports (except Bndry Bay-Pt Roberts)



#### Summary observations:

- Approximately three quarters of all trips are same-day trips.
- One quarter of all trips are for 1 hour or less in summer. It's near one third in winter.
- Winter trips are generally shorter, probably due in part to the larger share of vacation travel in summer.

## Distribution of trip duration: Boundary Bay-Point Roberts



### Summary observations:

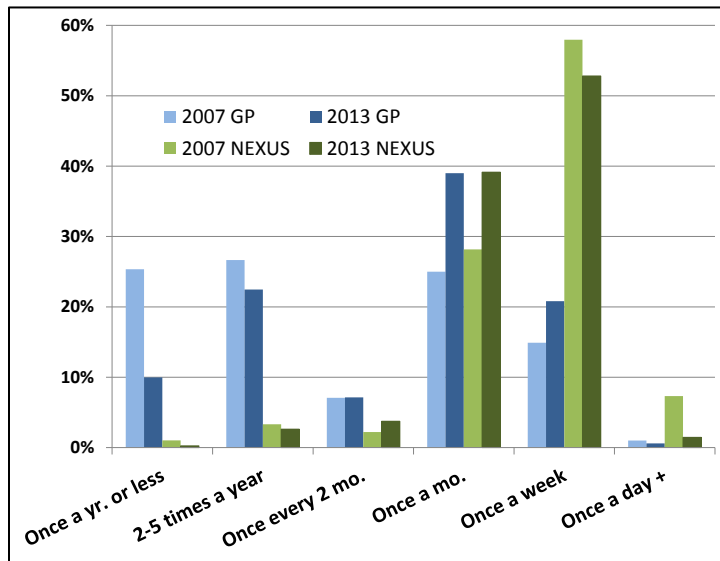
- Boundary Bay-Point Roberts shows a distinctly different trip duration profile which is partially due to the limited geography (you can't go very far south of the border) and the high concentration of transaction-based trip purposes (gas and mail).
- Trips reported as 15 minutes or less made up about 43 percent of Boundary Bay-Point Roberts crossings in summer and in winter. For many of these trips, the largest portion of the overall trip time would be the wait in line at the border itself.

## Frequency

When assessing and forecasting travel demand on a given transportation network, it's important to know both how many individuals are using the network (along with how that population is growing or shrinking) and how frequently that user population is making trips on the system. When we say that 50,000 trips were made across the border last week, we usually don't know if it was 50,000 individuals traveling once or if it was the same 7,000 people traveling every day.

The following charts show the distribution of reported trip frequency separated by standard traffic and NEXUS traffic and also shows how this measure has changed over the last seven years.

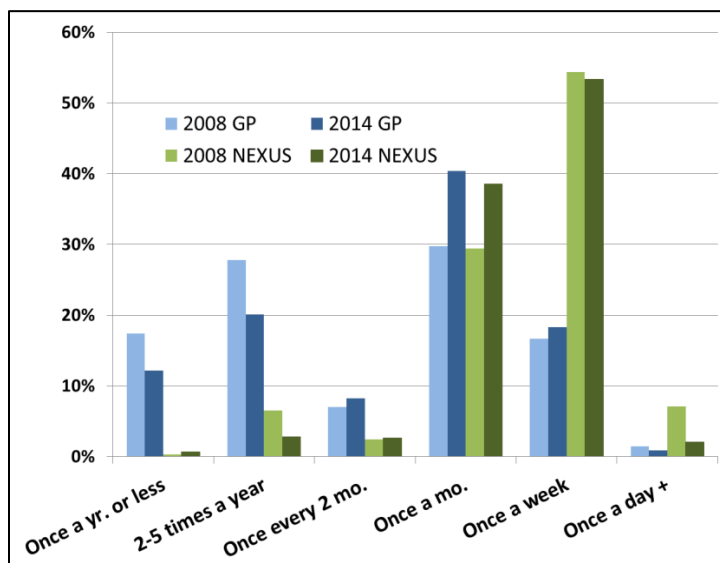
**Distribution of cross-border trip frequency by booth-type (General Purpose & NEXUS) and by survey year (summer 2007 & summer 2013)**



Summary observation:

- From 2007 to 2013, it is evident that a significant source of observed traffic growth is caused by increased trip frequency by system users. 14 percent more general purpose lane drivers and 12 percent more NEXUS drivers reported crossing once a month than did in 2007.

**Distribution of cross-border trip frequency by booth-type (General Purpose & NEXUS) and by survey year (winter 2008 & winter 2014)**



Summary observation:

- Confirming the conventional wisdom, NEXUS card holders are more frequent cross-border travelers. Over half the NEXUS users observed at the border reported traveling at least once a week.

## Traveler tenure and attitude trends

This section of our survey was added this year as a way of examining which aspects of the border affect people’s interest in and willingness to travel across the border. Because answering the questions required respondents to have enough experience to base a comparison on, the first question in the series simply asked about tenure – “How long have you been a regular cross-border traveler in this region?” Responses were entered in four timeframes: *1-5 years*, *6-10 years*, *10-20 years*, and *20+ years*.

### Tenure

The following table summarizes the tenure results. Because *1-5 years* was considered insufficient exposure and experience to inform a perspective on *changing* border conditions, the following table rolls up three of the four timeframes into *6+ years*, providing summary percentages of the share of respondents who were given follow-on questions and those who were not.

#### Cross-border travel tenure by country of residence

| Cross border tenure | Summer             |                | Winter             |                |
|---------------------|--------------------|----------------|--------------------|----------------|
|                     | Canadian Residents | U.S. Residents | Canadian Residents | U.S. Residents |
| 1-5 years           | 48%                | 42%            | 44%                | 43%            |
| 6+ years            | 52%                | 58%            | 56%                | 57%            |
| 6-10 years          | 14%                | 16%            | 17%                | 18%            |
| 10-20 years         | 11%                | 18%            | 11%                | 16%            |
| 20+ years           | 27%                | 24%            | 28%                | 23%            |

### Perceptions of personal travel trends

After screening out drivers who were relatively new to cross-border travel in the region, “tenured travelers” were asked, “How does your *current* amount of cross-border travel compare to your *past* amount of cross-border travel?” The notion of “the past” was left open ended for respondents.

#### Summary of responses: Traveling more, less, or about the same compared to the past.

| Amount         | Summer             |                | Winter             |                |
|----------------|--------------------|----------------|--------------------|----------------|
|                | Canadian residents | U.S. residents | Canadian residents | U.S. residents |
| More           | 47%                | 29%            | 48%                | 29%            |
| Less           | 13%                | 23%            | 13%                | 13%            |
| About the same | 40%                | 48%            | 39%                | 57%            |

#### Summary observations:

- U.S. residents are fairly evenly distributed between change of some kind (*more* or *less*) and no change (*about the same*). Canadian residents are most likely to report they are traveling more with a more definite minority (13 percent both seasons) reporting a reduction in their cross-border travel.
- The only significant change in travel perception between seasons is a decrease of 10 percent from summer to winter of U.S. residents claiming to travel less. Those 10 percent are absorbed into the no-change category, implying a more consistent traveling U.S. population in winter.

## Individuals' reported reasons for changing cross-border travel frequency

Depending on if tenured travelers said they traveled more or that they traveled less than in the past, they then were asked "What are the reasons you believe you cross more / cross less?" Top of mind responses were attributed to a list of pre-defined categories. Multiple reasons could be recorded (though most stuck with a single answer).

### Categories of reasons given by tenured, cross-border travelers that they have been traveling MORE than in the past (summer 2013)

| Summer 2013<br>Travels MORE often<br>because... | POEs, west to east               |                         |                     |                      |                              | All Ports |
|---|----------------------------------|-------------------------|---------------------|----------------------|------------------------------|-----------|
|   | Boundary<br>Bay - Pt.<br>Roberts | Peace Arch<br>- Douglas | Pacific<br>Highw ay | Aldergrove<br>Lynden | Abb.-<br>Hntgdn. --<br>Sumas |           |
| Border Inspection                               | 0.7%                             | 0.3%                    | 0.1%                | 0.3%                 | 0.6%                         | 0.3%      |
| Changed life circumstances                      | 23.8%                            | 26.7%                   | 25.3%               | 31.9%                | 25.3%                        | 26.6%     |
| Retired   | 6.5%                             | 5.3%                    | 6.1%                | 4.5%                 | 5.9%                         | 5.6%      |
| Congestion/Wait Times                           | 1.4%                             | 0.3%                    | 0.7%                | 0.2%                 | 0.7%                         | 0.6%      |
| Duty Exemption                                  | 1.2%                             | 0.3%                    |                     | 0.3%                 |                              | 0.3%      |
| Exchange Rate                                   | 21.0%                            | 11.2%                   | 13.5%               | 10.5%                | 13.1%                        | 13.4%     |
| Gas Prices                                      | 10.0%                            | 13.9%                   | 12.1%               | 16.8%                | 13.3%                        | 13.3%     |
| Shopping related                                | 22.6%                            | 14.0%                   | 16.6%               | 15.1%                | 16.1%                        | 16.5%     |
| Got NEXUS                                       | 1.4%                             | 16.5%                   | 14.6%               | 7.7%                 | 7.0%                         | 10.7%     |
| Lost NEXUS                                      |                                  |                         |                     |                      |                              |           |
| Other   | 11.4%                            | 11.6%                   | 11.0%               | 12.7%                | 17.9%                        | 12.7%     |
| Total   | 100%                             | 100%                    | 100%                | 100%                 | 100%                         | 100%      |

### Categories of reasons given by tenured, cross-border travelers that they have been traveling MORE than in the past (winter 2014)

| Winter 2014<br>Travels MORE often<br>because... | POEs, west to east               |                         |                     |                      |                              | All Ports |
|---|----------------------------------|-------------------------|---------------------|----------------------|------------------------------|-----------|
|   | Boundary<br>Bay - Pt.<br>Roberts | Peace Arch<br>- Douglas | Pacific<br>Highw ay | Aldergrove<br>Lynden | Abb.-<br>Hntgdn. --<br>Sumas |           |
| Border Inspection                               |                                  | 0.3%                    | 0.5%                | 2.6%                 |                              | 0.5%      |
| Changed life circumstances                      | 33.9%                            | 31.0%                   | 29.0%               | 27.0%                | 28.6%                        | 30.3%     |
| Retired   | 7.5%                             | 6.5%                    | 5.4%                | 5.2%                 | 3.3%                         | 6.0%      |
| Congestion/Wait Times                           |                                  | 1.5%                    |                     | 3.6%                 |                              | 0.9%      |
| Duty Exemption                                  |                                  |                         |                     |                      | 2.3%                         | 0.1%      |
| Exchange Rate                                   | 8.0%                             | 8.2%                    | 7.8%                | 15.4%                | 8.0%                         | 8.5%      |
| Gas Prices                                      | 18.3%                            | 7.5%                    | 11.0%               | 12.7%                | 15.0%                        | 10.7%     |
| Shopping Related                                | 14.4%                            | 10.9%                   | 14.9%               | 18.0%                | 24.1%                        | 13.9%     |
| Got NEXUS                                       | 14.3%                            | 30.6%                   | 22.5%               | 0.9%                 | 11.9%                        | 22.9%     |
| Lost NEXUS                                      |                                  |                         |                     |                      |                              |           |
| Other   | 3.5%                             | 3.4%                    | 9.0%                | 14.6%                | 6.7%                         | 6.2%      |
| Total   | 100%                             | 100%                    | 100%                | 100%                 | 100%                         | 100%      |

**Categories of reasons given by tenured, cross-border travelers that they have been traveling LESS than in the past (summer 2013)**

| Summer 2013<br>Travels LESS often<br>because... | POEs, west to east               |                        |                     |                      |                              | All Ports |
|---|----------------------------------|------------------------|---------------------|----------------------|------------------------------|-----------|
|   | Boundary<br>Bay - Pt.<br>Roberts | Peace Arch<br>-Douglas | Pacific<br>Highw ay | Aldergrove<br>Lynden | Abb.-<br>Hntgdn. --<br>Sumas |           |
| Border Inspection                               | 4.9%                             | 3.4%                   | 2.0%                |                      | 3.9%                         | 3.6%      |
| Changed life circumstance                       | 51.4%                            | 47.8%                  | 44.2%               | 34.6%                | 34.6%                        | 43.1%     |
| Retired   | 2.1%                             | 7.9%                   | 3.0%                | 1.5%                 | 8.7%                         | 4.6%      |
| Congestion/Wait Times                           | 19.0%                            | 18.0%                  | 26.4%               | 19.1%                | 17.3%                        | 20.4%     |
| Duty Exemption                                  |                                  |                        |                     |                      |                              |           |
| Exchange Rate                                   | 0.7%                             | 2.8%                   | 2.5%                | 7.4%                 | 3.9%                         | 3.3%      |
| Gas Prices                                      | 1.4%                             | 0.0%                   | 1.0%                | 2.2%                 | 0.0%                         | 0.9%      |
| Shopping related                                | 1.4%                             | 1.1%                   | 1.0%                | 2.9%                 | 1.6%                         | 1.5%      |
| Got NEXUS                                       |                                  |                        |                     |                      |                              |           |
| Lost NEXUS                                      |                                  |                        |                     |                      |                              |           |
| Other   | 19.0%                            | 19.1%                  | 19.8%               | 27.9%                | 29.9%                        | 22.6%     |
| Total   | 100%                             | 100%                   | 100%                | 100%                 | 100%                         | 100%      |

**Categories of reasons given by tenured, cross-border travelers that they have been traveling LESS than in the past (winter 2014)**

| Winter 2014<br>Travels LESS often<br>because... | POEs, west to east               |                         |                     |                      |                              | All Ports |
|---|----------------------------------|-------------------------|---------------------|----------------------|------------------------------|-----------|
|   | Boundary<br>Bay - Pt.<br>Roberts | Peace Arch<br>- Douglas | Pacific<br>Highw ay | Aldergrove<br>Lynden | Abb.-<br>Hntgdn. --<br>Sumas |           |
| Border Inspection                               | 4.8%                             | 3.6%                    | 2.6%                | 2.2%                 |                              | 3.1%      |
| Changed life circumstances                      | 52.7%                            | 55.3%                   | 36.1%               | 43.5%                | 18.2%                        | 46.3%     |
| Retired   | 8.8%                             | 5.6%                    | 3.6%                | 2.1%                 | 18.5%                        | 5.9%      |
| Congestion/Wait Times                           | 14.5%                            | 12.1%                   | 15.9%               | 16.3%                | 27.3%                        | 14.8%     |
| Duty Exemption                                  |                                  |                         |                     |                      |                              |           |
| Exchange Rate                                   | 10.4%                            | 12.9%                   | 12.6%               | 17.0%                | 21.6%                        | 13.3%     |
| Gas Prices                                      | 1.4%                             |                         |                     |                      |                              | 0.2%      |
| Shopping Related                                | 4.1%                             |                         | 3.4%                | 4.6%                 | 8.3%                         | 2.5%      |
| Got NEXUS                                       |                                  |                         |                     |                      |                              |           |
| Lost NEXUS                                      |                                  |                         | 2.4%                |                      |                              | 0.7%      |
| Other   | 3.3%                             | 10.4%                   | 23.4%               | 14.2%                | 6.1%                         | 13.1%     |
| Total   | 100%                             | 100%                    | 100%                | 100%                 | 100%                         | 100%      |



### Summary observations:

- The reasons that people change their travel patterns or level of interest in cross-border travel are diverse. Clearly, it was difficult to anticipate the range of categories given how many responses were most appropriately attributed to *changed life circumstances* and *other*. For those traveling more, the remaining categories did account for over half of respondents (around 60 percent in both summer and winter). But for those traveling less, almost two thirds (65.7 percent in summer and 59.4 percent in winter) were attributed to changed life circumstances and other reasons.
- For those traveling more, the reasons given – *exchange rate, gas prices, shopping related* -- match well with the observed relative growth in certain trip-purpose categories.
- It is interesting to note that acquisition of a NEXUS card is cited as a reason for traveling more, 10.7 percent total in summer and more than double that in winter. Not surprisingly but important – NEXUS isn't only a response to frequent border travel but, as characterized through this set of responses, can be seen to induce higher rates of travel by individuals.
- With regards to traveling less, line-ups at the border seem to be less a concern in winter than in summer. Exchange rates however seem to be a much greater factor in winter.
- Recent studies and media have suggested that the 2012 harmonized increase to duty limits have likely increased interest in cross-border shopping. While that might be true, it was a rare, top of mind response in our sample.
- One of the reasons for including this line of questioning was to gauge the impact of increase border security since 2001, the assumption being that this would present as a reason travelers might give for traveling less than in the past. While it did show up as a measureable perception, it was very low in both summer and in winter – under 4 percent of the sub-set of respondents who were deemed tenured travelers and who say they travel less than in the past.

### **Crossing location choice**

The Cascade Gateway, especially the Peace Arch-Douglas and Pacific Highway crossings, offers travelers options to route trips in response to congestion and incidents. Answers to the question on crossing location choice provide insights about what sources of information are being used and what circumstances are prompting diversions.

The following tables break apart responses to why travelers chose a specific crossing by port, direction, and booth type (standard vs. NEXUS travelers).



Surveying at Douglas, BC.

**Summarized responses to question: Why did you choose this border crossing rather than another border crossing in the area? (Summer 2013)**

| Summer 2013<br>Crossing location<br>choice | Peace Arch - Douglas |       |            |       | Pacific Highway |       |            |       | Aldergrove - Lynden |             | Abbotsford-Huntingdon-Sumas |       |            |       |
|--|----------------------|-------|------------|-------|-----------------|-------|------------|-------|---------------------|-------------|-----------------------------|-------|------------|-------|
|  | Northbound           |       | Southbound |       | Northbound      |       | Southbound |       | North-bound         | South-bound | Northbound                  |       | Southbound |       |
|  | Std.                 | NEXUS | Std.       | NEXUS | Std.            | NEXUS | Std.       | NEXUS |                     |             | Std.                        | NEXUS | Std.       | NEXUS |
| ATIS signs                                 | 8%                   | 1%    | 8%         | 2%    | 16%             | 1%    | 13%        | 2%    | 1%                  | 1%          | 0.4%                        |       | 0.3%       | 1%    |
| Avoid congestion                           | 4%                   | 5%    | 11%        | 7%    | 16%             | 6%    | 14%        | 8%    | 20%                 | 23%         | 5%                          | 3%    | 4%         |       |
| Don't know                                 | 1%                   | 1%    | 3%         | 1%    | 1%              | 1%    | 2%         | 2%    | 1%                  | 0.3%        | 1%                          |       | 1%         | 1%    |
| Duty Free Store                            | 0.1%                 |       | 0.1%       |       | 2%              | 2%    | 0.5%       | 2%    | 0.2%                | 0.2%        |                             |       |            |       |
| Following directions                       | 10%                  | 2%    | 5%         | 1%    | 3%              | 1%    | 6%         | 1%    | 3%                  | 3%          | 2%                          | 1%    | 2%         | 2%    |
| Most direct route                          | 55%                  | 77%   | 52%        | 66%   | 46%             | 73%   | 48%        | 67%   | 57%                 | 57%         | 86%                         | 84%   | 87%        | 88%   |
| NEXUS lane                                 | 0.1%                 | 4%    |            | 10%   | 0.2%            | 5%    |            | 6%    |                     |             | 0.2%                        | 9%    |            | 6%    |
| Preferred route                            | 9%                   | 7%    | 9%         | 8%    | 11%             | 9%    | 11%        | 8%    | 11%                 | 10%         | 3%                          | 2%    | 3%         |       |
| Radio advice                               | 1%                   | 0.1%  | 0.2%       | 0.5%  | 1%              | 0.2%  | 1%         | 0.3%  | 1%                  | 1%          |                             |       | 0.3%       |       |
| Ready Lane                                 | 0.2%                 |       |            |       |                 |       |            |       |                     |             |                             |       |            |       |
| Road came here                             | 9%                   | 1%    | 8%         | 2%    | 1%              | 1%    | 2%         | 1%    | 0.3%                | 0.1%        |                             |       | 0.3%       |       |
| Web page advice                            | 0.3%                 |       | 0.1%       | 0.1%  | 1%              |       | 0.1%       | 1%    | 0.2%                |             | 1%                          |       | 0.1%       |       |
| Other                                      | 3%                   | 1%    | 3%         | 2%    | 2%              | 2%    | 2%         | 2%    | 5%                  | 4%          | 3%                          | 1%    | 3%         | 2%    |

**Summarized responses to question: Why did you choose this border crossing rather than another border crossing in the area? (Winter 2014)**

| Winter 2014<br>Crossing location<br>choice | Peace Arch - Douglas |       |            |       | Pacific Highway |       |            |       | Aldergrove - Lynden |             | Abbotsford-Huntingdon-Sumas |       |            |       |
|--|----------------------|-------|------------|-------|-----------------|-------|------------|-------|---------------------|-------------|-----------------------------|-------|------------|-------|
|  | Northbound           |       | Southbound |       | Northbound      |       | Southbound |       | North-bound         | South-bound | Northbound                  |       | Southbound |       |
|  | Std.                 | NEXUS | Std.       | NEXUS | Std.            | NEXUS | Std.       | NEXUS |                     |             | Std.                        | NEXUS | Std.       | NEXUS |
| ATIS signs                                 | 14%                  | 1%    | 9%         | 1%    | 5%              |       | 15%        | 2%    | NA                  | 7%          | 0.4%                        | 1%    | NA         | NA    |
| Avoid congestion                           | 2%                   | 3%    | 4%         | 4%    | 13%             | 4%    | 16%        | 12%   | NA                  | 30%         | 1%                          |       | NA         | NA    |
| Don't know                                 | 4%                   | 2%    | 3%         | 1%    | 3%              | 1%    | 2%         | 2%    | NA                  |             | 0.1%                        |       | NA         | NA    |
| Duty Free Store                            |                      | 0.5%  | 0.2%       | 0.3%  | 6%              | 2%    | 1%         |       | NA                  |             |                             |       | NA         | NA    |
| Following directions                       | 6%                   | 1%    | 5%         | 4%    | 4%              | 1%    | 5%         | 2%    | NA                  | 1%          | 2%                          | 2%    | NA         | NA    |
| Most direct route                          | 59%                  | 64%   | 61%        | 74%   | 59%             | 74%   | 44%        | 67%   | NA                  | 58%         | 90%                         | 93%   | NA         | NA    |
| NEXUS lane                                 |                      | 8%    |            | 10%   | 1%              | 5%    | 2%         | 6%    | NA                  |             | 0.4%                        | 2%    | NA         | NA    |
| Preferred route                            | 9%                   | 18%   | 10%        | 5%    | 5%              | 9%    | 7%         | 7%    | NA                  | 2%          | 5%                          | 2%    | NA         | NA    |
| Radio advice                               | 0.3%                 | 0%    |            |       | 1%              |       |            |       | NA                  |             |                             |       | NA         | NA    |
| Ready lane                                 | 1%                   |       |            |       |                 | 0.3%  | 0.4%       |       | NA                  | 0.4%        |                             |       | NA         | NA    |
| Road came here                             | 4%                   | 1%    | 4%         | 0.3%  | 1%              | 1%    | 4%         | 1%    | NA                  |             |                             |       | NA         | NA    |
| Web page advice                            |                      | 0.4%  |            |       | 0.4%            |       | 1%         |       | NA                  | 0.3%        |                             |       | NA         | NA    |
| Other                                      | 1%                   | 1%    | 3%         | 1%    | 3%              | 3%    | 3%         | 1%    | NA                  | 1%          | 1%                          |       | NA         | NA    |

**Summary observations:**

- Given Peace Arch-Douglas and Pacific Highway’s proximity to each other, it makes sense that these ports had the highest percentage of travelers who indicated they chose the crossing because of the ATIS (border wait time signs).
- There may be overlap between respondents who cited the ATIS signs and those whose answers were more simply attributed to “avoid congestion” which may have been because of the wait time signs.
- Aldergrove-Lynden has the highest percentage of travelers who responded that they were “avoiding congestion.”
- “Most direct route” refers to a given port being the closest port directly between a traveler’s origin and destination. Because NEXUS offers a speedy border crossing, it makes sense that NEXUS respondents would more often cite “most direct route” as the reason for choosing a given port since in theory they wouldn’t be worried about wait-times.
- Given that Abbotsford-Huntingdon–Sumas is the easternmost port of the Cascade Gateway, residents of that geographic region have little choice when it comes to border crossings, as the next crossing to the east is on the other side of the Cascade Mountains.

## Border wait time systems

Since being installed for Peace-Arch Douglas and Pacific Highway crossings in 2002, border wait time (BWT) measurement systems and the corresponding border wait time signs on approach highways to the crossings (regionally referred to as the Advanced Traveler Information System –ATIS) have also been installed for Aldergrove-Lynden and Abbotsford Huntingdon – Sumas.



An ATIS sign along Interstate 5.

More recently, BWT systems have been identified in the 2011 Beyond the Border (BtB) Vision and subsequent (2012) BtB Action Plan – both as a priority improvement for the top-20 vehicle volume U.S.-Canada land border POEs and as a source of performance measurement to be used in conjunction with other metrics like travel demand.

At the Cascade Gateway crossings, the state and provincial transportation agencies own and maintain the BWT systems – BC MoT for the systems pertaining to U.S. inspection facilities and WSDOT for systems pertaining to Canadian inspection facilities. While the two transportation agencies have undertaken past efforts to validate and calibrate the hardware and software components (and these efforts are expected to continue), the 2013/14 Passenger Vehicle Survey presented an opportunity to ask the traveling public if they used the system, what they thought about its accuracy, and if they were also obtaining the system-generated wait time information from other media – either services set up by transportation and inspection agencies or third party internet and mobile device applications.



The NEXUS lane at Douglas-Peace Arch.

If respondents had responded in the previous question about border choice that they had used the Border Wait Time signs, they were not asked the next question: “Do you use the border wait time signs?” This question was not asked of NEXUS users since it’s assumed that their wait time will usually be very low.

The summary tables that follow, which break out the response categories by crossings, also continue a breakout by the responses to the subsequent question, “Do you think the border wait time signs give accurate information?” This question was asked of everyone who was asked the first question. Again, these are open ended questions and the responses given were attributed by the surveyor to the best matching category.

The joint percent column on the right of the table shows specific “Do you think signs are accurate” answers as percentages of all answers for all three “Do you use the BWT signs” answer-categories. For example, of all summer travelers at Peace Arch-Douglas who were asked about BWT signs, 41.2 percent said that they used the signs and also thought they were accurate.

### Summarized responses to border wait time system questions – Peace Arch-Douglas

| Peace Arch - Douglas -- Summer 2013 |         |                                       |         |               |
|-------------------------------------|---------|---------------------------------------|---------|---------------|
| Do you use the BWT Signs?           | Percent | Do you think signs are accurate?      | Percent | Joint Percent |
| Yes                                 | 70.3%   | No                                    | 18.3%   | 12.9%         |
|                                     |         | Not sure                              | 4.9%    | 3.5%          |
|                                     |         | Sometimes, seems inconsistent, etc.   | 18.0%   | 12.7%         |
|                                     |         | Yes                                   | 58.5%   | 41.2%         |
| Sometimes                           | 6.0%    | No                                    | 19.8%   | 1.2%          |
|                                     |         | Not sure                              | 10.5%   | 0.6%          |
|                                     |         | Sometimes, seems inconsistent, etc.   | 44.9%   | 2.7%          |
|                                     |         | Yes                                   | 24.9%   | 1.5%          |
| No                                  | 23.7%   | No                                    | 22.5%   | 5.3%          |
|                                     |         | Not sure                              | 36.2%   | 8.6%          |
|                                     |         | Not sure what the wait-time signs are | 8.2%    | 1.9%          |
|                                     |         | Sometimes, seems inconsistent, etc.   | 6.8%    | 1.6%          |
|                                     |         | Yes                                   | 26.2%   | 6.2%          |
| Peace Arch - Douglas -- Winter 2014 |         |                                       |         |               |
| Yes                                 | 58.7%   | No                                    | 22.6%   | 13.3%         |
|                                     |         | Not sure                              | 6.9%    | 4.1%          |
|                                     |         | Sometimes, seems inconsistent, etc.   | 25.9%   | 15.2%         |
|                                     |         | Yes                                   | 44.2%   | 25.9%         |
| Sometimes                           | 7.1%    | No                                    | 18.2%   | 1.3%          |
|                                     |         | Not sure                              | 6.1%    | 0.4%          |
|                                     |         | Sometimes, seems inconsistent, etc.   | 30.3%   | 2.1%          |
|                                     |         | Yes                                   | 45.5%   | 3.2%          |
| No                                  | 34.3%   | No                                    | 27.5%   | 9.4%          |
|                                     |         | Not sure                              | 28.8%   | 9.9%          |
|                                     |         | Not sure what the wait-time signs are | 10.0%   | 3.4%          |
|                                     |         | Sometimes, seems inconsistent, etc.   | 7.5%    | 2.6%          |
|                                     |         | Yes                                   | 26.3%   | 9.0%          |

#### Summary observations:

- In the summer survey session, Peace Arch – Douglas showed the highest use of BWT signs by travelers who also think the signs are accurate (41.2 percent).
- Confidence in system accuracy is noticeably less in the winter than in summer at Peace Arch-Douglas, going from a combined 48.9 percent confidence rate in summer to 38.1 percent in winter.

## Summarized responses to border wait time system questions – Pacific Highway

| Pacific Highway -- Summer 2013 |         |                                       |         |               |
|--------------------------------|---------|---------------------------------------|---------|---------------|
| Do you use the BWT Signs?      | Percent | Do you think signs are accurate?      | Percent | Joint Percent |
| Yes                            | 73.08%  | No                                    | 35.0%   | 25.6%         |
|                                |         | Not sure                              | 4.9%    | 3.6%          |
|                                |         | Sometimes, seems inconsistent, etc.   | 14.8%   | 10.8%         |
|                                |         | Yes                                   | 45.2%   | 33.0%         |
| Sometimes                      | 5.63%   | No                                    | 32.4%   | 1.8%          |
|                                |         | Not sure                              | 6.1%    | 0.3%          |
|                                |         | Sometimes, seems inconsistent, etc.   | 21.6%   | 1.2%          |
|                                |         | Yes                                   | 39.9%   | 2.2%          |
| No                             | 21.29%  | No                                    | 32.6%   | 6.9%          |
|                                |         | Not sure                              | 38.3%   | 8.1%          |
|                                |         | Not sure what the wait-time signs are | 3.2%    | 0.7%          |
|                                |         | Sometimes, seems inconsistent, etc.   | 7.3%    | 1.5%          |
|                                |         | Yes                                   | 18.7%   | 4.0%          |
| Pacific Highway -- Winter 2014 |         |                                       |         |               |
| Yes                            | 64.20%  | No                                    | 31.7%   | 20.4%         |
|                                |         | Not sure                              | 2.4%    | 1.5%          |
|                                |         | Sometimes, seems inconsistent, etc.   | 26.9%   | 17.3%         |
|                                |         | Yes                                   | 38.9%   | 25.0%         |
| Sometimes                      | 8.64%   | No                                    | 25.0%   | 2.2%          |
|                                |         | Not sure                              | 3.6%    | 0.3%          |
|                                |         | Sometimes, seems inconsistent, etc.   | 25.0%   | 2.2%          |
|                                |         | Yes                                   | 42.9%   | 3.7%          |
| No                             | 27.16%  | No                                    | 36.4%   | 9.9%          |
|                                |         | Not sure                              | 22.7%   | 6.2%          |
|                                |         | Not sure what the wait-time signs are | 5.7%    | 1.5%          |
|                                |         | Sometimes, seems inconsistent, etc.   | 11.4%   | 3.1%          |
|                                |         | Yes                                   | 23.9%   | 6.5%          |

### Summary observations:

- Reported ATIS use rates at Peace Arch-Douglas and Pacific Highway are high in the summer – 70 and 73 percent respectively – which are around 10 percent higher than each of their respective winter percentages.
- An indicator that system accuracy isn't the only determinant of use, a full quarter of all summer respondents at Pacific Highway claimed to use the ATIS signs even though don't think they are accurate. Winter responses here were similar, encompassing one fifth of the total.

## Summarized responses to border wait time system questions – Aldergrove-Lynden

| Aldergrove - Lynden -- Summer 2013 |         |                                       |         |               |
|------------------------------------|---------|---------------------------------------|---------|---------------|
| Do you use the BWT Signs?          | Percent | Do you think signs are accurate?      | Percent | Joint Percent |
| Yes                                | 57.4%   | No                                    | 16.7%   | 9.6%          |
|                                    |         | Not sure                              | 2.2%    | 1.3%          |
|                                    |         | Sometimes, seems inconsistent, etc.   | 23.8%   | 13.7%         |
|                                    |         | Yes                                   | 57.0%   | 32.7%         |
| Sometimes                          | 11.2%   | No                                    | 17.1%   | 1.9%          |
|                                    |         | Not sure                              | 1.5%    | 0.2%          |
|                                    |         | Sometimes, seems inconsistent, etc.   | 22.5%   | 2.5%          |
|                                    |         | Yes                                   | 58.9%   | 6.6%          |
| No                                 | 31.4%   | No                                    | 30.9%   | 9.7%          |
|                                    |         | Not sure                              | 25.5%   | 8.0%          |
|                                    |         | Not sure what the wait-time signs are | 5.1%    | 1.6%          |
|                                    |         | Sometimes, seems inconsistent, etc.   | 8.0%    | 2.5%          |
|                                    |         | Yes                                   | 30.5%   | 9.6%          |
| Aldergrove - Lynden -- Winter 2014 |         |                                       |         |               |
| Yes                                | 65.34%  | No                                    | 16.2%   | 10.6%         |
|                                    |         | Not sure                              | 2.8%    | 1.9%          |
|                                    |         | Sometimes, seems inconsistent, etc.   | 21.9%   | 14.3%         |
|                                    |         | Yes                                   | 58.7%   | 38.4%         |
| Sometimes                          | 11.64%  | No                                    | 31.8%   | 3.7%          |
|                                    |         | Not sure                              | 9.1%    | 1.1%          |
|                                    |         | Sometimes, seems inconsistent, etc.   | 25.0%   | 2.9%          |
|                                    |         | Yes                                   | 34.1%   | 4.0%          |
| No                                 | 23.02%  | No                                    | 31.0%   | 7.1%          |
|                                    |         | Not sure                              | 19.5%   | 4.5%          |
|                                    |         | Not sure what the wait-time signs are | 14.9%   | 3.4%          |
|                                    |         | Sometimes, seems inconsistent, etc.   | 9.2%    | 2.1%          |
|                                    |         | Yes                                   | 25.3%   | 5.8%          |

### Summary observation:

- In the winter survey session, Aldergrove-Lynden showed the highest use of BWT signs by travelers who also think the signs are accurate (38.4 percent).
- Aldergrove-Lynden and Abbotsford-Huntingdon – Sumas show more response similarities between seasons that do the western ports.

## Summarized responses to border wait time system questions – Abbotsford-Huntingdon—Sumas

| Abbotsford-Huntingdon - Sumas -- Summer 2013 |         |                                       |         |               |
|--|---------|---------------------------------------|---------|---------------|
| Do you use the BWT Signs?                    | Percent | Do you think signs are accurate?      | Percent | Joint Percent |
| Yes  | 57.6%   | No                                    | 30.9%   | 17.8%         |
|  |         | Not sure                              | 4.0%    | 2.3%          |
|  |         | Sometimes, seems inconsistent, etc.   | 21.0%   | 12.1%         |
|  |         | Yes                                   | 43.9%   | 25.3%         |
| Sometimes                                    | 7.3%    | No                                    | 32.2%   | 2.3%          |
|  |         | Not sure                              | 6.2%    | 0.5%          |
|  |         | Sometimes, seems inconsistent, etc.   | 28.8%   | 2.1%          |
|  |         | Yes                                   | 32.8%   | 2.4%          |
| No   | 35.0%   | No                                    | 35.9%   | 12.6%         |
|  |         | Not sure                              | 29.2%   | 10.2%         |
|  |         | Not sure what the wait-time signs are | 3.5%    | 1.2%          |
|  |         | Sometimes, seems inconsistent, etc.   | 8.7%    | 3.1%          |
|  |         | Yes                                   | 22.6%   | 7.9%          |
| Abbotsford-Huntingdon - Sumas -- Winter 2014 |         |                                       |         |               |
| Yes  | 54.20%  | No                                    | 33.3%   | 18.1%         |
|  |         | Not sure                              | 2.3%    | 1.3%          |
|  |         | Sometimes, seems inconsistent, etc.   | 24.0%   | 13.0%         |
|  |         | Yes                                   | 40.3%   | 21.8%         |
| Sometimes                                    | 8.82%   | No                                    | 38.1%   | 3.4%          |
|  |         | Not sure                              | 14.3%   | 1.3%          |
|  |         | Sometimes, seems inconsistent, etc.   | 38.1%   | 3.4%          |
|  |         | Yes                                   | 9.5%    | 0.8%          |
| No   | 36.97%  | No                                    | 53.4%   | 19.7%         |
|  |         | Not sure                              | 17.0%   | 6.3%          |
|  |         | Not sure what the wait-time signs are | 9.1%    | 3.4%          |
|  |         | Sometimes, seems inconsistent, etc.   | 6.8%    | 2.5%          |
|  |         | Yes                                   | 13.6%   | 5.0%          |

### Summary observations:

- Abbotsford-Huntingdon—Sumas has the lowest average ATIS use rate – 57 and 54 percent in summer and winter, respectively. This is likely a result of the crossing being farthest away, making a driver’s interest in using this port more dependent on balancing the anticipated time savings against longer route travel time and overall trip distance.
- Abbotsford-Huntingdon—Sumas also consistently has the lowest confidence in accuracy of BWT signs.

## Border wait time systems at Point Roberts-Boundary Bay

Under the BtB Action Plan previously mentioned, Point Roberts-Boundary Bay, along with the other top 20 vehicle volume POEs, have been identified for installation of an automated border wait time system. Given this intention, we asked cross-border travelers at Point Roberts-Boundary Bay if they would use a BWT system. Given that there are not alternate land routes for this location, it is anticipated that BWT information would be used primarily to choose *when* to travel.

### Summary observation:

- Opinion is split down the middle as to whether border wait time information would affect the travel plans of those crossing at Boundary Bay-Pt. Roberts.

| Bndry. Bay--Pt. Rbts. Only   |        |        |
|--|--------|--------|
| If border wait time information was available, would you use it to plan your travel? |        |        |
|  | Summer | Winter |
| Yes  | 46%    | 43%    |
| No   | 50%    | 52%    |
| Not sure   | 5%     | 5%     |

## Radio frequency identification (RFID)

Evolving from the development of alternative forms of identification that, along with standard passports, meet specifications for compliance with the U.S. Western Hemisphere Travel Initiative such as the U.S. State Department's Pass Card and state and provincial enhanced drivers licenses (EDLs), the BtB Action Plan promotes initiatives to leverage the potential benefits of these new cards' underlying technology - vicinity readable radio frequency (RF) media.

Over the last few years, U.S. CBP has installed vicinity card readers in advance of primary inspection booths that use RF to initiate required queries of traveler information while the current primary inspection is still occurring. This expedites primary inspections and can reduce time at the inspection booth by more than 20 seconds per vehicle. The BtB Action Plan advocates for continued installation of RF technology by both the U.S. and Canada.

If the anticipated RF technology investments are to have the intended operational benefit (shorter primary inspections and reduced border wait times), significantly greater numbers of travelers will need to obtain and use RF identification documents (RFIDs). Both British Columbia and Washington issue EDLs to residents who choose to pay a higher fee and provide additional documentation (\$35 more in BC & \$15 more in WA).



An RFID-priority "ready" lane at Peace Arch.



## Enhanced driver's licenses (EDL)

The 2013 Passenger Vehicle Survey included two questions about the EDL (which were not asked of drivers using the NEXUS lane). The first question was, "Are you familiar with the enhanced driver's license?" If the respondent said they were not familiar with it or that they had one, there were no more EDL questions. If they were at all familiar with the EDL, they were asked, "Is there a reason you haven't gotten an EDL?" Responses were attributed to predefined categories that matched the best.

### Summary of Enhanced Driver's License questions.

| Familiar with EDL? | Summer '13 | Winter '14 | Is there a reason you haven't gotten an EDL? | Summer '13 | Winter '14 |
|--------------------|------------|------------|--|------------|------------|
| Yes                | 53.8%      | 56.5%      | Have passport                                | 39.4%      | 38.5%      |
| Have heard of it   | 8.0%       | 10.1%      | No reason                                    | 18.8%      | 23.0%      |
| No                 | 24.4%      | 21.6%      | Other  | 13.4%      | 9.7%       |
| I have one         | 13.8%      | 11.8%      | Waiting for license renewal                  | 7.7%       | 7.9%       |
|                    |            |            | Plan to get one                              | 7.6%       | 3.3%       |
|                    |            |            | Price  | 4.5%       | 4.5%       |
|                    |            |            | Hassle                                       | 4.2%       | 3.6%       |
|                    |            |            | Would rather get NEXUS                       | 2.4%       | 6.6%       |
|                    |            |            | Not a citizen                                | 1.1%       | 2.1%       |
|                    |            |            | Privacy concern                              | 0.9%       | 0.9%       |

### Summary observations:

- Nearly a quarter of border-crossers still don't know what an enhanced driver's license is.
- The share of respondents that say they have an EDL (about 12-14 percent) seems much higher than the reported rate of EDL use at inspection booths. However, only drivers were questioned in this survey, and any passengers were not considered.
- The nearly 40 percent of EDL-knowledgeable respondents who are happy with using their passports illustrates a widely held perspective that there is no individual benefit at the border as a result of obtaining an EDL.
- The 18.8 percent and 23 percent (respective summer and winter) of EDL-knowledgeable respondents who have no particular reason for not having obtained an EDL represent a group that might be easier to convince to make a switch.
- While privacy concerns are often assumed to be significant deterrent, fewer than one percent of respondents indicated that this was their reason for not getting an EDL.

## NEXUS

NEXUS has been a hugely successful program in the Cascade Gateway region where, at Peace Arch-Douglas and Pacific Highway ports, over 30 percent of vehicles cross the border through a NEXUS lane. This section summarizes the results of survey questions that provide information about the potential for continued growth in the program and the possible implications on border and transportation system operations.

Travelers at ports with NEXUS lanes and booths (not Aldergrove-Lynden) who were *not* already using NEXUS were asked, “Why don’t you have a NEXUS card?” To use the responses to estimate the percentage of those travelers who would probably benefit from getting NEXUS, we filtered out responses from those who report crossing the border fewer than eight times a year. Lastly, to keep this particular analysis focused on the Cascade Gateway ports, Boundary-Bay-Pt. Roberts responses are not included in the tables below.

Applying the eight-trips-per-year filter indicates that 57 percent of current non-NEXUS users at ports with NEXUS service cross the border 8 or more times per year in summer, while 41 percent of winter travelers fit that characterization.

### Summary of reasons non-NEXUS users give for not having a NEXUS card.

| Why no NEXUS?           | Summer '13 | Winter '14 |
|-------------------------|------------|------------|
| No reason/don't know    | 20.3%      | 27.2%      |
| Meaning to              | 12.2%      | 10.9%      |
| Don't cross enough      | 11.9%      | 9.4%       |
| Application a hassle    | 9.1%       | 10.7%      |
| Cost too high           | 5.9%       | 6.1%       |
| Unfamiliar              | 1.9%       | 0.5%       |
| Other                   | 10.9%      | 7.7%       |
| non-NEXUS passenger     | 8.6%       | 6.9%       |
| Application in process  | 8.1%       | 9.2%       |
| Don't want to           | 5.2%       | 5.5%       |
| Not eligible            | 3.3%       | 2.8%       |
| Other program flaw      | 1.5%       | 1.3%       |
| Waiting for appointment | 0.7%       | 0.8%       |
| Card being renewed      | 0.4%       | 1.2%       |
| total                   | 100.0%     | 100.0%     |

Summer = 61.3%  
Winter = 64.7%

### Summary observations:

The top six rows are grouped to show those reasons that describe people who either feel that getting a NEXUS card is something they *could* do or people who have made a benefit-cost decision not to get one. Both of these perspectives could be communicated to with messages about the growing ease of applying for NEXUS and the increasing value of the program.

### For more information...

Please direct any questions or comments regarding the 2013/14 Passenger Vehicle Survey to the primary project manager:

#### Hugh Conroy

Manager

IMTC Program

Whatcom Council of Governments

360 676-6974

[hugh@wcog.org](mailto:hugh@wcog.org)