Information sheets are prepared and maintained for each project currently approved by IMTC Program organizations for their 2013 list of shared priorities for Cascade Gateway border improvements. Information sheets are updated as needed and thus include a version-date. Current copies, inclusive of any changes to information below, are available in the future-projects section at theIMTC.com.

Near-term prediction of border traffic volume changes

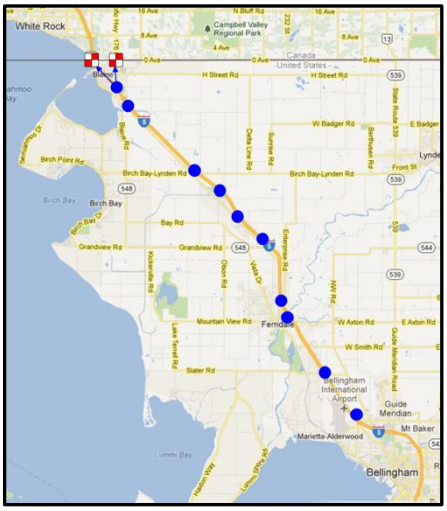
Overview

Queuing models demonstrate that opening additional service capacity *before* a lineup develops is dramatically more effective for avoiding lineups (and reducing wait times) than reacting with additional service after significant lineups occur.

This is a research and development effort that will build on current interests in making better use of various device data to improve anticipation of increasing (or decreasing) border arrival rates. Several predictive methods will be tested that link historic trend analysis with real-time observations of upstream traffic characteristics. The goal is to enable proactive booth openings (and closings).

Location

This project will focus on the two Cascade Gateway ports-of-entry on the U.S. Interstate 5 – B.C. Highway 99 corridor: Peace Arch-Douglas and Pacific Highway. The graphic at right shows the crossings and related approach roads. Also for this research and development effort, attention will be focused on arrivals at the CBSA facilities (northbound traffic entering Canada).



Why this project is needed

Successful development of a method for predicting near-term, significant changes in arrivals at border crossings will provide an important tool for inspection agencies for both traffic management and improved situational awareness.

The blue dots on the graphic at right represent new vehicle detector stations (VDS) installed by WSDOT along this segment of I-5. The VDSs offer new visibility of traffic volume as well as the opportunity to archive all of it for archiving and subsequent explanatory testing with similarly archived border arrival data.

Other data is expected to become available which further broadens the opportunity emerging at these crossings. First, US CBP is working to develop a data sharing arrangement that will provide BC MoT's ATIS server with real-time booth based data elements, including the state or province of each vehicle's license plate. This will allow predictive analysis testing to, in the case of British Columbia-bound predictions; include a variable based on the volume and distribution of B.C. resident cars that have come into Washington in previous time periods.

Results

While a detailed approach will be refined by a principal investigator, the envisioned sequence of research, testing, and results is as follows. The first task will be to establish an historical database of frequently gathered (five-minute interval) traffic data from multiple locations at and near the border. These data will then be analyzed (likely using regression analysis) to identify conditions that correlate with near term, significant changes in border traffic arrivals. If results from these analyses produce strong enough correlations, the next step will be to develop algorithms to apply to running observations of real time corridor traffic. The end product would be a frequently refreshed prediction of changes to border traffic volume in upcoming time periods (in 15 minutes, in 25 minutes, etc.).

Application to other IMTC projects

In addition to refreshing often-used data sources, this project will have direct applications for other priority projects. These include:

- Traveler feedback that is needed for the evaluation and updates to the regional cross-border ATIS Assessment & Calibration Project.
- Traveler feedback needed for the NEXUS expansion feasibility project.

Estimated project Schedule

Depending on the length of time between the summer and winter survey waves, this project is estimated to take between nine months and a year to complete.

Cost

This project is estimated to cost $125,000

This project is not currently funded.

Administration, funding, and partnerships

Inspection agencies are interested in developing better predictive management tools and regional and HQ agency staff will be involved for research scoping, additional data if available.

The Whatcom Council of Governments is available to coordinate project development and funding partnerships. Agencies possibly interested in advising more closely on this research include CBSA, CBP, Transport Canada, Washington State Department of Transportation, B.C. Ministry of Transportation, Washington Transportation Center (TRAC), the Border Policy Research Institute (BPRI).

Partial funding is being requested from U.S. FHWA. Other agencies (such as those listed above) will evaluate upcoming possibilities for additional funding – for matching FHWA funds (if awarded) and completing the project as envisioned.

Conduct of the project itself could be led by WCOG, a partner institution/principal investigator, or, put out for proposals from consultants.