

TIGER Grant Application

Cascade Gateway Border Investments

Front page information

The Whatcom Council of Governments (WCOG) metropolitan planning organization (MPO) is submitting the Cascade Gateway Border Investments for TIGER grant funding. Most of the following program of projects has been recently reviewed and selected for advancement by the U.S. Federal Highway Administration as part of WSDOT's successful application to USDOT's 2008 Transportation Border Congestion Relief Program (TBCR). The TBCR application, Work Plan, and related materials are available for review at WCOG's website: [Cascade Gateway Border Investments](#).

Type of project(s)

The proposed investments focus on **highways** serving international border crossings and address congestion and system capacity, safety, and emissions reduction. The strategies employed include rebuilding deficient infrastructure, traffic information systems, and continued facilitation of interagency collaboration, information sharing, and financial partnerships.

Location

A map of the Cascade Gateway border crossings and highway connections is inserted below as Figure 1.

State & cities

The Cascade Gateway provides the international connection of travel and trade between Seattle, Washington and Vancouver, British Columbia. U.S. small cities at the regional border-crossing locations include Blaine, Lynden, and Sumas, WA.

Congressional district

The proposed projects are located in the second congressional district of Representative Rick Larsen.

Urban / rural

While the Cascade Gateway provides the connection between urban, metropolitan trade centers, the border crossings themselves are in rural areas.

Funding request

\$4,740,000 is requested for the Cascade Gateway Border Investments program.

Waiver request: This application requests a waiver of the \$20 million minimum grant size.

National interest

The investments proposed here—improvements in our country's fifth busiest freight and third busiest traveler crossings on the United States-Canada border—address the needs of U.S. federal facilities and our national interest in trade and international travel. Given this focus on federal facilities and our national interest in global trade, the Cascade Gateway Border Investments should not be considered a state-based allocation when calculating geographic apportionment.

TIGER Grant Application Cascade Gateway Border Investments

Table of contents

- 1. Contact information**
- 2. Project description**
 - 2.1. Cascade Gateway ATIS
 - 2.2. Cross-border planning & policy development
 - 2.3. How the project serves the needs of urban & rural areas
 - 2.3.1 ATIS
 - 2.3.2 Planning & policy
 - 2.4. The transportation challenge
 - 2.4.1. Addressing the challenge—ATIS
 - 2.4.2. Addressing the challenge—planning & policy development
- 3. Project parties**
- 4. Grant funds and sources and uses of project funds**
- 5. Primary selection criteria**
 - 5.1. Long-term outcomes
 - 5.1.2. State of good repair
 - 5.1.3. Current condition & performance
 - 5.1.4. Economic competitiveness
 - 5.1.5. Livability
 - 5.1.6. Sustainability
 - 5.1.7. Safety
 - 5.1.8. Project performance evaluation plan
- 6. Benefit-cost analysis**
- 7. Secondary selection criteria**
 - 7.1. Innovation
 - 7.2. Partnership
 - 7.2.1. Jurisdictional & stakeholder collaboration
 - 7.2.2. Disciplinary integration
- 8. Program-specific criteria**
- 9. Federal wage-rate requirement**
- 10. National Environmental Policy Act requirement**
- 11. Environmentally related federal, state, and local actions**

TIGER Grant Application Cascade Gateway Border Investments

1. Contact information

Jim Miller
Executive Director
Whatcom Council of Governments
314 East Champion Street
Bellingham, WA 98225

ph: (360) 676-6974
Jim@wcog.org

2. Project description

The Cascade Gateway Border Investments will make nationally significant improvements to the third-busiest traveler border crossing and the fifth busiest truck crossing on the U.S. - Canada border¹.

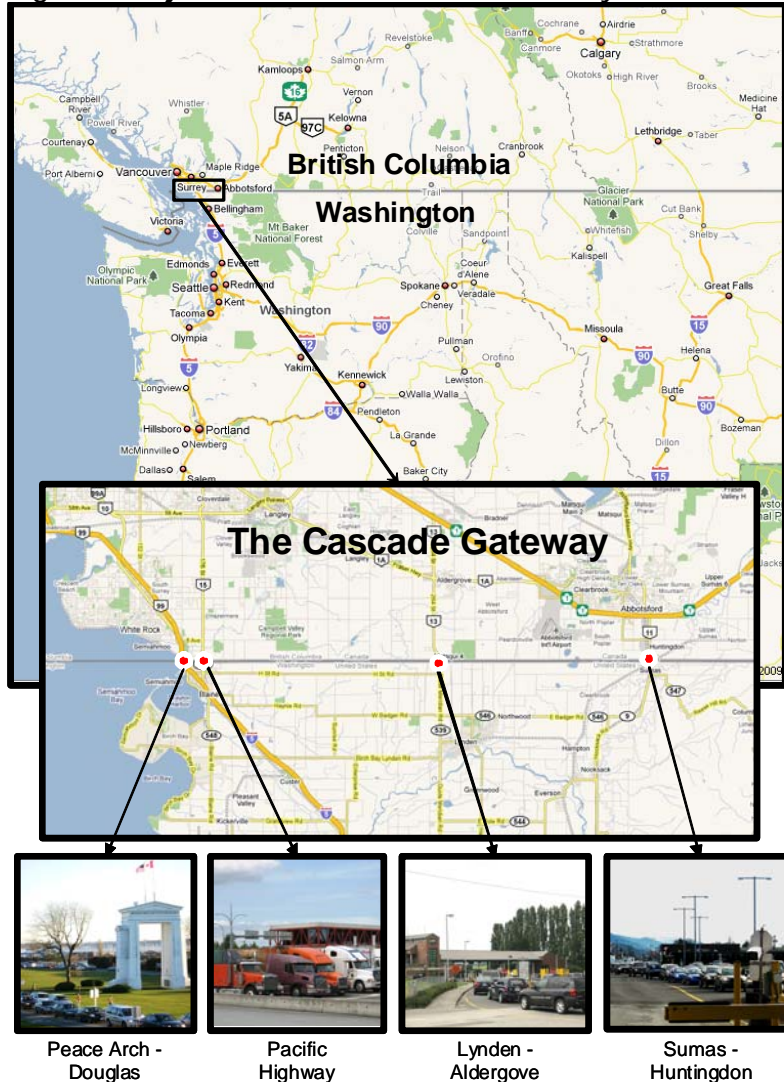
This application requests funding for ten projects that are presented as a program. These projects were recently proposed in 2008 and selected for advancement by USDOT under the Transportation Border Congestion Relief Program (TBCR). While no funding was included in the selection-phase of TBCR, FHWA is partnering with WSDOT and WCOG to identify technical approaches, funding, and financing opportunities.

This section will give individual project descriptions. Following sections will discuss the projects collectively under two main categories:

- **Advanced traveler information systems (ATIS)**
- **Cross-border planning and policy**

These two categories match up with [WSDOT's TBCR Work Program](#), finalized between FHWA and WSDOT in July, 2009.

Figure 1: Project location - The Cascade Gateway



¹ USDOT, RITA, BTS, http://www.transtats.bts.gov/Fields.asp?Table_ID=1358. Border Crossing/Entry data.

TIGER Grant Application

Cascade Gateway Border Investments

2.1. Cascade Gateway ATIS

Providing cross-border freight carriers and travelers with real-time information on border wait times, corridor travel times, and regional road conditions and incidents has been identified by numerous agencies as an effective strategy for reducing congestion and increasing productivity of the regional transportation systems. Associated benefits include reduction of vehicle idling and emissions at border crossings and improved community connections in a traditionally well-connected cross border economic region.

The cross-border transportation improvements associated with ATIS and the strategy for integrating systems between WSDOT and partner agencies in Canada (the British Columbia Ministry of Transportation, BC TransLink, Canada Border Services Agency, etc.) are covered in detail in the [June 30, 2008 WSDOT TBCR proposal](#). The individual ATIS system projects proposed for TIGER funding are as follows. These projects have been subsequently listed by WSDOT in its TBCR Work Plan, jointly developed with FHWA.

State Route 539 ITS II²

This project includes design and construction of five closed circuit video cameras, nine data stations, one variable message sign, and one mile of fiber optic cable. The project will span between mileposts 5.90 to 1.70 on SR 539. The project uses conduit and fiber placed during construction to enhance ITS applications for this critical freight and border access route.

State Route 539 ITS III³

This project includes design and construction of four closed circuit video cameras, four data stations and fiber optic cable. The project will span between mileposts 10.9 to 5.9. The project extends ITS applications north along this critical freight and border access route.

State Route 9 ATIS Expansion

This project includes two closed circuit video cameras, four data stations and more than two miles of fiber optic cable between mileposts 98.16 to 95.67 on SR 9. The project would replace license plate readers with a full loop-based system and extend the system an existing mile for additional accuracy and reliability in the calculation of border wait times.

2.2. Cross-border planning & policy development

The Cascade Gateway's ability to collaborate on planning and improving its regional border connections depends on active coordination and information sharing between transportation and inspection agencies, and system users on both sides of the U.S.-Canada border.

The planning and policy development projects advanced here support the institutional relationships needed to effectively build cross-border traffic management systems as well as cooperatively standardize and validate information required to coordinate planning, project investment, and maintenance.

Additionally, the above actions result in better performance measurement and complementary policy development.

² WSDOT's TBCR Work Program, Cascade Gateway Advanced ATIS, Work Package 3, Page A-8.

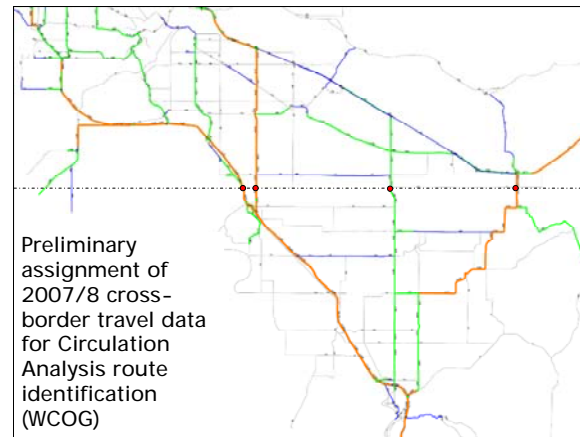
³ WSDOT's TBCR Work Program, Cascade Gateway Advanced ATIS, Work Package 5, Page A-8.

TIGER Grant Application

Cascade Gateway Border Investments

Border Circulation Analysis Phases II & III⁴

Additional funding is needed for Phase II of the Cascade Gateway Border Circulation Analysis, a project of the International Mobility and Trade Corridor Project (IMTC) which is evaluating the actions needed to ensure ongoing transportation efficiency including road and border-station infrastructure improvements, information technology expansion, and operational changes. More information and Phase I products are available at the [Circulation Analysis website](#).



Regional Freight Capacity Management⁵

Agency representatives participating in IMTC know that the Free and Secure Trade (FAST) program (the U.S. and Canadian trusted freight programs) has not worked as well in the Cascade Gateway as at border ports between eastern states and provinces

To address this and evaluate alternatives, a regional Cross-border Freight Capacity Management Study is desired. Such an analysis is enabled by the recently conducted [IMTC 2009 Commercial Vehicle Operations Survey](#). Other resources include: past IMTC studies (2000 O&D, manifest samples, etc.); FAST program assessment under the Border Circulation Analysis; cross-border traffic model scenario testing; Border Wizard; emerging successes with ongoing commercial vehicle delay measurement; and likely upcoming improvements to collection of at-border weigh-in-motion (WIM) data.

A review of alternative, *binational approaches* to managing goods-movement capacity will include greater program harmonization, regulatory flexibility, reversion of dedicated lanes to general purpose, and optional pricing strategies. The parameters of federal, state, and provincial authorities as well as market feasibility will be assessed. Information and automation requirements will also be studied.

NEXUS marketing⁶

Cross-border travelers can voluntarily apply for pre-screening from U.S. and Canadian border inspection agencies under the NEXUS program. If approved, these trusted travelers are issued NEXUS identification and given access to a dedicated lane where the primary inspection is, for the most part, reduced to verifying identity—a much quicker process resulting in a high-volume travel lane at busy border crossings.

While 30 percent of all border traffic at Peace Arch-Douglas and Pacific Highway crosses using NEXUS lanes, recent regional studies have clearly shown that significantly more traffic could be benefiting from NEXUS—a shift with dramatic potential for improving gateway efficiency.

Market research has already been done (See the NEXUS section of the [2008 IMTC travel study report](#)). WCOG conducted a previous NEXUS marketing effort in 2002 with much

⁴ WSDOT's TBCR Work Program, Cross-border Planning & Policy Development, Work Package 5, Page A-5

⁵ WSDOT's TBCR Work Program, Innovative Project Development, Work Package 1, Page A-10

⁶ WSDOT's TBCR Work Program, Cross-border Planning & Policy Development, Work Package 6, Page A-6

TIGER Grant Application

Cascade Gateway Border Investments

success. This project will fund a regional outreach and marketing effort focused on target communities (Surrey, BC and Bellingham, WA).

Facilitation of IMTC⁷

The International Mobility and Trade Corridor Project (IMTC) is led by WCOG, the MPO in Bellingham, WA. IMTC is a binational, public-private planning coalition focused on the four main BC-WA border crossings that serve the US Interstate 5 – BC Highway 99 corridor between Seattle, WA and Vancouver, BC. Since 1997, multiple entities (FHWA, the State of Washington, BC Ministry of Transportation, and local jurisdictions) have funded WCOG to lead and support the activities of this highly effective cross-border planning coalition.

WCOG lead-agency functions include: • convention and facilitation of monthly work sessions • interagency identification and prioritization of regional border improvement projects • setup of funding partnerships and cross-border cooperative arrangements • special projects research and analysis for regional policy-makers • transportation data collection and distribution • regional representation and participation with the national-level working group between Transport Canada and U.S. FHWA and • administrative support of IMTC through quantitative and policy research and report writing, website development and maintenance, contact management, communications support, informational publications, and more.

More information on IMTC activities, products, and current and past projects is available on the [IMTC projects webpage](#).

The IMTC forum will continue to be essential to maximizing resources and investments that converge at land-border ports-of-entry.

Regional economic model⁸

WCOG and other regional partners (WSDOT, Skagit Council of Governments, Western Washington University, & Transport Canada) have a shared interest in the acquisition and use of a regional economic policy and transportation investment model. This type of analysis will provide a superior basis for investment and policy decisions. The Cascade Gateway connects a binational, regional economy. This type of quantification and analysis of cross-border transactions, labor movements, trade flows, and other economic activities that depend on international mobility will be a critical asset to continued partnership and joint investment strategies.

Under this proposal, WCOG would acquire and operate the model. Software access and data sharing arrangements are envisioned with nearby MPOs, regional universities, and adjacent U.S. and Canadian jurisdictions. The Transport Canada Pacific Region office is also exploring acquisition of a regional economic model and coordinated data development and analysis would be a likely consequence.

BIFA mapping⁹

The primary ATIS systems advanced in this proposal will exist in the context of several other system-monitoring efforts: by other regional transportation agencies (BC TransLink's Smart Corridors and iMove systems), U.S. and Canadian border inspection agencies (RFID applications, e-manifest, FAST and other transponder based systems), and state and provincial transportation agencies (weigh station-bypass systems, hazardous materials tracking, etc.). There are important dimensions to consider when

⁷ WSDOT's TBCR Work Program, Cross-border Planning & Policy Development, Work Package 1, Page A-5.

⁸ WSDOT's TBCR Work Program, Cross-border Planning & Policy Development, Work Package 3, Page A-5

⁹ WSDOT's TBCR Work Program, Cascade Gateway Advanced ATIS, Work Package 1a, Page A-7

TIGER Grant Application

Cascade Gateway Border Investments

assessing the opportunities to fill data gaps and leverage existing data sources in the cross-border environment. The TBWG's **Border Information Flow Architecture (BIFA)** will provide the framework to assess these issues and pursue the optimal set of investments and arrangements.¹⁰

This proposal includes funding to undertake the completion of a BIFA-based architecture.

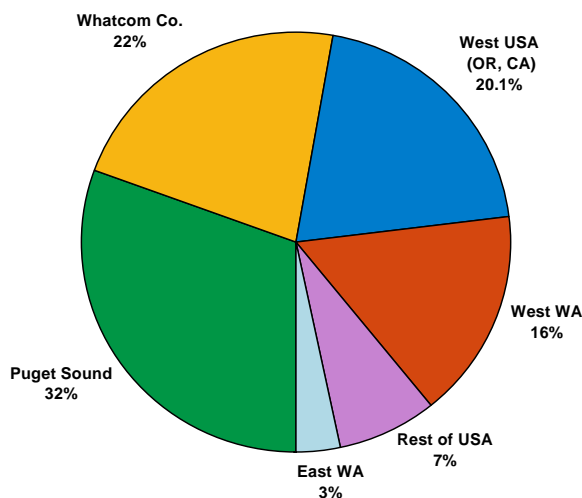
Data Warehouse Upgrade¹¹

Data generated by Cascade Gateway advanced traveler information systems (ATIS) is warehoused for performance measurement, planning, and analysis by WCOG and made available via the internet at www.cascadegatewaydata.com. IMTC identified the border data warehouse as a priority and Transport Canada, BC Ministry of Transportation, and the University of Washington funded development. The system is now at capacity.

This project will upgrade server capacity and shift the site to a higher-volume environment. This is intended to create capacity for planned expansion, increase the database's speed and enable larger queries.

2.3. How the project serves the needs of urban & rural areas

Pacific Highway Cross-border Trucks,
U.S. Trip-ends.



Source: WCOG & WWU BPRI Commercial Vehicle Operations Survey June 2009.

The Cascade Gateway ports-of-entry connect a high volume, U.S.-Canada trade and travel corridor that serves the West Coast of North America. Improvements and institutional coordination focused on these facilities address needs of rural Whatcom County *and* serve the high volume of freight and travel with trip-ends outside the border region. So, while the Cascade Gateway is in a rural area, it serves our national interests in exports and ongoing connection with Canada including travel and business transactions, and long-standing social and cultural ties that have spanned our border for generations.

The pie chart at left shows how these crossings serve the freight transportation needs of regional rural traffic (22% Whatcom County), urban centers (32% Puget Sound) and longer haul exports from other states (27% Rest and West USA). This geographic

distribution validates the national attention that USDOT has given to, and should continue to give high-volume land border ports-of-entry.

Cascade Gateway freight transportation demand generator include exports from regional industries (agriculture, manufacturing), West Coast freight distribution, and intermodal connections between international marine ports and railroads terminals.

2.3.1. ATIS in a rural border region

While Whatcom County is a predominately rural geography (with a population of 190,000), the corresponding geography in Lower Mainland British Columbia is urban

¹⁰ Excerpted from WSDOT's June 2008 TBCR application, page 17.

<http://resources.wcog.org/border/tbcApplication.pdf>

¹¹ WSDOT's TBCR Work Program, Cascade Gateway Advanced ATIS, Work Package 1c, Page A-7

TIGER Grant Application

Cascade Gateway Border Investments

(population 2,200,000). Promoting a better balance of travel demand across existing capacity with real-time information for drivers is a cost-effective strategy for maximizing productivity of the transportation infrastructure in a rural area.

2.3.2. Planning and policy development in a rural border region

In the rural areas that surround the Cascade Gateway border crossings, how the inspection and transportation agencies of both countries plan, build, and operate their respective parts of the system is consequential. Balancing travel demand from crossing to crossing, the dedication of truck routes, and complementary selection and management of primary routes are all examples of system improvements a dependent on cross-border coordination.

2.4. The transportation challenge

By definition, controlled borders are a challenge to mobility. The national boundary affects an almost complete separation of system ownership¹². Additionally, because the operational scope of federally-designated border crossings is expensive and motivates economies of scale, transportation flows are consolidated to many fewer transborder routes than would exist across a comparable domestic geography. This funneling of flows, a bottleneck by design, is prone to congestion.

Since 9/11, scrutiny of cross-border flows has intensified. Comparisons of Pacific Highway commercial vehicle processing times between 2002 and 2006 (table below) show a 91 percent increase in inspection time. This is during a period subsequent to 9/11 and following the opening of FAST lane.

2002 vs. 2006 truck processing times, U.S. Pacific Highway port-of-entry¹³

Year	Lane Type	Booth Count	Processing Time (seconds)	Capacity (trucks/hour)
2002	All	2	57	126
2006	General	2	120	60
	FAST	1	87	41
	Total	3	109	101
Change		↑ 50%	↑ 91%	↓ 20%

The funneling effect of high-volume border crossings, the increased security processes of federal inspection services, and increased globalization of trade and travel flows have rendered the preservation of mobility a continuing challenge. The plan for meeting this challenge, presented here, is to keep all parties involved, identify the shared interests, and promote cooperative investments in system optimization that are well matched to regional transportation demand characteristics. This approach will leverage continued information sharing and interoperability.

2.4.1. Addressing the challenge—ATIS

The strategy of providing more timely information to cross-border travelers and freight carriers (explained at length in the [WSDOT/WCOG TBCR application](#)) aims to balance the ongoing need for mobility with the increased attention to security since 9/11. Expected results include the following:

- Drivers will have advanced knowledge of route-specific border wait times and therefore be able to make the most efficient use of available capacity.

¹² An example of cross-border system ownership is the Burlington Northern Sante Fe Railway's WA-BC line used by BNSF, Canadian National, and Amtrak.

¹³ IMTC Pacific Highway Port-of-Entry Commercial Vehicle Border Operations Survey, [Final Report](#), June 2007, Halcrow Consulting, Inc.

TIGER Grant Application

Cascade Gateway Border Investments

- Resulting data and information can be integrated with federal inspection-agency process-improvement programs like NEXUS, FAST.
- ATIS infrastructure will provide attractive opportunities for market-based and public-private approaches to reducing congestion. Emerging, market-based services include real-time routing based on corridor travel times and incident avoidance.

2.4.2. Addressing the challenge—planning & policy development

Even from a domestic perspective, border crossings require multiple, major public functions with very different core missions: transportation and inspection. This creates a system management challenge which benefits from active outreach and coordination.

From its inception, the International Mobility and Trade Corridor Project (IMTC) has gone beyond a domestic perspective and engaged *public and private* stakeholders in a planning coalition that considers the system opportunities for improving a *binational*, multiple-crossing *gateway*.

Balancing trade and travel with increased attention to security requires, even more than at the outset of IMTC, that both countries' federal, state, and, provincial agencies work together with industry in a regional context to mutually identify opportunities for higher performance, and advance those improvements with financial and administrative partnerships. This approach has proven itself for more than a decade. Continued success depends on support for active facilitation, data collection, and information sharing.

This strategy, based on a willingness to jointly collect data and share information, is embodied in the planning projects proposed here. The Circulation Analysis, Regional Economic Modeling, BIFA Mapping, Border Data Warehouse, and Border Freight Capacity Management study would not be possible without cultivated relationships among regional binational stakeholders and facilitated multi-agency involvement in project planning, financing, and oversight. Given the purpose of these projects—to inform the binational identification of future improvements and operational alternatives—the products of such analysis must be pursued bilaterally.

3. Project parties

At their inception, the projects proposed here have been identified and collaboratively endorsed for advancement by IMTC members. Information on IMTC participants and objectives can be found at the [IMTC membership webpage](#).

For the purpose of illustrating the involvement of critical project parties and individuals with the projects proposed in this application, the following, partial list of agencies and people follows. All of these individuals participate regularly in IMTC.

TIGER Grant Application

Cascade Gateway Border Investments

Selected IMTC Participants

Partner Agency / Organization	Contact at Partner Organization	Position
WSDOT	Todd Carlson	Planning & Engineering Services Manager, Whatcom, Skagit & Island Counties
BC Ministry of Transportation	John Schnablegger	Regional Manager, Programming, Partnerships, & Planning
FHWA	Sidney Stecker	Transportation Planner, WA Division
Transport Canada	Mimi Sukhdeo	Regional Director, Coordination & Policy
US Customs & Border Protection	James Rector	Assistant Port Director, Passenger Operations
Canada Border Services Agency	Kim Scoville	Director, Pacific Highway District
U.S. Consulate General, Vancouver	G Kathleen Hill	Deputy Consul General
Canadian Consulate General, Seattle	Kevin Cook	Political, Economic & Academic Officer
Washington Trucking Association	Norm Miller	Vice President
BC Trucking Association	Louise Yako	Vice President, Policy, Communications & Partnerships

4. Grant funds and sources and uses of project funds

The total amount requested for the Cascade Gateway Border Investments is \$4,740,000.

This application requests a waiver of the \$20 million minimum.

This is also a 100 percent request. As indicated in the TBCR application referenced in earlier sections, complementary investments in border ATIS are planned by the British Columbia Ministry of Transportation and Transport Canada.

The uses of these funds are summarized in the table at right.

Project	Est. Cost
Cross-border ATIS	
SR 539 ITS 2	\$1,400,000
SR 539 ITS 3	\$760,000
SR 9 ITS Expansion	\$960,000

Planning & Policy	
Border Circulation Analysis Phs. II & III	\$200,000
Regional Freight Capacity Mngmt.	\$200,000
NEXUS marketing	\$40,000
WCOG - IMTC facilitation (2yrs)	\$650,000
Regional Economic Model	\$400,000
BIFA mapping	\$15,000
Data Warehouse Upgrade	\$115,000

Total	\$4,740,000
--------------	--------------------

5. Primary selection criteria

This section explains how the Cascade Gateway Border Investments will leverage regional, binational partnership to increase border crossing productivity and continue support for coordinated border management and planning. These investments in information and institutional capacity are essential to continued, long term maintenance of U.S.-Canada mobility, U.S. export viability, and cross-border cultural ties.

TIGER Grant Application

Cascade Gateway Border Investments

5.1. Long-term outcomes

While the Cascade Gateway Border Investments will generate near-term benefits for the United States, these projects are also foundational, promoting long-term system maintenance, economic competitiveness, regional livability, sustainability, and safety.

5.1.2. State of good repair

Improved Facilities: Investments in cross-border ATIS promote optimized distribution of traffic across existing roadways and border crossing capacity including route and travel time shifts.

Consistent with regional efforts: These investments complement previous deployments of border ATIS (by WSDOT, B.C. Ministry of Transportation, U.S. FHWA, and Transport Canada) that have been jointly developed to serve the Cascade Gateway region.

Improved transportation for commerce: Improved system efficiency addresses the transportation challenge of increased border security. These kinds of efficiency gains help balance our concurrent pursuit of security and mobility. Real-time, route-specific travel time information is also a key strategy of U.S. and Canadian border inspection services, documented in their joint work on business resumption during and following interruptions to cross-border transportation systems¹⁴.

Capital, asset management, & maintenance: The Cascade Gateway Border Investments are proposed for 100-percent federal assistance under the TIGER program.

WSDOT has maintained ongoing investments in ITS hardware and will continue such asset management under its 2009-2015 Strategic Plan policy, "To maintain, preserve, and extend the life and utility of prior investments in transportation systems and services."¹⁵

As individual agencies and in the context of coordinated border planning through IMTC, WSDOT, BC MoT, and numerous other agencies have identified ATIS as a priority and made significant initial investments. Ongoing maintenance of these assets has been undertaken by WSDOT and BC MoT and should continue under existing programmatic responsibilities.

5.1.3. Current condition and performance

Through efforts coordinated by the IMTC Project, the Cascade Gateway has benefited from relatively robust data on trade and travel demand and border operations. The following charts review recent, summary-level measures of travel demand and system performance. As the systems which generate this data improve and become more constant generators of information, performance measurement should improve as well as agencies' ability to fine tune resource allocation and asset management.

Passenger system performance: Performance of cross-border travel systems is typically measured in wait-time or wait-time as a function of volume. ATIS systems in the Cascade Gateway aim to distribute demand across proximate crossings, so the degree to which this distribution takes place is also an important measure.

¹⁴ Pacific Venture, Government to Trade Exercise, After Action Report, April 12 2007, CBSA/CBP

¹⁵ [Business Directions](#): WSDOT's 2009-2015 Strategic Plan.

TIGER Grant Application Cascade Gateway Border Investments

The chart at right offers an annualized view of cross-border wait-time patterns for southbound traffic entering the U.S. at Peace Arch (Interstate 5).

Freight system performance: Elements of the cross-border freight system typically associated with performance measurement include border wait time, variation in border wait-time (predictability), and usability of alternative inspection programs (C-T PAT, CSA, PIP). As with passenger movements, ongoing investments in ATIS hardware (loops, radar, LPRs) enable more efficient distribution of traffic on the network. The extent to which these information systems achieve this should be tracked as a performance measure. Especially in the freight environment, this will require ongoing coordination with U.S. and Canadian inspection agencies and a shared appreciation of how import entry regulations relate to carrier route selection and clearance.

The chart above illustrates a range of typical truck traffic border wait times experienced in June 2006 at the U.S. port-of-entry at Pacific

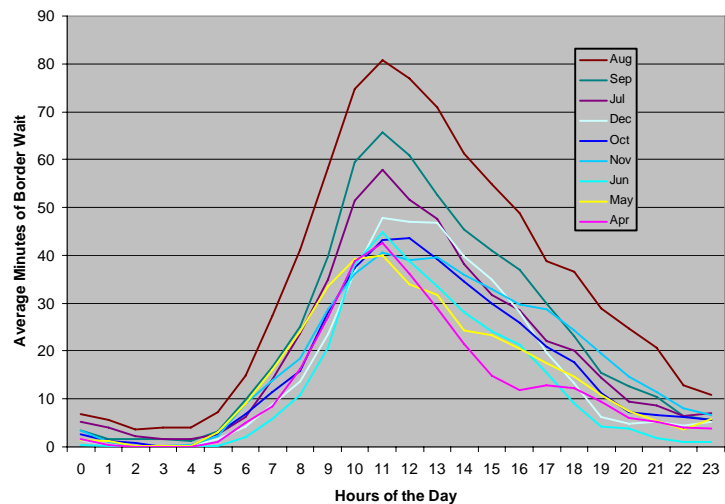
Highway. Comparable measures are currently being compiled for IMTC agencies by WCOG and BPRI upon completion of a similar data-gathering effort this June and July.

Abundant information on freight and travel volume trends for the Cascade Gateway is available at WCOG's [IMTC border data webpage](#).

5.1.4. Economic competitiveness

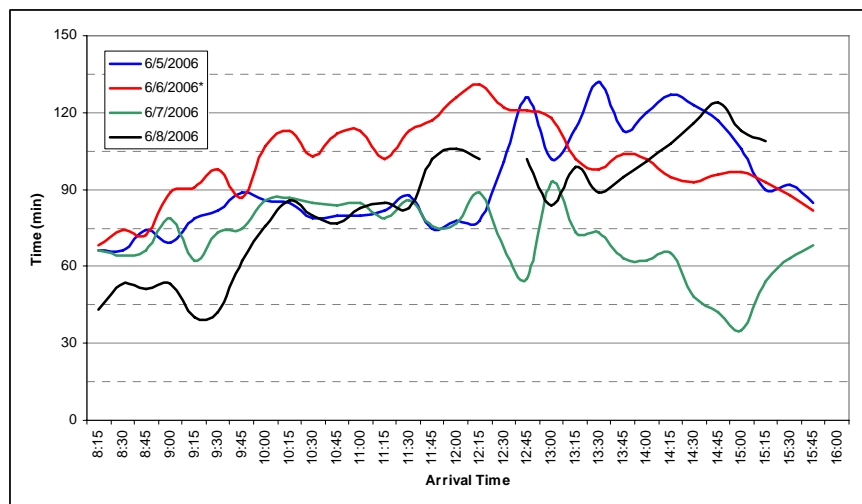
Employment & production: The connections that the Cascade Gateway provides between WA and BC are important to the United States and Canada for the continuation of longstanding cultural and social ties. On this foundation our two countries have established the world's largest trading partnership. The most basic indicator of this connection's relevance to U.S. citizens' livelihoods is exports. In 2008, U.S. companies

2008, Peace Arch, Southbound, Average Passenger Vehicle Wait Time, By Month, By Hour



Source: CascadeGatewayData.com—IMTC ATIS Border Data Warehouse. January through March

Southbound, Non-FAST travel times, Pacific Highway Trucks



Source: IMTC Pacific Highway Port-of-Entry Commercial Vehicle Border Operations Survey - Final Report. June 2007, Halcrow Consulting, Inc. - for Transport Canada & WWU Border Policy Research Institute.

TIGER Grant Application Cascade Gateway Border Investments

exported \$11.75 billion of goods to Canada through the three Cascade Gateway truck crossings. An additional \$945 million of U.S. goods was exported by rail here.

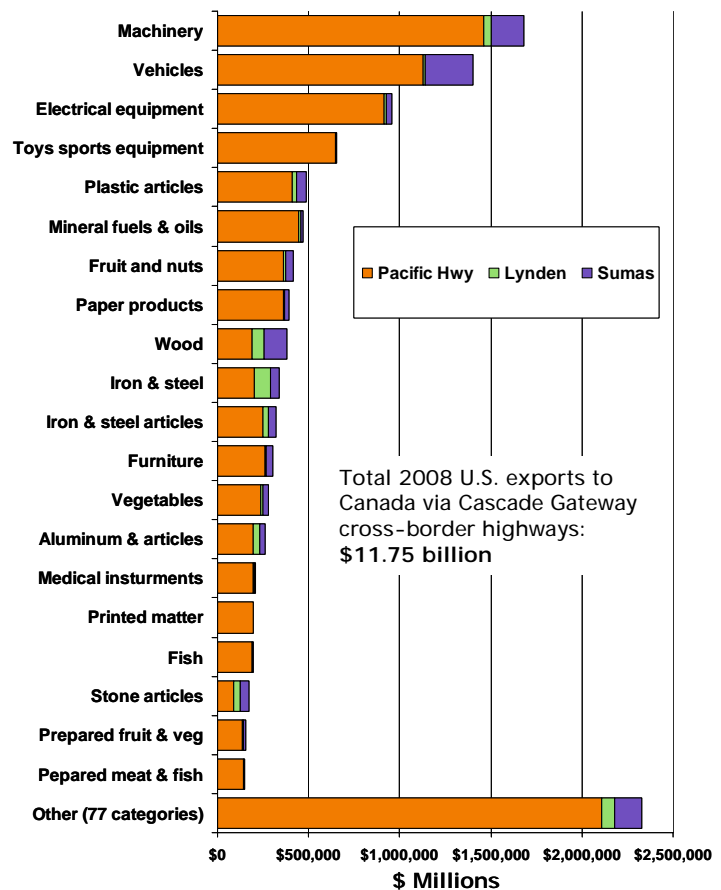
The chart at right details the relative export volume by the top 20 commodity sectors shipping goods through the Cascade Gateway. 27 percent of this export volume comes from outside of WA State.

Jobs: Cascade Gateway export flow also comes from a diverse array of market sectors including manufacturing, farming, forestry, and technology. These industries provide high paying jobs as do the transportation industries that carry these international shipments.

When viewed alongside the WA State GDP-by-industry chart at right, the importance of efficient border crossings is clearly connected to major sources of regional employment: durable goods, 8 percent; non-durable goods, 3 percent; transportation and warehousing, 3 percent; agriculture and fishing, 2 percent. Each of these sectors (collectively 16 percent of WA GDP) shows prominently in the mix of U.S. exports transiting the Cascade Gateway.

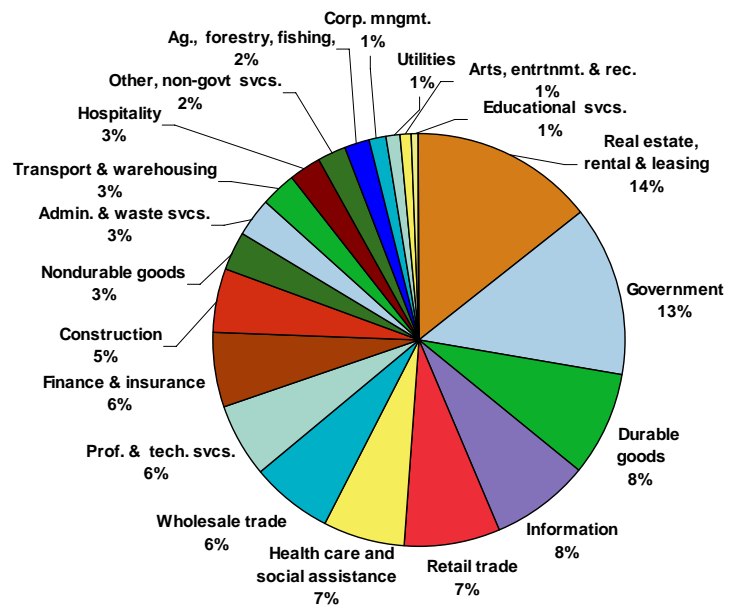
Long-term efficiency: Long term scenarios that system planners are considering include higher fuel costs, emissions reduction, the increasing difficulty and cost of expanding roadway capacity, and a continued emphasis on security at our borders. In this context, ATIS and multi-agency binational coordination (Cross-border policy & planning) provide proven strategies to increase system efficiency in support of goods and labor movement. As discussed above, ATIS systems stretch the capacity of the existing infrastructure by distributing demand across all viable routes. But planning, design, and

2008 U.S. Exports to Canada via Cascade Gateway Cross-border Highways by Port-of-entry, by Commodity Value



Source: U.S. Bureau of Transportation Statistics, Transborder Surface Freight Database. Compiled by WCOG.

2006, WA State GDP by NAIC



Source: US Bureau of Economic Analysis

TIGER Grant Application

Cascade Gateway Border Investments

deployment of these systems (or any cross-border system) requires structured communication and information sharing.

Encouraging new investments: As discussed in WSDOT's TBCR application, lowering the costs of crossing the border (travel time, regulatory complexity, route and mode flexibility) reduces existing barriers to entry for shippers and carriers and encourages new investment. Secondly, building traffic monitoring systems for borders and regional corridors will avail opportunities for the private sector to compile and deliver this information in innovative and dynamic ways that best serve specific user types (cars, trucks, dispatchers, media, etc.). This topic was covered in more detail in an [addendum to WSDOT's TBCR application](#).

Involvement with multiple modes: An adopted strategy of the IMTC coalition has been to look for opportunities to serve corridor travel and trade demand with expanded services by modes other than the region's highway border crossings. Rail and marine (both passenger and freight services) offer potential capacity, efficiency, and emissions-reduction benefits for future portions of Cascade Gateway trade and travel.

5.1.5. Livability

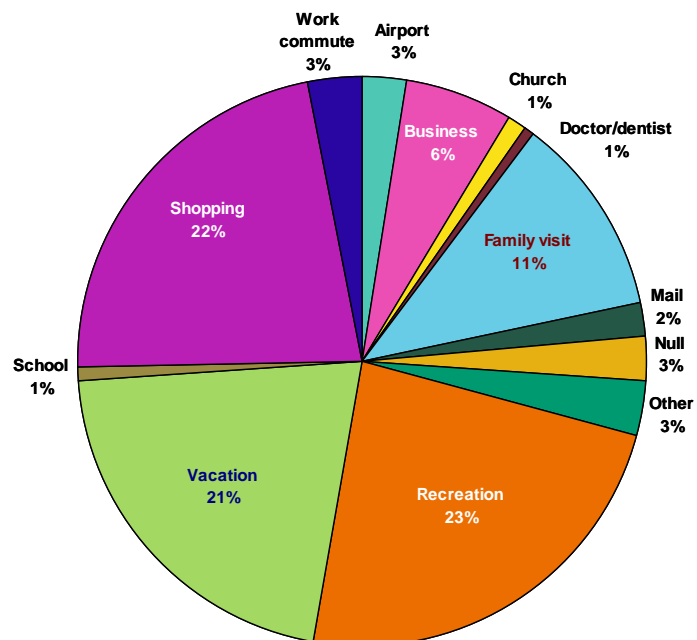
The affected community: In addition to the businesses and industries that depend on the Cascade Gateway (to a large degree described by the commodity distribution above), cross-border travelers are a diverse community, described at right by their stated trip purposes.

Over 4 million vehicle trips entered the U.S. via the Cascade Gateway in 2008. As illustrated by the array of trip purposes, this travel connects families (11 percent), and takes people to work or work-related activity (9 percent). U.S. and Canadian citizens buy goods and services while across the border (22 percent – an export mode unto itself). And vacation and recreation (a combined 44 percent) are even clearer indicators of community quality of life as well as important industries.

The IMTC cross-border planning coalition, by regularly convening system operators and stakeholders from both sides of the border, has built a community of professionals whose collaboration is grounded in shared livability standards.

Building on past feasibility studies and current initiatives, the IMTC coalition will continue to work on optimizing the Cascade Gateway. This translates into strategies of increasing transportation convenience (NEXUS, ATIS) but also supporting collaboration on expanded options, such as the recently increased Amtrak Cascades passenger rail service, regional bus agencies' interests in developing cross-border transit, cross-

Cascade Gateway, 2008 Passenger Vehicle Trip Purpose



Source: 2007/8 IMTC Cascade Gateway Travel Study, WWU BPRI, WCOG.

TIGER Grant Application

Cascade Gateway Border Investments

border short-sea shipping and passenger ferry services, and regulatory assessments to frame proposals for any of these.

5.1.6. Sustainability

The IMTC planning coalition, early in its formation, adopted an objective of promoting opportunities to encourage Cascade Gateway trade and travel to use the mode that most efficiently and productively serves its needs. As a strategy for sustainably managing the region's land border ports-of-entry, this translates into assessing the feasibility of cross-border rail and cross-border marine and promoting supportive policy and investment. Binational assessments have been conducted by IMTC agencies on both rail and marine and are available on WCOG's [IMTC project webpage](#). In addition to reducing congestion by spreading future demand across a broader set of modes, rail and marine offer potential emissions reductions.

The ATIS projects, as described above, reduce border wait times by spreading traffic volumes over available capacity. Resulting reductions in vehicle idling also reduces greenhouse gas emissions.

5.1.7. Safety

The IMTC planning coalition is an important foundation for cross-border projects that improve transportation safety. 2002 initiatives that integrated commercial vehicle weigh-in-motion software have advanced systems that allow weigh station data for cross-border trucks to be shared between BC and WA commercial vehicle enforcement agencies.

IMTC transportation and inspection agencies have also established a Cascade Gateway cross-border incident response communications protocol (featured in the TBCR application) that each party has agreed to use in the event of a border or border-road closure. The communication protocol has been noted by the BC-WA joint-cabinet meeting as well as cited in US Custom & Border Protection and Canada Border Services Agency's 2008 business resumption strategy.

5.1.8. Project performance evaluation plan

For each of the projects proposed in this application, one or more performance measures is listed below.

SR 539 & SR 9 ITS: As border-wait time systems are added to the Cascade Gateway Data Warehouse (www.CascadeGatewayData.com), the impact on system performance can be a secondary product of the ITS. Alongside ongoing plans for road improvements, inspection facility upgrades, and traffic routing alterations, the accuracy of border wait time systems also needs to be verified and maintained on a regular basis. IMTC will be addressing this need in the coming months.

Border Circulation Analysis Phases II & III: The delivery of a Phase II project & actions list for the binational transportation network (including ITS investments).

Regional Freight Capacity Management: Delivery of binationally conducted assessments of operational alternatives for Cascade Gateway cross-border commercial transportation capacity.

NEXUS Marketing: Percentage change in NEXUS enrollment and percentage change in NEXUS lane use.

IMTC: Meetings held per year. Meeting attendance by key agencies. Progress on endorsed projects.

TIGER Grant Application

Cascade Gateway Border Investments

Regional Economic Model: Development of base data that enables regional economic analysis irrespective of the international border.

BIFA Mapping: Delivery of a regional, cross-border ITS architecture using BIFA.

Data Warehouse Upgrade: Increased storage capacity and increased data query speed. Integration with other data-collection programs (WA and BC border weigh-in-motion).

6. Benefit-cost analysis

For the planning and policy components of this proposal, the benefits of planning coordination, information sharing, and cooperative system operations are evidenced in [many past projects](#) that, without a mechanism for cross-border collaboration, would not have happened. For the purpose of describing anticipated benefits, the proposed planning and policy projects can be viewed in three categories: coordination and decision making, system analysis, and stakeholder outreach.

Coordination and decision making (IMTC, BIFA, Data Warehouse, Economic Model) will continue to sustain cross-border collaboration between agencies, jurisdictions, and industry. This avoids redundancy and increases project value through knowledge of shared objectives and synergy.

System analysis (Freight Capacity Management) will engage IMTC stakeholders to jointly quantify the costs and benefits of alternative freight operations.

Stakeholder outreach (NEXUS marketing) will maximize regional participation in NEXUS, free up capacity, and reduce travel time and congestion-related emissions. As evidenced in the following ATIS benefit calculations, wait-time reduction associated with high NEXUS enrollment in the Cascade Gateway is very significant.

Benefits from investments in ATIS are much easier to quantify, estimate, and monetize. The following calculations estimate, in dollars, the range of benefit produced by a traveler information and wait time estimate system that results in saving ten minutes from the typical peak-travel experience. (Please see the 2008 data on typical wait times shown in the chart on page 12)

Starting with the 2008 figure of approximately 8 million cross-border car trips through the Cascade Gateway (for this purpose, counting both directions), the first step is to remove segments of that traffic who are not likely to experience significant delay: NEXUS travelers, off-peak-hour travelers, and off-peak-season travelers.

Estimated Adjustment to Total 2008 Passenger Vehicle Volume

2008 Cascade Gateway Passenger Vehicle Trips, Both Directions		8,000,000
Less Trips via NEXUS lane (no wait)	20%	-1,600,000
subtotal		6,400,000
Less Trips during off-peak hours	20%	-1,280,000
subtotal		5,120,000
Less Trips during off-peak months	40%	-2,048,000
Adjusted: Auto Volume Experiencing Delay		3,072,000

The next step involves application of USDOT's departmental guidance, *Valuation of Travel Time in Economic Analysis* (Revised February 2003). The following table applies the distinction USDOT makes between business and personal travel to IMTC's 2008 Cross-Border Travel Study results on vehicle occupancy by trip purpose.

TIGER Grant Application

Cascade Gateway Border Investments

Estimated Annual Travel Time Savings from 10-minute Wait-time Avoidance¹⁶

Travel Type	2008 Percent	Avg Veh. Ocpncy.	2008 Adjusted Auto Est.	Travelers	Time Savings Scenario	
					Minutes	Hours
			3,072,000		10	0.167
Business	7.6%	1.5	234,203	348,970	3,489,696	58,162
Personal	92.4%	2.0	2,838,528	5,696,926	56,969,257	949,488

Finally, the estimated annual total hours of avoided delay is multiplied by the high and low values suggested by USDOT for intercity travel.

	Est. Annual Value of Saved Time			
	Low		High	
Business	\$17.00 /hr	\$988,747	\$25.40 /hr	\$1,477,305
Personal	\$12.70 /hr	\$12,058,493	\$19.00 /hr	\$18,040,265
Total		\$13,047,240		\$19,517,569

The annual savings calculated above should not be directly compared to the combined project costs of the ATIS investments proposed in this application (\$3,000,000). These investments are important additions to a regional system that has already been invested in by FHWA, WSDOT, BC MoT, and Transport Canada (approximately \$8 million over the last seven years). Applying a ten-year amortization to the total investment of \$11 million (the past \$8 million plus the proposed \$3 million) indicates that an annualized system cost of about \$1.1 million leads to an annual benefit of around \$16.3 million (the midpoint of the estimated value range).

6. Secondary selection criteria

The Cascade Gateway has been a leader in innovative project development supported by active partnerships between agencies, across the international border, and between private and public sectors.

6.1. Innovation

In the cross-border environment, technology continues to offer potential for productivity and efficiency gains. The biggest challenge to applying technology is not the hardware and software but the distinct institutional missions and relationships: transportation and inspection, state/provincial and federal, private and public. IMTC has provided a forum that has successfully facilitated innovative cross-border collaborations to implement information technology and infrastructure improvements. Ongoing facilitation of IMTC and efforts to improve cross-border arrangements to the benefit of all border stakeholders will continue.

¹⁶ Based on assumption that current and proposed investments in ATIS, along with continued expansion of NEXUS enrollment, could reasonably result in reduction of peak-time waits of ten minutes. Estimates of trip purpose and associated vehicle occupancy based on [2007/8 IMTC Cascade Gateway Travel Study](#).

TIGER Grant Application

Cascade Gateway Border Investments

The Cascade Gateway planning and policy projects proposed here will support collaborative efforts to continuously improve system performance and help ensure that the transportation system continues to sustain the regional and national economic sectors that move goods on this international corridor.

The proposed ATIS projects employ tested technologies (loop detectors, license plate readers, cameras, websites, mobile-device interfaces, etc.). The innovation is a function of how these deployments have involved multiple agencies from two countries. The end result is a WA State owned system that provides wait times associated with the Canadian federal inspection station and a BC provincially owned system that similarly covers wait times for U.S. border stations. As a secondary benefit, this data is compiled in a binational data warehouse and publically available.

In conjunction with the Freight Capacity Management project described above, the completion of a regional border wait time system (including the evolving coverage of adjacent border-approach highway segments) will enable evaluations of alternative management strategies that include binational approaches to congestion pricing. Evaluation of these scenarios will also include the potential for associated revenue and financing of future border improvements. But it needs to be emphasized that any proposal to price a portion of cross-border freight capacity needs to be binational (a one-way unilateral program will not work) and must be based on a verifiable, real-time congestion measurement system. This potential scenario clearly illustrates the dual necessity of innovative institutional partnerships and innovative applications of technology. The Cascade Gateway Border Investments are supported by agencies who have executed projects based on these principles.

6.2. Partnership

The Cascade Gateway Border Investments will build upon twelve years of cross-border collaboration between agencies, jurisdictions, and industries. As discussed above, the IMTC cross-border planning coalition brings together multiple disciplines with operational responsibilities for, and economic reliance on, the Cascade Gateway: transportation, inspection, border cities and small towns, chambers of commerce, industry associations, non-governmental organizations, and others.

6.2.1. Jurisdictional & stakeholder collaboration

As discussed in Section 3 of this application, the Cascade Gateway Border Investments will continue to rely on the active involvement of regional stakeholders through the IMTC project, led by the Whatcom Council of Governments (MPO). ([Complete information on IMTC participation](#)). Each of the projects has a specific owner but, through IMTC, will involve multiple cross-border partners in integration and delivery.

6.2.2. Disciplinary integration

There are several examples of how IMTC enables the involvement and financial partnership of diverse interests.

Symmetrical investments in Canada: A timely illustration of how the Cascade Gateway Border Investments are symmetrically complemented by other partner's investments is the recently announced plan by the BC Ministry of Transportation to expand their wait-time measurement systems to cover passenger-vehicles on BC Highways 13 and 11—approaching the Lynden, WA and Sumas, WA US Customs and Border Protection facilities respectively.

Federal inspection agencies pursuing similar objectives: U.S. Customs & Border Protection and Canada Border Services Agency have joined with FHWA and Transport

TIGER Grant Application

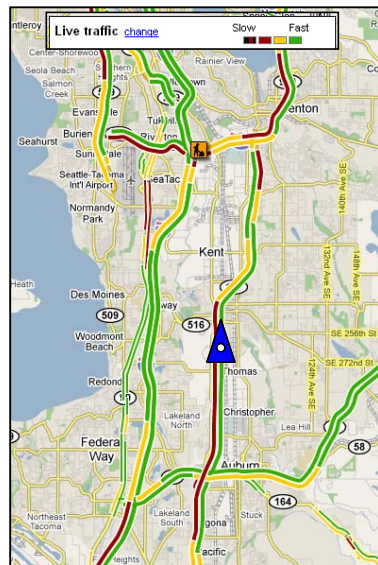
Cascade Gateway Border Investments

Canada in forming a binational border wait-times working group. This effort, focused on improving and standardizing the automated collection and dissemination of border wait times, will be testing new technologies and measurements at multiple ports-of-entry including Cascade Gateway locations. Representatives from headquarters offices of FHWA, US CBP, Transport Canada, and CBSA have discussed these plans at an IMTC meeting and collaborated with system engineers from WSDOT and BC MoT regarding upcoming activity.

Border traffic data systems used to reduce greenhouse gas emissions: The ATIS system in-road detectors have been used to control a traffic-signal at the approach to the U.S. border station at Peace Arch which is used create a no-idling zone during peak traffic periods. Groups of cross-border cars are signaled to proceed to inspection booths ensuring that the border processing is not slowed.



Cars wait behind an automatically activated signal in the anti-idling zone at the BC Highway 15 approach to the U.S. land border port at Peace Arch, Blaine, WA. The same system that generates real-time measures of delay (ATIS) is also used to reduce greenhouse gas emissions.



Third-party applications development: Potential for third party, value-added information services to be developed and sold to consumers is made possible by public investments in traffic monitoring. This result supports economic growth while at the same time encouraging more efficient transportation system use and quality of life improvements.

At left, real-time road congestion information (shown here from Google Maps Traffic coverage of South Puget Sound, WA) is enabled by WSDOT owned in-road detectors. Increasingly, privately developed data products are being integrated with GPS applications to provide real time re-routing guidance in response to congestion and incidents. (Graphic from Google.com modified by WCOG)

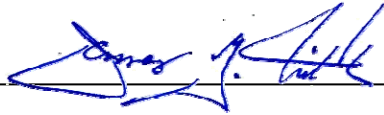
TIGER Grant Application Cascade Gateway Border Investments

7. Program-specific criteria

This section is not applicable to the projects outlined above.

8. Federal wage rate requirement

The Whatcom Council of Governments will comply with the requirements of subchapter IV of chapter 31 of title 40, United States Code (Federal wage rate requirements), as required by the Recovery Act.



James Miller, Executive Director

9. National Environmental Policy Act requirement

The proposed projects will not significantly impact the natural, social, or economic environments. Past evaluations of ATIS installations by WSDOT have determined that they are categorically excluded from NEPA.

10. Environmentally related federal, state, and local actions

Past installations of ATIS, in-road detectors have required permissions and cooperation with federal inspection agencies (US CBP, CBSA), federal facilities agencies (GSA), and the U.S.-Canada International Boundary Commission. While these have been handled efficiently in the past, the ATIS investments proposed will be sufficiently distant from federal facilities and the border itself.