

# CASCADE GATEWAY ADVANCED BORDER INFORMATION SYSTEM DESIGN PROJECT (ABIS) REQUEST FOR PROPOSALS



whatcom council of governments

RFP Issued	Monday, August 14, 2023
Proposals Due	Friday, September 8, 2023
RFP Website	<a href="http://www.wcog.org/rfp">www.wcog.org/rfp</a>
Questions & Submittals Email Address:	<a href="mailto:RFP@wcog.org">RFP@wcog.org</a>

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# 1. ABSTRACT

The Whatcom Council of Governments requests proposals to develop a detailed design and implementation plan for a binational border wait time system that will solve existing system challenges and support additional features including an anti-idling system to reduce greenhouse gas emissions; data feeds to inspection agencies, and the border wait time archive at [www.borderdata.org](http://www.borderdata.org); real-time traffic operation applications including websites, variable message signs, and alerts; and possible wider-range applications to look at travel patterns.

The cost of this design project may not exceed \$350,000 (USD). This work will be personal services. This project has a voluntary 10% DBE goal. Firms submitting proposals must be able to work in both the United States and Canada.

Whatcom Council of Governments reserves the right to amend terms of this RFP or to withdraw the RFP at any time, regardless of how much time and effort consultants have spent on their responses.

## 2. INTRODUCTION

### 2.1 The current system

The Cascade Gateway system of border crossings consists of four land ports-of-entry (POEs) connecting Lower Mainland British Columbia and Whatcom County, Washington State. To optimize traffic flow across Cascade Gateway POEs and inform travelers of relative travel times on proximate cross-border routes, the WA State Department of Transportation (WSDOT) installed a [northbound advanced traveler information system \(ATIS\)](#) at all four ports-of-entry. Similarly, the B.C. Ministry of Transportation and Infrastructure (BCMOTI) also installed a [southbound system](#). Since 2007, both systems have exported their data in real time to an online archive at [www.borderdata.org](http://www.borderdata.org).

Both systems use loop detectors to collect data and estimate current wait times. Data include the location of the queue end, the number of inspection booths open, and the current average inspection booth processing rate. Every five minutes, the algorithm calculates the number of vehicles in the queue and the time it will take to process them (the current wait time). The southbound system has been modified to include real-time booth-type data from U.S. Customs & Border Protection's (USCBP). Booth type – and by extension, lane type (standard or trusted-traveler) must be known for accurate wait time estimation since processing times for NEXUS (trusted-traveler) booths and standard booths differ substantially. And although there is only one NEXUS approach lane, the number of inspection booths serving the NEXUS lanes varies.

### 2.2 International Mobility & Trade Corridor Program (IMTC)

The existing wait time systems are managed by stakeholder agencies that participate in the International Mobility & Trade Corridor Program ([www.theimtc.com](http://www.theimtc.com)), a binational coalition established to support the improvement of safety, mobility, and security for the Cascade Gateway system of border crossings. A subgroup of IMTC participants will advise on the ABIS Design Project.

### 2.3 The SMART Program

Funding for this project comes from the Bipartisan Infrastructure Law (BIL) SMART Grants Program. SMART funds state, local, and tribal governments to conduct demonstration projects focused on advanced smart city or community technologies and systems to improve transportation efficiency and safety. The program is structured in two stages, in which applicants initially seek Stage 1 Planning and Prototyping Grants. Selected projects are then eligible to apply for Stage 2 Implementation Grants. This RFP is for Stage 1 work only.

## 2.4 Location

The project will focus on the Cascade Gateway POEs and approach roads connecting Lower Mainland of British Columbia, Canada, and Whatcom County in Washington State:

- **Peace Arch/Douglas:** Open 24 hours/passenger traffic and NEXUS/U.S. I-5 and B.C. Hwy 99
- **Pacific Highway:** Open 24 hours/passenger traffic, NEXUS, bus, commercial traffic, and FAST/ WA SR543 and B.C. Hwy 15
- **Lynden (Kenneth G. Ward)/Aldergrove:** Open 8:00am – 12:00am, NB passenger traffic, NEXUS, and commercial traffic/ SB passenger and permit-only trucks/ WA SR 539 and B.C. Hwy 13
- **Sumas/Abbotsford-Huntingdon:** Open 24 hours/all modes/WA SR9 and B.C. Hwy 11

Note that this project will not include the Point Roberts/Boundary Bay port-of-entry, as there are no alternate routes for travelers to use.

## 3. PROBLEM STATEMENT

Both WSDOT and BCMOTI ATIS systems are 20 years old, and the hardware and software systems are becoming obsolete. And while loop detector systems work well in non-queued situations, the border wait time systems face numerous challenges:

- Loop detectors often miscount vehicles in slow-moving queues where the tail end of one vehicle is difficult to detect separately from the front of the following vehicle.
- The fixed locations of loop detectors have made it difficult to keep wait time systems accurate alongside changes in border traffic management like realigned or lengthened lanes. Three of the four Cascade Gateway POEs are scheduled for major redevelopments.
- The current loop detector system estimates *current* wait time – the wait likely to be experienced by the next arriving vehicle. Other technologies (e.g., Bluetooth) can estimate *actual* wait time – the wait that the last vehicle departing an inspection booth actually experienced. Both estimates are desirable for different uses and stakeholders. Actual wait times are the more appropriate system performance metric.
- Northbound and southbound systems are impacted by inspection agencies changing the functions of any booth; if personal vehicles (cars) are diverted to the commercial (heavy truck) booths, for example, the system will not record them as cars or add them to the calculation; or if inspection agencies operate a variable NEXUS lane, the algorithm for that lane would need to change.
- Current systems use field servers on the side of the highway. The servers and the cabinets are obsolete, and the algorithms used for data processing were developed 20 years ago.
- Current communication systems that relay loop data from the crossings to ITS hubs and traffic management centers (TMCs) is split between reliable fiber and less-reliable wireless transmission. Wireless connections have created communication reliability concerns.

## 4. OPPORTUNITIES

In addition to addressing the issues above, a new system may be able to offer additional benefits that were not possible when the original systems were installed.

**Anti-idling:** The Greening the Border Initiative of 2008 recommended anti-idling systems. A southbound anti-idling system has been operating at the Peace Arch Port-of-Entry since 2010 and encourages travelers to shut off their engines. A northbound system at the same crossing could have multiple benefits, including providing Canada Border Services Agency (CBSA) a better way to hold traffic during transitions between open and closed booths.

**Commercial vehicle wait times:** Brokers and carriers are currently required to provide advanced notification of their POE choice, which limits last-minute usage of a commercial wait time system. However, information shared

via apps and websites could be used by trucking companies to assess which POE to select prior to submitting their paperwork. The system would also be poised to respond to proposed future developments where trucks could file paperwork and cross at any of the POEs in the region. And the data collected through a commercial wait time component would provide valuable performance metrics not currently available that could lead to operational improvements.

**Dynamic vehicle tracking:** If the technology chosen is compatible with crowdsourced data, there may be opportunities to calculate total trip times, border crossing choices, origins and destinations, and other metrics, assuming the information gathered abides by both Canada and United States privacy laws.

## 5. ABIS SYSTEM GOALS

Given the factors listed above, IMTC participating agencies have determined that new technology would improve the cross-border wait time systems. ABIS will improve cross-border transportation efficiency and safety with the following goals:

1. **Accurately and efficiently report actual traveler wait times in real time for the region's four POEs, northbound and southbound, for standard and NEXUS traffic:** improve transportation efficiency by distributing traffic volumes across available capacity, and flag suspected inaccuracies for system operators.
2. **Report commercial vehicle wait times for the three commercial POEs, northbound and southbound:** reduce truck travel times and assist with more reliable scheduling.
3. **Provide a real-time data feed to applications, websites, and variable message signs:** improve travel time expectations to allow for more reliable cross-border experiences.
4. **Provide a real-time data feed to U.S. and Canadian inspection agencies:** improve safety by providing tools for law enforcement to better manage travel demand.
5. **Provide a real-time data feed to the Cascade Gateway Border Data Warehouse:** improve system performance metrics and improve datasets for research and analysis.
6. **Integrate with existing traveler information systems:** integrate results with traveler information networks managed by WSDOT, BCMOTI, CBP, and CBSA.
7. **Improve data security:** Any solution identified will improve the security of the data feed by anonymizing data and not relying on outdated servers located on the side of the roadway and may include updates for the data transmission network/method.
8. **Evaluate the possibility of incorporating anti-idling system and vehicle routing component:** Determine if it is feasible to incorporate dynamic traffic metering and encourage travelers to switch off engines and reduce greenhouse gas emissions; and/or routing information that would provide route travel estimates, border crossing choices, and arrival rate forecasts.
9. **Document the process:** serve as a test case for other U.S. – Canada border crossings looking to provide wait times and improved reporting functionality.

## 6. PROJECT DESCRIPTION

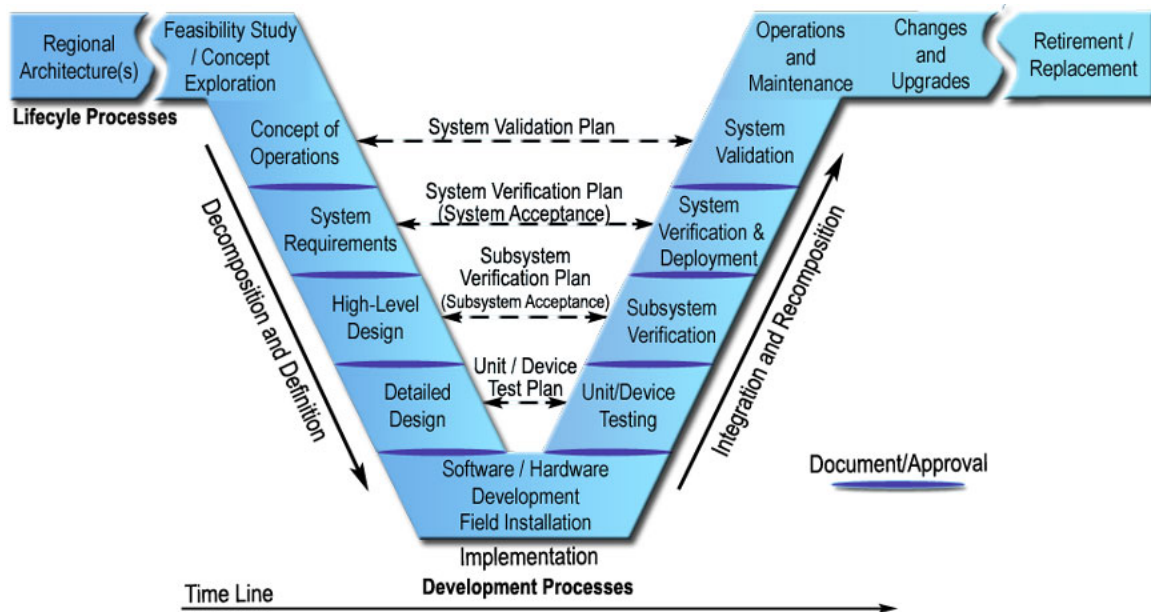
Based on the problem statement, opportunities, and project goals listed above, WCOG seeks a consulting firm to identify technology options and **develop a complete implementation plan** with cost estimates for the ABIS. The budget for this design stage may not exceed **\$350,000 (USD)** for the completion of the consultant portion of the work. A final agreement will be negotiated with the consultant following initial selection, as detailed further below.

# 7. DESIGN PROJECT OBJECTIVES

This Stage 1 design project includes the following objectives:

1. Evaluate technologies and methodologies for estimating and reporting cross-border wait times (including but not limited to Bluetooth, Wi-Fi, camera detection, or microwave detection, as well as the possibility of purchasing location-based services data or other third-party data).
2. Evaluate system configurations to determine the optimal design for capturing, processing, and disseminating border wait time data.
3. Develop and document a concept of operations for the ABIS project.
4. Develop and document system requirements.
5. Complete a high-level design that includes an assessment of performance improvements, cost, and maintenance requirements, and sets up the project for implementation.

Because this is an Intelligent Transportation Systems (ITS) project, the project requires a systems engineering approach to completing the design. A systems engineering analysis is required for all ITS projects using federal funds per Title 23 CFR 940.11. The “Vee” diagram below illustrates a project’s life cycle. This ABIS Design Project will develop the left wing of the diagram, specifically, the concept of operations, system requirements, and high-level design of the project.



Source: <https://ops.fhwa.dot.gov/publications/seitsguide/index.htm>

The project must answer the following questions:

1. What technology(ies) can accurately estimate wait times for the different modes and lane types in an area with mixed wireless data coverage?
2. Has an existing system like the one(s) recommended been deployed in a heavily queued traffic area like a border crossing?
3. What are the costs of these technologies?

4. What are the maintenance requirements and estimated maintenance costs?
5. How will information from the system securely connect to TMCs and be availed to the general public?
6. How will the system integrate with existing traveler information systems, data archives, and inspection agencies?
7. Is an anti-idling component feasible, and if so, what is the additional cost? Would it impact CBP outbound operations?
8. Is dynamic vehicle routing analysis feasible (for a 50-mile radius), and if so, what is the additional cost?
9. Will the system accomplish all the ABIS system goals?
10. What is the estimated time to implement this system (not including procurement of funding)?

## **8. SCOPE OF WORK**

The following tasks reflect work to be completed by the consultant as overseen by the WCOG Project Manager and a project advisory group, consisting of representatives of the U.S. and Canadian agencies that are stakeholders in the project. Task descriptions will be finalized during contracting.

### ***Task 1: Scoping and contracting***

Develop a detailed scope of work and systems engineering documentation for the consultant, then finalize a contract agreement.

### ***Task 2: Current state assessment***

Report on the existing northbound WSDOT and southbound BCMOTI ATIS system designs, equipment, functionality, and accuracy. Develop a list of what challenges exist and what needs to be addressed in the new ABIS system.

### ***Task 3: Review of existing border wait measurement technologies***

Provide a review, and lessons learned, from existing border crossing wait-time technology deployed at other ports-of-entry along the U.S.- Canada and, if applicable, U.S. – Mexico border.

#### ***Deliverable A: Current State Assessment and Existing Measurement Technology Review Report***

### ***Task 4: Concept development***

Consider technology for reporting current and actual vehicle wait times for standard cars, NEXUS cars, and commercial vehicles, including but not limited to readers like Bluetooth, Wi-Fi, camera detection, and microwave, as well as third party data. Explore how these wait times would be transmitted from the four crossings to WSDOT and BCMOTI TMCs and shared as per the goals of the project. Identify costs, challenges at each site. Develop a recommendation.

#### ***Deliverable B: Concept Explorations & Recommendations Report***

### ***Task 5: Concept of Operations***

Develop a concept of operations to describe how the system will function and be used, using established practices and templates for concepts of operations.

### ***Task 6: System Requirements***

In coordination with the Project Advisory Team, develop a table of the system requirements. This document will be used to ensure the completed project meets all expectations and project goals.

Deliverable C: Concept of Operations & Systems Requirements Document

### **Task 7: High-Level Design**

Develop a high-level design showing the project architecture and an evaluation of its performance, functionality, cost, and any potential/expected technical or non-technical issues. If possible, include hardware, software, and selection of commercial products needed to complete the project.

Deliverable D: High-Level Design & Implementation Plan

## **9. MEETING REQUIREMENTS**

The selected consultant team is expected to meet with the Project Advisory Team either in person or virtually to present key stages in the project and solicit draft feedback before moving on to the next task.

At the minimum this would include meetings:

1. To review the Deliverable A draft: Current State Assessment and Existing Measurement Technology Review Report (Tasks 2 & 3)
2. To review the Deliverable B draft: Concept Exploration & Recommendations Report (Task 4)
3. To review the Deliverable C draft: Concept of Operations & Systems Requirements Document (Tasks 5 & 6)
4. To review the Deliverable D draft: High-Level Design & Implementation Plan (Task 7)

The consultant will be expected to have regular meetings with the WCOG Project Manager, at least monthly.

## **10. MANAGEMENT STRUCTURE**

WCOG will hire the consultant. WCOG will manage the consultant. WCOG will be in regular communication with the project advisory group.

## **11. TIMELINE**

The project will begin as soon as a notice to proceed is delivered to the chosen consulting firm, estimated to be in October/November 2023. The project will span one calendar year and should be completed by end of December 2024. A project timeline will be finalized as part of the contracting process.

## **12. SUBMITTAL INSTRUCTIONS**

### **12.1 Proposal Contents**

Proposals shall be submitted with the following elements:

1. **Cover page**
2. **Table of Contents**
3. **Executive Summary** — Provide an overview of your firm's expertise and strengths, examples that distinguish your firms from other firms, and how you plan to accomplish this scope of work.
4. **Qualifications and Experience** — Describe the qualifications of staff proposed for the project, their positions in the firm, and types and amount of relevant experience. Include the experience and key personnel of any subcontractors.

5. **Narrative** — Detail your approach for accomplishing the project scope of work and achieving project goals. Identify tasks, due dates, and commitments in sufficient detail to permit WCOG to fully understand the intentions and activities of the consultant.
6. **Schedule** — Provide a timeline for each task in the project, key milestones and deliverables, and information about what personnel will be involved with the number of hours dedicated to each task.
7. **Project Staff and Rates** — Provide all-inclusive rates of each person, non-personnel costs, and the cost of each task along with the total project cost.
8. **Confirmation of Firm Eligibility** — Any firm selected for this project must be able to work in both the United States and Canada. Note if your firm or any subcontractor qualifies as a Disadvantaged Business Enterprise (DBE).
9. **References** — Provide a reference list of clients within the last five years that have contracted with the proponent to do similar work to this project. Name, title, email address, and telephone number shall be included for each reference.

## 12.2 Submittal Documentation Instructions

The submittal is limited to a total number of thirty (30) printed pages (15 sheets if printed both sides) including the cover page, submitted on 8.5" X 11" paper, and with type size no smaller than 10 point.

Hard copies are not required. A PDF of your proposal shall be submitted to: [RFP@wcog.org](mailto:RFP@wcog.org).

## 12.3 Deadline for Receipt of Proposals

Proposals must be submitted to the WCOG email address: [RFP@wcog.org](mailto:RFP@wcog.org) by **Friday, September 8, 2023**, by **5:00pm** (Pacific Time).

## 13. QUESTIONS

For administrative questions regarding the RFP submission (such as timeline, submittal format, etc.), please contact Melissa Fanucci at (360) 685-8385 or by email: [melissa@wcog.org](mailto:melissa@wcog.org).

Non-administrative questions regarding the proposal (such as clarifications about the scope of work, selection criteria, etc.) may be submitted by email only to [RFP@wcog.org](mailto:RFP@wcog.org). For the benefit of all proponents, questions and responses will be anonymously posted on the WCOG website at: [www.wcog.org/rfp](http://www.wcog.org/rfp).

All questions must be submitted by **Monday, August 28, 2023**, by **5:00pm** (Pacific Time).



## 14. SELECTION PROCESS

Proposals will be evaluated by WCOG staff and the Project Advisory Team. In evaluating the proposals, the following criteria will be used to determine up to three finalists to interview:

CRITERIA	POINTS
Experience and qualifications of both the project team and the project/contract manager in developing detailed designs for traveler information systems	25
Understanding of the existing system and challenges	10
Understanding of the project goals	15
Methodology and approach	25
Ability to meet project schedule & deliverables	15
References (with emphasis on working with multiple government agency partners)	10
<b>Total</b>	<b>100</b>

The selection process timeline will proceed as outlined below:

DATE	SELECTION PROCESS
8/14/23	First advertisement of RFP
8/21/23	Second advertisement of RFP
8/28/23	Deadline for emailed questions
9/8/23	Proposals due 5pm (PST) at WCOG office
9/15/23	Selection for interview
9/26/23	Interview finalists
9/27/23	Notification of first choice selection
ASAP	Negotiate toward a contract with first-choice proponent. If a final work plan and price cannot be agreed upon with first choice proponent, WCOG will ask the second-choice proponent to negotiate an agreement.

## 15. ALTERNATIVE FORMATS

Persons with disabilities may request this information in alternative forms by calling WCOG at (360) 676-6974.

## 16. ADA AND CIVIL RIGHTS

The Whatcom Council of Governments, in accordance with Title VI of the Civil Rights Act of 1964, 78 Stat. 252, 42 U.S.C. 2000d – 2000d-4 and Title 49, Code of Federal Regulations, Department of Transportation, subtitle A,

Office of the Secretary, Part 21, nondiscrimination in federally assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color or national origin in consideration for an award.

WCOG encourages disadvantaged, minority, and women-owned firms to respond.