

Cascade Gateway Border Data Warehouse 3.0 REQUEST FOR PROPOSALS



ABSTRACT

The Whatcom Council of Governments requests proposals to complete an upgrade of the Cascade Gateway Border Data Warehouse online archive to improve warehouse performance, output, and deliverables. The warehouse is accessible at www.borderdata.org.

This work will be personal services. This project has a voluntary 10% DBE goal.

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.

INTRODUCTION

The Cascade Gateway Border Data Warehouse (BDW) is a U.S. – Canadian data storage server and corresponding database and website that archives real-time border traffic information for the Cascade Gateway system of border crossings between Whatcom County, Washington State in the U.S.A. and the Lower Mainland of British Columbia in Canada. The BDW is located at www.borderdata.org.

The BDW archives five-minute increment wait time, volume, and other data from the northbound Advanced Traveler Information System (ATIS) managed by the WA State Department of Transportation (WSDOT), and the southbound ATIS managed by B.C. Ministry of Transportation and Infrastructure.

The original BDW was built in 2007 (BDW 1.0). Subsequent updates in 2010 (BDW 2.0) and the addition of a U.S. Customs & Border Protection (CBP) booth status data system into southbound wait time calculations in 2016 have improved upon the original design and availed more tools to stakeholders who use the archive. The BDW is now used by multiple apps and websites and is a proven data source and basis of metrics for multiple border stakeholders including federal and regional transportation agencies, inspection agencies, planning organizations, and local governments.

In addition to storing passenger and commercial vehicle wait time, volume, queue length, and other data relating to the four land border crossings, the warehouse also provides a connection to regional freight value data through a partnership with the U.S. Bureau of Transportation Statistics and their Transborder Surface Freight Database.

The objective of the BDW 3.0 Upgrade is to improve timely, accurate, and accessible border data to a broad range of stakeholders.

This project will:

1. Incorporate booth status data into BDW data feeds
2. Improve BDW performance and output
3. Upgrade commercial vehicle datasets
4. Improve aggregation and accessibility of regional cross-border freight value data

FEATURES OF BDW 2.0

The current system has numerous assets to help the public and stakeholder agencies access border-related data, including:

- Estimated delay, queue length, and volume for four border land border crossings, both directions, updated every five minutes (dating back to 2007).
- Subscription service that allows users to receive notification by email when a certain delay threshold has met.
- Application Programming Interface (API) that allows developers to directly query the database for their own applications.
- Custom query tools for downloadable data, and static reports and charts for quick views of the data.

PROBLEM STATEMENT

The applications using these data are numerous and include regional traffic models, border throughput simulation models, staffing allocations by inspection agencies, reporting by agencies on delays, system performance reporting by transportation agencies, academic research, and more.

The existing archive was completed in 2010 by IBI Group and is currently maintained by IBI Group under a maintenance contract. This project is needed for the following reasons:

- **Data accuracy** – In 2016 the archive was modified to collect data from CBP systems including vehicle processing type (NEXUS, standard, Ready Lane), vehicle passenger counts, province or state of vehicle, and processing time data. Because the current version of the archive doesn't use the booth status data to define data, it is erroneously reporting volumes by booth type.
- **Increasing hosting expense** – because the booth status data is archived in raw format (a data field for every car) and not binned, it is growing at a much higher rate than necessary.
- **Loss of U.S. Bureau of Transportation Statistics (BTS) compatibility** – since the BTS converted its transborder freight data query tool to Tableau it no longer allows for the BDW to "screen scrape" the relevant regional data for local queries.
- **End of maintenance funding** – This project is the only ongoing archive of five-minute increment border wait times going back to 2007. Keeping this resource maintained and hosted is very important to regional stakeholders.
- **No way to access new data sets** – the booth status data and archived commercial vehicle wait times are not currently accessible through the existing website, even though the data are being saved.

HIGH-LEVEL PROJECT GOALS

The following table shows existing limitations in the BDW and what operational needs there are to address these limitations.

EXISTING LIMITATIONS	OPERATIONAL NEEDS
<i>Booths are categorized by processing type (NEXUS, Standard, etc.) and are not dynamic.</i>	1. The warehouse needs to categorize data for each booth and lane dynamically, using the booth status data.
<i>There is no way to access booth status data.</i>	2. The southbound booth status data needs to be accessible for queries, reports, and visualizations.
<i>Booth status data is stored as individual records, creating additional storage needs.</i>	3. The southbound booth status data needs to be binned appropriately to reduce the size of the storage requirements and improve functionality.
<i>The warehouse is no longer compatible with the BTS freight data website.</i>	4. The warehouse needs to update its connection with the BTS freight data to show filtered Cascade Gateway data results.
<i>Subscriptions are no longer available due to security concerns.</i>	5. The warehouse needs an updated subscription service for notifications of border delays.

<i>There is no record of who is using the API.</i>	6. The warehouse needs an API registration function to provide contact information for agencies/organizations using the API resource.
<i>Data visualizations are outdated.</i>	7. The warehouse needs an updated visualization interface.
<i>The warehouse website is not device responsive.</i>	8. The warehouse needs a dynamic web interface that detects device type for optimal layout.
<i>Data definitions need to be more accessible.</i>	9. The warehouse needs to better define measures and validation criteria for data.
<i>Loop detector system information is outdated.</i>	10. The warehouse needs to update the loop detectors data in the back end of the archive.
<i>Updating loop detector information is time consuming.</i>	11. The warehouse needs an improved loop detector interface system for maintained loop detector records.
<i>Status alert system doesn't effectively notify system administrators of the health of the system.</i>	12. The warehouse needs to send a simplified daily email to system administrators reporting if all data feeds and backups are complete.
<i>Administrative reporting tools are manually compiled.</i>	13. The warehouse needs an improved backend reporting system to provide monthly status reports and logs to system administrators.
<i>The backfill and backup process for data is slow.</i>	14. The warehouse needs an improved method for backing up existing and backfilling missing data.
<i>Help pages have not been updated.</i>	15. The warehouse needs an improved help section function in the back end for system administrators to easily update each page/section.

PROJECT DESCRIPTION

Based on the problem statement and operational needs as listed above, WCOG is seeking a consulting company to upgrade the existing BDW to a new version, BDW 3.0, that will include modifications requested in this RFP. Because this project is funded by federal, state, and provincial grants, the budget for this project may not exceed **\$150,000 (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.

SCOPE OF WORK

The following order of tasks reflects work to be completed both by the consultant and by WCOG project administrators. Task descriptions will be finalized during contracting.

Task 1: Scoping and contracting – develop a detailed scope of work for the consultant and systems engineering documentation, then contract with the consultant through the RFP process.

Task 2: Project design – work with the developers and stakeholders through an advisory team to identify needed features and upgrades to the system architecture.

Task 3: Update and modernize website – Complete general updates to the web user interface and develop a report interface using Tableau to support the creation of custom reports. **See System Requirements for a more detailed description of improvements.**

Task 4: Set up and configure for maintenance – Simplify the detector and sensor configuration in the archive; simplify the data collection process and how the archive completes back fills and backups; and configure the dynamic feed to the BTS transborder freight database for a seamless end-user experience. **See System Requirements for a more detailed description of improvements.**

Task 5: Verification and validation – complete systems engineering reporting and finalize all tasks of the project as per specifications outlined in this scope of work.

Task 6: Reporting – complete documentation, outreach, and maintenance plan.

SYSTEM REQUIREMENTS

- 1. The warehouse needs to categorize data for each booth and lane dynamically, using the booth status data.**
 - 1.1. The warehouse shall be restructured so that data are categorized by processing type rather than by lane.
 - 1.2. The warehouse shall recategorize historic data to fit the new dynamic architecture.
- 2. The southbound booth status data needs to be accessible for queries, reports, and visualizations.**
 - 2.1. Booth status data shall be queriable in the custom query tool.
 - 2.2. Booth status data shall be displayed in the primary crossing visualizations.
 - 2.3. Booth status data shall be available in the reports section.
- 3. The southbound booth status data needs to be binned appropriately to reduce the size of the storage requirements and improve functionality.**
 - 3.1. Booth status data shall be binned in five minute increment data.
- 4. The warehouse needs to update its connection with the BTS freight data to show filtered Cascade Gateway data results.**
 - 4.1. The warehouse shall provide a feed of regionally relevant freight data from the BTS transborder surface freight database.
- 5. The warehouse needs an updated subscription service for notifications of border delays.**
 - 5.1. The warehouse shall have a subscription tool that allows users to define email/text preferences for border alerts.
 - 5.2. The warehouse shall update all security requirements to allow for safe subscription practices.
- 6. The warehouse needs an API registration function to provide contact information for agencies/organizations using the API resource.**
 - 6.1. The warehouse shall require those using the API to register for a key so that contact information can be collected on developers using the tool.
- 7. The warehouse needs an updated visualization interface.**
 - 7.1. The warehouse shall maintain existing features of mapping, displays, reporting, and custom query tools, but updated to currently available software capabilities and visualizations.
 - 7.2. The warehouse shall use Tableau to create its data visualizations and data sharing tools.
- 8. The warehouse needs a dynamic web interface that detects device type for optimal layout.**
 - 8.1. The warehouse shall be designed on a web platform with a dynamic display based on device type (computer, tablet, phone).
- 9. The warehouse needs to better define measures and validation criteria for data.**
 - 9.1. The warehouse shall provide sidebar information on measure information on each page.
- 10. The warehouse needs to update the loop detectors data in the back end of the archive.**
 - 10.1. The loop detector data shall be reviewed and updated as necessary.
- 11. The warehouse needs an improved loop detector interface system for maintaining loop detector records.**
 - 11.1. The loop detector data input tool (back end) shall be upgraded to make it easier to locate and update information.
 - 11.2. The loop detector input tool shall be upgraded to make it easier to select one or a series of loops to be used for volume counts.
 - 11.3. The loop detector data input tool shall use improved mapping/graphics to place each loop on location
- 12. The warehouse needs to send a simplified daily email to system administrators reporting if all data feeds and backups are complete.**
 - 12.1. The warehouse shall send a simplified daily email with symbols showing whether all data feeds were received.
 - 12.2. The warehouse shall send a simplified email stating if all backups were completed effectively.
- 13. The warehouse needs an improved backend reporting system to provide monthly status reports and logs to system administrators.**

- 13.1. The warehouse shall have a backend reporting tool to make it easier to compile monthly maintenance logs.
14. **The warehouse needs an improved method for backing up existing and backfilling missing data.**
 - 14.1. The warehouse shall have an updated backfill process for when data needs to be added in bulk.
 - 14.2. The warehouse shall evaluate and implement an improved backup routine.
15. **The warehouse needs an improved help section function in the backend for system administrators to easily update each page/section.**
 - 15.1. The warehouse shall have an improve help page administrative feature that shows completed pages, and which are missing.
 - 15.2. The warehouse shall have an improved interface for adding text and images to the help sections.

MANAGEMENT STRUCTURE

WCOG will hire the consultant. WCOG will manage the consultant. WCOG will be in regular communication with the project advisory group, representatives of the U.S. and Canadian agencies that are stakeholders in the project. In addition to regular communication with WCOG, the consultant will prepare materials for the project advisory group.

TIMELINE

The project will begin as soon as a notice to proceed is delivered to the chosen consulting firm, estimated to be in December 2019. The project will span one calendar year and should be completed by end of December 2020. A project timeline will be finalized as part of the contracting process.

SUBMITTAL INSTRUCTIONS

Proposals submitted in response to this RFP shall clearly describe:

- Professional credentials and experience of the firm, along with any subcontractors and key personnel of all firms proposed for this project. The experience should be specific to designing, implementing, and maintaining online data archives storing data from multiple sources.
- Details of the approach for accomplishing the BDW 3.0 upgrade, including a work plan, a management plan, and schedule.
- The software and third-party solutions to be used in implementing this upgrade, including the manner in which the deployment of this software will be conducted.
- Identify tasks, due dates, and consultant personnel commitments in sufficient detail to permit WCOG to fully understand the intentions and activities of the consultant. For example, provide a timeline for each task in the project and information about what personnel will be involved with the number of hours dedicated to each task. Additionally, provide all-inclusive rates of each person, non-personnel costs, and the cost of each task along with the total project cost.
- The proposed contractors and subcontractors shall provide a reference list of clients within the last five years that have contracted with the proponent to do similar work to this project. The names, title, addresses, and telephone numbers shall be included for each reference.

QUESTIONS

For administrative questions (such as timeline, submittal format), please contact Melissa Fanucci at (360) 685-8385 or by email to melissa@wcog.org.

Non-administrative questions (such as clarifications about the scope of work, selection criteria, etc.) regarding this RFP may be submitted by email only to 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

All questions must be submitted by **November 6, 2019 by 5:00pm (Pacific Time)**.

SUBMITTAL DOCUMENTATION

The submittal is limited to a total number of twenty-four (24) printed pages (12 sheets if printed on both sides) including the cover page, submitted on 8.5" X 11" paper, and with type size no smaller than 10 point.

All respondents shall submit a PDF copy of their proposals to: RFP@wcog.org.

Submittals are due at the WCOG offices **on November 13, 2019 by 5:00pm (Pacific Time)**.

SELECTION PROCESS

Proposals will be evaluated by the project advisory committee. In evaluating the proposals, the following criteria will be considered to determine up to three finalists to interview:

CRITERIA	POINTS
Experience and qualifications of project team in completing online data warehouses using data from multiple sources	30
Understanding of the existing warehouse and its features and functionality	25
Methodology and approach	20
Demonstrate ability to meet project schedule & deliverables	15
References (with emphasis on working with multiple government agency partners)	10
<i>Total</i>	<i>100</i>

The selection process will proceed as outlined below:

DATE	SELECTION PROCESS
Oct. 23, 2019	First advertisement of RFP
Oct. 30, 2019	Second advertisement of RFP
Nov. 6, 2019	Deadline for emailed questions
Nov. 13, 2019	Proposals due 5pm (PST) at WCOG office
Nov. 15, 2019	Selection for interview
Nov. 22, 2019	Interview finalists
Nov. 25, 2019	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.

ALTERNATIVE FORMATS

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

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.