

THE PORT AUTHORITY OF NY & NJ

PROCUREMENT DEPARTMENT
4 WORLD TRADE CENTER
150 GREENWICH STREET, 21ST FLOOR
NEW YORK, NY 10007

REQUEST FOR INFORMATION

TITLE: PROPOSED LINCOLN TUNNEL EXCLUSIVE BUS LANE
(XBL) CONNECTED AUTOMATED BUS PROJECT

NUMBER: 53377

RESPONSE DUE DATE: JULY 2, 2018 TIME: 2:00 PM EST

QUESTION DUE DATE: JUNE 11, 2018 TIME: 2:00 PM EST

BUYER NAME: JAMES SUMMERVILLE
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EMAIL: jsummerville@panynj.gov

1. GENERAL INFORMATION: THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY

For background with respect to The Port Authority of New York and New Jersey (the Port Authority or Authority), see www.panynj.gov. Additionally, the most recent electronic version of the Authority's Annual Report is available at <http://www.panynj.gov/corporate-information/annual-reports.html>.

2. PURPOSE OF THIS REQUEST FOR INFORMATION (RFI)

The Port Authority is seeking information from firms (Respondents) that manufacture, develop, or implement connected and automated vehicle (CAV) technologies that could be used on existing and new buses that use the Lincoln Tunnel Exclusive Bus Lane (XBL) to enter New York City from New Jersey via the Lincoln Tunnel (Tunnel). Information collected from responses to this RFI and in meetings and follow-up correspondence with select Respondents should help inform the development of the Port Authority's proposed Lincoln Tunnel Exclusive Bus Lane (XBL) Connected Automated Bus Project (Project). The goal of the Project is to: (1) demonstrate the benefits of the adoption of CAV technologies on buses to help prevent (or mitigate the effect of) incidents and deviations in traffic flow on the corridor, which negatively affect the reliability and effective capacity of the XBL operation, and (2) plan for the scaled adoption and deployment of effective technology solutions to enhance the safety, reliability, and effective capacity of the XBL.

The Project requires the Authority to determine the availability and delivery schedule of technology components that could be used on buses transiting the XBL, and to determine the bus manufacturers' willingness to approve the installations of the CAV technologies on their buses so the existing equipment warranties are maintained. The Port Authority and its partners (e.g. New Jersey Dept. of Transportation, New Jersey Turnpike Authority) will develop potential procurement strategies based on the input from bus manufacturers and connected automated system suppliers and integrators obtained through written responses to this RFI and in subsequent meetings with select Respondents. The Port Authority will not preclude firms or organizations that do not respond to this RFI from participating in any possible future procurement(s) for the proposed Project.

Responses to the RFI should also help inform a dialogue between the Port Authority, bus operators, bus manufacturers and the XBL operating agencies to plan a successful demonstration of the technology and a final deployment, as described in Section 3.D, below.

3. BACKGROUND AND PROJECT INFORMATION

A. BACKGROUND OF THE XBL

The XBL is a 2.5-mile contra-flow lane, using a westbound (NJ-bound) lane along NJ Route 495 to carry interstate buses eastbound (NY-bound) to the Lincoln Tunnel and New York City. The XBL connects the NJ Turnpike and NJ Route 3 to the Lincoln Tunnel for the exclusive use of buses each weekday morning from 6-10 a.m. The XBL is the most productive highway lane in

the nation carrying more than 1,850 buses and 70,000 bus passengers on the single-lane operation. Most buses operating on the XBL are manufactured by Motor Coach Industries (MCI), but there are a wide range of other buses, minibuses, and vans, including North American Bus Industries (NABI), Suburban, Transit, and articulated buses.

The XBL generally processes 650 buses in the peak hour, and the peak-hour demand is anticipated to grow to 850 buses per hour by 2030. Its operation turns the Lincoln Tunnel into a mass transit facility each weekday morning. The contra-flow XBL is separated from the oncoming traffic by using a total of 560 cylindrical, 1.5-foot plastic traffic posts that are manually inserted into predrilled holes along the entire 2.5-mile bus lane every morning. At its western end, the XBL lanes are 10' 8" wide, but narrow to between 10' 4" and 10' 6" at the various points along a 0.7-mile stretch that runs beneath the north-south local roads of Union City, NJ through a series of eight (8) underpasses. The XBL continues down a 0.8-mile-long elevated curved "Helix" ramp to the toll plaza before entering the Lincoln Tunnel. On the Helix curve, additional lane width is provided by adjusting the pylon locations, with lane widths increasing from 10'-6" at the beginning of the Helix to 12'-4" at the southernmost point.

The Port Authority Bus Terminal (PABT) on the New York side is the largest bus terminal in the United States and the busiest in the world by volume of traffic, serving nearly 8,000 bus trips daily and 260,000 passenger trips on a peak weekday, and nearly 76 million people a year. There are nearly 2.4 million bus departures from the terminal per year. Most of these buses access the PABT through the XBL on weekday mornings.

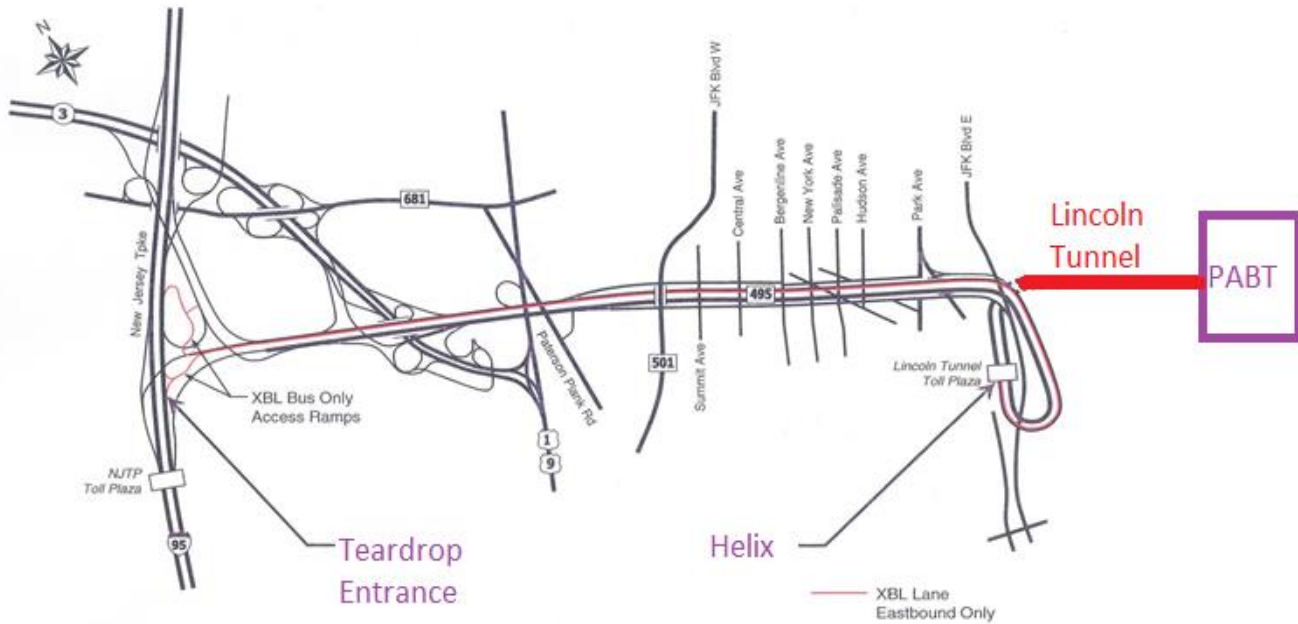


Figure 1 - Location Map

The XBL is beyond its peak-hour capacity and has grown its passenger and vehicular volumes only by accommodating more fully loaded buses and spreading demand beyond the peak hours to larger portions of the four-hour operation. Any incident or deviation in traffic flow in the corridor severely affect XBL operation, and often have related impacts on the general-purpose lanes through the Tunnel.

B. PROJECT SUMMARY

The Port Authority is examining state-of-the-art technologies for use on buses traveling in the XBL. Such technologies may provide for collision warning and avoidance; lane-keeping; and high-efficiency fleet operations such as cooperative adaptive cruise control that could be deployed on buses to improve safety and increase the throughput of the bus lane. Since the lane is used by a relatively fixed population of buses and bus carriers largely in commuter service, a technology deployment could be implemented for a manageable cost that could have a significant impact on safety, reliability, and throughput.

In the demonstration and evaluation phase of the proposed Project, the Port Authority and its partners intend to test an array of technologies for their ability to positively affect the safety, reliability and throughput of the XBL. Initial tests are planned to be conducted in a closed environment in an off-property location with a limited number of buses. Successful demonstrations in such an environment will be advanced to a demonstration in the XBL facility at a time when it is closed and traffic volumes in the corridor and generally low. A traffic simulation model will be developed by the Port Authority to understand the relative costs and benefits of a scaled implementation of the most promising technologies in a deployment plan.

C. DESIRED FUNCTIONALITY OF THE XBL SYSTEM

Ideally, the buses transiting the XBL would be equipped with Connected Vehicle - Dedicated Short-Range Communications (DSRC), Ultra-wide band (UWB) communications, and vehicle automation technologies. The Ultra-wide band technology will be required to provide precise location accuracy along the XBL, including inside the Tunnel and the PABT. Roadside Units (RSUs) using DSRC communications would be installed at several locations along the XBL, and UWB units would also be installed throughout the XBL corridor and into the PABT.

Technology applications planned for testing include, but are not limited to, the following: lane departure warning, forward collision warning, headway monitoring warning, curve speed warning, adaptive cruise control, automatic emergency braking, electronic emergency brake light, work zone warning, spot weather impact alerts, cooperative adaptive cruise control, automated merging, and mechanical vehicle health monitoring. Following a successful demonstration of the technologies to improve throughput, reliability, and safety with closer follow-distances, higher speeds, and smoother entry merges, the Project team would develop an implementation and funding strategy for the phased deployment of connected/autonomous bus technologies on the XBL.

D. DEMONSTRATION

The Port Authority would like to first demonstrate several CAV applications, including technologies with the ability to perform Cooperative Adaptive Cruise Control (CACC), Automatic Lane Keeping, Automatic Merging, and Precision Docking. The Project would also include associated connected infrastructure (DSRC and UWB vehicle-to-infrastructure communications) and the connected automated vehicle systems (actuators, sensors, communications, control processor, etc.). Under the Demonstration phase of the proposed Project, it is anticipated that at least five (5) vehicles would be fully equipped with the aforementioned technologies. This Demonstration phase would include two parts: (1) testing of the equipped buses on Port Authority off-road facilities, and thereafter (2) testing of the equipped buses on the XBL during off-peak hours. A large-scale deployment would likely follow the successful two-phase demonstration. The Port Authority is seeking Respondents willing to work with the Port Authority to demonstrate these capabilities in both test environments.

E. FUNDING OF THE DEMONSTRATION AND EVALUATION PHASES

As part of this solicitation, the Port Authority seeks to engage select Respondents as to their willingness to contribute their time, materials, and services required for the Demonstration and Evaluation phase of the Project. In particular, the Port Authority will seek the Respondents' willingness to provide, as their contribution to the Project, the following, but not limited to: equipment, installation services, software and related applications, pre-testing of functionality, data collection and reporting of results.

4. SUBMISSION OF INFORMATION

The RFI Respondents shall complete the **Attachment B – Feedback Survey** and provide the information requested in this Section.

Each Respondent must email a .PDF copy of its response to James Summerville at jsummerville@panynj.gov by the due date and time conveyed on the cover page of this RFI. The subject line should clearly indicate the transmission is in response to this RFI for the Proposed XBL Connected Automated Bus Project and include the RFI number #53377 listed on the cover page. Exclude any images in your response that could complicate the easy dissemination of your response. Moreover, do not provide marketing materials.

The Response must also include or identify:

1. Transmittal Letter / Executive Overview
 1. The name, address, URL and Federal Employer Identification Number of the Respondent;
 2. Contact information (name, title, email, telephone number) of the individual who shall act as the Respondent's contact with the Port Authority for further information requests and future solicitations, if any. In addition, at any time after the opening of the responses to the RFI, the Authority may request additional information relating to the Respondent's qualifications and will use this individual as the point of contact for these queries.
 3. A brief description of the Respondent, its lines of business, organization, mission, affiliates, objectives, location, years in business under its present business name, and a list of previous business names used, if any.
2. A signed copy of Attachment A (*Agreement on Terms of Discussion*) hereof.
3. Responses to questions/requests for information in Attachment B (*Feedback Survey*).
4. A description of the Respondent's experience in providing transit buses and/or heavy duty components for automated operation technologies. Provide a client list identifying or describing the following:
 1. Client along with contact information
 2. A description of the installed system
 3. Contract term (beginning/end)
 4. The value of the contract

5. QUESTIONS

Any questions by prospective Respondents concerning this request must be addressed by email to the Buyer listed on the cover page of this RFI. All questions should be provided no later than the Question Due Date conveyed on the cover page.

6. MEETINGS WITH SELECT RESPONDENTS

At any time after the receipt of responses, Respondents may be asked to attend an informal discussion with Port Authority staff and their partners and advisors regarding further clarification of the response or for additional information. The Port Authority may, based on review of submitted material and other information gathering, elect which Respondents it wishes to meet with. To facilitate the candid free flow and exchange of ideas and information, the Port Authority intends to meet with Respondents separately. The Port Authority will communicate the date, time, place and objectives of the meetings in due course.

Note: The Port Authority may schedule and hold individual conferences with select Respondents on a rolling basis, as responses are received by the Port Authority, which may be prior to the Final Submission Date.

7. GENERAL

- A. The Port Authority reserves the right to conduct interviews, issue a solicitation for a proposal, or to perform none of the above.
- B. The Port Authority reserves the unqualified right in its sole and absolute discretion to choose to accept or reject any and all firms responding to this RFI on the basis of an evaluation of the responses to the RFI. The Authority also reserves the unqualified right to request further information from any Respondent.
- C. Neither the expression of your organization's interest, nor the submission of your response to the RFI and any documents or other information supplied by you, nor any correspondence, discussions, meetings or other communications between your organization and the Port Authority, shall impose any obligation on the Port Authority. The Port Authority shall have no obligation to any Respondent. The Respondent's costs of participation in or information preparation are not compensable.

ATTACHMENT A: AGREEMENT ON TERMS OF DISCUSSION

The Port Authority’s receipt or discussion of any information (including information contained in any proposal, vendor qualification(s), ideas, models, drawings, or other material communicated or exhibited by us or on our behalf) shall not impose any obligations whatsoever on the Port Authority or entitle us to any compensation therefor (except to the extent specifically provided in such written agreement, if any, as may be entered into between the Port Authority and us). Any such information given to the Port Authority before, with or after this Agreement on Terms of Discussion (“Agreement”), either orally or in writing, is not given in confidence. Such information may be used, or disclosed to others, for any purpose at any time without obligation or compensation and without liability of any kind whatsoever. Any statement which is inconsistent with this Agreement, whether made as part of or in connection with this Agreement, shall be void and of no effect. This Agreement is not intended, however, to grant to the Port Authority rights to any matter, which is the subject of valid existing or potential letters patent.

Any information (including information contained in any proposal, vendor qualification(s), ideas, models, drawings, or other material communicated or exhibited by us or on our behalf) provided in connection with this procurement is subject to the provisions of the Port Authority Public Records Access Policy adopted by the Port Authority’s Board of Commissioners, which may be found on the Port Authority website at: <http://corpinfo.panynj.gov/documents/Access-to-Port-Authority-Public-Records/>. The foregoing applies to any information, whether or not given at the invitation of the Authority.

(Company)

(Signature)

(Title)

(Date)

**ORIGINAL AND PHOTOCOPIES OF THIS PAGE ONLY.
DO NOT RETYPE.**

Rev. 01/27/17

ATTACHMENT B – FEEDBACK SURVEY

The Port Authority believes there may be value in connected and automated vehicle (CAV) technologies to safely move a high volume of buses and passengers into New York City. The responses provided in the following questionnaire will help the Port Authority gauge the level of interest of firms in responding to potential future solicitations for the Project, and should help inform the development of requirements that: (a) satisfy the project objectives, and (b) encourage competition. In addition to providing answers to the following questions, please feel free to provide additional relevant information that can help the Port Authority meet the goals of this RFI.

Existing Vehicles (General Description)

For existing transit bus manufacturers, provide a list of the types of transit buses that you manufacture and may fit (with or without modifications) with the type of technologies identified herein. Include a brief description of the use and difference between vehicles (e.g., degree of electronically controlled actuators, existing warning and control technologies, passenger space, reliability, availability, and life cycle cost). Please include a list of vehicles that have been delivered to public and private interstate bus operators serving New York City that could support retrofit of connected and automated control technologies.

For vehicle control system suppliers and system integrators, please provide a list of the types of heavy-duty vehicles or buses for which you have implemented vehicle control technologies and the types of connected and automated technologies that have been demonstrated.

Describe any experience you have with Dedicated Short-Range Communications (DSRC) and with Ultra-wide band (UWB) technology, vision/radar collision warning technologies or CAV technologies related to transit or large-vehicle operations, and whether you have retrofitted these technologies on existing heavy-duty vehicles.

Describe any experience you have with Cooperative Adaptive Cruise Control (CACC), Automatic Lane Keeping, Automatic Merging, Precision Docking, or other similar automated vehicle applications for use in transit buses.

Quality and Reliability

With respect to developing potential future solicitations, provide information that the Port Authority should consider in specifying a high quality, highly reliable connected automated bus system that includes a design optimized for keeping the buses available for service, or should be included as part of a vehicle maintenance contract.

Experience with Vehicle Control System Suppliers

1. What suppliers of Vehicle Control systems has your firm worked with in the past ten (10) years and what was your firm's level of participation in the system integration efforts of the Vehicle Control system?
2. Has your firm participated in the system integration of any automated heavy-duty vehicle control system and, if yes, what was the specific system?
3. If you have not participated in building an automated system, would a preference for this experience affect your decision to respond to future solicitation(s)?

Delivery Schedule

1. Describe the factors that influence the lead time to delivering the first five units and the delivery schedule for the number of vehicles per month that could be equipped/retrofitted following a successful demonstration.
2. How does the projected lead time differ between an off-the-shelf design and a new design?

Strategies for Adherence to Fleet Maintenance

In considering a maintenance role for your vehicle and equipment, please recommend any key management strategies or requirements that the Port Authority should consider, including in a future solicitation, that would ensure timely adherence to proper fleet maintenance.

Funding of the Demonstration and Evaluation Phases

Please indicate your willingness to contribute the time, materials, and services required for the Demonstration and Evaluation phase of the Project. In particular, the Port Authority is interested in your willingness to provide, as a contribution to the Project, the following but not limited to: equipment, installation services, software and related applications, pre-testing of functionality, data collection and reporting of results.