New York City Transit
Department of Buses

REQUEST FOR INFORMATON (RFI) # **0000428191** :
Bus Depot Integration System for Zero-Emissions Vehicles (ZEV)
Reply Date 04/06/2023

This Request for Information is not a solicitation of actual bids, which may be solicited by means of a Request for Proposal (RFP) at a later date. The purpose of this RFI is to identify the most current and leading-edge technologies and software that can provide near real-time bus locations indoors for use with a Bus Depot Integration System for Zero-Emissions Vehicles.

The MTA is open to both newly developed and commercial off-the-shelf (COTS) systems. Proposers with systems which have been successfully implemented, particularly if in large fleet / depot properties are particularly encouraged to respond.

Background Information

NYCT/MTABC provides bus service in all five boroughs of the City of New York and has a fleet of approximately 6,000 buses operating out of 28 bus facilities (depots) throughout the City. NYCT/MTABC operates 234 local, 71 express, and 20 Select Bus routes in the five boroughs. Buses run 24 hours a day, seven days a week: buses travel approximately 120 million miles annually.

As a part of sustainability efforts, the MTA is committed to further reducing greenhouse gases and is working towards a Zero Emissions Vehicle (ZEV) bus fleet. Electric bus pilots and surveys are currently underway with plans to scale. To eventually scale to such a fleet, an effective means to monitor a large fleet of electric buses is needed within and adjacent to the depot environs.

The ZEV program-office seeks to identify potential sources that may be interested in developing, delivering, and maintaining a system that incorporates the following objectives:

1. An easy-to-use User Interface (UI) and all supporting hardware and software components that provides the following:
    a. Current location for user-selected ZEVs within the depot or its immediate environs, Location information shall be updated at least twice per minute and be accurate at a 99% confidence rate level within 1 meter.
    b. Displays and allows selection of any ZEVs within a user selected area of the depot.
    c. Creates user notifications in case a battery hazardous condition arises with a ZEV based on data integration with existing battery-electric charging systems.
    d. Records and stores the entrance and exit times of each ZEV as it enters and exits its assigned depot (pull-in and pull-out times).
    e. Integrates and displays the abovementioned location information along with ZEV data from existing and planned MTA sources to describe the ZEVs readiness for service.
2. These disparate MTA data sources would likely include static data, such as the upcoming schedules, and ZEV- specific data, that includes on-board EV diagnostic software, charger diagnostic information, and maintenance management systems.
3. The system will have high availability -- on the close order of 99%. Thus, hardware components of the solution shall be designed and warrantied to survive and operate well in the challenging environments present on a ZEV transit bus or within a transit depot.

4. Both hardware and software components of the solution shall comply with MTA cybersecurity requirements
5. Installation and operational plans for the solution shall be tailored to consider the highly individual topography and layout of a depot, including its buildings, grounds and immediately adjacent areas.
6. The solution shall provide a (near) real time data interface with current and planned MTA software. Data connections shall use a well-documented and readily available interface, with an MTA preference for non-proprietary interfaces.

Specific Instructions

When preparing your submission, please include

- A **brief** description and history of your company,
- An overview of your system. Include and describe each major hardware and software component, along with any diagrams or exhibits needed to convey its concept of operations, and
- How many installations do you have in operation today? What is their domain profile? Please ensure that you include transit/transportation and vehicle-fleet properties as a category
- A list of customers with similar needs -- prioritizing transit properties, or vehicle-fleet properties -- that are presently utilizing your system and that we may contact. along with their contact information.

Review and directly address in writing your system's ability and approach to meeting the above requirements, and answer the following questions:

1. What would be your approach for presenting the required ZEV information to our depot staff?
2. What is the location detection technology and location accuracy used in your system? What advantages does it offer over other choices?
3. What are the tradeoffs between accuracy and installation cost / complexity, and maintenance cost / complexity? How have you navigated this balance in the past? Be specific.
4. Describe your company's installation / deployment procedures. Include any cases where the environment presents similar challenges to installation in a bus depot. Include a sample sequence and timeline for equipping one typical depot floor level (assume 15-25k ft^2) and 250 buses.
5. Based only on prior deployments (not laboratory data) what is the hardware failure rate? Express this in terms of the (Mean Time Between Incidents (MTBI), Mean Time Between Failure (MBTF) and / or availability for the system. What were the (principle) causes of failure?
6. What are the maintenance requirements for a typical deployment? Which elements are easily accessible remotely for use, administration, or maintenance? Which are not?
7. Describe any design choices you made that reduce your system's cost / complexity / frequency of failure or maintenance. Describe your recommended best practice preventative maintenance practices.
8. Describe your company's warranty and warranty service practices. Can you accommodate long-term in-depot off-hour maintenance services?
9. Describe your company's reactive processes, including troubleshooting, communication, triage, etc.
10. Describe your company's practices for maintaining and updating software.
11. Describe your company's approach when interacting with customers, post-sale.

12. What (other) feature(s) and/or functionality differentiate your system from your competitors?

13. What is your business model for providing your system, installation, testing, hardware and software warranty, and warranty services?

14. What is a rough cost estimate (+/50%) for installing your system in one depot comprising 4 buildings (or 4 levels in a single building) with the dimensions given in question #4 and having 250 buses. Also provide this cost estimate for an outdoor facility with the dimensions in question #4 since additional physical infrastructure might be required. Please indicate any elements that do not scale, or do so unevenly, with additional depot installations.

Submissions

Submissions should be sent to the address below no later than 04/06/2023.

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Attn: Shadé James, MPA
Tel (646) 252-6276

If you would like to make your submission electronically, please send it to Shade.James@nyct.com .