New York City Transit
Department of Buses

Request for Information (RFI #490082)

Use of Drones for Bus Tracking at NYCT & MTABC Bus Depot Locations

Overview

The MTA's Department of Buses (DOB) is seeking information from qualified vendors regarding the state-of-industry and / or state-of-art for a drone program to manage and oversee its bus operations more effectively.

This Request for Information (RFI) is not a solicitation of proposals, which may or may not be formally solicited later. Instead, this RFI seeks to identify the most appropriate option(s) (if any) to meet the needs of the agency. Department of Buses (DOB) is open to both newly developed and commercial off-the-shelf (COTS) systems.

The objectives of this program are twofold: using low-cost, low-footprint aerial vehicles (colloquially known as "drones") to:

1. Provide up-to-date information on the locations of vehicle assets within DOB bus depot facilities, and / or,
2. Provide up-to-date information on vehicular traffic patterns along the MTA bus service routes.

Background Information

DOB, comprising both NYCT and MTA Bus Company, provides bus service in all five boroughs of the City of New York and have a combined fleet of approximately 6,000 buses operating out of 28 bus depots throughout the New York City with the largest division having approximately 1,700 buses. NYCT and MTA Bus Company operate 252 local and 72 express bus routes in the five boroughs. Buses run 24 hours a day, seven days a week with bus operators making more than 58,750 trips daily; buses travel approximately 120 million miles annually.

Regarding the use of drones for depot inventory management, DOB wishes to address the challenges of maintaining accurate and up-to-date vehicle location tracking for both its buses parked within depot buildings and outside in uncovered parking lots. DOB envisions the deployment of one or more drones to survey these depot facilities at regular time intervals and to transmit their findings to inform a real-time "map" of the buses.

Scope of Interest

DOB is interested in an end-to-end solution comprised of all the elements, below but will entertain responses to this RFI that address one or more of the following:

- Drone hardware,
- Control system architecture (level of autonomy, network/comms requirements, etc.),

- Data interfaces (i.e., how is data transmitted from the drone platform to the backend storage/processing solution? What data volumes and formats are to be expected?)
- Data storage and processing software (i.e., what does the "backend" look like? How does data collected onboard the drone platform get translated into useful metrics for bus operations personnel?),
- User interface / reporting software intended to display real time and / or historical data from a drone fleet, whether from your company or from partner companies if they have been used in successful projects with your products.

Incomplete responses will not be considered qualified, but respondents may include additional specific information they believe to be relevant and that targets the objectives. Response packages may include generic informational or promotional materials, but respondents should NOT assume such will be considered.

Responses shall include, at a minimum:

- A description of an applicable system or subsystems – hardware, software – and a conceptual description of operations, along with any major gaps, design alternatives or options that should be considered, given the above objectives.
- An assessment of the maturity of said technology, along with a description of any proven implementations in a traffic monitoring or inventory management setting.
- A description of the level of autonomy of the proposed system – how much user intervention is required for the system to function, along with a description of each distinct user role.
- A description of any supporting infrastructure and prerequisites that are required for the system to function – sensors, networking requirements, charging infrastructure, takeoff/landing platforms, etc.
- A description of licensing needs and whether the proposed system is compliant with Federal Aviation Administration (FAA) and other relevant local ordinances.
- Empirical data for reliability / anticipated failure rates (MTBF, MTBI), levels-of-effort relationship to system availability, maintainability of the system, and your company's available warranty, maintenance, and repair agreements.
- Expected flight times (duration, frequency, times-to-recharge).
- A description of the vendor's desired data rights and intellectual property agreements, including the open or proprietary nature of any data formats or data transfer protocols.
- Modularity and opportunities for customization of proposed solution.
- Capacity and willingness to provide customization and / or other professional services, along with real-world examples.
- A description of your company's business and sales model.