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Daniel F. DeCrescenzo, Jr.
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Bridges and Tunnels

March 28, 2019

Subject: Request For Technology -19-65 Congestion Pricing Alternative Technology

The Triborough Bridge and Tunnel Authority (hereinafter referred to as "the Authority") is seeking technical information from the marketplace on Congestion Pricing Alternative Technology. Congestion tolling has been recommended to reduce congestion in New York City's Central Business District and financially support mass transit in the region. With only a handful of congestion pricing programs around the world, and with this being the first application of cordon-based congestion pricing in the United States, the Authority is seeking concepts and solutions that could be effective in implementing this solution within the next two years. The proposed Congestion Tolling Program (CTP) program is outlined in Attachment 1, Congestion Pricing Alternative Technology.

Submissions may include, but are not limited to, a vendor's standard literature, catalog information, sample specifications, and qualifications. In addition, the submission should include a draft test plan, including how the vendor proposes to install the technology, how the technology will be operated, and what data will be collected. The RFT submission shall be provided by e-mail, USB Flash Drive, or other file transfer service. The Authority may request that vendors provide a technical presentation and a product demonstration to further describe their technology. The deadline for submission of the technical information and qualifications of the firm is April 12, 2019 at 3:30 PM.

All responses are to be submitted to the address set forth below:

Triborough Bridge and Tunnel Authority
ATTN: Victoria Warren
2 Broadway, Mail Center
New York, NY 10004
vprocure@mtabt.org
RFT 19-65, Congestion Pricing Alternative Technology

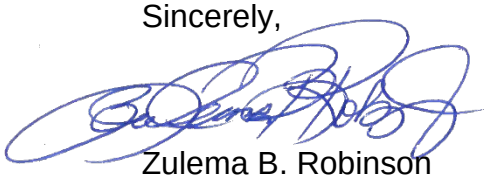
The Authority reserves all rights at law and equity including the rights to reject and/or accept any and/or all comments submitted in response to this Request for Technology (RFT). No respondent shall have any rights against the Authority arising from the contents of this RFT, the receipt of information or the incorporation or rejection of comments in the final procurement. The Authority shall not be held liable for any pre-contract activity and/or costs incurred by respondents to this RFT.

No respondent will be allowed competitive advantage by reason of its submission or failure to submit information in response to this RFT. At such time as Authority issues RFPs or IFBs for services for the Congestion Tolling Program, each RFP and IFB will be evaluated on its own merits and no weight will be given or withheld due to submissions or failure to submit information for this RFT.

Respondents should clearly state which, if any, of the information they provided is deemed proprietary in nature. The Authority reserves the right to use any information not so marked as they deem necessary. The Authority may wish to use any RFT responses as information for development of future procurement documents.

If you have any questions, please contact Dara Hill-Anderson at (646) 252-7050 or DHill-Anderson@mtabt.org.

Sincerely,



Zulema B. Robinson
Director, ITS Projects
Procurement Department

Triborough Bridge and Tunnel Authority

Attachment 1 Request for Technology: Alternative Techniques for Congestion Pricing Tolling

Congestion Pricing Proof of Concept #2

3-28-2019

Attachment 1

Congestion Pricing Alternative Technology

Contents

Attachment 1
Congestion Pricing Alternative Technology

Background

Congestion pricing has been recommended to reduce congestion in New York City's Central Business District and financially support mass transit in the region. With only a handful of congestion pricing programs around the world, and with this being the first application of cordon-based congestion tolling in the United States, the Triborough Bridge and Tunnel Authority (TBTA) is seeking concepts and solutions that could be effective in implementing this solution within the next two years.

The proposed Congestion Tolling Program (CTP) program envisions a cordon-based system encompassing New York City's (NYC) lower business district from 60th Street to the southern tip of Manhattan, not including the FDR Drive. Balancing the following parameters will be paramount to any potential solution:

- Reduce congestion
- Minimize the rate of uncollectible transactions;
- Maximize revenue collection and minimize system, back office, installation, maintenance, and collection costs;
- Minimize the infrastructure footprint, and leverage current infrastructure, to the greatest extent possible;
- Offer multiple methods for customers to pay easily and conveniently;
- Integrate with other implemented solutions through an open architecture

During TBTA's recent Industry Day and subsequent meetings with integrators and equipment manufacturers, several potential solutions to the above-mentioned challenge were presented to TBTA stakeholders. Considering this, TBTA is currently conducting Proof of Concept (PoC) demonstration to examine the feasibility and effectiveness of mounting traditional, transponder-based radio frequency identification (RFID) and camera-based license plate recognition (LPR) technologies on existing or newly installed roadside infrastructure.

Additionally, TBTA requests potential technology solutions beyond transponder-based RFID and camera-based LPR and is undertaking a second set of PoC demonstrations (PoC2) to examine the feasibility and reliability of these alternative technologies.

As with the first PoC, PoC2 is separate and distinct from the competitive procurement process that will be used for implementation of the CTP. It is important to note that participation in either or both of the Proof-of-Concept demonstrations does not guarantee any vendor to be short-listed in a full procurement that is still envisioned. Results from the Proof-of Concept demonstrations will not be used in any way to score potential respondents in a future procurement.

Prospective Technologies

TBTA has surveyed technologies for this purpose and has identified several additional technology categories that it requests to explore including, but not limited to, the following:

Roadside Bluetooth Readers

Some in-vehicle infotainment systems now include Bluetooth radios that allow for smartphones and other devices to pair with the vehicle. Roadside equipment can be used to interface with this system and capture the MAC address or another unique identifier of the onboard system. If this identifier can be uniquely associated with a user account, it may be a feasible technique for cashless toll collection.

Smartphone-Based Mobile Application – No Roadside Technology Needed

Smartphones have reached a saturation level in the U.S. and recent estimates place the percentage of Americans with a smartphone at approximately 95%.[1] The ubiquitous nature of smartphones has led several toll agencies to explore the use of smartphones for cashless tolling. TBTA is interested in examining applications that can be used for cashless toll collection that would not require TBTA to install additional roadside equipment; that is, the application can utilize the inherent features of a smartphone such as GPS, cellular tower triangulation, or some other location service to reliably determine when the device has crossed into the Congestion Tolling Zone.

Smartphone-Based Mobile Application – Roadside Technology Required

Some smartphone-based applications for tolling may require the installation and operation of roadside equipment by TBTA. For example, smartphone applications that allow the smartphone itself to serve as a stand-in for RFID transponders. This technique would require specialized readers to be mounted and operated by TBTA on the roadside. Other examples would include the use of roadside equipment to connect to the smartphone so that it can accurately determine a vehicle's presence within the cordon. For example, a series of Bluetooth or Bluetooth Low Energy beacons could be utilized to broadcast the cordon boundary that would be received by the smartphone. A similar technique is in non-tolling use by TBTA – Bluetooth Beacons are placed in low-connectivity environments to assist with GPS navigation. This type of roadside equipment may be mounted in a single location or multiple installations may be used to oversaturate a block to improve the potential for a smartphone application to receive the broadcast.

Connected Vehicle Technology

Connected Vehicle technology refers to specialized on-board units (OBUs) that are installed or placed in vehicles for Vehicle-to-Vehicle (V2V) and/or Vehicle-to-Infrastructure (V2I) communications. In Europe, these OBUs typically operate on the 5.8 GHz spectrum and they are widely used in tolling applications as alternatives to RFID transponders. In the United States, the FCC has reserved bands in the 5.9 GHz spectrum for transportation applications. The NYC Department of Transportation is participating in a large Connected Vehicle Regional Pilot with

[1] http://www.pewinternet.org/fact-sheet/mobile/

funding from the US DOT where more than 10,000 vehicles in NYC will be equipped with this technology.

The OBUs can communicate with the infrastructure and subsequently, a back office by wirelessly communicating with Roadside Equipment (RSEs). As part of a regional pilot NYC DOT is mounting more than 200 RSEs in NYC and the surrounding area. Recently, V2V and V2I communications using 5G technology has surfaced as an alternative to WiFi-based Connected Vehicle technology. TBTA would be interested in applications that use either of these technologies.

Global Navigation Satellite System (GNSS) Based Tolling.
Automotive manufactures and aftermarket suppliers provide GNSS solutions that are mounted within a vehicle and can determine the vehicle's location using satellite coverage. GM's Onstar© system is one such system. Embedded satellite radio systems can also include GNSS positioning capabilities leading to an increasing number of vehicles that have the ability to determine their position using a satellite solution. Challenges with the use of GNSS in urban canyons such as those found in NYC are well documented.[2] Still, these technologies and positioning solutions may be sufficient for determining entry into the Congestion Tolling Zone.

Environmental Conditions

The objective of the PoC2 is to explore the feasibility, utility, costs, and other information related to the use of these alternative technologies under several conditions and environments as described below:

Location
Existing TBTA bridge and tunnel locations can be used for the purposes of this Proof of Concept if necessary. If the technology does not require roadside infrastructure, the location may be applied more broadly within the cordon.

Environment
To the greatest extent possible, the locations chosen for the proof of concept will replicate the conditions of entering the Congestion Tolling Zone.

[2] https://www.trackingsystemdirect.com/gps-device-accuracy-in-city-environments/