



**REGIONAL TRANSPORTATION COMMISSION  
OF SOUTHERN NEVADA**

**REQUEST FOR INFORMATION (RFI) NO. 20-014-2**

**PEDESTRIAN DETECTION AND CONNECTED VEHICLE  
TECHNOLOGIES**

**ISSUED: June 3, 2020**

# PEDESTRIAN DETECTION AND CONNECTED VEHICLE TECHNOLOGIES

## I. General Information

### A. Disclaimer

This Request for Information (RFI) is primarily for planning purposes and is not a Request for Proposals (RFP), Invitation for Bid (IFB), or an obligation on the part of the Regional Transportation Commission of Southern Nevada (RTC) to acquire any services. Responses to this RFI are not offers and cannot be accepted by the RTC to form a binding contract. The RTC reserves the right to determine how it should proceed as a result of this notice, including but not limited to contract negotiations. Furthermore, those who respond to this RFI should not anticipate feedback with regard to its submission. The RTC will not pay any cost incurred in response to this RFI. All costs associated with responding to this RFI will be solely at the responding party's expense. The information provided in this RFI is subject to change and is not binding on the RTC.

### B. Purpose

The purpose of this Request for Information (RFI) is to solicit feedback and input from consultants and vendors on the deployment of Pedestrian Detection and Connected Vehicle technology in Las Vegas, Nevada. The objective is to understand Pedestrian Detection and Connected Vehicle technology capabilities and receive input, not to make a vendor selection. The outcome of the RFI may result in one or more Request for Proposals (RFP) that will be published by the RTC.

For this RFI, the RTC is specifically requesting information only on the questions outlined herein and only for the specific Pedestrian Detection and Connected Vehicle technology that your organization would consider proposing for this project.

Respondents have the option to respond to only the Pedestrian Detection or the Connected Vehicle sections in this RFI, but a combined response of both technologies is encouraged. Respondents should note that for the connected vehicle technology elements of Roadside Unit (RSU) and On-Board Unit (OBU), that RTC is interested in vendor solutions that may be either DSRC-based or Cellular V2X based, or a combination of both of these connected vehicle communications technologies. RTC expects that any proposed Pedestrian Safety applications will leverage the deployment of the RSUs and OBUs.

### C. Background

The RTC is a regional entity that oversees public transportation, traffic management, roadway design and construction funding, transportation planning and regional planning efforts. The Commission consists of six (6) jurisdictions; Boulder City, Cities of Las Vegas, North Las Vegas, Henderson, Mesquite, and Clark County.

The United States Department of Transportation (USDOT) awarded a FY 2018 Better Utilizing Investments to Leverage Development (BUILD) Transportation Discretionary Grant in the amount of \$5.3 million for the Las Vegas Medical District (LVMD) Automated Circulator and Connected Pedestrian Safety Program, referred to as GoMed. GoMed will connect Southern Nevada residents to the LVMD, 684 acres of critical medical facilities, which include four hospitals that handle almost 200 thousand patient visits each year. GoMed expands on Southern Nevada's autonomous shuttle success by improving mobility between the LVMD and downtown Las Vegas through an autonomous transit vehicle circulator and improves safety through the deployment, operation, and analysis of innovative pedestrian safety technologies that connect traffic signals, drivers, passengers and pedestrians.

As part of the GoMed program, the RTC will install the Pedestrian Detection and Connected Vehicle technology at 20 key locations. It is important to note that the initial requirement for Pedestrian Detection and Connected Vehicle technology was driven from the GoMed project but following a successful implementation on the GoMed sites, could lead to a wider requirement across Southern Nevada.

## II. Project Location

The GoMed Project is located within Las Vegas Nevada, United States. The LVMD is home to two major teaching hospitals and a host of related services such as clinics, medical offices, pharmacies, imaging, diagnostics, health administrative offices, and the UNLV School of Medicine. The LVMD will be an engine of economic growth in the health care sector and bring together health care organizations along with other high-profile businesses, research organizations, and corporations, improving the quality of life of residents throughout Las Vegas. The LVMD is estimated to grow the statewide economy by \$3.6 billion and support and sustain 24,000 new jobs, for a total of nearly 40,000 employees working in the LVMD, according to the LVMD Master plan.

The LVMD is located within the City of Las Vegas’ vibrant and revitalized Downtown and in the heart of the broader Las Vegas Metropolitan area. The LVMD is directly adjacent to major freeways I-15 and U.S. 95, and its core area is bounded by Charleston Boulevard, Rancho Drive, Alta Drive, and Martin Luther King Boulevard.

The following map presents the location of the twenty Pedestrian Detection and Connected Vehicle technology units proposed as part of GoMed, and shown as red boxes.

**Site Map with Proposed Pedestrian Detection and Connected Vehicle Technology Locations**



**III. RFI System Requirements**

The RTC is inviting interested vendors to submit cost-effective, convenient, and innovative technology solutions for Pedestrian Detection and Connected Vehicle technology. Respondents have the option to respond to only the Pedestrian Detection or the Connected Vehicle sections in this RFI, alternatively a combined response of both technologies is acceptable.

**A. Pedestrian Detection System Requirements**

The GoMed Program aims at improving pedestrian safety by installing Pedestrian Detection at key signalized intersections and uncontrolled crosswalks. For the pedestrian safety benefits of the GoMed Program to be achieved, pedestrians need to cross at designated crosswalks, instead of jaywalking. Currently, many pedestrians cross in the middle of the road, raising safety concerns and increasing the number of crashes in the area. At uncontrolled crossings, motorists will be alerted on the presence of pedestrians through 3<sup>rd</sup> party mobile apps or through in-vehicle alerts enabled via the OBUs deployed in connected vehicles (which communicate with the RSUs deployed at the 20 locations).

When responding to this RFI, consideration to the below System Requirements **must be addressed**, stating if your Pedestrian Detection System can meet the requirements or working towards the requirements. If you are unable to meet any specific requirements, you must state any alternative measures.

ID	Requirement
PDS-01	The Pedestrian Detection System at signalized crosswalks shall have the capability to automatically/ passively detect pedestrians in the crosswalk or on a sidewalk near the crosswalk, and work in conjunction with the signal controller to manage pedestrian demand inputs.
PDS-02	The Pedestrian Detection System shall provide adequate WALK time for all pedestrians to cross. The WALK phase shall be in accordance with the minimum crossing time requirements as defined in the MUTCD and local City of Las Vegas standards.

<b>PDS-03</b>	The Pedestrian Detection System shall have the flexibility to hold or extend the pedestrian WALK time, for pedestrians (such as elderly and wheelchair users) to complete the crosswalk safely.
<b>PDS-04</b>	The Pedestrian Detection System at uncontrolled crosswalks shall have the capability to automatically/ passively detect pedestrians in the crosswalk or on a sidewalk near the crosswalk, and request an activation of a pedestrian rapid-flashing beacon.
<b>PDS-05</b>	The Pedestrian Detection System shall be able to detect the presence of a pedestrian in the defined detection zone (i.e. passive actuation) and count the number of pedestrians that are present in the zone (i.e. count).
<b>PDS-06</b>	The Pedestrian Detection System shall have the capability to send safety alerts to Connected Vehicles when pedestrians are detected at signalized and uncontrolled crosswalks.
<b>PDS-07</b>	The Pedestrian Detection System shall be connected via wireless backhaul to a data hub and analytics platform.
<b>PDS-08</b>	The Pedestrian Detection System shall have the ability to detect people walking and riding bikes within 3 seconds of entering the detection zone, 95% of the time.
<b>PDS-09</b>	The pedestrian detection system shall be capable of counting all people walking and riding bikes in pre-defined zones with an accuracy of 95%.
<b>PDS-10</b>	The Pedestrian Detection System at uncontrolled crosswalks shall keep the activation of the rapid-flashing beacon for a maximum time of 4 seconds after no more pedestrians are detected. Maximum time shall be configurable.
<b>PDS-11</b>	The Pedestrian Detection shall support performance monitoring and measurement.
<b>PDS-12</b>	The Pedestrian Detection System at signalized intersections shall have the capability of interfacing with the local signal controller (for all phase call and hold requests) and the traffic management system (to send actuation and count data).
<b>PDS-13</b>	The Pedestrian Detection System shall have the capability of interfacing with RSUs to transmit pedestrian safety alerts to Autonomous Transit Vehicles and Connected Vehicles OBUs.
<b>PDS-14</b>	The Pedestrian Detection System shall have the capability of recording and transmitting the following data to a data hub and analytics platform: <ul style="list-style-type: none"> <li>• Number of pedestrian activation calls (per signal cycle/per 15-minute period)</li> <li>• Pedestrian counts (per signal cycle/per 15-minute period)</li> <li>• Pedestrian waiting time (per activation call)</li> <li>• Pedestrian clearance time (per activation call)</li> <li>• Number of pedestrians that cross on the DON'T WALK/Red pedestrian phase</li> <li>• Number of vehicles that enter the intersection on the Red signal phase</li> <li>• Number of pedestrian and vehicle near-miss or conflict occurrences</li> </ul>
<b>PDS-15</b>	The Pedestrian Detection System shall report device status/failures/errors to any interfaced system including the data and analytics platform and traffic management system.
<b>PDS-16</b>	The Pedestrian Detection System shall use equipment that has hardware specifications that are suitable to meteorological conditions found in Nevada.
<b>PDS-17</b>	The Pedestrian Detection System at uncontrolled crossings shall have the flexibility to be upgraded to HAWK beacon system in the future.
<b>PDS-18</b>	The Pedestrian Detection System shall be compatible with the requirements of the MUTCD standards and local design standards.
<b>PDS-19</b>	The Pedestrian Detection System at signalized crosswalks shall be compatible and/or be able to be integrated with the existing traffic management system and TrafficWare* controllers.
<b>PDS-20</b>	The Pedestrian Detection System at uncontrolled crossings shall be compatible with TAPCO and Eltec pedestrian warning systems.
<b>PDS-21</b>	The Pedestrian Detection System shall be easily operated and maintained after passing acceptance testing.

\* TrafficWare controllers are the current traffic signal controllers deployed in the locations pertaining to this RFI.

## B. Connected Vehicles System Requirements

Connected Vehicles will be deployed with OBUs and RSUs, further addressing safety needs. 300 OBUs will be installed in select vehicles that frequently access the Medical District. This will enable the real-time transmission of data such as vehicle location, speed, and erratic driving patterns to the project data hub and analytics platform, for analytics and pushing of alerts to drivers. 20 RSUs will be installed as communication devices with the GoMed project's Autonomous Transit Vehicles, Connected Vehicles, and other applications. RSUs will collect data from OBU-equipped vehicles for historical and real-time analytics of roadway operating conditions and pushing of alerts to drivers for real-time decision-making such as pedestrian proximity and speeding alerts.

When responding to this RFI, consideration to the below System Requirements **must be addressed**, stating if your Connected Vehicle System, including both RSU and OBU can meet the requirements or working towards the

requirements. If you are unable to meet any specific requirements, you must state any alternative measures.

ID	Requirement
CV-01	The Connected Vehicles OBUs shall have the capability of storing and transmitting basic safety messages (including vehicle location and speed) in the SAE J2735 format, as data is available.
CV-02	The Connected Vehicles OBUs shall have the capability of receiving messages from RSUs, from this project or other area CV-related projects.
CV-03	The Connected Vehicles RSUs shall have the capability of receiving and transmitting messages to enable Vehicle-to-Infrastructure (V2I) applications.
CV-04	The Connected Vehicles OBUs shall support DSRC and/or Cellular Vehicle-to-Everything (C-V2X) communications protocols based on standards at the time of advertisement.
CV-05	The Connected Vehicles RSUs shall support both DSRC and C-V2X connectivity options.
CV-06	The Connected Vehicles RSUs shall be connected via wireless backhaul when connected to Wi-Fi and/or a cellular connection to a data hub and analytics platform.
CV-07	The Connected Vehicles OBUs and RSUs shall satisfy all relevant USDOT, IEEE and SAE standards.
CV-08	Data recorded and transmitted from the Connected Vehicles OBUs shall be encrypted to protect any personal information.
CV-09	Connected Vehicles related data shall be exchanged at low latencies that do not exceed those found in industry for messages using the SAE J2735 message set dictionary.
CV-10	Connected Vehicles shall support performance monitoring and measurement.
CV-11	The Connected Vehicles RSUs shall allow for remote access and diagnosis.
CV-12	The Connected Vehicles RSUs shall have the capability of interfacing with signal controllers and rapid-flash beacon controllers.
CV-13	The Connected Vehicles OBUs shall transmit available data in accordance with the SAE J2735 standard.
CV-14	The Connected Vehicles RSUs shall transmit pedestrian safety and speed limit alerts to Connected Vehicles OBUs.
CV-15	The Connected Vehicles RSUs shall transmit pedestrian safety alerts to the GoMed Autonomous Transit Vehicles.
CV-16	The Connected Vehicles RSUs shall support broadcasting safety alerts to third party applications (Waze/Google Maps) via API.
CV-17	The Connected Vehicles RSUs shall have the capability of transmitting all basic safety messages from OBUs to the data hub and analytics platform.
CV-18	The Connected Vehicle RSU's shall be capable of transmitting Signal Phasing and Timing (SPaT) and MAP data.
CV-19	The Connected Vehicles OBUs shall be an aftermarket device compatible with a standard vehicle power outlet (i.e. cigarette lighter) as to not impede the driver's visibility and shall be easily installed and removed.
CV-20	The Connected Vehicles OBUs shall incorporate a built-in speaker to provide driver with audible alerts.
CV-21	The Connected Vehicles RSUs and OBUs shall be designed to operate in the meteorological conditions found in Nevada.
CV-22	The Connected Vehicles OBUs and RSUs shall undergo a certification testing process to ensure communication is private, secure and interoperable.
CV-23	The Connected Vehicles OBUs and RSUs shall be easily installed, removed and maintained. The OBUs shall be easily installed within the vehicles and not require permanent modifications to the vehicles.

#### IV. RFI Questions

The following questions must be addressed in the RFI response.

1. What type and level of support would your organization provide to the GoMed project? (e.g., project managers, trainers, software developers, etc.)
2. What is the rough Order of Magnitude Estimate for a Pedestrian Detection unit?
3. What is the rough Order of Magnitude Estimate for a Connected Vehicle RSU?
4. What is the rough Order of Magnitude Estimate for a Connected Vehicle OBU?
5. Would you offer a complete system for Pedestrian Detection and Connected Vehicle RSU or as separate solutions?
6. Are there any additional benefits and challenges that you have determined through your research, testing, and

deployments in other cities that were not noted in this RFI?

## V. Response Format

Responses to this RFI should be typed, double-spaced in portrait orientation with size 12 font. **Responses must not exceed 30 pages in length, including supplemental materials. The responses should be identified pursuant to the Section Headings below.** Vendors are asked to submit their responses in English in the following format.

**A. SECTION 1 – REQUIRED SUPPLEMENTAL INFORMATION** (Vendors submitting a response to this RFI must provide the following supplemental information):

1. General overview and brief history of your organization, including parent organization, number of years of providing transit amenities.
2. Total number of your firm’s full time employees.
3. Demographic breakdown of your customers (industry, size, and any other relevant categories). How many transportation agencies and government agencies do you have as clients?
4. A minimum of three (3) references from your current clients, of which two (2) are from similarly sized or larger government sector clients. Include the name, title, company, telephone number, and email address for each reference.

## **B. SECTION 2 – REQUIRED TECHNICAL INFORMATION**

The RTC is requesting interested vendors to submit documentation regarding their Pedestrian Detection and Connected Vehicles solutions, in terms of equipment specifications (including but not limited to size, power requirements, attachment requirements, etc.), equipment operational features, ease of installation and/or retrofitting, maintenance, etc.

Respondents are asked to provide a rough Order of Magnitude Estimate for the proposed features in order to provide staff insight on the possible level of effort and cost for this new initiative.

The content of the vendor response must address the RFI System Requirements and RFI Questions per III “RFI System Requirements” and IV “RFI Questions.”

## VI. Response Submittal Instructions

Please submit your response to this RFI electronically via the NGEM website by uploading your document under the Response Attachment tab. Questions may be directed to the Purchasing Representative via the NGEM website (Questions Tab). The deadline for questions is as stated in the NGEM Activities Tab. The closing time for responses is as stated in the NGEM Activities Tab. Responses will be accepted any time before the closing date.

What should be included in the response:

- Submit documentation that address the RTC’s Required Technical Information per IV.B “Response Format, Section 1 and 2.”

What should not be included in the response:

- Do not submit proposals or offers
- Do not submit capability statements, white papers, or other company marketing materials
- Do not submit requests to be considered for award or to be notified of a future solicitation
- Do not submit requests to be added to a mailing or distribution list
- Do not submit questions or comments not related to this RFI
- Do not respond via telephone

Vendors may be invited to present their innovative solutions to RTC representatives for further evaluation.