REQUEST FOR INFORMATION (RFI)

State of Ohio, Department of Transportation
Office of Contract Sales, Purchasing Services
Jack Marchbanks, Ph. D., Director

Response Submission Deadline (Bid Opening Date):
September 17, 2019 at 2:00 p.m. eastern time

Submitted by:

Company Name: ________________________________

Federal Tax ID No.: ____________________________

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Contact Person and Phone Number:
(authorized to answer questions about your company’s bid)

E-Mail Address (required):
(person who filled out bid)

E-Mail Address (required):
(for notification of future bid opportunities)

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VENDORS MUST SUBMIT ANY QUESTIONS, CLARIFICATIONS, OR INQUIRIES REGARDING THIS RFI VIA THE FOLLOWING WEBSITE:
http://www.dot.state.oh.us/Divisions/ContractAdmin/Contracts/Pages/PurchasePBQ.aspx
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INTRODUCTION

This is a Request for Information (RFI) regarding Youngstown OH SMART2 Network Project, and does not constitute a commitment, implied or otherwise, that the Ohio Department of Transportation (ODOT) will take procurement action in this matter.

The purpose of this Request for Information (RFI) is to solicit feedback and input from consultants and vendors on deployment of Automated Vehicle (AV) shuttle services in Youngstown Ohio as part of the SMART2 Network. The objective is to understand the infrastructure/support needed to maximize AV shuttle capabilities, receive input regarding potential AV routes, and receive input regarding contractual language as to not exclude potential vendors. This RFI will not be used to make a vendor selection. Participation in the RFI is not a prerequisite for bidding on a Request for Proposals (RFP). The outcome of the RFI will result in in the following:

• Assist with requirements for the Youngstown SMART2 Design/Build construction contract,
• Demonstrate interest in an AV demonstration project in 2020 within Youngstown, and
• Assist in the development of an AV Shuttle Request for Proposals (RFP) for Youngstown (expected in 2021).

Responses to the RFI are due by 2:00 PM EST on September 17, 2019.

For this RFI, we are specifically requesting information only on the questions outlined herein and only for the specific AVs that your organization would consider proposing for this project.

RFI Confidentiality

All Respondents are strongly discouraged from including in a RFI any information that the Respondent considers to be a "trade secret," as that term is defined in Section 1333.61(D) of the Ohio Revised Code. All information submitted in response to this RFI is public information under Section 149.43 of the Ohio Revised Code unless a statutory exception exists that exempts it from public release. If any information in the RFI is to be treated as a trade secret, the RFI must:

• Identify each and every occurrence of the information within the RFI with an asterisk before and after each line containing trade secret information and underline the trade secret information itself.
• Check the “This RFI Does include information considered a ‘trade secret’” box on the Respondent Information Page.
• Include a page immediately after the Respondent Information Page that lists each page in the RFI that includes trade secret information and the number of occurrences of trade secret information on that page.

To determine what qualifies as trade secret information, refer to the definition of “trade secret” in the Ohio Revised Code, which is reproduced below for reference:

• “Trade Secret” means information, including the whole or any portion or phase of any scientific or technical information, design, process, procedure, formula, pattern, compilation, program, device, method, technique, or improvement, or any business information or plans, financial information, or listing of names, addresses, or telephone numbers, that satisfies both of the following:
  • It derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use.
• It is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.

BACKGROUND

In December 2018, Eastgate Regional Council of Governments was awarded $10.85 million through USDOT’s BUILD Transportation Discretionary Grant program. An autonomous shuttle is included in the scope and budget for that project. The proposed technology solution involves vehicles that are level 4 automated, as defined in SAE J3016, and preferably electric and connected, serving the general public in fixed-route service.

As the hub for all things autonomous and connected within Ohio, DriveOhio and the Ohio Department of Transportation (ODOT) are part of the project team and will support procurement. In December 2018 DriveOhio launched the first AV shuttle in Ohio with Smart Circuit in Columbus.

In May 2018, Governor Kasich signed Executive Order 2018-04K to establish guidelines for testing autonomous vehicles in Ohio. It is expected that any AV deployment in Youngstown comply with this Executive Order and meet or exceed its intent where applicable.

Scope

This RFI is designed to provide a better understanding of the availability of AV vehicle technology and AV operation. With this information, an RFP for an AV shuttle will be developed that will allow for the widest range of vendor participation and a scope of services that can be reasonably accomplished with current and proposed/anticipated technology. The RFI will also provide a general understanding of the street infrastructure that could be installed as part of the overall BUILD grant implementation to make an AV vehicle operate more efficiently and safely.

Project Goals

The team is interested in better understanding the challenges the potential Youngstown AV route may pose, the infrastructure required to implement and support the operation of this technology, the approach to public adoption, the types and value of data produced, and the benefits derived from the use of AVs. Vehicle performance will be recorded, such as time in service, miles traveled, ridership, high-accuracy positioning, speed, battery/fuel usage, number of and reasons for disengagements, hard braking, evasive maneuvers, and more.

Statewide these deployments will benefit the region by demonstrating the potential of this emerging technology to local stakeholders and the public, allowing for an educational experience while also inspiring quicker adoption of future innovations. More broadly, results of this project will be used to inform the following overall goals:

• Better connect the community to jobs and services through first-mile/last-mile/only-mile connections by providing a convenient and reliable transit option.
• Grow transit ridership by encouraging a modal shift to public transit by increasing the attractiveness and availability of end to end transit options.
• Refine procurement guidelines, including demonstrated vehicle performance and data sharing requirements, for both operational and capital projects.
• Refine AV operational testing and evaluation guidelines to benchmark AVs.
• Refine the methodology for evaluating the operational safety of the system in various deployment settings.
Youngstown’s SMART2 Network Activity Timeline

AV Showcase event – April 2020
AV Shuttle Pilot – Summer/Fall 2020
Final Route RFP – Spring 2021
Final Route Deployment – Fall 2021

Proposed Route Descriptions

Route 1: Mercy Health to WRTA Transit Hub (Round trip distance: 3.5 miles)
This route travels between Mercy Health and WRTA Transit hub. The goal with this route is to connect the downtown Youngstown, Youngstown State University and the hospital with downtown and other Western Reserve Transit Authority (WRTA) transit options.

Route 2: Downtown Loop; Commerce Street from WRTA Transit Hub to Federal Street to Walnut Street to Front Street to 5th Avenue back to the WRTA Transit hub (Round trip distance: primary – 1.5 miles)
The route travels around the Youngstown Central Business District. The goal with this route is to connect the downtown area and other transit options.

RFI Procedure

Responses to this RFI should utilize the template in the RFI Questionnaire Section. All responses must be emailed as PDF or Word documents to:

ODOT Office of Contracts:
contracts.purchasing@dot.ohio.gov

Responses are due no later than: 2:00 p.m. Tuesday, September 17, 2019

RFI Questionnaire

A. Respondent Information: Please fill out the information on page 1 of this RFI.

B. This RFI does include information considered a ‘trade secret:’ Yes/No

C. QUESTIONS PRESENTED

1. Infrastructure. The potential routes where an AV shuttle service would enhance access to transportation and help fill a local need in Youngstown. This route will be partially within portions of the streetscape project which will allow new infrastructure installations (for example: pull poxes, power conduits, communication conduits, intelligent transportation system termination control cabinets, specialized traffic and lighting support structures). Please provide any recommendations you may have for the City of Youngstown to consider as making part of the construction requirements for the areas impacted with the street scape project. Please identify any traditional infrastructure installations which could be modified, or which may pose difficulties in AV shuttle deployment and thereby avoided. These recommendations should enhance the project by eliminating obstacles posed by existing in-place infrastructure. The recommended
infrastructure installation should be general in nature as to not preclude any other supplier or manufacturer.

2. **Alignment.** The attached maps (in Appendix A) present potential routes where an AV shuttle service would enhance access to transportation and help fill a local need in Youngstown. Please review the route maps and provide feedback on whether these alignments would be feasible to serve using your existing technology or proposed technology advancements prior to deployment, and whether you have any specific concerns or suggestions (such as a specific unprotected left turn, two and four way stops and whether/how they could be rerouted out).

3. **Operating Assumptions.** The City may consider eliminating existing traffic movements or prohibiting future movements if such recommendations would improve the capability of the AV if these recommendations do not severely impact needed traffic operations. Some operating parameters and potential challenges are included but may not envelop all challenges presented on the routes. We encourage you to use any resources at your disposal to inform your response about the routes and route changes you might suggest. The expectation is that high-frequency service, with targeted headways of no more than 10 or 15 minutes, will be provided during all service hours to enable potential passengers to arrive at a stop and expect a vehicle to come within a reasonable amount of time rather than having to pre-plan their trip. Include any assumptions on operating characteristics, such as hours of operation, layover requirements, fleet size, and headway that would make this type of service possible within your operating constraints.

4. **Dynamic Operations.** Rather than operating along a fixed route, would it be possible to operate dynamically within a specified area?

   a. If so, how would passenger rides be requested and coordinated? Are the AVs capable of sensing whether a passenger is waiting to board and/or whether a passenger is requesting to alight?

   b. Are these features available to all users, including those without smartphones

5. **Route Preference.** Which of the two described routes would you like to see as part of an RFP? Why do you prefer this route?

6. **Your Interest.** Describe your organization’s level of interest and role in providing an AV shuttle service in a community within Ohio, and specifically in Youngstown. What role do you anticipate DriveOhio, community leadership and other partners to play?

7. **Schedule Overview.** Do you have any concerns with the schedule outlined in this RFI, or do you think there would be any benefits to either tightening or extending the schedule?

8. **Your AV Project Role.** What type and level of support would your organization provide to the SMART² Network/ DriveOhio AV shuttle projects? (e.g., project managers, trainers, software developers, etc.)

9. **Public Engagement.** How would your organization manage members of the public who choose to ride the AV shuttle or otherwise interact with it in the project area? In what ways can feedback be collected and what can be done to enhance safety?
10. **Interoperability Guidelines.** In conjunction with this project, the Youngstown SMART² Network project intends to define a set of interoperability guidelines for AVs to communicate with infrastructure and a central fleet management system to ensure that various systems deployed throughout the city, state, and nation can be deployed interchangeably. Do you have any suggestions for or concerns with this approach?

11. **Contract Preference.** Discuss any preferred contract type(s) for the execution of an AV shuttle deployment project and the justification for this preference. Be sure to include pricing models.

12. **Prior RFP Feedback.** Did you have any specific concerns with any previous RFPs issued by any other organization, including ODOT’s RFP #505-19: Automated Vehicle Shuttle Service, that made it more difficult to submit a proposal and/or comply with all specified terms?

13. **General Specifications.** Describe the general specifications of any AVs your organization would consider proposing for this project, including the passenger capacity, including ADA accessibility, external and internal dimensions, maximum safe operating speed on route, required charging time (if applicable), and range.
   
   a. Within this project’s schedule, will these AVs be Americans with Disabilities Act (ADA) accessible, or do you have a plan to ensure ADA accessibility?
   
   b. Within this project’s schedule, will these AVs comply with all applicable Federal Motor Vehicle Safety Standards (FMVSS) or have approval to operate under an exemption to the FMVSS? If not compliant, describe how the items not in compliance are directly related to the full automation capability with no driver. If an exemption is necessary, include whether it has already been approved and whether there is an alternative plan if an exemption is not possible.
   
   c. Describe the AVs’ status with the USDOT National Highway Traffic Safety Administration (NHTSA) 12-point voluntary safety self-assessment, including whether the AVs have completed the assessment, whether the assessment has been submitted to NHTSA, and if not, whether there are any plans to do so. Discuss any other safety features you have considered that are not already part of these guidelines.
   
   d. Within this project’s schedule, would you be able to adhere to “Buy America” provisions?

14. **Infrastructure Support.** Describe any and all infrastructure installations that may be required to support your technology. This may include but is not limited to roadside units that leverage Dedicated Short-Range Communications (DSRC), infrastructure-based cameras to monitor signal indications, and real-time kinematic (RTK) antennae.

15. **AV Vehicle Facilities.** What is the maximum distance from the route that a storage facility should be provided? As part of an RFP, would you require electric vehicle charging stations (or fueling locations, if the AVs are not electric) and storage facilities to be identified or would you be willing to identify facilities?
a. Identify the power needs for both the charging and storage facility and any other infrastructure that is needed for your solution.

b. As part of an RFP, would you be willing to include the charging and storage facility as part of the package and cost?

c. If the provided vehicle uses gasoline or diesel, would you refuel at a public gas station or prefer a dedicated station?

16. Your Vehicle Testing. Describe the type of testing that has been conducted with your AVs. What experiences do the AVs have in mixed traffic operations (including crossing high-traffic, high-speed intersections), various weather conditions, and other environments? What precautions were taken during previous tests or deployments?

17. Your Vehicle Operations Limitations. Are there any conditions under which the AVs would not be able to operate and would need to be taken from service (e.g., unfavorable weather, humans manually directing traffic, communication/signal failure, etc.)? If so, please describe the type and level of conditions and the proposed response protocol.

18. Connected Capabilities. Can the AVs be connected to smart infrastructure and send, receive, and respond to messages with other connected vehicles, bus stop environments and infrastructures? If so, what types of connected vehicle (CV) applications can the AVs support?

19. Insurance/Liability. Discuss your insurance/liability approach with respect to the proposed solution, including the possibility of cyber security insurance.

20. Pricing Estimates. What is the estimated monthly lease price for a vehicle and what does this include? What are the estimated monthly operating and maintenance costs? Are there any other additional costs we should be aware of?

21. Fare Collection Options and Feasibility. While the service will likely be fare-free during preliminary operations, there may be a desire to test the ability to collect fares onboard. Is this something your organization’s fleet is capable of? Describe the possible options and your thoughts on the feasibility of fare collection as a sustainable revenue model.

22. Estimate of AVs for 2021. The outcome of this RFI may result in multiple AV shuttle deployments being pursued in the Youngstown area. Considering your current production capacity and other commitments, how many AVs do you estimate you would be able to dedicate to the Youngstown SMART² Network and areas outside this network by late 2021?

23. Protocol to Change Routes. What level of time and effort (including lead time for route mapping and site assessment) would be required for your AVs to be capable of dynamically switching between different deployment sites in Youngstown? Describe the required logistics and process.

24. 5G. Would 5G availability have any added benefit?
25. **Construction Operations.** Can the AVs be operated in construction zones? If so, describe how that would be accomplished.

26. **Data Collection.** DriveOhio encourages the collection of data to measure the performance of the system. Please explain how your organization would support data collection, with a focus on the data suggested in Appendix B.

   a. Can your organization support sharing information and data related to the performance of the proposed solution to support integration to the Youngstown SMART² Network project and independent evaluation?
   b. Can your organization support providing data to the Youngstown SMART² Network project where it can be accessed by third party users? Do you have any restrictions on the data sets that you would provide?

27. **Ohio AV Showcase.** Express your level of interest in participating in an AV Showcase some time during the Spring 2020 in Youngstown, Ohio. The audience is DriveOhio, communities throughout Ohio, Other Transit Authorities, ODOT, FTA and USDOT. Will you be interested in presenting your work and solutions? Will you consider bringing a vehicle to Ohio for the showcase?

28. **Youngstown Demonstration Route.** Express your level of interest in participating in an RFP for a demonstration AV route around Fall 2020. This is proposed on Wick which is parallel to Fifth, but not under construction.

29. **Other Items.** 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?
Appendix A
Routes

Turn by turn descriptions of the routes are below, followed by a map for each route.

Route One
Starting Point at Mercy Hospital which is Northwest
- Ride east on Park
- Turn right on Fifth
- Turn right on Commerce
- Turn right on Walnut
- Turn right on Front
- Turn right on Vindicator Square
- Turn left on Federal
- Turn right on Fifth
- Turn left on Park
Return to Starting Point

Route Two
Starting Point at Commerce and Fifth which is the northwest point on the route
- Ride east on Commerce
- Turn right on Federal
- Turn left on Walnut
- Turn right on Front
- Turn right on Vindicator Square
- Turn left on Federal
- Turn right on Fifth
Return to Starting Point
APPENDIX B

Operational Data
Real-time vehicle location information
Trip updates and service alerts
Ridership
Actual stop arrival and departure times
Vehicles miles traveled
Vehicle hours traveled (hours the vehicle is in service)
Number of route-trips served
Duration of each trip

Vehicle Data
Battery usage (such that it can be associated with weather, temperature, vehicle load, etc.)
Local roadway traffic volumes, speeds, congestion

Performance Data
Sensor and other telemetry data
Navigation variances
Mechanical data (vehicle condition)
Hard stops
Disengagements/interventions by the operator
Any other logged events
Conditions driven in (weather, congestion, etc.)
Incident reports
Communications Record of operational data exchanged
Controller Area Network (CAN) bus data
Rider feedback
Rider satisfaction
Rider acceptance of the technology
Transfer behavior (to/from WRTA fixed-route service at Federal Station and other locations)