

# Answers for FCC Application (Orosz, et al.)

July 15, 2020

## Questions Posed:

4. \*  
Is this authorization to be used for fulfilling the requirement of a government contract with an agency of the United States Government? If "YES", include as an exhibit a narrative statement describing the government project, agency and contract number.  
 Yes  No

5. \*  
Is this authorization to be used for the exclusive purpose of developing radio equipment for export to be employed by stations under the jurisdiction of a foreign government? If "YES", include the contract number and the name of the foreign government concerned as an exhibit.  
 Yes  No

6. \*  
Is this authorization to be used for providing communications essential to a research project? (The radio communication is not the objective of the research project)? If "YES", include as an exhibit the following information:  
a. A description of the nature of the research project being conducted.  
b. A showing that the communications facilities requested are necessary for the research project.  
c. A showing that existing communications facilities are inadequate.  
 Yes  No

7. If all the answers to Items 4, 5, 6 are "NO", include as an exhibit a narrative statement describing in detail the following items:  
a. The complete program of research and experimentation proposed including description of equipment and theory of operation.  
b. The specific objectives sought to be accomplished.  
c. How the program of experimentation has a reasonable promise of contribution to the development, extension, expansion or utilization of the radio art, or is along line not already investigated.

8. \*  
Give an estimate of the length of time that will be required to complete the program of experimentation proposed in this application:  in

9. \*  
Would a commission grant of this application come within Section 1.1307 of the FCC Rules, such that it may have a significant environment impact? If "YES", include as an exhibit an Environmental Assessment as required by Section 1.311.  
 Yes  No

## Answers:

4. YES

## Exhibit:

- Narrative Statement:

- Project Title: Improving the efficiency of trucks via CV2X connectivity on highways
- Funding Agency: United States Department of Transportation (USDOT)
- Contract Number: 69A3551747105
- Abstract: This project, funded by the USDOT Center for Connected and Automated Transportation (CCAT), aims to advance the integration of cellular vehicle-to-everything (CV2X) communication platforms with intelligent highway transportation systems including roadside camera systems and bridge structural health monitoring systems. The project aims to deploy a small network (approximately 5 nodes) of commercial CV2X roadside units on the I-275 highway corridor in southeast Michigan. The role of deployed system is to collect and aggregate traffic information that can be used by heavy duty trucks traveling the corridor to improve their fuel efficiency. The system will consist of a set of CV2X road side units which collect traffic data from heavy duty trucks instrumented with CV2X units, a network of high-resolution cameras, and bridge monitoring systems. The heavy duty trucks of different levels of automation will utilize the collected data when selecting their lane and controlling their longitudinal motion in order to maximize their fuel economy and minimize their travel time. The impact of these trucks on the rest of the traffic flow will also be evaluated.

5. NO

6. YES

Exhibit:

- Narrative Statement:
  - 5.a: Nature of Research Being Conducted:
    - The overarching goal of the project is to integrate a small number of commercial cellular vehicle-to-everything (CV2X) roadside units (approximately 5) along a 35 mile stretch of the I-275 highway corridor within the Michigan Department of Transportation (MDOT) right-of-way. The CV2X RSUs will be attached to light poles along the corridor connecting to power and wired communications. Vehicles with CV2X onboard units will be utilized to test the robustness of the CV2X RSU and their ability to probe the location and velocity of connected vehicles. Along the corridor already exists roadside camera systems and bridge monitoring systems that collect visual data on road traffic and the physical response of bridge structures to heavy trucks. The project will use the CV2X collected data to assess the movement of connected and automated trucks (CATs) that broadcast basic safety messages received by the CV2X RSUs. Tracking CATs in the I-275 corridor using both CV2X basic safety messages combined with image data from the existing roadside camera system, the location and speed of these trucks will be predicted to assess their fuel efficiency and their mechanical impact on bridges.
  - 5.b: Show Essential Nature of Communications:
    - The entire project is based on adoption of the emerging CV2X wireless transmission standard favored by the automotive industry for adoption in the nation's fleet of connected and autonomous vehicles (CAV). Without permission to deploy CV2X road side units, the research proposed in this project is *impossible* to execute given the essential nature of CV2X in the research objectives.
  - 5.c: Show Existing Communication Facilities are Inadequate:
    - To date, there are no CV2X road side units on the I-275 corridor from Monroe, Michigan to Plymouth, Michigan (35-mile corridor stretch). While traditional cellular communications are available along the corridor, the research project is very specific to assessing the use of CV2X for management and command of autonomous trucks.

7. N/A

8. 24 months

9. NO