



City of Arts & Innovation

Transportation Committee Memorandum

TO: TRANSPORTATION COMMITTEE MEMBERS **DATE: APRIL 13, 2017**
FROM: PUBLIC WORKS DEPARTMENT **WARDS: ALL**
SUBJECT: CONNECTED AND AUTONOMOUS VEHICLES UPDATE - DIRECT SUBMITTAL

ISSUE:

Receive updated information regarding connected and autonomous vehicles.

RECOMMENDATION:

That the Transportation Committee receive and file this report containing updated information pertaining to connected and autonomous vehicles.

BACKGROUND:

On April 14, 2016 the Public Works Department provided a briefing to the Transportation Committee regarding autonomous vehicles that use both laser and radio imaging techniques to map and react to the world around them. These vehicles are capable of independently navigating roadways without being actively controlled or monitored by a human driver.

DISCUSSION:

Following the initial briefing to the Transportation Committee, several important developments have occurred pertaining to autonomous vehicles:

Revised California Department of Motor Vehicles (DMV) Regulations

In September of 2016, the DMV released revised draft deployment regulations (Attachment 1). The new regulations:

1. Lift some of the previous restrictions imposed on developers of autonomous vehicles;
2. A fully tested autonomous vehicle is no longer required to have a separate steering wheel and manual brakes to allow a human to pilot the vehicle in case of an emergency, and

3. The State has decided to adopt the National Highway Traffic Safety Administration's guidelines for automated vehicle performance.

A more detailed review of State regulation of autonomous vehicles is included in an article from Lexology (Attachment 2).

In response to the issuance of revised DMV regulations, the Contra Costa Transportation Authority has partnered with the Bishop Ranch business park in San Ramon, California, to begin testing and deployment of the first fully autonomous shuttles. These shuttles, manufactured by EasyMile, are currently being tested on an empty lot within the business park but are anticipated to quickly begin service for the 30,000 Bishop Ranch employees. Each shuttle holds 12 passengers, runs for approximately 14 hours a day without recharging, and costs \$250,000. The EasyMile deployment is the first of its kind in the nation. (Attachment 3)

Autonomous Vehicle Permits

Uber, the rideshare service, started, stopped, and started once more testing autonomous vehicles in San Francisco. Following several instances of Uber's self-driving test vehicles running red lights at traffic signals, permits were revoked for Uber in California. On March 8, 2017, two permits were reissued to Uber, and they have been cleared to begin testing of vehicles which will require the presence of a driver and cannot initially be used for Uber services. (Attachment 4)

Autonomous Vehicle Accident

The first fatal self-driving accident occurred in May of 2016 when a Tesla Model S failed to recognize a turning big-rig and collided into the large vehicle's trailer, causing the death of the Tesla's passenger. An illustrated account of the incident, along with additional information on the imaging technology behind autonomous vehicles can be found in Attachment 5.

Connected Vehicles

Public Works has been following the development of the autonomous vehicle industry in California, and has been preparing for the presence of autonomous vehicles on our roads. While it will be some time until fully autonomous vehicles are the predominant form of transportation, public ownership of 'connected vehicles' is already on the rise. Connected vehicles still require a motorist behind the wheel, but are able to 'speak' with traffic signals and the vehicles around them to provide the motorist with critical safety and speed related information. For example, a traffic signal may sense a vehicle approaching a crosswalk currently in use by a pedestrian and issue a safety alert to the motorist. The same technology that allows a traffic signal to speak with a connected vehicle can help prevent red-light violations by autonomous vehicles by sending the traffic signal's current phasing to the vehicle, eliminating the need to rely solely on imaging technology to assess whether a green, yellow or red light is on display.

Technology

Public Works recently executed a Memorandum of Understanding with the University of California, Riverside's Bourns College of Engineering (UCR) to further the testing of connected vehicle technology within the City of Riverside. Several intersections are being equipped with the special radio and computing equipment that allows connected and autonomous vehicles to receive traffic signal data.

Funding

The Public Works was recently selected to receive \$559,900 (yet to be received) in grant funding through the state's Highway Safety Improvement Program to replace 250 traffic signal controller computers within the City, and upgrade the central traffic control system. The objective of the grant funding is to deploy traffic signal controllers with enhanced safety and operational features. These signal controllers will be 'connected vehicle ready', only requiring small modifications should the City wish to invest further in connected vehicle technology in the future.

In January of 2017, Public Works partnered with UCR and the Riverside Transit Agency to submit an application for funding through Volkswagen's 'Green City' program. Volkswagen has been required to invest \$800M in California towards zero-emission vehicles and electric vehicle charging facilities. The proposal requested \$59 million to fund community wide electric vehicle charging infrastructure, a 'smart corridor' using advanced traffic signal controllers and fiber optic communications, zero emission vehicle shared mobility programs, mobility hubs, a zero-emission bus transit system, automated vehicle demonstrations, hydrogen fueling infrastructure, and more. While the City did not receive this funding, the proposal will serve as a framework for future funding applications and smaller scale projects.

FISCAL IMPACT:

There is no fiscal impact associated with this update.

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availability of funds: Scott Miller, PhD, Chief Financial Officer/City Treasurer
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Attachments:

1. Revised DMV Regulations
2. Lexology Article
3. Govtech Driverless Shuttle
4. Uber Article New York Times
5. When Cars Drive Themselves
6. Presentation