



STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. BOX 778
DOVER, DELAWARE 19903

JENNIFER COHAN
SECRETARY

**Advisory Council on Connected and Autonomous Vehicles
(Executive Order 14)
Subcommittee on Transportation Network Infrastructure**

Tuesday, May 8, 2018
10:30 AM – 12:30 PM
DelDOT Administration Building, 800 Bay Road, Dover, DE
Farmington/Felton Conference Room

MINUTES

1. Introductions

- a. The meeting commenced at 10:31 AM. R. McCleary introduced himself and opened the meeting with a round of introductions.

Present Voting Committee Members

Gene Donaldson	Delaware Department of Transportation (DelDOT)
Mark Luszcz	Delaware Department of Transportation (DelDOT)
Reed Macmillan	Dover/Kent County MPO
Rob McCleary	Delaware Department of Transportation (DelDOT)
Ed Osienski	State Representative
Scott Vien	Division of Motor Vehicles (DMV)

Absent Voting Committee Members

Ruth Briggs King	State Representative
Brian Pettyjohn	State Senate

Also Present

Fred Bergstresser	Royal Truck & Equipment
Erin Coombs	Jacobs
Bruce Demeter	DelDOT
Beth McGee	DelDOT
Colton Philips	DelDOT
Megan Rosica	Jacobs



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2. Review and Motion to Approve 3/1/18 Meeting Minutes

- a. The committee reviewed the previous meeting minutes and had no revisions or comments. E. Osienski made a motion to approve the minutes. Motion was seconded by G. Donaldson. Motion passed and the minutes were approved.

3. Discuss Old Business

- a. Stakeholder Questionnaire Update
 - i. R. McCleary explained that the questionnaire had been sent out and received responses that have been compiled in the provided matrix. R. McCleary requested that the subcommittee members review and provide any additional contact information of parties that would be potentially interested.
- b. Draft Subcommittee Charter
 - i. R. McCleary provided the latest version to the subcommittee members and stated that it was still in draft form with the provided input from members. The plan is for the charter to serve as a working tool for guidance.
 - ii. R. Macmillan asked for the dates that the target outcomes are being requested by the Advisory Council. The subcommittee reports are to be submitted by July 31 and the Council document will be released for review on August 17.
 - iii. G. Donaldson requested that Siemens be added as a primary stakeholder.
 - iv. There was discussion about telecommunications being referenced in the charter and its location of introduction. M. Luszcz suggested that telecommunications should be addressed in the scope section.
 - v. R. Macmillan stated that the charter should not be as detailed and more focus should be spent on developing the final report. He made a motion to adopt the final draft charter with inclusion of Siemens (primary stakeholder) and added dates of submission. E. Osienski seconded the motion. Motion carried and the final draft charter with updates was approved.
- c. Draft Recommendations Report/Report Template
 - i. R. McCleary provided a template of the recommendations report based on the template provided by the Advisory Council. He stated that the next step is to convert the bulleted points from the 3/1 meeting and insert into template. He requested that the committee continue to brainstorm issues and areas of further discussion and to forward to him. The plan is to have a draft available for the June 7th meeting.

4. New Business

- a. TARDEC (US Army Tank Automotive Research Development & Engineering Center)



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- i. R. McCleary provided a recap of the discussion with TARDEC on 4/5. TARDEC is currently working to develop, integrate and sustain the right technology solutions for all manned and unmanned Department of Defense (DOD) ground systems and combat support systems to improve effectiveness and provided superior capabilities.
- ii. Presentation focused primarily on leader-follower fleet testing with Michigan DOT and Canadian border. TARDEC believes they are 2 years away from routine operations of leader and follower technology.
- b. Proxy
 - i. R. McCleary requested that if any committee members are unable to make any of the upcoming meetings that they send a proxy so that quorum can be reached. Due to approaching deadlines, it is important to continue to meet on schedule.
- c. Speaker Fred Bergstresser, Royal Truck & Equipment
 - i. F. Bergstresser presented on the leader-follower technology being developed by Royal Truck & Equipment in an autonomous TMA. Low speed mobile operations can be dangerous for drivers so CAV technology is extremely beneficial to operations (e.g. road striping vehicles and sweepers). Royal is working with agencies and universities to develop this technology at different levels in states throughout the U.S., such as Colorado, California, and Missouri.
 - ii. E. Osienski asked about the cost of these autonomous TMAs. F. Bergstresser responded that the follower truck and equipment to be added to the leader truck cost around \$350,000.
 - iii. G. Donaldson asked how DOT's are purchasing this equipment and whether they are submitting RFP's. F. Bergstresser responded that it varies. Colorado did a sole-source procurement and California is following suit with UC Davis in their research study. Missouri put out an RFP for a 2-year study. Royal won and is working with them to fit trucks currently. Many states are working with research universities to validate equipment.
 - iv. R. McCleary asked about the communication between vehicles and if it relies on infrastructure. F. Bergstresser responded that the equipment only relies on GPS signals and real-time kinematics. When R. McCleary asked about radio frequency interference F. Bergstresser noted that there were initial issues with this, especially at toll booths, but now they are broadcasting on multiple frequencies for redundancy.
 - v. S. Vien raised the concern of a leader truck driving off-route and a follower truck doing the same. F. Bergstresser indicated that if the leader is off route, the follower truck will see this using its radar/sonar and will come to a stop.



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- vi. R. McCleary asked what the maximum speed is to where the operation halts. F. Bergstresser responded that it is not yet programmed but while testing in London it has gone up to 57 mph with the follower truck following the entire time. R. McCleary indicated the needed consideration for how this technology could be misused.
- vii. R. Macmillan asked about the cameras recording in vehicles. F. Bergstresser responded that Royal integrates trucks with an Event Data Recorder (EDR) that can be accessed remotely. Royal is talking with Colorado to implement devices in other vehicles as well. R. McCleary indicated the benefits adding cameras to buses in Delaware has had, but that the same liabilities will have to be considered with this technology.
- viii. R. McCleary asked if there was any infrastructure that may be needed to help the technologies that Royal is developing. F. Bergstresser responded that the technology just relies on vehicle-to-vehicle (V2V) communications. It runs completely on GPS, so no road stripes are needed. He also indicated that Royal is working to develop an offset for mower operations.
- ix. G. Donaldson emphasized that the core of CAV technology is in the 3D map and this needs to be considered by this committee as they make recommendations to the general council in the final report.

5. Public Comment

- a. None

6. Next Meeting

- a. The next meeting is scheduled for June 7th at 10:00AM. R. McCleary called for a motion to close the meeting. E. Osienski made a motion and R. Macmillan seconded. The meeting adjourned at 11:48AM.