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LEGISLATIVE ACTION ALERT



Self-driving vehicles

Coming soon to Pa. roads: Autonomous trains of semi trucks

MJ Slaby Theincline© January 2019

It's called platooning, and it will be allowed this spring. Why have one semi when you can have a platoon? Why have one semi when you can have a platoon? When it comes to the robot vehicles of the future, it's possible that semis will be self-driving before taxis.

State lawmakers have yet to agree on legislation governing the testing of self-driving vehicles but passed a bill in October that will allow for platooning of up to three automated buses, military vehicles or tractor-trailers on some highways and interstates starting this spring.

Think of platooning as an autonomous train of vehicles traveling in a line, bound not by a physical connection, but a wireless one. While the law now requires a driver in each vehicle, eventually, there may be one human in the lead vehicle and none in the vehicles that follow.

PennDOT is currently working on policies to implement the new platooning law and is looking for industry advice, said Mark Kopko, the department's special advisor on transformational technology. Companies will need to submit their platooning and operations plans to the department for review, he said.

Here's what experts are saying about the technology and what's next. How does platooning work? Platooning vehicles are more fuel-efficient, take up less space on the roads and can be safer, explained Philip Koopman, CTO & co-founder of Pittsburgh-based Edge Case Research and a professor at CMU.

To get benefits of efficiency and aerodynamics, the first platooning vehicle sends data — through wifi, cell phone, or radio connection — telling the second vehicle to brake when the first brakes, rather than a human driver hitting the brakes when they see tail lights. The vehicles travel so close together that it wouldn't be safe for non-platooning vehicles, Koopman said. If the first vehicle braked, a human driver wouldn't have fast enough reflexes to react, Koopman said. "That's why, in real life, you can't do that."

As the technology is developing, Koopman said the vehicles could travel farther apart to allow humans in the following vehicles to supervise and react if needed, almost like driving with a form of smart cruise control. But companies still need to figure out what to do when a car moves between platooning trucks, causing an issue for the connection.

Next steps, under the new law, PennDOT will have the ability to reject plans for platooning, but not to approve them. So if a company doesn't hear from the department within 30 days after PennDOT receives the plan, the platoon is allowed to operate. PennDOT, along with the Pa. Turnpike Commission, will also be able to restrict platoons for safety reasons such as weather, Kopko added.

The department will also look at things like sight distance, connectivity through areas with tunnels and urban canyons, and average traffic to determine if a road would be good for platooning, Kopko said. In general, he added, urban corridors with lots of traffic and changes wouldn't work.

PennDOT's policy will also include how to indicate that vehicles are part of a platoon, as the platooning law requires a visual identifier. Kopko said it could be something like a special sticker, but the department is looking into what other states require to streamline the process for truck platoons to go from coast to coast. What platooning actually looks like in practice depends on how the technology develops and what companies prioritize in their business models, Koopman said.

While it seems simple to say the other vehicles would just follow the first one, there are still plenty of issues to work out, Koopman said, adding the stakes are high because the platoons would be heavy trucks on the highway with many other cars.

It may be the case that a platoon of vehicles have a person in each one, while the person in the first one drives and the others rest before switching, allowing for decreased travel time due to fewer stops. Or, he said that it could be the following vehicles don't have seats and almost smart trailers connected to the lead vehicle. The follow trailers could be delivered to a parking lot or rest stop near the highway where the lead vehicle could pick them up and continue on as a platoon. "Both are viable and have different requirements on the level of the autonomy," he said.