

# Pittsburgh Cars May Talk with Traffic Signals

BY: Aaron Aupperlee, The Pittsburgh Tribune-Review | May 31, 2016

(TNS) -- Traffic lights on Perry Highway in Marshall and along Baum Boulevard and Centre Avenue in Pittsburgh's Bloomfield neighborhood can talk.

No one is listening , but vehicles soon will — and they'll talk back.

Road tests of self-driving cars, as Uber is doing in Pittsburgh, are just beginning. But connected vehicles — cars that communicate with traffic signals, other cars and other devices — could be in production and on the road as soon as next year.

“Basically, everyone in the industry sees this technology as, yes, this is the right way to go, and this will increase safety more than we’ve ever seen in history,” said Stan Caldwell, executive director of Carnegie Mellon’s Traffic21 Institute and an adjunct associate professor of transportation and public policy.

PennDOT, in partnership with Carnegie Mellon University, has installed dedicated short-range communication radios at 35 intersections in Bloomfield and Marshall and will add 11 this year at intersections along McKnight Road in Ross and McCandless. The technology is endorsed by the federal Department of Transportation to transmit and receive connected car signals.

The work stems from a study PennDOT commissioned and CMU completed in 2014 that looked at how the state agency can prepare for transportation needs in 2040, including connected and autonomous vehicles. It costs \$1,000 to \$2,000 to equip intersections with the radios, said Caldwell and Mark Kopko, traveler information and advanced vehicle technology manager at PennDOT.

“The big goal of the department right now is that we stay in tune with everything and keep our finger on the pulse,” Kopko said, adding that work for 2040 is beginning now. “You don’t want to plan for Betamax and VHS becomes popular.”

Connected vehicle technology and dedicated short-range communication radios could turn every car, truck, bus, traffic signal or control device into a beacon broadcasting essential information. A car, truck or bus could broadcast its speed, location, route and size. A traffic light could tell cars what color it is and when it will change. It could warn cars when someone runs a red light.

Those signals are sent 10 times a second in a radius of about 300 meters, Caldwell said. They are sent and received almost instantaneously.

Cars could talk to each other. They could warn each other when one slams on the brakes or veers from its lane. An ambulance could talk to traffic lights and tell them to give it all greens en route to a hospital.

Cars and traffic lights could talk to cellphones, computers or other devices to help direct traffic and warn of backups or detours.

Cars could talk to cyclists and pedestrians carrying the radios, warning each other of their locations and behaviors.

“Once these cars are connected, it just opens up all the new worlds,” Caldwell said.

General Motors has indicated it could start adding dedicated short-range communication radios to some of its 2017 vehicles. The automaker claims to have millions of vehicles on the road connected through cellular networks.

The federal Department of Transportation is in the final stages of making rules concerning the technology, and it could be as few as two years away from mandating the technology in new cars. The agency set a goal of 90 percent of vehicles and 80 percent of traffic signals having dedicated short-range communication radios by 2040.

In a report to Congress last year, the agency said the technology could make transportation on American roads safer, addressing 83 percent of car crashes that don't involve drunken or impaired drivers.

Port Authority of Allegheny County is considering installing the radios on its buses as part of its partnership with CMU's Scalable Urban Traffic Control program, which is seeking to ease congestion and improve safety in the East End through connected traffic signals, sensors and antennas, said authority spokesman Adam Brandolph. The expanded use of the radios is part of Pittsburgh's Smart City application for \$50 million in federal transportation funding, which the city submitted this week.

Caldwell said CMU is talking with local freight and trucking companies about using the technology.

The Pennsylvania Turnpike Commission also is looking at dedicated short-range communication radios, said Bob Taylor, the turnpike's manager of traffic operations. The commission is experimenting with connected technology through its TripTalk app. Taylor hopes to expand connected technology to alert drivers to work zones, crashes, weather and other safety notices.

"By sharing it through the app first, we can get it to more people and show some early successes," Taylor said.

CMU and PennDOT have been testing the technology in Western Pennsylvania since 2014, when the first radios were installed in intersections on Perry Highway in Marshall. A year later, 24 were installed in Bloomfield. PennDOT will install radios at intersections along McKnight Road — from Nelson Run to McIntyre Road in Ross — and at Peebles and Perrymont roads in McCandless.

CMU's Cadillac SRX — the SUV that drove itself to Pittsburgh International Airport in 2013 in a pioneering display of autonomous vehicle technology — is the only car that can talk to the signals, according to PennDOT and CMU.

As CMU's Cadillac drives through radio-equipped intersections, it tells the traffic lights how fast it's going, where it's going and what it is. The traffic light broadcasts its color and how long it will remain that color before it changes.

"The average person is driving through these and they have no idea," Kopko said.

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