

GREEN MEANS GO: DOT GRANT FUELS DEVELOPMENT OF OHIO'S AUTONOMOUS VEHICLE INDUSTRY

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On September 10, the Ohio Department of Transportation (ODOT) landed a hefty \$7.5-million grant from the U.S. Department of Transportation (DOT) for the testing of self-driving vehicles. The grant comes on the heels of months of hard work by ODOT, having faced stiff competition from 72 other applicants nationwide to secure a sizeable chunk of \$60 million in federal Automated Driving System Demonstration Grants. The grants have been long anticipated, and will give winning geographic regions a leg up in the regional autonomous vehicle competition.

Ohio's Automated Driving System Demonstration Grant has been heralded by those in the industry, as well as politicians and policymakers, as a huge win for the state. Senator Sherrod Brown said that securing this research funding will allow Ohio to remain at the "forefront of research and innovation." Senator Rob Portman also praised the program and emphasized Ohio's expertise in this area. Governor Mike DeWine commented as well, reiterating Ohio's commitment to being a thought leader at the forefront of autonomous vehicle technology. The hope is that innovators from across the nation, and even across the world, will flock to Ohio to test their cutting-edge technologies.

The \$7.5 million will be used by entities like DriveOhio and the Transportation Research Center (TRC) – as well as partners at The Ohio State University, University of Cincinnati, and Ohio University – to test automated driving system (ADS) technology over the next four years. According to Brett Roubinek, TRC President and CEO, this testing will help to inform DOT policymakers, providing the data they need to roll out effective safety regulations. Other private and public contributors across Ohio have pledged an additional \$10.3 million, giving the project a total budget of \$17.8 million. Other project partners include Bosch, Columbus Yellow Car, AutonomouStuff, Robotic Research, the City of Athens, Foundation for Appalachian Ohio, Buckeye Hills Regional Council, and the Diabetes Institute at Ohio University. Ohio hopes to woo Toyota, Waymo, Ford, the American Trucking Associations, AAA, and others into pledging additional funding.

While some research will take place at TRC's 4500-acre facility, the project will also utilize 32 counties of Ohio's rural Appalachian region, with real-world testing conducted under the watchful eyes of human drivers. ODOT Director Jack Marchbanks explained that while 97% of the area in the United States is rural, a majority of autonomous vehicle testing has occurred in urban settings. Utilizing Ohio's rural Appalachian region for developing self-driving technology will eliminate potential blind spots in developing safe and effective driverless technologies for rural settings and will continue to raise Ohio's profile in the smart mobility industry. The project's goals include developing autonomous vehicle technology capable of overcoming the unique challenges presented by rural settings that often suffer from faded pavement markings, limited shoulders, rolling terrain, unclear or non-existent edge lines, and gravel roads.

OTHER AUTOMATED DRIVING SYSTEM DEMONSTRATION GRANTS

So far, DOT has granted award funding to eight projects. The other winning proposals include those submitted by the City of Detroit, MI; Contra Costa Transportation Authority, CA; University of Iowa; Texas A&M Engineering Experiment Station; Pennsylvania Department of Transportation; and two submissions from Virginia Polytechnic Institute and State University. Each of these projects has a unique focus and fulfills a niche area of research emphasized by DOT, representing a broad cross section of ADS applications, including fleet and trucking applications, interactions between automated vehicles, and automated vehicle use on less well-charted roads with no high-definition maps or adequate signage.

DOT aims to study a broad range of the autonomous vehicle applications in a variety of settings. Thus, in awarding Automated Driving System Demonstration Grants, emphasis was placed on funding projects that are composed of urban, suburban, and rural areas and include freight, personal mobility, and public transportation.

For example, the Contra Costa Transportation Authority will develop three projects focused on elderly and differently abled populations who struggle with mobility. The first demonstration will attempt to increase transit accessibility to the elderly by using shared autonomous vehicles within a gated community. The shuttle will operate on a predetermined loop and functionally help elderly individuals with the first and last miles of their trips. The second project will provide on-demand, wheelchair-accessible vehicle shuttle service to a local hospital. Researchers hope to reduce appointment absenteeism and give populations without access to reliable transportation a sense of self-sufficiency. The final project will utilize the I-680 Corridor and prepare it for future autonomous vehicle use. The two-mile section of highway will be used to test high-speed autonomous vehicles.

The City of Detroit will leverage its Mobility Innovation Office and partner with the Mcity Test Facility, American Center for Mobility, Michigan DOT, University of Michigan's Transportation Research Institute, Michigan Economic Development Corporation, Wayne State University, Ford Smart Mobility LLC, and Deloitte Consulting. Its end-goal is to roll out a fleet of shuttle vehicles in urban Detroit to move differently abled and senior populations of Detroit who experience barriers to mobility. The low-speed shuttles used in this demonstration will focus on transporting people to medical appointments, grocery stores, social activities, and civic engagements. The fleet of vehicles deployed during this project will have an urban focus.

Texas A&M is creating a demonstration emphasizing the concept of autonomous driving for all. The broad two-part proposal seeks to explore urban, suburban, and rural autonomous vehicle applications not only in Texas, but around the nation, utilizing private sector partners like Nvidia, General Motors, and National Instruments. The first project hopes to integrate multimodal transportation on college campuses (i.e., mixed-vehicle environments, including cars, pedestrians, and cyclists) with driverless technology that can safely navigate these unique challenges. Rather than simply treating these travelers as objects to be avoided, this proposal hopes to integrate the decision-making logic of these other modes of transportation into the AI that controls Connected and Autonomous Vehicles (CAVs). Combined with innovative low-latency vehicle-to-everything communications, this aspect of the project aims to make particularly vulnerable travelers safer. The second experiment will address overcoming obstacles such as lack of HD mapping, unclear road markings, inaccurate or non-existent road signs, and poor pavement quality that plague rural roadways.

Iowa State University and Iowa DOT are partnering on a project called "ADS for Rural America." This project will focus on unique challenges for driverless technology on rural roads, including climate, weather, road variance, slow-moving traffic, sharp curves, steep grades, limited visibility, and loose surfaces.

Stakeholders in Virginia were awarded two separate federal Automated Driving System Demonstration Grants. The first grant will go toward a project aimed at informing DOT and industry leaders about how to safely and effectively roll out autonomous fleets by utilizing mixed fleets (with both autonomous and traditional vehicles). This particular demonstration will culminate in an uninterrupted trip from San Francisco to New York across I-80 using L5 autonomous technology – the first long-haul proof of concept of its kind, employing technology having the capacity to develop instincts about the immediate future. The second grant will fund a project focused on developing technology that can adapt to highly dynamic interactive scenarios, including work zones, signalized intersections, and public safety officers directing traffic (or partially obstructing lanes after an accident).

Finally, Pennsylvania DOT will partner with Carnegie Mellon University and Penn State University to integrate ADS technology into the physical infrastructure of work zones. By utilizing innovative coatings that will allow for connectivity through dedicated short-range communications and cellular vehicle-to-everything connectivity, researchers hope to allow ADS vehicles to “see” construction workers, pavement markings, traffic control devices, and construction vehicles.ⁱ

ADDITIONAL INFORMATION

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ⁱ To read the entire proposals of any of the selected applications, see:

<https://www.transportation.gov/policy-initiatives/automated-vehicles/35-ohio-department-transportation-through-driveohio>

<https://www.transportation.gov/policy-initiatives/automated-vehicles/62-contra-costa-transportation-authority-ca>

<https://www.transportation.gov/policy-initiatives/automated-vehicles/49-city-detroit-mi>

<https://www.transportation.gov/policy-initiatives/automated-vehicles/10-texas-am-engineering-experiment-station>

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<https://www.transportation.gov/policy-initiatives/automated-vehicles/23-virginia-tech-transportation-institute>

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<https://www.transportation.gov/policy-initiatives/automated-vehicles/36-pennsylvania-department-transportation>