Department of Transportation

Office of the Secretary

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Solicitation of Proposals for Designation of Automated Vehicle Proving Grounds Pilot

Agency: Office of the Secretary, U.S. Department of Transportation (DOT)

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The City of Detroit is pleased to present our qualifications to be designated as an Automated Vehicle Proving Grounds Pilot. No other city in the United States has the combination of infrastructure and opportunity, state and local leadership support, and proximity to the companies involved in designing and building automated vehicles. The Mayor's Office of Mobility Innovation was created to support these type of unique efforts and provide Detroit's residents with innovative solutions to their daily mobility challenges. Through this new office Detroit is building a strong foundation to transform personal and commercial mobility. Detroit is committed to mobility innovation and poised to serve as the center of the global mobility future.

The integration of automated vehicles will be the most dramatic change in American society since the Internet. It will impact of all aspects of daily life, from how people get around to where they live and how they work. The potential benefits of this technology range from eliminating fatalities caused by vehicles, to reducing the amount of space required for parking in Central Business Districts, to a greater amount of free time for commuters. The U.S. Department of Transportation has served as a leader for states and cities on this issue through the recent introduction of policies and regulations. The solicitation for Designating Automated Vehicle Providing Grounds is the logical next step is this process.

As the applications for automated vehicles evolve, including Detroit in the initial pilot network will provide valuable lessons to cities of all sizes and types across the country in how to safely and successfully deploy this new technology. Automated vehicles are viewed by Detroit as an essential part of the toolbox for solving a number of mobility challenges. The City has a high pedestrian fatality rate, low car ownership, under-developed transit systems, and low employment, all of which could be positively impacted by this designation and subsequent efforts. These problems are not unique to Detroit, but Detroit presents a unique opportunity to trial and pilot the solutions critical to ensuring safe, convenient and affordable integration of

automated vehicles into the mobility framework, and the leadership commitment and partnerships in place to transition from pilot to full-scale implementation, with ultimate benefits for all residents and businesses.

Detroit is Poised to Serve as the Center of the Global Mobility Future

Since the first Model T left the Ford Piquette Avenue Plan in 1908, the City of Detroit has served as the center of the American automobile industry. The unique strengths of the City today will propel Detroit into a national leadership role in the development and deployment of automated vehicles as we move into a Global Mobility Future.

Detroit City is the Place to Be

As seen by recent deployments of automated vehicle fleets in Pittsburgh and San Francisco by Uber and in Singapore by nuTonomy, there is an immediate demand to test this technology in cities. The complexity of urban transportation networks and the strong business case for the private sector make cities the most logical first candidate for private investment in this space.

Southeast Michigan has quickly developed an automated vehicle testing eco-system with M City and the future American City for Mobility at Willow Run. The next logical step for testing at these premiere facilities is the complexity of the urban environment of the City of Detroit. The future partnerships that the City develops with these facilities will create a unique testing environment for automated vehicles that cannot be matched anywhere in the United States.

Leadership Commitment

Mayor Duggan is committed to implementing innovative solutions to address all mobility challenges in Detroit. This commitment is supported throughout the City and region by numerous partners in the private sector as well as the non-profit and philanthropic communities.

The City recently launched a first-ever Office of Mobility Innovation. A key role of this office is the integration of automated vehicles and other new technologies and services that will keep Detroit at the forefront of innovative mobility solutions. This office is responsible for convening a quarterly Mobility Coalition that includes the City, State, automotive original equipment manufacturers (GM, Ford, Fiat Chrysler Automobiles), and other local partners to discuss mobility issues, quarterly meetings between transportation providers including public transit, transportation network companies, taxis, and private shuttles. This creates numerous opportunities and avenues to plan how to best integrate automated vehicles into the City in a safe, coordinated manner. Staff from the Office of Mobility Innovation will be responsible for developing solutions, policies, research projects and fostering relationships with the private sector companies developing the technology.

Support from OEMs and Mobility Community

Ranked No.1 nationally for the number of advanced automotive industry jobs (67,825) and businesses (462), Detroit and Southeast Michigan will continue to serve as the heart of a mobility industry that is rapidly advancing towards more connected and automated vehicles.

The proximity of these companies and facilities to Detroit will not only make it easy for those working on these projects to observe testing in the field, but it will also allow the City's Office of Mobility Innovation to create in-person relationships with the private sector to improve all aspects of deployment. For example, General Motors has already made a commitment to begin testing its automated technology in the Detroit area and the City's Office of Mobility Innovation has initiated conversations on how this can best be done.

State Leadership and Support

In 2014, Michigan led the United States in connected vehicle projects (45), followed by California (31), a growth of 50 percent over the previous year. The State of Michigan has clearly demonstrated its desire to be a leader in the deployment of automated vehicles, from its financial investments in testing grounds to the recent passing of statewide regulations. Both the City and the State consider this issue a high priority. This confluence of interests provides more capacity for implementation and research as well as mitigates potential disagreements between jurisdictional agencies.

Detroit's Vision for Automated Vehicles

To transform the Motor City to Mobility City, the Mayor and the Office of Mobility Innovation have laid out the framework for the City's vision for the integration of automated vehicles. This framework rests on the understanding that as the Motor City, Detroit has a legacy transportation system and land use patterns almost totally reliant on personal auto ownership. As a result, many Detroiters lack affordable access to mobility. Automated vehicles, whether they are used as part of a service, personally owned, or part of transit, will be key to improving the state of mobility for Detroit's residents.

There will be many different types of deployments of automated vehicles, both in the short-term and the long-term. The City does not plan to dictate where automated vehicles should be tested; instead it is working with the private sector to understand their needs and figuring out both the best location to meet those needs and how the technology can be deployed to improve the mobility within Detroit. If selected as a Designating Automated Vehicle Providing Grounds, the City of Detroit is committed to this strategy of creating pilots that are win/wins for the City and the private sector.

Increasing mobility for Detroiters, and providing effective mobility solutions to existing and new businesses, is critical to the growth of the City. The following are what Detroit sees as the key elements to success:

Framework Element 1: Access to Opportunity

No other mid-sized city has are car ownership rates so low (74.8% in Detroit vs. national average of 90.8%), jobs so spread out (115,000 Detroiters leave the city for jobs vs. 65,000 who live and work in the city), and transit systems so underdeveloped and fragmented (65% of transit dependent households are beyond a 10 minute walk to transit options and only 22% of the regions jobs are accessible within a 90 minute fixed route transit commute). In addition, Detroit has one of the highest poverty rates among mid-sized cities (39.3% of Detroit

households live below the poverty line) and lowest employment rates (53% of Detroiters age 18-64 worked any hours last year vs. national average of 75%).

The Office of Mobility Innovation is collaborating closely with the Jobs and Economy team to develop workforce development solutions to address the mobility challenges faced by the City's residents. Automated vehicle pilots in Detroit have the opportunity to not only test the technology, but also make a significantly greater impact on equity and inclusion than they would in any other city in America. Building a next-generation transportation system which provides efficient and effective access in a low-density environment will fundamentally change the lives of many lower-income individuals and families that currently face daunting transportation challenges, and will create models that can be used in mid-sized cities all across the country.

Framework Element 2: Mobility as a Service

Owning a vehicle in Detroit is very expensive due to the fact that it has the highest insurance rates in the country (average cost of auto insurance in Detroit is $6,137 per year for men and $7,450 for women compared to the national average cost of $841.23). Expanding the opportunities for mobility to be used a service instead of ownership model will significantly reduce the burden that the cost of transportation places on households, particularly those that can afford it the least. The City envisions automated vehicles being an integral part of this solution, from traditional uses, such as point to point trips served by TNCs and taxis, as well as determining how the technology can support services that would not traditionally be feasible in Detroit, such as one-way car share, flexible workforce development transit, and first mile/last mile solutions in neighborhoods along the City's primary transit corridors.

Framework Element 3: Effective Movement of Freight

The movement of freight will likely be one of the first common applications of automated vehicle technology and Detroit is prepared to support this deployment. In addition to partnering to with delivery companies on short-haul deliveries, Detroit will prioritize the implementation of automated freight vehicles on trunk routes and other key jobs corridors, such as the Mount Elliott Employment District, which supports major auto assembly plants operated by General Motors and Chrysler, as well as the Coleman A. Young International Airport and a number of smaller service companies, logistics firms, and industrial suppliers.

Framework Element 4: Automating Transit

Investments continue to be made in the City's bus system, most recently adding 80 new buses to the fleet and approximately 1,500 new trips that were not part of the service schedule a year ago. Automated vehicles will become part of the City's transit system, both in fixed and dynamic routes. The City is currently working with the University of Michigan to conduct a service analysis and understand where flexible service could supplement or replace fixed route service. Automated vehicles would be a potential solution to provide this type of service.

Framework Element 5: Deploying Connected Vehicle Infrastructure

The City is committed to ensuring that our infrastructure supports the deployment of autonomous vehicles, from the striping of streets to necessary infrastructure to allow vehicles to

communicate. The City's Department of Public Works and Office of Mobility Innovation are coordinating efforts to ensure that future investments in the public right-of-way support automated vehicle technology and implementation. The City is currently working with Argonne National Laboratories Array of Things Platform to assess data about Detroit's environment, infrastructure, and urban movement.

Framework Element 6: Improving Public Safety

Improving the safety for all users on Detroit's streets is paramount. In 2014, Detroit had 125 total fatalities on its streets, 7th most in the United States as the most for any city under 1 Million people. Of even greater concern was that 40 of those fatalities were pedestrians, which resulted in country's highest pedestrian fatality rate.

There are many contributing factors to the safety issues which the City is addressing through current efforts of engineering, enforcement, education, and encouragement. The integration of automated vehicles has the potential to save the lives of Detroiters, particularly those of our most vulnerable populations.

Selection Criteria

The City of Detroit exceeds all of the listed selection criteria that apply to cities. We appreciate your review of our qualifications.

Mandatory Criteria

The City of Detroit is committed to sharing our approach and results to safety and data throughout the testing and operation of automated vehicles to further the overall learning and understanding among cities and others.

Ashok Patel, P.E., PTOE will serve as the City's Designated Safety Officer. He will be responsible for the implementation and review of the City's safety management plan. He is fully committed to participating in the Community of Practice's regular quarterly meeting of Safety Officers.

Additionally, the City will convene an internal working group of the Mayor's Office, the Office of Mobility Innovation, the Department of Public Works, the Department of Planning and Development, the Department of Public Health as well as the Michigan Department of Transportation and the Wayne County Roads Division. This working group will meet on a quarterly basis to review the overall deployment program of automated vehicles and provide input on future steps or research.

Proposed Contribution

An automated vehicle program is being developed through the Mayor's Office of Mobility Innovation, led by the Chief. It will include pilot programs, quarterly roundtables that include public and private sector, and metrics to evaluate the success of the program. Automated vehicles will be used as part of the toolbox to solve a number of mobility issues in Detroit, from traditional first/last mile to the challenge that mobility creates for residents to access opportunity. The City of Detroit is committed to sharing not only the outcomes from this program, but also the process and decision making that went into each solution.

Beyond studying simply the safety and operations of automated Issues, the City plans on undertaking studies that look at the following aspects of automated vehicles:

- Applications as mobility as a service
- Applications as first/last mile solutions
- Perceptions of all residents
- User evaluations of trips

The City is committed to being a leader in the Community of Practice and work closely with the DOT's research program offices. The City's Chief of Mobility Innovation will participate in all aspects of this partnership, from brainstorming research efforts to developing public-private partnerships between other Designated Proving Grounds and the Southeast Michigan automated vehicle eco-system, and participating in conferences and webinars to share the City's lessons learned and answer questions from other communities. This is one of the primary

duties of the Office of Mobility Innovation and the City is willing to expand the capacity of this office to meet the needs of the Department of Transportation.

Commitment to Safety

The City of Detroit is committed to ensuring safety of all when testing automated vehicles on public streets. We will work closely with our partners at the Michigan Department of Transportation and Wayne County Roads Division to develop the safety management plan and review all deployments. The safety management plan will be updated quarterly to ensure it is evolving with technology and observations of what is happening in the field.

Research, Application, and Data Sharing

The City is planning to demonstrate to the country how the implementation of automated vehicles can solve numerous types of mobility challenges. The Office of Mobility Innovation, in partnership with partners in academia as well as the private and non-profit sectors, will conduct and share a significant amount of research on the deployment of automated vehicles. The City will work closely with the DOT to align the research with national needs and ensure there is not overlap with work being conducted in other pilot cities. Detroit has Memorandums of Understanding with a number of premier research institutions, including the University of Michigan, Wayne State University, and Argonne National Labs. The City of Detroit is committed to open data and sharing performance metrics that are developed as part of different deployments.

Demonstrated Investments

The State of Michigan's recently passed legislation allows for the testing of automated vehicles on public roads. As automation technology advances, the City will work closely with the State to address any potential future regulatory challenges.

Readiness

The Office of Mobility Innovation was recently created in part to provide dedicated capacity to all aspects of the deployment of autonomous vehicles in the City of Detroit. It is anticipated that all staff working within the Office of Mobility Innovation will assist with the automated vehicle program.

The City's residents and communities of Detroit will be part of the process of deploying autonomous vehicles. The City has a considerable amount of internal infrastructure to inform its residents of new programs such as this, including the Neighborhoods program The City of Detroit will conduct significant public outreach to any communities where automated vehicles are launched as well as develop a citywide educational program, which will include webinars and a webpage.

Adherence to Laws, Regulations, and Federal Policy

The City of Detroit will work closely with the Michigan Department of Transportation to ensure that all deployments adhere to state and federal regulations and the Federal Automated Vehicles Policy. The City will provide quarterly reports to monitor adherence to all regulations.