Seattle Department of Transportation

USDOT Automated Vehicle Proving Grounds Pilot

Proposal

Docket No.: DOT-OST-2016-0233

In partnership with:

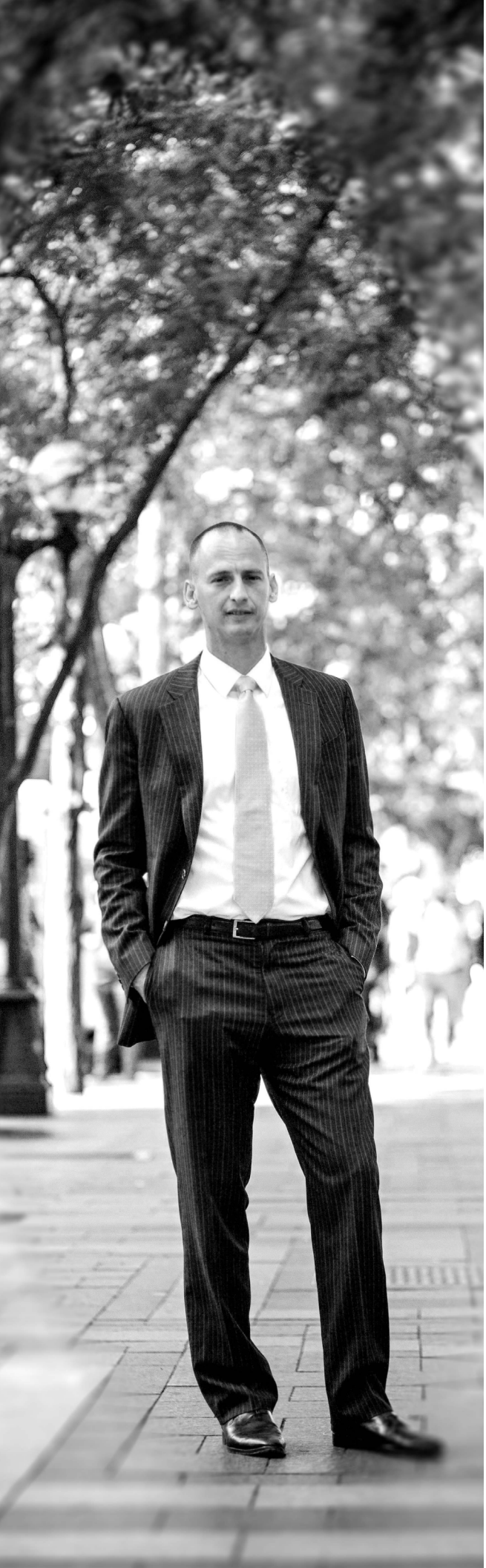
Seattle Department of Transportation

University of Washington

PACTRANS

King County Metro

Sound Transit



A MESSAGE FROM SCOTT KUBLY

Dear Secretary Anthony R. Foxx,

Seattle envisions a future where people can safely and comfortably get around; where people can choose from a variety of reliable, affordable, easy-to-use travel options; and where we harness innovation to expand choices and improve the environment. Automated mobility—whether personal vehicles, shared fleets, transit services, or freight—can help us achieve this vision, creating safe, efficient, and highly predictable personal and shared mobility options for our citizens. It will also spell better delivery service and new ways to deliver transit services to our high capacity transit lines. And, we are ready.

The City of Seattle's perspective on automated mobility and other emerging mobility innovations is simple: Embracing technology alone will not meet our city's needs. We use technology in service to our core values: To become a safe, interconnected, vibrant, affordable, and innovative city. The development and deployment of automated vehicles requires foresight and an innovative spirit—both of which are at the core of what it means to be Seattleites. The Seattle Department of Transportation has the progressive planning and engineering principles, and is prepared to help shape the infrastructure, regulatory environment, and to test and evaluate automated vehicles. I am eager to ensure automated vehicles work in our unique environment in service to our larger goals and objectives, including making Seattle's streets safe and walkable.

The way people and goods move about Seattle serves as a key indicator of our quality of life. If safe, dependable, cheap, and available to all, then automated transportation will enhance the livability of our city. With thoughtful planning, automated transportation and other mobility innovations will further implementation of our MoveSeattle strategy and contribute to an even greater Seattle.

Sincerely,
Scott Kubly
Seattle Department of Transportation
Director

1. INTRODUCTION

The Seattle Department of Transportation (SDOT), in partnership with King County Metro, Sound Transit, and the University of Washington's Pacific Northwest Transportation Consortium (PacTrans), Washington State Transportation Center (TRAC), Mobility Innovations Center, and Urban Freight Lab, is pleased to submit this proposal to the United States Department of Transportation (USDOT). This proposal was produced on behalf of our broader coalition of policy, technology, and original equipment manufacturer (OEM) stakeholders for the Automated Vehicle Proving Grounds Pilot. Our proposal and qualifications statement outlines a multimodal and urban landscape to test and deploy automated and connected vehicle technology and other innovative mobility and freight service models.

Our proposed contributions to the national "Community of Practice" will provide valuable lessons to cities of all sizes throughout the United States. Our proposed research opportunities, supportive investments, and data sharing approach presented within this proposal integrate with existing and planned transportation management systems across multiple jurisdictions and travel modes to measurably improve travel time, throughput, safety, and environmental impact on our city's arterials, residential streets, transit systems, and freight delivery models. All of our pilot partners have participated in similar communities of practice networks and would be active participants with the USDOT to ensure that findings from the partnership are shared and disseminated.

The key ingredients of a successful pilot are in place. Coordinated land use planning and strategic transportation investments (like the $54 billion Sound Transit 3 regional transit levy and the $930 million MoveSeattle transportation levy) ensure that automated mobility will be transit-centric, electric and shared. While recent research suggests that most people are reluctant to give up the wheel, Seattle's digital literacy and technology adoption suggests that the broader public will be more receptive of automation compared to other regions of the United States. Seattle's annual tech survey suggests that 85% of residents have internet access at home, 89% of residents own mobile phones, and smartphone ownership is at 58% and rising by 11% per year.

Seattle is a technology, shared mobility, and logistics hub that will benefit from automated transportation in the near future. The City has established one of the most innovative municipal agendas in the country, particularly related to transportation, energy, and the environment. SDOT is hard at work on a Shared Mobility Strategy, the first of its kind in the country, which will provide an anticipatory policy and regulatory framework for automated vehicles and smart freight. King County Metro carries a larger percentage of our commuters on transit than any other city in the nation without an extensive rail system, as a result of early adoption of policies and technologies to prioritize buses.

Seattle offers a unique set of pilot conditions and partnerships that will extend the utility of our proposed pilot sites. We propose testing automated vehicle technology applications in environments that represent the diversity of conditions experienced within urban areas across the United States. Seattle's density, complex mobility landscape, climate, topography, and winter lighting conditions provide a critical mass of challenging operating conditions where OEMs and technology companies need to test their products and service types. In addition, the proposed pilot partners have an extensive track record working together on numerous complex projects.

Washington State has no regulatory barriers barring the testing of automated vehicles. In fact, the neighboring City of Kirkland is currently testing Level 2-3 automated vehicles in a variety of different land use environments. This offers the dual benefit of free testing of innovative technology within the public right of way and establishing the technical backing for long-term automated vehicle legislation that factors the needs of cities throughout Washington State.

2. PROPOSED TEST AREAS

The Seattle Department of Transportation (SDOT) proposes a network of test facilities on public rights-of-way in three distinct geographies: SODO/Georgetown; Magnolia/Interbay/Queen Anne/South Lake Union; and West Seattle. Each test area exhibits unique operating environments, land use contexts, and mobility challenges where automated vehicle types can serve as a solution. The three proposed test areas are illustrated in Figure 1 and are summarized below:

- **SODO/Georgetown** are the major freight and industrial centers in Seattle and include the majority of the Port of Seattle seaport facilities. There are multiple high speed arterial corridors in this area, some of which have relatively high collision rates with respect to the rest of the City. The easterly portion of the West Seattle Freeway also runs through SODO which provides a unique City-owned limited access roadway for possible testing. Safeco Field and Century Link Field are also located in this neighborhood. These stadiums along with multiple large employers such as Starbucks, UPS, FedEx, Amazon Logistics, and Boeing provide a unique opportunity for first and last mile transit connections using a variety of different automated vehicle types and testing new freight technologies.
- **West Seattle** is separated from the remainder of the City by the Duwamish River and Elliott Bay. This provides a unique situation for a mostly residential area with limited crossings over a navigable and freight heavy waterway. King County Metro and Washington State Ferries provide ferry service to Downtown Seattle and surrounding areas west of West Seattle. Challenges connecting to and from these ferry terminals from West Seattle's rapidly densifying residential areas is well documented. The West Seattle Freeway discussed in the previous paragraph originates in this neighborhood as well.
- **Magnolia/Interbay/Queen Anne/South Lake Union** are a string of adjacent neighborhoods that, much like West Seattle and SODO/Georgetown, provide a connection between dense residential neighborhood and employment centers. The physical proximity of these locations create high single occupancy vehicle usage, which in turn creates congestion on the Mercer Corridor, where Gates Foundation, Vulcan, Google, Amazon, as well as multiple IT and biotechnology companies are located. Much like West Seattle, this provides a great opportunity to test innovations in first and last mile connections as well as new freight technologies.

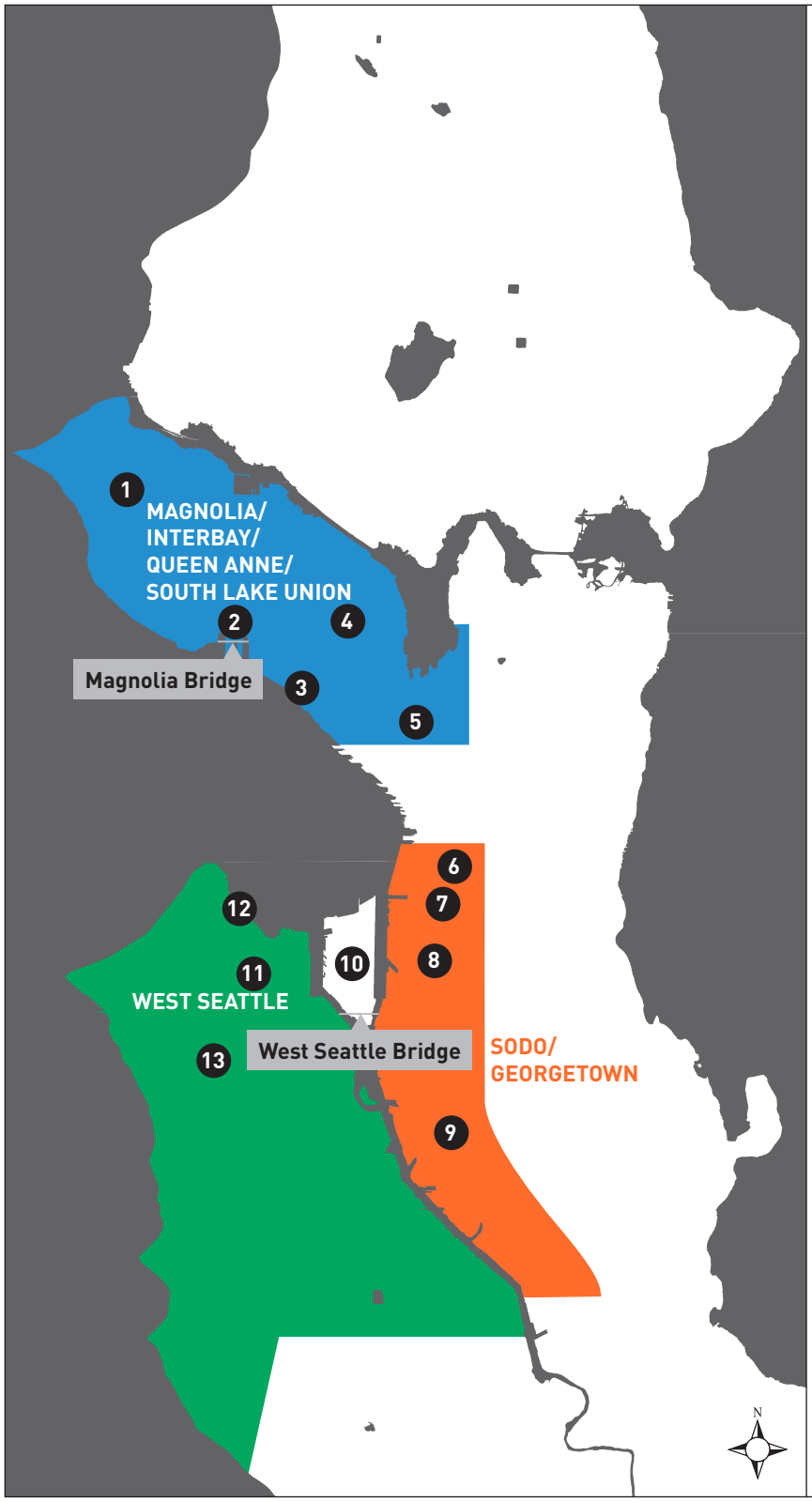
3. MANDATORY CRITERIA

The Seattle Department of Transportation fully satisfies the mandatory criteria for the USDOT Automated Vehicle Proving Grounds Pilot RFP.

Designated Safety Officer and Community of Practice's regular quarterly meeting participation

In the City of Seattle, the right-of-way or publicly owned streets under municipal authority are managed and administered by SDOT. Within the Department of Transportation, the City Traffic Engineer has the authority through the Seattle Municipal Code to regulate uses of the right-of-way and collect data amongst other duties. Dongho Chang, the City Traffic Engineer, would serve as the Pilot's Designated Safety Officer. Chang will manage the preparation of the pilot safety management plan and subsequent progress reports. SDOT's Transportation Operations Division Director, Mark Bandy, will serve as the Pilot's Deputy Safety Officer.

We anticipate that SDOT's core automated transportation team will participate in the Community of Practice's regular quarterly meeting of Safety Officers, including Dongho Chang (City Traffic Engineer), Mark Bandy (Transportation Operations Division Director), Adiam Emery (ITS and Transportation Operations Center Manager),



MAGNOLIA/INTERBAY/ QUEEN ANNE/SOUTH LAKE UNION

1. Low density residential and regional park draw with poor transit service.
2. Magnolia Bridge provides a limited access, highway-like operating environment (owned and operated by SDOT).
3. Interbay is in an employment growth phase, but has poor transit service.
4. Dense residential in Queen Anne needs better connections to South Lake Union employment.
5. First and last mile transit connection needs to major population and employment growth in South Lake Union. Key opportunities for innovative last mile freight testing at Amazon.

SODO/GEORGETOWN

6. Major mobility hub at King Street Station needing better first mile/last mile transit connections.
7. Stadium congestion and access challenges.
8. SODO Link Light Rail Station needing better first mile/last mile transit connections to a mix of small and large employers.
9. Major freight and industrial center with high speed arterials designated as high crash corridors.

WEST SEATTLE

10. The West Seattle Bridge provides a limited access, highway-like operating environment and creates a AV connection to the SODO test area (owned and operated by SDOT).
11. Platooning issues and operational complexity at the Fauntleroy/ 35th/Avalon Way intersection.
12. Need for more reliable connections to the King County Water Taxi.
13. Growing residential densities and central retail main street environment at Alaska Junction grappling with access issues.

FIGURE 1 – PROPOSED TEST AREAS IN SEATTLE

Image from the Seattle Department of Transportation

Ahmed Darrat (Project Delivery and Field Manager), and Evan Corey (Shared Mobility and Smart Cities Program Manager).

Commitment to sharing safety approaches and data
The Seattle Department of Transportation has a long, successful transportation safety track record. The Department's Vision Zero plan lays out the key elements of our approach. Two of these elements are data analysis and outreach. We have a long history of collecting numerous types of transportation data as well as making that data publicly available through numerous tools such as our annual Traffic Report. We will also employ our data scientist to develop data dashboards to convey data results in the three proposed pilot areas.

We also have extensive experience collaborating nationally with other cities and governmental and non-governmental entities such as National Association of City Transportation Officials (NACTO) and Transportation for America. SDOT Department Director, Scott Kubly, is the Vice President of the Executive Board of NACTO in 2017 and Seattle was one of 16 cities to be selected for Transportation for America's Smart Cities Collaborative. Seattle also actively participates in NACTO's Data Sharing Working Group, developing methods and standards to ensure data generated by shared mobility services and other new mobility technologies are open and consistent.

Each of SDOT's research partners at the University of Washington—including PacTrans, TRAC, the Mobility Innovation Center, and the Urban Freight Lab—conduct independent research and are committed to publishing and briefing safety data and analysis generated through automated vehicle testing and operation. SDOT and the University of Washington have significant experience working together on research projects, most recently collaborating on urban freight and Internet of Things (IoT) research projects in Seattle.

4. PROPOSED CONTRIBUTIONS

The Seattle Department of Transportation offers unique partnerships, unparalleled research capabilities, and significant investments that will greatly contribute to the growing body of automated vehicle research.

Eligibility and administration of an automated vehicle program
SDOT satisfies all eligibility requirements of the RFP. SDOT would represent an eligible entity as a City/Urban Core, including urban highway facility types. In anticipation of new and emerging mobility services and mobility technology, the Seattle Department of Transportation developed a Shared Mobility Program that manages shared mobility initiatives, Smart Cities initiatives, and the City's forthcoming automated vehicle policy framework. Under the Shared Mobility Program, SDOT is in the process of developing an Automated, Connected, Electric, and Shared (ACES) Mobility sub-cabinet to prepare for automation in transportation in ways that help Seattle meet its broader community goals.

National and regional leadership in addressing mobility challenges through the testing and deployment of automated vehicle technology
SDOT views automated vehicles as a critical part of the solution to keep people moving safely and efficiently, especially as Seattle is projected to grow by 100,000 more people and add 115,000 more jobs by 2035.

SDOT is doing the necessary planning to ensure this technology is affordable, accessible, and used to meet our broader community goals. Automated vehicles will dramatically reduce traffic deaths and serious injuries, helping us achieve our Vision Zero goals. We also believe that automated vehicles and shared mobility services will complement public transit, recognizing that transit will always be a more effective way to move large numbers of people than single-occupant vehicles. We aim to use the Proving Ground pilot as a way to demonstrate automated mobility's ability to address urban mobility challenges.

Much like our continued leadership in shared mobility planning and management, we expect to be a leading example of how to test, evaluate, and deploy automated mobility. SDOT is taking a risk-based approach to managing shared mobility services and other emerging mobility innovations. SDOT and King County Metro are developing coordinated Shared Mobility Strategies to manage shared mobility to meet the public good. Our shared mobility agenda is the first strategic partnership of its kind in the United States and will flexibly guide automated vehicle policy, regulation, data standards, investments, and public-private partnerships over the next 20 years. Leading practices that SDOT will implement and test as part of the Proving Grounds pilot include the implementation of a trusted data network to facilitate data sharing and connected mobility as well as a Mobility as a Service platform to facilitate multimodal trip planning, integrated booking, and behavioral economics.

Likewise, SDOT Director Scott Kubly's credentials in the areas of automated vehicle policy development, shared transportation, and disruptive mobility are matched only by a handful of other leading city mobility managers. Several SDOT staff are regularly solicited for their leadership and expertise on shared and automated mobility at conferences across the United States—most recently presenting our vision for shared and automated mobility at the 2016 NACTO Designing Cities Conference and the 2016 National Shared Mobility Summit.

Proposed contributions to the Community of Practice

The Seattle Department of Transportation seeks to become a vanguard of automated vehicle testing and deployment, establishing the research parameters, data standards, analytical tools, and capital investments needed to facilitate automated operations. We aim to create a blueprint for other cities and transit agencies to not only test automated vehicle technology, but address some of the associated issues related to an increasingly automated transportation system. We propose the following contributions to the Proving Grounds pilot:

- **Investment in a trusted data network.** The City of Seattle aims to implement a trusted data network in 2017 that will enable urban automation, receiving and distributing public and private data in real-time. As part of the Proving Grounds pilot, we will seek to automate the feedback mechanism from various data collection systems, such that the sensors and other infrastructure we install will enable future automation of active systems. Real-time information about traveler decisions made via Mobility as a Service platforms will alert systems such as adaptive traffic control about expected loads to improve proactive management. We propose the trusted data network to house the pilot data output. This data will be cleaned and/or aggregated prior to dissemination. SDOT's data scientists will create easy to understand performance dashboards as a way to quickly and easily visualize pilot results to the USDOT team and other partners.
- **Robust datasets and sensor networks.** As part of this Pilot, SDOT will collect and combine live data from operators of all modes of transportation to create and share complete, real-time knowledge of the network's performance, enabling direct and proactive management. This includes sensor deployment for V2I/roadside units (RSUs), on-street parking, loading zones, and participating private off-street parking facilities. We anticipate implementation of the Array of Things (AoT) urban sensing project in 2017 and 2018. This network of ten interactive, modular sensor boxes will collect real-time data on the city's environment, infrastructure, and activity for research, public use, and flow to automated vehicles.
- **Data-driven parking management.** SDOT is a national leader in using local parking data to set meter rates to meet a performance standard of one to two parking spaces open and available on each block throughout the day. SDOT makes its parking data open and transparent, pushing our parking dataset about real-time garage spaces, meter rates, and other parking regulations into commonly used travel direction web apps. This data could be pushed to AV test units to calibrate parking movements and dynamically route vehicles to available parking.

- **Leveraging Drive Clean Seattle and fleet electric fueling stations.** Clean hydroelectric power fuels Seattle's electricity supply and it is abundant. Our city is supplied with some of the lowest electricity costs in the nation, making ideal conditions to electrify the local transportation system. Mayor Ed Murray's Drive Clean Seattle initiative aims to transition our transportation sector from polluting fossil fuels to clean, carbon-neutral electricity. One of the many transition strategies is to electrifying the City's fleet at scale and deploy electric vehicle (EV) charging stations in city-owned parking structures. Over the next two years, the City will install up to 250 Level 2 chargers with cutting edge load management technology in the Seattle Municipal Tower and SeaPark parking structures. As part of the Proving Grounds pilot, we will allow AV test vehicles to recharge at City-managed fueling sites. In turn, the City will test new fueling, pricing, and funding models for public and private electric AV fleet services. This contribution will directly serve as a model for our Urban Sustainability Directors Network West Coast EV partners, among others.
- **Vision Zero and safety research.** We will leverage our work implementing the City's Vision Zero action plan and research support from the University of Washington to analyze the safety implications of AV operations. Additional details on our Vision Zero research is provided on page 9.
- **Logistics hubs.** Seattle is a logistics hub with companies like Amazon, UPS, and FedEx testing automated freight, last 50-foot delivery solutions, and automated retail service ventures (among others). We will collaborate directly with our logistics partners to test vehicle safety, new delivery models, and the labor implications of automated goods movement.
- **Community outreach and the Transportation Equity Program.** We are embracing new technologies like automated transportation and shared mobility services, so long as it helps us achieve our broader community objectives and is inclusive to our diverse and culturally rich citizens. SDOT's new Transportation Equity Program will help ensure this new technology is available to all and the public on-boarding process is built on robust public consultation. We aim to conduct market research, focus groups, and community forums to educate the community about AV technology and absorb the community's ideas and concerns. We aim to complete this outreach work prior to the January 2018 pilot launch.
- **Transit pilots and research.** SDOT is partnering with its primary transit partners, King County Metro and Sound Transit, to identify technologies to complement the fixed route network, provide first and last mile connections, and achieve our shared Vision Zero goals. King County Metro's recent long range plan, supports testing and evaluation of new service models and automated transit vehicles. In addition, we will collaboratively study opportunities to calibrate interactions between automated vehicles and human-driven transit vehicles.
- **Labor strategy.** To date, no city has completed a comprehensive analysis of the labor implications of automated transportation. The City of Seattle is committed to developing a strategy that quantifies potential positive and negative labor implications of automated transportation. This work will establish a strategy to create new labor opportunities under a new automated paradigm by piloting new labor models. Working with the Office of Labor Standards and the Office of Civil Rights, this strategy could serve as a blueprint for other cities in the State of Washington and across the nation.
- **Focus on shared automated vehicles.** Seattle has been on the frontlines of innovation in the sharing economy since its inception and has a fundamental commitment to ensuring the sharing economy is open to all. Seattle was the first City in the country to recognize the need to adjust its regulatory framework to address taxis, vehicles for hire (VFH), and Transportation Network Companies (TNCs), and it continues to lead the national shared transportation conversation. Seattle has always provided a welcoming environment for shared mobility and we will leverage this environment

to ensure automated vehicle testing has a focus on ridesourcing and ridesplitting with TNCs and other emerging car sharing models.

- **Dress rehearsal for statewide legislation.** While Washington State presents no regulatory barriers to the testing of automated vehicles on public right-of-way, Washington needs a long-term regulatory framework for automated transportation balances the needs of urban, suburban, and rural areas of the state. SDOT will start its dialogue with its AV partner coalition to ensure any future legislation is meets the unique needs and opportunities of dense urban areas.
- **Building toward our Mobility as a Service vision.** SDOT is developing the building blocks for people to consume mobility as a service or utility. We are currently working on pilot/projects that will establish a trusted data network (for data sharing, anonymized API integration, and analysis), a Mobility as a Service platform, shared mobility hubs, testing behavioral economics, and automated vehicle policy and regulatory frameworks—each component parts of the Mobility as a Service vision. The Proving Ground pilot is a tangible way to test these component parts and prepare the cities for an automated future.
- **Concurrent and complementary pilots.** We are establishing the building blocks for a connected, automated, shared, and electric future that is driven by data. We will weave the Proving Grounds pilot into our trusted data network, mobility as a service, behavioral economics, and Drive Clean Seattle pilot initiatives. This will ensure AV technology fits within our bigger picture mobility solutions and seamlessly flow data between users' personal devices, vehicles, and a trusted data platform.

Relationship with the Department's relevant research program offices

The University of Washington has served as the USDOT Region 10 University Transportation Center since 1996. Supported by TRAC, the Urban Freight Lab, and the Mobility Innovation Center, PacTrans will serve as SDOT's key research partner as part of this pilot. We will work collaboratively with our other pilot partners to establish research methodologies and report pilot results in research briefs. During the Proving Grounds pilot, SDOT and PacTrans staff will participation in conferences, forums, and technical assistance workshops. SDOT will also develop monthly activity reporting templates and custom data dashboards built by our in-house data scientists for submission to the USDOT.

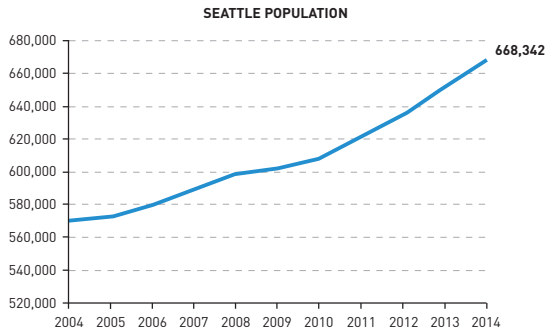
5. COMMITMENT TO SAFETY

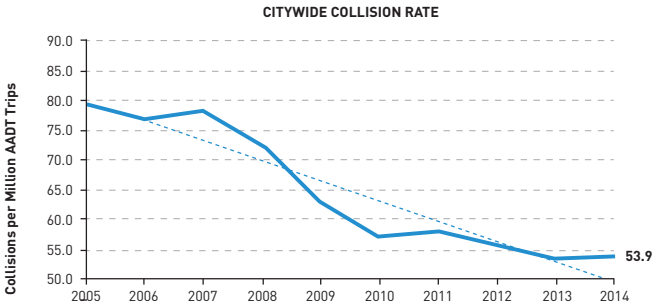
Seattle is consistently recognized as one of the safest transportation systems in the country. Seattle is a leader in traffic safety, and for the past decade, collisions on our streets have steadily declined. Our philosophy with traffic safety, which will be applied to automated vehicles, is **people first**. Over the past decade, we've seen a 30 percent decline in traffic fatalities, even as our population grows. In 2014, Seattle was named the safest city for pedestrians in the United States by Liberty Mutual Insurance.

The Seattle Department of Transportation's most critical public and departmental objective is safety. In 2015, SDOT released its Vision Zero plan reflecting our intent to eliminate traffic deaths and serious injuries by 2030. As such, our operational approach to the AV Proving Grounds Pilot is grounded in our Vision Zero objectives.

Capability to control risks through the implementation of robust safety precautions (Safety Management Plan) and meeting key safety considerations during pilot operation

The safety of pilot partner staff is our first priority and an environment free of recognized hazards is critical for pilot success. Hazard mitigation reduces the risk of injuries, lowers costs and increases morale and productivity. SDOT is committed to providing a safe pilot operation for all employees, pilot partners and contractors. SDOT has developed a document organizing our Accident Prevention Program for injury prevention,





which will be modified to serve as the Pilot's Safety Management Plan. This document outlines for our employees, supervisors and department leadership expectations and roles and responsibilities around worker safety. The basic safety policy of our department is that no task is so important that an employee should violate a safety rule or risk an injury or illness in order to get the job done.

Current elements of the Accident Prevention Program that will be modified to reflect the needs of an AV Pilot Safety Management Plan include vehicle safety checklists (pursuant to federal safety rules for automated vehicles), preventative maintenance, site audits and hazard identification, incident investigations, reporting for unsafe operational conditions, accidents, and injuries, protocol in the event of collisions with vehicles, pedestrians, or property, and record keeping. The document also governs operational hazard control including engineering support, administrative controls, and protocol for personal protective equipment (PPE).

In addition, Seattle has a true data-driven approach to safety. This starts with SeaStat. The SeaStat program uses data to allocate police resources. We continually monitor collision trends and deploy enforcement appropriately. We share information between transportation officials and police after serious collisions occur through forensic engineering efforts. This group then reviews the factors that contribute to each serious collision that occurs on our streets. When bad things happen, it's important that we learn as much as possible from each incident. This approach will also be applied to the Proving Ground pilot.

Finally, we support our engineering work through targeted public outreach, regulation, and enforcement. We work with our partners to reach people of all ages and abilities through education programs like Safe Routes to School, Be Super Safe, Pedestrian Safety for Seniors, and our new overarching Vision Zero campaign. This model will be replicated for any automated vehicle pilot in Seattle.

6. RESEARCH, APPLICATION, AND DATA SHARING

Upon selection as a designated Proving Ground, the Seattle Department of Transportation will jointly work with its university, transit, freight, OEM, and technology partners to develop a proposed body of research, associated research metrics, and data sharing agreements.

Applicable solutions for the broader region

We strategically included multiple test areas to ensure testing occurs in heterogeneous environments and solutions can be scaled across the city. Seattle's centrality within the Puget Sound region positions nearly all of SDOT's proposed pilot contributions to be scaled and applied in Tacoma, Olympia, and cities throughout King County. The work produced out of the Proving Grounds pilot will be used to provide regulatory guidance and technical assistance to cities around the region. We've identified interoperability as a critical barrier to seamless and safe automated movement.

Available research and extension resources

The University of Washington is SDOT's primary research partner on the Pilot and is considered one of the world's preeminent public universities. It is ranked number 11 by the US News 2016 Best Global Universities Rankings, educating more than 54,000 students annually. The UW is the top recipient in the nation among public universities for federal research dollars and second overall among all U.S. universities, and it ranks among the top universities for technology startups. The University of Washington and SDOT are part of White House's Smart Cities Initiative Metro Lab Network. Highlights of accomplishments include:

- Home of the Region 10, University Transportation Center (PacTrans) since 1996.
- New partnership with 17 large, local employers (including Microsoft and Amazon) to develop a mobility innovation center to explore the development and deployment of new technologies that support better urban mobility.
- Produced OneBusAway, the open source transit arrival app that is used in multiple cities across the county and throughout the world, including as the basis for New York MTA's BusTime application.
- In 2016, Urban Freight Lab and its partner members, including SDOT, pilot test promising low-cost and high-value actions like automated delivery methods to optimize operations of the Final-50-Feet of the urban goods delivery system.
- Major participant in smart city research.
- Developed, with the Washington State Transportation Center, the first integrated freeway/arterial management system linking initial ramp metering system with arterial system's traffic signal systems and Fuzzy-Neural ramp metering algorithm.

Disseminating results of automated vehicle research through statewide or region-wide education program

SDOT proposes establishing a knowledge transfer program in coordination with the University of Washington research partners. The program will host data, University research briefs and analysis briefs from SDOT, King Count Metro, and Sound Transit analysis briefs, and other public facing documents that feed into public education and promotions on a central website. We will also work with our University partners to ensure our work is represented at regional/national conventions and other professional training seminars. The University of Washington has the institutional capabilities to distribute research findings and other partner materials to local, state, and national research partners.

As noted on the previous page, we will provide analysis results and performance tracking on a custom performance dashboard. The data dashboard example on the following page is used to track the Seattle Streetcar performance.

Commitment to open data and sharing performance metrics and results of objective tests

Since 2010, Seattle's Department of Information Technology has maintained a robust open data platform, powered by Socrata, with hundreds of data sets including parking, transportation systems, public safety, land use, and many others. In 2015, SDOT established the "Open Data and Data-Driven Reporting Special Interest Group," to collect, develop, and share open data and data-driven reporting resources. The agency has recognized open data, both internal and external, as a fundamental requirement for the sharing economy and the expansion of public-private transportation partnerships. We will make data available to ensure Seattle is an AV innovation incubator.

POTENTIAL PROVING GROUNDS RESEARCH METRICS

- Sensor efficacy and response time to impedance
- Roadway conditions and telematic data collection
- Reduce the total number of collisions, fatalities, and serious injuries in the three test areas
- Reduce the total number of pedestrian collisions, fatalities, and serious injuries in the three test areas
- Reduce the total number of bike collisions, fatalities, and serious injuries in the three test areas
- Improved access to transit and reduced transit transfer wait time
- Improved transit travel times along key transit corridors from V2I and V2V predictive priority installation, reduced stop time at intersections, and improved reliability
- Completed system requirement integration of driverless technology in a simulated condition
- Business models and operational challenges related to centralized EV fleet fuel sites
- Vehicle interactions between automated and human driven modes of transportation
- Delivery efficiencies and last 50 feet improvements
- Human labor applications in an automated transportation paradigm
- Accessibility through mobile devices
- Economic models for regulation
- Parking utilization and turnover for staging/feeling
- Freeway to local roadway connections for freight
- Heavy haul routing and travel time
- And many more

DAILY TRAVEL TIME ANALYSIS

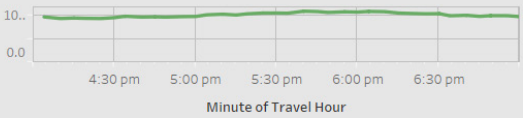
This sheet shows the Travel Time Index (Average Travel Time during the specified periods compared to the Baseline Free-Flow from) between 4-7PM on the specified day. This type of visualization could be done with other perfomance indicators or time parameters as well.

Travel Date
6/16/2016

Average Travel Time Index
1.0 — 3.0

	4:00p	4:15p	4:30p	4:45p	5:00p	5:15p	5:30p	5:45p	6:00p	6:15p	6:30p	6:45p	7:00p
23rd Ave - Madison St to NE Pacific S	2.2	2.1	2.1	2.0	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.7	1.6
23rd Ave - Madison St to Rainier Ave	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3
23rd Ave - NE Pacific St to Madison St	1.8	1.8	1.8	1.7	1.9	1.9	2.0	2.1	2.1	2.1	1.9	1.8	1.7
23rd Ave - Rainier Ave to Madison St	1.3	1.3	1.2	1.3	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
3rd Ave - Denny Way to Stewart St	1.1	1.1	1.1	1.1	1.2	1.6	1.6	1.6	1.6	1.5	1.4		
3rd Ave - Jackson St to Stewart St	1.1	1.1	1.1	1.1		1.1	1.2	1.3	1.3	1.3	1.3	1.3	1.4
3rd Ave - Stewart St to Denny Way	1.0	1.1	1.2	1.2	1.3	1.5	1.6	1.6	1.6	1.6	1.4	1.2	1.1
3rd Ave - Stewart St to Yesler Way	0.9	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2
4th Ave - Jackson St to Virginia St	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.4	1.4	1.4	1.5	
4th Ave - Pine St to Denny Way	1.0	1.0	1.0	1.0	1.1	1.2	1.2	1.2	1.4	1.5	1.5	1.5	1.5
5th Ave - Denny Way to Stewart St	1.2	1.2	1.2	1.3	1.3	1.4	1.4	1.5		1.5	1.8	1.8	1.8
5th Ave - Stewart St to Jackson St	1.1		1.1	1.2	1.3	1.3	1.4		1.5	1.6		1.6	1.6
Boren Ave - Broadway to Madison St	1.2	1.2	1.2	1.2	1.2	1.4	1.4	1.4	1.3	1.2	1.1	1.0	1.0
Boren Ave - Denny Way to Madison St	1.6	1.6	1.5	1.5	1.6	1.5	1.5	1.7	1.4	1.3	1.3	1.1	1.1
Boren Ave - Madison St to Broadway	1.6	1.7	1.8	1.8	1.7	1.8	1.8	1.7	1.4	1.2	1.1	1.0	0.9
Boren Ave - Madison St to Denny Way	1.4	1.6	1.6	1.7	2.2	2.5	2.5	2.4	2.4	2.3	2.4	2.5	2.4
Denny Way - Dexter Ave N to Fairview Ave N	2.1	2.2	2.4	2.8	3.0	3.2	3.4	3.3	3.4	3.4	2.9	2.8	2.7
Denny Way - Dexter Ave N to Western Ave W	1.1	1.1		1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.4
Denny Way - Fairview Ave N to Dexter Ave N	1.0	1.0	1.0	1.0	1.1	1.3	1.9	2.1	1.9	1.7	1.8	1.8	1.8
Denny Way - Western Ave W to Dexter Ave N	1.2	1.2	1.2	1.2	1.2		1.3	1.3	1.3	1.4	1.4	1.5	1.5
Mercer St - Elliot Ave to Fairview Ave	2.7	2.8	2.8	3.0	3.1	3.3	3.5	3.5	3.2	2.8	2.5	2.3	2.0
Mercer St - Fairview Ave to Elliot Ave	1.0	1.1	1.2	1.1	1.2	1.3	1.4	1.4	1.5	1.5	1.5	1.4	1.4
Northgate Way - 5th Ave NE to Greenwood Ave N	1.3	1.4	1.4	1.5	1.5	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7
Northgate Way - 5th Ave NE to Lake City Way	2.4	2.4	2.4	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3
Northgate Way - Greenwood Ave N to 5th Ave NE	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Northgate Way - Lake City Way to 5th Ave NE	2.5	2.5	2.5	2.5	2.5	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.5

Hourly Travel Times
Average of selected routes



PERFORMANCE DASHBOARDS CAN DISPLAY DATA RESULT AND KEY PILOT PERFORMANCE METRICS

Source: Seattle Department of Transportation

7. DEMONSTRATED INVESTMENTS

The City of Seattle and the Puget Sound region are in the national infrastructure and Smart Cities spotlight. Recent public investments in transit and mobility and strategic planning for transportation technology and initiatives speak to Seattle's vision for mobility in the future.

Capital improvements

Our capital improvements begin with a track record of proven performance on local levies. In 2006, Seattle voters passed a nine-year, $365 million levy for transportation maintenance and improvements known as Bridging the Gap. The success of this program laid the groundwork and cultivated the trust from the public to nearly triple the investment in the Levy to Move Seattle. Approved by voters in November 2015, the 9-year, $930 million Levy to Move Seattle provides funding to improve safety for all travelers, maintain our streets and bridges, and invest in reliable, affordable travel options for a growing city.

The current levy provides funding for specific projects that use intelligent transportation systems (ITS) features that will be the foundation for future automated vehicle implementation. In addition, the City values innovation and leading the way in transformative technologies that could significantly enhance mobility. With this in mind, the levy includes $17 million of discretionary funding for ITS. SDOT management has already made the decision that a large amount of this funding will be allocated to research and development of new devices and technology to be installed such as connect vehicle roadside units which should be in place in 2017.

SDOT has a long history with ITS. In 2003, SDOT began heavily investing in ITS beginning with a rapid expansion of communication to its traffic signals and installation of traffic cameras. In 2009, SDOT developed the Traveler's website, which supplements these camera images and video with real-time arterial congestion information and travel time using Internet of Things (IoT) sensors strategically placed on the network. In 2010, SDOT developed the 10-year ITS Strategic Plan which lead to the Next Generation ITS program which invested $11.5 million in expanding the system. Furthermore, SDOT's investment and commitment to new and innovative ITS solutions earned us the title of "Center of Excellence" from Siemens. This is a commitment from Siemens to ensure that Seattle is an early pilot city for any future innovations. To date, SDOT has over two-thirds of the signal system connected to our central system, over 200 CCTV cameras, over 75 dynamic message signs, and countless other sensors and IoT devices providing real-time information. This is the foundation to the early implementation of automated vehicle technology.

Finally, this investment by voters and elected officials is not limited to only local government. At a state level, the Washington State legislature invested $16.1 billion into transportation in 2015. This funding includes $8.8 billion on local road and state highway projects, $1 billion on non-highway projects such as bike, pedestrian and transit improvements, and provides authority for regional transit levies and local transportation improvement districts. Puget Sound's regional transit authority, Sound Transit, was recently overwhelming successful in passing ST3 which adds 62 new miles of light rail with stations serving 37 additional areas for a regional system reaching 116 miles. This 25-year, $54 billion plan will build a mass transit system which will be critical to the ecosystem that the City envisions for an automated vehicle future.

Authorization for the proving grounds to address regulatory challenges

While Washington State presents no regulatory barriers to the testing of automated vehicles on public right-of-way with a human in the driver seat, SDOT is working with the State to establish an Executive Order that permits automated vehicle testing with no human in the driver seat (similar to the Arizona Executive Order 2015-09). Washington needs a long-term regulatory framework for automated transportation balances the needs of urban, suburban, and rural areas of the state. SDOT will start its dialogue with its AV partner coalition to ensure any future legislation is meets the unique needs and opportunities of dense urban areas.

8. READINESS

The Seattle Department of Transportation is prepared for the testing of automated vehicle technology on our public roadways. SDOT has a well-organized, technically gifted and well-staffed workforce that is prepared for the opportunity to not only plan, engineer and operate a safe and effective pilot but also to engage with the public on the greater effects and outcomes of these pilots.

Designated facility testing availability

The proposed test areas are open for testing by January 1, 2018 or earlier.

Facility supports testing by multiple users

Each of these locations provides a unique proving ground for the positive effects that automated private, shared, transit, and freight vehicles can have on the transportation system. All proposed locations are public roadways under the authority of the Seattle Department of Transportation.

Designated Point of Contact

The Designated Point of Contact for all three proposed test sites is the City Traffic Engineer, Dongho Chang. Mark Bandy, SDOT's Transportation Operation Division Director, will serve as a secondary point of contact.

Engaging affected communities

Seattle is widely viewed as a leader on public engagement, with particular expertise on ensuring that racial and social equity is a critical focus for governmental outcomes. Recently, Mayor Murray signed an executive order to expand the public engagement efforts to ensure growing demographic groups are represented in City decision-making processes and that barriers discouraging people from participating are eliminated. Equitable engagement is essential to every community involvement process in Seattle, especially for underrepresented and underserved communities, including, but not limited to, renters, immigrants and refugees, communities of color, people experiencing homelessness, LGBTQ, low-income households, youth, and seniors.

SDOT is developing an automated vehicle public engagement framework as part of its forthcoming Shared Mobility Strategy as a way to assuage fears about potential the impacts of automated vehicles and other new transportation technology. The community research and education aspects of the framework would be implemented in early 2017 and ready for pilot launch in late 2017 or January 2018. SDOT has begun socializing the idea of automated vehicles to key community stakeholders in anticipation of a broader community outreach and consultation effort in 2017.

In addition, SDOT is in the beginning stages of acknowledging the organized labor implications of the automated mobility economy. The City has been at the forefront of labor relations with transportation network company and for-hire service drivers. Seattle was the first City in the country to give these drivers the right to unionize. The City is also tasked with creating the framework for bargaining. The City and State of Washington has a rich history working with labor unions and will provide a unique proving ground for strategies on collaboration between employers and affected workers. As previously noted, one of our key pilot contributions includes the development of a labor strategy with our labor and mobility stakeholders.

9. ADHERENCE TO LAWS, REGULATIONS, AND FEDERAL POLICY

The City of Seattle regularly competes and wins federal grants and distinctions. In doing so, the City is both accustomed to all laws, regulations, and policies of the federal government and the practices and procedures with which they are administered.

Adhere to state and local laws and federal regulations

The City of Seattle complies with all federal regulations in relation to the design and operation of the transportation system as interpreted through the Manual on Uniform Traffic Control Devices (MUTCD) and other federal rules and guidelines established but organizations such as American Association of State Highway and Transportation Officials (AASHTO), Federal Highway Administration (FHWA), Federal Transit Authority (FTA), and United States Access Board. Furthermore, the MUTCD is adopted with revision by the State of Washington into state law.

Adherence to NHTSA's primary subject areas for testing or deployment of L3-L5 systems on public roads

The City of Seattle is supportive of and adheres to the guidance provided in the National Highway Transportation Safety Administration (NHTSA) Federal Automated Vehicle Policy. Through its member role in the National Association of City Transportation Officials (NACTO), SDOT has driven policy direction on automated vehicle adoption and management, recently providing insight on performance metrics, local governance opportunities, data sharing, and considerations for municipal finance disruption for integration into the Final USDOT Federal Autonomous Vehicle Policy. While local government currently has a limited role in licensing authority we will work with our partners to influence lawmakers to increase this authority and provide tools outlined in the policy to better regulate automated vehicles. We will also work with these lawmakers on codifying best practices learned through these pilots and other experiences nationally into law at the State level. Furthermore, the SDOT will work with Seattle Police Department and other law enforcement agencies on best practices and tools for enforcement of current laws related to automated vehicles.

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(206) 684-ROAD (7623)
www.seattle.gov/transportation

LETTERS OF SUPPORT

Pacific Northwest Transportation Consortium

The Honorable Anthony R. Foxx
Secretary
United States Department of Transportation
1200 New Jersey Ave S.E.
Washington D.C. 20590

Subject: Letter of Support: City of Seattle Department of Transportation (SDOT) Application to the USDOT's Autonomous Vehicle Proving Grounds Pilot

Dear Secretary Foxx:

The Pacific Northwest Transportation Consortium (PacTrans) Federal Region 10 University Transportation Center (UTC) humbly and respectfully submits this letter of strong support for the Seattle Department of Transportation's (SDOT) application to be designated as one of the United States Department of Transportation's Automated Vehicle Proving Grounds Pilot sites. Over the last decade, the greater Seattle Metropolitan Region has been among the top ten growing regions in the country in both jobs and population. This growth has had significant impacts on congestion, mobility, and accessibility, which negatively effects health, safety, quality of life, and transportation costs and reliability for all residents and employees of the region.

Seattle is currently developing an automated vehicle policy framework, a Mobility as a Service platform, robust sensor networks, and a trusted data sharing network, positioning it well for this pilot including a range of different automated transportation technologies. The SDOT proposal offers the building blocks of success: a diversity of test sites; unique environmental conditions; ongoing and complimentary technology pilots; a supportive political and partner coalition; and a demonstrated willingness to innovate.

The Federal Region 10 UTC, which has been a University of Washington-lead center for over 40 years, is in its third year acting as a safety center (MAP-21 grant), and has just been awarded a new center focusing on mobility (FAST Act grant). UW along with three of our other consortium partners (University of Idaho, University of Alaska, and Washington State University), are each actively engaged in the research of some component of automated vehicle testing. PacTrans has a long history of working with both private sector partners and public agencies to develop data-driven, sustainable solutions for the diverse transportation needs of the Pacific Northwest. PacTrans is supportive of SDOT's proposal and we look forward to partnering with the City to create a hotbed of innovation in the automated transportation space.

With warmest regards,

Yinhai Wang

Director, Pacific Northwest Transportation Consortium (PacTrans)
USDOT University Transportation Center for Federal Region 10

WASHINGTON STATE
TRANSPORTATION
CENTER

December 19, 2016

The Honorable Anthony R. Foxx
Secretary
United States Department of Transportation
1200 New Jersey Ave S. E.
Washington D. C. 20590

Subject: Letter of Support: City of Seattle Department of Transportation (SDOT) Application to the USDOT's Autonomous Vehicle Proving Grounds Pilot

Dear Secretary Foxx;

The Washington State Transportation Center at the University of Washington (TRAC-UW) is pleased to offer its strong support for the City of Seattle Department of Transportation's (SDOT) application to be designated as one of the United States Department of Transportation's Autonomous Vehicle Proving Grounds Pilot sites.

The Puget Sound Metropolitan Region is undergoing a period of massive population and economic growth. That growth has exacerbated our region's mobility challenges. The City of Seattle is heavily impacted by these forces. The City is dealing with rapidly growing congestion, increasing traffic safety concerns, delayed freight deliveries, and rising transportation costs across all modes.

SDOT has responded by; increasing the person carrying capacity of our streets by embracing new shared mobility services, enhancing and expanding the transit network, and investing in Smart Cities solutions that deliver a more efficient transportation system. The University of Washington, and TRAC-UW in particular, is a robust partner in all of these efforts. The University brings world class expertise to this effort. We are a world leader in the development and deployment of Smart Cities technologies, with specialties in collecting, manipulating, and converting the data that Smart technologies generate into decision support tools. We are part of the White House's MetroLab Network for smart cities. TRAC-UW's core mission is to connect the University's wide ranging expertise with all transportation service providers in the state, be they public agencies or private companies.

TRAC-UW has a long history of working with both private sector partners and public agencies. Our work with the Washington State DOT has resulted in that agency helping lead the nation into a more robust era of data driven decision making by public transportation agencies. Our current work with both private sector logistics companies (e.g., UPS, Amazon, Costco), and public agencies (e.g., the City, the NW Seaport Alliance) is striving to identify and implement smart city technologies which increase last mile freight efficiencies and demonstrate the ways in which technology and improved public/private cooperation can meet the fast changing needs of urban freight deliveries.

University of Washington, Box 354802, University District Building, 1107 NE 45th Street, Suite 535, Seattle, Washington, 98105-4631

It is this spirit of mobility investment, progressive policymaking, and technological innovation that will serve as the backdrop for a successful automated transportation pilot in Seattle. Seattle is one of a handful of cities that is developing an autonomous vehicle policy framework. The City is also developing a Mobility as a Service platform, robust sensor networks, and working with Microsoft and other partners to develop and deploy a trusted data sharing network. Seattle is well positioned for a successful pilot for a range of different automated transportation technologies.

The SDOT proposal offers the building blocks of success: a diverse set of test sites; unique environmental conditions; ongoing and complimentary technology pilots; a supportive political and partner coalition; and a demonstrated willingness to innovate. We look forward to partnering with the City to create a hotbed of innovation in the automated transportation space, and look forward to working with USDOT to advance the state of the art and the state of the practice.

Very truly yours,

Mark E. Hallenbeck
Director
Washington State Transportation Center (TRAC-UW)
University of Washington

COMOTION®
Your Innovation Partner

The Honorable Anthony R. Foxx
Secretary
United States Department of Transportation
1200 New Jersey Ave S. E.
Washington D. C. 20590

Dear Secretary Foxx,

The Mobility Innovation Center strongly supports the City of Seattle Department of Transportation's (SDOT) application to be selected as a United States Department of Transportation's Autonomous Vehicle Proving Grounds Pilot.

CoMotion's Mobility Innovation Center is a partnership with former Governor Christine Gregoire's "Challenge Seattle" mobility initiative. We have already done extensive work in cooperation with the Tech Policy Lab at the University of Washington School of Law on identifying obstacles and proposing recommendations that Seattle must consider and implement to be ready for the full-scale use of Autonomous Vehicles. This work, coupled with Seattle's culture of "early adopters," makes this region an appropriate place to conduct this important work.

Seattle's explosive economic and population growth has forced its infrastructure to evolve quickly and encouraged its residents to evolve their transportation habits at an accelerated pace.

In recent years, SDOT has embraced these added constraints and changing needs by investing in bike and pedestrian capacity; lowering speed limits to increase safety for non-motorists; and expanding light rail, street car, and bus routes. It has also been at the frontline of embracing new traffic management technologies and Smart Cities solutions that have made Seattle a proving ground for many best practices in smart mobility.

Seattle is one of a handful of cities that is developing an autonomous vehicle policy framework, a Mobility as a Service platform, robust sensor networks, and a trusted data sharing network. Seattle is well positioned for a successful pilot for a range of different automated transportation technologies.

The SDOT proposal offers a diverse environment to test autonomous technologies including environmental conditions and geography. It also has forward-thinking political

CoMotion Innovation Center, Box 354990
4545 Roosevelt Way NE Ave NE, Suite 400, Seattle, WA 98105
tel 206.543.3970 fax 206.543.0586 uwcomotion@uw.edu

leaders and non-government organizations that are supportive of innovation and blazing new paths.

CoMotion's Mobility Innovation Center looks forward to partnering with the City to develop the automated transportation industry. We strongly recommend SDOT's selection as a pilot city for this important program to support this transformative technology.

Sincerely,

Dr. Vikram Jandhyala
Vice President for Innovation Strategy | University of Washington
Executive Director, CoMotion
Co-Executive Director, Global Innovation Exchange

CoMotion Innovation Center, Box 354990
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tel 206.543.3970 fax 206.543.0586 uwcomotion@uw.edu

King County
Department of Transportation
Transit Division
M.S. KSC-TR-0415
201 South Jackson Street
Seattle, WA 98104-3856

December 19, 2016

The Honorable Edward B. Murray
City of Seattle
600 Fourth Avenue
Seattle, WA 98104

Dear Mayor Murray:

King County Metro is pleased to support the City of Seattle Department of Transportation's (SDOT) application to the United States Department of Transportation's Autonomous Vehicle Proving Grounds Pilot.

Central Puget Sound population is expected to grow by 800,000 by the year 2040, with a significant amount of that growth occurring in the City of Seattle. While this is an exciting opportunity for the region's economy and job growth, it does exacerbate the region's mobility challenges.

Seattle faces congestion, mounting traffic safety concerns, and rising transportation costs. The SDOT has responded by embracing new shared mobility services, increasing the person carrying capacity of streets while reducing speeding, enhancing and expanding the transit network, and investing in Smart Cities solutions that deliver a more efficient transportation system. King County Metro and SDOT have collaborated closely in the last year in the analysis of these new challenges and the development of a Shared-Use Mobility Strategy that leverages emerging mobility providers, technologies, and data to improve transportation access for all. It is this spirit of mobility investment, progressive policymaking, technological innovation, and multi-agency collaboration that will serve as the backdrop for a successful automated transportation pilot in Seattle.

The SDOT proposal offers the building blocks of success: a diversity of test sites; unique environmental conditions; ongoing and complimentary technology pilots; a supportive political and partner coalition; and a demonstrated willingness to innovate. King County Metro is supportive of SDOT's proposal and we look forward to partnering with the City to create the

most innovative autonomous vehicle ecosystem to support and complement the region's rapidly growing transit network.

Sincerely,

Rob Gannon
General Manager
Metro Transit Division

cc: Harold S. Taniguchi, Director, Department of Transportation (DOT)
Chris Arkills, Government Relations Manager, Director's Office, DOT
Peter Heffernan, Intergovernmental Relations, Office of Regional Transportation Planning, Director's Office, DOT
Victor Obeso, Deputy General Manager, Planning and Customer Services, Metro Transit Division, DOT
Christina O'Claire, Manager, Strategy and Performance, Metro Transit Division, DOT
Bill Bryant, Manager, Service Development, Metro Transit Division, DOT

SOUNDTRANSIT

December 16, 2016

Mayor Edward B. Murray
City of Seattle
600 Fourth Avenue
Seattle, WA 98104

Dear Mayor Murray:

Sound Transit is pleased to support the City of Seattle Department of Transportation's application to the United States Department of Transportation's Autonomous Vehicle Proving Grounds Pilot.

Central Puget Sound population is expected to grow by 800,000 by the year 2040, with a significant amount of that growth occurring in the City of Seattle. While this is an exciting opportunity for the region's economy and job growth, it does exacerbate the region's mobility challenges.

This past November, voters approved Sound Transit 3, a high capacity transit expansion plan to build 62 new miles of light rail, establish new bus rapid transit service in two corridors and extend commuter rail in the region's south end. These investments will move Puget Sound residents through the most congested corridors in the region, but there is still a need to develop innovative solutions, like autonomous vehicles, to move more people through our constrained transportation network and help people access the high capacity transit system.

The City of Seattle faces congestion, mounting traffic safety concerns, and rising transportation costs. The Seattle Department of Transportation (SDOT) has responded by embracing new shared mobility services, increasing the person carrying capacity of streets while reducing speeding, enhancing and expanding the transit network, and investing in Smart Cities solutions that deliver a more efficient transportation system. It is this spirit of mobility investment, progressive policymaking, and technological innovation that will serve as the backdrop for a successful automated transportation pilot in Seattle.

The Seattle Department of Transportation's proposal offers the building blocks of success: a diversity of test sites, unique environmental conditions, ongoing and complimentary technology pilots, a supportive political and partner coalition, and a demonstrated willingness to innovate. Sound Transit is supportive of SDOT's proposal and we look forward to partnering with the City to create the most innovative system to compliment and integrate with our rapidly growing transit network.

Sincerely,

Peter M. Rogoff
Chief Executive Officer

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King County Executive

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Tacoma Mayor

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Peter von Reichbauer
King County Councilmember

CHIEF EXECUTIVE OFFICER
Peter M. Rogoff

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185 Berry Street
Suite 5000
San Francisco, CA 94107

The Honorable Anthony R. Foxx
Secretary of the United States Department of Transportation
1200 New Jersey Ave S. E.
Washington D. C. 20590

Dear Secretary Foxx,

I write this letter to express Lyft's strong support for the City of Seattle Department of Transportation's (SDOT) application to the United States Department of Transportation's Autonomous Vehicle Proving Grounds Pilot. Seattle is in an exciting period of population growth and economic dynamism that has exacerbated the region's mobility challenges. Seattle faces congestion, mounting traffic safety concerns, and rising transportation costs. SDOT has responded by embracing new shared mobility services, while reducing speeding, enhancing and expanding the transit network, and investing in Smart Cities solutions that deliver a more efficient transportation system. It is this spirit of mobility investment, progressive policymaking, and technological innovation that will serve as the backdrop for a successful automated transportation pilot in Seattle.

Seattle is one of a handful of cities that is developing an autonomous vehicle policy framework, a Mobility-as-a-Service platform, robust sensor networks, and a trusted data sharing network. Seattle is well-positioned for a successful pilot for a range of different automated transportation technologies.

The SDOT proposal offers the building blocks of success: a diversity of test sites; unique environmental conditions; ongoing and complimentary technology pilots; a supportive political and partner coalition; and a demonstrated willingness to innovate. I want to compliment SDOT for their depth of knowledge as well as their openness to new ideas from technology partners. Lyft is supportive of SDOT's proposal and we look forward to partnering with the City to create a hotbed of innovation in the automated transportation space.

Sincerely,

Laura Bisesto
Public Policy Manager
Lyft, Inc.

The Honorable Anthony R. Foxx
Secretary
United States Department of Transportation
1200 New Jersey Ave S. E.
Washington D. C. 20590

Dear Secretary Foxx,

I write this letter to express Microsoft's strong support for the City of Seattle Department of Transportation (SDOT) application to the United States Department of Transportation's Autonomous Vehicle Proving Grounds Pilot. SDOT's is in an exciting period of population growth and economic dynamism that has exacerbated our region's mobility challenges. Seattle faces congestion, mounting traffic safety concerns, and rising transportation costs. SDOT has responded by embracing new shared mobility services, increasing the person carrying capacity of our streets while reducing speeding, enhancing and expanding the transit network, and investing in Smart Cities solutions that deliver a more efficient transportation system. It is this spirit of mobility investment, progressive policymaking, and technological innovation that will serve as the backdrop for a successful automated transportation pilot in Seattle.

Seattle is one of a handful of cities that is developing an autonomous vehicle policy framework, a Mobility as a Service platform, robust sensor networks, and a trusted data sharing network. Seattle is well position for a successful pilot for a range of different automated transportation technologies.

The SDOT proposal offers the building blocks of success: a diversity of test sites; unique environmental conditions; ongoing and complimentary technology pilots; a supportive political and partner coalition; and a demonstrated willingness to innovate. Microsoft is supportive of SDOT's proposal and we look forward to partnering with the City to create a hotbed of innovation in the automated transportation space. I want to compliment SDOT for their depth of knowledge as well as their openness to new ideas from technology partners.

Sincerely,

Graham Thompson
Technology & Civic Engagement
Microsoft

Transportation for America

1707 L Street NW • Suite 250
Washington, DC 20036
Phone: 202-955-5543
Fax: 202-955-5592
www.t4america.org

December 14, 2016

The Honorable Anthony R. Foxx
Secretary
United States Department of Transportation
1200 New Jersey Ave S. E.
Washington D. C. 20590

Dear Secretary Foxx,

I write this letter to express Transportation for America's strong support for the City of Seattle Department of Transportation (SDOT) application to the United States Department of Transportation's Autonomous Vehicle Proving Grounds Pilot. Seattle faces the same transportation challenges many regions are faced with, but has additional geographic challenges to contend with as they deal with congestion, mounting traffic safety concerns, rising transportation costs.

SDOT is in an exciting period of transformation and is planning for and thinking proactively about their future by embracing new shared mobility services, planning for people not vehicles, while reducing speeds, enhancing and expanding their transit network, and investing in Smart Cities solutions to deliver a more efficient, multimodal transportation system. Because of their progressive policymaking, investments in diverse mobility choices, and a strong desire to foster innovation, we believe Seattle is an excellent location for an automated transportation pilot.

As part of our Smart Cities Collaborative, Seattle is one of a handful of cities that is actively developing an automated vehicle policy framework, a Mobility as a Service platform, robust sensor networks, and a trusted data sharing network. Because of these, and myriad other qualities, Seattle is deserving of a designation for an Automated Vehicle Proving Grounds Pilot for a range of different automated transportation technologies.

SDOT's proposal offers the building blocks of success: a diversity of test sites; unique environmental conditions; ongoing and complimentary technology pilots; supportive political and local partner coalitions; and a demonstrated willingness to innovate and share their experiences. Their proposal uses unique and readily transferable systems, creating more efficient operations in the areas of traffic and pedestrian operations.

Transportation for America supports of SDOT's proposal and we look forward to partnering with the City to foster innovation in the automated transportation space.

Sincerely,

Russell Brooks
Director of Smart Cities
Transportation for America

Transportation for America is an alliance of elected, business and civic leaders from communities across the country, united to ensure that states and the federal government step up to invest in smart, homegrown, locally-driven transportation solutions. These are the investments that hold the key to our future economic prosperity.

NACTO

National Association of
City Transportation Officials

Linda Bailey
Executive Director

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NEW YORK MTA
PORTLAND TRIMET

December 19, 2016

The Honorable Anthony R. Foxx
Secretary
United States Department of Transportation
1200 New Jersey Ave S. E.
Washington D. C. 20590

Dear Secretary Foxx,

This letter expresses NACTO's support for the City of Seattle Department of Transportation (SDOT) application to the United States Department of Transportation's Autonomous Vehicle Proving Grounds Pilot. Seattle is amidst an exciting period of population growth and economic dynamism that has exacerbated their region's mobility challenges. The city faces congestion, mounting traffic safety concerns, and rising transportation costs. SDOT has responded by embracing new shared mobility services, increasing the person carrying capacity of our streets while reducing speeding, enhancing and expanding the transit network, and investing in Smart Cities solutions that deliver a more efficient transportation system. It is this spirit of mobility investment, progressive policymaking, and technological innovation that will serve as the backdrop for a successful automated transportation pilot.

Seattle is also developing an autonomous vehicle policy framework, a Mobility as a Service platform, robust sensor networks, and a trusted data sharing network that will support their success in the pilot program. Seattle offers the building blocks of success: a diversity of urban test sites; unique environmental conditions; ongoing and complimentary technology pilots; a supportive politician and partner coalition; and a demonstrated willingness to innovate.

This monitored testing program is essential to create new technology for automated vehicles that is compatible with city streets, and should precede any further experimentation without oversight, such as the pilots being conducted by technology companies with little or no communication with cities and police departments.

NACTO is supportive of SDOT's proposal and we look forward to supporting the City as they develop new mobility solutions.

Sincerely,

Linda Bailey
NACTO Executive Director

November 28, 2016

The Honorable Anthony R. Foxx
Secretary
United States Department of Transportation
1200 New Jersey Ave S. E.
Washington D. C. 20590

Dear Secretary Foxx,

On behalf of Local Motors, I am pleased to offer this letter of commitment for the City of Seattle's proposal for the United States Department of Transportation's Automated Vehicle Proving Grounds Pilot. SDOT is in an exciting period of population growth and economic dynamism that has exacerbated our region's mobility challenges. Seattle faces congestion, mounting traffic safety concerns, and rising transportation costs. SDOT has responded by embracing new shared mobility services, increasing the person carrying capacity of our streets while reducing speeding, enhancing and expanding the transit network, and investing in Smart Cities solutions that deliver a more efficient transportation system. It is this spirit of mobility investment, progressive policymaking, and technological innovation that will serve as the backdrop for a successful automated transportation pilot in Seattle.

Seattle is one of a handful of cities that is developing an autonomous vehicle policy framework, a Mobility as a Service platform, robust sensor networks, and a trusted data sharing network. Seattle is well positioned for a successful pilot for a range of different automated transportation technologies.

Local Motors as a partner in this pilot is headquartered in Chandler, AZ. We are the manufacturers of Olli, a low speed shuttle vehicle that uses a combination of sensors and cameras to drive autonomously. The Olli has numerous configurations to support safety and reliability. It has several valuable applications including serving as a shuttle to improve first mile/last mile mobility. We envision participating in this exciting project by providing at least one Olli, based on terms and conditions to be determined after award, for the demonstration and testing of Olli within the project based in Seattle.

Local Motors' approach to vehicle commercialization and deployment is unique among vehicle manufacturers. We work with a community of creators, partners and consumers to commercialize vehicles rapidly and continuously to make improvements in real time.

- Vehicle testing primarily for technical and system development and validation
- Public demonstrations of the vehicle to collect data and allow public interaction with the self-driving system
- Public and commercial pilot programs to test specific uses cases and applications

LOCAL MOTORS

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Chandler, AZ 85226
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- Demonstrated self-driving systems to customers or consumers
- Commercial operation of vehicle and system use in day-to-day commercial operation

This approach enables the rapid integration of the latest technology as CAVs are rolled out into commercial and consumer markets. It also enables lessons learned and failures to be incorporated into vehicle improvements and upgrades. Hence, this phased approach and direct interaction with customers and consumers turns unknowns into knowns in an open innovation environment. This theory of constant improvement with stakeholders was originally put to work in the Toyota Way and is now being adapted to modern digital method.

Local Motors is unique among vehicle makers in our open, co-creative, approach to design, development, manufacturing and upgrade of vehicles. In this open spirit, we look forward to collaborating with both Universities and other industry stakeholders to further the adoption of CAVs by the general public to create safer, smarter and more sustainable public roads for all. Local Motors believes that the future of transportation will be redefined by automated and autonomous vehicles, and we stand ready to build them.

The SDOT proposal offers the building blocks of success: a diversity of test sites; unique environmental conditions; ongoing and complimentary technology pilots; a supportive political and partner coalition; and a demonstrated willingness to innovate. Local Motors is supportive of SDOT's proposal and we look forward to partnering with the City to create a hotbed of innovation in the automated transportation space. I want to compliment SDOT for their depth of knowledge as well as their openness to new ideas from technology partners such as Local Motors.

Sincerely,

Hugh Palmer 12.19.16

Hugh Palmer
VP of Product Management
Local Motors, Inc.

The terms outlined in the letter above reflect only the customer's non-binding expression of interest, and each party acknowledges that those terms are not intended to create or constitute any legally binding obligation between the parties. Neither party shall have any liability to the other party based upon, arising from, or relating to, anything contained in the letter above. No legally binding obligations will exist between the parties unless and until a definitive written agreement is prepared and executed by both parties. Either party may terminate discussions regarding Olli at any time for any reason or no reason, without liability or obligation to the other party.

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The Honorable Anthony R. Foxx
Secretary
United States Department of Transportation
1200 New Jersey Ave S. E.
Washington D. C. 20590

Dear Secretary Foxx,

We write this letter to express Madrona Venture Group's support for the City of Seattle Department of Transportation (SDOT) application to the United States Department of Transportation's Autonomous Vehicle Proving Grounds Pilot.

Madrona is an early stage venture capital firm based in Seattle that has been fortunate to be an early partner and investor in some of our region's most successful companies, including Amazon, Isilon Systems, Apptio, and Redfin. Since last year, we have been deeply involved in researching and promoting a better understanding of autonomous vehicles, and we are delighted that SDOT is taking a proactive role in working with the Department of Transportation, local leaders, and local companies to become a global leader in transportation technology.

Today, Seattle is facing an exciting period of economic and population growth that has exacerbated our region's mobility challenges. SDOT has responded by enhancing existing services and embracing new shared mobility services, increasing the efficiency of our streets while reducing speeding, enhancing and expanding the transit network, and investing in Smart City technologies to deliver a safer, more efficient transportation system.

Additionally, private sector leaders have formed organizations such as Challenge Seattle (a coalition of 17 CEOs of local companies including Microsoft, Amazon, Boeing, Nordstrom, and others) to address these issues at a company level by holding one another accountable to metrics such as percent of employees commuting in single occupancy vehicles, establishing a Mobility Innovation Center at the University of Washington, and encouraging open communication between the private sector, public sector, and academia.

We believe this spirit of mobility investment, progressive policymaking, and technological innovation will serve as the backdrop for many successful autonomous vehicle pilots in Seattle.

The SDOT proposal offers the building blocks of success: a diversity of test sites; unique environmental conditions; ongoing and complementary technology pilots; a supportive political and partner coalition; and a demonstrated willingness to innovate. Madrona is supportive of SDOT's proposal, and we look forward to partnering with the City to foster innovation in the automated transportation space.

Sincerely,

Tom Alberg, Managing Director,
Madrona Venture Group

Daniel Li, Senior Associate,
Madrona Venture Group

BULLITT FOUNDATION

1501 East Madison Street, Suite 600 | Seattle, WA 98122
t: 206.343.0807 f: 206.343.0822 | www.bullitt.org | info@bullitt.org

16 December 2016

The Honorable Anthony R. Foxx
Secretary
United States Department of Transportation
1200 New Jersey Ave S. E.
Washington D. C. 20590

Dear Secretary Foxx,

The Bullitt Foundation strongly supports the application by the City of Seattle Department of Transportation (SDOT) for the United States Department of Transportation's Autonomous Vehicle Proving Grounds Pilot. Seattle's rapid population growth and economic dynamism is exacerbating our region's mobility challenges. The City faces congestion, safety concerns, and rising transportation costs. SDOT has responded by investing in Smart Cities solutions that deliver a more efficient transportation system. These include embracing new shared-mobility services, increasing the person-carrying capacity of our streets, and dramatically expanding our transit network. This spirit of mobility investment, progressive policymaking, and technological innovation will serve as the backdrop for a successful autonomous transportation pilot in Seattle.

Seattle is one of a handful of cities developing an autonomous vehicle policy framework as well as a "Mobility as a Service" platform, robust sensor networks, and a trusted data-sharing grid. The City is well positioned to host a successful pilot for a range of different automated transportation technologies.

The SDOT proposal offers the building blocks of success. It includes a diverse mix of test sites; favorable environmental conditions; ongoing, complimentary technology pilots; a supportive political and partner coalition; and a demonstrated willingness to innovate. SDOT bring a depth of knowledge to the effort as well as a genuine openness to new ideas from technology partners. The Bullitt Foundation supports SDOT's proposal and we look forward to working with the City to create a hotbed of innovation in the automated transportation space.

Sincerely,

Denis Hayes
President