

Section 8

Connected and Autonomous Vehicles

SUMMARY OF REVISIONS

Autonomous Vehicles (AVs) have the potential to benefit Portland by reducing crashes, improving first and last mile connections for transit users, and reducing the high cost of owning a private vehicle. AVs also have the potential to significantly increase traffic congestion, vehicle miles travelled, and climate pollution. Investments in AV infrastructure could increase demands on transportation budgets while use of AVs could threaten parking revenues. The protections and rules of the road adopted by state and local governments will substantially determine how much benefit and how much burden we experience.

Autonomous vehicle technology is advancing rapidly: AVs are being tested on public streets in Pittsburgh, California, and Arizona. We may have vehicles that are largely autonomous operating in Portland in 2017.

Portland does not have an autonomous vehicles policy. In order to maximize potential benefits and minimize potential threats, PBOT is proposing a policy based on AVs advancing our adopted comprehensive plan goals. The objectives below are designed to provide guidance from City Council to both implementing bureaus and private sector organizations. The policy could provide clear guidance for evaluating autonomous vehicle tests, pilots, and deployment. PBOT is also proposing to amend Comprehensive Plan Policy 9.6, the transportation strategy for people movement, to reflect a priority for AVs that are fleet, electric, and shared by multiple passengers. This combination is likely to produce the greatest benefits with the least risk.

With clear policy direction, use of autonomous vehicles in Portland could boost the likelihood of achieving our Vision Zero, economic, environmental, and equity goals.

Policy 9.xx and Objective 9.41: Connected and Autonomous Vehicles

SUGGESTED LANGUAGE FOR ADOPTION

Updated 12 May 2017

Key

Existing language

Suggested new language

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<u>Policy 9.xx</u>	<u>Connected and Autonomous Vehicles.</u> Ensure that connected and autonomous vehicles advance Portland's Comprehensive Plan multiple transportation goals and policies, including vision zero, climate pollution reduction and cleaner air, equity, physical activity, economic opportunity, great places, cost effectiveness, mode share, and reducing vehicle mile traveled.
<u>Objective 9.41</u>	<p><u>Connected and Autonomous Vehicles.</u> <u>Prioritize connected and autonomous vehicles that are fleet/shared ownership, electric, fully automated and, for passenger vehicles, shared by multiple passengers. Develop and implement strategies on:</u></p> <p><u>9.41.a. Safety:</u> <u>Ensure that all levels of self-driving vehicles operate safely for all users, especially in the presence of vulnerable road users:</u></p> <p><u>9.41.b. Reliability and Efficiency:</u> <u>Ensure that connected and autonomous vehicles improve travel time reliability and system efficiency by</u></p> <ol style="list-style-type: none"> <u>maintaining or reducing the number of vehicle trips during peak congestion periods;</u> <u>reducing low occupancy vehicle trips during peak congestion periods;</u> <u>paying for use of, and impact on, Portland's transportation</u>

system including factors such as congestion level, vehicle miles traveled, vehicle occupancy, and vehicle energy efficiency;

9.41.c. Climate: cut vehicle carbon pollution by reducing “empty miles” traveled by passenger vehicles with zero or one passengers;

9.41.d. Equity: make benefits of autonomous mobility available on an equitable basis to all segments of the community;

9.41.f. Adverse Impacts: identify, prevent, identify, and mitigate potential adverse impacts from connected and autonomous vehicles.

Use a full range of tools to ensure that connected and autonomous vehicles and private data communications devices installed in the City right of way contribute to achieving Comprehensive Plan and Transportation System Plan goals and policies, including:

9.41.g. Information: Maintain City authority to identify and develop appropriate data sharing requirements to inform and support safe, efficient, and effective management of the transportation system. Ensure that when connected and autonomous vehicles use City rights-of-way or when vehicles connect with smart infrastructure within the City they share information including vehicle type, occupancy, speed, travel routes, and travel times, with appropriate privacy controls. Ensure that private data communications devices installed in the City right of way are required to share anonymized transportation data;

9.41.h. Design and Manage: design and manage the mobility zone, curb zone, and traffic control devices, e.g. to limit speeds to increase safety, to minimize cut-through traffic, evaluate future demand for pick-up and drop-off zones, and to prioritize autonomous electric vehicles carrying more passengers in congested times and locations;

9.41.i. Investments: Evaluate the public cost and benefit of investments in wayside communication systems advancing connected and autonomous vehicles goals. Develop a criteria-driven automated vehicle wayside infrastructure investment plan.

9.41.j. Funding: Develop sustainable funding mechanisms to support connected and autonomous vehicle infrastructure and service investments, transportation system maintenance, and efficient system management;

9.41.k. Pricing: Ensure that autonomous vehicles and vehicles that

connect to smart City infrastructure, and private data communications devices installed in the City right of way, help pay for infrastructure and service investments, and support system reliability and efficiency. Develop a tiered pricing structure that reflects vehicle impacts on the transportation system, including factors such as congestion level, vehicle miles traveled, vehicle occupancy, and vehicle energy efficiency;

9.41.l. Pilot Projects: Carefully evaluate potential pros and cons of pilot projects; support testing connected and autonomous vehicles in limited initial applications to explore the best methods of advancing adopted goals, policies, and objectives;

9.41.m. Analysis: Evaluate the potential impacts of connected and autonomous vehicles on traffic and travel modeling, vehicle storage (parking) demand analysis and projects, right-of-way allocation, development, and parking and vehicle capacity project evaluation, management, funding, and other evolving issues;

9.41.n. Partnerships: Collaborate with federal, state, regional, local, and private sector partners. Advocate for state creation of a jurisdictional committee on automated safety technology with Portland representation, and state recognition of city oversight of autonomous vehicles on city streets.

9.41.o. Connectivity: Support federal requirements that all new passenger vehicles are equipped with dedicated short-range communications (DSRC) radios, which include a number of traffic safety technologies that are consistent with Portland's Vision Zero goals.

Policy 9.6: Transportation Strategy for People Movement

SUGGESTED LANGUAGE FOR ADOPTION

Updated 31 March 2017

Key

Existing language

Suggested new language

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Policy 9.6 **Transportation strategy for people movement.** Implement a prioritization of modes for people movement by making transportation system decisions according the following ordered list:

1. Walking
2. Bicycling
3. Transit
4. Fleets of electric, fully automated, multiple passenger vehicles
5. Other shared vehicles
6. Low or no occupancy vehicles, fossil-fueled non-transit vehicles
7. ~~Taxi/commercial transit/shared vehicles~~
8. ~~Zero emission vehicles~~
9. ~~Other single occupant vehicles~~

Please see <https://procure.portlandoregon.gov/bsa> for the most recent RFI information



RFI NUMBER 00000657

PROFESSIONAL, TECHNICAL, AND EXPERT SERVICES

City of Portland, Oregon
June 9, 2017

**REQUEST FOR INFORMATION
For
Smart Autonomous Vehicle Initiative**

RESPONSES DUE: August 11, 2017 by 4:00 p.m.

Envelope(s) shall be sealed and marked with RFI number and Project Title.

SUBMITTAL INFORMATION: Refer to PART II, SECTION B.3 (RESPONSE SUBMISSION)

Submit the Response to:

City of Portland
Bureau of Transportation
Attn: Ashly Hoffman
1120 SW 5th Ave.
Portland, OR 97204

Refer questions to:

Ashly Hoffman
Email: PBOTContracts@portlandoregon.gov

A PRE-SUBMITTAL MEETING has been scheduled for Monday, June 19 at 1:00 pm PST, via Webex. Interested parties should provide their email addresses to PBOTContracts@portlandoregon.gov.

PART I SOLICITATION REQUIREMENTS

SECTION A GENERAL INFORMATION

1. INTRODUCTION

The City of Portland Bureau of Transportation (PBOT) is a community partner in shaping a livable city. We plan, build, manage and maintain an effective and safe transportation system that provides people and businesses access and mobility. We keep Portland moving. As a part of that mission, and in line with directives from Mayor Wheeler and Commissioner Saltzman, PBOT is proactively reaching out to the autonomous vehicle community and associated technology providers to solicit information on potential partnerships that could support the development of this new technology and ensure that this new technology serves the people and businesses of Portland.

2. BACKGROUND

Portland is an international transportation leader, partnering with the private and university sectors in developing innovative technology solutions that improve our quality of life. Autonomous Vehicles (AVs) have the potential to be a truly transformative technology. They could benefit our communities by reducing crashes, improving first and last mile connections for transit users, and reducing the high cost of owning a private vehicle. Conversely, AVs also have the potential to significantly increase traffic congestion, vehicle miles travelled, and climate pollution. The protections and rules of the road adopted by state and local governments will substantially determine how much benefit and how much burden we experience.

Portland began contemplating AVs as a component of its [2016 Smart Cities application](#) to the U.S. Department of Transportation. AVs were contemplated as a, "ladder of opportunity," or a safe, reliable, and affordable connection to the places people need to go every day: jobs, school, healthcare, and other essential services. Portland followed this with a secondary application for the US DOT Autonomous Vehicle Proving Pilot Program.

Taking that vision a step further, on March 29, 2017, Mayor Ted Wheeler and Commissioner Dan Saltzman wrote to state legislators to weigh in on pending AV legislation. Document linked [here](#). This letter emphasized the important role that cities must play as AVs are introduced into our transportation system. It also outlined the policy outcomes that are most important to Portland, namely safety, equity, climate and congestion relief.

On April 19, 2017, Mayor Wheeler and Commissioner Saltzman issued a directive to Transportation Bureau Director, Leah Treat, to launch the Smart Autonomous Vehicle Initiative (SAVI). Document linked [here](#). Understanding that this technology has the potential to transform our transportation system, PBOT was tasked with meeting this challenge head on through four specific tasks, developing an AV policy, issuing an RFI, developing an interim administrative rule, and creating an outreach strategy. This RFI is in direct response to that directive, and is the first step towards launching an AV pilot in the city.

SAVI is an opportunity for technology innovators to work with the city to ensure new transportation technologies advance our safety, equity, climate, and job goals, which can be found in more detail in the [City's Comprehensive Plan, Chapter 9](#) and in the [Vision Zero Action Plan](#). This initiative will:

Spur innovation and guide this emerging transportation technology to serve community goals;

Ensure the safety of our residents and businesses by requiring AV providers to align with our Vision Zero goal to eliminate all traffic deaths and serious injuries by 2025. AVs must show that they can and will stop or avoid pedestrians, bicyclists, animals (to include domestic, game and livestock), disabled people, emergency vehicles, red lights, and stop signs.

Prioritize fleet AVs that are electric and shared. Shared electric autonomous vehicles may reduce congestion, climate pollution, and travel costs for low and moderate income Portlanders;

Establish a clear process for public or private sector partners to apply to PBOT to test AVs at specific times, in specific locations, in Portland;

Encourage testing new technologies to benefit low and moderate income Portlanders and high value trips like public transit and freight; and

Allow for public comment on AV policy and potential pilot activities through the Transportation System Plan update process.

3. PURPOSE

The purpose of this Request for Information (RFI) is to gather data to assist the City in understanding the availability and diversity of suppliers in the marketplace, as well as approaches and solutions to AV testing, piloting and deployment. Respondents are invited to submit information regarding one or more of the following categories:

Pilot programs for AV technologies including, but not limited to:

- Shared Mobility Vehicles;
- Autonomous Driving Systems Technology; and/or
- Sensor technology.

Electric vehicle charging infrastructure which specifically supports AV testing or deployment and considers integration of smart grid and/or renewable power supply.

Maintenance and system operation for AVs.

Mobile device and communications networks, specifically with the interoperability to work with Portland's existing application efforts.

Innovative business models that support the testing, piloting and deployment of AVs in a way that furthers one or more of Portland's safety, equity, climate or traffic congestion goals, which can be found in the [City's Comprehensive Plan, Chapter 9](#) and the [Vision Zero Action Plan](#).

We encourage responses from a variety of companies, institutions and not-for-profit entities that are interested in being involved in AV deployment in the Portland area. We are open to receiving individual applications from companies that have a single piece of the AV puzzle, or group applications that bring together multiple entities. This could include, but is not limited to, the following:

Original Equipment Manufacturers;

Technology Companies;

System Integrators;

Transportation Network Companies;

Consultant services;

Mobility solutions providers; or

Community partners that provide services to specific populations that could benefit from AVs (seniors, people with disabilities, underserved populations).

We anticipate holding a voluntary AV open house with RFI respondents, where interested companies can present their capabilities and pair up with complementary providers.

We are particularly interested in responses which include the following:

Right-of-way Management– specifically as it pertains to curb pick-up and drop off zones;

First and last-mile solutions that connect users to transit lines, schools, jobs or services;

Freight delivery;

University, hospital, or campus autonomous electric shuttle;

Vehicle-to-infrastructure technology, such as communications between traffic signals and high occupancy vehicles, freight vehicles, or any sensors in the right of way;

AV's data collection regarding the conditions and operations of the transportation system including pavement condition information;

Other data collection technology which may gather information related to transportation safety and planning: i.e., vehicle volumes, vehicle occupancy, routes, speeds, etc.

Incentive systems that increase the occupancy, or shared use of vehicles, decreases overall carbon emissions per person, or reduces congestion;

Mobile delivery services such as electric fresh food carts serving underserved neighborhoods; or

Incentive systems that incorporate multi-occupant AVs with existing transit options, such as a smart phone app.

If applicable for your response category, please address the following questions in your response:

What are you proposing to test?

Will your tests require any hardware, connectivity or other infrastructure upgrades or investment (ex. radios, transmitters, restriping, signal upgrades, etc.)?

In what type of terrain/environment do you hope to test (industrial, residential, highways only, etc.)? What streets or blocks in Portland do you propose testing? Please be as specific as possible.

When would you start and end testing? Please provide any desired season, days of the week, and hours of the day.

If you plan to use AVs, how many will be in use for your pilot? What is the maximum number of AVs that would be operating in the pilot program simultaneously?

How is success measured for your pilot program?

What data will be produced by the test(s)? Could such data be collected and shared on the following outputs during the program and at full deployment origin, destination, route, and VMT; speeds; emissions, etc.? If not, why?

How would your service(s)/product(s) address Portland's goals, which are outlined in [Chapter 9 of the City's Comprehensive Plan](#)? Specifically please discuss how it will address the following:

- Safety and specifically [Vision Zero](#)
- Ensuring equity
- Congestion reduction
- Reducing climate pollution
- Creating great places
- Generating economic benefits

What do you need for the pilot program to be successful? Specifically, what do you need from the City of Portland (e.g., expanded Right-of-Way cooperation or access to municipal resources.)?

Is a partnership with the City of Portland contemplated for your pilot program? If so, would such a partnership require a financial investment by the City?

Has the technology been previously tested?

- If so, when and where did those test take place?
- And what were the results of these tests?

Please include any photographs, videos, illustrations, concept designs, etc. of what you are proposing (if available).

4. RFI PARAMETERS

A contract will NOT result from this Request for Information (RFI). A separate competitive solicitation may result following the City's review of the responses submitted. This RFI in no manner obligates the City of Portland or its Bureaus to issue a Request for Proposal (RFP) or to the eventual purchase of any services that may be described or proposed.

If a future RFP or other type of solicitation results from this RFI, respondents to this RFI are hereby notified that all information, documentation and any specific content or approaches included in the RFI Responses may be analyzed, may appear in various reports, and may be used in any resulting solicitation.

5. PROJECT DATA

The City will release an interim administrative and an Autonomous Vehicle Pilot Application and Permit Application in the near future. These will be available at www.portlandoregon.gov/savi, and we will welcome comments from the public. This website also contains background information including: a letter from City Officials to the State Legislature regarding statewide AV legislation, the directive to launch SAVI, the USDOT application for AV Proving Ground Designation, and draft policy documents.

We expect for the regulations to evolve as AV technology and pilot activities become more mature. All companies should plan to fully comply with local, state and federal regulations applicable to AVs. The City will work closely with all companies planning to test AV technologies to ensure they comply with new regulations. **No permit or pilot applications will be required in response to this RFI.**

The City of Portland is exploring future investment opportunities in AVs and AV related infrastructure. In order to be eligible for such future investments, respondents will need to comply with additional permits and application processes at that time.

PART II RESPONSE PREPARATION AND SUBMITTAL

SECTION A PRE-SUBMITTAL MEETING/CLARIFICATION

1. PRE-SUBMITTAL MEETING

A pre-submittal meeting is scheduled for this Request for Information at the date, time and location defined on the cover of this document.

2. RFI CLARIFICATION

Questions and requests for clarification regarding this Request for Information must be directed in writing, via email or fax, to the person listed below. **The deadline for submitting such questions/clarifications is seven (7) days prior to the response due date.** An addendum will be issued no later than 72 hours prior to the response due date to all recorded holders of the RFI if a substantive clarification is in order.

City of Portland
Bureau of Transportation
Attn: PBOT Contracts
1120 SW 5th Ave.
Portland, OR 97204

E-mail: PBOTContracts@portlandoregon.gov

SECTION B RESPONSE SUBMISSION

1. RESPONSES DUE

Responses must be received no later than the date and time, and at the location, specified on the cover of this solicitation. The outside of the envelope shall plainly identify the subject of the response, the RFI number, and the name and address of the Respondent. It is the Respondent's responsibility to ensure that their response is received prior to the specified closing date and time, and at the location specified. Responses received after the specified closing date and/or time may not be considered and could be returned to the Respondent unopened. The City shall not be responsible for the proper identification and handling of any responses submitted to an incorrect location.

2. RESPONSE SUBMISSION

Responses should be clear, succinct and **not exceed 20 pages**. The Cover Letter, section dividers, title page, and table of contents, will not count in the preferred page count of the response. For purposes of this response submission, the respondent shall submit: **one (1) original printed copy, two (2) additional printed copies, and one (1) PDF or MS Word format copy on CD disk or flash drive**. Responses shall be printed on both sides of a single sheet of 8.5" x 11" paper wherever applicable; if sheets are printed on both sides, it is considered to be two pages. Color is acceptable, but content should not be lost by black-and-white printing or copying. For purposes of review and in the interest of the City's Sustainable Paper Use Policy and sustainable business practices in general, the City requests the use of submittal materials (i.e. paper, envelopes, etc.) that contain post-consumer recycled content and are readily recyclable. Submittals shall NOT include 3-ring binders or any plastic binding, folders, or indexing materials. Reusable binding posts, clips or rings and recycled content paper envelopes or folders are examples of acceptable bindings.

REDACTION FOR PUBLIC RECORDS: If the respondent requests redactions, Respondents are required to submit one (1) complete redacted copy in the same format as the original. If no redactions are requested in a response, please state that clearly in the Cover Letter section of your submittal. Any portion of a response that the respondent claims as exempt from disclosure must meet the requirements of ORS 192.501(2), ORS 192.502(4) and/or ORS 646.461 et seq. "Redaction" means the careful editing of a document to obscure confidential references; a revised or edited document thereby obscuring the exempt information but otherwise leaving the formatted document fully intact. **The redacted copy must be a complete copy of the submitted response, in which all information the Respondent deems to be exempt from public disclosure has been identified.**

When preparing a redaction of your response, a respondent must plainly mark the redactions by obscuring the specific areas your firm asserts are exempt from public disclosure. In addition, a summary page identifying the pages where redactions occur shall be included with the response submission (summary is not included in page limitations). **If a respondent fails to submit a redacted copy of their response as required, the City may release the respondent's original response without redaction.** If the entire response is marked as constituting a "trade secret" or being "confidential", at the City's sole discretion, such a response may be rejected as non-responsive.

Unless expressly provided otherwise in this RFI or in a separate written communication, the City does not agree to withhold from public disclosure any information submitted in confidence by a respondent unless the information is otherwise exempt under Oregon law. The City agrees not to disclose responses until the City has completed its evaluation of all responses and publicly announces the results.

3. COST OF RESPONDING

All costs incurred by the Respondent in preparation of responses to this solicitation shall be borne solely by the Respondent; the City shall not be liable for any of these costs. At no time will the City provide reimbursement for submission of a response unless so stated herein.

4. ORGANIZATION OF RESPONSE

Respondents are encouraged to provide all information as requested in this Request for Information (RFI) and address them in the following manner:

1. Cover Letter
2. Project Approach and Understanding
3. Respondent's Capabilities

5. RESPONSE SUBMITTAL

a. COVER LETTER

Please include the following in your cover letter:

- RFI number and project title
- Full legal name of responding business entity
- Structure or type of business entity
- Name(s) of the person(s) authorized to represent the Respondent in discussions
- Contact person's name, mailing or street addresses, phone and fax numbers and email address
- Statement that no redactions are requested, if applicable

b. PROJECT APPROACH AND UNDERSTANDING

The project approach should:

Summarize your firm's overall approach for delivering the service(s) and/or product(s) categories outlined in Part I, Section A.3 of this RFI, and delineate specific tasks or work products which may be involved.

Provide a narrative description of how the firm proposes to implement its pilot program, specifically address how the service(s) and/or product(s) will further the City's goals regarding safety, equity, climate and congestion.

Identify any estimated time frames which may be needed for service and/or product delivery.

Identify any experience or certification necessary for the successful completion of any pilot program contained in your response.

Identify any municipal resources which may be needed from the City (i.e., access to infrastructure, staff resources, financial investments, specific authorizations).

Identify points of input and review with City staff and the general public.

c. RESPONDENT'S CAPABILITIES

Describe the following for your firm:

Your firm's legal structure, areas of expertise, length of time in business, number of employees, and other information that would be helpful in characterizing the firm.

Direct relevant experience your firm has obtained on similar or related AV projects.

- o For each AV project listed, please include the name, and contact information of a person who can be contacted for further information about the project.
- o If your firm worked in an auxiliary capacity or participated in a joint venture or partnership, include the name of the other firm(s) or agencies.

Resources available to perform the work required of the project.

Firm management and organizational structure.

Autonomous Vehicle Public Outreach Strategy

Initial engagement activities, prior to autonomous vehicle piloting or testing could include:

- Briefings to modal committees, Bureau and Budget Advisory Committee (BBAC), and any relevant stakeholder group that requests it;
- Public comment
 - The Autonomous Vehicle draft policy is in the Transportation System Plan (TSP) Stage 3 Discussion Draft. PBOT is taking public comment on the draft policy through July 21st. The draft Connected and Autonomous Vehicles policy is section 8-1 of the TSP, linked here:
<https://www.portlandoregon.gov/transportation/article/640080>;
 - www.portlandoregon.gov/savi provides information on the Smart Autonomous Vehicle Initiative (SAVI) and provides an email address for people to provide PBOT questions and comments.

During testing and piloting of autonomous vehicles in Portland, outreach could include:

- An Open House to discuss the responses to the Autonomous Vehicles Request for Information (RFI) with organizations proposing to test and pilot AV's, and with the public;
- Test or pilot design workshops with selected organizations and community representatives;
- Neighborhood meetings in potential test or pilot locations; and
- Mailers to city residents.

During test or pilot activities and phase-in deployment of autonomous vehicles:

- Develop an AV Advisory/Oversight Committee; probably once pilot projects are launched or if a substantial amount of public money is invested in the program.