MEMORANDUM

To: Transportation and Public Works Committee
From: William Appleton, Public Works Director
Date: 4/13/18
Subject: Gateway Program Update and Discussion on MOU

Purpose:

To provide the Committee with an update on the status of the Gateway Program, specifically recent changes to the State Route 509 project scope and the development of a partner agency MOU to address the local match requirement for the project.

Background:

The Gateway Program is comprised of two projects, completion of SR509 in King County and SR 167 in Pierce County. Freight mobility, regional mobility, airport access and regional job and economic growth are the primary drivers behind the need to complete the Gateway Program. The City of SeaTac has long recognized the need for this project and has been a leader in supporting the SR 509 completion project; evidenced thru Resolution 07-009, to reinvest any and all construction sales tax derived from the project back into the project and Resolution 13-007 expressing the City's strong support for a 2013 transportation investment package (attached).

In July 2015, the Washington State Legislature and Governor Inslee acted to fund the Puget Sound Gateway Program through the Connecting Washington revenue package. In funding the Program, the Legislature directed that $130 million of the 1.9 billion is to come through local funding sources. For the Program to stay on schedule, the Secretary of Transportation has been directed by the legislature to develop a Memorandum of Understanding (MOU) with local project stakeholders that identifies a schedule and approach for stakeholders to provide local matching funds for the Program (see attached Draft MOU). The deadline for having an MOU in place is July 1, 2018.

With the completion of the Connecting 28th/24th project in 2017, the first project elements of the greater SR 509 project were constructed and the City of SeaTac is already seeing both job creation and other economic benefits. The Gateway Program is now picking up momentum as it enters the real estate acquisition phase with construction expected to begin in 2021. Refinement in the areas of cost estimate validation and practical design have lead to adjustments to the preferred alternative for SR 509 that now includes a full interchange at South 188th Street.

The City of SeaTac has been identified as a Tier 1 City (see attached partner assessment), or one that derives a high level of net benefits from the project, and as such SeaTac is being asked to commit to the following responsibilities: Contribute to local nexus projects; Sponsor, initiate and help write grants; Support project and grant requests, and Participate in project meetings and reviews. Additionally, Tier 1 cities are expected to provide greater cash contribution towards the local match. This is reflected in the attached MOU. While the MOU identifies anticipated contributions for each of the partnering jurisdictions by project phase, an interlocal agreement will need to be developed and entered into prior to the exchange of any funds.

Staff have reviewed the draft MOU and provided comment. Execution of the subject MOU will signal SeaTac's continued strong support for the project, help ensure the project schedule is maintained and help further coalesce local support and commitment for the program.

4800 South 188th Street
SeaTac, WA 98188-8605

City Hall: 206.973.4800
Fax: 206.973.4809
TDD: 206.973.4808

April 13, 2018

Mr. Craig Stone, P.E.
WSDOT Program Administrator – Gateway Program
401 2nd Ave South, Suite 300
Seattle, WA 98104

RE: Grant Application – SeaTac Access Project (Ramps at 24th/28th Corridor)

Dear Mr. Stone,

The City of SeaTac acknowledges that it is a local project stakeholder in the Puget Sound Gateway - State Route 509 completion project (SR 509) and that the SR 509 project has a Legislative-imposed local match of $60 million. The City recognizes both the local and regional benefits the SR 509 project will bring to the Puget Sound and affirms its commitment to reasonably participate along with state, regional and local funding partner agencies to meet the local match requirement and see the project successfully constructed. Since the funding partner agencies have not yet reached the Local Contribution Agreement that is due to the Legislature by July 1, 2018, the City of SeaTac cannot indicate what will be our final allocation.

However, the current grant application for the SeaTac Access Project needs to be submitted at this time, prior to the final contribution agreement. As it is in the best interests of all the funding partner agencies to secure this grant, this letter confirms the City of SeaTac's commitment to provide local match for this grant application through the provision of real estate owned by the City that is needed by WSDOT for the construction of the SR 509 project. The City's real estate has an estimated current value of $2 Million. The final value will be determined prior to the transfer to WSDOT. The City will not be asked, nor will it provide other funds or in-kind contributions to this grant application nor to the SeaTac Access Project.

The City's commitment to the final Local Contribution Agreement will include the full value of this land transfer. Other City of SeaTac commitments, if any, will be negotiated and included in the final Local Contribution Agreement.

Sincerely,

Joseph Scorcio, AICP
City Manager
City of SeaTac

Cc: Will Appleton, Public Works Director
SeaTac City Councilmembers

Puget Sound Gateway Program
SR 167 and SR 509 Completion Projects

Local Funding and Phasing
Memorandum of Understanding

Draft 12

1. Participating Parties

In addition to the Washington State Department of Transportation (WSDOT), the following jurisdictions constitute those parties (Local Agency Partners) currently participating in ~~the~~this ~~the participating parties to the~~ Memorandum of Understanding pertaining ~~to~~ to the local matching funds requirement of~~participation in~~ the Puget Sound Gateway ~~projects~~Program ~~(Local Agency Partners)~~:

- Port of Seattle
- Port of Tacoma
- King County
- Pierce County
- City of Des Moines
- City of Edgewood
- City of Fife
- City of Kent
- City of Puyallup
- City of SeaTac
- City of Sumner
- City of Tacoma

2. Background and Purpose of MOU

In July 2015, the Washington State Legislature and Governor Inslee acted to fund the Puget Sound Gateway Program through the Connecting Washington revenue package. The Puget Sound Gateway Program is comprised of two projects: the State Route 167 Completion Project and the State Route 509 Completion Project. These projects provide essential connections to the ports of Tacoma and Seattle and will help ensure people and goods move more reliably through the Puget Sound region.

The Washington State Department of Transportation ~~(WSDOT)~~ is the lead project sponsor and is responsible for the planning, design and construction of the Puget Sound Gateway program, as well as for its overall financial management. ~~The program has been guided from its beginning~~From the beginning, this Program has been guided by a Joint SR 167/SR 509 Executive Committee, ~~made up primarily~~comprised of elected and appointed representatives of local jurisdictions within which the projects are being constructed or directly served ~~by the Puget Sound Gateway Program~~ (Algona, Auburn, Burien, Des Moines, Edgewood, Federal Way, Fife, Kent, Milton, Pacific, Puyallup, SeaTac, Sumner and Tacoma), ~~as well the~~ Port of Tacoma, ~~the~~ Port of Seattle, Federal Highway Administration, Washington State Transportation Commission, Washington State Department of Transportation, the Puget Sound Regional Council, Sound Transit, King County Metro, Pierce Transit, and the Freight Mobility Strategic Investment Board.

Commented [JS1]: The Legislation calls it the Gateway Project, why relabel it as a Program?

Commented [wsa2]: Allows for additional parties to come to the table

Commented [MJ3]: Agree that the word program and project are used interchangeably. It should one or the other. If the intent is for the Puget Sound Gateway Program to consist of two separate project (SR509 and SR167), that would make sense. But throughout the document make sure the two terms are used correctly.

Commented [JS4]: The Legislation calls it the Gateway Project, why relabel it as a Program? Seems unnecessarily confusing and arbitrary - global edit needed?

Commented [JS5]: Made up primarily is vague and confusing.

Approved fundingFunding for the total Puget Sound Gateway Program has been designated will come from the state gas tax, tolls, local contributions, and potential federal and state grants. Total funding for the project, from the 2015 Connecting Washington transportation funding package, is $1.875 billion, which includes local contributions of $130 million. The program has been funded over a 16-year timeline. Based on the legislative funding plan, major construction for a first stage would likely occur between 2019 through 2025, and a second stage in 2026-2030.

Commented [MJ6]: Shouldn't this be Program?

In the 2017 Legislative session new language was enacted (Engrossed Senate Bill 5096 § 306(20)(b)) requiring development of a Memorandum of Understanding (MOU) be developed between the local agency partnersLocal Agency Partners and WSDOT. The legislature directed that:

> *The secretary of transportation must develop a memorandum of understanding with local project stakeholders that identifies a schedule for stakeholders to provide local matching funds for the Puget Sound Gateway project. Criteria for eligibility of local match includes matching funds and equivalent in-kind contributions including, but not limited to, land donations. The memorandum of understanding must be finalized by July 1, 2018. The department must submit a copy of the memorandum of understanding to the transportation committees of the legislature and report regularly on the status.*

Commented [JS7]: See comment/question above

To this end, the Joint Executive Committee of the Puget Sound Gateway Program convened a Funding and Phasing Subcommittee ("Subcommittee") to develop an MOU that summarizes their commitments to contribute to the SR 167 and SR 509 projects.

The goals of the The Subcommittee goals include: are to:

- Support efforts to build the Gateway projects on or ahead of schedule
- Create successful local partnerships
- Obtain sufficient local funding to build the Puget Sound Gateway projects
- Time grant-funding projects to support the project delivery schedule

The construct of local funding participation is based on the following:

	SR 167	SR 509	TOTAL
Port contributions	$30 million	$30 million	**$60 million**
Federal INFRA grant	$10 million	$10 million	**$20 million**
Other Local Agency Partners partner match	$10 million	$10 million	**$20 million**
Other Grants (PSRC, FMSIB, TIB)	$20 million	$10 million	**$30 million**
Total	**$70 million**	**$60 million**	**$130 million**

3. Local Funding Strategy

A key element of the local funding strategy, is its to identify focus on sub-projects in the Gateway portfolio Program that provide clear and measurable benefits to local jurisdictions

(Local Nexus Projects) thereby creating a case for pursuing these project elements thru grant funding and a corresponding local match. This approach is designed to:. ~~In the Gateway program, these are called "Local Nexus Projects," designed to~~:

- Create a positive business case for Local Agency Partners~~local partners~~ by focusing on the parts of the program that are most relevant and important to local jurisdictions
- Leverage the potential to access significant grant funding to support local funding assumptions
- Participate, co-fund match, and submit grant applications with support from Subcommittee staff
- Combine local contributions and project funds to ensure fully-funded applications
- Support the grant effort and avoid competition with the local projects in the year of application

~~At the time of this MOU, t~~The following Local Nexus Projects have been identified ~~for~~ within the north (SR 509) and south (SR 167) segments of the Gateway Program:

Gateway North (SR 509)	Gateway South (SR 167)
~~SR 509:~~188th South Ramps	~~SR 167:~~Meridian West Ramps
~~SR 509:~~ SeaTac Access, link to 24th/28th	~~SR 167:~~54th Ave East Ramps
~~SR 509:~~ Veterans Drive Extension	Interurban Trail
Lake to Sound Trail	~~SR 167:~~ Valley Ave West Ramps
~~SR 509:~~24th/28th Avenue South Ramps	~~SR 509 Spur:~~ Port of Tacoma Access
	70th Avenue Bridge Relocation

If Local Nexus Projects, ~~local nexus and~~ INFRA Grants, and any other pending grant projects become fully funded, these projects will contribute substantially toward the Legislative requirement for local match. Future grant applications and contributions may be necessary to ~~comply with~~ultimately meet the local match requirement. Signatories to this MOU understand that upon meeting their own approved funding commitments ~~to meet~~towards the ~~consider that the local contribution requirement set forth in ESB 5096 will be fulfilled once the~~ $130 million local match requirement , no additional local financial commitments will be sought, requested or imposed and that the State will complete the Gateway Program as scoped as of the effective date of this MOU.~~is achieved.~~

4. Local Participation Policy

The Joint Executive Committee has agreed to a funding and phasing policy that structures local partner match requirements to be commensurate with the benefits accrued from the project at a local level. This policy states that:

> *All local agencies within the Greater Puget Sound ~~y partners~~ accrue some benefit from the Puget Sound Gateway Program. Local Agency Partners ~~sagencies~~, those agencies choosing to directly participate in advancing the Gateway Program, receiving fewer benefits, however, are not expected to contribute as much as ~~partners who~~those*

anticipated to recievereceivinge more benefits. Direct benefits are those that are most quantifiable, but there are other components of value that include indirect, strategic and policy/social benefits. Both direct and indirect benefits will be assessed as part of the consideration of local contributions, because they are more easily quantifiable than strategic and policy/social benefits.

Commented [wsa8]: It should be noted that all agencies within the P.S. will benefit. The door should be left open for others to show up.

All signatories of ~~the~~ this MOU agree to contribute a match to be applied to Local Nexus Projects at a level that reflects their ~~mutually~~ agreed upon ~~to~~ ~~respective~~ level of anticipated benefit, ~~anticipated.~~

5. **Benefit Assessment Methodology**

The ~~determination of~~proposed financial participation by each partner ~~has been~~ is based on a ~~general~~ qualitative assessment of the net benefits expected to be received. The assessment includes the following metrics, based on available project data and transportation modeling outputs:

- **Direct transportation linkages.** The location of direct access points for new limited access highways or other transportation infrastructure that benefits the community.
- **Effects on local sales taxes.** The impacts of the projects to sales tax receipts, both in terms of one-time construction sales taxes for the project, and ongoing sales taxes from impacts to commercial uses.
- **Travel time savings.** Overall travel time savings for local car and truck traffic associated with the projects.
- **Traffic diversion from local streets.** The diversion or increase of traffic on~~from~~ local arterials due to the project, with associated positive impacts to traffic safety and local road maintenance.
- **Effects on local employment.** The potential~~possible~~ effects of improved accessibility are reviewed, particularly in the context of access to new or potential employment uses.
- **Effects on developable residential lands.** The potential impacts of changes in traffic flow and accessibility on residential land development, with a focus on areas within the jurisdiction that are available for redevelopment.
- **Effects on developable employment lands.** The potential impacts of changes in traffic flow and accessibility on the development or redevelopment of commercial and industrial lands.
- **Achievement of local policy goals.** The alignment of the WSDOT Gateway Program with local plans and policies.
- **Environmental and social benefits.** Environmental and social benefits specifically linked to these projects, including upgrades to pedestrian and cycling infrastructure, and wetlands and riparian restoration.

Commented [JS9]: These should be listed separately because some non-construction cities will likely benefit more from ongoing sales tax. Two different issues and criteria.

Commented [JS10]: To be consistent with other items.

The approach and findings of the benefits assessments ~~will be~~have been made available ~~for~~ to the Local Agency Partners.~~review by the partners agencies.~~

6. **Local Jurisdiction Contributions to the Program**

~~This section presents descriptions of~~Using results from the benefit assessment described in Section 5, ~~anticipated~~ recommended contributions for each ~~of the participating~~ Local Agency Paartner~~partner agency jurisdictions by project phase~~were determined as. ~~Recommended contributions are provided~~listed by project phase in the tables below. ~~-~~ Following ~~their concurrence with~~execution of this MOU, interlocal agreements will be drafted for subsequent approval and ~~. Interlocal agreements~~ must be in place prior to issuance of the request for qualifications for any proposed construction contract.

~~Stage~~ Phase 1 **Grant Pursuits for Local Nexus Projects**

Sub-Project	Estimated Construction Cost	Grant Program	Target Amount	Target Due Mo/Year	Partner Match	Partner Nexus
70th Avenue E	$32,245,600	FMSIB	$5,000,000	Mar 2018	$800,000 $500,000 $3,000,000	Fife Tacoma Port of Tacoma
		TIB	$5,000,000	Aug 2018	$800,000	Fife
Veteran's Dr	$33,800,000	PSRC	$4,500,000	Apr 2018	$1,000,000	Kent
		TIB	$5,000,000	Aug 2020		
SeaTac Access	$176,883,500	PSRC	$4,500,000	Apr 2018	$1,000,000 $2,000,000	Kent SeaTac (ROW in lieu)
Port of Tacoma Spur	$323,042,000	PSRC	$4,500,000	Apr 2018	$1,500,000 $3,000,000	Tacoma Port of Tacoma
All Gateway Project		INFRA	$20,000,000*	Nov 2017		
SR 167 Stage 1		Port of Tacoma		TBD	$9,000,000	Port of Tacoma
SR 509 Stage 1		Port of Seattle		TBD	$15,000,000	Port of Seattle
Subtotal			**$48,500,000**		**$37,600,000**	**$86,100,000**

~~Stage~~ Phase 2 **Future Grant Pursuits for Local Nexus Projects**

Sub-Project	Estimated Construction Cost	Grant Program	Target Amount	Target Due Mo/Year	Partner Match	Partner Nexus
Meridian Ave Interchange			$3,000,000	2023	$2,000,000	Puyallup
Valley Ave Interchange			$3,000,000	2023	$2,000,000	Pierce County
188th Street Interchange				2023		SeaTac
SR 167 Stage 2			$4,000,000	2023	$500,000	Edgewood Sumner

SR 509 Stage 2			$4,000,000	2023		Des Moines
SR 167 Stage 2		Port		TBD	$15,000,000	Port of Tacoma
SR 509 Stage 2		Port		TBD	$15,000,000	Port of Seattle
Total Stage 2			**$14,000,000**		**$34,500,000**	**$48,500,000**
Total Stage 1 &2			**$62,500,000**		**$72,100,000**	**$134,600,000**

* If no INFRA, apply to TIGER for Port of Tacoma (509 Spur)

7. Terms and Termination

7.1. Amendments

This MOU shall be periodically reviewed and evaluated regarding the need for modifications or amendments by mutual determination of the parties. Amendments to the MOU shall be required if program funding assumptions need to be adjusted. Such amendments shall only be binding if they are in writing and signed by authorized personnel from all of the participating parties. Except as set forth in an amendment, the MOU will be unaffected and shall continue in full force and effect in accordance with its terms. If there is conflict between this amendment and the MOU or any earlier amendment, the terms of the amendment will prevail.

7.2. Dispute Resolution

Should any signatory to this MOU object at any time to any actions proposed or the manner in which the terms of this MOU are implemented, the Joint Executive Committee shall consult with such party to resolve the objection. If the Joint Executive Committee determines that such objection cannot be resolved, it will forward all documentation relevant to the dispute, including the Joint Executive Committee's proposed resolution, to the Secretary of Transportation. The Secretary of Transportation shall provide the Joint Executive Committee with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, the Joint Executive Committee shall prepare a written response that considers any timely advice or comments regarding the dispute from the Secretary of Transportation, signatories and other interested parties, and provide them with a copy of this written response. The Washington State Department of Transportation will then proceed according to this final decision.

7.3 Conditions for termination

Subject to legislative appropriation and all applicable laws, each signatory shall ensure that the Puget Sound Gateway Program is carried out in accordance with the terms of the MOU. A signatory may terminate their participation in this MOU if its respective terms, or the terms of any other signatory party are not being ~~cannot be~~ met. Prior to terminating the MOU, however, the signatories should consult to determine whether an amendment to the MOU might be feasible. WSDOT will then consult with the Joint Executive Committee to adjust the project scope elements that need to be removed if contributions are not realized in accordance with this understanding.

8. Period of Agreement.

This MOU will commence on the date of the final signature~~(date)~~ and will dissolve at the end of the grant funding period on (date)

Commented [JS11]: This proposed date makes no sense. This MOU is described and titled as much more than just grant funding. Set a firm date. Add a additional section or statement regarding extension by agreement of all parties.

9. Signatories

Puget Sound Gateway Program

SR 167 and SR 509 Completion Projects

City of SeaTac

Transportation and Public Works Committee

April 23, 2018

Agenda

- Project Guiding Principles
- Construction Update
- Legislative Updates
- Funding Overview
- Local Funding Commitments/Agreements

Puget Sound Gateway Program
Guiding Principles

1. Support regional mobility to provide efficient movement of freight and people
2. Improve local, regional, state and national economic vitality
3. Provide a high level of safety
4. Support local and regional comprehensive land use plans
5. Minimize environmental impacts and seek opportunities for meaningful improvements
6. Create solutions that are equitable, fiscally responsible, and allow for implementation over time
7. Support thoughtful community engagement and transparency

Construction & Implementation Plan

Updated Preferred Scenario

SR 509: Updated Preferred Scenario 3B

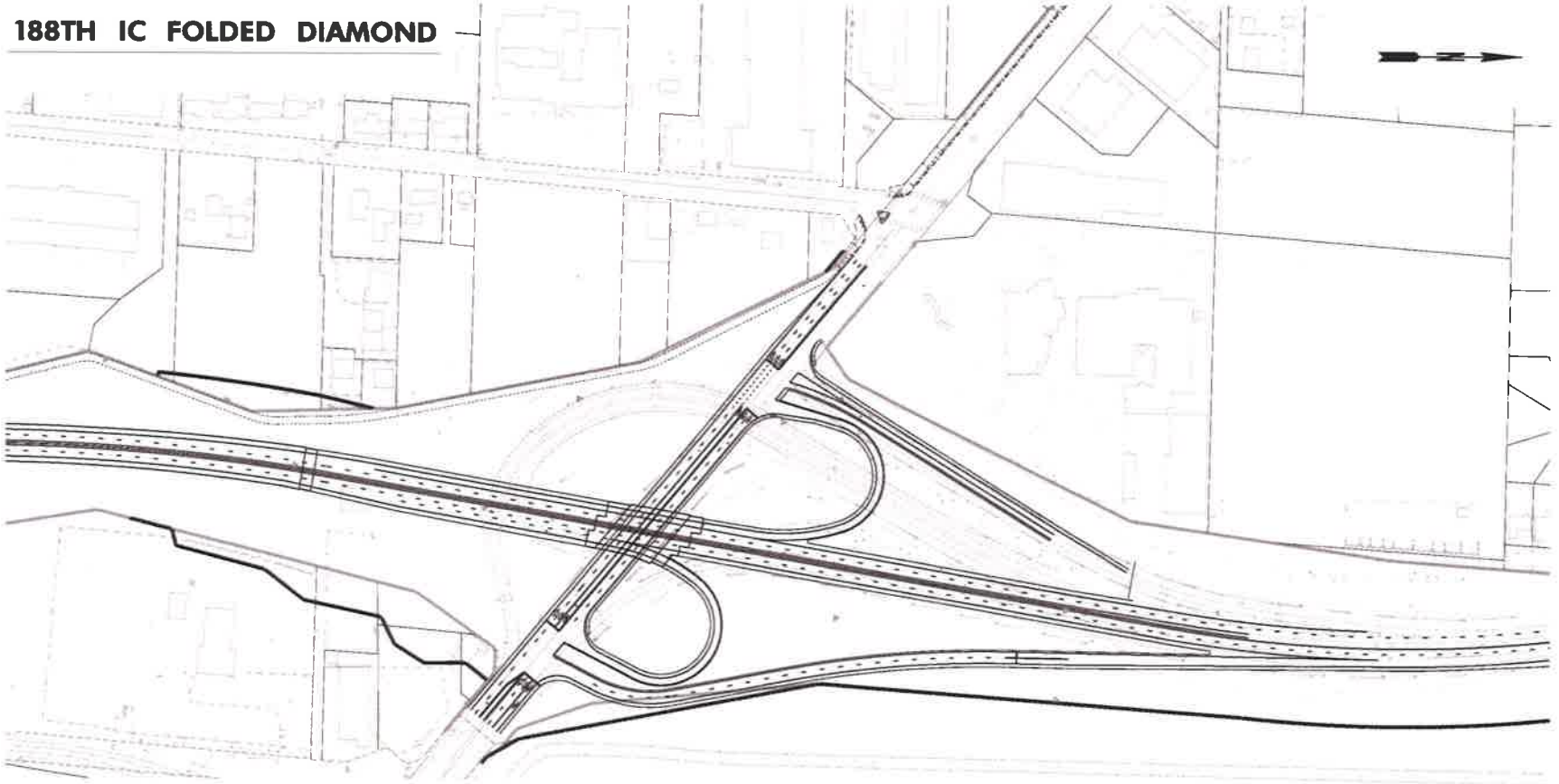
SR 509

Completed local projects

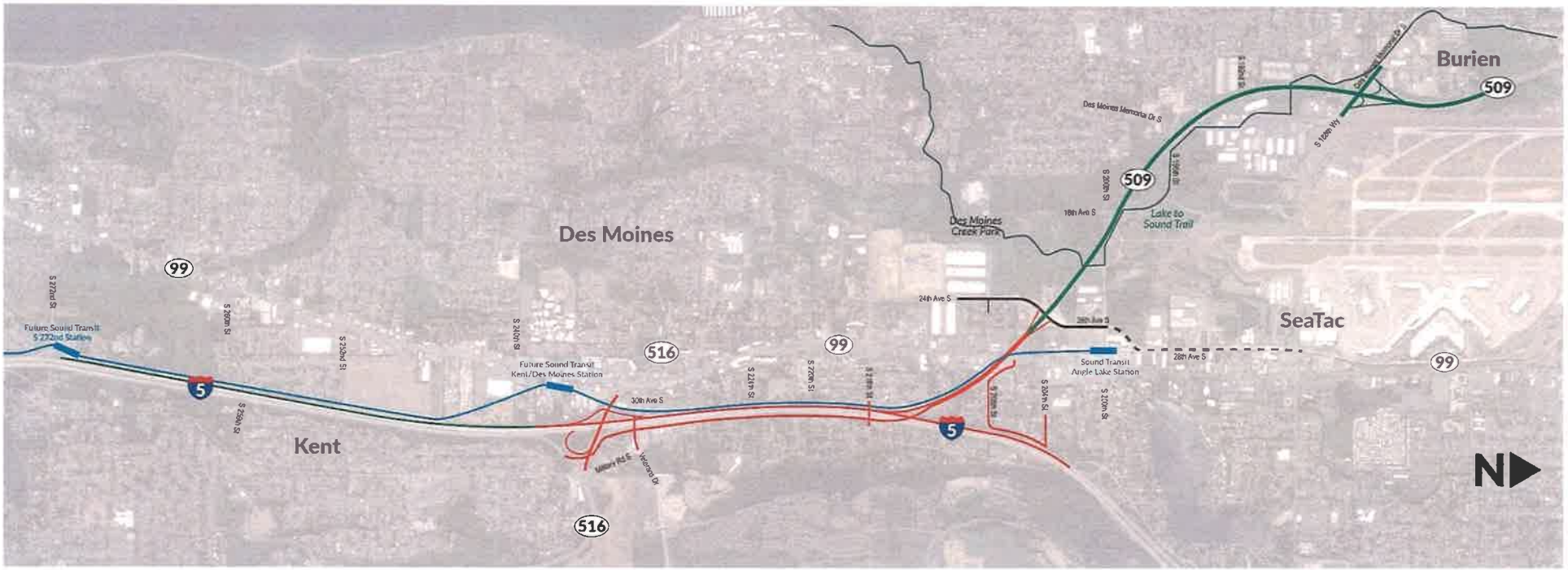
Planned local projects

Sound Transit Federal Way Link Extension

SR 509 188th Interchange – Folded Diamond



SR 509 Construction Stages



Legislative Direction – 2017 Update

*The **secretary of transportation must develop a memorandum of understanding with local project stakeholders** that identifies a schedule for stakeholders to provide local matching funds for the Puget Sound Gateway project. Criteria for eligibility of local match includes matching funds and equivalent in-kind contributions including, but not limited to, land donations. The memorandum of understanding must be finalized by **July 1, 2018**. The department must submit a copy of the memorandum of understanding to the transportation committees of the legislature and report regularly on the status.*

*During the course of developing the memorandum of understanding, the department must evaluate the project schedules to determine if there are any **benefits to be gained by moving the project schedule forward.***

*Additionally, the department **must consider completing a full single-point urban interchange at the junction of state route number 161 (Meridian avenue)** and state route number 167 and a full single-point urban interchange at the junction of state route number 509 **and 188th Street**. If the department receives additional funds from an outside source for this project, the funds must be applied toward the completion of these two full single-point urban interchanges.*

*Any **savings on the project must stay** on the Puget Sound gateway corridor until the project is complete.*

Legislative Direction – 2018 Update

(b) ***Proceeds from the sale of any surplus real property*** *acquired for the purpose of building the SR 167/SR 509 Puget Sound Gateway (M00600R) project must be deposited into the motor vehicle account for the purpose of constructing the project.*

(c) During the course of developing the memorandum of understanding, the department must evaluate the project schedules to determine if there are any benefits to be gained by moving the project schedule forward. ***It is the legislature's intent that if the department identifies any savings after the funding gap on the base project is closed as part of the proposal to expedite the project, that these cost savings shall go toward construction*** *of a full single-point urban interchange at the junction of state route number 161 (Meridian avenue) and state route number 167 and a full single point urban interchange at the junction of state route number 509 and 188th Street. If the department receives additional funds from an outside source for this project* ***after the funding gap on the base project is closed****, the funds must be applied toward the completion of these two full single-point urban interchanges.*

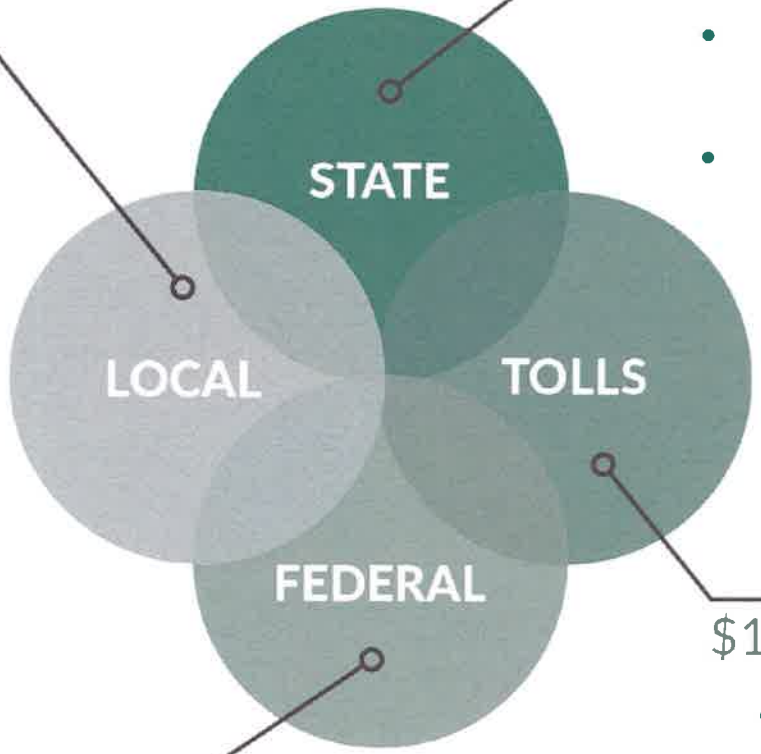
Gateway Funding Spheres

$130 M local contribution

- MOU

$1,565 M Connecting Washington funds

- Construction & Implementation Plan
- Schedule Acceleration Report



$180 M toll funding

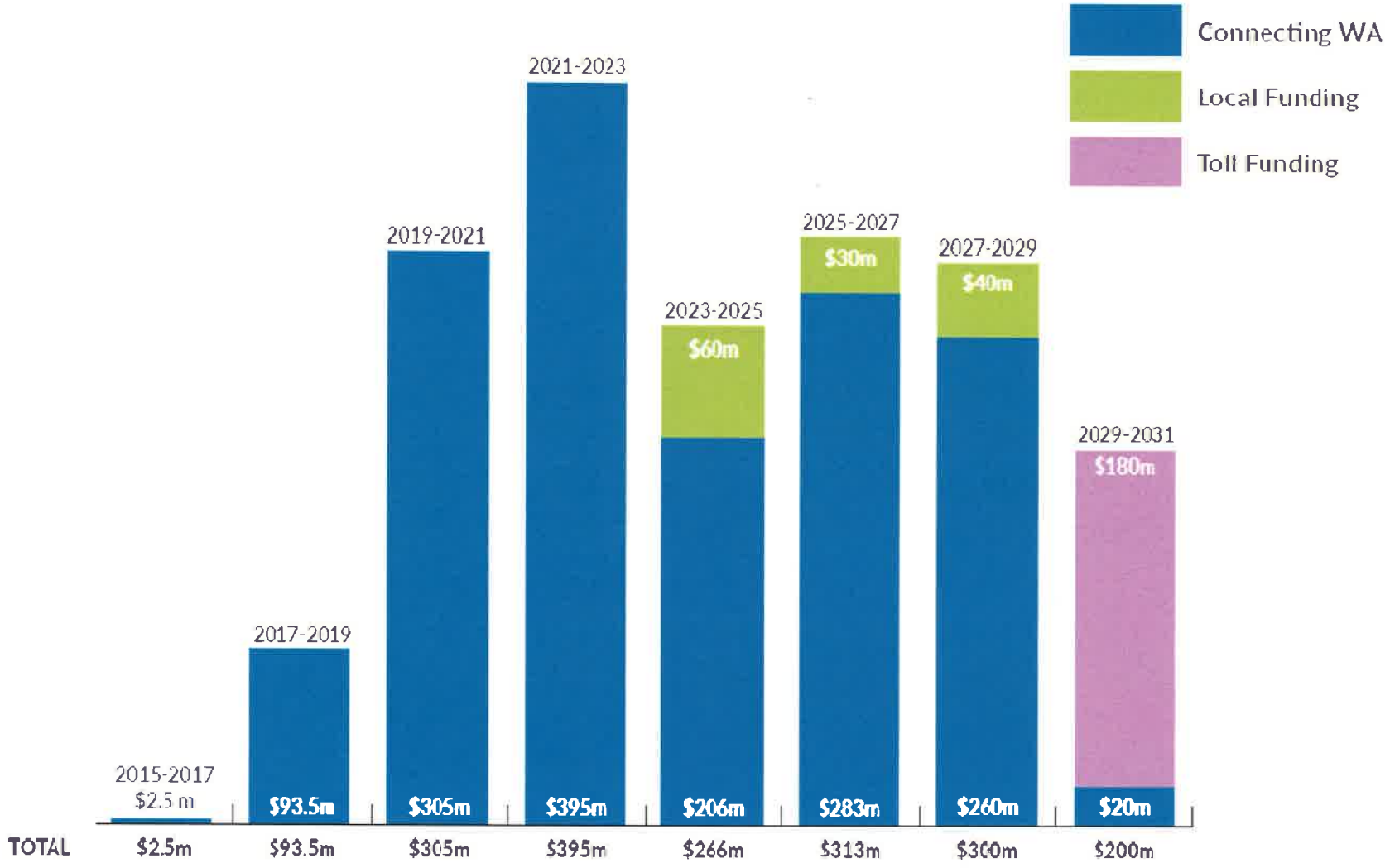
- Traffic & Revenue Forecast

$111 M INFRA Grant

Total $1,986 M

Puget Sound Gateway Funding

as enacted by the 2017 Legislature



Local Contribution Construct

Projects	SR 167	SR 509	TOTAL
Port contributions	$30 million	$30 million	$60 million
Federal INFRA grant	$10 million	$10 million	$20 million
Local partner match	$10 million	$10 million	$20 million
Other Grants (PSRC, FMSIB, TIB)	$20 million	$10 million	$30 million
Potential Total	**$70 million**	**$60 million**	**$130 million**

Benefit Level and Partner Roles

Benefit Level	Proposed Partner Roles
Tier 1 (Ports and Cities)	• Contribute to local projects • Donate right-of-way (if applicable) • Sponsor, initiate and help write grants • Support project and grant requests • Participate in project development review & project meetings
Tier 2 (Cities and Counties)	• Contribute to match to local projects • Support project and grant requests • Participate in project development review & project meetings
Tier 3 (Cities)	• Support project and grant requests • Participate in project meetings

Grant and Match Financial Plan:

Partner Commitments and Status

Partner Agency	Status	Amount	Total
City of Fife	Committed	$1,800,000	
City of Tacoma	Committed (Council action pending April 3)	$2,000,000	
City of Kent	Committed	$2,000,000	
City of SeaTac	Pending	$2,000,000	
City of Puyallup	Committed (pending W. Meridian ramps)	$2,000,000	
City of Des Moines	Committed	$500,000	
City of Edgewood	Committed	$500,000	
City of Sumner	Requested		
City of Pacific	Pending		
Pierce County	Committed (Executive)	$2,000,000	
King County	Requested		
Port of Seattle	Committed (Commission action with MOU)	$30,000,000	
Port of Tacoma	Committed	$30,000,000	
		Partner Total	$72,800,000

Stage 1 Grant Assumptions

Federal INFRA	Application filed	$20,000,000	
Interurban Trail	Awarded	$1,400,000	
FMSIB 70th Avenue E	Application due March 30	$5,000,000	
FMSIB Port of Tacoma Spur	Apply 2020	$5,000,000	
PSRC Veterans Extension	Application due April 19	$4,500,000	
PSRC SeaTac Access (SR 509)	Application due April 19	$4,500,000	
PSRC Port of Tacoma Spur	Application due April19	$4,500,000	
TIB 70th Avenue E	Application due August 17	$5,000,000	
TIB Veterans Extension	Apply 2020	$5,000,000	
		Stage 1 Grant Total	$54,900,000

Stage 2 Grant Assumptions

SR 167/Valley Avenue	2022	$3,000,000	
SR 167/Meridian Avenue	2022	$3,000,000	
SR 167 Stage 2 Mainline	2022	$4,000,000	
SR 509 Stage 2 Mainline	2024	$4,000,000	
		Stage 2 Grant Total	$14,000,000
		Total Financial Strategy	$141,700,000

SeaTac Support to Date:

- Resolutions of Support
  - Resolution 07-009 (Commitment of construction sales tax)
  - Resolution 13-007 (Support of project)

- Letter of Commitment
  - Up to $2M in match (real estate) for SeaTac Access Project

SeaTac Support Moving Forward :

- Memorandum of Understanding:
  - Describes Schedule and Approach
  - Identifies Level of Participation (Tier 1, 2 &3)
  - Willingness to fund raise

- Inter Local Agreement
  - Details commitments
  - Allows for issuance of construction contracts

RESOLUTION NO. 13-007

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SEATAC, WASHINGTON, EXPRESSING ITS STRONG SUPPORT OF A 2013 TRANSPORTATION INVESTMENT PACKAGE

WHEREAS, a healthy transportation system is a critical foundation of our state and local economies and our quality of life, as well as our global position as the nation's most trade-dependent state; and

WHEREAS, Washington state's transportation system is suffering from disrepair, with a backlog of maintenance and preservation needs, and data showing that without any new investments, more than half the pavement on our state roads and highways will be in poor condition by 2023; and

WHEREAS, failing roads and bridges, congested highway corridors, and bottlenecked interchanges undermine the mobility of vehicles, buses, and freight carriers to transport people and goods; and

WHEREAS, the Connecting Washington Task Force released a report in early 2012, identifying $50 billion in unfunded transportation needs and recommending an investment of $21 billion in state funding during the next 10 years for maintenance, preservation, and strategic investments; and

WHEREAS, investing in maintaining and upgrading our transportation system is a positive step the Legislature can take to catalyze construction jobs, enhance freight mobility for our Ports, and create a pathway for retaining and growing new jobs for key industry sectors; and

WHEREAS, through SHB 1954, SHB 1955 and related bills, the 2013 Washington State Legislature is considering a 12-year, $9.5 billion package of transportation infrastructure investments; and

WHEREAS, this package provides critical funding for key highway corridor projects throughout the state, including The Puget Sound Gateway Project, which will complete State Route 167 and State Route 509; and

WHEREAS, the City of SeaTac has already spent approximately $10 million and plans to spend another $20 million completing its 28th/24th Avenue South arterial to connect to the State Route 509 project; and

WHEREAS, the transportation package also provides a direct gas tax distribution that will provide new funding each year for the City of SeaTac to maintain local roadways and arterials and to leverage existing funding; and

WHEREAS, the package also includes local transportation financing options that cities and counties can submit to their voters for transportation improvements in their communities; and

WHEREAS, the transportation package additionally invests in grant programs that are vital for cities and counties, including the Transportation Investment Board (TIB), the Freight Mobility Strategic Investment Board (FMSIB), Complete Streets," Safe Routes to Schools, and Bicycle-Pedestrian Safety; and

WHEREAS, the package also includes direct funding allocations for other local transit agencies, including King County Metro and Pierce Transit, that would otherwise have to make drastic cuts in routes which carry people to work sites and serve local communities; and

WHEREAS, transportation investment depends on use of tax payer dollars; and

WHEREAS, the 2013 Washington State Legislature is considering SHB 1957, ESHB 1978, SHB 1986, HB 1988 and HB 1979 to help reform the transportation system and take steps to make it more efficient, accountable and cost effective; and

WHEREAS, the City Council of the City of SeaTac, Washington, strongly encourages the Washington State Legislature to enact a balanced transportation investment and reform package,

in Olympia, during the Special Session to create jobs, relieve congestion, support our businesses, and maintain our quality of life.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF SEATAC, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. The City Council hereby takes an official position in strong support of a comprehensive transportation investment and reform package, including direct funding and funding options for local governments.

Section 2. The City Council strongly encourages lawmakers to approve and enact this package in Olympia.

Section 3. That the City Manager is authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation, including, but not limited to forwarding copies of this Resolution and its message to our representatives in the state legislature and to others at the State of Washington.

Section 4. That this Resolution shall take effect and be in full force upon passage and signatures hereon.

Dated and signed this 28th day of May, 2013

CITY OF SEATAC
ANTHONY ANDERSON
MAYOR

CITY OF SEATAC
KRISTINA GREGG
CITY CLERK

APPROVED AS TO FORM:

CITY OF SEATAC
MARY MIRANTE BARTOLO
CITY ATTORNEY

RESOLUTION NO. 07-009

A RESOLUTION of the City Council of the City of SeaTac, Washington stating the City Council's intent to reinvest any and all sales tax revenue received by the I-5/SR509 road project back into the project.

WHEREAS, SR509 has been an unfinished freeway for many years; and

WHEREAS, the City of SeaTac has been instrumental in maintaining interest in the completion of SR509; and

WHEREAS, improvements to I-5 and the construction of the SeaTac Airport South Access are logical components to the completion of SR509; and

WHEREAS, the Port of Seattle (POS) and the Washington State Department of Transportation (WSDOT) have been partners with the City of SeaTac in keeping the I-5/SR509 a viable project; and

WHEREAS, the I-5/SR509 project's cost increases the longer it is delayed; and

WHEREAS, alternate revenue sources are being sought to ensure the success of the I-5/SR509 project; and

WHEREAS, it is anticipated that the project's funding package includes local sales tax reimbursements; and

WHEREAS, the I-5/SR509 project is currently in the plan to be included on the ballot at the November 2007 Regional Transportation Investment District (RTID) election, subject to County Councils' approval; and

WHEREAS, the Council assumes that the vote on the RTID will be approved by the electorate at the November, 2007 election; and

WHEREAS, it is the intention of the City of SeaTac to continue to perform an active role in the completion of the I-5/SR509 project;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF SEATAC, WASHINGTON HEREBY RESOLVES as follows:

It is the intent of the City Council to reinvest any and all sales tax revenue which will be received by the City of SeaTac from the construction of the I-5/SR509 project back into the I-5/SR509 project and to strongly encourage other cities in the RTID to do the same.

PASSED this 12th day of June, 2007 and signed in authentication thereof on this 12th day of June, 2007.

CITY OF SEATAC

_____
Gene Fisher, Mayor

ATTEST:

_____
Judith L. Cary, City Clerk

Approved as to Form:

_____
Mary E. Mirante Bartolo, City Attorney

[SR509 Road Project Sales Tax]

Puget Sound Gateway Partner Assessments

DRAFT: February 23, 2018

Introduction and Purpose

In July 2015, the Washington State Legislature and Governor Inslee acted to fund the Puget Sound Gateway Program through the Connecting Washington revenue package. The Puget Sound Gateway Program is comprised of two projects: completion of State Route (SR) 167 in Pierce County, and completion of State Route (SR) 509 in King County.

In funding the Puget Sound Gateway Program, the Legislature directed that $130 million of the $1.9 billion is to come through local funding sources. In the 2017 session, they directed the Secretary of Transportation to develop a Memorandum of Understanding with local project stakeholders that identifies a schedule for stakeholders to provide local matching funds for the Puget Sound Gateway project.

This series of Partner Assessments is intended to provide an overview of the economic and transportation benefits that will accrue to the local jurisdictions due to the Gateway Program. These packages of benefits are provided to assist in the development of the Memorandum of Understanding with local project partners.

Content

The Partner Assessments include descriptions of overall net benefits to individual communities on folio sheets, with one summary sheet provided for each community. These sheets include the following:

Overview Map

An overview map is provided at the beginning of the folio sheet, which highlights the community and locations of interest with the project. These maps include the following elements:

- Local alignments of the SR 167 and SR 509 Completion Projects at full construction of Phase 1
- Changes in traffic volumes between the "build" and "no build" scenarios for 2025 at the completion of the projects, with blue colors representing decreased volumes of traffic for the combined AM/PM peak periods, and red colors representing increases in traffic volume
- Designated Regional Growth Centers (RGCs) and Manufacturing and Industrial Centers (MICs)
- Call-outs highlighting major elements of the assessment on the map

Note that the representation of traffic volume changes is intended to highlight major changes in regional traffic. These indicators are general metrics that do not show whether local street / highway capacity is exceeded, or if there are impacts to levels of service in the study area. Specific information on the results of regional traffic modeling should be reviewed for areas of interest.

Overview

An overview of the community is provided, with population, local government budget, and employment statistics provided. For cities, a series of benefit categories evaluated under the assessment are also included, with general qualitative scores indicating the relative benefits provided to the community in these groups. These categories include:

1. **Direct transportation linkages.** This category evaluates whether the location of direct access points for new limited access highways or other transportation infrastructure benefits the community.
2. **Effects on local sales taxes.** In this category, the impacts of the projects to sales tax receipts are evaluated, both in terms of one-time construction sales taxes for the project, and ongoing sales taxes from impacts to commercial uses.
3. **Travel time savings.** This category provides an assessment of the travel time savings for car and truck traffic associated with constructing the SR 167 and SR 509 Completion Projects.
4. **Traffic diversion from local streets.** Traffic volumes are evaluated between the "build" and "no-build" scenarios, and the diversion of traffic from local arterials is highlighted due to the positive impacts to traffic safety and local road maintenance.
5. **Effects on local employment.** The possible effects of improved accessibility are reviewed, particularly in the context of access to new or potential employment uses.
6. **Effects on developable residential lands.** This category indicates the potential impacts of changes in traffic flow and accessibility on residential land development, with a focus on areas within the jurisdiction that are available for redevelopment.
7. **Effects on developable employment lands.** This category indicates the potential impacts of changes in traffic flow and accessibility on the development or redevelopment of commercial and industrial lands.
8. **Achievement of local policy goals.** The alignment of the WSDOT Gateway Program with local plans and policies is highlighted with this indicator, noting cases where these projects are considered by the jurisdiction in their own operations.
9. **Environmental and social benefits.** Finally, there are certain environmental and social benefits specifically linked to these projects, including upgrades to pedestrian and cycling infrastructure, and wetlands and riparian restoration. These elements are highlighted as part of this category.

Each of these categories is provided with a qualitative ranking as follows:

- ●●●● **High benefits**, which typically include the primary considerations for the jurisdiction with the Completion Projects
- ○●●● **Moderate benefits**, which include significant benefits important to consider by the community with the Completion Projects
- ○○●● **Low benefits**, which typically include minor benefits that will affect the community, but are not likely large enough to be a main consideration
- ○○○● **Negligible benefits** which indicate low or no benefit in this category; note that this also includes cases where **net costs** are experienced by the community

A roll-up summary of the rankings for all the cities in the study area is provided in this document for reference, with each community generally ordered by the benefits received from the Program.

Proposed Participation Level

A summary of the relationship between identified community benefits and participation under the Puget Sound Gateway Program Memorandum of Understanding (MOU) is provided. "Tiers" classify the levels of benefit received by each community and define the resource commitments to the Puget Sound Gateway Project. These Tiers include the following:

- **Tier 1** communities, which are serviced directly by the new highway alignments and receive significant direct benefits due to improved accessibility.
- **Tier 2** communities, which are located close to the new highway alignments and receive moderate to high benefits due to improved accessibility.
- **Tier 3** communities, which receive overall benefits from improvements to regional accessibility, but only receive nominal direct benefit.

For each community, the responsibilities in the Program associated with their Tier are also identified, ranging from direct contribution of matching funds to projects, to participation in project meetings and reviews. Note that these responsibilities are not final and may be revised based on the content of the MOU.

Note that the classification of the cities involved in the Program are also provided in the roll-up in this section.

Description of Net Benefits

A more detailed explanation of the net benefits received from the projects of the Gateway Program are provided in this section. The identified characteristics are typically the most significant for a community and provide an understanding of both the costs and benefits associated with projects under the Program.

These descriptions are divided into three main categories:

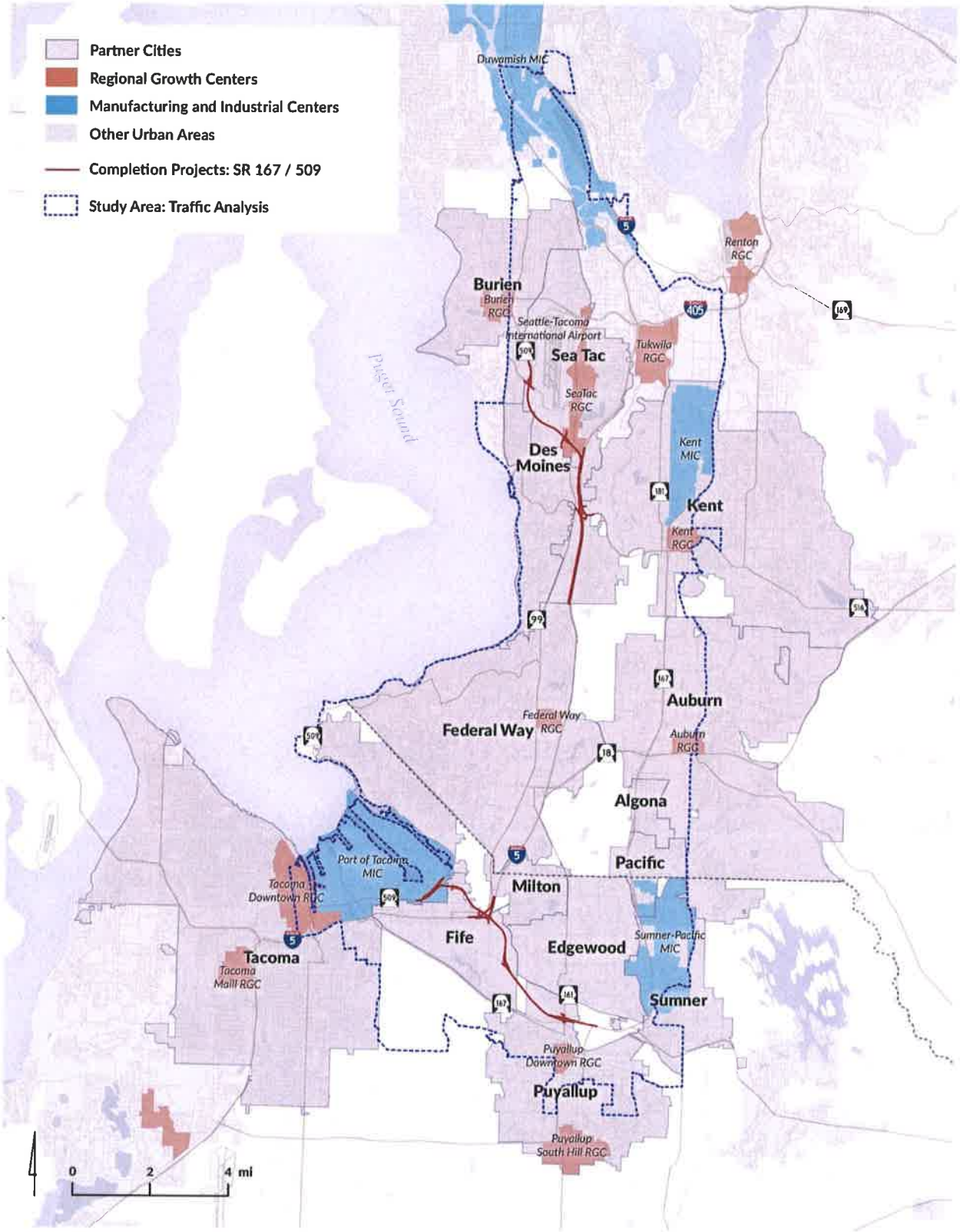
- **Direct effects** include the outcomes of these projects that are directly related to the transportation network. This can include regional travel times to major destinations, overall travel time savings, changes in traffic flow, and diversion of traffic volumes.
- **Indirect effects** include project outcomes that are linked to transportation but are not directly related to changes in the transportation system. This includes the effects of changes in accessibility on economic activity, residential and commercial development, and retail sales receipts.
- **Social and policy effects** include two distinct categories of outcomes. Social effects describe elements of the project that are not related to motorized transportation but will have an impact on the community, such as wetlands restoration or development of sidewalks and cycling trails. Policy effects indicate how projects under the Gateway Program will fulfill the objectives and goals of community plans, policies, and programs.

For cities, each of these descriptions are also classified according to the nine categories used in the Overview on the first page of the assessment. The category numbers are provided as end notes for reference.

Partner Benefit Assessment Summary: WSDOT Gateway Program

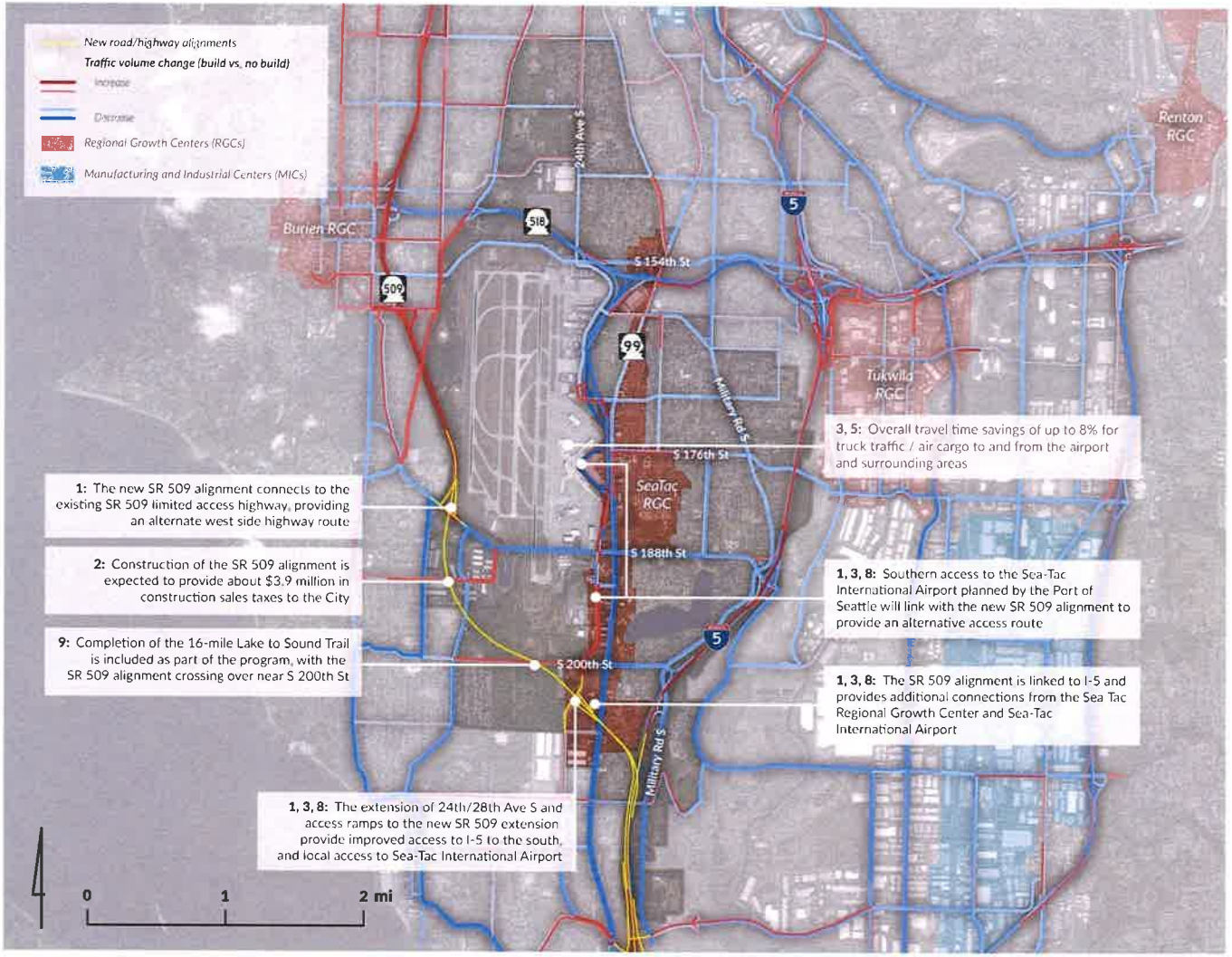
		1 Direct transportation linkages	2 Impacts to local sales taxes	3 Travel time savings	4 Traffic diversion from local streets	5 Impacts to local employment	6 Impacts to developable residential lands	7 Impacts to developable employment lands	8 Achievement of local policy goals	9 Environmental and social benefits
TIER 1	Fife	●●●●	●●●●	○●●●	●●●●	●●●●	○○●●	○○●●	●●●●	○●●●
	Puyallup	●●●●	○●●●	●●●●	○●●●	●●●●	●●●●	○●●●	●●●●	○○●●
	Kent	●●●●	○●●●	○●●●	○●●●	●●●●	●●●●	●●●●	○●●●	○○●●
	SeaTac	●●●●	●●●●	○●●●	○●●●	●●●●	○○●●	○●●●	●●●●	○○●●
	Tacoma	●●●●	○○●●	○●●●	○○●●	●●●●	○○●●	○●●●	●●●●	○○●●
TIER 2	Des Moines	○●●●	○○●●	○●●●	●●●●	○○●●	○●●●	○○●●	●●●●	○●●●
	Sumner	○●●●	○○○●	●●●●	○○○●	●●●●	○●●●	●●●●	○●●●	○○○●
	Pacific	○●●●	○○○●	○●●●	○●●●	●●●●	○○●●	●●●●	○●●●	○○○●
TIER 3	Federal Way	○○○●	○○○●	○●●●	○○●●	○●●●	○●●●	○●●●	○○●●	○○○●
	Milton	○○●●	○○○●	○○●●	●●●●	○○○●	○●●●	○○○●	○●●●	○○●●
	Edgewood	○○●●	○○○●	○●●●	●●●●	○○○●	○●●●	○○○●	○○○●	○○○●
	Algona	○○○●	○○○●	○○●●	○○●●	○○●●	○○●●	○○●●	○○●●	○○○●
	Auburn	○○○●	○○○●	○○●●	○○●●	○○●●	○○●●	○○●●	○○●●	○○○●
	Burien	○○●●	○○○●	○○●●	○○○●	○○○●	○○●●	○○●●	○○●●	○○●●

Partner Benefit Assessment: Study Area



Puget Sound Gateway Partner Assessment

City of SeaTac



DRAFT: 23 February 2018

Overview

Population:	28,850 (2017 est.)
Employment:	30,937 (2016)
Operating Budget:	$132.7 million (2017)

The City of SeaTac is expected to receive **high** net local benefits under the Puget Sound Gateway Program, based on the characteristics summarized below:

- ●●●● **1.** Direct transportation linkages
- ●●●● **2.** Effects on local sales taxes
- ○●●● **3.** Travel time savings
- ○●●● **4.** Traffic diversion from local streets
- ●●●● **5.** Effects on local employment
- ○○●● **6.** Effects on developable residential lands
- ○●●● **7.** Effects on developable employment lands
- ●●●● **8.** Achievement of local policy goals
- ○○●● **9.** Environmental and social benefits

SeaTac includes almost all of the new SR 509 alignment linking the current terminus of the limited access highway at S 188th St with I-5. The project also includes the recently completed connection between 24th and 28th Ave S, providing more direct access to Sea-Tac International Airport, as well as improvements to the Lake to Sound Trail.

The benefits of the new SR 509 segment and related improvements are significant. Enhanced airport access and road capacity will decrease travel times and traffic congestion from the "as built" scenario, primarily in the south of the city.

For More Information

www.wsdot.wa.gov/projects/gateway

Andrew Bjorn, BERK Consulting
andrew@berkconsulting.com
(206) 493-2384

Proposed Participation Level: Tier One

Per the Policy adopted by the Puget Sound Gateway Funding and Phasing Subcommittee outlining three tiers of participation, the City of SeaTac commits to the following responsibilities as a **Tier 1** partner:

- **Contribute to local nexus projects.** The City would commit to providing funding and rights-of-way to local nexus projects that would constitute part of the SR 509 Completion Project. This would focus on the new alignment of SR 509 within the city, as well as associated improvements to the Lake to Sound Trail.
- **Sponsor, initiate and help write grants.** The City would commit to sponsoring grants for local nexus projects and overall project development, and provide staff support for grant writing as required.
- **Support project and grant requests.** The City would commit to supporting project and grant requests that are included under the Gateway Program. This includes providing letters of support to grant applications as necessary, and coordinating applications for other transportation funding to reduce conflicts.
- **Participate in project meetings and reviews.** The City would commit to participating in project meetings and project development reviews for the Puget Sound Gateway Program and allocate sufficient staff time for attendance and participation.

What Tiers are included under the assessments?

The Partner Assessments are structured around three Tiers that classify the levels of benefit received by each community along a continuum, and define the resource commitments to the Puget Sound Gateway Project:

- **Tier 1** communities are serviced directly by the new highway alignments, and receive significant direct benefits due to improved accessibility.
- **Tier 2** communities are located close to the new highway alignments, and receive moderate to high benefits due to improved accessibility.
- **Tier 3** communities receive overall benefits from improvements to regional accessibility, but only receive nominal benefits directly.

What Are the Net Benefits to the City of SeaTac?

The Puget Sound Gateway Program is expected to provide the following net benefits to the City of SeaTac:

Direct Effects

- **New linkages are created to regional and local transportation networks.** The new SR 509 alignment provides improved access between the airport and locations in the city from the north, and the 24th/28th Ave S connection improves local access to the airport from the south. This will also support access to the City's Regional Growth Center, and may be linked with the planned South Access Expressway in the future. **(1,3)**
- **Single and high-occupancy vehicles will experience low to moderate overall travel time savings.** Compared to the no-build scenario, there will be low improvements in commuting travel time. On average expect total travel time savings to range from negligible in the northern part of the city, to 2–5% in areas to the south served directly by new improvements. **(3)**
- **Moderate to high overall travel time savings for truck traffic due to local and regional network improvements.** Expect to see 4–8% overall time savings for the western portion of the city close to the Airport, with total time savings of less than 3% in other areas. **(3)**
- **Moderate truck traffic will be diverted from city streets onto new routes.** Expect a 15% reduction in truck traffic VMT for on local streets during AM peak periods and 22% during PM peaks, especially on SR 99 / International Blvd. Other significant benefits include reduced maintenance, capacity improvements, and local safety. **(4)**
- **SeaTac will receive significant sales tax revenue from project construction.** Based on a preliminary assessment of the new SR 509 alignment, SeaTac should receive about $3.9 million in local sales tax from construction activities. This is about 80% of the total sales taxes generated by cities from the SR 509 Completion Project, and 56% of this total will be received in Stage 1. **(2)**

Indirect Effects

- **SeaTac is highly dependent on maintaining regional connections, particularly with Sea-Tac International Airport.** The economy of SeaTac is strongly tied to the Airport, as 16,270 jobs, or 54% of local employment, are in the transportation and warehousing sector. This is related not only to the direct employment at the airport, but also related businesses that are dependent on access to the airport. Improving the travel times of truck transportation by up to 7% in the area can help to support the ongoing operation of these businesses. **(5)**
- **Improving accessibility and traffic congestion can promote development of vacant and underutilized lands.** Both improvements in accessibility and the management of congestion in the area can improve the attractiveness of residential and commercial development in the city, including areas in the current SeaTac Regional Growth Center **(5, 6, 7)**
- **Impacts on retail sales and associated taxes may be possible in certain locations due to the diversion of traffic.** For SR 99 / International Blvd, the diversion of traffic towards the southern access to the airport may reduce the customer draw for auto-oriented uses on this corridor when compared to the "no build" scenario. This may, in turn, impact retail sales, development, and City revenue from taxes. **(2, 4, 5)**

Social and Policy Effects

- **The 2015 Comprehensive Plan supports completing the SR 509 project by 2040.** The City has reinforced the need to complete the first phase of the SR 509 Completion Project prior to 2025 to facilitate the South Access Expressway for access to Sea-Tac International Airport. (Policy 4.1A, 4.2C) The full alignment is expected to be complete by 2040. (Policy 4.2F) **(8)**
- **The City's land use plan is dependent on the new SR 509 alignment.** Long-range land use planning in SeaTac is dependent on the completion of the new SR 509 alignment, and incorporates assumptions from this planning. (Policy 2.7D) **(8)**
- **Development of the 24th/28th Ave S extension as an arterial.** The City has worked to provide the 24th/28th Ave S extension to reduce congestion and delays related to airport traffic in the area. This project has been integrated with planning for the SR 509 alignment, and the new highway will include ramps to connect to this extension. (Policy 4.2D) **(8)**
- **Mitigation of impacts.** The Comprehensive Plan includes policies to consider the impacts of the SR 509 alignment and related projects on pedestrian infrastructure, residential streets, and bicycle routes. **(8)**
- **Riparian and wetlands mitigation and restoration in Des Moines Creek will be incorporated into the Program.** The Program includes significant restoration as part of the new SR 509 alignment to mitigate impacts of the project and restore wetlands and riparian areas in Des Moines Creek and its Park. **(9)**
- **The development of the final segment Lake to Sound Trail will be integrated with the construction of the new SR 509 alignment.** The final segment of the Lake to Sound Trail is planned as part of the SR 509 Completion Project. This project will complete the 16-mile non-motorized trail from Lake Washington to Puget Sound, which passes through Des Moines and will support regional pedestrian and cycling. **(9)**

Questions?

MEMORANDUM

To: Transportation and Public Works Committee
From: William Appleton, Public Works Director
Date: 4/10/2018
Subject: CATES Action Plan regarding Autonomous Vehicles

Purpose:

The submittal of an Action Plan focused on providing guidance for the City of SeaTac to justify supporting the deployment of advanced transportation technologies, specifically autonomous vehicles fulfills the terms of the contract entered into by the City of SeaTac and CATES. Recommendations flowing from this action plan will be presented by Mr. John Niles and next steps discussed.

Background:

On May 18, 2017, the City of SeaTac entered into a contract with the Center for Advanced Transportation and Energy Solutions (CATES) to develop an action plan with guidance for deploying advanced transportation technologies that have the potential to reduce accidents emissions and congestion, with the initial focus being on the feasibility of automated mobility services.

On June 29th, CATES conducted an orientation workshop briefing for Council and the public (Contract Deliverable 1) and discussed what the deployment of autonomous vehicles within the City might mean for citizens and local businesses and what resources would likely be required of City Government.

On September 25th, 2017, CATES submitted a Memo to the City on key findings from Stakeholders and immediate action steps to begin securing Federal funding (Contract Deliverable 2).

On October 16th, 2017, Deliverable 3 was provided to the City which consisted of a draft 50% action plan at the January 18th Transportation and Public Works Committee meeting; CATES provided and made a presentation on the 95% action plan at this meeting (Deliverable 4 &5).

Submittal of the final action plan (included in this packet) constitutes completion of the City's contract with CATES and provides City Council with a document describing how the City might best proceed with supporting the development/use of autonomous vehicles in SeaTac.

CATES

Center for Advanced Transportation and Energy Solutions

April 6, 2018
From: John Niles, Executive Research Director, CATES
To: City of SeaTac
Subject: Draft Final Action Plan for Development of Autonomous Vehicles

This document is an Action Plan providing guidance for the City of SeaTac to justify deploying advanced transportation technologies, specifically autonomous vehicles.

Executive Summary

The prospect of automation of road vehicle driving on public roads rose to widespread public prominence in October 2010 when the high-tech firm Google, famous for search technology, surprisingly announced that over the preceding year it had equipped several Prius sedans with sensors and electronic equipment for robotic driving. Google staff had then supervised the cars' unannounced movements over 140,000 accident-free miles on California roads and highways.

This effort has subsequently advanced in years since then until in 2018 Google formed a new company called Waymo, now seemingly demonstrating the ability to provide on-demand taxi-like rides in custom-built driverless Chrysler Pacifica hybrid vans in suburbs of the Phoenix metropolitan area. In San Francisco, General Motors in alliance with Cruise Automation is a competitor on the path to providing on-demand rides in an urban environment. There are other competitors emerging as well, including providers of automated, slow-speed microtransit vehicles, such as Easy Mile and Navya, focused on first/last mile service to transit hubs.

In reaction to automation developments at Google and in vehicle electrification, the Center for Advanced Transportation and Energy Solutions (CATES) was founded in 2012 in Seattle as a non-profit think tank to advance automated, electric–powered vehicles as a sustainable solution to transportation and energy problems in the central Puget Sound Region. First funding of CATES was from the University of Michigan's Graham Environmental Sustainability Institute, with later funding from the three King County subarea Transportation Boards.

In May 2017, after a period when Waymo, General Motors, Volvo and other private companies continued with further development of robotic driving, the City of SeaTac engaged CATES as a consultant to conduct research that explores and points to municipal action on the opportunity of using the City's public road network and economic development capacity to establish the viability of the City credibly labeling itself as a Municipal Center of Excellence in Automated

Vehicles. The consulting contract cost was set at $20,000 fixed price, with payment for deliverables. Deliverables to date have been posted on the SeaTac City website at http://www.ci.seatac.wa.us/government/city-departments/public-works/autonomous-vehicles

During the course of the CATES consulting engagement, the State of Washington has taken two significant actions supporting how the City of SeaTac and its consultant CATES have been proceeding. Governor Inslee in June 2017 issued executive order 17-02 on autonomous vehicle testing and technology, setting parameters for the development of driverless vehicles that CATES has incorporated into its work for SeaTac. In February 2018, the Legislature approved and the Governor concurred on the establishment of an autonomous vehicle working group of executive and legislative branch representatives to develop policy recommendations that address the operation of autonomous vehicles on public roadways.

> Note: CATES new recommendation to the State of Washington autonomous vehicle working group in response to the change in national perception of safety in autonomous vehicle development activities resulting from the Uber testing fatality in Arizona on March 18, 2018 is provided at http://cates.solutions/wp-content/uploads/2018/03/Statement-by-CATES-on-the-March-18-Uber-fatality-in-Arizona-March-302018.pdf

After exploring strengths and weaknesses, as well as opportunities and threats, CATES has found SeaTac positioning for "excellence" in vehicle automation as viable. "Excellence" requires doing something excellent, the details of which CATES have now developed for City consideration in this Action Plan. The work has been carried out by the CATES Executive Research Director John Niles, a public policy analyst focused on transportation technology over three decades, and now with a university-level textbook he co-authored, *The End of Driving: Transportation Systems and Public Policy Planning for Autonomous Vehicles* set to be published by Elsevier in summer 2018.

This Action Plan sets out this path of Excellence for City of SeaTac: As a way of attracting the attention of Waymo, or a competitor of Waymo, to deploy a driverless ride service in City of SeaTac, a good option is for the City to proceed to design a deployment of an automated electric on-demand shuttle micro-transit franchise operation delivered by a qualified public or private organization meeting a provable City of SeaTac residents' mobility demand and working within a framework of sustainable long-run economics. The City should specify a pilot deployment qualified for external Federal, private, and non-government organization funding with due regard for regulatory issues and in cooperation with agencies working on similar projects. This path is described further and justified below.

One basic choice for City response to this Action Plan is Go or No-Go on proceeding to reach the potentials available. Choosing No-GO supports focusing City leadership and staff attention on other priorities. However, the benefits of proceeding with the action on automated vehicles recommended are several:

- More community engagement in a high-tech future with benefits for residents and visitors
- Demonstrated City pursuit of enhanced mobility for all citizens, voters, and taxpayers
- Demonstrated official interest in mobility support for non-driver citizens both young and old
- New positive engagement with the new Autonomous Vehicle Working Group, King County Metro, Sound Transit, Puget Sound Regional Council, and other transportation main actors in the central Puget Sound region
- Demonstrated regional and national transportation improvement leadership
- Further engagement by the City with recognized national organizations like National League of Cities and Aspen/Bloomberg Charities. The latter has already recognized the project described here in its City of SeaTac in its Global Atlas of Autonomous Vehicles and Cities published on the web at https://avsincities.bloomberg.org/global-atlas/
- Some new local employment opportunities if the pilot project proceeds
- Enhanced civic pride from pursuing public service technology applications
- Positions the City for attracting other private sector initiatives related to vehicle automation

CATES has developed a menu of possibilities for going forward, ranging from further study of possibilities, to seeking outside funding and planning toward achieving near-term driverless, electric vehicle deployment for cost-effective public benefit.

All of the options to proceed include a strong recommendation from CATES that the City Council vote a Resolution of Action Plan endorsement and statement of Autonomous Vehicle Intentions with regard to implementation, in order to energize regional attention on a formal municipal decision to pursue excellence at one of three levels.

Level One: Work actively to move the findings and recommendations of the Action Plan into the deliberations of the State AV Working Group.

Recommended City of SeaTac Resolution for Level One:

A. WHEREAS, many motor vehicle collisions with other automobiles, bicycles, pedestrians, and fixed objects are caused by driver errors or impairment leading to deaths and injuries;

B. WHEREAS, technological advancement and business innovation has now resulted in the commercial availability of vehicles capable of moving on some public roads safely without constant, direct control by a human operator in the vehicle, and with full-time human monitoring via telecommunication to a fixed base site;

C. WHEREAS the State of Washington Governor has issued Executive Order 17-02 on autonomous vehicle technology development which serves to encourage the state's private sector and all levels of government to support safe deployment of automated vehicles for citizen benefit;

D. WHEREAS the State of Washington Legislature has passed, and the Governor has signed Substitute House Bill 2970 establishing an Autonomous Vehicle Working Group to develop policy recommendation to address the operation of autonomous vehicles (AVs) on public roadways in the state;

E. WHEREAS, the City Council has funded and embraced the development of an Action Plan document with specific steps to advance automated vehicle deployment in the City of SeaTac, and hereby offers it to its citizens and all others for discussion and supportive activities;

NOW THEREFORE, the City Council of SeaTac, Washington hereby declares itself a Center of Municipal Excellence in Automated Vehicle Policy Development because of taking the initiative in 2017 to begin planning for automated vehicle deployment in the City. The City will appoint a staff member as liaison between the City Government and the State's Autonomous Vehicle Working Group, and hereby will forward all materials developed by its consultant in the Action Plan to the Working Group for consideration in its deliberations on how the State of Washington and its county and municipal governments should proceed further on AVs.

Level Two: Study further a pilot deployment of AV service

All of the WHEREAS clauses above, plus some additional WHEREAS clauses and a different, alternative NOW THEREFORE action clause

F. WHEREAS, City of SeaTac has an interest in developing and maintaining a municipal leadership role in supporting the deployment of vehicles with automated driving capabilities on the City's public roadways in order to nurture, cultivate, and advance the beneficial impact of this technology application;

G. WHEREAS, the deployment of automated vehicles in the City will promote economic growth, bring new employment opportunity, provide research opportunities for the

State's academic institutions, and allow the State of Washington's leading airport City to serve as an easily accessible statewide and national demonstration site for innovative mobility services based on emerging new technologies;

H. WHEREAS, the safe deployment and operation of automated, electric or hybrid vehicles is likely to produce societal benefits cost-effectively, minimizing injuries and saving lives that would otherwise be lost to vehicle collisions, reclaiming time spent waiting for rides; maximizing the ability to move people and goods quickly and safely throughout the City, improving mobility for youth, elderly, disabled and other non-drivers, and serving to reduce atmospheric emissions;

NOW THEREFORE, the City Council of SeaTac, Washington hereby declares itself a Center of Municipal Excellence in Automated Vehicle Deployment to be evidenced henceforward by City staff pursuing available opportunities to propose changes in local and state laws impeding technology deployment and making technology deployment safer, to conduct further follow-on study activities recommended in the Action Plan in cooperation with the State Autonomous Vehicle Working Group, and to pursue opportunities in cooperation with other jurisdictions to conduct pilot projects demonstrating innovative excellence funded by the Federal Government and other external sources.

Level Three: Aggressively pursue implementation of an automated vehicle ride service pilot deployment within the City

All of the resolution language above, with the following additional language in the concluding action section:

NOW FURTHERMORE, the City Council of SeaTac, Washington directs the City Manager and City Staff to pursue deployment aggressively -- in cooperation with King County Metro Transit, Sound Transit, and the City of Bellevue Transportation Partnership program -- of automated ride services operating within City boundaries as described in the Action Plan, and coordinated with the provision of similar service access to and from other geographic locations in cooperating neighboring municipal jurisdictions and in the Sea-Tac Airport. Any such vehicles deployed in the City of SeaTac must be delivered for deployment pre-certified by competent authority to have highly reliable ability to detect pedestrians, cyclists, and motor vehicles in its path and then take action to prevent collisions with them.

Additional recommendation for all Levels

- Submit the Action Plan to the State AV Working Group for their review, and participate in future deliberations and activity of this group.

- Appoint a City representative and alternate assigned to liaison with the State AV Working Group who advocates for City of SeaTac as an early deployment site for mobility-as-a-service applications of autonomous vehicles.

Additional recommendations for Levels Two and Three

- Put the Action Plan resolution and other documents in public circulation to help ramp up public attention and interest, to encourage active engagement and collaboration with the City by citizen and business interests, neighboring jurisdictions, Port of Seattle, King County Metro, Sound Transit, non-governmental technology or mobility providers, and others – such as members of the ACES Northwest Network -- who step forward with an interest in this topic.
- City leaders embrace and actively describe a long-run vision of multi-vendor robotic mobility services that provide fleets of electric driverless vehicles – RoboCabs -- that will come on short notice to any location in the Puget Sound region to take a customer to any other location. General Motors, Ford, Volvo, Uber, Lyft, and Waymo all embrace a future for urban mobility consistent with this vision.
    - Such a service would be a strong competitor of private vehicle ownership, partially but not completely replacing consumer ownership of road vehicles. This would be consistent with proposed technology applications seen worldwide in visioning and simulation exercises and the subject of existing research, development, and testing activities.
    - A different, popular vision -- evolutionary embrace of increasingly automated vehicles owned and operated by private citizen-consumers who are SeaTac residents or visitors -- is well underway and does not require any special City action beyond keeping its roads and traffic signals in good repair.
    - The RoboCab vision contemplates motivating many citizens in the long run to drive their private vehicles less frequently. The future mobility service would carry SeaTac resident travelers across the last mile to rail and express bus services that remain in operation even after RoboCabs deploy ubiquitously, as well as to other local destinations, such as employee entrances to large employers, and the Senior Center.
- SeaTac's role in the deployment is to authorize, encourage, and regulate use of its street and signaling infrastructure, NOT to own and operate Robocabs. The fleet of Robocabs would be owned and operated by King County Metro, or by another government or non-profit organization, or by a private for-profit organization such as Waymo. The owner operator could potentially be a new organization founded for the purpose of operating an automated RoboCab service.

- As a way to support the vision, this Action Plan recommends that the City find a way to deploy an early, limited range pilot version of the long-run vision to provide enhanced mobility in the City's residential neighborhoods in cooperation with King County Metro, Sound Transit, the Hyde Shuttle, and the City of Bellevue Transportation Partnership Office. City of Bellevue is also planning for a pilot deployment of electric shuttles within its jurisdiction.
- The pilot deployment explored in this Action Plan is a small fleet of driver-less shuttle mini-buses or vans on City roads providing convenient, affordable, quiet, accessible mobility for passengers in residential neighborhoods traveling to light rail stations, community centers, shopping areas, and employment locations.
    - Although not RoboCabs, electric shuttle buses are precursors. These small, boxy passenger carriers are ready to be deployed in driverless motion now. Details are provided in the Appendix. Vehicles such as these have the potential to provide mobility that is safer, less expensive, and non-polluting compared to today's available alternatives. Such vehicles from several manufacturers are already being tested and deployed in cities around the world. CATES has conducted some preliminary analysis to verify economic feasibility and sufficient paid ridership to justify investment of management attention by the SeaTac municipality.
    - The cost of the pilot would in effect be a first round of development for all of South King County and beyond, and thus appropriately covered not by taxation of the 28,000 SeaTac residents, but by external funding and in-kind support within existing SeaTac responsibilities. Several specific Federal funding opportunities are described in this Action Plan.
    - Cooperation, coordination, and co-sponsorship with other municipal jurisdictions is recommended as a way to achieve an attractive scale for investors and economies of scale in operations. City of Tukwila, in particular, has given indications of interest in participating, as well as City of Bellevue, the latter now doing parallel development and being a potential partner in obtaining regional financial support from U.S. Department of Transportation.
    - First/last mile service to the Link light rail and Rapid Ride combined transit stations would be a key element of the pilot to engage and maintain support of Sound Transit and King County Metro Transit.
    - This should be a service deployment, not a technology experiment.
- The pilot should be designed to be consistent with a plan for the long-run financial sustainability of mobility as a service as the geographic coverage area expands. CATES has provided sample calculations as part of its work for the City.

- This Action Plan proposes a step by step series of staged deployments beginning in 2019 with microtransit first to the Tukwila light rail and BRT station and other destinations in the Riverton Heights neighborhood, including the Sea-Tac Airport employee access point and the Boeing Parts Distribution Center. Again, the pilot would be supported with developmental funding from the U.S. Government and quite possibly, private entrepreneurial risk capital that recognizes the advantages of working with a willing municipal customer in a highly visible, easily accessible geographic location.

Additional detail is provided in the 95% submission document for the 68 page Action Plan submitted January 17, 2018.

CATES

Center for Advanced Transportation and Energy Solutions

April 6, 2018
From: John Niles, Executive Research Director, CATES
To: City of SeaTac
Subject: Draft Final Action Plan for Development of Autonomous Vehicles

This document is an Action Plan providing guidance for the City of SeaTac to justify deploying advanced transportation technologies, specifically autonomous vehicles.

Executive Summary

The prospect of automation of road vehicle driving on public roads rose to widespread public prominence in October 2010 when the high-tech firm Google, famous for search technology, surprisingly announced that over the preceding year it had equipped several Prius sedans with sensors and electronic equipment for robotic driving. Google staff had then supervised the cars' unannounced movements over 140,000 accident-free miles on California roads and highways.

This effort has subsequently advanced in years since then until in 2018 Google formed a new company called Waymo, now seemingly demonstrating the ability to provide on-demand taxi-like rides in custom-built driverless Chrysler Pacifica hybrid vans in suburbs of the Phoenix metropolitan area. In San Francisco, General Motors in alliance with Cruise Automation is a competitor on the path to providing on-demand rides in an urban environment. There are other competitors emerging as well, including providers of automated, slow-speed microtransit vehicles, such as Easy Mile and Navya, focused on first/last mile service to transit hubs.

In reaction to automation developments at Google and in vehicle electrification, the Center for Advanced Transportation and Energy Solutions (CATES) was founded in 2012 in Seattle as a non-profit think tank to advance automated, electric–powered vehicles as a sustainable solution to transportation and energy problems in the central Puget Sound Region. First funding of CATES was from the University of Michigan's Graham Environmental Sustainability Institute, with later funding from the three King County subarea Transportation Boards.

In May 2017, after a period when Waymo, General Motors, Volvo and other private companies continued with further development of robotic driving, the City of SeaTac engaged CATES as a consultant to conduct research that explores and points to municipal action on the opportunity of using the City's public road network and economic development capacity to establish the viability of the City credibly labeling itself as a Municipal Center of Excellence in Automated

Vehicles. The consulting contract cost was set at $20,000 fixed price, with payment for deliverables. Deliverables to date have been posted on the SeaTac City website at http://www.ci.seatac.wa.us/government/city-departments/public-works/autonomous-vehicles

During the course of the CATES consulting engagement, the State of Washington has taken two significant actions supporting how the City of SeaTac and its consultant CATES have been proceeding. Governor Inslee in June 2017 issued executive order 17-02 on autonomous vehicle testing and technology, setting parameters for the development of driverless vehicles that CATES has incorporated into its work for SeaTac. In February 2018, the Legislature approved and the Governor concurred on the establishment of an autonomous vehicle working group of executive and legislative branch representatives to develop policy recommendations that address the operation of autonomous vehicles on public roadways.

> Note: CATES new recommendation to the State of Washington autonomous vehicle working group in response to the change in national perception of safety in autonomous vehicle development activities resulting from the Uber testing fatality in Arizona on March 18, 2018 is provided at http://cates.solutions/wp-content/uploads/2018/03/Statement-by-CATES-on-the-March-18-Uber-fatality-in-Arizona-March-302018.pdf

After exploring strengths and weaknesses, as well as opportunities and threats, CATES has found SeaTac positioning for "excellence" in vehicle automation as viable. "Excellence" requires doing something excellent, the details of which CATES have now developed for City consideration in this Action Plan. The work has been carried out by the CATES Executive Research Director John Niles, a public policy analyst focused on transportation technology over three decades, and now with a university-level textbook he co-authored, *The End of Driving: Transportation Systems and Public Policy Planning for Autonomous Vehicles* set to be published by Elsevier in summer 2018.

This Action Plan sets out this path of Excellence for City of SeaTac: As a way of attracting the attention of Waymo, or a competitor of Waymo, to deploy a driverless ride service in City of SeaTac, a good option is for the City to proceed to design a deployment of an automated electric on-demand shuttle micro-transit franchise operation delivered by a qualified public or private organization meeting a provable City of SeaTac residents' mobility demand and working within a framework of sustainable long-run economics. The City should specify a pilot deployment qualified for external Federal, private, and non-government organization funding with due regard for regulatory issues and in cooperation with agencies working on similar projects. This path is described further and justified below.

One basic choice for City response to this Action Plan is Go or No-Go on proceeding to reach the potentials available. Choosing No-GO supports focusing City leadership and staff attention on other priorities. However, the benefits of proceeding with the action on automated vehicles recommended are several:

- More community engagement in a high-tech future with benefits for residents and visitors
- Demonstrated City pursuit of enhanced mobility for all citizens, voters, and taxpayers
- Demonstrated official interest in mobility support for non-driver citizens both young and old
- New positive engagement with the new Autonomous Vehicle Working Group, King County Metro, Sound Transit, Puget Sound Regional Council, and other transportation main actors in the central Puget Sound region
- Demonstrated regional and national transportation improvement leadership
- Further engagement by the City with recognized national organizations like National League of Cities and Aspen/Bloomberg Charities. The latter has already recognized the project described here in its City of SeaTac in its Global Atlas of Autonomous Vehicles and Cities published on the web at https://avsincities.bloomberg.org/global-atlas/
- Some new local employment opportunities if the pilot project proceeds
- Enhanced civic pride from pursuing public service technology applications
- Positions the City for attracting other private sector initiatives related to vehicle automation

CATES has developed a menu of possibilities for going forward, ranging from further study of possibilities, to seeking outside funding and planning toward achieving near-term driverless, electric vehicle deployment for cost-effective public benefit.

All of the options to proceed include a strong recommendation from CATES that the City Council vote a Resolution of Action Plan endorsement and statement of Autonomous Vehicle Intentions with regard to implementation, in order to energize regional attention on a formal municipal decision to pursue excellence at one of three levels.

Level One: Work actively to move the findings and recommendations of the Action Plan into the deliberations of the State AV Working Group.

Recommended City of SeaTac Resolution for Level One:

A. WHEREAS, many motor vehicle collisions with other automobiles, bicycles, pedestrians, and fixed objects are caused by driver errors or impairment leading to deaths and injuries;

B. WHEREAS, technological advancement and business innovation has now resulted in the commercial availability of vehicles capable of moving on some public roads safely without constant, direct control by a human operator in the vehicle, and with full-time human monitoring via telecommunication to a fixed base site;

C. WHEREAS the State of Washington Governor has issued Executive Order 17-02 on autonomous vehicle technology development which serves to encourage the state's private sector and all levels of government to support safe deployment of automated vehicles for citizen benefit;

D. WHEREAS the State of Washington Legislature has passed, and the Governor has signed Substitute House Bill 2970 establishing an Autonomous Vehicle Working Group to develop policy recommendation to address the operation of autonomous vehicles (AVs) on public roadways in the state;

E. WHEREAS, the City Council has funded and embraced the development of an Action Plan document with specific steps to advance automated vehicle deployment in the City of SeaTac, and hereby offers it to its citizens and all others for discussion and supportive activities;

NOW THEREFORE, the City Council of SeaTac, Washington hereby declares itself a Center of Municipal Excellence in Automated Vehicle Policy Development because of taking the initiative in 2017 to begin planning for automated vehicle deployment in the City. The City will appoint a staff member as liaison between the City Government and the State's Autonomous Vehicle Working Group, and hereby will forward all materials developed by its consultant in the Action Plan to the Working Group for consideration in its deliberations on how the State of Washington and its county and municipal governments should proceed further on AVs.

Level Two: Study further a pilot deployment of AV service

All of the WHEREAS clauses above, plus some additional WHEREAS clauses and a different, alternative NOW THEREFORE action clause

F. WHEREAS, City of SeaTac has an interest in developing and maintaining a municipal leadership role in supporting the deployment of vehicles with automated driving capabilities on the City's public roadways in order to nurture, cultivate, and advance the beneficial impact of this technology application;

G. WHEREAS, the deployment of automated vehicles in the City will promote economic growth, bring new employment opportunity, provide research opportunities for the

State's academic institutions, and allow the State of Washington's leading airport City to serve as an easily accessible statewide and national demonstration site for innovative mobility services based on emerging new technologies;

H. WHEREAS, the safe deployment and operation of automated, electric or hybrid vehicles is likely to produce societal benefits cost-effectively, minimizing injuries and saving lives that would otherwise be lost to vehicle collisions, reclaiming time spent waiting for rides; maximizing the ability to move people and goods quickly and safely throughout the City, improving mobility for youth, elderly, disabled and other non-drivers, and serving to reduce atmospheric emissions;

NOW THEREFORE, the City Council of SeaTac, Washington hereby declares itself a Center of Municipal Excellence in Automated Vehicle Deployment to be evidenced henceforward by City staff pursuing available opportunities to propose changes in local and state laws impeding technology deployment and making technology deployment safer, to conduct further follow-on study activities recommended in the Action Plan in cooperation with the State Autonomous Vehicle Working Group, and to pursue opportunities in cooperation with other jurisdictions to conduct pilot projects demonstrating innovative excellence funded by the Federal Government and other external sources.

Level Three: Aggressively pursue implementation of an automated vehicle ride service pilot deployment within the City

All of the resolution language above, with the following additional language in the concluding action section:

NOW FURTHERMORE, the City Council of SeaTac, Washington directs the City Manager and City Staff to pursue deployment aggressively -- in cooperation with King County Metro Transit, Sound Transit, and the City of Bellevue Transportation Partnership program -- of automated ride services operating within City boundaries as described in the Action Plan, and coordinated with the provision of similar service access to and from other geographic locations in cooperating neighboring municipal jurisdictions and in the Sea-Tac Airport. Any such vehicles deployed in the City of SeaTac must be delivered for deployment pre-certified by competent authority to have highly reliable ability to detect pedestrians, cyclists, and motor vehicles in its path and then take action to prevent collisions with them.

Additional recommendation for all Levels

- Submit the Action Plan to the State AV Working Group for their review, and participate in future deliberations and activity of this group.

- Appoint a City representative and alternate assigned to liaison with the State AV Working Group who advocates for City of SeaTac as an early deployment site for mobility-as-a-service applications of autonomous vehicles.

Additional recommendations for Levels Two and Three

- Put the Action Plan resolution and other documents in public circulation to help ramp up public attention and interest, to encourage active engagement and collaboration with the City by citizen and business interests, neighboring jurisdictions, Port of Seattle, King County Metro, Sound Transit, non-governmental technology or mobility providers, and others – such as members of the ACES Northwest Network -- who step forward with an interest in this topic.
- City leaders embrace and actively describe a long-run vision of multi-vendor robotic mobility services that provide fleets of electric driverless vehicles – RoboCabs -- that will come on short notice to any location in the Puget Sound region to take a customer to any other location. General Motors, Ford, Volvo, Uber, Lyft, and Waymo all embrace a future for urban mobility consistent with this vision.
    - Such a service would be a strong competitor of private vehicle ownership, partially but not completely replacing consumer ownership of road vehicles. This would be consistent with proposed technology applications seen worldwide in visioning and simulation exercises and the subject of existing research, development, and testing activities.
    - A different, popular vision -- evolutionary embrace of increasingly automated vehicles owned and operated by private citizen-consumers who are SeaTac residents or visitors -- is well underway and does not require any special City action beyond keeping its roads and traffic signals in good repair.
    - The RoboCab vision contemplates motivating many citizens in the long run to drive their private vehicles less frequently. The future mobility service would carry SeaTac resident travelers across the last mile to rail and express bus services that remain in operation even after RoboCabs deploy ubiquitously, as well as to other local destinations, such as employee entrances to large employers, and the Senior Center.
- SeaTac's role in the deployment is to authorize, encourage, and regulate use of its street and signaling infrastructure, NOT to own and operate Robocabs. The fleet of Robocabs would be owned and operated by King County Metro, or by another government or non-profit organization, or by a private for-profit organization such as Waymo. The owner operator could potentially be a new organization founded for the purpose of operating an automated RoboCab service.

- As a way to support the vision, this Action Plan recommends that the City find a way to deploy an early, limited range pilot version of the long-run vision to provide enhanced mobility in the City's residential neighborhoods in cooperation with King County Metro, Sound Transit, the Hyde Shuttle, and the City of Bellevue Transportation Partnership Office. City of Bellevue is also planning for a pilot deployment of electric shuttles within its jurisdiction.
- The pilot deployment explored in this Action Plan is a small fleet of driver-less shuttle mini-buses or vans on City roads providing convenient, affordable, quiet, accessible mobility for passengers in residential neighborhoods traveling to light rail stations, community centers, shopping areas, and employment locations.
    - Although not RoboCabs, electric shuttle buses are precursors. These small, boxy passenger carriers are ready to be deployed in driverless motion now. Details are provided in the Appendix. Vehicles such as these have the potential to provide mobility that is safer, less expensive, and non-polluting compared to today's available alternatives. Such vehicles from several manufacturers are already being tested and deployed in cities around the world. CATES has conducted some preliminary analysis to verify economic feasibility and sufficient paid ridership to justify investment of management attention by the SeaTac municipality.
    - The cost of the pilot would in effect be a first round of development for all of South King County and beyond, and thus appropriately covered not by taxation of the 28,000 SeaTac residents, but by external funding and in-kind support within existing SeaTac responsibilities. Several specific Federal funding opportunities are described in this Action Plan.
    - Cooperation, coordination, and co-sponsorship with other municipal jurisdictions is recommended as a way to achieve an attractive scale for investors and economies of scale in operations. City of Tukwila, in particular, has given indications of interest in participating, as well as City of Bellevue, the latter now doing parallel development and being a potential partner in obtaining regional financial support from U.S. Department of Transportation.
    - First/last mile service to the Link light rail and Rapid Ride combined transit stations would be a key element of the pilot to engage and maintain support of Sound Transit and King County Metro Transit.
    - This should be a service deployment, not a technology experiment.
- The pilot should be designed to be consistent with a plan for the long-run financial sustainability of mobility as a service as the geographic coverage area expands. CATES has provided sample calculations as part of its work for the City.

- This Action Plan proposes a step by step series of staged deployments beginning in 2019 with microtransit first to the Tukwila light rail and BRT station and other destinations in the Riverton Heights neighborhood, including the Sea-Tac Airport employee access point and the Boeing Parts Distribution Center. Again, the pilot would be supported with developmental funding from the U.S. Government and quite possibly, private entrepreneurial risk capital that recognizes the advantages of working with a willing municipal customer in a highly visible, easily accessible geographic location.

Additional detail is provided in the 95% submission document for the 68 page Action Plan submitted January 17, 2018.

Action Plan for Automated Vehicle Deployment Excellence in City of SeaTac, WA

John Niles

Center for Advanced Transportation and Energy Solutions -- CATES

January 17, 2018

Consultant Draft for Comment, 95% Submission

No City of SeaTac Policies and No City Decisions are Shown in This Document

Executive Summary Part 1

- City of SeaTac engaged the CATES think tank in May 2017 to explore the opportunity of doing something with its road network and economic development capacity to establish itself as a Municipal Center of Excellence in Automated Vehicles.
- CATES recommends the City embrace a long-run vision of multi-vendor robotic mobility services that provide fleets of electric driverless vehicles – RoboCabs -- that will come on short notice to any location in the Puget Sound region to take a customer to any other location. General Motors, Ford, Volvo, Uber, Lyft, and Waymo all embrace a future for urban mobility consistent with this vision.
- A different, popular vision -- evolutionary embrace of increasingly automated vehicles owned and operated by private citizen-consumers who are SeaTac residents or visitors -- is well underway and does not require any special City action beyond keeping its roads and traffic signals in good repair.
- The RoboCab vision contemplates motivating many citizens in the long run to drive their private vehicles less frequently. The future mobility service would carry SeaTac resident travelers across the last mile to rail and express bus services that remain in operation even after RoboCabs deploy ubiquitously, as well as to other local destinations, such as employee entrances to large employers, and the Senior Center.
- As a way to support the vision, this Action Plan suggests the City find a way to deploy an early, limited range pilot version of the long-run vision to provide enhanced mobility in the City's residential neighborhoods in cooperation with King County Metro, Sound Transit, and the Hyde Shuttle.
- SeaTac's role in the deployment is to authorize, encourage, and regulate use of its street infrastructure, NOT to own and operate Robocabs. The fleet of Robocabs would be owned and operated by King County Metro, or by another government or non-profit organization, or by a private for-profit organization. The owner operator could potentially be a new organization founded for the purpose of operating an automated RoboCab service.

Executive Summary Part 2

- The pilot deployment explored in this Action Plan is a small fleet of driver-less shuttle mini-buses or vans on City roads providing convenient, affordable, quiet, accessible mobility for passengers in residential neighborhoods traveling to light rail stations, community centers, shopping areas, and employment locations.
- Although not RoboCabs, electric shuttle buses are precursors. These small, boxy passenger carriers are ready to be driverless now. Vehicles such as these have the potential to provide mobility that is safer, less expensive, and non-polluting compared to today's available alternatives. Such vehicles from several manufacturers are already being tested and deployed in cities around the world. CATES has conducted some preliminary analysis to verify economic feasibility and sufficient paid ridership to justify investment of management attention by the SeaTac municipality.
- The cost of the pilot would be a case of development for all of South King County and beyond, and thus appropriately covered not by taxation of the 28,000 SeaTac residents, but by external funding and in-kind support within existing SeaTac responsibilities. Specific Federal funding opportunities are described in this Action Plan.
- Cooperation, coordination, and co-sponsorship with other municipal jurisdictions is recommended.
- **This recommended approach and plan is offered as a City Council decision point: Go or No-go.**
- The recommended plan is consistent with the coverage of a book being co-authored by the CATES consultant and accepted for publication in 2018 by Elsevier, a leading worldwide textbook publisher for university students. Title of the book is *The End of Driving: Transportation Systems and Public Policy Planning for Autonomous Vehicles*

Action Steps for City Consideration in Go or No Go on Decision to Move Forward

- Important first step: Council approval of official City declaration of its status as Automated Vehicle Center of Excellence; draft Council resolution provided below.
- Endorsement of the CATES authored Action Plan would be included in the Council resolution.
- Council and staff embrace the Action Plan vision for long-run deployment of automated vehicles in the Puget Sound region, as follows: A robo-cab mobility-on-demand ride service available to anywhere in the region from Tacoma to Everett, available for customer pick up in 3-minutes or less. Such a service would be a strong competitor of private vehicle ownership, partially but not completely replacing consumer ownership of road vehicles. This would be consistent with proposed technology applications seen worldwide in visioning and simulation exercises and the subject of existing research, development, and testing activities.
- City of SeaTac would take a first step toward this vision by authorizing policy and staff support at existing resource levels for a regionally-significant pilot deployment on City right of way to illustrate level of citizen acceptance and use of on-demand automated mobility. This would be a service deployment, not a technology experiment. Funding of further development work and capital resources would be raised from external sources. Cooperation and coordination with neighboring municipalities and other regional municipalities that embrace the SeaTac vision would be best to achieve an attractive scale for investors and economies of scale in operations.
- First/last mile service to the Link light rail and Rapid Ride combined transit stations would be a key element of the pilot to engage and maintain support of Sound Transit and King County Metro Transit.
- The pilot would be designed to be consistent with a plan for the long-run financial sustainability of mobility as a service as the geographic coverage area expands.
- This Action Plan proposes a step by step series of staged deployments beginning in 2018 with microtransit first to Tukwila light rail station and other destinations. The pilot would have to be supported with developmental funding from U.S. Government and private entrepreneurial risk capital.

Benefits of Go and of No Go

- Benefits to City of SeaTac in Proceeding with Action Plan
  - More community engagement in a high-tech future
  - Demonstrated City pursuit of enhanced mobility for all citizens, voters, and taxpayers
  - Demonstrated official interest in mobility support for non-driver citizens both young and old
  - New positive engagement with King County Metro, Sound Transit, and Puget Sound Regional Council
  - Demonstrated regional and national transportation improvement leadership
  - Further engagement with national organizations like National League of Cities and Aspen/Bloomberg
  - Some new local employment opportunities if the pilot project proceeds
  - Enhanced civic pride from pursuing public service technology applications
  - Positions the City for attracting other private sector initiatives related to vehicle automation
- Benefits of No Further Action Now
  - Reduces the risk of poor publicity if external fund-raising fails, pilot project is unable to launch, or pilot operation fails to attract sufficient ridership
  - Allows focusing of City leadership and staff attention on other priorities
- Risk Mitigation Steps in Proceeding
  - Put limits on City financial investment
  - Establish milestone goals and periodic performance reviews
  - Maintain a back-up Plan B to attract private sector alternative proposals
  - Be willing to stop or modify project activity at any time

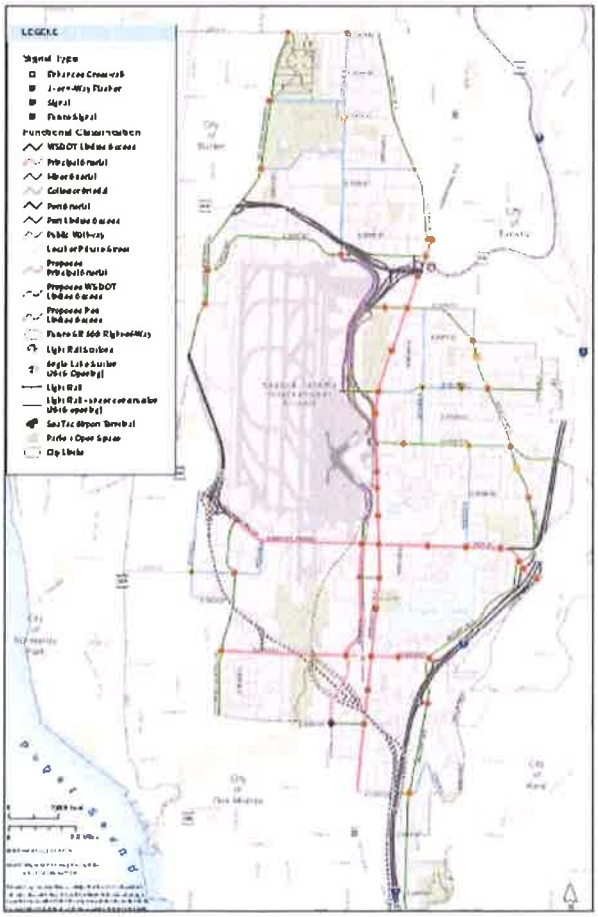
Table of Contents

INTRODUCTION

City of SeaTac

SeaTac is a municipality with a population of about 28,000 residents and 10 square miles of territory, located halfway between the cities of Seattle and Tacoma. Within the city limits are 79 center-line miles of public roads. Sea-Tac International Airport is located entirely within the city boundaries. The City of SeaTac operates under the Council-Manager form of government, consisting of seven elected Council members and a professional City Manager hired by the City Council.

Since its founding in February 1990, the City has improved its roadways including International Boulevard, and provided sidewalks and medians to improve safety. The City works closely with four neighboring cities, Puget Sound Regional Council, Port of Seattle, King County Metro, Sound Transit, and State of Washington on transportation issues, including mobility improvement projects like the one described in this document. The City website is http://www.ci.seatac.wa.us/ .



Background Information

- City of SeaTac engaged the non-profit Center for Advanced Transportation and Energy Solutions (CATES) to conduct research on the viability of the City becoming a Center of Municipal Excellence in automated, driver-less vehicle deployment for cost-effective public benefit. This document, an Action Plan, is the main product of the engagement.
- CATES has developed this Action Plan document to provide guidance to the City on whether and how to proceed on developing and implementing processes of learning, teaching, fundraising, and procurement of new technology applications for using high-tech automated vehicles to provide better mobility in the City of SeaTac.
- With this document in circulation to help stir up interest, active engagement and collaboration is sought by CATES and the SeaTac Public Works Department with citizen and business interests, neighboring jurisdictions, Port of Seattle, King County Metro, Sound Transit, non-governmental technology or mobility providers, and others – such as members of the ACES Northwest Network -- who step forward with an interest in this topic.
- All of the work in this project is consistent with the June 7, 2017 State of Washington Executive Order 17-02 on autonomous vehicle testing and technology, as well as local, state, and Federal regulations.
- CATES is a non-profit policy research & design organization headquartered in Seattle. It carries out technical and management consulting, provides policy advisory services to governments and businesses, and conducts contract research on road vehicle automation and electrification. Past clients include Mineta Transportation Institute at San Jose State University, Graham Environmental Sustainability Institute at University of Michigan, and the three King County Transportation Boards. The CATES website is http://aboutcates.org.
- Intermediate work products provided by CATES in this engagement are posted at http://www.ci.seatac.wa.us/government/city-departments/public-works/autonomous-vehicles

Recommended Draft Resolution, City of SeaTac

- **WHEREAS, many motor vehicle collisions with other automobiles, bicycles, pedestrians, and fixed objects are caused by driver errors or impairment leading to deaths and injuries;**
- **WHEREAS, technological advancement and business innovation has now resulted in the commercial availability of vehicles capable of moving on some public roads safely without constant, direct control by a human operator;**
- **WHEREAS the State of Washington has issued Executive Order 17-02 on autonomous vehicle technology development which serves to encourage the state's private sector and all levels of government to support safe deployment of automated vehicles for citizen benefit;**
- **WHEREAS, City of SeaTac has an interest in developing and maintaining a municipal leadership role in supporting the deployment of vehicles with automated driving capabilities on public City roadways in order to nurture, cultivate, and advance the beneficial impact of this technology application;**
- **WHEREAS, the deployment of automated vehicles in the City will promote economic growth, bring new employment opportunity, provide research opportunities for the State's academic institutions, and allow the State of Washington's leading airport City to serve as an easily accessible statewide and national demonstration site for innovative mobility services based on emerging new technologies;**
- **WHEREAS, the safe deployment and operation of automated, electric or hybrid vehicles is likely to produce societal benefits cost-effectively, minimizing injuries and saving lives that would otherwise be lost to vehicle collisions, reclaiming time spent waiting for rides; maximizing the ability to move people and goods quickly and safely throughout the City, improving mobility for youth, elderly, disabled and other non-drivers, and serving to reduce atmospheric emissions;**
- **WHEREAS, the City Council has funded and embraced the development of an Action Plan document with specific steps to advance automated vehicle deployment in the City of SeaTac, and hereby offers it to its citizens and all others for discussion and supportive activities;**
- **NOW THEREFORE, the City Council of SeaTac, Washington hereby declares itself a Center of Municipal Excellence in Automated Vehicle Deployment to be evidenced henceforward by City staff pursuing available opportunities to propose changes in local and state laws impeding technology deployment, to pursue opportunities in cooperation with other jurisdictions to conduct pilot projects demonstrating innovative excellence funded by the Federal Government and other external sources, and to aggressively pursue deployment of automated ride services operating within City boundaries as well as providing access to other geographic locations in cooperating neighboring jurisdictions.**

City Supports Puget Sound Regional Council Transportation Plan on Automation

- Here is the first listed highlight of the PSRC Plan, now open for regional review through January 31!
- "A new regional approach to getting ready for autonomous, connected, shared and electric vehicles."
- Specifically, using PSRC's summary of Appendix N on technology:
  - Establish a technology advisory committee, with diverse stakeholders, to help the region prepare for and foster emerging technologies. Topics to explore include legal frameworks, liability issues, and technical specifications to support new technologies.
  - Update the region's ITS Implementation Plan (RITSIP) to better reflect existing conditions, current needs, and projected changes due to emerging technologies.
  - Continue to enhance regional models to analyze the effect of autonomous and electric vehicles, shared mobility, and new technology on the transportation system and travel behavior.
  - Facilitate regional discussions to identify opportunities to support private sector projects and partnerships and the deployment of pilot programs

Recommended Supplementary Reading

- Waymo Safety Report
- General Motors report to investment community
- Volvo DriveMe test of autonomous vehicles
- "The car of the future isn't a car at all"
- "The Future Car Is Driverless, Shared and Electric" | UC Davis
- PSRC 2018 Transportation Plan review draft, Technology Appendix N
- "Ontario Must Prepare for Automated Vehicles," Parts One and Two
- Pilot Project Financial Model (Excel spreadsheet)
- "Connectivity and Communication" by Tony Billera, CATES

Contract to Develop AV in City of SeaTAC

- City engaged non-profit Center for Advanced Transportation and Energy Solutions (CATES) as a consultant in May, 2017
- Assignment is to determine through research the viability of the City becoming a Center of Municipal Excellence in Vehicle Automation, focused on immediate driver-less vehicle deployment for cost-effective public benefit.
- Consulting contract cost is $20,000 fixed price: pay for deliverables.
- CATES has found SeaTac positioning for "excellence" as viable.
- This document is a 95% draft of an Action Plan describing further steps for City to be a Center of Excellence.
- "Excellence" requires doing something excellent, the details of which CATES have now developed for City consideration.
- The basic option for City action is Go or No-Go to become a Center of Excellence. The option to proceed has been developed with a menu of possibilities for going forward.

Responses to Contract Scope I

Contract Scope Point	Page Numbers
[1] Overview of state of the art in road vehicle automation and specification of a process for monitoring ongoing advances. The relationship of this road vehicle automation field to the larger field of Intelligent Transportation Systems (ITS) will be described.	17-27
[2] Develop an overall vision for deployment of advanced vehicle automation in City of SeaTac, to provide benefit to residents and businesses in City of SeaTac, and with special attention to the Sea-Tac Airport and its millions of users annually.	36
[3] Conduct a Strengths/weaknesses/opportunities/threats (SWOT) analysis of SeaTac with respect to autonomous vehicle deployment. Strengths include a manageable geographic area, a committed municipal jurisdiction, and location in a high-tech industry region of the nation, including its proximity to SeaTac airport and its unique regional needs for mobility.	34
[4] Develop recommendations on how to exploit strengths and opportunities, and ideas listed for overcoming weaknesses and threats	2-5
[5] Develop reasonable goals and targets for years one, two, and three of future work by and for SeaTac in autonomous vehicle deployment. A focus on a positive benefit-to-cost ratio would be maintained for use of any City Government resources. Both Federal Government and private sector investment would be programmed into the Action Plan.	50
[6] Document results of conferring with City operating officials Joseph Scorcio (City Manager), William Appleton (Public Works), Jeff Robinson (Community and Economic Development), and other City staff	37-38
[7] Provide an outline of the coordination required with King County Metro and other agencies, Sound Transit, Puget Sound Regional Council, Port of Seattle, agencies of the State of Washington, and Federal Government agencies. Include a catalog of incentives and impediments in the Action Plan.	61
[8] Provide an assessment of support from local businesses in City of SeaTac, such as SeaTac Airport related facilities and services.	36

Responses to Contract Scope II

Contract Scope Point	Page Numbers
[9] Provide an assessment of support from the four neighboring jurisdictions Burien, Tukwila, Des Moines, and Kent	56
[10] Provide a summary of findings from interviews with stakeholders external to City of SeaTac, as determined by CATES and as suggested by the City. These stakeholders will include taxicab companies, and Internet-based ride-hailing providers such as Uber and Lyft. Forecast implications of future automated ride services will be sought from incumbent providers of mobility services.	37-38
[11] Provide an outline of four potential service deployments. For example: 1) transport of arriving/departing passengers from SeaTac Airport to and from local hotels; 2) transport of arriving/departing passengers from SeaTac Airport transportation center to and from long-term parking; 3) connecting "last mile" transit services to and from light rail stations; 4) transport to and from off airport rental car services.	35
[12] Provide an outline of a partnership between one or more car companies and one or more in-city SeaTac parking structures to deploy a self-driving parking system similar to systems being developed and deployed in Europe.	64
[13] Provide an outline of the State and Federal legal framework which to which automation must comply, and a list of further legal topics on which further research is required. The Federal legal framework explicitly includes the document issued by the U.S. Government, National Highway Traffic Administration titled "Federal Automated Vehicles Policy" issued September 2016 and posted at https://one.nhtsa.gov/nhtsa/av/av-policy.html .	55
[14] Preparation of a list of potentially needed City legislation additions and modifications to facilitate the use of autonomous vehicles within the City of SeaTac	58
[15] Provide documentation of initial contacts with nationwide technical resources and potential partners in the private sector, including but not limited to GM, Ford, Tesla, Local Motors, EasyMile, Lyft, Uber, ReachNow, INRIX, Microsoft, and Paccar.	37

Responses to Contract Scope III

Contract Scope Point	Page Numbers
[16] Conduct an initial traffic flow analysis and classification of suitability of driverless services on specified City streets	44-47
[17] Provide a step-by-step plan applicable to any sites or routes for deploying Level 5 automated shuttles, at a level of detail necessary to submit for U.S. DOT grant funding for technology deployment, testing, demonstration, and evaluation.	Entire document
[18] Provide an outline of resources required for SeaTac to move forward, including assessment of opportunities for securing Federal resources from USDOT, Energy, and Commerce.	59-60
[19] Provide recommended next steps for the City of SeaTac to secure Federal funding to become deployment ready for vehicle automation.	59-60
[20] Consultants' exploration of options to be described in the Action Plan will also incorporate an assessment of the potential for including a crime prevention and public safety patrol element in future deployments of automated mobility services. The technical, implementation and legal aspects of this concept will be explored.	65
[21] Consultants' recommendations will include an assessment of telecommunications requirements placed on the public and private sectors over the next five years for the required level of wireline and wireless telecommunications supporting growing and potential future vehicle automation, including an estimate of the range of financial costs likely to be placed on the City of SeaTac. Telecommunications modes to be covered include 4G and 5G wireless as promoted by the cellular industry, dedicated short range communications (DSRC) as promoted by USDOT, and expanded mesh networks and Bluetooth coverage as promoted by potential providers.	54; on 12, the referenced paper by Tony Billera

AV TECHNOLOGY OVERALL

Vehicle Automation Technologies

- **Automated Vehicles (AVs)** are vehicles in which at least one element of vehicle control (e.g., steering, speed control) occurs without direct driver input
- AVs work by gathering information from a suite of **sensors**, which may include:
  - Cameras
  - Radar
  - Light detection and ranging (LiDAR)
  - Ultrasonic, and
  - Infrared
- **Positioning** systems may include GPS, inertial measurement units, and detailed map data
- AVs may combine these data with other inputs, including vehicle-to-vehicle and vehicle-to-infrastructure inputs

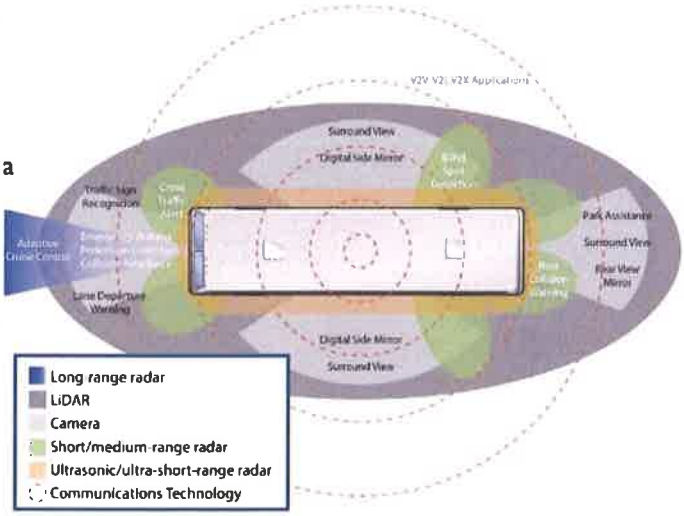
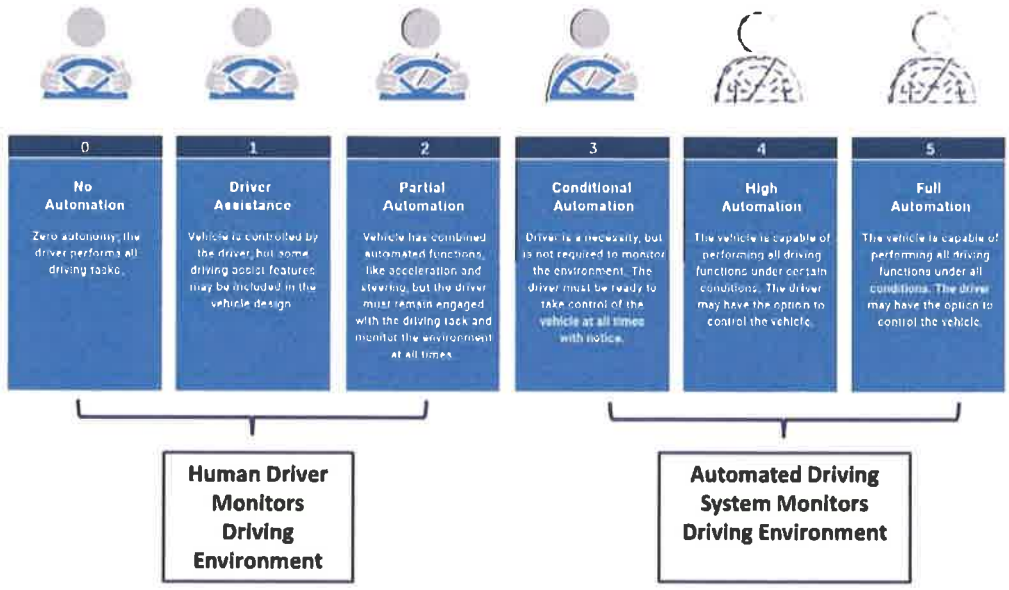


Image Adapted from the Texas Instruments ADAS Solutions Guide

FTA RESEARCH

Levels of Automation

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE) AUTOMATION LEVELS



*For full description see SAE J3016: Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles

FTA RESEARCH

8

Progress by General Motors

PRODUCT:
THE MINIMUM VIABLE PRODUCT (MVP) BAR IS *VERY* HIGH

GM is the *only* company parallel iterating a *totally integrated* solution

Self-driving software "brain"	Deep simulation capability	HD Mapping and Routing	Proprietary AV sensors	AV-specific redundant hardware systems
Core EV platform	Automotive safety and durability validation	Cyber-security and electrical architecture	Vehicle connectivity and data collection	AV-specific vehicle design
Operations infrastructure	Large scale production readiness	UX interfaces (in car & app)	Customer support & remote assistance (OnStar)	Total cost optimization

COMMERCIALLY READY MVP IS ~10,000x MORE DIFFICULT THAN AN AV DEMO

GENERAL MOTORS

33

Relationship of vehicle automation to Intelligent Transportation Systems (ITS)

- ITS is the application of computers and telecommunications to road transportation.
- A main focus of ITS has been traffic management to respond to changing conditions in real time, realized through fine tuning of traffic signal timing to smooth out traffic flow. Provision of traffic information to drivers from cameras and sensors has also become important.
- Vehicle automation adds more computer and communication capabilities to cars, in effect expanding the meaning of ITS and making vehicle automation a topic within ITS.
- In the future, automated cars and traffic signals will be able to communicate with each other, machine to machine, so that vehicle speeds and signal timing are both automated for smooth traffic flows.

Framework: Two Paths for Vehicle Automation Now Apparent

Path A: Better, Safer Vehicles Evolving with Selectable Automated Driver Assistance Systems – ADAS

Path B: Automated Rides with No Operator on Board providing Mobility as a Service (MaaS), aka micro-transit . Evolves eventually to be like Uber or Lyft without a driver.

Path A Vehicle Automation
Driver Assistance has Features Like These:

- Adaptive cruise control
- Adaptive light control
- Automatic braking
- Automatic parking
- Blind spot detection
- Collision avoidance systems
- Driver drowsiness detection
- GPS navigation
- Hill descent control
- Intelligent speed adaptation
- Lane departure warning systems
- Night vision

Path A is preventing accidents and saving lives now and more so as time goes by and new models of cars are introduced every year.

Path B Vehicle Automation MaaS:
How the Path B Car Works

- Eliminate the driver ASAP
- Work to perfect full driverless operation
- Sensors and computers work constantly and quickly to determine:
  - Where is this vehicle?
  - What is Around this vehicle?
  - What Will Happen Next?
  - What Should the Vehicle Do Now?

Path B is inevitable, but still at an early stage of development despite the hype. The time frame for widespread deployment is uncertain.

100 Waymo (formerly Google) Fleet Vehicles Deployed in Arizona Simulating Robo-Cab MaaS

GM wants to sell AV cars AND AV rides

WE ARE REDEFINING THE FUTURE OF PERSONAL MOBILITY

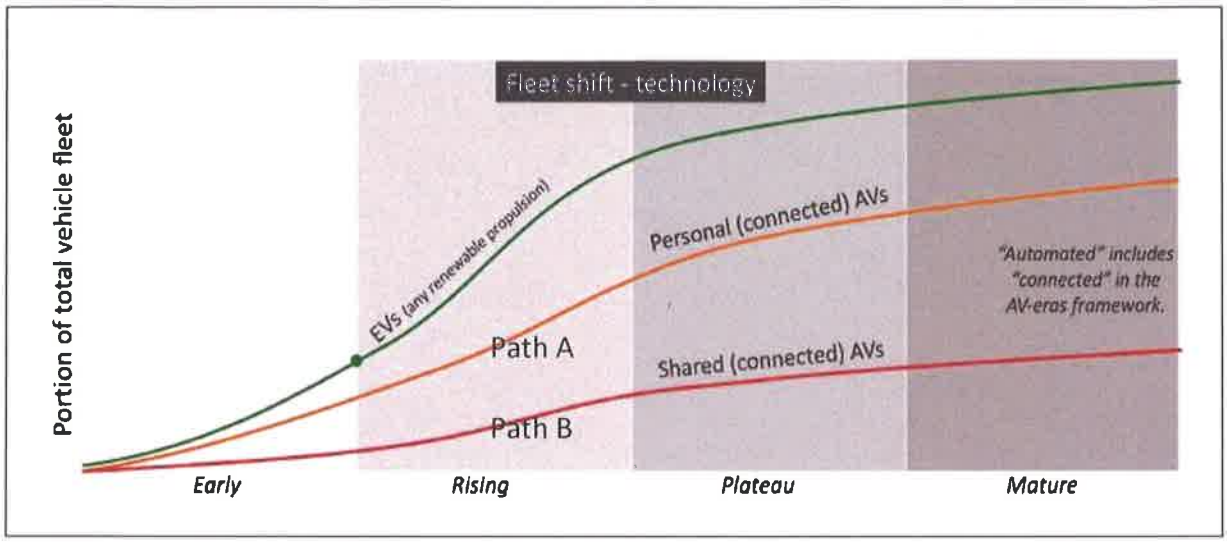
OWN THE CUSTOMER RELATIONSHIP BEYOND THE CAR

CORE BUSINESS		FUTURE OF PERSONAL MOBILITY			
Winning Portfolio Strong Brands	Adjacent Business Growth	Electric Vehicles Connected Car/OnStar	Autonomous Vehicles	Shared Mobility	Driver/Miles Driven Data
FOUNDATION	People	Values/Behavior	Culture		

GENERAL MOTORS

Likely Scenario for AV Development

Source: "The Four Eras of Vehicle Automation" by Bern Grush and John Niles, essay prepared for the 2017 ITS World Congress



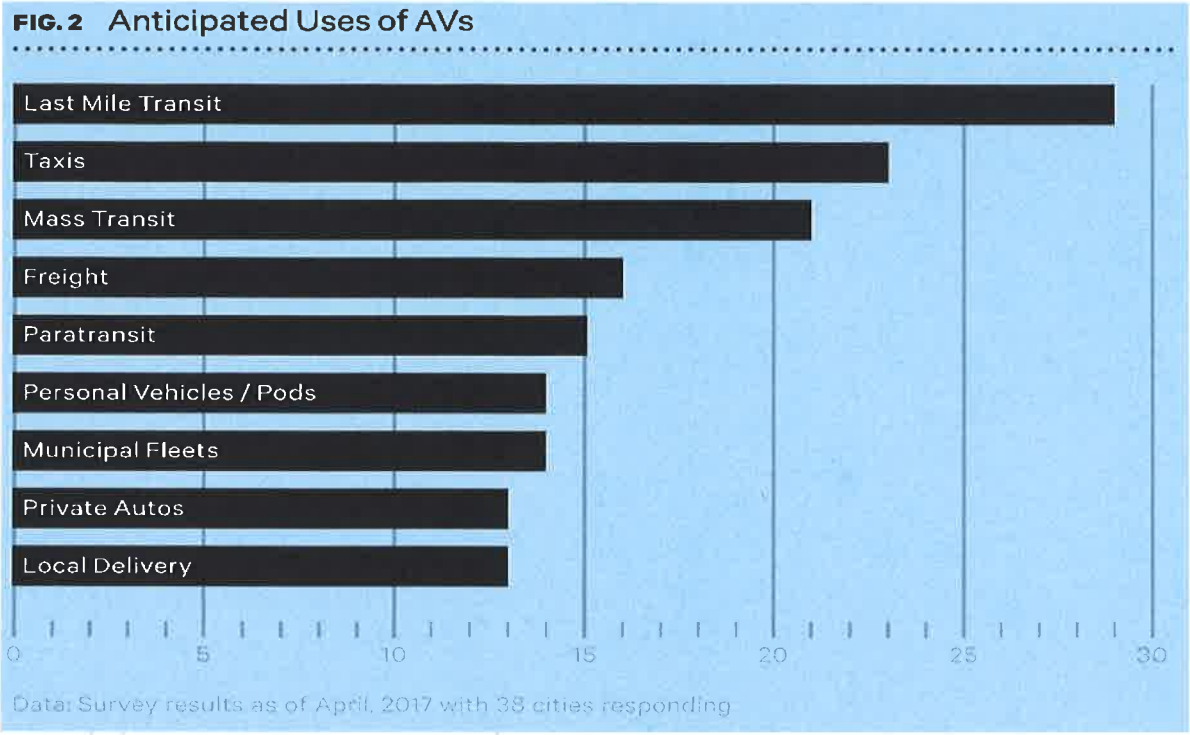
thinkinghighways.com

47

CONNECTED NORTH AMERICA SUPPLEMENT

WHAT CITY OF SEATAC CAN DO

Survey shows what city governments are anticipating for automated vehicle use



City of SeaTac is Automobile Dependent; Good Transit Service not always within Easy Walking Distance

- 80% automobile mode share for commuting
- 91% of households own at least one car
- Rapid rail transit available northward into Seattle from three stations
- Metro's highest quality bus service runs south to Federal Way and also serves Burien and Southcenter from the Tukwila rail station.
- Two Metro local bus lines serve some neighborhood locations to some destinations

City of SeaTac Commuting Profile

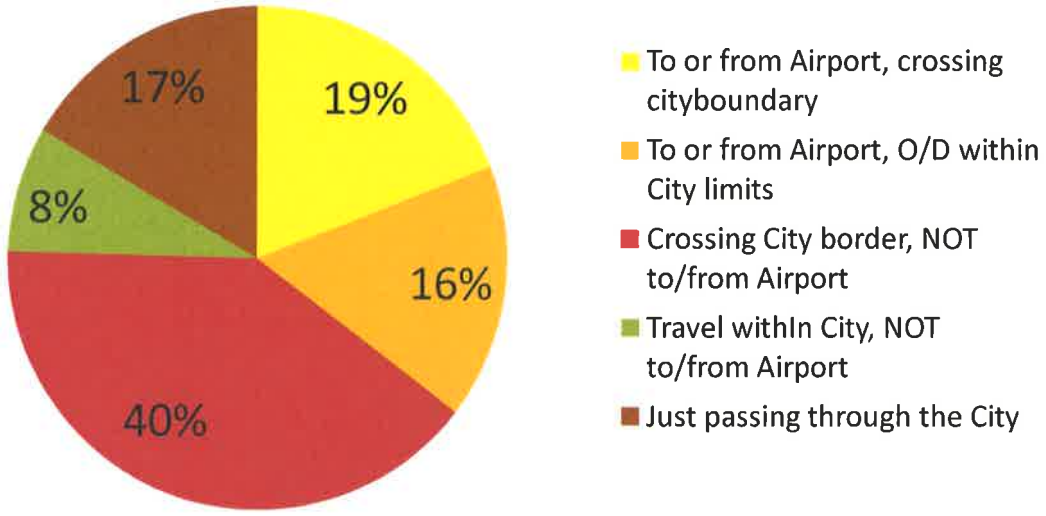
	Number	Margin of Error	Percentage	Margin of Error
Workers 16 years and over	12,551	+/-604		
Car, truck, or van -- drove alone	8,658	+/-642	69.0%	+/-3.7
Car, truck, or van -- carpooled	1,321	+/-276	10.5%	+/-2.1
Public transportation (excluding taxicab)	1,561	+/-409	12.4%	+/-3.2
Walked	454	+/-177	3.6%	+/-1.4
Other means	154	+/-106	1.2%	+/-0.9
Worked at home	403	+/-162	3.2%	+/-1.3
Mean travel time to work (minutes)	29.7	+/-1.8		

City of SeaTac Vehicle Ownership

	Number	Margin of Error	Percentage	Margin of Error
Occupied housing units	9,831	+/-407		
No vehicles available	869	+/-254	8.8%	+/-2.5
1 vehicle available	3,890	+/-387	39.6%	+/-3.4
2 vehicles available	3,052	+/-308	31.0%	+/-3.0
3 or more vehicles available	2,020	+/-263	20.5%	+/-2.7

SeaTac Traffic Analysis (INRIX Data)

City of SeaTac Vehicle Traffic Categories



SWOT Analysis For SeaTac as a Municipal Center of Automated Vehicle Excellence

- Strengths
  - Diverse demographics of the population; civic strength in diversity.
  - Elected leadership intentions to pursue beneficial, feasible vehicle automation developments
  - Can provide convenient access to AV demonstration for out of town and regional visitors
  - City has good physical venues for immediate automated microtransit service deployment
  - City situated in a region interested in AV advancement – ACES NW Network
  - In a State where Gubernatorial leadership supports AV advancement
  - Long-run opportunities exist associated with the Airport
  - Three light rail stations as AV destination focus, which tie in to 1st/Last mile transit concept
- Weakness: City will need external financial support; cannot internally fund
- Opportunities: As recommended by CATES; suggested in this document
- Threats
  - Local competition in the AV space from other jurisdictions and entities overshadowing and discouraging what City of SeaTac undertakes to accomplish.
  - Other City of SeaTac priorities consuming city management attention.
  - Lack of constituent interest despite media attention on the AV topic.

Potential AV Deployments

- Transport of arriving/departing passengers from SeaTac Airport to and from local hotels
- Transport of arriving/departing passengers from SeaTac Airport transportation center to and from long-term parking
- Transport customers to and from off-airport rental car services
- Point-to-point robo-cab services within a specified service area
- Connecting "last mile" transit services to and from light rail stations
- Provide in-City micro-transit to a variety of locations in a pilot zone of service

Considerations Related to SeaTac Airport

- Source as O/D for 35% of the vehicle traffic in City of SeaTac
- International Boulevard with hotels and parking facilities, and also the interior roads of Airport are very congested
- But a very complex operating domain for automation.
- Initial automated vehicles would not operate fast enough nor with sufficient maneuverability to allow adequate smooth mixing with human-operated buses, vans, and cars.
- Demonstration of automation in operation to visitors arriving via SeaTac Airport does not require a project location at the airport.
- CATES recommends holding work here for a later phase.
- Potential opportunity exists in private parking structures to demonstrate automated valet service for certain makes of vehicles capable of automated operation.

Stakeholders Engaged So Far by CATES in SeaTac AV Development

- SeaTac City Offices including Public Works, Planning, Economic Development, and Police
- Port of Seattle staff
- Sound Transit staff
- King County Metro staff
- PSRC transportation staff
- Staff of Washington State Traffic Safety Commission
- Sound Generations (Hyde Shuttle)
- Highline School District Transportation Office
- City of Tukwila Public Works
- City of Des Moines City Manager and staff
- Office of Congressman Adam Smith
- ACES NW Network
- INRIX, traffic measurement firm
- Local Motors, producer of micro-transit vehicles
- Navya, producer of micro-transit vehicles
- Easy Mile, producer to micro-transit vehicles
- Contact with airport related businesses deliberately deferred once judgment reached that International Boulevard and SeaTac Airport were not a sound initial focus.
- Draft Action Plan suggested as the vehicle for stimulating interest and reaction from the taxicab industry and the Internet Rideshare industry.

Results from Stakeholder Engagement

- General acceptance of micro transit approach focused on residential neighborhoods.
- Concern about mixing slow moving automated vehicles with human-driven vehicles that want to go faster and must pass.
- Compatibility with all right-of-way users including bicycles and pedestrians is a requirement.
- Micro transit vehicle vendors should and can meet technical requirements of the pilot deployment by the end of 2018.
- Metro and Sound Transit want to cooperate and coordinate with the City's micro transit intentions and deployment. In fact, these agencies would insist that to the degree micro transit shares important characteristics of current public transit, micro transit may have to be under current law operated by an existing transit agency and be part of the integrated public transit system of the region.
- Need for accommodation of those with disabilities, per Federal ADA requirement.
- Senior citizen transport viewed as important market.
- School children age 10 and up suggested as a market.
- No reading on residential homeowner acceptance of frequent vehicles.

How City of SeaTac Can Become a Vehicle Automation Center of Municipal Excellence

- Understand that vehicle automation is following two paths.
- Path A – trend of increasing automation in private vehicles – belongs to Detroit and Silicon Valley. Municipal influence potential is low.
- Therefore, Path B is best line of development for City of SeaTac
- One Path B option is inviting Waymo or Uber or another company testing and simulating driverless MaaS with human-driven vehicles (next slide)
- But private sector ride services like GM/Lyft, Uber/Volvo, and Waymo/Fiat-Chrysler pursuing automation already heavily engaged in other locations where electronic mapping and testing of specially-converted, automation-enhanced vehicles have been launched.
- There is an alternative Path B option in automated micro transit.

Alternative tasks available for initiating advanced Path B on-demand ride services, that is, the paths to shared use of fleet vehicles and MaaS

- Simulate MaaS in a computer model
- Simulate on the street --
  - Waymo in metro Phoenix, with a safety driver
  - Uber in Pittsburgh, with a safety driver
  - GM/Cruise in San Francisco, with a safety driver
  - Eventually remove the safety driver and rely on remote monitoring for unusual circumstances
- Transit Leap – Plan now for fully automated micro transit deployment in a constrained, feasible operational domain

Another Path B Play for City of SeaTac: Taking a Leap with Automated Micro-Transit

- Purposely designed, wheelchair compatible, electric passenger vehicles with no driver
- On pre-selected, adapted, certified, existing roads
- Closely monitored & supervised fleet
- Trials already underway world wide

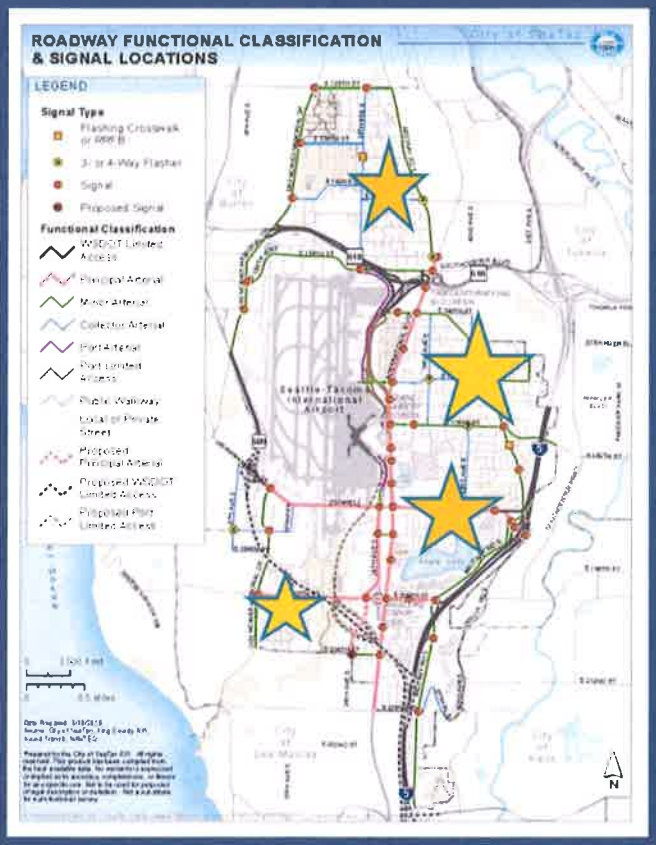
Best Path B Action Opportunity

A Path of Excellence for City of SeaTac:

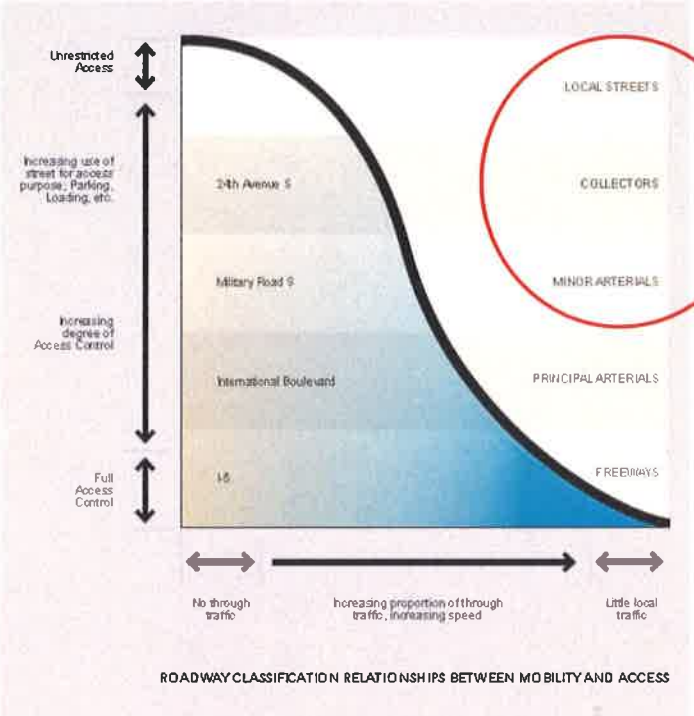
Design a deployment of an automated electric on-demand shuttle micro-transit franchise operation delivered by a qualified public or private organization meeting a City of SeaTac mobility demand and working within a framework of sustainable long-run economics. Begin with a pilot deployment qualified for external Federal, private, and non-government organization funding with due regard for regulatory issues and in cooperation with agencies working on similar projects.

CITY OF SEATAC PILOT DEPLOYMENT

CATES recommends City of SeaTac Consider Electric Automated Shuttle Routes Serving Residential Areas



Micro Transit Designed to Operate on Slower, Lower Volume Streets



Source:
City of SeaTac
Transportation
Master Plan

Candidate First Automated Micro Transit Trial Deployment: Riverton Heights

Five mile loop route (red line on map) for automated 10 passenger automated electric micro buses at five minute intervals in both directions could serve passenger movement at 20 mph with 6 vehicles. These would provide total capacity of 480 passengers per hour if average trip length were 2.5 miles (half the loop). The Tukwila light rail station, the SeaTac Senior center, and two main employment sites would be served. High volume of usage not certain based on data. Blue lines show possibilities for future automated on-demand branching.

Key Destination on the Pilot Route

- Tukwila International Boulevard Link Light Rail Station & Metro RapidRide Bus access
- Access to Metro RapidRide Lines A & F & Bus Routes 124, 128, 132
- City of SeaTac Senior Center
- North SeaTac Park & Sunset Playfields
- Port of Seattle Main Employee Parking Lot with direct employee bus access to Airport
- Boeing Parts Distribution Center
- Cascade Behavioral Health Treatment Center
- Riverton Heights Post Office
- Cluster of small businesses near intersection of Military Road and International Boulevard

Some Users of Tukwila Light Rail Park-and-Ride Come from Riverton Heights and just beyond

Pilot Ridership Estimation

- Pilot route goes close to 1,358 households in the NE and NW sectors of City SeaTac
- Additional 30% more households are nearby in Burien and Tukwila
- Vehicle average daily car traffic on one key route segment of the pilot route is 5,100 per day
- Tukwila light rail station, Senior Center, and two large employment sites are collectively the destination for thousands of people every day.
- Taking into account the many destinations, the daily passenger boarding target is estimated at 500 per day. Equivalent to 100 all-day boardings per route mile, both directions combined.
- This ridership target should be examined closely by City of SeaTac Public Works, Puget Sound Regional Council, King County Metro, and Sound Transit, all of whom have modeling capabilities.
- Risks of the pilot micro transit deployment are (a) that the cost is too high compared to forecast ridership benefit (without regard to funding source) and (b) achieved ridership in the funded pilot that does not grow beyond a non-economical plateau.

Step by step stages of deployment of on-demand automated mobility service in City of SeaTac.

- Riverton Heights neighborhood fixed route loop, as described separately
- As technology of the system develops, establish branching within the Riverton neighborhood to selected other streets
- After first year, expand service territory to include immediately adjacent residential neighborhoods in Tukwila and Burien
- Transition to a more advanced 2nd generation vehicle
- In year three, transition from fixed route service in Riverton neighborhood to real time dispatch of vehicles on demand, with service to and from all doorways
- Beyond three years, plan for dispatched, on-demand service in all other SeaTac residential neighborhoods providing service to all three light rail stations in the City and to all other doorways except the Airport and International Boulevard addresses. Back door access to hotels where feasible.
- Expand service to more comprehensively to neighboring jurisdictions' residential areas in Tukwila, Des Moines, Burien, and Normandy Park
- Transition to a more capable 3rd generation vehicle capable of operating in congested traffic
- Expand the MaaS territory to include SeaTac Airport access ramps and roads, and addresses on International Boulevard
- Expand the MaaS territory to include South Center Mall

Financial Model of Micro-Transit Financial Performance, Both the Pilot Phase and Full Citywide Deployment have been Developed

			MetroBus Route 128		Electric shuttles Trial Deployment		Electric shuttles 2025 service	
Route miles in one direction	input	route miles	18.8	route miles	5		30	input route miles
vehicle miles per vehicle revenue hour	inputs	mph	14.5	mph	20		25	inputs mph
Headways in minutes	input	minutes	30	minutes	7		5	input minutes
Daily span of service	input	hours	19	hours	18		20	input hours
Days per week of operation	input	days	7	days	7		7	input days
Passenger miles per boarding (average trip length)	input	pax miles	4.1	pax miles	2.0		3.0	input pax miles
Costs per vehicle mile, including shuttle rental	input	dollars	$ 12.00	dollars	$ 1.00		$ 0.60	input dollars
Daily boardings per route mile, both directions	input	boardings	205	input	100		300	input boardings
Daily boardings entire route, all day	calc	boardings	3850	calc	500		9000	calc boardings
Boardings per vehicle hour in motion	calc	boardings	39.1	calc	6.5		15.6	calc boardings
Time for one vehicle to cover route in both directions	calc	hours	2.6	hours	0.5		2.4	calc hours
Vehicles in service (no accounting for spares)	calc	vehicles	5.2	vehicles	4.3		28.8	calc vehicles
All the vehicle revenue hours for daily coverage	calc	hours	98.6	hours	77.1		576.0	calc hours
Boardings per day	calc	boardings	3850	boardings	500		9000	calc boardings
Hours service is open per week	calc	hours	133	hours	126		140	calc hours
Daily vehicle miles	calc	vehicle miles	1427	vehicle miles	1543		14400	calc vehicle miles
Boardings per vehicle mile	calc	customers	2.7	customers	0.3		0.6	calc customers
Average daily boardings per vehicle in service	calc	customers	742.0	customers	116.7		312.5	calc customers
Passenger miles per vehicle mile	calc		10.9		0.6		1.9	calc
Operating cost per boarding	calc		$ 4.45		$ 3.09		$ 0.96	calc
Cost per passenger mile	calc		$ 1.10		$ 1.54		$ 0.32	calc
Passenger miles per revenue hour	calc		158		13		47	calc
Fare revenue per veh hr	fare per boarding	$ 2.75	$ 107.39	$ 2.75	$ 17.82	$ 3.00	$ 46.88	calc
Equivalent 35 hour shifts	calc		3.8	per trip	3.6	per trip	4.0	calc
Total all vehicles operating cost per day	calc		$ 17,131		$ 1,543		$ 8,640	calc
Per vehicle operating cost per day	calc		$ 3,301		$ 360		$ 300	calc
2 FTE monitoring cost/day	hrly wage		$ -	$ 25	$ 900	$ 50	$ 2,000	calc
Monitoring staff cost per vehicle hour	calc		$ -	hrly wage	$ 11.67	hrly wage	$ 3.47	calc
Vehicle cost per revenue hour	calc		$ 173.74		$ 20.00		$ 15.00	calc
Service supervisor	per yr			$100,000	$ 15.26	$200,000	$ 27.47	calc
Total cost per vehicle hour	calc		$ 173.74	per yr	$ 46.93	per yr	$ 45.94	calc
Total cost per operating day	calc		$ 17,131		$ 3,620		$ 26,464	calc
Total cost per year	calc		$ 6,235,703		$ 1,317,771		$ 9,632,960	calc
Fare revenue per year with fare per boarding			$ 3,854,304		$ 500,500		$ 9,828,000	
Annual profit (loss) with fare per boarding			$ (2,381,399)		$ (817,271)		$ 195,040	

Financial Model Highlights

- Created by CATES for this project.
- Inputs in salmon; calculated outputs in yellow
- Model replicates King County Metro Bus statistics.
- Metro fares assumed for micro transit riders
- Absence of a human vehicle operator in micro transit vehicles pulls cost of operation way down.
- Pilot deployment of five vehicles requires sponsor subsidy for operation.
- Citywide deployment of 30 vehicles could be sustainable, supported by fares without subsidy
- Model is an important tool to support investment decisions in micro transit.
- Financial Model (Excel spreadsheet)

Vehicle Considerations

- CATES is doing planning focused on deployment of a generic vehicle with characteristics similar to the EasyMile EZ10, developed in France. A competitor's vehicle is soon to be manufactured in Michigan, suggesting foreign companies may be open to USA domestic manufacturing sites.
- The EZ10 has the following specifications as of 2016:
  - Capacity: 12 persons (6 sitting and 6 standing)
  - Cruising speed: 13 mph Maximum speed: 25 mph
  - Propulsion engine: Electric asynchronous
  - Autonomy: up to 14 hours of operation
  - Battery: Lithium-ion (LiFeP04) Battery Charger: 110V – 230V 16A
  - Length: 154.6" Width: 78.2" Height: 108.3" Wheelbase: 110.2"
  - Payload: 771 lbs Fully loaded: 1,270 lbs
  - Vehicle price to purchase: $223,180 to $245,498
  - Annual maintenance costs: $33,477 annually
- CATES planning assumes a monthly all-inclusive negotiable monthly per vehicle lease/usage price with monitoring and maintenance included.

Infrastructure Considerations

- Deployment of automated vehicles can be made compatible with existing City of SeaTac road classifications.
- Path A automation deployment by citizen-consumers who purchase new vehicles do not require new City road investments and signal investments beyond a state of good repair.
- Path B mobility-as-a-service (MaaS) automation applications over the next five years -- for example, automated micro-transit like being contemplated -- may require new telecommunications equipment and capabilities, but these will be provided by design-build-operate (DBO) vendors of the vehicles and associated fleet support equipment. No generalized pre-installation program of telecom infrastructure from City of SeaTac is required.
- New signs, street markings, and a handful of signal installations will likely be necessary for automated MaaS vehicles, with cost reimbursement to the City provided as part of the deployment budget and capital investment base from the DBO vendor. No anticipatory public investments are expected to be required.
- Leading AV developer Waymo has long-maintained that its vehicle automation capabilities are being designed to work well with existing public infrastructure. Other vendors will likely follow that philosophy.

State and Federal Legal Framework

- Federal Government regulates the characteristics of motor vehicles.
- In general, vehicle manufacturers are managing the Federal regulatory process with regard to vehicle characteristics.
- State Government of Washington regulates conditions for vehicle operation in a Motor Vehicle Code
- State Government also sets the table for driverless vehicles: Under Governor Inslee's executive order 17-02. "Autonomous vehicles without human operators shall comply with the following requirements:
  - ...must be capable of bringing the vehicle to a safe condition in the event of a system failure.
  - ...capable of being operated in compliance with Washington State motor vehicle laws relevant to the vehicle's operational design limits.
  - Vehicle owners shall attest to proof of financial responsibility...
  - Developing entities shall self-certify to Dept of Licensing that they are compliant with the above requirements..."
- City of SeaTac designs and implements a network of streets, and then regulates use of them by motor vehicles
- Key recommendation for City of SeaTac is to maintain transparency on intent and specific plans with regulatory bodies, so that issues are surfaced early in the process.

Interest from Adjacent Cities

- Officials in Tukwila and Des Moines have been briefed and are supportive.
- City of Burien not reached yet. Officials will have the opportunity to react to this document.
- City of Kent has been deferred ... no obvious road interface for any immediate application.
- Normandy Park City Manager serendipitously expressed interest during a chance meeting with the CATES consultant.

IMPLEMENTING THE MICRO TRANSIT PILOT

City Legislation Requirements

- City Council resolution of intent; draft shown earlier
- Authorization of City staff to pursue Federal and private funding for a pilot project as described earlier
- Authorization of City staff to procure a design-build-operate agency or vendor for procurement of micro-transit vehicles and the systems to manage the fleet.
- Commitment of land for vehicle storage and maintenance, and commitment of space for a control center in a trailer, all of which could be in the existing Public Works facility in the north part of the City
- Explicit support of specific street usage by whatever vehicle type arises from pilot project on whatever pilot routes are decided
- Explicit authorization of the Police Department to use video cameras mounted on the micro-transit vehicles for neighborhood watch purposes

Best Potential Funding Source FHWA ATCMTD grants

October 9, 2017:

"Federal Highway Administration (FHWA) has awarded Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD) grants valued at $53.6 million for 10 states to fund advanced technologies that will improve mobility and safety for drivers, and enhance the performance of the USA's highway system. The FHWA received 68 applications from 52 states and localities requesting more than $362 million. "

Of significance to City of SeaTac, the awards included a $4 Million Grant to South Carolina's Greenville County for Automated Taxi Shuttles. CATES has close contacts on this project team.

This ATCMTD program could be a main target for a Spring 2018 application for grant funding supporting City of SeaTac deployment of automated mobility-as-a-service (MaaS). A joint application with City of Bellevue is recommended.

Action Toward Federal Funding of a Pilot Micro Transit Deployment in Riverton Heights

- As preparation for Federal, state, and local funding in the future, CATES will assist the City in getting whatever authorized action comes out of this project into the lists of projects maintained by PSRC for the TIP. PSRC staff are aware of the City's interest in vehicle automation benefit demonstration.
- Study Greenville County, South Carolina' $4 million winning grant for the 2017 funding round for the USDOT "Advanced Transportation and Congestion Management Technologies Deployment Initiative" as part of getting ready to respond with a grant funding application in response to its likely spring 2018 call for proposals. Develop pattern of development in City of SeaTac that breaks new ground beyond Greenville's plan. Action, CATES.
- Maintain cooperation with Sound Transit and King County Metro in their transit access projects that enjoy Federal Transit Administration support. SeaTac's project supports development of first/last mile small vehicle public access to light rail stations. Action, CATES, reinforced by City staff communicating with peers in the two transit agencies.
- Maintain cooperation with City of Bellevue's Transportation Partnerships Manager who is actively seeking to develop multi-jurisdictional projects that go beyond the borders of that City, Action, CATES, reinforced by City Staff communicating with peers in Bellevue's DOT.
- Maintain contact with the transportation-assigned assistants to the three Members of Congress who represent City of SeaTac residents—the two Washington Senators, Patty Murray and Maria Cantwell, and Representative Adam Smith. Action, City of SeaTac.

Coordination Required to Proceed

- City of SeaTac Public Works needs to keep the following agencies informed on plans to implement the Riverton Microtransit Pilot
  - King County Metro Transit (for integration with other transit services for which it has a monopoly charter)
  - Sound Transit (for access to the light rail station)
  - Puget Sound Regional Council (for authorization as transportation service eligible for government funding)
  - State of Washington Department of Licensing
  - SeaTac Police Department
  - State of Washington's Automation Task Force
  - Port of Seattle (for access to a vehicle stop near the employee parking lot)
  - Boeing Parts Distribution Center (for service access at a vehicle stop near NE pedestrian gate)

WRAP UP – ADDITIONAL OPTIONS

Public Safety Enhancement

- As a technical specification, CATES recommends that in-service micro-transit vehicles be equipped with video cameras providing 360 degree coverage of the scene around the vehicle for purposes of system management's general awareness and public safety and security. These cameras will be wirelessly connected to the vehicle control center, from which police, fire, or EMS responders could be contacted as appropriate for what's being observed by system managers.
- Camera images could in theory be relayed instantly to a console available to the SeaTac police watch commander. Images could also be temporarily stored for a few days before deletion, so retrieval of visual evidence is possible when crimes are committed.
- There is also a government transparency and service promotion justification for live streaming of some or all of the available video images on the City of SeaTac web site.
- The cost of providing video to the system control center would be part of the base budget for the micro-transit service. Transmission of the video beyond this Center would have a cost that has not been estimated, but could be.
- After a briefing on September 15, SeaTac Police Captain Carl Cole indicated the Department would be positive about the idea of public safety monitoring via cameras on the micro-transit vehicles.

Automated, Driverless Valet Parking

- Automated, driverless valet parking in parking facilities is a long-term service and revenue opportunity for SeaTac parking businesses, although ruled out by a Port of Seattle representative with respect to Port facilities because of prohibitions on being preferential with only certain makes of cars that would be able to take advantage of such a service.
- The current state of the art of automated valet parking is limited to partnerships involving makers of specially equipped cars working with technology companies that can electronically map the floor space of the parking facilities and put in radio frequency ID tags and other markings that sensors on the car can interpret. The tech companies have to provide a service that establishes the capability of certain cars to find specific marked spaces without anyone driving the car.
- For example, as reported by the WebWire blog on July 24, 2017, "At the Mercedes-Benz Museum parking garage in Stuttgart, Bosch and Daimler have made automated valet parking a reality. With a command from a smartphone, drivers [of specifically equipped automobiles] can now automatically park cars in their assigned spots without having to monitor the vehicles' movements. ...From early 2018, visitors will be able to experience the convenient service for themselves in the museum's garage, and save the time they would have spent parking."
- In City of SeaTac, a next step in pursuing an early implementation locally would be to invite a few of the larger parking providers near the Airport, such as Master Park , Wally Park, and Doug Fox, to meet with invited representatives from broad spectrum technology companies like Bosch and Continental that are visibly pursuing this product line. The goal of the meeting would be to begin extended conversations that could potentially lead to setting up development of a pilot that would be beneficial to the business interests of some in the meeting. CATES recommends City of SeaTac facilitate meetings, but not invest public funds. This facilitation task could be assigned to a summer intern from a graduate business school.
- Such a pilot would certainly be beneficial to City of SeaTac's stature as a Center of Excellence in Vehicle Automation Deployment.

Recommended Policies for City of SeaTac in Pursuit of Excellence in Vehicle Automation

- Develop automated vehicle services cost-beneficial to residents
- Commit to micro-transit deployment only after obtaining more neighborhood-level data predicting ridership demand that justifies public investment in a new service.
- Offer City streets and mobility demands of residents as a deployment opportunity for entrepreneurial service providers
- Modify City regulations that unnecessarily block AV deployment
- Secure Federal and other non-City resources for development
- Keep local-tax-funded investments minimal and well justified
- Keep a focus on economic development results for local business development and employment growth
- Encourage totally private sector initiatives, such as automated valet parking in private parking facilities
- Leverage the SeaTac Airport presence by exploring short-range aviation in small, quiet, electric, semi-automated, VTOL aircraft as a future in-region travel mode: Paine Field to SeaTac for example. Concept is being pursued seriously by Uber, AirBus, and others.

Thank You! Any Questions?

Consultant – John Niles

- **John Niles, President, Global Telematics, and Executive Research Director, Center for Advanced Transportation and Energy Solutions, is a telematics and automation expert, and a public policy analyst over three decades.**
- John is founder and president of the independent policy consultancy Global Telematics focused on research, design, planning and evaluation of policies and actions for transportation improvement with clients including federal, state, and local government agencies, universities, and corporations. John is a co-founder of the CATES nonprofit think-tank, and now leads the City of SeaTac project for CATES. Other recent research projects are on the productivity implications of transit rider acquisition at park & ride lots, and on strategies for accelerated deployment of mobility as a service (MaaS) using automated vehicles. John co-authored a chapter on automated vehicle deployment strategies in the book *Disrupting Mobility* (Springer, 2017) stemming from his presentation at an MIT Conference in 2015. He has a contract with Elsevier and a co-author to write a book for 2018 publication, titled *The End of Driving: Transportation Systems and Public Policy Development for Autonomous Vehicles.* John is a long-standing member of the Puget Sound Freight Mobility Roundtable. He served as an aviation quality assurance officer in the U.S. Navy, and is a graduate of MIT (math) and Carnegie Mellon University (business).

Contact Points

Project Monitor	Lead Researcher
William Appleton, P.E., Public Works Director	John Niles, Executive Director
City of SeaTac	CATES
206-973-4741 wappleton@ci.seatac.wa.us	206-781-4475 jniles@alum.mit.edu