



Southwest Neighborhoods, Inc.

7688 SW Capitol Highway, Portland, OR 97219 (503) 823-4592

www.swni.org

May 6, 2016

Councilor Bob Stacey
Councilor Craig Dirksen
Co-Chairs, SW Corridor Steering Committee
Metro
600 NE Grand
Portland, OR 97232

Re: SW Corridor Staff Recommendations for May 9, 2016 meeting

Dear Councilors Stacey and Dirksen and members of the SW Corridor Plan Steering Committee:

Southwest Neighborhoods, Inc. (SWNI), a coalition of seventeen neighborhood associations and three business associations in SW Portland, supports the April 4, 2016 staff recommendations regarding the mode (light rail) and removal of the tunnel option to Portland Community College. This motion was approved by the SWNI Board on April 27, 2016.

The Southwest Corridor Plan Project List will need greater scrutiny to develop safe pedestrian and bicycle connections to station areas. We may need to add projects to the list as we work with the SWC project team to categorize needed projects into "buckets". The two "buckets" are roadway, bicycle, and pedestrian projects that are part of the HCT project, i.e. scoped during the DEIS and funded and built by the SWCP; and roadway, bicycle, and pedestrian support of community land use visions, to be funded by other sources, i.e. grants and other funding sources and built by the partner jurisdictions.

SWNI requests more details regarding access to key destinations, particularly the medical facilities uphill and downhill from SWC (including the OHSU and VA hospitals, Knight Cancer Center, OHSU medical and dental schools, Dornbecher Childrens Hospital, etc., and to the PCC Sylvania Campus. "Mechanized Options" (i.e. elevator, tram) have a lot of potential negative impacts on local neighborhoods. Neighborhoods want options that benefit the neighborhoods, too. TriMet should improve transit service to PCC now, without waiting for completion of the SW Corridor Plan.

Thank you for the opportunity to participate in the development of this important project in our community.

Sincerely,

Sam Pearson
President, Southwest Neighborhoods, Inc.

Public Comments on Draft Update to SW Corridor Purpose and Need Statement

(Supplement to verbal testimony provided at May 9, 2016 Steering Committee meeting, by Roger Averbeck, chair of SW Neighborhoods, Inc. / SWNI Transportation Committee)

Initially I was surprised that the SWCP Purpose and Need Statement is being updated at this stage in the planning process. Upon review of Chris Ford's recommended revisions, I am generally supportive of the update, and offer these comments:

- I appreciate that the public will be given an opportunity to comment on the revised Purpose and Need Statement, as mentioned in the timeline, in August and September 2016.
- The draft update begins to address today's previous public testimony regarding peak congestion and travel times for vehicle traffic on Barbur Blvd within Portland, and our community shares this concern.
- The Purpose and Need Statement should contribute to improved opportunities to provide for multiple modes in the corridor, not just the currently prioritized single occupancy vehicle (SOV) mode.
- The statement should emphasize serving the communities along the corridor, by improving access to the small businesses, many of which are not thriving today.
- As the DEIS and SIS project lists are refined, they should be evaluated against criteria as to whether or not the Purpose and Need Statement is met.

Thank you for the opportunity to comment on this topic.

Roger Averbeck

From: Peggy Reuler [mailto:preuler79@gmail.com]
Sent: Monday, May 09, 2016 8:04 AM
To: Southwest Corridor Plan
Cc: marcia leslie; Peggy Reuler; Noelle Dobson
Subject: May 9 meetiing

I live on SW 53rd. I have attended several meetings and filled out surveys regarding the Southwest Corridor Plan. Unfortunately, I am unable to attend today's meeting of the Steering Committee.

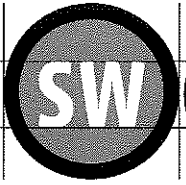
I have heard the staff recommendations and agree that building a tunnel to Sylvania PCC is not beneficial to the corridor as a whole for the reasons staff provided.

I think that the focus for SW 53rd should be on improvements for bikes and pedestrians as has been discussed for several years.

Improved transportation to PCC and Tigard/Tualatin via bus and light rail on Barbur should be pursued.

Thank you for your consideration.

Peggy Reuler



GREAT PLACES

Corridor

Please be aware that all information submitted here will become public record, per state law, and will be made available to those who request it.

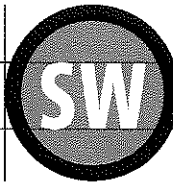
Event Southwest Corridor Plan Steering Committee

Location Tigard Town Hall, 13125 SW Hall Blvd.

Date May 9, 2016

Time 9:00 a.m. – 11:00 a.m.

Representative	Representative Sign-in	Alternate	Alternate Sign-In
Craig Dirksen			
Bob Stacey			
John Cook		John Goodhouse	
Denny Doyle		Randy Ealy	
Steve Novick		Chris Warner	
Neil McFarlane		Dan Blocher	
Krisanna Clark		Jennifer Harris	
Lou Ogden		Alice Cannon	
Roy Rogers		Andy Duyck	
Gery Schirado		Linda Tate	<i>Linda Tate</i>
Rian Windsheimer		Alan Snook	
Al Reu			



GREAT PLACES

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Multnomah County • Washington County
ODOT • TriMet • Metro

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Event sign-in

Southwest Corridor Plan Steering Committee

May 9, 2016

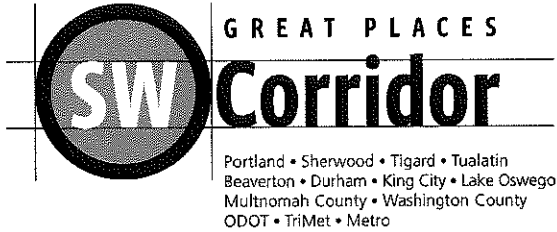
Name John Chertis Address _____
 Phone _____ City, State, ZIP _____
 Email john@cascahopoly.org Yes, please add me to the plan's email/mailling list.

Name JIM HOWELL Address _____
 Phone _____ City, State, ZIP _____
 Email _____ Yes, please add me to the plan's email/mailling list.

Name Marian Leslie Address Far Southwest WA
 Phone _____ City, State, ZIP _____
 Email _____ Yes, please add me to the plan's email/mailling list.

Name RA Foster Address _____
 Phone _____ City, State, ZIP CO, 97034
 Email _____ Yes, please add me to the plan's email/mailling list.

Name GORDON HUBER Address TUFR for Director
 Phone _____ City, State, ZIP _____
 Email _____ Yes, please add me to the plan's email/mailling list.



Event sign-in

Southwest Corridor Plan Steering Committee

May 9, 2016

www.swcorridorplan.org

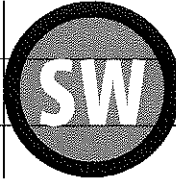
Name Marianne Fernald, SWN Address _____
 Phone _____ City, State, ZIP _____
 Email _____ Yes, please add me to the plan's email/mailling list.

Name ROGER AVERBECH Address _____
 Phone _____ City, State, ZIP _____
 Email TRANSPORTATION@SWN Yes, please add me to the plan's email/mailling list.
ORIG

Name Celina Bagniao Address _____
 Phone _____ City, State, ZIP _____
 Email celina.bagniao@pcc.edu Yes, please add me to the plan's email/mailling list.

Name Jim Diamond Address 9519 SW 2nd AVE
 Phone _____ City, State, ZIP PDX 97219
 Email _____ Yes, please add me to the plan's email/mailling list.

Name Audrey Address 1003 TERRACE DR
 Phone 503-699-9642 City, State, ZIP LAKE OSWEGO
 Email _____ Yes, please add me to the plan's email/mailling list.



GREAT PLACES

Corridor

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Multnomah County • Washington County
ODOT • TriMet • Metro

Event sign-in

Southwest Corridor Plan Steering
Committee

May 9, 2016

www.swcorridorplan.org

Name	Doug Allen	Address	734 SE 47th Ave
Phone		City, State, ZIP	Portland, OR 97215
Email		<input type="checkbox"/> Yes, please add me to the plan's email/ mailing list.	
Name	John Ludlow	Address	BCC chair
Phone		City, State, ZIP	
Email		<input type="checkbox"/> Yes, please add me to the plan's email/ mailing list.	
Name	Kathleen Hersh	Address	
Phone		City, State, ZIP	
Email		<input type="checkbox"/> Yes, please add me to the plan's email/ mailing list.	
Name	Scott Mockry	Address	12607 SW 62ND AVE
Phone		City, State, ZIP	97219
Email		<input type="checkbox"/> Yes, please add me to the plan's email/ mailing list.	
Name	Gina Whitshull-Barzuc	Address	
Phone	BCC	City, State, ZIP	
Email		<input type="checkbox"/> Yes, please add me to the plan's email/ mailing list.	



Portland • Sherwood • Tigard • Tualatin
Beaverton • Durham • King City • Lake Oswego
Multnomah County • Washington County
ODOT • TriMet • Metro

Event sign-in

Southwest Corridor Plan Steering Committee

May 9, 2016

www.swcorridorplan.org

Name Elise Shearer Address _____
 Phone _____ City, State, ZIP _____
 Email _____ Yes, please add me to the plan's email/ mailing list.

Name Jim Pasero Address 7017 SW 52nd Ave
 Phone _____ City, State, ZIP Portland - 97219
 Email Jim@thirdcentury Yes, please add me to the plan's email/ mailing list.
solutions.com

Name David Aldridge Address 8861 SW Commercial St
 Phone 503-639-2340 City, State, ZIP Tigard 97223
 Email AldridgeDavid@gmail.com Yes, please add me to the plan's email/ mailing list.

Name Richard Roche Address 13950 SW Aerie Drive
 Phone _____ City, State, ZIP Tigard OR 97223
 Email roche@parametrix.com Yes, please add me to the plan's email/ mailing list.

Name _____ Address _____
 Phone _____ City, State, ZIP _____
 Email _____ Yes, please add me to the plan's email/ mailing list.

Southwest Corridor Plan
Request to Comment

(Please print legibly)

Name: John Luffow Date: May 9, 2016
Affiliation (if any): Chair, Clackamas County Board of Commissioners
Street address: 2051 Kaen Rd #250
City: Oregon City, OR 97015
Email address: jluffow@clackamas.us

Southwest Corridor Plan
Request to Comment

(Please print legibly)

Name: Denise Fensbee Date: 5/9/2016
Affiliation (if any): PLC - Board Member
Street address: _____
City: _____
Email address: _____

Southwest Corridor Plan

Request to Comment

(Please print legibly)

Name: Dr. Lisa Avery Date: 5/9/2016

Affiliation (if any): PEC - Sylvania Campus President

Street address: _____

City: _____

Email address: _____

Southwest Corridor Plan

Request to Comment

(Please print legibly)

Name: R A FONTES Date: 5/9/16

Affiliation (if any): -

Street address: POB 144

City: LAKE OSWEGO

Email address: rfontes@Q.COM

Southwest Corridor Plan

Request to Comment

(Please print legibly)

Name: Ron Swaren Date: 6-9-2016

Affiliation (if any): _____

Street address: 1543 SE Umatic St

City: Portland, OR

Email address: _____

Use express buses, Double decker buses
Route can easily be modified.

Build bicycle infrastructure adjacent to Barber
Blvd. instead of in it.

Innovation is proceeding faster in road vehicles
instead of rail vehicles.

Southwest Corridor Plan

Request to Comment

(Please print legibly)

Name: JIM HOWELL Date: _____

Affiliation (if any): AORTA

Street address: _____

City: _____

Email address: _____

Southwest Corridor Plan

Request to Comment

(Please print legibly)

Name: Maria Leake Date: 5/9/16
Affiliation (if any): Far SW NA
Street address: on file
City: PA
Email address: on file

Southwest Corridor Plan

Request to Comment

(Please print legibly)

Name: JOHN CHARLES Date: MAY 9 2016
Affiliation (if any): CASCADE POLICY INST
Street address: 4850 SW Scholls Ferry
City: PA
Email address: john@cascadepolicy.org

Southwest Corridor Plan

Request to Comment

(Please print legibly)

Name: Doug Allen

Date: 5/9/16

Affiliation (if any): _____

Street address: 734 SE 47th Ave

City: Portland, OR 97215

Email address: dougallen@centurylink.net

Southwest Corridor Plan

Request to Comment

(Please print legibly)

Name: STEVE SCHOPP

Date: 5/9/16

Affiliation (if any): _____

Street address: TUALATIN

City: _____

Email address: STEVESCHOPP@AOL.COM

Southwest Corridor Plan

Request to Comment

(Please print legibly)

Name: Edith J. Hall Date: 5/19/2016

Affiliation (if any): SWN

Street address: 3150 4th Street NW

City: Washington DC

Email address: edith.hall@gmail.com

Southwest Corridor Plan

Request to Comment

(Please print legibly)

Name: Maura Fitzgerald Date: 5/19/2016

Affiliation (if any): SWN

Street address: _____

City: _____

Email address: A Fitzgerald. maura@gmail.com

Southwest Corridor Plan

Request to Comment

(Please print legibly)

Name: ROGER AVERBECK Date: 5/9/16
Affiliation (if any): SW NEIGHBORHOODS, INC
Street address: _____
City: _____
Email address: _____

Southwest Corridor Plan

Request to Comment

(Please print legibly)

Name: Allen Alley Date: _____
Affiliation (if any): ALLEY FOR GOV
Street address: 1003 THURACE DR
City: LAKE OSWEGO
Email address: allen@allenalley.com

Southwest Corridor Plan

Request to Comment

(Please print legibly)

Name: Linda Cohn Date: 5/9/16

Affiliation (if any): _____

Street address: 3020 NW Northrup #712 / ~~1112 S. S. S. S. S.~~ at 2641 SW Spring Garden

City: Portland OR 97209

Email address: _____

Testimony

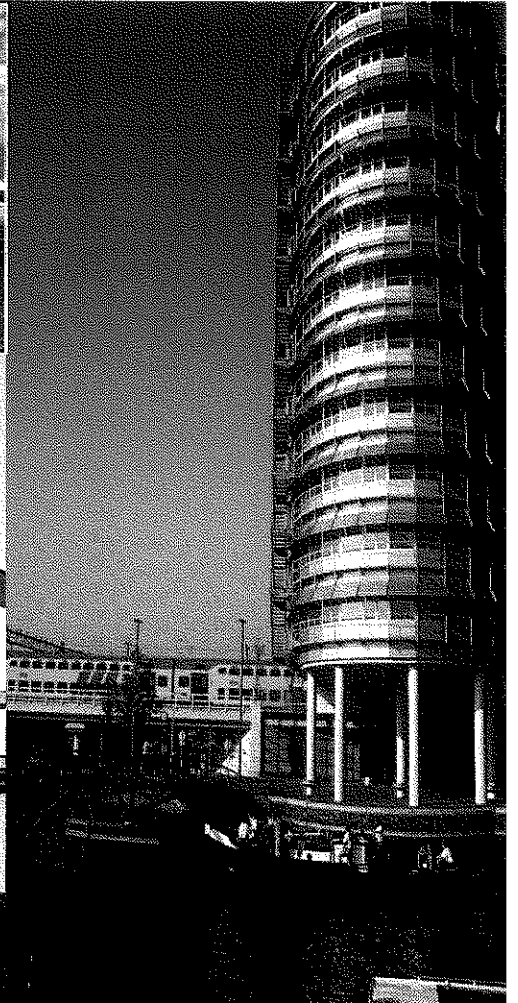
Brad Perkins

Durham councilor's name?

ARE YOU OK EXTENDING THE MEETING TIME
OR SHOULD WE TRUNCATE THE PRESENTATIONS
ON SIS & PURPOSE & NEED?

I have to leave at 11:30

New Columbia River Bridge & Multi-Network Transportation Plan



Oregon and Washington Governor or Legislator: We need your support for a New CRC Multi-Modal Bridge & Multi-Network Transportation Plan between Portland's Rose Quarter and Vancouver WA. The Commuter Express/Cascadia High Speed Rail (CHSR) corridor and economic development project will eventually connect Eugene, Oregon to Vancouver, BC.

What is it? The First Phase of development includes a CRC bridge, station hubs and fast trains.

- Double deck multi-modal bridge is 150 feet above the Columbia River with four traffic lanes designated for motor vehicles on the top deck and two sets of double tracks for freight rail and electrified Commuter Express/CHSR on the lower deck.
- A new Portland Rose Quarter Transportation Hub is for vehicles, buses, Max, Portland Streetcar, Commuter Express/inter-city CHSR, bikes and pedestrian use. This new Hub for advanced carbon reducing transportation networks will be a catalyst for town center mixed-use development at all transportation hub stops from Eugene to Vancouver B.C.
- A new CHSR multi-modal 10.5 mile electrified double track corridor from Portland Rose Quarter to 69th in Vancouver, WA.

Where will it be located?

- The new bridge over the Columbia River is 1.3 miles west of the existing I-5 Bridge and next to the circa 1908 Burlington Northern SF freight rail bridge.
- The new Rose Quarter Transportation Hub is planned south of the Moda Center. It consists of a roundabout for vehicles with relocated Max rails, concourse and a high rise private building above.
- New commuter express to the existing Vancouver Amtrak Station and new 69th Street/Fruit Valley Road transportation hubs.
- New Commuter Express/CHSR heavy rail in a new high capacity corridor near, but not in the Union Pacific and Burlington Northern Santa Fe corridor right of ways.
- Widen Portland Road to four lanes and bridge over Columbia River to Vancouver's Fruit Valley Road with new interchanges at Columbia Blvd, Marine Drive, and 4th Plain Blvd and at 69th Street.

Who is it for?

- Commuters who want traffic congestion relief, free parking and save on commute times. Six minutes by commuter express from the improved Vancouver Amtrak Station to the Rose Quarter. New bridge and corridor for vehicles 1.3 miles west of I-5.
- Vancouver and Portland Port users who want better access to destinations via an alternative to I-5.
- Business travelers and tourists who wish to travel by CHSR from the proposed Portland Rose Quarter CHSR Station to Seattle in 75 minutes and travel from Portland to Eugene, Oregon in 45 minutes.
- Bicyclists and pedestrians who want safer off street corridors to new transportation hubs.
- New water taxi users going from the Rose Quarter to downtown Portland or Lake Oswego.

How much will it cost and who will pay for this project?

- The multi-modal bridge, one mile tunnel, four interchanges, three transportation hubs, CHSR Station and new 10.5 mile double track heavy rail system for passengers between Portland's Rose Quarter and Vancouver Transportation Hubs will be approximately \$2 billion.
- Funding will be through similar sources that were proposed to fund the failed Columbia River Crossing. A plan is overdue that truly removes congestion on I-5 by new vehicle, freight and passenger rail corridors. As an example the cost of \$2 billion will come from: the State of Oregon \$400 million, the State of Washington \$400 million, the Federal New Start Program for Commuters \$800 million, Union Pacific's \$150 in capital expense or lease, Burlington Northern's \$150 million in capital expense or lease,* Federal grants and/or loans of \$300 million.
- This funding component is attractive to major freight rail users. Write a check or sign a long term lease and a new multi-modal bridge will be built for their use that is high enough to avoid having a lift system for boats.

What are the next phases after the Commuter Express/CHSR corridor is running from Portland to Vancouver, WA?

- Continued commuter express rail corridor development to Longview, WA.
- Continued commuter express rail corridor development to Salem, OR.
- Finish double track electrified rail corridor to Vancouver, B.C. and Eugene, OR. as CHSR.

Why is CHSR needed?

- To meet future growth we need a new travel corridor that is fast, efficient, frequent and reliable.
- The Northwest is environmentally conscious and CHSR meets the need to reduce carbon emissions.
- Union Pacific and BNSF rail companies will gain capacity by removing passenger rail service off their tracks and benefit by sharing grade and river crossing improvements.
- Higher speeds in a 467 mile corridor will out compete vehicle and air travel in half the time or more.
- Light weight freight companies (i.e., Federal Express, Amazon, UPS and US Postal, etc.) will have a faster and more efficient corridor to use and invest in for overnight freight movement.
- Incredible real estate investment opportunities that will encourage economic growth at the station hub areas and beyond.
- Adding a high speed rail network to the existing MAX, bus and bike systems will increase international recognition of the green Northwest and spur greater migration of people that want to live and work at densely built station hubs without the need to use a car.

How and when should we start getting support?

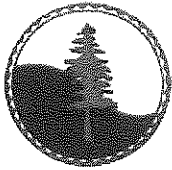
- Continue getting support from labor unions, business groups and the general public in Oregon and Washington shall occur in 2016.
- Continue getting Oregon and Washington legislative and governor support which will help set up a bi-state committee that will focus on a new multi-modal bridge across the Columbia River with improved transportation corridors for vehicle and rail systems. \$400 million bond support will be lobbied for in both Oregon and Washington legislatures for approval in the 2017 session.
- Seek financial commitment from the Federal New Starts Program, Union Pacific and BNSF in 2016.

2016 Concept Plan for Cascadiahighspeedrail.com with West and East Connections:

- Since 2007 Cascadia High Speed Rail, LLC has been planning various HSR corridors and multi-modal station stop options that, if used, can save NW citizens tens of millions of dollars and a decade of time. (See the corridor concept plan at: cascadiahighspeedrail.com). (It is important to understand that this concept plan varies a great deal from the EIS Study that ODOT and CH2MHill is working on currently. This \$10 million study recommends using the UP freight rail corridor for future passenger rail service. For the next 20 years ODOT recommends using diesel powered trains travelling an average speed of less than 50 mph on a 140 year old privately owned corridor).
- West Connection: Vehicle and/or fast rail corridor south from the multi-modal bridge, Portland Road, above BNSF through the "cut" over Willamette River, tunnel under Forest Park to Hwy 217 and Hwy 26. As an alternative new corridor from Beaverton to Vancouver, WA, it will result in time saving and congestion relief at the Vista Bridge Tunnel.
- East Connection: New rail corridor for UP freight and passengers from Gateway Green to the Dalles and beyond. New bike corridor along I-84 from the Rose Quarter to Multnomah Falls.

Contact Information:

Brad Perkins & Rudy Niederer
Cascadia High Speed Rail, LLC
cascadiahighspeedrail.com
503 317-6455



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Councilor Craig Dirksen
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Portland, OR 97232

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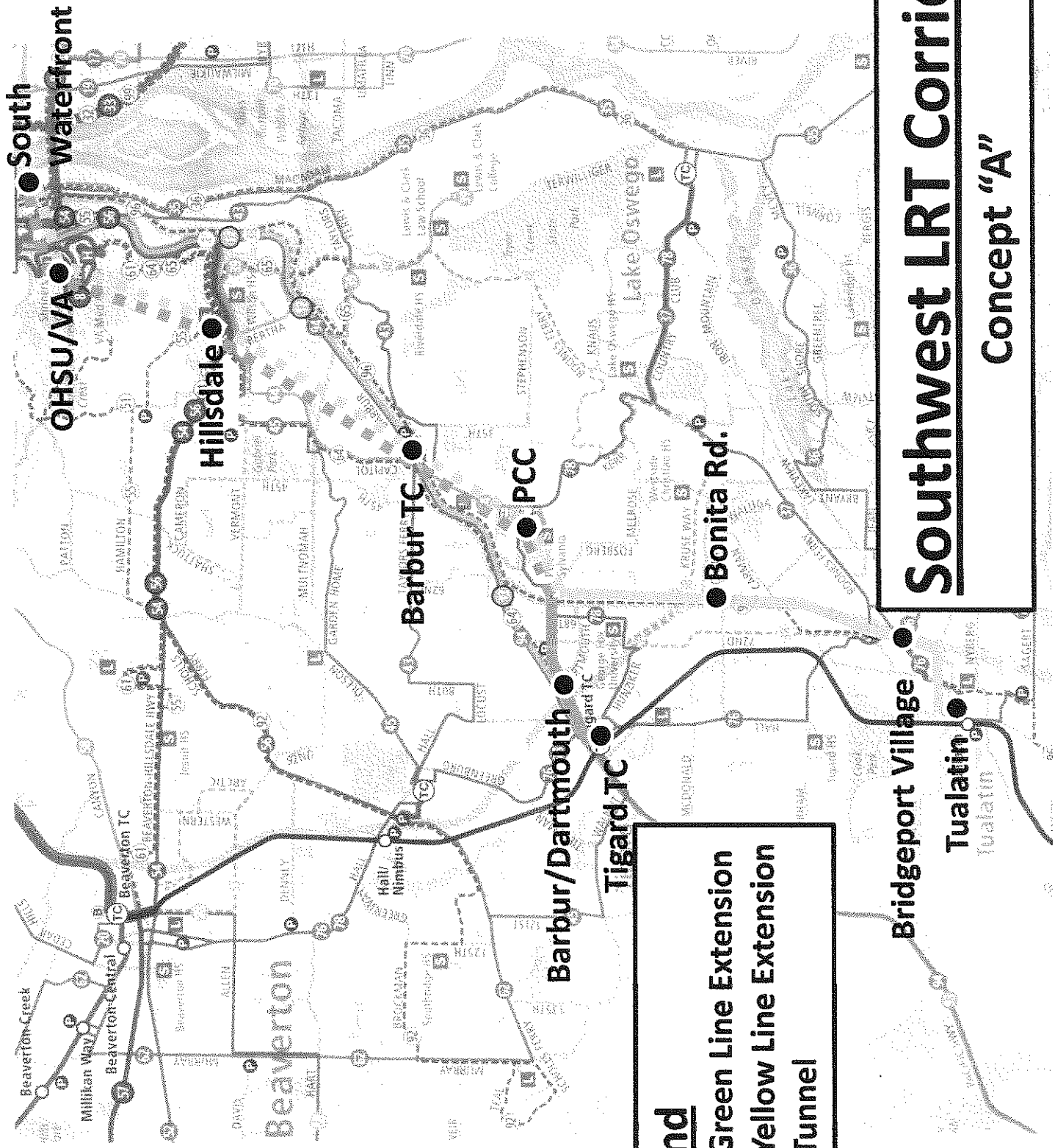
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Thank you for the opportunity to participate in the development of this important project in our community.

Sincerely,

Sam Pearson
President, Southwest Neighborhoods, Inc.



Southwest LRT Corridor Concept "A"

Legend

- Green Line Extension
- Yellow Line Extension
- Tunnel

Purpose & Need ppt

to:

acannon@ci.burlington.vt.us

Zmorckson@ci.burlington.vt.us

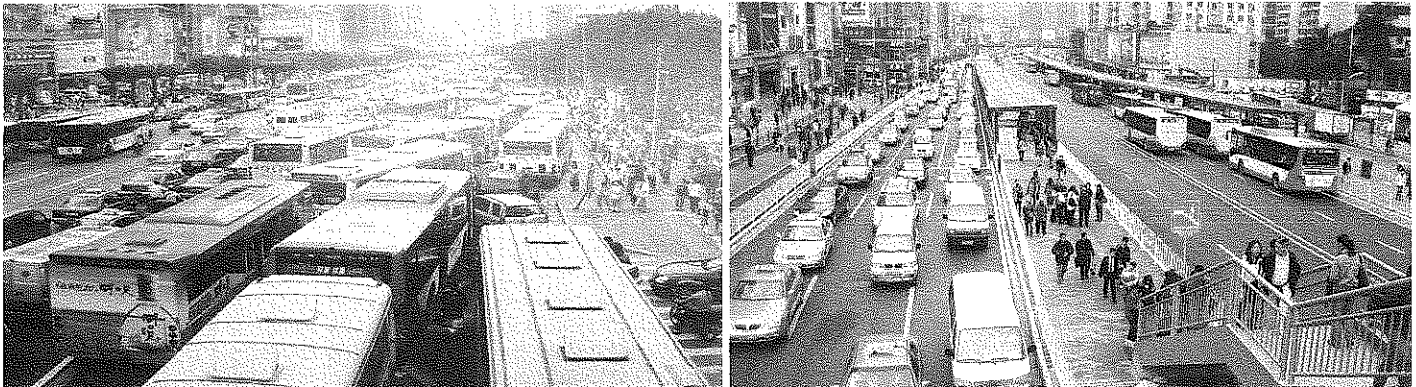
Do We Really Want To Do This?

Some SWC Concerns and Discrepancies

5/9/16 R A Fontes PO Box 144, Lake Oswego 97034 rfontes@Q.com

- 1. Lack of serious discussion of autonomous vehicle (AV) technology impacts on project outcomes:** Given the high likelihood and transformative nature of these technologies, how can mode choice be made without serious discussion of expected transit impacts such as ridership drops, cost-advantage shifts from rail to bus, and the possible loss of traditional transit altogether?
- 2. Vehicle capacity double-standard:** TriMet lists MAX capacities at 332 to 372 per two-car train; project staff uses 266. 266 may be scheduled loading, used to prevent overcrowding from demand spikes. Staff's 60' bus 86-rider capacity is reasonable, but larger than scheduled loads. Since headways are based on scheduled loading, staff's BRT design would perform more poorly than project documents indicate, and much more poorly than quality BRT.
- 3. No effort to get the most out of BRT:** For example, station-bypass capability could offer riders express service and reliability unavailable on MAX. Add direct-service and we'd have faster and more convenient service than MAX could possibly offer. This would require larger station areas, but split platforms could minimize roadway intrusion.
- 4. LRT reliability non disclosure:** We're told that LRT should be more reliable than BRT because it would have 100% exclusive right-of-way and would not overtax priority signals. MAX requires more unplanned service calls than any other TriMet service. Project documents overlook the reliability drop that came with MAX's age, growth, and increased complexity. Buses outperformed MAX eight months last year. BRT should be even better.
- 5. BRT capacity myths:** Unlike MAX, buses wouldn't have to use the Transit Mall or every stop on it. If demand warranted, BRT could skip stops to provide more capacity while reducing trip times. Individual BRT lines throughout the world carry up to 30,000 riders per hour without using double-articulated buses, far more than two-car LRT.
- 6. Overly optimistic LRT ridership and operating cost projections:** Metro's forecasting model consistently overestimated ridership on recent TriMet rail projects. We are told that LRT would provide 39,700 rides per day, second only to the Blue line (Gresham to Hillsboro), with almost twice as many rides as either of the next most productive lines, the Red and Green. That 39,700 would bring the cost per ride down to \$1.59, far less than the \$2.07 to \$2.80 MAX actually costs, according to TriMet's latest (Winter 2015-16) Route Ridership Report.

Guangzhou, China - before and after BRT installation:



Photos: University of Minnesota

This single BRT line carries peak direction loads of about 27,000 riders and a daily total of around 1,000,000—more than three times TriMet's total ridership. Because many riders were already using buses before BRT and the buses were a major congestion component, BRT noticeably improved traffic for everyone. The stations can be around 800 feet long, and feature a bypass-lane. Since this line follows a direct-service model (i.e. buses continue off-line in regular service), many buses are regular two-axle 40 footers with doors on the right side only. Some elements would not work in Portland, but we don't begin to need its capacity. BRT could easily meet our needs, if we wanted it to.

Autonomous vehicle developments: 1. Transportation Secretary Foxx, among others, believes that we should be able to start using AV's within 5 years. 2. European autonomous microbus demonstration projects are set to begin within the next few weeks. The vehicles are limited to about 12 to 15 mph, but will be fully computerized, with no back-up driver, and will carry ordinary folks on public roads. 3. General Motors is putting a half billion dollars into the LYFT ride hailing service to provide autonomous mobility-on-demand services. They plan to offer the public rides in AV's with back-up drivers next year. GM and competitors are doing everything they can to be ready for the market before it opens. If that happens, we can expect the shift from traditional transit to robotaxis to be very rapid.

Comparison of BRT vs. LRT costs on existing MAX lines: A necessarily rough, but good faith back-of-the-envelope effort.

Day	Max Load Section (MLS) Direction - Start	(A) MLS Rides	(B) LRT Runs	(C) BRT Runs (A)/26	(D) BRT Break-Even 2.5(B)	(E) Cost Ratio (C)/(D)	(F) LRT Ride Cost	(G) Total Rides	(H) Daily LRT Cost (F) x (G)	(I) Days Per Year	(J) Annual LRT Cost (H) x (I)	(K) Annual BRT Cost (E) x (J)	Annual Extra LRT Cost (J) - (K)
Wk	E - Wash. Park	9684	191	372	478	.778	\$2.02	59,170	\$119,523	255	\$30,478,365	\$23,712,168	\$6,766,197
Sa	E - Sunset	5296	154	204	385	.530	\$2.52	40,330	\$101,632	53	\$5,386,496	\$2,854,843	\$2,531,653
Su	E - Wash. Park	4269	123	164	308	.532	\$2.79	31,850	\$88,862	57	\$5,065,314	\$2,694,747	\$2,370,567
Wk	W - Hollywood	5081	151	195	378	.516	\$2.27	20,860	\$47,352	255	\$12,074,760	\$6,230,576	\$5,844,184
Sa	W - Division	2910	118	118*	295	.400	\$2.85	13,640	\$38,874	53	\$2,060,322	\$824,129	\$1,236,193
Su	W - Main	2429	112	112*	280	.400	\$3.49	10,800	\$37,692	57	\$2,148,444	\$859,378	\$1,289,066
Wk	N - Rose Qtr.	5259	148	202	370	.546	\$2.42	24,860	\$60,161	255	\$15,341,055	\$8,376,216	\$6,964,839
Sa	N - Montgomery	3079	134	134*	335	.400	\$3.36	16,350	\$54,936	53	\$2,911,608	\$1,164,643	\$1,746,965
Su	N - Rose Qtr.	2814	131	131*	328	.400	\$3.96	13,020	\$51,559	57	\$2,938,863	\$1,175,545	\$1,763,318
Wk	W - Conv. Ctr.	4436	140	171	350	.489	\$2.32	20,840	\$48,349	255	\$12,328,995	\$6,028,879	\$6,300,116
Sa	W - Conv. Ctr.	3633	132	140	330	.424	\$2.72	17,300	\$47,056	53	\$2,493,968	\$1,057,442	\$1,436,526
Su	W - Conv. Ctr.	2997	122	122*	305	.400	\$3.04	14,270	\$43,381	57	\$2,472,717	\$989,087	\$1,483,630
Totals:											\$95,700,907	\$55,967,653	\$39,733,254
Costs after TriMet automates its fleet. Assumes current ridership with 20% LRT and 50% BRT cost drops.											\$76,560,726	\$27,983,827	\$48,576,899

* Minimum BRT runs set to equal existing LRT runs to provide minimum service levels even though fewer BRT runs would be required to carry the light loads generated on these routes and days.

TriMet data from Fall 2015 Route Ridership Report, Passenger Census, and schedule. Assumptions: Based on Lane Transit District costs and the Madison Bus Size Study, BRT 60' buses would cost \$120 per hour to operate. Bus capacity set at 86 from SWC study; scheduled load would be 60% or 52. (C) uses 26 instead of 52 to allow for trips in both directions. Weekdays per year = 261 - 6 holidays, Saturdays = 52 + 1 holiday, Sundays = 52 + 5 holidays.

Autonomous vehicle developments: 1. Transportation Secretary Foxx, among others, believes that we should be able to start using AV's within 5 years.
 2. European autonomous microbus demonstration projects are set to begin within the next few weeks. The vehicles are limited to about 12 to 15 mph, but will be fully computerized, with no back-up driver, and will carry ordinary folks on public roads. 3. General Motors is putting a half billion dollars into the LYFT ride hailing service to provide autonomous mobility-on-demand services. They plan to offer the public rides in AV's with back-up drivers next year. GM and competitors are doing everything they can to be ready for the market before it opens. If that happens, we can expect the shift from traditional transit to robotaxis to be very rapid.

Comparison of BRT vs. LRT costs on existing MAX lines: A necessarily rough, but good faith back-of-the-envelope effort.

Day	Max Load Section (MLS) Direction - Start	(A) MLS Rides	(B) LRT Runs	(C) BRT Runs (A)/26	(D) BRT Break-Even 2.5(B)	(E) Cost Ratio (C)/(D)	(F) LRT Ride Cost	(G) Total Rides	(H) Daily LRT Cost (F) x (G)	(I) Days Per Year	(J) Annual LRT Cost (H) x (I)	(K) Annual BRT Cost (E) x (J)	Annual Extra LRT Cost (J) - (K)
Wk	E - Wash. Park	9684	191	372	478	.778	\$2.02	59,170	\$119,523	255	\$30,478,365	\$23,712,168	\$6,766,197
Sa	E - Sunset	5296	154	204	385	.530	\$2.52	40,330	\$101,632	53	\$5,386,496	\$2,854,843	\$2,531,653
Su	E - Wash. Park	4269	123	164	308	.532	\$2.79	31,850	\$88,862	57	\$5,065,314	\$2,694,747	\$2,370,567
Wk	W - Hollywood	5081	151	195	378	.516	\$2.27	20,860	\$47,352	255	\$12,074,760	\$6,230,576	\$5,844,184
Sa	W - Division	2910	118	118*	295	.400	\$2.85	13,640	\$38,874	53	\$2,060,322	\$824,129	\$1,236,193
Su	W - Main	2429	112	112*	280	.400	\$3.49	10,800	\$37,692	57	\$2,148,444	\$859,378	\$1,289,066
Wk	N - Rose Qtr.	5259	148	202	370	.546	\$2.42	24,860	\$60,161	255	\$15,341,055	\$8,376,216	\$6,964,839
Sa	N - Montgomery	3079	134	134*	335	.400	\$3.36	16,350	\$54,936	53	\$2,911,608	\$1,164,643	\$1,746,965
Su	N - Rose Qtr.	2814	131	131*	328	.400	\$3.96	13,020	\$51,559	57	\$2,938,863	\$1,175,545	\$1,763,318
Wk	W - Convent	4436	140	171	350	.489	\$2.32	20,840	\$48,349	255	\$12,328,995	\$6,028,879	\$6,300,116
Sa	W - Convent	3633	132	140	330	.424	\$2.72	17,300	\$47,056	53	\$2,493,968	\$1,057,442	\$1,436,526
Su	W - Convent	2997	122	122*	305	.400	\$3.04	14,270	\$43,381	57	\$2,472,717	\$989,087	\$1,483,630
Totals:													\$39,733,254
Costs after TriMet automates its fleet. Assumes current ridership with 20% LRT and 50% BRT cost drops.													\$48,576,899

* Minimum BRT runs set to equal existing LRT runs to provide minimum service levels even though fewer BRT runs would be required to carry the light loads generated on these routes and days.

TriMet data from Fall 2015 Route Ridership Report, Passenger Census, and schedule. Assumptions: Based on Lane Transit District costs and the Madison Bus Size Study, BRT 60' buses would cost \$120 per hour to operate. Bus capacity set at 86 from SWC study; scheduled load would be 60% or 52. (C) uses 26 instead of 52 to allow for trips in both directions. Weekdays per year = 261 - 6 holidays, Saturdays = 52 + 1 holiday, Sundays = 52 + 5 holidays.

**Table 5.3
Frequent Service Expansion**

Type	Line	From	To	Weekly Vehicle Hour Increase	Peak Bus Increase
FY 2007-FY2012					
New	76-Beaverton/Tualatin (Hall Blvd.)	Beaverton TC	Tualatin	390	3
New	31-King Rd	Milwaukie TC	Clackamas TC	240	2
Span	9-Powell	Portland Mall	I-205	80	0
Span	4-Division	Portland Mall	Gresham TC	50	0
Span	8-Jackson Park	Portland Mall	Marquam Hill	25	0
Span	15-Belmont	Portland Mall	Parkrose TC	75	0
Total				860	5
Tier 2 Priority					
Extension	54-Beaverton-Hillsdale Hwy	Beaverton TC	Scholls Ferry Rd.	225	2
Extension	33-McLoughlin (Molalla Ave)	Portland Mall	Clackamas Community College	260	2
New	35-Macadam Ave (Hwy 43)	Oregon City TC	Portland Mall	605	0
Extension	31-King Rd (Sunnyside Rd)	Clackamas TC	152nd	125	1
Span	12-Barbur	Portland Mall	Durham Rd.	60	0
Span	12- Sandy	Portland Mall	Parkrose TC	40	0
Span	33- McLoughlin	Portland Mall	Oregon City	160	0
Total				1,475	5
Tier 3 Priority					
Extension	12- Barbur	Durham Rd.	Sherwood	140	2
New	79-Clackamas Town Center (Webster Rd)	Clackamas TC	Oregon City TC	305	3
New	87-181st /182nd Ave	NE Sandy Blvd	SE Powell Blvd	380	2
Total				825	7

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Route	Fall 2015 Quarter							Fall 2014 Quarter			
	Boarding Rides	Rides Revenue Hour	Rides Vehicle Hour	Cost Per Ride	Passenger Miles	Passenger Miles Per Revenue Mile	Avg. Trip Length	Boarding Rides	Rides Per Vehicle Hour	Rides Change	Rides Per Hour
MAX Blue Line	59,170	182.3	147.4	\$2.02	379,245	61.5	6.4	59,220	153.6	-50	-6.3
MAX Green Line	20,860	178.6	131.5	\$2.27	89,094	43.7	4.3	20,650	150.2	210	-18.7
MAX Orange Line	10,960	151.3	108.5	\$2.75	45,860	37.3	4.2				
MAX Red Line	20,840	158.5	128.5	\$2.32	118,402	45.4	5.7	20,940	127.1	-100	1.4
MAX Yellow Line	13,900	189.6	137.9	\$2.16	43,773	42.1	3.1	15,230	128.4	-1,330	9.6
WES Commuter Rail	1,810	125.8	74.2	\$15.90	15,282	32.8	8.4	1,970	80.7	-160	-6.4
Portland Streetcar - NS Line											
Portland Streetcar - A Loop											
Portland Streetcar - B Loop											
1-Vermont	430	27.4	20.5	\$4.56	1,462	6.6	3.4	440	21.0	-10	-0.6
4-Division/Fessenden	17,580	54.2	42.2	\$2.21	50,397	12.6	2.9	18,130	43.8	-550	-1.6
6-Martin Luther King Jr Blvd	6,130	49.5	38.6	\$2.42	15,645	10.0	2.6	6,080	40.2	50	-1.6
8-Jackson Park/NE 15th	6,390	47.6	33.1	\$2.82	12,262	8.8	1.9	6,630	35.4	-240	-2.3
9-Powell Blvd	9,200	45.3	34.0	\$2.74	26,392	10.7	2.9	9,650	40.5	-450	-6.5
10-Harold St	2,190	32.8	27.4	\$3.41	6,639	7.0	3.0	2,100	26.3	90	1.1
11-Rivergate/Marine Dr	150	13.7	9.1	\$10.25	786	3.2	5.2	140	8.3	10	0.8
12-Barbur/Sandy Blvd	8,650	50.0	39.4	\$2.37	31,009	13.8	3.6	9,020	41.3	-370	-2.0
14-Hawthorne	5,850	54.7	41.9	\$2.23	12,736	10.7	2.2	6,310	45.3	-460	-3.4
15-Belmont/NW 23rd	8,350	45.7	33.7	\$2.77	20,369	10.5	2.4	8,870	38.3	-520	-4.6
16-Front Ave/St Helens Rd	770	22.0	15.6	\$5.98	4,876	6.8	6.3	750	15.1	20	0.5
17-Holgate/Broadway	6,530	41.1	31.9	\$2.92	22,229	11.8	3.4	6,820	35.3	-290	-3.4
18-Hillside	20	12.5	12.5	\$7.47	29	1.3	1.2	20	11.9	0	0.6
19-Woodstock/Glisan	6,360	36.8	29.3	\$3.19	20,777	9.5	3.3	6,390	31.2	-30	-1.9
20-Burnside/Stark	10,820	48.7	39.3	\$2.37	33,158	10.9	3.1	11,460	42.0	-640	-2.7
21-Sandy Blvd/223rd	2,040	42.6	28.5	\$3.28	7,201	8.6	3.5	2,130	29.7	-90	-1.3
22-Parkrose	510	28.8	21.6	\$4.32	1,020	3.7	2.0	560	23.8	-50	-2.2
23-San Rafael	150	20.4	12.6	\$7.40	313	2.4	2.1	160	13.7	-10	-1.1
24-Fremont	560	21.3	15.8	\$5.89	1,439	3.8	2.6	560	16.0	0	-0.2
25-Glisan/Rockwood	160	24.1	16.9	\$5.53	377	3.1	2.3	190	19.8	-30	-2.9
29-Lake/Webster Rd	230	18.5	15.0	\$6.21	816	4.1	3.6	290	18.0	-60	-3.0
30-Estacada	650	17.9	11.9	\$7.84	6,791	7.0	10.5	560	13.0	90	-1.1
32-Oatfield	600	16.1	12.1	\$7.70	2,291	4.2	3.8	920	18.5	-320	-6.4
33-McLoughlin/King Rd	5,210	35.4	26.1	\$3.58	21,546	10.1	4.1	5,710	30.9	-500	-4.8
34-Linwood/River Rd	520	12.5	9.7	\$9.58	2,263	3.4	4.4	200	11.9	320	-2.1
35-Macadam/Greeley	4,200	36.2	27.7	\$3.37	23,571	13.1	5.6	4,320	28.5	-120	-0.8
36-South Shore	210	19.7	11.7	\$7.95	1,027	5.6	4.8	210	11.3	0	0.4
37-Lake Grove	80	20.3	13.4	\$6.94	281	3.5	3.4	90	14.1	-10	-0.7
38-Boones Ferry Rd	430	25.7	17.2	\$5.43	2,721	9.3	6.3	410	16.4	20	0.8



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Weekdays

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Route	Fall 2015 Quarter							Fall 2014 Quarter			
	Boarding Rides	Rides Revenue Hour	Rides Vehicle Hour	Cost Per Ride	Passenger Miles	Passenger Miles Per Revenue Mile	Avg. Trip Length	Boarding Rides	Rides Per Vehicle Hour	Rides Change	Rides Per Hour Change
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Portland Streetcar - A Loop											
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4-Division/Fessenden	17,580	54.2	42.2	\$2.21	50,397	12.6	2.9	18,130	43.8	-550	-1.6
6-Martin Luther King Jr Blvd	6,130	49.5	38.6	\$2.42	15,645	10.0	2.6	6,080	40.2	50	-1.6
8-Jackson Park/NE 15th	6,390	47.6	33.1	\$2.82	12,262	8.8	1.9	6,630	35.4	-240	-2.3
9-Powell Blvd	9,200	45.3	34.0	\$2.74	26,392	10.7	2.9	9,650	40.5	-450	-6.5
10-Harold St	2,190	32.8	27.4	\$3.41	6,639	7.0	3.0	2,100	26.3	90	1.1
11-Rivergate/Marine Dr	150	13.7	9.1	\$10.25	786	3.2	5.2	140	8.3	10	0.8
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22-Parkrose	510	28.8	21.6	\$4.32	1,020	3.7	2.0	560	23.8	-50	-2.2
23-San Rafael	150	20.4	12.6	\$7.40	313	2.4	2.1	160	13.7	-10	-1.1
24-Fremont	560	21.3	15.8	\$5.89	1,439	3.8	2.6	560	16.0	0	-0.2
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29-Lake/Webster Rd	230	18.5	15.0	\$6.21	816	4.1	3.6	290	18.0	-60	-3.0
30-Estacada	650	17.9	11.9	\$7.84	6,791	7.0	10.5	560	13.0	90	-1.1
32-Oatfield	600	16.1	12.1	\$7.70	2,291	4.2	3.8	920	18.5	-320	-6.4
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35-Macadam/Greeley	4,200	36.2	27.7	\$3.37	23,571	13.1	5.6	4,320	28.5	-120	-0.8
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