SOUTHWEST CORRIDOR
LIGHT RAIL PROJECT

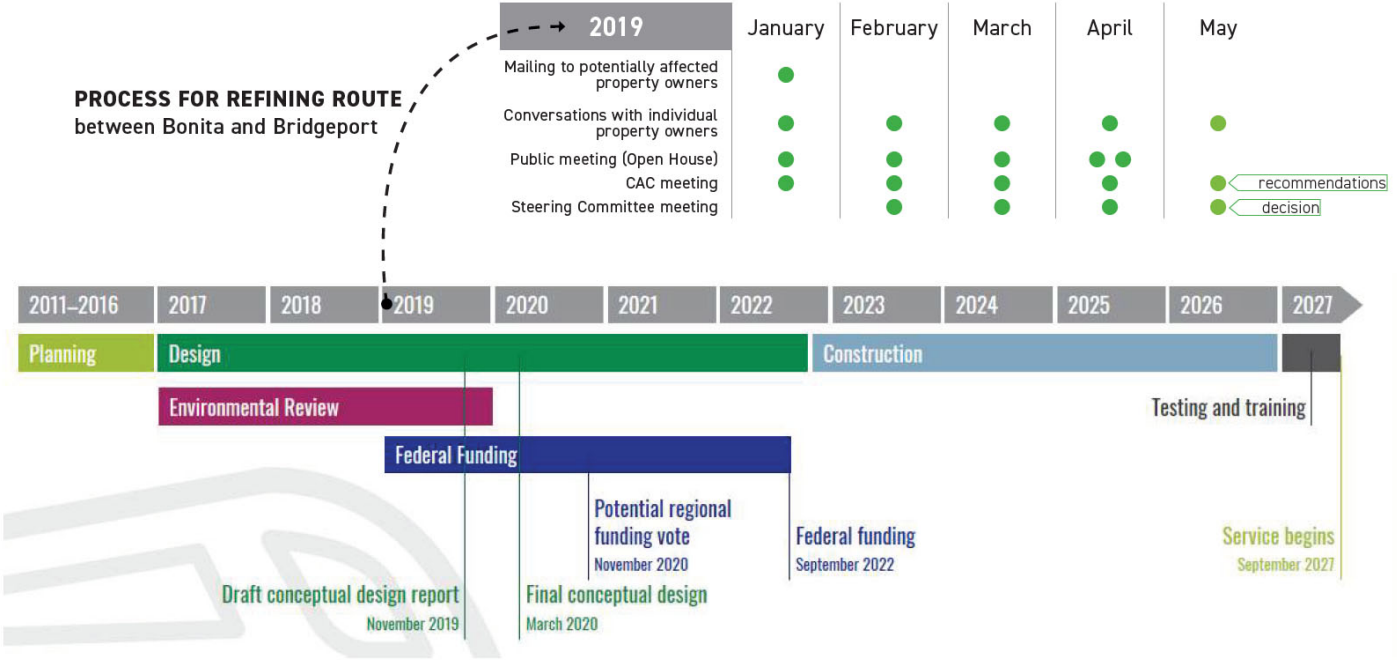
Steering Committee

Bonita to Bridgeport

May 13, 2019

GREAT PLACES SW Corridor

Bonita to Bridgeport Timeline



SWC Cost Elements

Note: Assume 3.5% escalation

Project Scope Target (YOE)	2.375B
2018 Estimate (YOE)	2.733B

Total Cost/(Scope Gap):

To Reach Bridgeport: 2.733B/(-.358M)

- Solve Viaducts Funding: D
- Reduce High Value ROW Costs: E
- Reduce O&M Facility: G
- Reduce Bonita to Bridgeport Costs: H or I
- Continue to Balance Cost Pressures: A thru G

- A **Downtown Tie-in** + $10-40M
- B **Marquam Hill Connector** + $0-20M
- C **Consolidate Station(s)** - $3.4-7.5M
- D **Viaducts** - $200M
- E **High Value ROW** * - $15-50M
- F **B2 - Short Span** - $0-7.5M
- G **O&M Facility** - $15-50M
- H **74th Alignment** - $0-51M
- I **Upper Boones At-Grade** - $55M

Updated: 04.02.2019

Options Considered

1. LPA 2018

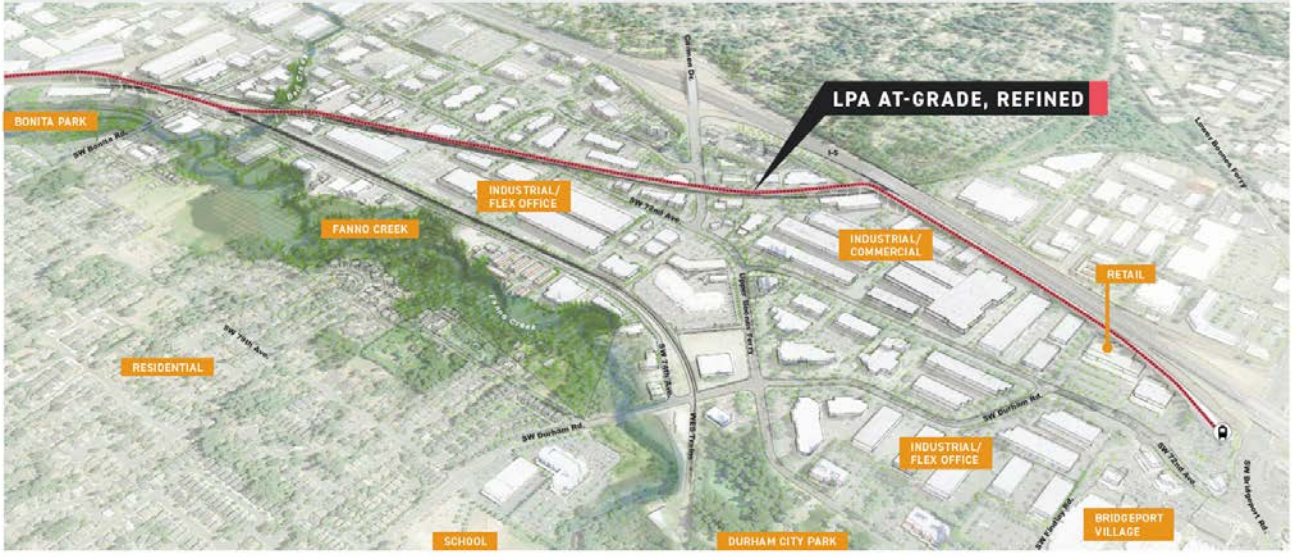
4. 74TH AVE.

2. LPA ELEVATED

5. 74TH AVE., REFINED

3. LPA AT-GRADE, REFINED

6. EAST OF WES



STAFF FINDINGS ON LPA AT-GRADE, REFINED ROUTE ARE BASED ON THE FOLLOWING:

1. Fewer business impacts
2. Lower cost with fewer risks to project schedule
3. Station at Upper Boones Ferry Road serves employment center
4. Multiple potential designs for Bridgeport Station, including option with no business displacements

FOLLOW-UP ON LPA AT-GRADE, REFINED ROUTE

Detailed traffic study by the end of 2019 will help partners collaborate on at-grade crossing design.

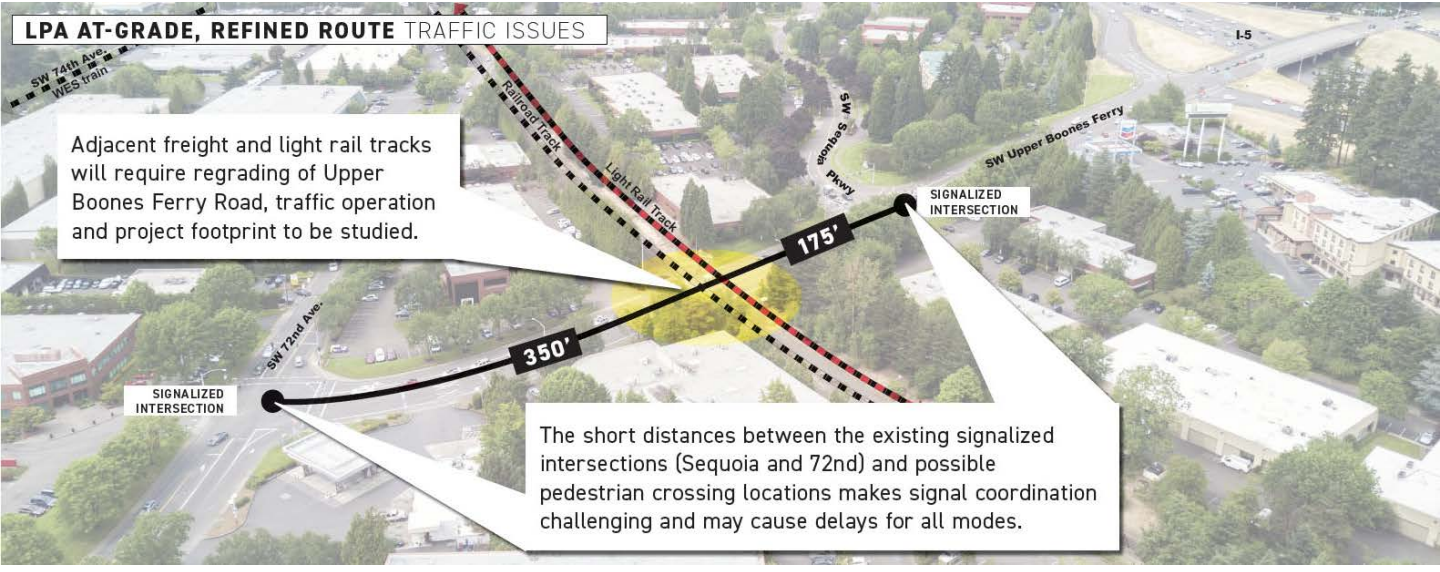
- Safety – follow industry best practices
- Transit reliability and travel time – make transit fast and easy
- Traffic issue – motor vehicle queuing, level of service, delay – meet 2035 "no-build" conditions (2045 at I-5 ramps)

Comparison of Options

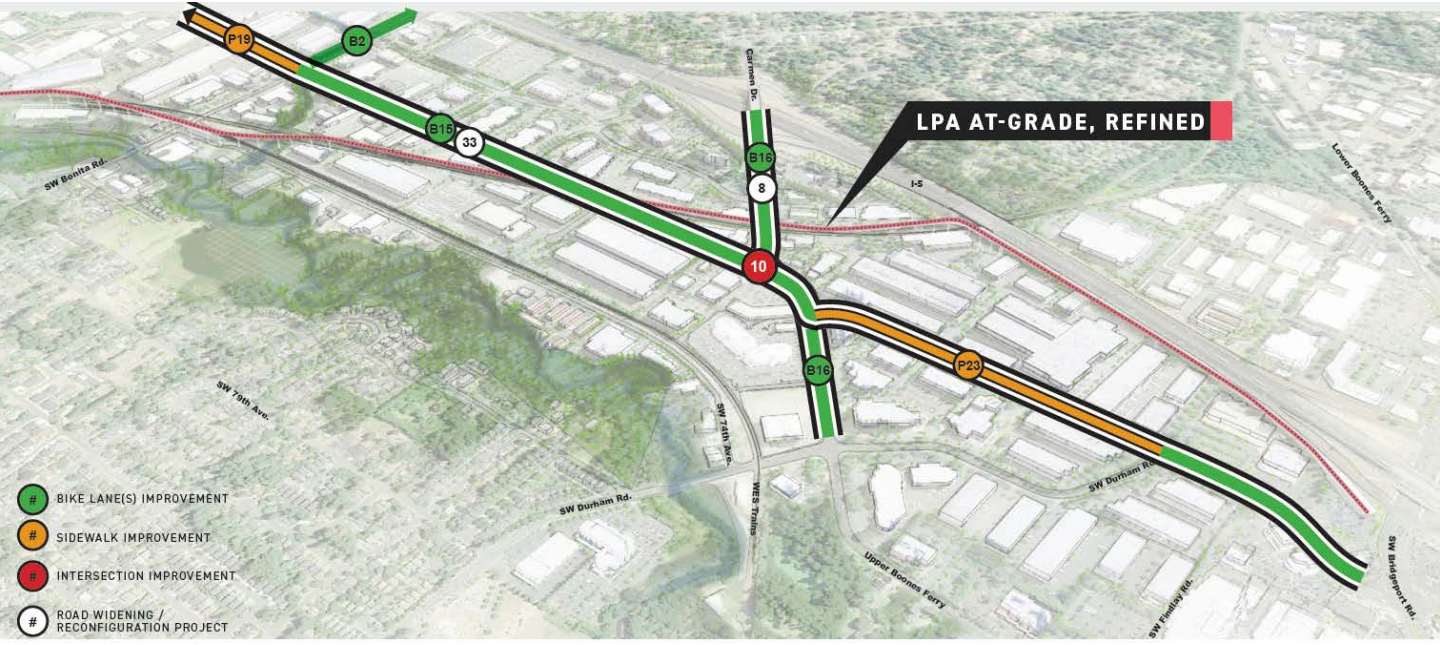
	LPA 2018	LPA Elevated	LPA at-grade Refined	74th Ave	74th Ave Refined	East of WES
TRAFFIC						
At-grade crossings	72nd Ave Upper Boones, with queuing concern	———	72nd Ave Upper Boones, with queuing concern	———	———	———
Bridgeport Park & Ride Location	South of Lower Boones	South of Lower Boones	South of Lower Boones	North of Lower Boones	North of Lower Boones	North of Lower Boones
LIGHT RAIL PERFORMANCE						
Travel time difference from LPA	N/A	30 seconds faster	30 seconds slower	60 seconds faster	60 seconds faster	60 seconds faster
On-time performance	Risk of delay	———	Risk of delay	———	———	———
PROPERTY ACQUISITIONS						
Full or partial acquisitions	31	28	33	32	34	24
RELOCATIONS						
Business	12	11	8	43	10	9
Employees	320	270	130	680	190	250
ENVIRONMENTAL IMPACTS						
Acres of floodplain	0.00	0.00	0.00	0.80	0.00	0.00
Acres of wetland	0.01	0.1	0.1	0.56	0.14	0.26
LAND USE, TRAILS						
Difference in land uses served by an Upper Boones station	More commercial, industrial	More commercial, industrial	More commercial, industrial	More residential	More residential	More residential
Regional trail opportunities	———	———	———	On-street	On-street	———
RISKS						
Railroad interface	Union Pacific; no existing agreement	Union Pacific; no existing agreement	Union Pacific; no existing agreement	Outside railroad right-of-way	Portland & Western (WES); shared use agreement	Portland & Western (WES); shared use agreement
Utilities	———	———	———	High risk	Higher risk	———
COST						
Difference from most recent full-project cost estimate	(-$55m)	———	(-$53m)	(-$31m)*	(-$77m)*	+$12.5m*

*Risk of additional environmental study

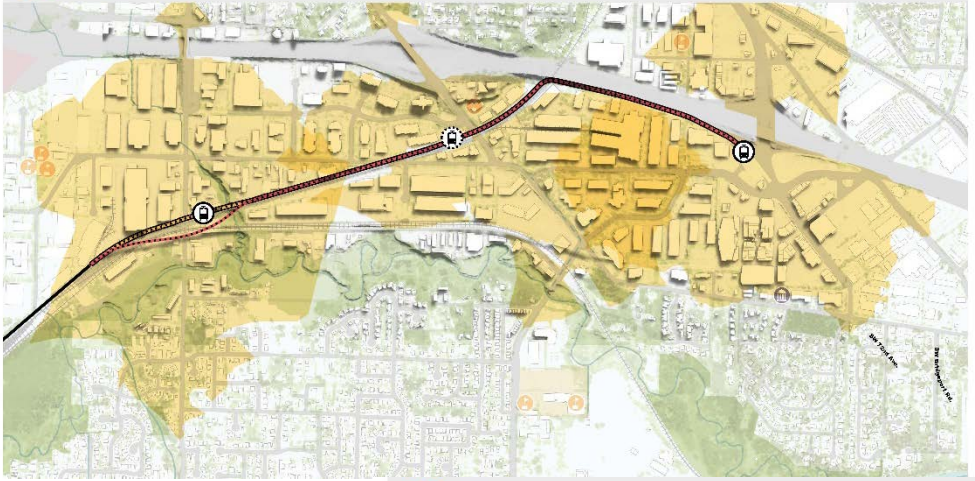
LPA At-Grade, Refined Traffic Issues



Future Planned Projects



LPA STATIONS & 1/2 MILE WALK DISTANCE



74TH STATIONS & 1/2 MILE WALK DISTANCE

168 COMMENT CARDS RECEIVED

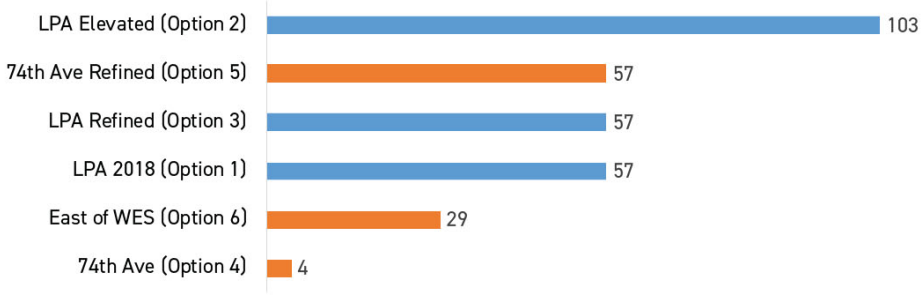
OVER 325 ATTENDEES AT MEETINGS & OPEN HOUSES

OVER 350 EMAILS & LETTERS

MARCH AND APRIL COMMENT CARDS

GATHERED FROM PUBLIC OPEN HOUSES AND ONLINE

PREFERRED OPTIONS



Respondents could choose multiple updated 4/23/19 5pm

TOP OPEN-ENDED COMMENTS

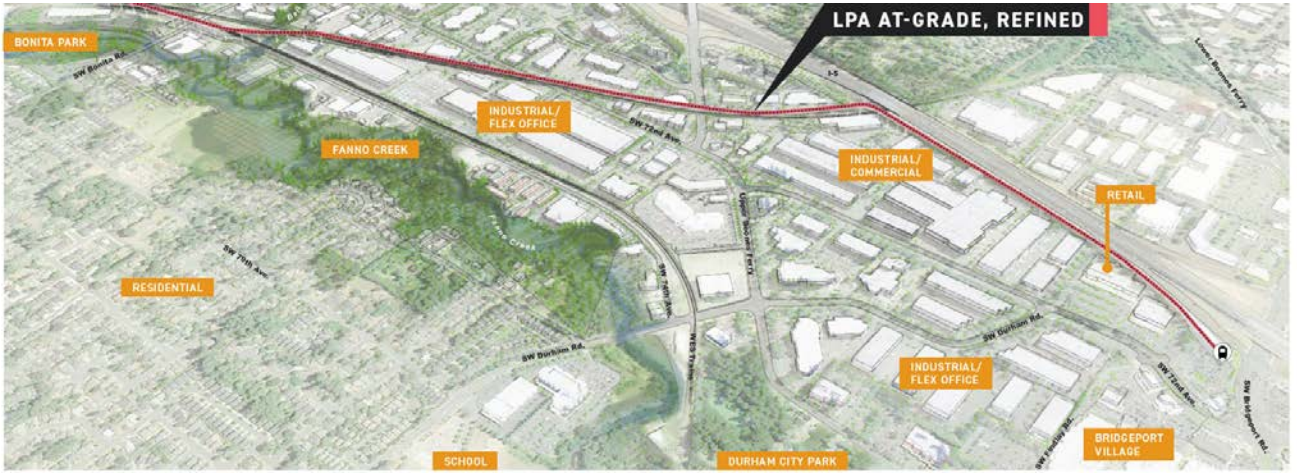
- Concern about business impacts (117)
- Circuit Bouldering Gym (54)
- Concern about traffic impacts (52)
- Cost Considerations (26)
- Prefer lower cost option (17)
- Prefer higher cost for lower impacts (9)

April 25th Open House

- About 30 people; 10 comment cards
- Many supported LPA elevated (for traffic and avoiding business impacts)
- A few supported 74th Ave, refined (for station at 74th & Upper Boones)
- A few supported LPA at-grade, refined
- Many advocated for bike and pedestrian access to stations

Community Advisory Committee (CAC) feedback

- **Unanimous concurrence with staff findings**
- Additional Considerations:
  - Safety improvements for people walking and biking at Upper Boones crossing
  - Freight mobility at 72nd & Upper Boones
  - Interconnected signals
  - Robust support for relocated businesses



Staff Recommendation: LPA At-Grade, Refined

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Discussion & Decision

SOUTHWEST CORRIDOR
LIGHT RAIL PROJECT

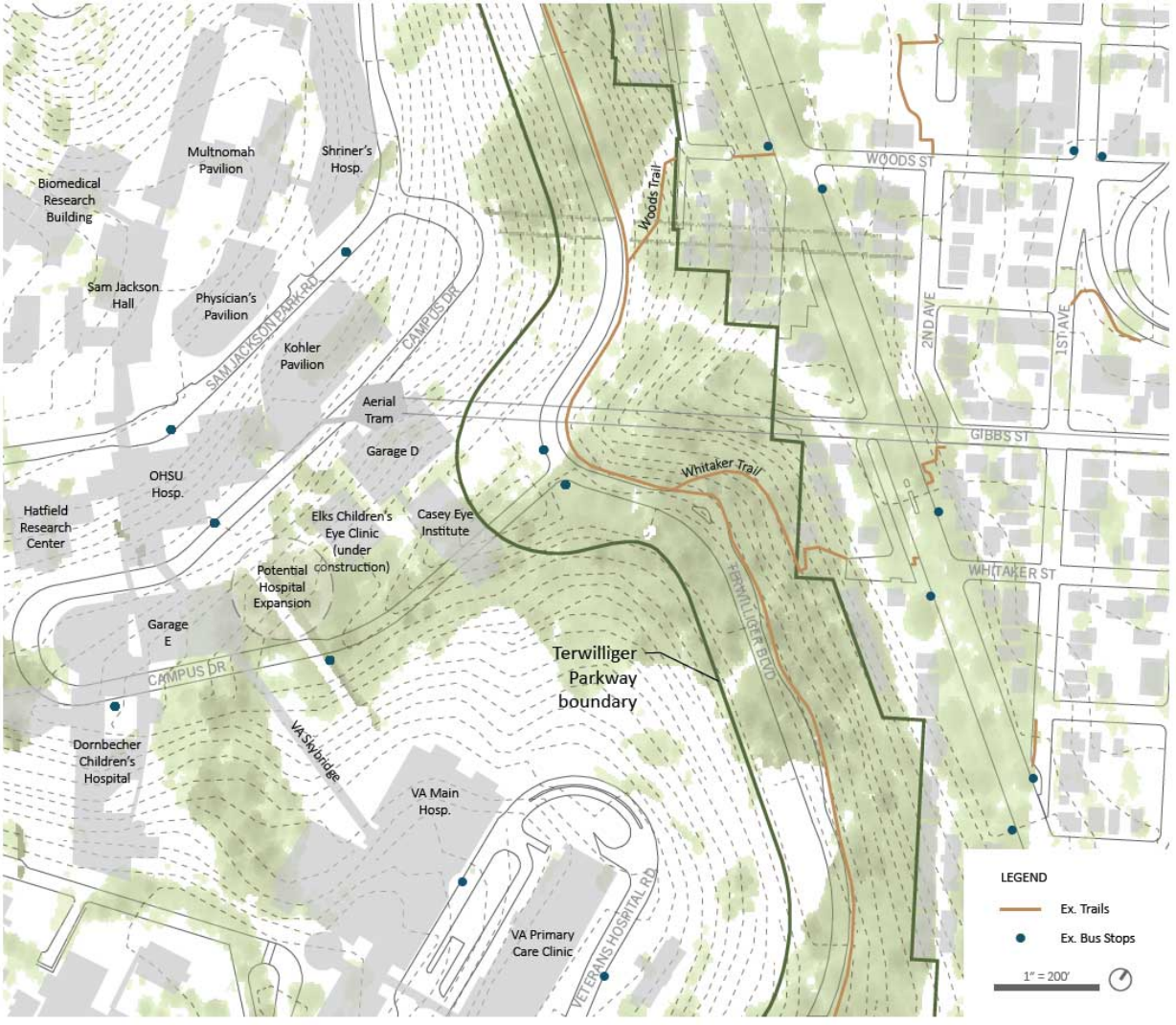
Steering Committee

Marquam Hill Connector

May 13, 2019

GREAT PLACES
SW Corridor

Marquam Hill Connector


Multnomah Pavilion
Shriner's Hosp.
Biomedical Research Building
Sam Jackson Hall
Physician's Pavilion
Kohler Pavilion
SAM JACKSON PARK RD
CAMPUS DR
Aerial Tram
Garage D
OHSU Hosp.
Hatfield Research Center
Elks Children's Eye Clinic (under construction)
Casey Eye Institute
Potential Hospital Expansion
Garage E
CAMPUS DR
Dornbecher Children's Hospital
VA Skybridge
VA Main Hosp.
VA Primary Care Clinic
VETERANS HOSPITAL RD
Terwilliger Parkway boundary
Woods Trail
Whitaker Trail
WOODS ST
2ND AVE
1ST AVE
GIBBS ST
WHITAKER ST
TERWILLIGER BLVD
LEGEND
Ex. Trails
Ex. Bus Stops
1" = 200'

Goals & Criteria

- **Access:** Develop equitable, efficient, convenient connections for all users to a number of destinations.

- **Safety:** Create a safe & secure, 24/7 connection for all users.

- **Context:** Enhance & improve the historic, scenic & recreational resources; consider the unique character of the area in the design.

- **Environmental:** Project & enhance natural resources & habitat.

Goals & Criteria

- **Operational:** Provide a long-term, sustainable connection for current & future users.

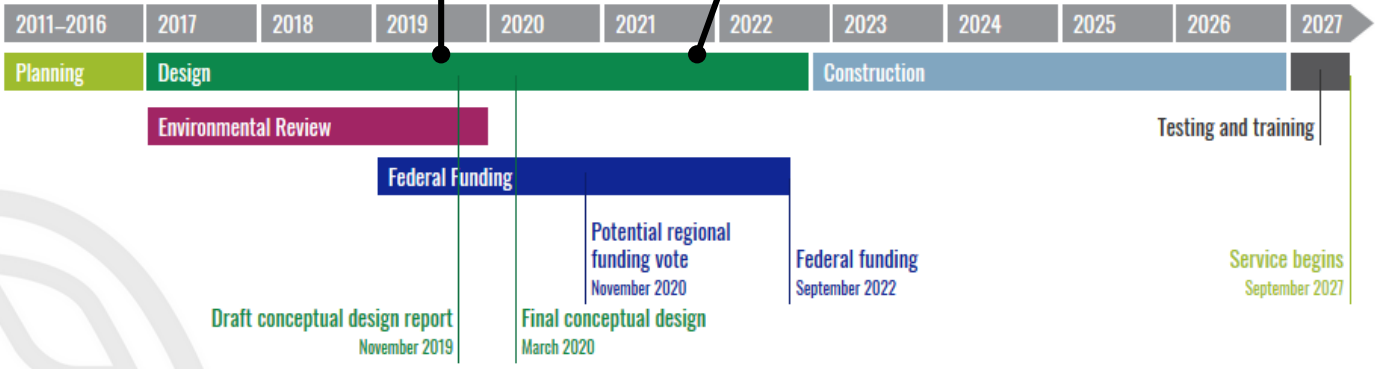
- **Budget/Schedule:** Be cost effective & timely within the SW Corridor Light Rail project.

- **Experience:** Create a connection that provides a high-quality user experience & inspires civic pride.

Timeline

Connector Type Selected
June 2019

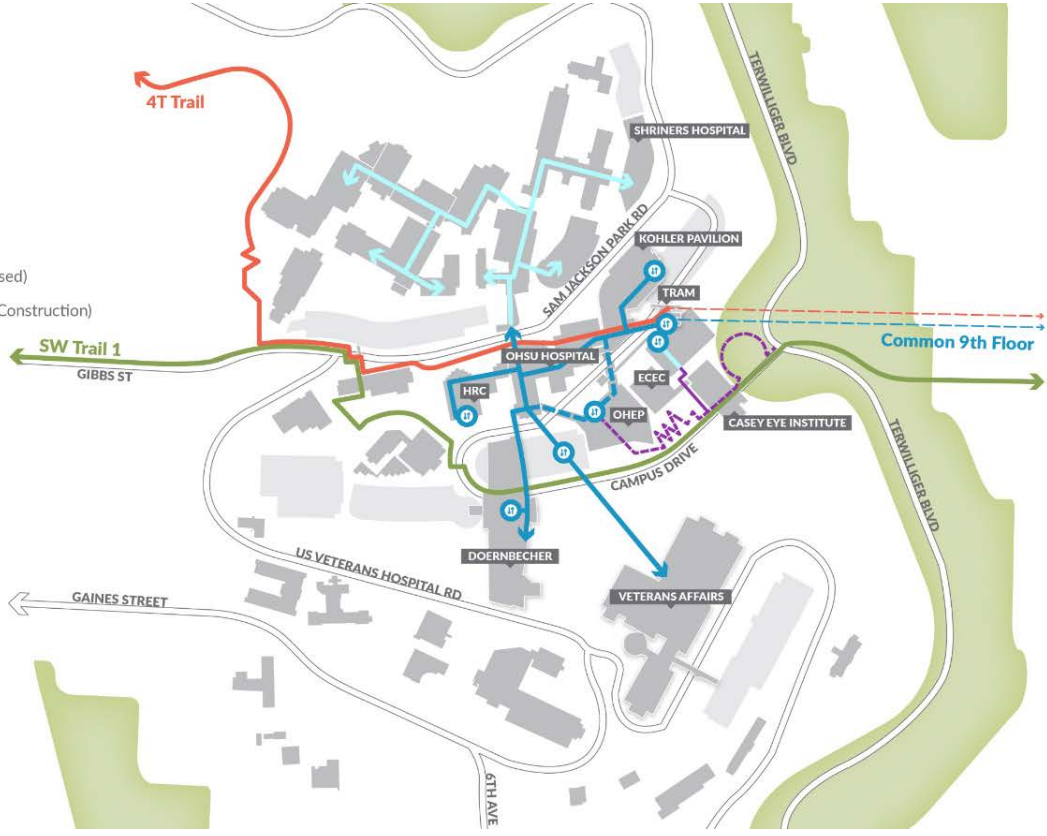
Continued Outreach & Design Work
2019 - 2022



Options

Option	Rough Cost Estimate
Bridge + Elevator	$15 – 25 million
Inclined Elevator (Funicular)	$35 – 45 million
Aerial Tram	$50 – 85 million
Tunnel + Elevator	$55 – 125 million

Marquam Hill Access



OHEP	OHSU Hospital Expansion Project (Proposed)
ECEC	Oregon Elks Children's Eye Clinic (Under Construction)
HRC	Hatfield Research Center
	Common 9th Floor
	Proposed OHEP 9th Floor Skybridges
	Elevator to Common 9th Floor
	Interior ADA-accessible connection
	Exterior ADA-accessible connection
	Proposed ADA-accessible pathway
	SW Trail 1
	4T Trail

Not to scale

Bridge + Elevator

Pros:

- Simple and cost-effective
- Limited impacts on landscape
- Canopy walk and views
- Several alternatives to study and evaluate

VIEW FROM BASE OF CAMPUS DRIVE, LOOKING EAST

VIEW FROM BASE OF HILL, LOOKING WEST

Bridge + Elevator

Cons:

- Longer walking distance
- Visible structure; avoid impacts to designated scenic view corridor
- Safety and exposure to elements

VIEW FROM BASE OF CAMPUS DRIVE, LOOKING EAST

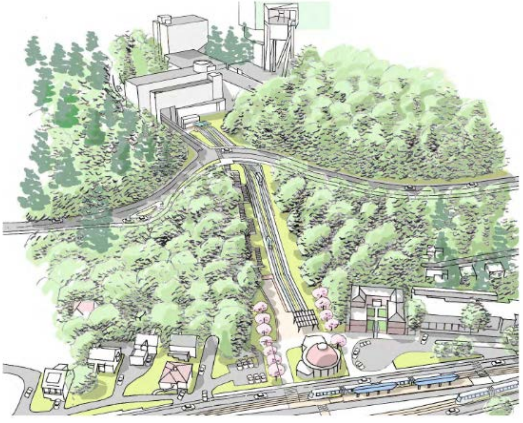
VIEW FROM BASE OF HILL, LOOKING WEST

Inclined Elevator

Pros:

- Cool, unique, iconic!
- Limited walking required
- Safe and weather-protected
- Easy to use; similar to an elevator (no attendant required)

VIEW FROM BASE OF HILL, LOOKING WEST



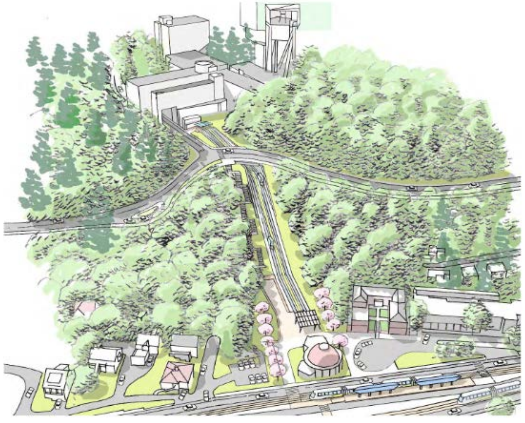
AERIAL VIEW, LOOKING WEST

Inclined Elevator

Cons:

- More expensive than Bridge and Elevator
- New technology for Portland
- Consider impacts to wildlife and forest
- Avoid expensive utility relocations

VIEW FROM BASE OF HILL, LOOKING WEST



AERIAL VIEW, LOOKING WEST

Aerial Tram

Pros:

- Good views and fun experience
- Maintains use and identity of Terwilliger Parkway

Aerial Tram

Cons:

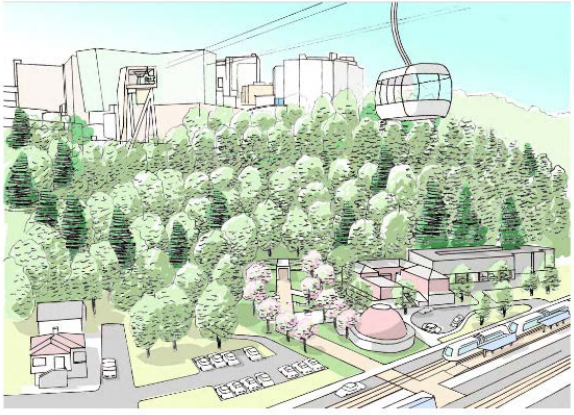
- Expensive: capital, operations, maintenance
- Likely user fee
- Possible tower and cable view obstructions

Tunnel + Elevator

Pros:

- Maintains use and identity of Terwilliger Parkway
- Sheltered from the elements

VIEW FROM BASE OF HILL, LOOKING WEST



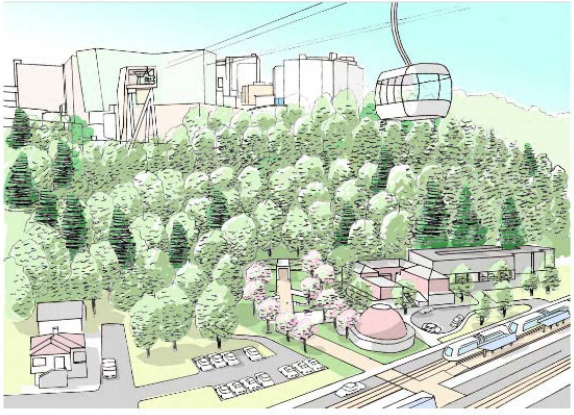
AERIAL VIEW, LOOKING WEST

Tunnel + Elevator

Cons:

- Expensive: capital, operations, maintenance
- Does not feel safe and comfortable
- Long walking distance

VIEW FROM BASE OF HILL, LOOKING WEST



AERIAL VIEW, LOOKING WEST

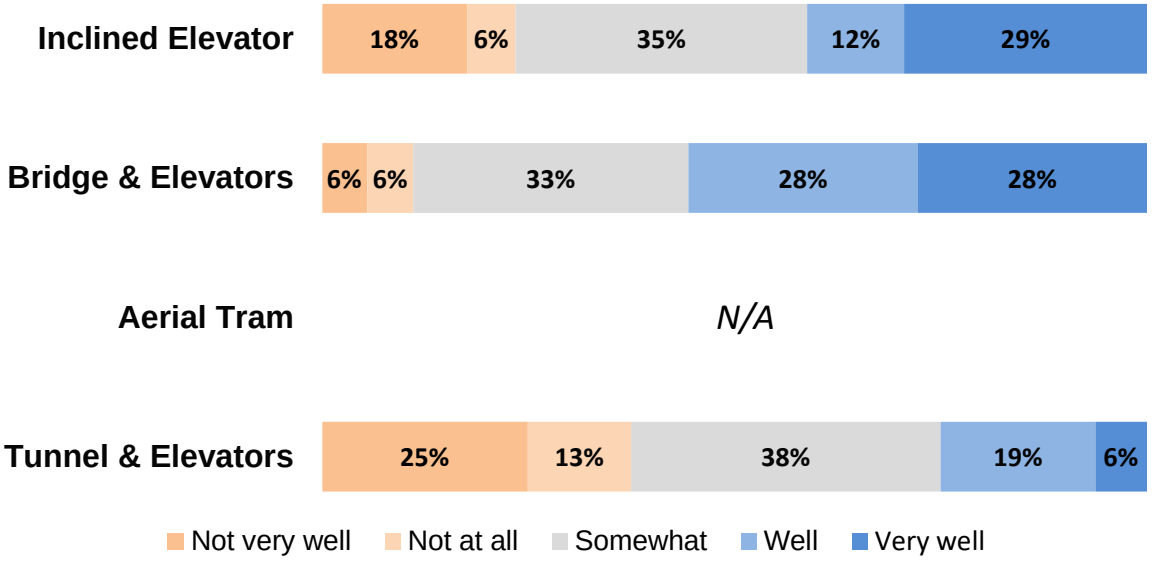
TriMet Committee on Accessible Transportation (CAT)

Preferred Options

- Bridge + Elevator
- Inclined Elevator

In-Person Open House

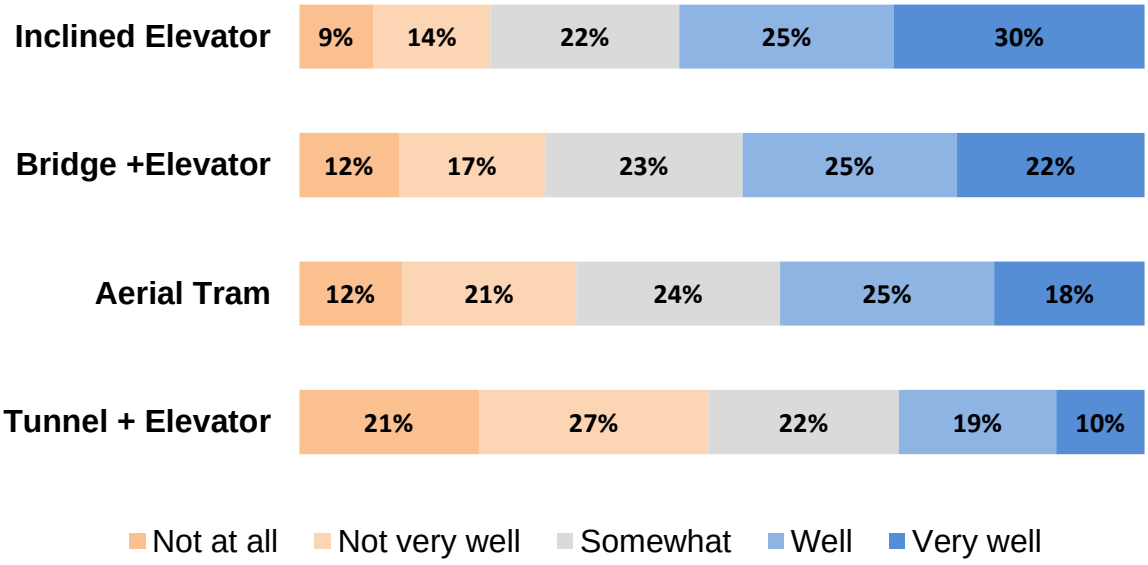
How well does the option meet the project goals?



Total Responses: 17

Online Open House

How well does the option meet the project goals?



Total Responses: 291

Options as of May 8

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Marquam Hill Connector

SOUTHWEST CORRIDOR
LIGHT RAIL PROJECT

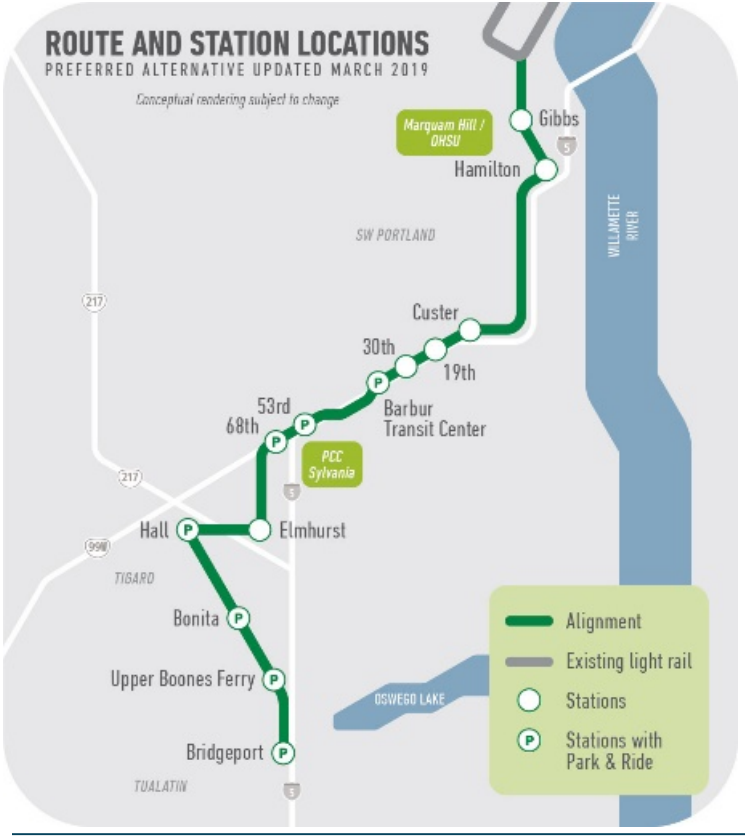
Community Advisory Committee

Park & Rides

May 2, 2019

GREAT PLACES SW Corridor

Overview



- Goals & Objectives
- Inventory & Usage
- Existing Park & Rides
- Lessons Learned
- Considerations
- Next Steps

Overview

What are Park & Rides?

- Station access; bring riders from low density areas with limited mode options to high capacity stations
- Typically adjacent to arterials
- Surface lot or structure

Orange Line: SE Tacoma Park & Ride

Blue Line: Sunset Park & Ride

Goals & Objectives

Access:

- Station access for all modes
- Equitable, efficient, convenient

Cost:

- Included in FTA's cost effectiveness guidelines
- Balance P&R costs within Project
- Weigh against Ridership
- Potential trigger of traffic mitigation

Goals & Objectives

Context:

- Existing land use, density
- Transit oriented development (TOD)
- Future land use, zoning, and community vision
- Responsible use of public resources, land

FEIS:

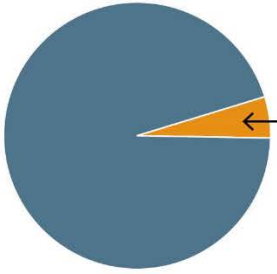
- Visual impact, environmental impact, etc.
- Respond to DEIS public comments
- Ongoing engagement with public and partners

Background

TriMet Park & Ride Policy (2005)

- In 2040 Regional and Town centers, design facilities that minimize the use of developable urban land
- Prioritize new facilities to provide convenient access for residents of under-served transit areas
- Protect the pedestrian and neighborhood environment and opportunities for Transit-oriented Development (TOD)
- Provide location and design that protects pedestrian and bike traffic safety with a focus on eyes on the street
- Maximize efficiency through the use of partnerships within the public and private sectors

Existing Park & Rides



5% of TriMet's weekday ridership originates from Park & Ride

12,614 Existing TriMet Park & Ride Spaces

40% of TriMet's Park & Ride spaces are typically empty on a weekday

What criteria affects utilization?

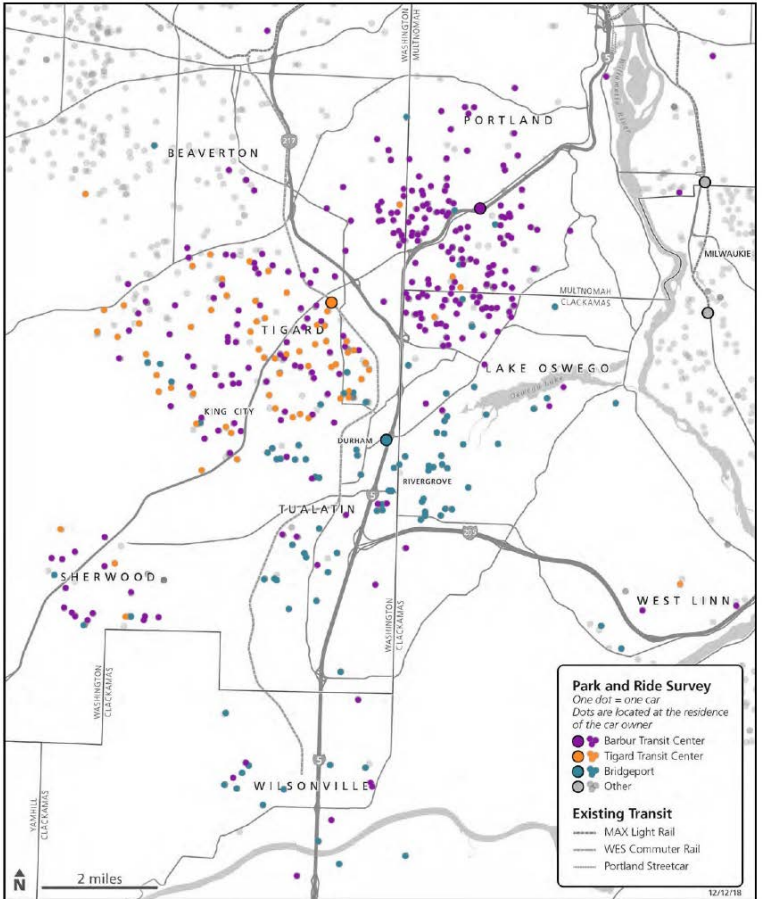
Corridor	2017 Capacity (# spaces)	2010 Utilization	2017 Utilization	Good Access from Arterials	Higher Frequency	Direct Service	Newer Design Features & Amenities
Westside MAX	3643	82%	85%	X	X	X	X
Eastside MAX	2967	55%	47%	X		X	
Interstate MAX	600	40%	51%			X	X
Green Line MAX	1990	25%	30%				X
Orange Line MAX	719	n/a	100%	X	X	X	X
Westside Bus	1329	68%	62%	X	X	X	
WES	300	35%	52%	X			X

*Green Line P&R usage has declined, but utilization rate has increased because of a reduction of 300 spaces at Powell P&R.

Existing Park & Rides

Fall 2018 TriMet
License Plate Survey Data/ Trip Origins

- Park & Ride users *typically* utilize the closest station/P&R
- Predominant use is home-based trips to destinations with restrictive parking policies and costs
- P&Rs; extend ridership sheds
-



GREAT PLACES SW Corridor

Lessons Learned

- Ridership & Access:
  - Varies within TriMet's system
  - Is higher where other modes are limited (ex: no sidewalks, bike lanes)
  - Is higher where frequent bus service is limited
  - Is higher at first and last facilities along a MAX line
  - Support those with Accessibility needs
- More use upstream of roadway congestion
- Regional modeling tools have become more sophisticated

Orange Line Park & Ride: Park Ave

Considerations

Capital Cost

- Parking is expensive

Cost Effectiveness

- Required metric by the Federal Transit Administration

Operating Costs / Fees

- Currently available for no charge
- Operating costs - approx. $1 per day per space
- TriMet policy review - consideration of use fees
- Coordination of adjacent/ neighborhood parking and park & ride management

Includes: engineering, administration, & contingency
Does not include: land costs

Considerations

Environmental Impact

- Greenhouse Gas (GHG) emissions
- Congestion, air pollution & auto collisions
- Environmental footprint of each mode type

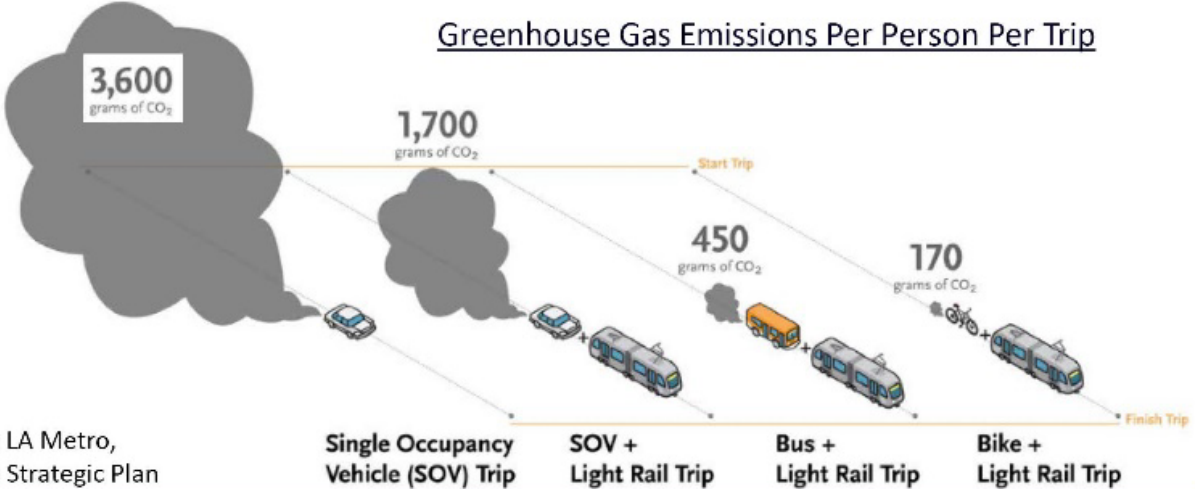
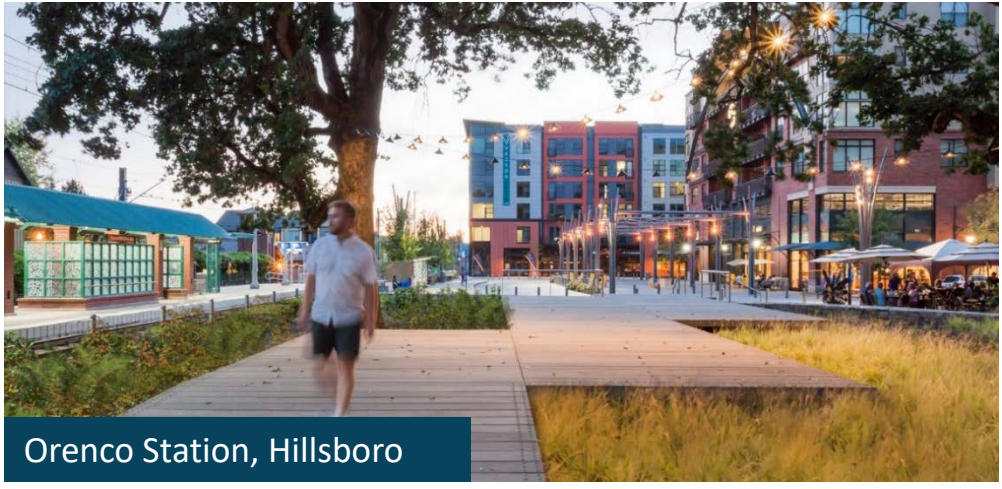


Image Source: LA Metro, First/Last Mile Strategic Plan

Considerations

Transit Oriented Development (TOD)

- Surface parking can evolve into other uses
- TOD catalyzes land use density at station areas
- Leverage investment assets
- Future TriMet TOD Corporate Policy



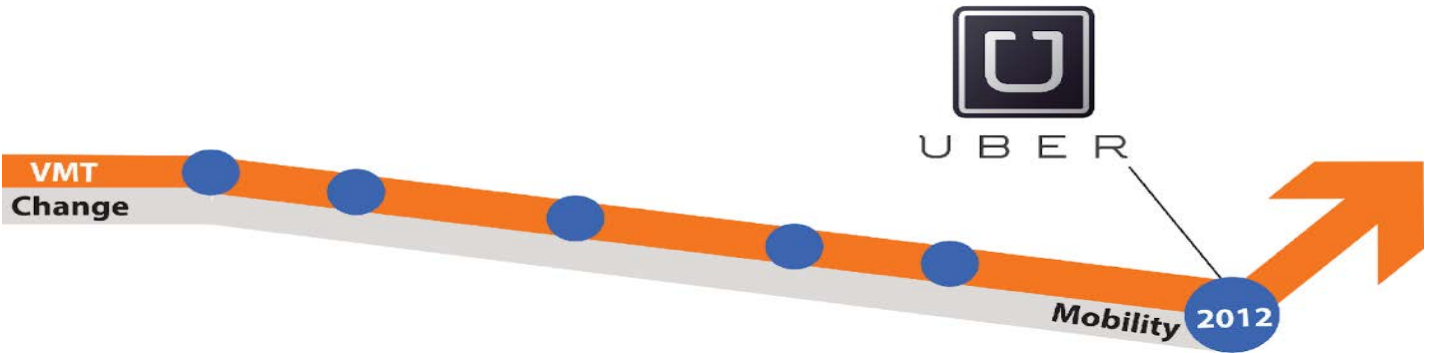
Orenco Station, Hillsboro

Photo credit: Walker Macy

Considerations

Mobility is rapidly changing

- Trends in auto ownership & vehicle miles traveled (VMT)
- Shared ride services (cars, bikes, scooters)
- TriMet as integrated mobility manager
- Autonomous vehicles



Next Steps

June

- **Online engagement**

June CAC

- **More background and discussion**
- **Potential Park & Ride scenarios**

July CAC

- **Discussion and recommendations**

Ongoing

- **Station design**

Questions and Comments

Website:
www.trimet.org/swcorridor

Email: swcorridor@trimet.org

Phone: 503.962.2150