

A Primer on Station Access and Park & Rides

A Handbook for Decision Makers, Project Partners and Community Members

This primer on station access and Park & Rides and is a framework intended to address a series of questions, synthesize existing data and provide an overview that will inform the project's "Park & Ride approach." The Southwest Corridor Light Rail Project is looking to balance partner and public input with financial resources available to address Park & Ride locations and quantities along the alignment.

Park & Rides facilities at station areas have historically been used to bring transit riders from low-density areas to high-capacity transit stations. They have typically been located adjacent to interstate highways and regional arterials as a means of providing system riders an alternative to congested roadways. Single-purpose Park & Ride spaces are the most expensive form of access to transit due to land costs and capital outlay. However, Park & Ride access may be the only form of access to households that live beyond the reach of public transit or in areas where regional bus does not provide efficient means to complete regional trips. Park & Rides also provide a competitive alternative to single-occupancy vehicle (SOV) travel by providing the quickest overall trip time and contribute to reducing regional vehicle miles traveled (VMT) per capita. Each Park & Ride space supports approximately two transit trips per average weekday. Like many other transit agencies, TriMet continues to identify and implement creative parking management strategies and partnerships to help reduce both capital and operational costs, and provide more flexible land use as the region grows.

In recent years, cities throughout the United States have seen a steady decline in automobile ownership and VMT. Meanwhile, the project recognizes that mobility trends are constantly changing throughout urban areas and should be recognized as a counterpoint to traditional Park & Ride facilities. Shared mobility concepts have been widely accepted as scooter, bike, and car share options become available. As the Portland Metro region continues to grow in population, the need for a balanced and sustainable approach to first and last mile commute strategies becomes increasingly critical. The National Association of City Transportation Officials (NACTO) reported in 2018 that the 'number of rides Americans took via dockless scooters, bikes and traditional bike share systems more than doubled from 2017, to 84 million trips. Together, this primer and the project's Conceptual Design Report will highlight considerations and options to plan and manage proposed station areas and ultimately serve a variety of needs among transit users.

Parking is an inherently complicated topic that will be decided by the project's Steering Committee in summer of 2019. Leading up to the Steering Committee's decision on Park & Ride locations and quantities for the Southwest Corridor Light Rail Project, the project team will seek public and partner input. Following the Steering Committee's decision, public input will continue through the conceptual design report process, analyzing existing station access, identifying station access needs and shared investment strategy projects, and looking for opportunities to improve amenities at station areas through a suite of new mobility concepts.

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Overview and approach

Goals and Objectives

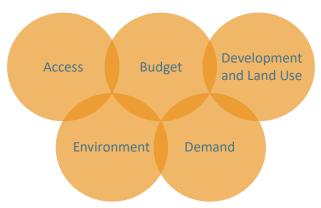
Based on this research, what do the access, demand, costs, and many other considerations tell us? The Southwest Corridor Light Rail project team is currently weighing the many different trade-offs around Park & Rides. The goal of this process is to develop an approach to the Park & Ride quantities and locations. Our approach will be shaped by the following goals and objectives, respond to public comments from the Draft Environmental Impact Statement (DEIS), and reflect outreach with the public partners:

Access:

- Provide equitable, efficient, and convenient station access for all modes
- Complement Transit Service Enhancement
- Prioritize new facilities in underserved transit areas
- Be resilient to future mobility changes

Budget:

- Balance Park & Ride costs with other project cost pressures
- Maintain cost effectiveness and competitiveness for federal funds
- Use public resources responsibly
- Incorporate future TriMet policy changes around Park & Ride use fees
- Engage in partnerships and opportunities to leverage investment assets



Development and Land Use:

- Minimize use of developable land in and around regional and town centers
- Support Transit Oriented Development (TOD) at station areas
- Sensitivity to existing land use
- Sensitivity to zoning, future land use and community visions

Environment:

- Minimize environmental and visual impacts
- · Minimize trigger for traffic mitigations
- Support adopted goals to reduce greenhouse gas emissions

Demand:

 Respond to ridership projections and demand for Southwest Corridor Light Rail station locations and characteristics

TriMet Park & Rides

Park & Rides generally come in two forms- surface lots and structured lots. Two examples of Park & Rides within TriMet's system that have consistently high utilization rates include:



Surface Park & Ride

318 spaces (including 10 accessible spaces), opened in 2015, adjacent to 99E arterial. 100% utilization rate in 2017



Structured Park & Ride

630 spaces (including 13 accessible spaces, 16 carpool spaces and 2 quick drop spaces), opened in 1998, adjacent to Highway 26 arterial. 100% utilization rate in 2017

Background, existing inventory and utilization

Adopted TriMet Park & Ride Policy (2005)

TriMet adopted a Park & Ride policy in 2005. Highlights from the policy relevant to Southwest Corridor are as follows:

- 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.

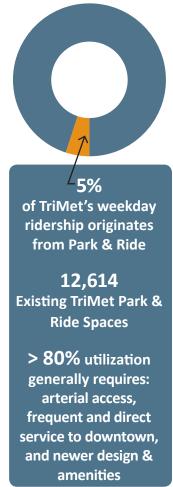
TriMet Park & Ride Inventory and Usage

TriMet provides a total of 11,478 Park & Ride spaces and another 1,136 spaces through shared-use agreements, mostly with churches. A count of parked cars at the Park & Rides is conducted every fall and provides a summary of usage by transit service, areas, and trends over the years. Overall, Park & Ride usage from 2010 to 2017 has remained steady, with system-wide usage at roughly 60% (up from 58% in 2010), though usage rates vary significantly from corridor to corridor and between individual lots.

Riders originating from official Park & Ride facilities account for less than 5% of TriMet's daily weekday transit boardings. That number is much greater (up to 15%) when ad hoc surface parking spaces are taken into consideration.

Surveys of transit riders reveal that Park & Ride users predominately use transit for home-based trips to work or college when their destination experiences restrictive parking policies and costs. These locations are generally in the Portland Central City, including Oregon Health & Science University (OHSU). License plate surveys indicate that a higher proportion of users originates from the immediate area around a facility, though major regional facilities with the best transit service attract users from further away. Regardless of where users originate, the region benefits from a reduction in car trips which reduces congestion, air pollution and auto collisions.

MAX corridors with greater frequency and/or multiple routes exhibit the highest usage, as shown in the table below. Individual facilities in closest proximity to downtown Portland experience the highest utilization. However, service frequency and ease of automobile access from nearest major traffic street are other important factors for individual facilities. Previous regression analyses show that the first and last Park & Ride lots on an alignment fill up first.



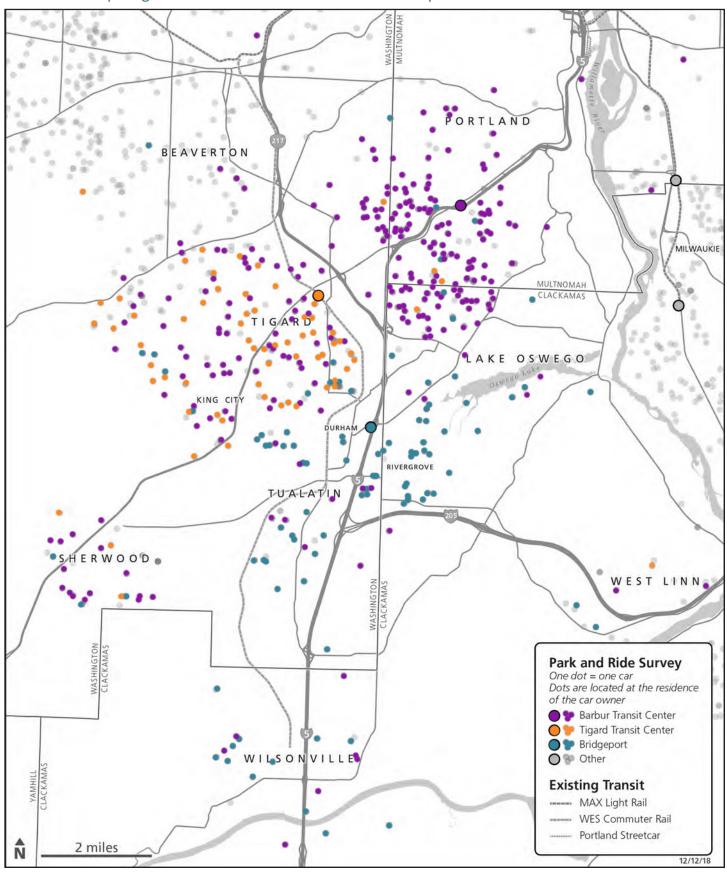
TriMet Corridor Performance Summary

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

Notes: (*) Frequncy varies depending on station location. (**) The 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 & Ride trip origins

Park & Ride Trip Origins: Fall 2018 TriMet License Plate Survey Data



Lessons learned and cost considerations

Lessons Learned

Some of TriMet's MAX Park & Rides have been in operation for 30+ years, and the design and location of Park & Rides has improved in response to lessons learned from earlier projects. The Eastside MAX represents an aging corridor with mostly surface lots that should either be refreshed with current safety standards (CCTV and lighting) and new landscaping or turned over to TOD use. Infill and expansion of transit service in this corridor has resulted in a reduced need for Park & Ride there, though certain facilities with ideal locations for regional commutes continue to exhibit high use.

Westside MAX exhibits relatively high usage and the highest quantity of Park & Ride facilities for a single corridor. When this corridor opened in 1998, many of the station areas were devoid of significant urban development. Surface Park & Rides were used to attract ridership outside of station areas and resulted in relatively few displacements at relatively low costs. Peak headways are currently 7.5 minutes or better and although lengthy, the corridor provides a direct connection into downtown Portland. The corridor also exhibits a more suburban development pattern that is difficult to serve with transit, making Park & Ride access more attractive than walk or bus transfer access. As the corridor develops with more high density infill, walk access is increasing in importance and some surface Park & Rides are able to develop with Park & Ride capacity replaced in structures.

The Green Line's I-205 corridor represents the lowest utilization as a result of several factors. First, regional modeling tools were not yet advanced to forecast Park & Ride demand, significant swathes of Oregon Department of Transportation (ODOT) property were available for surface lots at low cost to the project, individual lot access is inconvenient from major roadways due to interchange access management requirements, and the corridor provides a less direct route to downtown Portland. Numerous, frequent bus routes run perpendicular to I-205, but also provide direct service to downtown Portland. The Green Line also opened in the midst of the Great Recession, and peak headways have never improved beyond 15 minutes. In contrast, the newest Park & Ride facilities along the Orange Line have easy, direct access from 99E, 10 minute peak headways, and a direct ride to OHSU and downtown Portland. Metro's latest Park & Ride demand forecasting tools correctly predicted higher Park & Ride demand in the corridor than supply in part due to suburban development patterns in the corridor that are difficult to serve well with transit.

Capital Costs, Cost Effectiveness and Operating Costs

The cost per space is generally estimated at \$18,000 per surface space and \$52,000 per structured space, including engineering, administration and contingency, in base year dollars. The cost of acquiring land is not included in these estimates. In some cases, land acquisition may be negligible due to full acquisitions of larger sites for the alignment, stations, and/or construction staging sites.

Using the Federal Transit Administration (FTA) formula for their project cost-effectiveness criteria, staff have found that the additional ridership generated by a well-utilized Park & Ride barely offset the capital costs of a surface or structured facility. The most cost effective scenarios will provide Park & Ride capacity that meets demand in the opening year. Otherwise, Park & Ride capital costs will not be offset by additional ridership. Opening year cost effectiveness is a required metric in the FTA formula and at most can be averaged with horizon year. A key consideration with capital costs is the regional capacity to provide local match for the project and the cumulative effect on Park & Ride capital costs on that overall project budget, with escalation and finance costs.

surface lot: \$18,000 estimated cost per space

\$52,000 estimated cost per space

TriMet's existing Park & Ride facilities allow parking for up to 24 hours, at no charge to the user.

However, it costs over \$1 per space per day for the agency to operate, including security. Per TriMet's 2005 policy, the agency encourages exploring the use of parking charges as a tool for allocating resources in an equitable manner that is consistent with fare policy and service development policy. TriMet also knows that Park & Ride locations and neighborhood parking management need to be connected. In parallel with the Southwest Corridor Light Rail Project development, TriMet will be exploring changes to policy on usage fees. There are many new models and partnership opportunities for improved parking management and utilization.

What other considerations are there?

Ridership and Access

Between 2011 and 2016, TriMet engaged the Portland region in a process called the Transportation Improvement Plan (TIP) to envision a 20-year expansion of bus service for its five service areas. The Southwest Service Enhancement Plan Final Report was completed in December 2015 and outlines the areas vision for future transit in Southwest, including Tigard, Tualatin, Sherwood, Lake Oswego, West Linn, Durham, King City, and Southwest Portland. When high capacity transit projects are built, TriMet leads a community engagement process around service line changes and bus frequencies. By adding high capacity transit to the region, TriMet is able to remove duplicative service currently provided by buses, add the service hours into existing lines, and implement other service improvements identified in the Southwest Enhancement Plan.

Special consideration about parking at stations should be given in regards to transit service enhancements. Historically, parking can incentivize people to use private auto access to station areas rather than using local bus service, particularly when it is provided to users free of charge. As a result, reduced ridership makes it difficult to justify providing more frequent service, significantly impacting those solely dependent upon it.

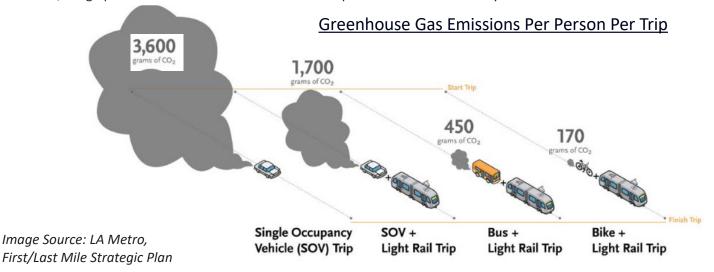
Context/ Land Use

Density at station areas is a critical component to achieve healthy and sustainable communities centered around high capacity transit networks. TriMet seeks to support sustainable regional growth through the ten key urban design components outlined in the Portland Metro 2040 Growth Concept policy and takes into account existing land use, future land use and zoning, while building upon previous community planning efforts.

Environmental Impact

There are many adopted national, state and local policies aimed at reducing greenhouse gas emissions. The State of Oregon passed House Bill 2543, also called the Next Generation Energy Act, back in 2007 with the goals of overall Greenhouse Gas (GHG) Emission reductions of 15% by 2015, 30% by 2025, and 80% by 2080. Similarly, Multnomah County and the City of Portland adopted the Portland Climate Action Plan in 2015 with parallel goals of GHG reductions: 40% by 2030 and 80% by 2050. Most recently, Washington County created the Washington County Energy Plan to hit the State of Oregon's reduction targets noted above, and to expand the use of more energy efficient practices. Washington County's have been outlined in the 2040 Draft Comprehensive Plan. Meanwhile, TriMet has also committed to converting its entire fleet to all-electric buses by 2040 as a way of moving the agency and region towards a more sustainable and cleaner future.

The graphic below captures how ride types are related to greenhouse gas emissions. With these regional goals in mind, the Southwest Corridor Light Rail Project's approach should aim to support these measures where possible. Park & Rides can also have big impacts to the local environment by increasing stormwater runoff, creating an urban heat island, and displacing habitat. Moreover, the graphic reminds us of the environmental footprint our individual mobility choices can have.



What other considerations are there?

Transit-Oriented Development (TOD)

TriMet has seen several surface Park & Ride lots redevelop into TOD. The Orenco Station (shown in the photo to the right) is the best example of a local public-private partnership where a surface lot was redeveloped by a private developer into a more vibrant mixed use development with Park & Ride capacity maintained in a structure. TriMet partnered with the developer to include a new bike-and-ride facility on the ground floor and enhance access to the light rail platform. In other areas, such as along the Green and Blue (eastside) lines, Park & Ride demand is low enough that redevelopment could occur without replacing Park & Ride capacity. Examples



Image Source: Walker Macy

include 122nd Ave (Blue Line) and Fuller Road (Green Line), where affordable housing and non-profit developments are anticipated to increase ridership compared to unused surface lots. Research suggests that TOD in lieu of parking can generate just as much ridership as surface parking if development densities exceed 110 dwelling units per acre.

TriMet is in the process of starting a new TOD Corporate policy as a framework to drive more partnerships and leverage additional investment assets, specifically at station areas. This policy is expected to be further developed in the fall of 2019.

Mobility is changing

The emergence of recent mobility technologies and changes is unprecedented. Specifically, the use of personal technology to access shared mobility has had large impacts on the way people are traveling and accessing new transit modes. Shared trips and shared resources have been paired with more efficient modes and a suite of better mobility choices. New transit alternatives come with new challenges, including, a need to adapt our streets and transit centers, local policy adoption, and a better understanding of how these modes can tie into and support public transportation systems and ultimately fill market gaps.

In June of 2018, TriMet prepared a New Mobility Study and Strategic Business Review, providing a long-term vision for how the agency can uniquely be positioned as a mobility manager for the greater Portland region. TriMet prides itself as a national leader in transportation innovation, and seeks to redefine the agencies role in an era of new mobility by strategically engaging in opportunities for project partnerships with other mobility providers. The future of mobility is unknown, but continual technology innovations and advancements with autonomous vehicles will demand that we adapt our streets, infrastructure, public transportation system and policies to support our economy and shape a sustainable future of our region.

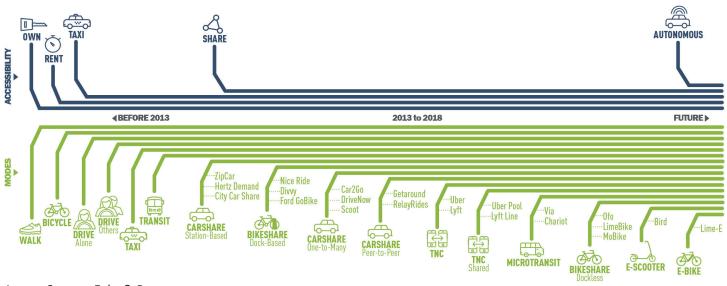


Image Source: Fehr & Peers

What strategies are other cities taking?



Seattle, WA

Delivery of upcoming light rail projects in Seattle have relatively large parking commitments attached to them (typically 500 stalls each). Parking facilities for these projects are sized in the planning phase and based on a variety of existing criteria including; previous planning efforts, existing and future land uses, city ordinances, funding/resources, input from elected officials, and input from the public. The region's parking facility utilization is over 90%, well above TriMet's system-wide utilization of 60%. Sound Transit is taking a new approach to their parking management. Starting in Fall 2016, the agency started offering a HOV parking program at select LRT stations, allowing carpool customers of two or more to reserve a free parking space in advance. The permits give access to priority parking areas on weekdays during morning rush hour and help efficiently manage limited resources. The agency reports the program having high success in the three existing facilities and expects rollout of the program at nine other locations by the end of 2019.



Fort Collins, CO

In 2014, Transfort completed the MAX Bus Rapid Transit line, a five mile long alignment with 12 stations. More recently, the agency completed a Park & Ride analysis for expanding parking along the route. A stand-alone parking was not part of strategies. Rather, the agency created a plan to add 300 new parking spaces through a variety of leases, easements, land purchases, shared parking, redevelopment, and marketplace pricing. Their model proves that there are a wide variety of creative solutions to parking implementation and management available to transit agencies.



Denver, CO

Denver and surrounding suburbs are building LRT projects with large parking commitments at station areas. However, the Regional Transportation District (RTD) adopted Transit Access Guidelines in 2009, a tool use to prioritize modal hierarchies at station areas. This hierarchy encourages an optimal balance of modes to get to transit, recognizing that pedestrians should have the highest priority. Balancing these access modes serves as a way to manage both system and site capacity constraints. For example, the marginal cost of adding ridership with new auto parking could be significantly greater than adding ridership through improved linkages to pedestrian paths or bicycle routes, or generating ridership through transit-oriented development.



Los Angeles, CA

In March 2014, LA Metro adopted a First/Last Mile Strategic Plan. These guidelines provide a framework for specific infrastructure improvements designed to facilitate easy, safe, and efficient access to the Metro transit system, to maximize multi-modal benefits and efficiencies, and to build on existing sustainable planning policies. This framework has helped identify barriers to transit and created site specific station area analysis, targeted design efforts, and implementation strategies. Many pedestrian and bicycle improvements have already been implemented through pilot projects and phased streetscape projects. Metro also launched a "Mobility on Demand" pilot program in January 2019 that links transit riders to subsidized ride share programs (Transportation Network Companies) as a solution to first/last mile station needs.

What we've studied and heard

What we studied in the Draft Environmental Impact Statement (DEIS)

The Draft Environmental Impact Statement (DEIS) analysis looked at a maximum capacity for all potential Park & Ride locations on the route, understanding that some may be reduced in size and some may be removed from consideration altogether. This approach provided an understanding of the highest possible impact to traffic, properties, visual quality and other environmental disciplines, as well as mitigation strategies to address those impacts.

Park & Rides were considered at all but one of the eight southernmost stations on the route, with a total of up to 4,250 spaces. Larger structured Park & Rides of up to 950 spaces were considered at stations with convenient access to and from I-5 and multiple bus routes, such as the Barbur Transit Center and Bridgeport. Other locations considered smaller structures of 300 to 400 spaces or surface lots of 50 to 100 spaces.

What we've heard

Public comments on the (DEIS) studies included the following themes related to parking. A summary of comments on the topic is as follows:

- During the public comment period for the Draft EIS, four local agencies, five organizations and thirty individuals provided comments related to Park & Rides.
- Fifteen commenters were generally supportive of constructing new Park & Rides. Many of these commenters cited the difficulty of finding parking at the existing Barbur Transit Center and Tigard Transit Center lots today. Some commenters justified their support for Park & Rides by noting that accessing light rail stations by walking, biking or bus would be challenging due to poor street connectivity and limited presence of sidewalks and bike facilities.
- Three commenters were generally opposed to constructing new Park & Rides or believed that the proposed capacities
 were too high. Reasons provided included prioritizing land near stations for housing and other development, support
 for regional climate change and Vision Zero goals, and not reinforcing suburban development patterns.
- Many commenters raised concerns about traffic impacts on streets that provide access to Park & Rides. Three
 commenters suggested providing pedestrian and bicycle improvements to address the livability and safety impacts of
 increased traffic. Several commenters also raised concerns about people parking in surrounding neighborhoods and
 business parking lots if insufficient capacity is provided at Park & Rides.

What will go into the Final Environmental Impact Statement (FEIS)

Name:	Final EIS Traffic Mitigation
No. of Structures *	4*
Barbur TC	<365
53rd	<400*
68th	<900*
Elmhurst	0
Hall TC	<403
Bonita	<100
Upper Boones Ferry	<50
Bridgeport TC	<950*
Total Spaces	3,168

The project team is looking to create an approach and gain input from the public and project partners on Park & Rides. Concurrently, the Final Environmental Impact Statement (FEIS) will include Park & Ride quantities that are higher than the scenarios proposed. The intent of this is to clear the maximum number of Park & Ride quantities at each viable station that would not trigger significant traffic mitigations. The total spaces that will be cleared through the Environmental Review reflects 3,168 total spaces. Because the Final Environmental Review will be completed in summer 2019, clearing these upper limit parking quantities will allow the team flexibility to shape the final steering committee recommendations following public and partner input. It is important to note that there is currently not enough project budget to build this total amount of parking.

What is the decision-making process and timeline?

	May	June	July	uly August September October November		October November		December
TIMELINE		Online Open House O Project Partn ee (CAC) and S			Steering Committee Decision			Public Draft of CDR
ľ	Conceptual Design Report (CDR) Development Ongoing Public Process to Inform Continuous Design Process ->							

Key Dates (tentative): May: Intro Presentation to CAC and SC | June: Station Access and Scenarios to CAC and SC

June 10-28: Online Open House | July: Update/ Survey Results to CAC and SC

Sept: Recommendation to CAC and SC | Winter 2019: CDR Public Draft | Spring 2020: Final CDR

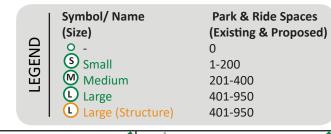
Station Area Considerations

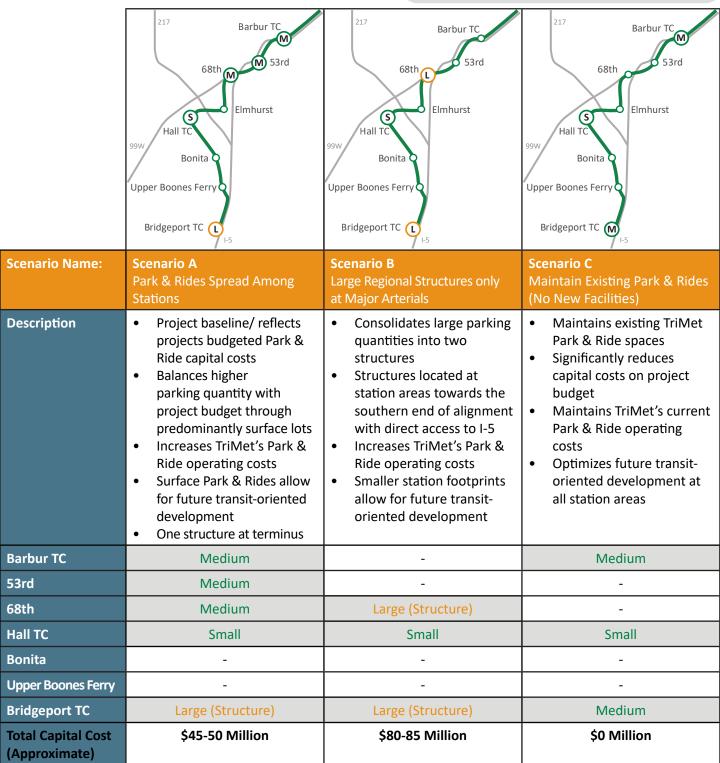
Name:	Station Area Considerations								
	Existing Park &	Outside of Portland	Station Area/	Direct Access to	Access to Frequent	Projected % Mode of Access			Viable Park &
	Ride (surface)	Central City	Land Availability	Major Arterials	Bus Service / Transfer	Walk	Bus/ Transfer	Car	Ride?
(Jackson tie-in)	0			~	~	56%	44%	0%	
Gibbs	0				~	94%	6%	0%	
Hamilton	0			~	~	55%	45%	0%	
Custer	0			~	~	61%	39%	0%	
19th	0			~		70%	29%	1%	
30th	0			~		95%	0%	5%	
Barbur TC	365	~	~	~	~	40%	25%	35%	~
53rd	0	~	>	~		46%	2%	52%	~
68th	0	~	>	~	~	69%	1%	30%	>
Elmhurst		~	~			91%	0%	9%	
Hall TC	103	~	>	~	~	28%	61%	11%	~
Bonita	0	~				89%	11%	0%	?
Upper Boones Ferry	0	~		~		94%	0%	6%	?
Bridgeport TC	390	~	>	>	~	32%	35%	33%	~
Total Spaces	858	858 Source: Mode of Access information is from the Southwest Corridor Draft Environmental Impact Statement, June 2018.							

Draft Park & Ride Discussion Scenarios

Using the criteria above, the project team is working to understand what the right balance of parking is at each station location. Many station characteristics such as existing Park & Ride size and location, distance from the central city of Portland, station area and land availability, direct access to major arterials, existing and projected access to frequent bus service/ transfer points given future service enhancement, and projected mode of access modeling help point to which station areas would make for viable Park & Ride locations. Many other determination factors will include public input, jurisdictional and partner input, financial resources available, and modeling to understand how ridership and cost effectiveness can ultimately be achieved. Three scenarios on page eleven have been identified for discussion. Public process around these scenarios will ultimately shape the considerations presented to the Steering Committee for final determination.

Park & Ride scenarios





Note: Based on the 'Station Area Characteristics' matrix on the previous page, the following stations are not being considered as proposed candidates for Park & Ride locations: Gibbs, Hamilton, Custer, 19th, 30th, Elmhurst