

Innovation and Technology

New and creative solutions that work for our customers.

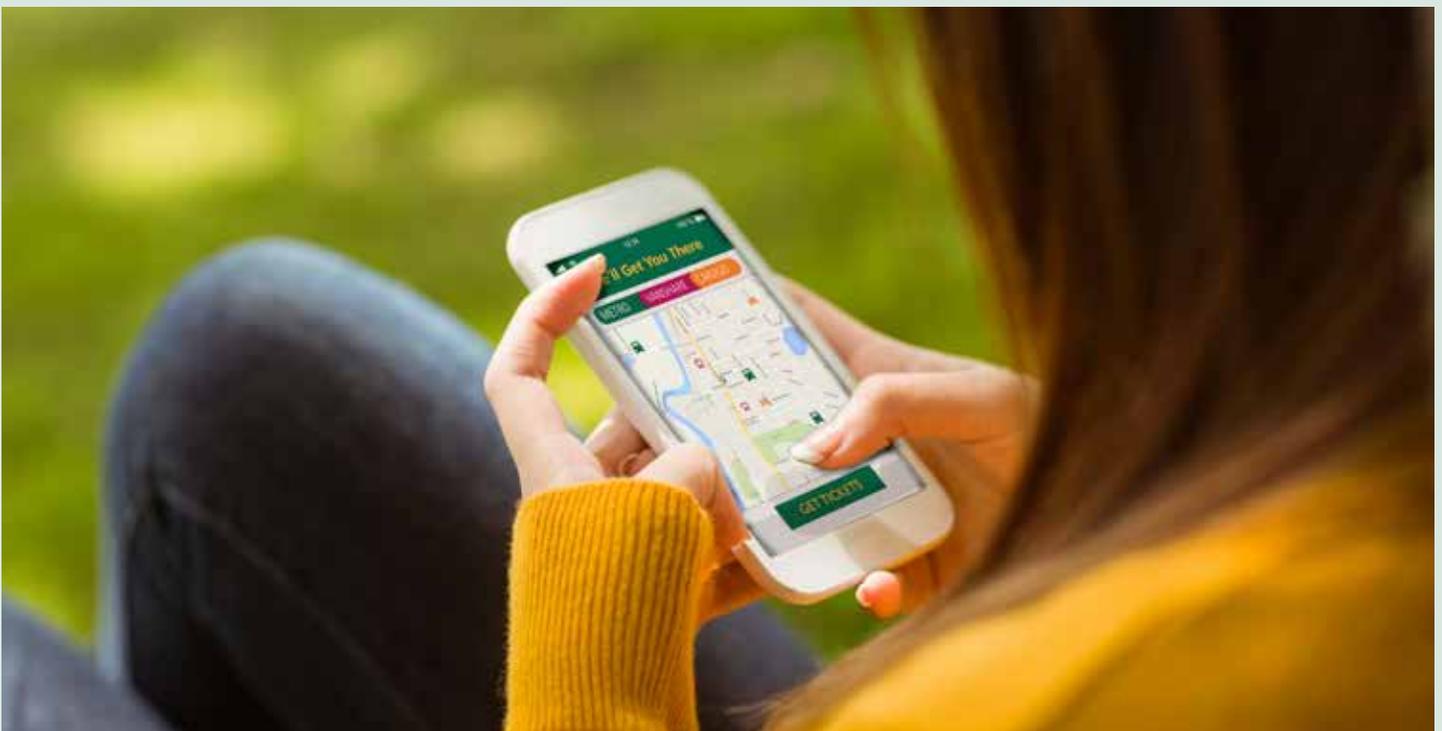
Rapidly advancing technologies are changing the ways people travel. METRO CONNECTS envisions Metro investing in, incorporating and encouraging technological innovation, continually evaluating “business as usual” and creating new ways to serve customers better. We plan to use new smartphone apps, trip planning resources, and real-time information to improve our customers’ experience and develop new service solutions. Behind the scenes, we would embrace technologies that help us operate more efficiently.

What would innovation and technology look like?

Metro has always been an innovator—from our vanpool program, to our groundbreaking employer pass program, to the use of private on-demand service providers in our expanded Emergency Ride Home program. METRO CONNECTS builds on that track record with an emphasis on testing and adopting new features, services, and products to make our service better and easier for customers to use.

Innovative approaches to transit access could include further testing of real-time, on-demand rideshare service models. Metro’s Real-Time Rideshare pilot in SE Redmond/Willows Road is a first step, and we are seeking funding to evaluate other models.

Technology will improve customers’ access to park-and-rides. One potential service is an app that gives you directions to the nearest park-and-ride with currently available space and lets you reserve a parking spot. Smart bicycle parking facilities could support similar functions for bike commuters.



We might partner with a software developer to create a fare system that lets users pay for transit, parking, bikeshare, carshare, and TNC service through one easy system.

Investments in new smartphone apps, trip-planning resources, and real-time information could enable our customers to get better information about the best travel options and how to use them. See the next section, “Customer Communications,” for details.

Advancing technology could also help Metro become a more informed and proactive agency. We could collect new and more-accurate data about operations and improve our performance reporting, increasing our accountability to the public.

We could also use technology to improve operations. For example, security systems on buses, combined with better mobile technology that our Transit Service Quality department could access in real time, could help Metro respond to incidents. Real-time information about crowding could help us manage vehicles on the road. Continual improvement in the collection of data about bus ridership and on-time performance could help us evaluate service and find opportunities for improvement.

What would it take?

- **Expand investment in integrated research and development.** Test and implement new services, products and practices enabled by emerging technologies that improve our customer service, help us operate more efficiently, and move us toward Metro’s strategic plan goals.
- **Better integrate data into planning and customer service.** Create systems that better manage the information we give customers and the feedback we receive from them, and improve internal data collection and reporting.
- **Nurture a culture that welcomes and adapts quickly to new ideas, technologies, and ways of working.** Although we would update METRO CONNECTS regularly, we must prepare for unanticipated opportunities by developing flexible policies and nimble processes that can adapt to change. We would foster a culture that supports creative thinking and innovation through cross-disciplinary working teams, regular performance assessments, and other avenues.



Innovation could help us move toward Metro’s strategic goals, including equity and social justice, sustainability, and safety. We would develop robust internal systems for continually exploring and implementing new ideas or approaches to these important aspects of our work.

Access to Transit

Safe and abundant options for getting to our service.

We want our customers to have safe, comfortable, and easy access to transit. METRO CONNECTS would develop a portfolio of projects and strategies for improving your walk, bike ride, or drive to or from bus stops and stations.

Including investments by Sound Transit, METRO CONNECTS would expand parking for transit riders in King County by 60 percent and invest equally in improvements for bicyclists and pedestrians. Travel options such as carsharing, bikesharing, taxis, on-demand providers like Uber or Lyft, and public and private shuttles would also help riders reach transit service.

What would access improvements look like?

A person’s decision to drive, ride, walk or bike to transit can be affected by how close they are to a stop, the frequency of service provided there, and the availability of parking, sidewalks, bike lanes, lighting, and other safety and security features.

With the expansion of transit service envisioned in METRO CONNECTS, by 2040 84 percent of customers would get to the bus by walking or biking compared with 78 percent in 2015.⁷

The METRO CONNECTS planning process evaluated ways to improve access to future transit service. We identified four transit access zones where different strategies might be effective. These zones are based on the expected future density of jobs and population and on proposed transit service.

Figure 20 summarizes the zones and types of investments we envision. The estimated number of new stalls is illustrative. The final siting of new stalls would be based on access to the service network—particularly frequent and express service—and on local considerations such as transit demand, traffic impacts, land use and congestion. Figure 21 shows the zones.

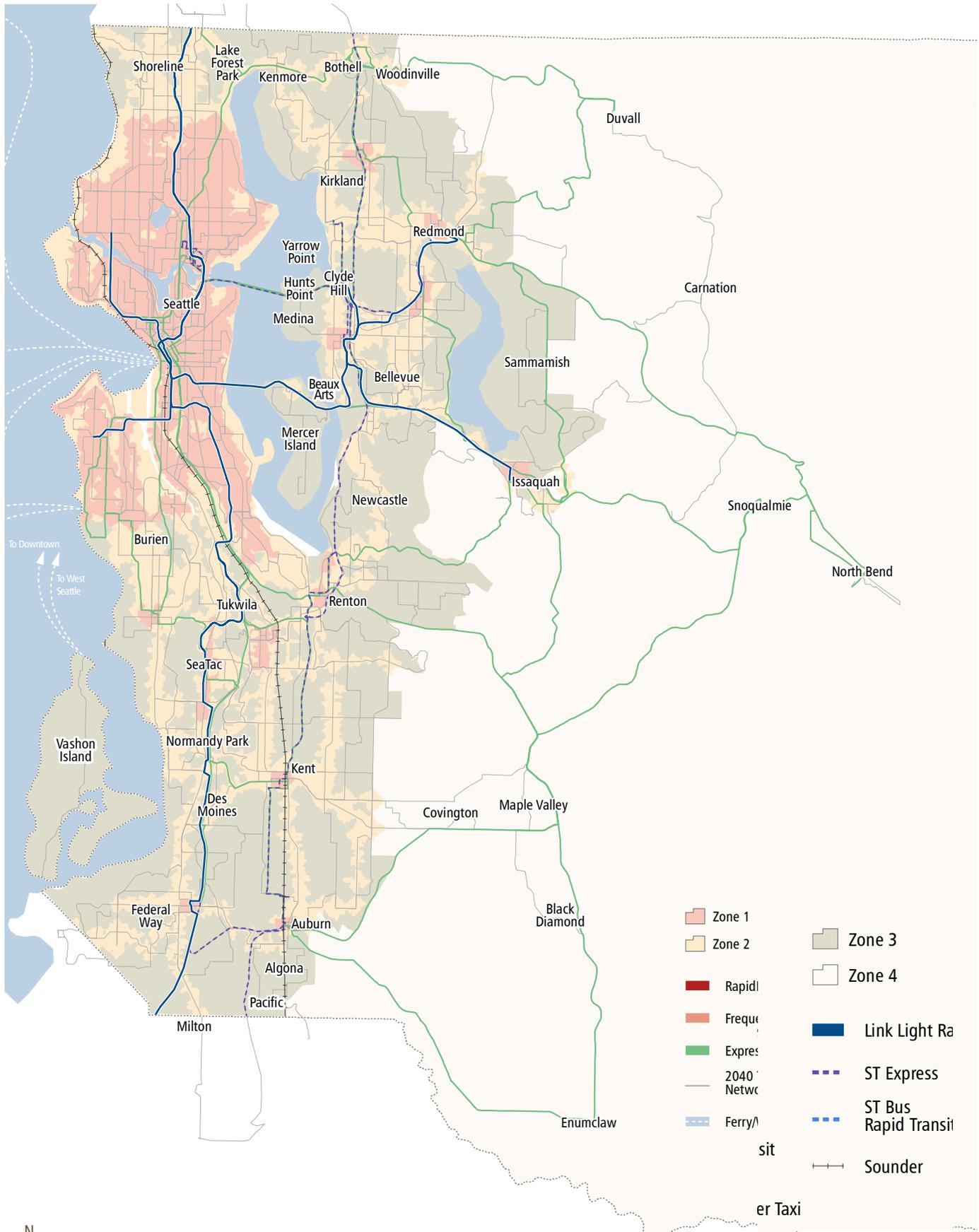
Figure 22, on page 56, illustrates the relationship between park-and-ride expansion and the future light rail, BRT and express network.

⁷ Outputs from model that does not incorporate updated transit mode choice from the most recent PSRC Household Travel Survey.

Fig. 20: Transit Access Zones Description

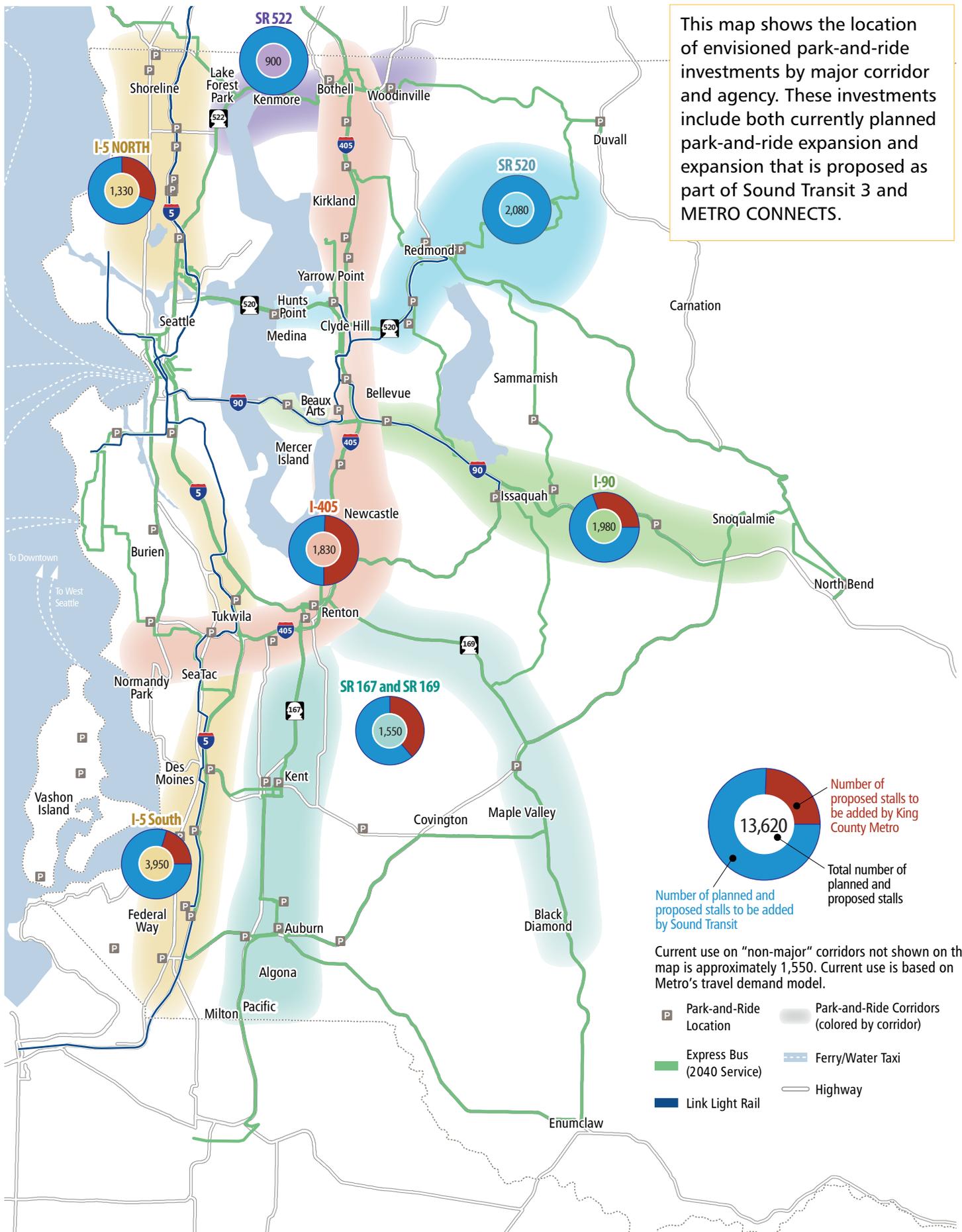
<p>ZONE 1 High-density areas served by a grid of frequent service, such as downtown areas.</p> <p>Improvements Focus on bicycle and pedestrian facilities, little or no expansion of Metro parking.</p> <p>Future bike/walk share 96%</p> <p>Current stalls used: 3,920</p>	<p>ZONE 2 Medium-density areas that are within walking distance of at least one frequent service.</p> <p>Improvements Strong emphasis on more bicycle and pedestrian facilities, little or no expansion of parking.</p> <p>Future bike/walk share 82%</p> <p>Current stalls used: 6,780 Estimated new stalls serving people in Zone 2 by 2040: 4,000</p>	<p>ZONE 3 Lower-density areas within walking distance of less frequent local or express service.</p> <p>Improvements Moderate emphasis on bicycle and pedestrian facilities and some parking investments.</p> <p>Future bike/walk share 50%</p> <p>Current stalls used: 7,300 Estimated new stalls serving people in Zone 3 by 2040: 8,510</p>	<p>ZONE 4 Lowest-density areas with limited or no walk access to transit.</p> <p>Improvements Limited investment in bicycle and pedestrian facilities, emphasis on increasing transit parking.</p> <p>Future bike/walk share 16%</p> <p>Current stalls used: 1,600 Estimated new stalls serving people in Zone 4 by 2040: 1,110</p>
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Fig. 21: Transit Access Zones



Standard King County map disclaimers apply to all maps. See full disclaimer on the back cover.

Fig. 22: Planned and Proposed Park-and-Ride Investments by Corridor



Access to Transit, continued

Analysis of motorless modes—walking and biking

King County needs more sidewalks, trails, and bicycle lanes as well as storage facilities to improve bike and pedestrian access to transit. The Puget Sound Regional Council's Transportation 2040 plan describes the region's bicycle and pedestrian needs, and King County is planning for regional trail expansion and improved connections to transit.

Metro and Sound Transit's Non-motorized Connectivity Study evaluated where projects supporting motorless travel could increase transit ridership. Based on this analysis and an investment level similar to that for parking, METRO CONNECTS could fund bicycle and pedestrian access improvements to transit stops across King County in partnership with local jurisdictions' bicycle and pedestrian plans.

To select potential improvements, Metro would identify areas with high potential ridership, giving priority to projects in access zones one and two. Metro would also identify a methodology to estimate the demand for bicycle parking.

We would coordinate with cities, which have plans and requirements for construction of sidewalks, trails and bicycle facilities. Cities can play a critical role in providing sidewalks and trails that connect residents to public transportation.



As the Redmond Transit Center was developed, Metro worked with the City of Redmond and King County Natural Resources and Parks to provide dedicated bike lanes and sidewalks connecting to the Redmond Central Connector Trail to the south and the Sammamish River Trail to the west.

Growing demand for trails and transit

King County has 300 miles of multi-use trails used for some 10 million bicycle and pedestrian trips annually—including a large and growing number of commute trips. The trails network presents opportunities to combine cycling or walking with the fast, frequent transit service envisioned in METRO CONNECTS.

Potential trail routes such as the SR-520 Trail across Lake Washington, the extension of the Mountains to Sound Trail east of Bellevue, the extensive Eastside Rail Corridor/Cross Kirkland Connector trails, and the Lake to Sound Trail from Lake Washington in Renton to Puget Sound in Des Moines would enhance regional mobility.

Our vision is to provide safe and comfortable bicycle and pedestrian connections at park-and-rides, major transit centers, and trails as well as secure bicycle parking.



Access to Transit, continued

Parking analysis

Park-and-rides provide auto access to transit, and by concentrating rider demand they allow Metro to serve low-density areas more efficiently.

Metro provides service to 130 park-and-rides across the county that have a combined total of more than 25,000 parking spaces. Metro and other transportation agencies own or lease these facilities.

Use of park-and-rides is growing, and many are frequently full or nearly full.

To identify where expansion of parking is most critical, we analyzed the transit access zones, shown in Figure 21 on page 55, and Sound Transit’s plans to expand parking. Sound Transit has proposed building more than 10,300 parking stalls in King County as it expands the regional transit system through 2040.

Metro analyzed the number of additional stalls that would be needed in each zone in the future, taking into account dramatically expanded bike and walk access to transit in medium- and high-density zones. The analysis identified where riders who would rely on park-and-rides would live and work. However, the analysis recognized that people might travel to a different area for parking. People in Zone 4 who do not have good walk access to transit would likely drive to Zone 2 or 3 if a park-and-ride is available there.

The analysis suggested the strategies listed on page 59 for transit parking.

- **High- and medium-density zones (1 and 2):** No new parking capacity would be needed for people from high-density zones; limited parking expansion for people from medium-density zones.
- **Low-density zones (3):** Some expansion of transit parking for people from low-density zones.
- **Lowest-density zones (4):** Parking is expected to continue providing an important means of access for people from low-density zones where there isn’t good walk access to transit.

Using this analysis, METRO CONNECTS envisions the addition of more than 13,500 new parking spaces to support anticipated future ridership. These parking spaces are recommended by corridor.

Approximately two-thirds of the suggested future expansion is accounted for by Sound Transit’s proposed projects. If METRO CONNECTS is fully implemented, Metro would consider partnering to provide approximately 3,300 additional parking stalls. Figure 23 shows both existing park-and-ride stalls used by zone and the proportion of riders from each zone that use park-and-rides, and the number of new stalls that would be added to target people from each zone. For example, 8,510 new stalls would be needed to accommodate the projected future riders from Zone 3. The location of those stalls would be determined based on the service network—particularly access to frequent and express service—and on local considerations such as transit demand, traffic impacts, land use and congestion.

Fig. 23: Existing Conditions: Park-and-Ride Access Mode Share and METRO CONNECTS Future Conditions: Estimated Park-and-Ride New Capacity

Transit Access Zone	Park-and-Ride Stalls Used	Proportion of Transit Riders who use Park-and-Rides	Estimated Metro and Sound Transit Planned or Proposed New Park-and-Ride Stalls Provided by 2040	Estimated Proportion of 2040 Transit Riders who use Park-and-Rides
Zone 1	3,920	8%	0	4%*
Zone 2	6,780	41%	4,000	33%*
Zone 3	7,300	64%	8,510	56%
Zone 4	1,600	84%	1,110	84%
Total	19,600	NA	13,620*	NA

*These proportions could be higher if transit riders in these areas use the new Sound Transit lots.

**3,300 from Metro; 10,320 from Sound Transit.

Our parking strategies would be prioritized as follows:

Manage parking supply:

- Increase efficiency, for example by promoting carpools and real-time ridesharing or marketing underutilized lots.
- Implement permits and payment for parking, making it easier for customers to find spaces.
- Improve bicycle and pedestrian access to park-and-rides, for example through better bicycle parking facilities and walkways.

Increase parking supply using relatively low-cost solutions:

- Restripe existing lots to create more spaces.
- Lease more lots, especially in the short term, before we could expand frequent service as proposed or build permanent park-and-rides.
- Use multifamily and commercial lots, which often have parking space available when transit parking is in high demand.
- Add on-street parking, working with cities to minimize impacts.

Build new parking facilities:

Compared to investments in expanding and enhancing service, construction of parking is more expensive for the ridership it generates. This will be a lower priority strategy.

As we consider future park-and-rides, we would coordinate with affected jurisdictions and consider costs and needs, local partnerships, the service network, and other options for accessing transit.



For more information

See Appendix D for more detail on access to transit, including estimates of parking by corridor.

What we've heard about access to transit

As we conducted outreach for this plan, Metro consistently heard from city staff and elected officials about the need for more parking options at major transit centers and park-and-rides. We also learned from our 2014 Rider/Non-Rider Survey that only 34 percent of customers are satisfied with park-and-ride availability.

The online survey conducted in summer 2015 supports the transit access zone approach because it found that priorities varied across the county. For example, parking was more important to Eastside respondents than those from other areas. Parking was the lowest priority for low-income respondents.

METRO CONNECTS proposes to expand all access options according to local priorities.

What would it take?

- **Make near-term improvements to parking access and information.** Continue monitoring park-and-rides and pursuing strategies to make the best use of existing resources—including using technology to provide real-time information to customers about parking availability and options for reserving a space.
- **Develop partnerships to improve access to transit.** Work with local cities, King County's Department of Natural Resources and Parks, and other partners to create high-quality trail connections, sidewalks, and bicycle facilities at bus stops and transit centers. Partners could help identify, design, permit, and build access improvements; assist in leased-lot negotiations; and contribute financially. Metro could provide funding to jurisdictions through grants or other mechanisms and help develop grant proposals.

Intelligent Transportation Systems (ITS)

Emerging technologies that interconnect travelers, vehicles, management centers and the roadway—called Intelligent Transportation Systems (ITS)—will transform the way we travel.

Metro has been a leader in using ITS. A wireless communications network on our RapidRide corridors enables buses to request priority treatment at traffic signals, lets passengers pay their fares before boarding, and delivers “next bus” information to electronic signs at stations.

We’ll build on this architecture to deliver such improvements systemwide, connecting the management of transit and other transportation modes to make our service faster, more reliable, and easier to use. Many of Metro’s concepts for using ITS are mentioned throughout this plan, including:

- **Intelligent buses** that report the availability of seats, bike racks, and space for mobility devices; engine diagnostics; have weather and pollution information; and also communicate with the road network and other vehicles.
- **Integration of public and private travel options** such as bus, rail, carshare, bikeshare, and TNCs like Uber and Lyft into a single trip-planning and payment system.
- **Integration of transportation management centers** operated by Metro, WSDOT, the City of Seattle, and others.
- **Improve and share raw transit data** among our regional partners to better understand our customers’ needs. We would build on recent initiatives such as the Metro/Sound Transit Integration effort and the Five Agency downtown Seattle effort to share data.
- **Other future technologies** such as automated buses and active safety systems.

With the ongoing extension of Link, Metro is continuing to restructure our route network around the rail system as well as multi-modal connections and new travel options. As this service network evolves, service integration will become ever more critical. We would need better tools to analyze ridership, productivity, on-time performance, traffic congestion, roadway volumes, corridor performance, and other aspects of operations in a more regional and collaborative manner. The region’s transit agencies could become better aligned by sharing more data and analysis.

Metro won’t be able to fully understand our own riders’ needs and travel patterns without knowing where and how they transfer to other services and modes. We would need agreements with the ORCA partners to obtain regional data and conduct integrated service planning.

What would it take?

- **Investment** in operations and system preservation such as:
 - Building base capacity for up to 650 new vehicles, along with a new vanpool distribution base, Access fleet base, and other support facilities.
 - Expanding safety and security infrastructure to keep customers and employees safe.
 - Continuing to lead in the testing, development, and procurement of information technology assets that are vitally important to providing excellent customer service over the long term.

