KING COUNTY METRO

Service Guidelines

2015 UPDATE

King County
METRO

We'll Get You There

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Introduction

Metro uses service guidelines to evaluate, design and modify transit services to meet changing needs and to deliver efficient, high-quality service. The guidelines help us make sure that our decision-making and recommendations to policy makers are objective, transparent, and aligned with the region's goals for public transportation. Use of the guidelines fulfills Metro's Strategic Plan Strategy 6.1.1, "Manage the transit system through service guidelines and performance measures."

The service guidelines establish criteria and processes that Metro uses to analyze and plan changes to the transit system. They provide direction in the following areas:

Evaluating and Reporting on the Exisiting Network

SETTING TARGET SERVICE LEVELS
Define a process for assessing the market potential of corridors in Metro's bus network using factors of corridor productivity, social equity, and geographic value, and determining the appropriate level of service for each corridor.

EVALUATING AND MANAGING SYSTEM PERFORMANCE
Establish measures for evaluating route productivity, passenger loads, and schedule reliability for every route based on service type (urban, suburban, DART/community shuttles) to identify where changes may be needed to improve efficiency, effectiveness and quality.

Planning and Designing Service and Service Changes

DESIGNING SERVICE
Provide qualitative and quantitative guidelines for designing specific transit routes and the overall transit network.

RESTRUCTURING SERVICE
Define the circumstances that should prompt Metro to restructure multiple routes along a corridor or within a larger area and how restructures should be done.

PLANNING ALTERNATIVE SERVICES
Help Metro plan, implement and manage the Alternative Services Program.

WORKING WITH PARTNERS
Describe how Metro can form partnerships to complement and expand service.

PLANNING AND COMMUNITY ENGAGEMENT
Guide the public engagement process that is part of Metro's service planning.

## Adding, Reducing and Changing Service

ADDING, REDUCING AND CHANGING SERVICE
Establish the priority order in which the guidelines will be considered as Metro makes recommendations about adding, reducing, or adjusting service and describe how Metro will report on the performance of individual bus routes and the Metro system as a whole.

How the guidelines are used

Every year, Metro uses the service guidelines to analyze the corridors and bus routes in the transit system. The results are published in an annual Service Guidelines Report that is transmitted to the King County Council and made available to the public.

Metro uses the results of this analysis, as well as guidelines concerning service design and alternative services, to develop service change proposals. The guidelines analysis is one step in a planning process that starts with the adoption of Metro's budget and results in changes to transit service (see chart below).
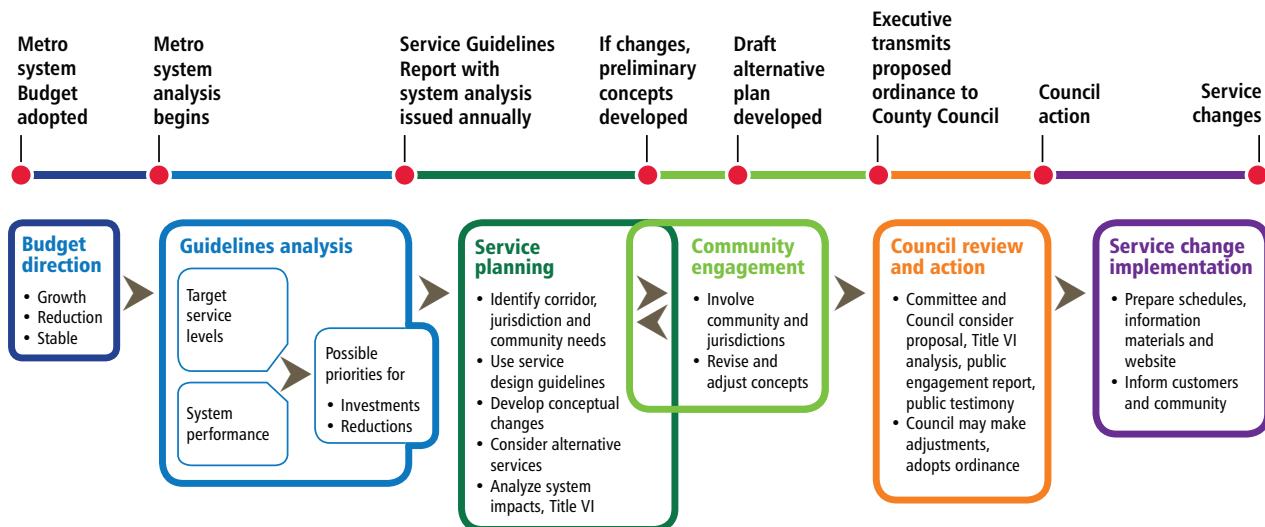
Why the guidelines were created and how they have changed

Metro's original service guidelines resulted from the work of the 2010 Regional Transit Task Force (RTTF). King County formed the RTTF to consider a policy framework to guide service investments or—if necessary—reduction of the Metro Transit system.

The RTTF recommended that Metro adopt transparent, performance-based guidelines for planning service that emphasize productivity, social equity, and geographic value.

In the four years after the service guidelines were adopted, Metro completed five Service Guidelines Reports that evaluated system performance and identified countywide service needs, and adjusted service using the results 12 times. The County made revisions to the Service Guidelines in 2012 and 2013.

The County formed a Service Guidelines Task Force (SGTF) in 2015 to consider further refinements to the guidelines based on the experience using them. The SGTF used the solid foundation developed in the 2010 effort to further analyze how transit service is allocated and measured across the region. The success of the RTTF was due in part to collaboration among King County, partner cities, regional decision makers, and diverse stakeholders. This same approach helped the SGTF develop recommendations for improving King County's transit system.

This 2015 update of the service guidelines incorporates the recommendations of the Service Guidelines Task Force. We also revised the explanation of the guidelines to make them clearer and easier to understand. The update includes the following changes:

- Modifies the way Metro evaluates corridors to better reflect productivity, social equity and geographic value.

- Changes the definition of "low income" used in setting target service levels from 100 percent to 200 percent of the federal poverty level, in line with Metro's ORCA LIFT program.

- Establishes a minimum target service level of every 60 minutes for corridors and routes.

- Provides greater protection for peak-only services in the event of major service reductions.

- Modifies Metro's service types so that comparable services are measured against one another.

- Expands the description of Metro's planning and public engagement process and how the agency engages and works with the community.

- Expands the description of the Alternative Services Program as a way to meet diverse needs.

- Expands the descriptions of how Metro will partner with communities and with private partners to build the best transit network possible.

- Expands the description of the different factors Metro considers when making investments.

- Gives more consideration to the relative impacts in all parts of the county when making service reductions.

Future guidelines

From the beginning, policymakers and Metro intended the service guidelines to be a living document; regular updates were required by the ordinance approving the guidelines. Updates to the guidelines will continue to be considered along with updates to the Strategic Plan for Public Transportation 2011-2021.

In 2016, Metro expects to transmit a long-range plan to the King County Council for consideration and adoption. This long range plan establishes a future network for transit that Metro will work toward and hopes to complete in 2040. It will include new transit corridors and connections between centers to meet the growing demand. The network will include fixed-route service as well as a variety of Alternative Services products and ADA Paratransit, depending on the diverse travel needs of the local community. This network will reflect local jurisdictions' planning efforts.

In future updates to the guidelines, Metro will respond to near-term issues and will seek to align the guidelines with the network defined in the long-range plan. In turn, the long-range plan will reflect the productivity, social equity and geographic value principles defined in the strategic plan and service guidelines.

Evaluating and Reporting on the Existing Network

 SETTING TARGET SERVICE LEVELS

A major function of the service guidelines is to assess and set target service levels for the corridors that make up Metro's All-Day and Peak-Only Network.

This network is a set of corridors that connect designated regional growth centers, manufacturing/industrial centers, and transit activity centers. All-day service is two-way service designed to meet a variety of travel needs and trip purposes throughout the day. The network also includes peak-only service that tends to travel in one direction and provides faster travel times, accommodates high demand for travel to and from major employment centers, and serves park-and-ride lots that are collection points for transit users.

For Metro's service guidelines, **corridors** are defined as major transit pathways that connect regional growth centers, manufacturing/industrial centers, activity centers, park-and-rides and transit hubs, and major destinations throughout King County. **Routes** are the actual bus services provided. Service within a single corridor might be provided by multiple bus routes. Almost all corridors have at least one route that operates on it, but not all routes in Metro's network operate on a corridor.

Target service levels are set by corridor rather than by route because a corridor could be served by a single route or by multiple routes.

As the region changes and corridors are added to the network, a similar evaluation process is used to set target service levels for the new corridors.

Productivity

Productivity is a primary value for transit service in King County. It means making the most efficient use of resources and targeting transit service to the areas of the county with the most potential for use. Metro uses the term productivity in two important ways in the service guidelines:

1. **Corridor productivity** is the *potential* market for transit based on the number of households, jobs, students, and park-and-rides along the corridor. Higher concentrations of people support higher use of transit.

2. **Route productivity** is the *actual* use of transit, determined using two performance measures of ridership—rides per platform hour and passenger miles per platform mile.

Corridor analysis

Metro establishes target service levels for the corridors in the All-Day and Peak-Only Network using a three-step process. Service levels are very frequent, frequent, local, or hourly (see chart on p. 11).

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STEP 1

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Step one sets target service levels for each corridor based on measurable indicators of corridor productivity, social equity, and geographic value. Indicators of productivity make up 50 percent of the total score, while geographic value and social equity indicators each comprise 25 percent of the total score in this step.

The use of measures related to social equity and geographic value is consistent with Metro's Strategic Plan. The use of social equity factors helps Metro plan transit service that provides travel opportunities for historically disadvantaged populations (Strategy 2.1.2). Factors concerning transit activity centers and geographic value guide service to areas of concentrated activity (Strategy 3.4.1) and ensure that services provide value in all areas of King County. The use of productivity factors helps Metro plan and deliver productive service throughout King County (Objective 6.1).

- **Corridor productivity** indicators demonstrate the potential demand for transit in a corridor using land-use factors: the number of households, jobs, enrolled students[1], and park-and-ride stalls[2] located within a quarter-mile walk to a bus stop. These factors are used because areas where many people live, work, or go to school have high potential transit use. The quarter-mile calculation considers how well streets are connected; only those areas that have an actual path to a bus stop are considered to have access to transit. This is an important distinction in areas that have a limited street grid or barriers to direct access, such as lakes or freeways. Park-and-rides are included because many people who access the transit system live outside of the quarter-mile draw area.

- **Social equity** indicators show how well a corridor serves any areas where there are concentrations of minority and low-income populations along the corridor. This is done by comparing boardings in these areas against the systemwide average of all corridor boardings within minority and low-income census tracts.[3] Metro assigns the highest value to corridors with concentrations of boardings in low-income or minority census tracts that are higher than the system average. Those close to the system average, but just below, are also awarded value in this process.

- **Geographic value** indicators establish how well a corridor supports connections and service to transit activity centers, regional growth centers, and manufacturing/industrial centers[4] throughout King County. All connections between centers are important and are given value in this process. Corridors that are the primary connections between centers, based on ridership and travel time, receive higher value in this process. King County centers are described on p. 15 of the strategic plan and are listed in Appendix 1 of this document.

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[1] An enrolled student is one who attends classes in a degree-conferring institution.

[2] Park-and-ride stalls are added at a factor of 1.1 to account for carpool usage. According to the Washington State Department of Transportation (WSDOT), the average occupancy of a parked car is very near 1 with the highest being 1.102 passengers per parked car. See WSDOT's report: How Can We Maximize Efficiency and Increase Person Occupancy at Overcrowded Park and Rides?

[3] Low-income tracts are those where a greater percentage of the population than the countywide average has low incomes (less than 200% of the federal poverty level depending on household size), based on current American Community Survey data. Minority tracts are defined as tracts where a greater percentage of the population than the countywide average is minority (all groups except White, non-Hispanic), based on current census data.

[4] "Centers" are areas that are important for Metro to serve. Transit activity centers, identified by Metro, are areas with relatively high transit use. Regional growth centers and manufacturing/industrial centers, designated by the Puget Sound Regional Council, are areas with dense population, employment, and manufacturing and industrial activity.

Scoring: The following table shows the measures of corridor productivity, social equity and geographic value and the points that would be assigned (out of a total 40) to determine the corridor's preliminary score in the corridor analysis.

THRESHOLDS AND POINTS USED TO SET SERVICE LEVELS

Factor	Measure	Threshold	Points
Corridor productivity	Households and park-and-ride stalls (with a factor of 1.1 to include carpools) within ¼ mile of stops per corridor mile	>3,000 Households & park-and-ride stalls/ Corridor mile	10
		>2,400 Households & park-and-ride stalls/ Corridor mile	8
		>1,800 Households & park-and-ride stalls/ Corridor mile	6
		>1,200 Households & park-and-ride stalls/ Corridor mile	4
		>600 Households & park-and-ride stalls/ Corridor mile	2
	Jobs and student enrollment at universities and colleges within ¼ mile of stops per corridor mile	>10,250 Jobs & students/Corridor mile	10
		>5,500 Jobs & students/Corridor mile	8
		>3,000 Jobs & students/Corridor mile	6
		>1,400 Jobs & students/Corridor mile	4
		>500 Jobs & students/Corridor mile	2
Social equity	Percent of boardings in low-income census tracts	Above system average	5
		Just below system average (.5 standard deviations[5])	3
		Below system average	0
	Percent of boardings in minority census tracts	Above system average	5
		Just below system average (.5 standard deviations[5])	3
		Below system average	0
Geographic value	Primary connection between regional growth, manufacturing/industrial centers	Yes	10
	Primary connections between transit activity center and regional growth, manufacturing/ industrial centers	Yes	7
	Primary connection between transit activity centers	Yes	5
	Other connection to any center	Yes	2

[5] Standard deviation is a measure of how spread out the numbers are. It is a statistic that describes the average difference between the values in the dataset and the average value of that dataset.

The table below shows the initial target service level that would be assigned to a corridor based on the number of points awarded for the corridor productivity, social equity and geographic value factors of that corridor. Service levels are very frequent, frequent, local, or hourly.

SCORES USED TO SET INITIAL SERVICE LEVELS (STEP 1)

Scoring Range	Minimum Peak Service Frequency (minutes)	Minimum Off-Peak Service Frequency (minutes)	Minimum Night Service Frequency (minutes)	Service Level Assigned
25-40	15	15	30	Very frequent
19-24	15	30	30	Frequent
10-18	30	30	--*	Local
0-9	60	60	--	Hourly

*Night service on local corridors is determined by ridership and connections.

Step two adjusts the target service level assigned in step one to accommodate actual ridership. Metro increases a corridor's target service level if service at the level established under step one would not accommodate existing riders, would be inconsistent with policy-based service levels set for RapidRide, or would result in an incomplete network of night service[6]. Adjustments are only made to assign a higher service level to a corridor; service levels are not adjusted downward in this step.

The table below shows how Metro adjusts the target service levels set in step one to ensure that the All-Day and Peak-Only Network accommodates current riders or to preserve a complete network of night service.

[6] Night service includes any trips between 7 p.m. and 5 a.m., seven days a week. Please refer to the Summary of Typical Service Levels table for target night service levels (p. 13). An incomplete network of night service is defined as a network in which night service is not provided on a primary connection between regional growth centers or on a corridor with frequent peak service. Provision of night service on such corridors is important to ensure system integrity and social equity during all times of day.

THRESHOLDS USED TO ADJUST SERVICE LEVELS (STEP 2)

Factor	Measure	Threshold	Adjustment to Warranted Frequency		
			Service Level Adjustment	Step 1 Frequency (minutes)	Adjusted Frequency (minutes)
Ridership (Load)	Estimated ratio of maximum load to the established passenger load threshold[7] by time of day – if existing riders were served by step-one service levels	>110% of the established passenger load threshold	Increase two service levels	15 or 30	15 or more frequent
				≥ 60	15
		>55% of the established passenger load threshold	Increase one service level	15	15 or more frequent
				30	15
				≥ 60	30
Service span[8]	Connection at night	Primary connection between regional growth centers	Add night service	--	≥ 60
		Frequent peak service	Add night service	--	30

[7] This ratio is calculated by dividing the maximum load along a route by the passenger load threshold. The passenger load threshold is equal to the number of seats on the bus, plus an allowance of four square feet per standing passenger.

[8] Service span: The span of hours over which service is operated. Service span often varies by day of the week. For example, a route's service span could be from 5 a.m. to 9 p.m.

Metro also adjusts service levels on existing and planned RapidRide corridors to ensure that assigned target service frequencies are consistent with policy-based service frequencies for the RapidRide program: more frequent than 15 minutes during peak periods, 15 minutes or more frequent during off-peak periods, and 15 to 30 minutes at night. Where policy-based service frequencies are higher than service frequencies established in step two, frequencies are improved to the minimum specified by policy.

The combined outcome of steps one and two is a set of corridors with all-day service levels that reflect factors concerning productivity, social equity, geographic value, and actual ridership. These corridors are divided into service levels based on the frequency of service, as described in the "Service Levels" section that follows. Corridors with the highest frequency would have the longest span of service.

Step three evaluates peak-only service to determine the value it provides in addition to other service provided on corridors in the network. Peak-only service operates only during peak travel periods (5-9 a.m. and 3-7 p.m. weekdays), primarily in one direction. Peak-only service typically brings riders from residential areas to job centers in the morning with return service from the job centers in the afternoon.

All-day routes also offer service during peak periods, but are not included in the peak-only analysis.

Peak service thresholds ensure that peak-only service has higher ridership and/or faster travel times than provided in the network of all-day service. Service levels on peak-only routes are established separately from the all-day network because of this specialized function within the transit network.

THRESHOLDS FOR PEAK SERVICE

Factor	Measure	Threshold
Travel time	Travel time relative to all-day service provided during peak periods	Travel time should be at least 20% faster than the all-day service, as measured during peak periods
Ridership	Rides per trip	Rides per trip should be 90% or greater compared to the all-day service provided during peak periods

Peak-only service is provided for a limited span compared to all-day service. Peak-only service generally has a minimum of eight trips per day on weekdays only (morning trips travel from residential areas to job centers, and afternoon trips take riders from the job centers back to the residential areas). The exact span and number of trips for each peak-only route are determined by the level of demand for service that meets the travel time and ridership criteria.

Because of the value that peak-only service provides in the network, it is protected in any potential reduction scenario. Peak-only service is lower priority for reduction if it is in the bottom 25 percent, but passes one or both of the travel time and ridership criteria described above. If peak-only service does not meet the load and travel-time thresholds but serves an area that has no other service, Metro may consider preserving service or providing service in a new or different way, such as connecting an area to a different destination or providing alternatives to fixed-route transit service, consistent with strategic plan Strategy 6.2.3.

Service levels

All-day services are categorized by level of service into four levels, plus peak-only and alternative services. Service levels are primarily defined by the frequency and span of service they provide. The table below shows the typical characteristics of each level. Some services may fall outside the typical frequencies, depending on specific conditions in the corridor served.

SUMMARY OF TYPICAL SERVICE LEVELS

Service Level	Service Level: Frequency (minutes) and Time Period			Days of Service	Hours of Service
	Peak	Off-peak	Night		
Very frequent	15 or more frequent	15 or more frequent	30 or more frequent	7 days	16-24 hours
Frequent	15 or more frequent	30	30	7 days	16-24 hours
Local	30	30 - 60	--*	5-7 days	12-16 hours
Hourly	60	60	--	5 days	8-12 hours
Peak-only	8 trips/day minimum	--	--	5 days	Peak
Alternative Services	Determined by demand and community collaboration process				

*Night service on local corridors is determined by ridership and connections.

- **Very frequent** services provide the highest levels of all-day service. Very frequent corridors serve very large employment and transit activity centers and very dense residential areas.

- **Frequent** services provide high levels of all-day service. Frequent corridors generally serve major employment and transit activity centers and very dense residential areas.

- **Local** services provide a moderate level of all-day service. Local corridors generally serve regional growth centers and residential areas with low to medium density.

- **Hourly** services provide all-day service at 60 minute frequencies. Corridors generally connect low-density residential areas to regional growth centers.

- **Peak-only** services provide specialized service in the periods of highest demand for travel. Peak services generally provide service to a major employment center in the morning and away from a major employment center in the afternoon.

- **Alternative** service is any non-fixed-route service directly provided or supported by Metro. These are further described in the "Planning Alternative Services" section, p. 23.

Target service level comparison

The corridors in the All-Day and Peak-Only Network are analyzed annually in Metro's Service Guidelines Report. The report compares the target service levels set through the corridor analysis with existing levels of service. A corridor is determined to be either "below," "at" or "above" its target service level. This process is called the target service-level comparison, and is used to inform potential changes to bus routes. For example, in simple terms, a corridor below its target service level would be a candidate for investment and a corridor above its target service level could be a candidate for reduction. This target service level comparison is a factor in both the investment and reduction priorities, as described in the "Adding, Reducing and Changing Service" section. Using the results of the annual corridor analysis and as resources allow, Metro adjusts service levels to better meet the public transportation needs of King County. The corridor analysis process is summarized in the chart below.

CORRIDOR ANALYSIS SUMMARY

STEP 1 — SET INITIAL TARGET SERVICE LEVELS

Factor	Purpose
Corridor productivity	Support areas of higher employment and household density
	Support areas with high student enrollment
	Support function of park-and-rides in the transit network
Social equity and geographic value	Serve historically disadvantaged communities
	Provide appropriate service levels throughout King County for connections between all centers

STEP 2 — ADJUST TARGET SERVICE LEVELS

Factor	Purpose
Ridership (Loads)	Provide sufficient capacity for existing transit demand
Service span	Provide adequate levels of service throughout the day to meet demand

STEP 3 — EVALUATE PEAK-ONLY SERVICE

Factor	Purpose
Travel time	Ensure that peak-only service provides a travel time advantage compared to other service alternatives
Ridership	Ensure that peak-only service is well utilized compared to other service alternatives

OUTCOME: ALL-DAY AND PEAK-ONLY NETWORK

Evaluating new service

Metro's long-range plan will respond to King County growth by defining a future transit network and service levels that are based on the current network with additional corridors. Metro will use the service guidelines, along with extensive input from cities and community members, to identify and evaluate service corridors in the long-range plan. As the region continues to grow, new services and service corridors can be added to future long-range plan updates through a planning process guided by the principles in the service guidelines.

Centers in King County

The list of centers associated with the All-Day and Peak-Only Network is adopted by the King County Council as part of the service guidelines. The region's growth and travel needs change over time, and centers may be added to the list in future updates of the service guidelines as follows:

Regional Growth Centers and Manufacturing/Industrial Centers

Additions to and deletions from the regional growth and manufacturing/industrial centers lists should be based on changes approved by the Puget Sound Regional Council and defined in the region's growth plan, Vision 2040, or subsequent regional plans.

Transit Activity Centers

Additions to the list of transit activity centers will be nominated by the local jurisdictions and must meet one or more of the following criteria:

- Is located in an area of mixed-use development that includes concentrated housing, employment, and commercial activity.

- Includes a major regional hospital, medical center or institution of higher education located outside of a designated regional growth center.

- Is located outside other designated regional growth centers at a transit hub served by three or more all-day routes.

In addition to meeting at least one of the criteria above, a transit activity center must meet the following criteria:

- Pathways through the transit activity centers must be located on arterial roadways that are appropriately constructed for transit use.

- Identification of a transit activity center must result in a new primary connection between two or more regional or transit activity centers in the transit network, either on an existing corridor on the All-Day and Peak-Only Network or as an expansion to the network to serve an area of projected all-day transit demand.

- When a corridor is added to the network, step one of the All-Day and Peak-Only Network analysis must result in an assignment of a 30-minute target service level or better.

The size of transit activity centers varies, but all transit activity centers represent concentrations of activity in comparison to the surrounding area.

- Additional centers and corridors may be established by Metro's long-range plan network, under development with the community and local jurisdictions.

EVALUATING AND MANAGING SYSTEM PERFORMANCE

Metro manages the performance of bus routes to improve the efficiency, effectiveness and quality of the transit system. Performance management guidelines are applied to individual routes to identify high and low performance, areas where investment is needed, and areas where resources are not being used efficiently and effectively.

Service types and route productivity

When comparing the productivity of individual bus routes, Metro classifies them by service type, which indicates the primary market served as well as other characteristics of service described below. These service types allow Metro to measure the performance of routes against similar services.

- **Urban** routes primarily serve the densest parts of the county: the PSRC-designated Regional Growth Centers of Seattle Downtown, First Hill/Capitol Hill, South Lake Union, the University Community, and Uptown.

- **Suburban** routes primarily serve passengers in suburban and rural areas in Seattle and King County.

- **Dial-A-Ride Transit and shuttles** are those that provide flexible, community-based service that has different characteristics than the fixed-route system. These services are held to different standards than those outlined for the fixed-route network below. These standards are under development and will be included in Metro's annual service guidelines reports. These services are described in more detail in the "Planning Alternative Services" section, p. 23.

High and low performance thresholds differ for routes that serve urban areas and those that serve suburban areas. Regional growth centers in the Seattle core and the University District have the highest job and residential densities in the county. Because the potential market for transit is so high, routes serving these areas are expected to perform at a higher level. These routes comprise the Urban category and are given higher performance thresholds compared to other routes. The other routes, which make up the Suburban category, meet important transit needs of areas that generally have lower job and residential densities. Performance thresholds are lower for these routes because they are different from markets served in other areas of King County. Service types are based on these two primary market types, as well as other characteristics of service, to ensure that like services are compared.

The performance management analysis uses route productivity measures to identify fixed-route service where performance is strong or weak as candidates for addition, reduction, or restructuring for each service type.

The measures for evaluating fixed-route service productivity are **rides per platform hour** and **passenger miles per platform mile**.

- **Rides per platform hour** is a measure of the number of riders who board a transit vehicle relative to the total number of hours that a vehicle operates (from leaving the base until it returns).

- **Passenger miles per platform mile** is a measure of the total miles riders travel on a route relative to the total miles that a vehicle operates (from leaving the base until it returns).

Two measures are used to reflect the different values that services provide in the transit system. Routes with a higher number of riders getting on and off relative to the time in operation perform well on the rides-per-platform-hour

measure; an example is a route that goes through the urban core with lots of riders taking short trips. Routes with full and even loading along the route perform well on the passenger-miles-per-platform-mile measure; an example is a route that fills up at a park-and-ride and is full until reaching its destination.

Low performance is defined as route productivity that ranks in the bottom 25 percent of all routes within a service type and time period; high performance is defined as route productivity in the top 25 percent. Fixed-route services in the bottom 25 percent on both route productivity measures are identified as the first candidates for potential reduction if service must be reduced. However, reduction of these routes is not automatic; other factors are considered as well. For more information, see p. 30.

Thresholds for the top 25 percent and the bottom 25 percent are identified for peak, off-peak, and night time periods and Urban and Suburban destinations for each of the two performance measures.

Passenger loads

Passenger loads are measured to identify overcrowded services as candidates for increased investment. Overcrowding is a problem because buses may pass up riders waiting at stops, riders may choose not to ride if other transportation options are available, and overcrowded buses often run late because it takes longer for riders to board and to get off at stops.

Passenger loads are averaged on a per trip basis using counts from an entire service change period (about six months). Trips must have average maximum loads higher than the thresholds for the entire service change period to be identified as overcrowded. Two metrics are used to measure passenger loads: crowding and the amount of time the bus has a standing load (standing load time).

Overcrowding occurs when the average maximum load of a trip exceeds its passenger load threshold. A passenger load threshold is calculated for each trip, based on the characteristics of the bus type scheduled for the trip. This threshold is determined by:

- The number of seats on the bus, plus

- The number of standing people that can fit on the bus, when each standing person is given no less than 4 square feet of floor space.

A trip's standing load time is determined by measuring the amount of time that the number of passengers on the bus exceeds the number of seats.

- No trip on a route should have a standing load for more than 20 minutes.

Routes with overcrowded trips or standing loads for more than 20 minutes are identified as candidates for investment. These candidates are analyzed in detail to determine appropriate actions to alleviate overcrowding, including:

- Assigning a larger vehicle to the trip, if available

- Adjusting the spacing of trips within a 20-minute period

- Adding trips.

Schedule reliability

Metro measures schedule reliability to identify routes that are candidates for investment because they provide poor quality service.

Schedule reliability is measured for all Metro transit service. Service should adhere to published schedules, within reasonable variance based on time of day and travel conditions. "On time" is defined as an arrival at designated points along a route[9] that is no more than five minutes late or one minute early relative to the scheduled arrival time. When identifying candidates for remedial action, Metro focuses on routes that are regularly running late.

To do this, Metro identifies trips that exceed the lateness thresholds (shown below). If a trip experiences lateness that exceeds the thresholds, it can be identified for investment. Investment can include improvements in route design, schedule, or traffic operations. Schedule reliability can also be improved through speed and reliability improvements, such as business access and transit lanes, queue jumps, transit signal priority and other transit priority treatments.

Time Period	Lateness Threshold
Weekday average	> 20%
Weekday PM peak average	> 35%
Weekend average	> 20%

Metro allows for a higher lateness threshold in the PM peak period to account for increased passenger demand and higher levels of roadway congestion experienced during this time period.

Metro actively manages the headways of RapidRide service, primarily in peak periods, with a goal of providing riders with a high-frequency service where they do not rely on paper timetables. High frequencies and real-time information are intended to give riders a reliable service. When actual service has gaps that are three minutes more than the intended headway, service is considered late. With that difference in mind, "lateness" on RapidRide service uses the same thresholds as shown above.

Routes that operate with a headway that is less frequent than every 10 minutes that do not meet performance thresholds will be given priority for schedule adjustment or investment. Routes that operate with a headway of every 10 minutes or more frequent that do not meet performance thresholds will be given priority for speed and reliability investments to improve traffic operations. It may not be possible to improve through-routed routes[10] that do not meet performance thresholds because of the high cost and complication of separating routes.

Other considerations: External factors affecting reliability

Action alternatives:

- Adjust schedules/add run time

- Adjust routing

- Invest in speed and reliability improvements.

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[9] Metro measures schedule reliability based on the arrival time of a given coach at designated points along a route. At the time the Strategic Plan and Service Guidelines were transmitted to the King County Council, Metro calculated this measure using the coach's arrival at time points. As Metro transitions with the Stop-Based Scheduling project, Metro will calculate this measure based on the coach's arrival at stops along a route, providing Metro with more data and improved accuracy for measuring schedule reliability.

[10] Through-routed services are routes that arrive at the end of one route and continue on as a different route. For example, Route 5 between Shoreline and Downtown Seattle continues on as Route 21 between downtown Seattle and Westwood Village.

Planning and Designing Service and Service Changes

DESIGNING SERVICE

Metro uses the following service design guidelines to develop transit routes and the overall transit network. Based on industry best practices for designing service, these guidelines help us enhance transit operations and improve the rider experience. The guidelines include both qualitative considerations and quantitative standards for comparing and measuring specific factors.

1 **Network connections**

Routes should be designed in the context of the entire transportation system, which includes local and regional bus routes, light-rail lines, commuter rail lines and other modes. When designing a network of services, Metro should consider locations where transfer opportunities could be provided for the convenience of customers and to improve the efficiency of the transit network. Where many transfers are expected to occur between services of different frequencies, timed transfers should be maintained to reduce customer wait times.

2 **Multiple purposes and destinations**

Routes are more efficient when designed to serve multiple purposes and destinations rather than specialized travel demands. Routes that serve many rider groups rather than a single group appeal to more potential riders and are more likely to be successful. Specialized service should be considered when there is sizable and demonstrated demand that cannot be adequately met by more generalized service.

3 **Easy to understand, appropriate service**

A simple transit network is easier for riders to understand and use than a complex network. Routes should have predictable and direct routings, and the frequency and span of service should be appropriate to the market served. As budget allows, routes should be targeted for a minimum service level of at least every 60 minutes. If a route cannot support this frequency level, it should be a candidate for alternative services as funding allows and the service meets the allocation criteria. Routes should serve connection points where riders can transfer to frequent services, opening up the widest possible range of travel options.

4 **Route spacing and duplication**

Routes should be designed to avoid competing for the same riders. Studies indicate that people are willing to walk 1/4 mile on average to access transit, so in general routes should be no closer together than 1/2 mile. Services may overlap where urban and physical geography makes it necessary, where services in a common segment serve different destinations, or where routes converge to serve regional growth centers. Where services do overlap, they should be scheduled together, if possible, to provide effective service along the common routing.

Routes are defined as duplicative in the following circumstances:

- Two or more parallel routes operate less than 1/2 mile apart for at least one mile, excluding operations within a regional growth center or approaching a transit center where pathways are limited.

- A rider can choose between multiple modes or routes connecting the same origin and destination at the same time of day.

- Routes heading to a common destination are not spaced evenly (except for operations within regional growth centers).

5 **Route directness**

A route that operates directly between two locations is faster and more attractive to riders than one that takes a long, circuitous path. Circulators or looping routes do not have competitive travel times compared to walking or other modes of travel, so they tend to have low ridership and poor performance. Some small loops may be necessary to turn the bus around at the end of routes and to provide supplemental coverage, but such extensions should not diminish the overall cost-effectiveness of the route. Directness should be considered in relation to the market for the service.

Route deviations are places where a route travels away from its major path to serve a specific destination. For individual route deviations, the delay to riders on board the bus should be considered in relation to the ridership gained on a deviation. New deviations may be considered when the delay is less than 10 passenger-minutes per person boarding or exiting the bus along the deviation.

$$\frac{\text{Riders traveling through x Minutes of deviation}}{\text{Boardings and exitings along deviation}} \leq 10 \text{ minutes}$$

6 **Bus stop spacing**

Bus stops should be spaced to balance the benefit of increased access to a route against the delay that an additional stop would create for all other riders. While close stop-spacing reduces walk time, it may increase total travel time and reduce reliability, since buses must slow down and stop more frequently.

Service	Average Stop Spacing
RapidRide	½ mile
All other services	¼ mile

Portions of routes that operate in areas where riders cannot access service, such as along freeways or limited-access roads, should be excluded when calculating average stop spacing. Additional considerations for bus stop spacing include the pedestrian facilities, the geography of the area around a bus stop, passenger amenities, and major destinations.

7 **Route length and neighborhood route segments**

A bus route should be long enough to provide useful connections for riders and to be more attractive than other travel modes. A route that is too short will not attract many riders, since the travel time combined with the wait for the bus is not competitive compared to the time it would take to walk. Longer routes offer the opportunity to make more trips without a transfer, resulting in increased ridership and efficiency. However, longer routes may

also have poor reliability because travel time can vary significantly from day to day over a long distance. Where many routes converge, such as in regional growth centers, they may be through-routed to increase efficiency, reduce the number of buses providing overlapping service, and reduce the need for layover space in congested areas.

In some places, routes extend beyond regional growth centers and transit activity centers to serve less dense residential neighborhoods. Where routes operate beyond centers, ridership should be weighed against the time spent serving neighborhood segments, to ensure that the service level is appropriate to the level of demand. The percent of time spent serving a neighborhood segment, which are defined as ≤ 20% of the total mileage length of a route, should be considered in relation to the percent of riders boarding and exiting on that segment.

$$\frac{\text{Percent of time spent serving neighborhood segment}}{\text{Percent of riders boarding/exiting on neighborhood segment}} \leq 1.2^{11}$$

8 **Operating paths and appropriate vehicles**

Buses are large, heavy vehicles and cannot operate safely on all streets. Services should operate with vehicles that are an appropriate size to permit safe operation while accommodating demand. Buses should be routed primarily on arterial streets and freeways, except where routing on local or collector streets is necessary to reach layover areas or needed to ensure that facilities and fleet used in all communities is equivalent in age and quality. Appropriate vehicles should be assigned to routes throughout the county to avoid concentrating older vehicles in one area, to the extent possible given different fleet sizes, technologies and maintenance requirements.

Bus routes should also be designed to avoid places where traffic congestion and delay regularly occur, if it is possible to avoid such areas while continuing to meet riders' needs. Bus routes should be routed, where possible, to avoid congested intersections or interchanges unless the alternative would be more time-consuming or would miss an important transfer point or destination.

9 **Route terminals**

The location where a bus route ends and the buses wait before starting the next trip must be carefully selected. Priority should be given to maintaining existing layover spaces at route terminals to support continued and future service. People who live or work next to a route end may regard parked buses as undesirable, so new route terminals should be placed where parked buses have the least impact on adjoining properties, if possible. Routes that terminate at a destination can accommodate demand for travel in two directions, resulting in increased ridership and efficiency. Terminals should be located in areas where restroom facilities are available for operators, taking into account the times of day when the service operates and facilities would be needed. Off-street transit centers should be designed to incorporate layover space.

10 **Fixed and variable routing**

Bus routes should operate as fixed routes in order to provide a predictable and reliable service for a wide range of potential riders. However, in low-density areas where demand is dispersed, demand-responsive service may be used to provide more effective service over a larger area than could be provided with a fixed route. Demand-responsive service may be considered where fixed-route service is unlikely to be successful or where unique conditions exist that can be met more effectively through flexible service.

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[11] The value of the service extended into neighborhoods beyond major transit activity centers should be approximately equal to the investment made to warrant the service. A 1:1 ratio was determined to be too strict, thus this ratio was adjusted to 1.2.

11 **Bus stop amenities and bus shelters**

Bus stop amenities should be installed based on ridership in order to benefit the largest number of riders. Bus stop amenities include such things as bus shelters, seating, waste receptacles, lighting, information signs, maps, and schedules. In addition to ridership, special consideration may be given to areas where:

• high numbers of transfers are expected

• waiting times for riders may be longer

• stops are close to facilities such as schools, medical centers, or senior centers

• the physical constraints of bus stop sites, preferences of adjacent property owners, and construction costs could require variance from standards.

Major infrastructure such as elevators and escalators will be provided where required by local, state, and federal regulations.

RIDERSHIP GUIDELINES FOR BUS STOP AMENITIES

RapidRide Routes	
Level of amenity	Weekday Boardings
Station	150+
Enhanced stop	50-149
Standard stop	Less than 50

All Other Metro Routes		
Location	Level of amenity	Weekday Boardings
City of Seattle	Standard shelter and bench	50
Outside Seattle	Standard shelter and bench	25

RESTRUCTURING SERVICE

Service restructures are changes to multiple routes along a corridor or within a large area consistent with the service design criteria in this document. Restructures may be prompted by a variety of circumstances, and in general are made to improve the efficiency and effectiveness of transit service as a whole, to better integrate with the regional transit network, or to reduce Metro's operating costs because of budget constraints. When planning for service restructures, factors other than route performance are taken into account, such as large-scale service and capital infrastructure enhancements. Restructures may result in the modification, addition, and deletion of corridors that align with future corridors in the long-range plan. These changes must be approved by council as part of a service change package.

- Under all circumstances, whether adding, reducing or maintaining service hours, service restructures will have the goals of focusing frequent service on the service segments with the highest ridership and route productivity, creating convenient opportunities for transfer connections between services, and matching capacity to ridership demand to improve the productivity and cost-effectiveness of service.

- Service restructures to manage the transit system will have a goal of increasing ridership.

- Under service reduction conditions, service restructures will have an added goal of an overall net reduction of service hours invested.

- Under service addition conditions, service restructures will have the added goals of increasing service levels and ridership.

When one or more circumstances trigger consideration of restructures, Metro specifically analyzes:

- Impacts on current and future travel patterns served by similarly aligned transit services.

- Passenger capacity of the candidate primary route(s) relative to projected consolidated ridership.

- The cost of added service in the primary corridor to meet projected ridership demand relative to cost savings from reductions of other services.

Restructures will be designed to reflect the following:

- Service levels should accommodate a projected minimum of 80 percent of the expected passenger loads per the established loading guidelines.

- When transfers are required as a result of restructures, the resulting service will be designed for convenient transfers. Travel time penalties for transfers should be minimized.

- A maximum walk distance goal of 1/4 mile in corridors where service is not primarily oriented to freeway or limited-access roadways. Consideration may be given to exceeding this maximum distance where the walking environment supports pedestrians or at transfer locations between very frequent services.

Based on these guidelines, Metro will recommend specific restructures that have compatibility of trips, have capacity on the consolidated services to meet anticipated demand, and can achieve measurable savings relative to the magnitude of necessary or desired change.

After a service restructure, Metro will regularly evaluate the resulting transit services and respond to chronically late performance and passenger loads that exceed the performance management guidelines as part of the ongoing management of Metro's transit system.

Key reasons that will trigger consideration of restructures include:

Sound Transit or Metro service investments
- Extension or service enhancements to Link light rail, Sounder commuter rail, and Regional Express bus services.

- Expansion of Metro's RapidRide network, investment of partner or grant resources, or other significant introductions of new Metro service.

Corridors above or below the All-Day and Peak-Only Network target service level
- Locations where the transit network does not reflect current travel patterns and transit demand due to changes in travel patterns, demographics, or other factors.

Services compete for the same riders
- Locations where multiple transit services overlap, in whole or in part, or provide similar connections.

Mismatch between service and ridership
- Situations where a route serves multiple areas with varying demand characteristics or situations where ridership has increased or decreased significantly even though the underlying service has not changed.

- Opportunities to consolidate or otherwise reorganize service so that higher ridership demand can be served with improved service frequency and fewer route patterns.

Major transportation network changes
- Major projects such as SR-520 construction and tolling and the Alaskan Way Viaduct replacement; the opening of new transit centers, park-and-rides, or transit priority pathways.

Major development or land use changes
- Construction of a large-scale development, new institutions such as colleges or medical centers, or significant changes in the overall development of an area.

PLANNING ALTERNATIVE SERVICES

King County is a diverse county with different travel demands in different parts of the county. The King County Metro Alternative Services Program brings a range of mobility services to parts of King County that do not have the infrastructure, population density, or land use to support traditional fixed-route bus service.

Prioritization criteria

The Alternative Services Program aims to right-size and complement existing fixed-route and Dial-A-Ride Transit (DART) service. Right-sizing may include restructuring underperforming fixed-route bus services and mitigating the impact of lost or reduced fixed-route service. Complementary alternative services may address: the need to serve rural communities, the need to seed emerging markets, and gaps in time-of-day service or geographic coverage of existing fixed-route services. These time-based or geographic coverage gaps might include areas with a concentration of shift jobs, industrial locations, or areas of potential transit activity that are geographically isolated. By employing Alternative Services products like TripPool or Community Vans to fill service gaps, right-size services, or complement existing services, Metro will enhance mobility options for residents while making optimal use of finite transit dollars. The diagram below shows the current range of alternative services. As new potential alternative services products, such as Trip Pool, become available, Metro will explore how best to implement these products and consider how subsidies, fares and promotional efforts can expand these programs and ensure their success.

Existing Alternative Services	Community Shuttle	Community Van	Real-Time Rideshare	TripPool
VanShare VanPool Rideshare Matching DART and CAT	Metro route with a Flexible Service Area, provided through community partnerships.	A fleet of Metro vans for local group trips that are scheduled by a local transportation coordinator to meet locally identified transportation needs.	Leveraging mobile applications to enable private carpool ridematching to take place in real-time.	Real-time ridesharing between home neighborhood and a transit center. Uses Metro Vans and ORCA fares.

Alternative service projects may be initiated by Metro identifying communities that meet one or more of the prioritization criteria listed below or by a competitive process involving a letter of interest by local jurisdictions or community organizations, evaluated against the prioritization criteria listed below. When considering where to implement alternative service projects, Metro will give special consideration to communities with high proportions of low-income or minority populations who depend on public transportation. Prioritization criteria for alternative service efforts in communities include:

1 Fixed-route transit service performs below service guidelines performance standards (measured in rides/platform hour, and passenger miles/platform mile)

2 Time-based service gaps

3 Geographic coverage service gaps

4 Rural communities or emerging transit markets (as identified through land-use targets, designated growth areas, demonstration of local transportation needs, and Metro's Long-Range Public Transportation Plan)

5 Market potential, considering jobs, student enrollment, household density, park-and-rides, high concentrations of low-income or minority populations, and proximity to centers, the regional transit network, and major institutions

6 Partnership opportunities for service or infrastructure with jurisdictions or communities as described in the "Working with Partners" section, p. 25.

Metro will use the Alternative Services Program's community planning process to better identify the needs of transit riders and potential riders, including traditionally isolated or disadvantaged communities, such as those with limited English proficiency, low-income and homeless populations, minorities, people with disabilities and Access users, youth, elderly people, and those who are currently unserved or underserved by transit (within the context of applicable federal laws, such as Americans with Disabilities Act and others). This community planning process will consider needs identified by riders and potential riders for access to social service agencies, health care facilities, jobs, education, and other destinations.

Community partnerships

Demonstrated partner participation is a key component of a successful alternative services project. A local partner organization, such as a municipality or nonprofit organization, must be actively engaged and contributing to the development and implementation of the project. Partnerships may include sharing the cost or staffing of community engagement, planning, equipment, contracted services, promotions, or other project elements and may involve either cash or in-kind contributions from the partner organization. Local jurisdictional partners may also enact transit-supportive land-use policy or may make infrastructure investments that support transit. Types of partnership are further described in the partnership section, p 25.

Performance evaluation

The Alternative Services Program conducts demonstration projects that are intended to identify new service offerings. These may include a range of transportation options that cannot be compared directly with each other or with fixed-route service. Each service needs to be evaluated independently. Given the experimental nature of the different projects under the Alternative Services umbrella, performance evaluation efforts will focus on product testing and continuous service improvement.

Metro will identify performance measures that reflect the unique nature of each service and different performance measures may be used to evaluate different types of services. Performance will be measured against the market potential for each project area. The market potential will be estimated prior to project launch based on the project's stated goals and the community's market characteristics, including population and demographic, land-use, and employment statistics. Past transit performance will also be factored into the development of market potential goals.

Metro will monitor and evaluate performance of all alternative service projects to ensure that service quality, customer satisfaction, and cost effectiveness objectives are being met. Performance measures may include usage/ridership rates and cost per boarding/ride. To the extent possible, performance of alternative services will be measured against similar services.

Conversion to fixed route

Communities with successful alternative service partnerships could transition to fixed-route bus service under certain circumstances. If funding is available, the partner jurisdiction or community is supportive, the alternative service is regularly over capacity, the density has increased, and the cost per boarding justifies a greater investment in transit, then Metro can consider converting an alternative service into fixed-route bus service.

WORKING WITH PARTNERS

A partnership is a relationship in which Metro and an external organization work together to help advance opportunities and conditions for travelers to use alternatives to driving alone. Partnerships enable Metro to leverage public and private resources to design and deliver services, facilities, access, policies, program/product design and incentives. Partners have included local, regional and state agencies; employers, institutions, schools, community and human service organizations, other transit providers, property owners or managers, and other businesses and entities.

Metro forms a variety of partnerships with local jurisdictions, community organizations, and other stakeholders. These partnerships are mainly related to service and infrastructure. The guidelines for partnerships are described in more detail below. When a proposed partnership agreement addresses specific routes and services, Metro shall confirm that the proposal incorporates adequate public outreach to the affected communities; when a Metro service change includes partnership investments, Metro shall ensure adequate public outreach to affected communities.

Service partnerships

Metro seeks to actively collaborate with cities, communities and private companies to explore service partnerships that:

- Are mutually beneficial to the agency and customers

- Extend service in complementary ways to current fixed-route bus service

- Extend mobility benefits to communities that have corridors below their target service level

- Enable more service hours, or extend service efficiencies

- Support transit options for low-income workers.

Services provided via a partnership may reflect the needs identified by the partner and may be implemented in a variety of ways, including alternative services. More information about alternative services partnerships can be found in the Planning Alternative Services section.

For fixed-route service, Metro is open to forming partnerships with cities, communities and private companies that would fully or partially fund transit service. The "Adding, Reducing and Changing Service" section establishes investment priorities for new Metro resources: Priority 1, Passenger loads (crowding); Priority 2, Schedule reliability; Priority 3, All-Day and Peak-Only Network (corridors connecting centers); and Priority 4, Route productivity. Metro will use new Metro resources to address priorities 1 and 2 first; Metro encourages partners to do the same.

Metro will make exceptions to these investment priorities to leverage partner funding according to the following:

1 Service funded fully by Metro's partners generally will be implemented at the next feasible service change subject to operational infrastructure constraints and contract terms†.

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† Operational infrastructure constraints include but are not limited to bus fleet availability to run new service (including potential maintenance downtime requirements), base capacity limitations, and operator availability.

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2 On corridors identified for priority 3 investments (as below their target service levels in the All-Day and Peak-Only Network), Metro will direct new Metro resources remaining after addressing priority 1 and 2 needs—subject to operational infrastructure constraints—to those corridors for which partners agree to fund at least one-third of investments to help meet target service levels, regardless of these corridors' positions in the prioritized investment list (as published in the annual Service Guidelines Report).

Infrastructure partnerships

Local jurisdictional partners may also enact transit-supportive land-use policy or may make infrastructure investments that support transit. These partnerships can include:

- Zoning measures that support increased density and mixed-uses within Urban Growth Areas

- Investments in cycling and pedestrian facilities that significantly enhance access to transit service

- Parking management programs that provide new sources of park-and-ride spaces or transit layover or make more efficient use of off-street parking to support transit ridership and /or operations

- Urban design guidelines that support transit and active transportation

- In-fill over greenfield development prioritization

- Street network connectivity improvements

- Other land-use measures that contribute to higher concentrations of potential transit riders.

PLANNING AND COMMUNITY ENGAGEMENT

For each major service change, Metro will undertake a significant planning process that includes outreach to involve the public in shaping the change. Through the outreach, Metro planners will better understand community mobility needs, where people are traveling and when, and how to provide the best service possible. During the planning process, Metro typically will engage with the community through several phases of outreach, and will complete a comprehensive community engagement report at the end that summarizes the results of this work and how public input was used to shape a final recommendation for change.

Each outreach effort will be guided by several goals:

- Transit planners are informed by members of the public who are reflective of those who may be affected by the change.

- Metro's outreach process is transparent, accessible, welcoming and understandable. Participants understand what is being considered, the timeline and how decisions are made, and that their input is valuable and welcome.

- The outreach process is meaningful. Regardless of how participants feel about the final result, they can see how public input shaped what is being considered and the final result.

Outreach should be scaled relative to the magnitude of the change being considered as well as the potential impacts of the change on riders.

For each outreach effort, Metro should identify the demographics of those who may be affected by the change being considered. Then, outreach strategies should be designed to inform and solicit input from these populations, creatively seeking to engage those who would not otherwise learn about our process via mainstream communication channels.

These outreach strategies should include, but not be limited to, the following:

- posting of information at bus stops or onboard buses and at community gathering places such as libraries, schools, and community centers

- conversations with people on the bus and at stops, community events, and information tables

- public meetings

- questionnaires

- conversations with community or stakeholder groups

- online and/or mailed information, social media, news releases, and advertisements

- community advisory groups or sounding boards

- outreach to community groups in the Community Service Areas of unincorporated King County

- translation and distribution of materials in accessible formats and/or provision of interpretation for populations with limited or no English proficiency and people with disabilities

- work with community partners that serve transit riders, such as those with limited English proficiency, low-income and homeless populations, youth, minorities, people with disabilities, elderly people, and those who are currently unserved or underserved by transit, to engage these populations in formats, locations and at times that work best for them.

For service changes that affect multiple routes or large areas, Metro may convene a community-based sounding board composed of people who may be affected by the change. Sounding board members attend public meetings, offer advice about public outreach, and provide feedback about what changes to bus service would be best for the local communities. Metro should consider both sounding board recommendations and public feedback in developing recommendations.

Proposed changes may require County Council approval. The Council holds a public hearing before making a final decision on changes.

Through the planning and outreach process, Metro should strive to:

- Understand and address potential issues regarding major travel origins and destinations

- Engage with key stakeholders including community-based organizations and the general public to understand the needs of transit riders and potential riders, such as those with limited English proficiency, low-income and homeless populations, youth, minorities, people with disabilities and Access users, elderly people, and those who are currently unserved or underserved by transit

- Match community needs with service provided. Metro may identify potential alternative services projects through the planning and outreach process.

ADDING, REDUCING, AND CHANGING SERVICE

Metro uses the following guidelines when adding or reducing service as well as in the ongoing development and management of transit service.

GUIDELINES FOR ADDING OR REDUCING SERVICE

Guideline	Measures
Passenger loads	Passenger load thresholds (see p. 15)
Schedule reliability	On-time performance (see p. 16) Schedule reliability (see Appendix 3: Glossary) Lateness (see p. 16)
All-Day Network	Current service relative to All-Day Network (see p. 12)
Peak-only service	Travel time or ridership advantage (see p. 10)
Route productivity	Rides per platform hour (see p. 14) Passenger miles per platform mile (see p. 14)

Adding service: investment priorities

Metro invests in service by using guidelines in the following order:

1. Passenger loads
2. Schedule reliability
3. All-Day and Peak-Only Network
4. Route productivity

When prioritizing investments in the transit network, Metro considers local and regional planning efforts, including Metro's future long-range plan; changes to the transportation network; operational considerations; productivity, geographic value and social equity impacts; service quality needs; and corridor score.

Passenger loads and schedule reliability

Metro's first investments are based on the passenger load and schedule reliability guidelines used to assess service quality. Routes that do not meet the standards are considered to have low-quality service that has a negative impact on riders and could discourage them from using transit. These routes are the highest priority candidates for investment. Routes that are through-routed but suffer from poor reliability may be candidates for investment, but because of the size and complexity of changes to through-routes, they would not be automatically given top priority.

All-Day and Peak-Only Network

Metro next uses the All-Day and Peak-Only Network guidelines and the target service level comparison (as described on p. 14) to determine if corridors are below their target levels. If a corridor is below the target service level, it is an investment priority. Metro uses the list of All-Day and Peak-Only Network investments which, are ordered for implementation in the service guidelines report by their geographic value score, followed by the corridor productivity score, then the social equity score.

Route productivity

The fourth and final guideline Metro uses to determine if additional service is needed is the route productivity rank. Routes with productivity in the top 25 percent perform well in relation to other routes; investment in these services would improve service where it is most efficient.

Reducing service

When Metro must reduce service, these guidelines help identify the services to be reduced. While the guidelines form the basis for identifying services for reduction, Metro also considers other factors. These include community input, opportunities to achieve system efficiencies and to simplify the network through restructures, and the potential for offering alternative services. Once the long-range plan is complete, we will also consider the long-range service network and priorities, particularly when reducing service through restructures. The use of these other factors means that some routes may not be reduced in the priority order stated below. Some factors that Metro considers when reducing service include:

- **The relative impacts to all areas of the county in order to minimize or mitigate significant impacts in any one area.** Metro seeks to balance reductions throughout the county so that no one area experiences significant negative impacts beyond what other areas experience.

- **Ways to minimize impacts through the type of reduction, particularly through restructuring service**. Reduction of service can range from deleting a single trip to eliminating an entire route. Metro will also consider restructuring service in an area to make it more efficient or will consider alternative services. By consolidating service to eliminate duplication, and by closely matching service with demand, Metro may be able to provide needed trips at reduced cost and minimize impacts on riders. Service consolidation may lead to increased frequency of service on some routes to accommodate projected loads, even though the overall result of the restructure is a reduction in service hours.

- **The identified investment need on corridors.** While no route or area would be exempt from change during a large-scale system reduction, Metro will try to maintain the target level of service on corridors in the All-Day and Peak-Only Network levels, and will seek to avoid reducing service on corridors that are already below their target service levels.

- **Preservation of last connections.** Metro serves some urbanized areas of east and south King County adjacent to or surrounded by rural land. Elimination of all service in these areas would result in significant reduction in the coverage that Metro provides. To ensure that Metro continues to address mobility needs, ensure social equity and provide geographic value to people throughout King County, connections to these areas would be preserved when making service reductions, regardless of route productivity.
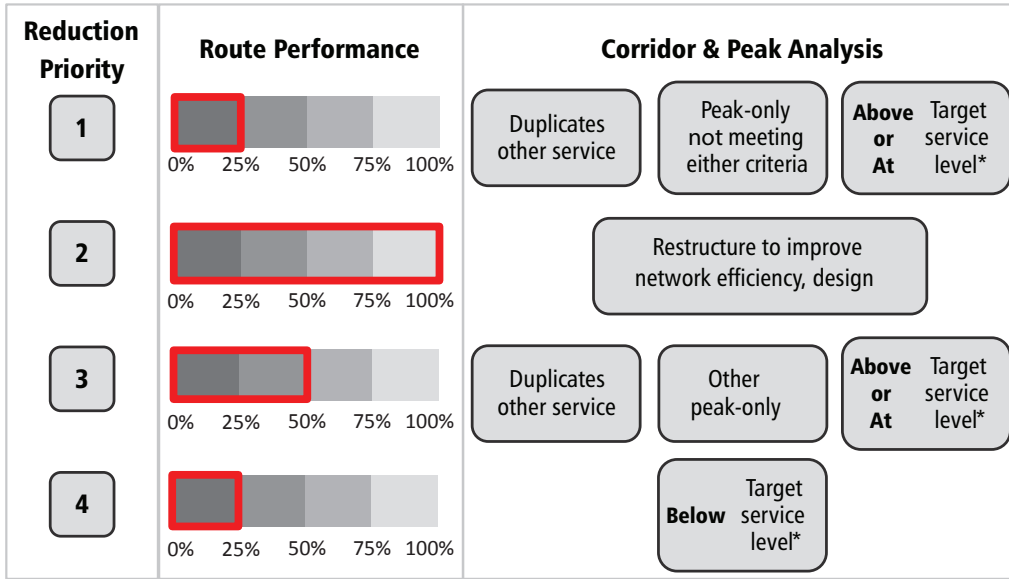
- **Applicability of alternative services.** In many areas of King County, and especially in urbanized areas adjacent to or surrounded by rural land, Metro may provide cost-effective alternatives to fixed-route transit service. These alternatives could avoid a significant reduction in the coverage Metro provides while better meeting community needs (Strategy 6.2.3). During service reductions Metro will consider the use of alternative services that can reduce costs on corridors with routes that are in the bottom 25 percent in one or both productivity measures. Alternative services will be evaluated differently than the fixed-route system, according to the measures and performance thresholds developed through the Alternative Services Program.

Reduction priorities

Priorities for reduction are listed below. Within all of the priorities, Metro ensures that social equity is a primary consideration in any reduction proposal, complying with all state and federal regulations.

1 Reduce service on routes that are below the 25 percent productivity threshold for a given time period. Routes that are below the 25 percent productivity threshold on both measures are considered for reduction before routes that are below the 25 percent productivity threshold for only one measure in the following order:

1. Routes that duplicate or overlap with other routes on corridors on the All-Day and Peak-Only Network.

2. Peak-only routes that do not have a travel time or ridership advantage.

3. All-day routes that operate on corridors that are above their target service levels.

4. All-day routes that operate on corridors that are at their target service levels. Reductions or deletions of these routes would worsen the deficiency between existing service levels and target service levels.

2 Restructure service to improve efficiency of service.

3 Reduce service on routes that are above the 25 percent productivity threshold for a given time period. Routes that are between the 25 and 50 percent productivity threshold on both measures are considered for reduction before routes that are above the 50 percent productivity threshold for either measure, in the following order:

1. Routes that duplicate or overlap with other routes on corridors on the All-Day and Peak-Only Network.

2. Any other peak-only route that was not considered as part of priority 1.2.

3. All-day routes that operate on corridors that are above their target service levels.

4. All-day routes that operate on corridors that are at their target service levels. Reductions or deletions of these routes would worsen the deficiency between existing service levels and target service levels.

4 Reduce services on routes that are below the 25 percent productivity threshold for a given time period on corridors identified as below their target service levels. Routes that are below the 25 percent productivity threshold on both measures are considered for reduction before routes that are below the 25 percent productivity threshold for only one measure. This worsens the deficiency between existing service levels and target service levels.

The chart below summarizes how service is reduced.

Reduction Priority	Route Performance	Corridor & Peak Analysis		
1	0% 25% 50% 75% 100%	Duplicates other service	Peak-only not meeting either criteria	**Above or At** Target service level*
2	0% 25% 50% 75% 100%	Restructure to improve network efficiency, design		
3	0% 25% 50% 75% 100%	Duplicates other service	Other peak-only	**Above or At** Target service level*
4	0% 25% 50% 75% 100%	**Below** Target service level*		

*Target service level is based on demographics and demand between connections served by transit

Implementation

Metro revises service twice a year—in spring and fall. In rare cases of emergency or time-critical construction projects, Metro may make changes at times other than the two regularly scheduled service changes. However, such situations are kept to a minimum because of the high level of disruption and difficulty they create. Many alternative service projects can be implemented at any time and do not need to follow the same schedule as fixed-route service.

Proposed route changes are subject to approval by the Metropolitan King County Council except as follows (per King County code 28.94.020):

- Any single change or cumulative changes in a service schedule which affect the established weekly service hours for a route by 25 percent or less.

- Any change in route location which does not move the location of any route stop by more than 1/2 mile.

- Any changes in route numbers.

Each year, Metro publishes a Service Guidelines report that outlines the analysis of target service levels and route performance management. The annual report will include a comprehensive list of the prior years' service changes and will identify and discuss service changes that address performance-related issues. Metro works to provide transparency in Metro's process and help jurisdictions plan for the future by conducting regular outreach throughout the county about the results of the Service Guidelines Report.

Adverse effect of a major service change

An adverse effect of a major service change is defined as a reduction of 25 percent or more of the transit trips serving a census tract, or 25 percent or more of the service hours on a route. Title VI of the Civil Rights Act of 1964 requires all transit agencies to evaluate major service change impacts on minority and low-income populations; the King County Strategic Plan and the County's Equity and Social Justice ordinance reflect similar commitments to addressing these impacts.

Disparate impact threshold

A disparate impact occurs when a major service change results in adverse effects that are significantly greater for minority populations than for non-minority populations. Metro's threshold for determining adverse effects is when the percentage of routes or tracts adversely affected by a major service change and classified as minority is 10 or more percentage points higher than the percentage of routes or tracts classified as minority in the system as a whole. Should Metro find a disparate impact, consideration will be given to modifying the proposed changes in order to avoid, minimize or mitigate the disparate impacts of the proposed changes.

Metro will measure disparate impacts by comparing changes in the number of trips serving minority or non-minority census tracts, or by comparing changes in the number of service hours on minority or non-minority routes. Metro defines a minority census tract as one in which the minority population percentage is greater than that of the county as a whole. For regular fixed-route service, Metro defines a minority route as one for which the percentage of inbound weekday boardings in minority census tracts is greater than the average percentage of inbound weekday boardings in minority census tracts for all Metro routes.

Disproportionate burden threshold

A disproportionate burden occurs when a major service change results in adverse effects that are significantly greater for low-income populations than for non-low-income populations. Metro's threshold for determining adverse effects is when the percentage of routes or tracts adversely affected by a major service change and classified as low-income is 10 or more percentage points higher than the percentage of routes or tracts classified as low-income in the system as a whole. Should Metro find a disproportionate burden, consideration will be given to modifying the proposed changes in order to avoid, minimize or mitigate the disproportionate burden of the proposed changes.

Metro will measure disproportionate burden by comparing changes in the number of trips serving low-income or non-low-income census tracts, or by comparing changes in the number of service hours on low-income or non-low-income routes. Metro defines a low-income census tract as one in which the percentage of low-income population is greater than that of the county as a whole. For regular fixed-route service, Metro defines a low-income route as one for which the percentage of inbound weekday boardings in low-income census tracts is greater than the average percentage of inbound weekday boardings in low-income census tracts for all Metro routes.

APPENDIX 1: CENTERS IN KING COUNTY

The list of centers associated with the All-Day and Peak-Only Network is adopted by the King County Council as part of the service guidelines. To plan its service, Metro utilizes the 18 Regional Growth Centers, four Manufacturing/Industrial Centers, and 64 Transit Activity Centers.

Regional Growth and Manufacturing/Industrial Centers

The Puget Sound Regional Council designates regional growth centers and manufacturing/industrial centers as places that will receive a significant proportion of population and employment growth compared to the rest of the urban area.

Regional Growth Centers

Auburn
Bellevue Downtown
Burien
Federal Way
First Hill/Capitol Hill
Issaquah
Kent
Northgate
Overlake

Redmond
Renton
SeaTac
Seattle Downtown
South Lake Union
Totem Lake
Tukwila
University Community
Uptown

Manufacturing/Industrial Centers

Ballard/Interbay
Duwamish
Kent
North Tukwila

Transit Activity Centers

Each transit activity center identified below meets one or more of the following criteria:

- Is located in an area of mixed-use development that includes concentrated housing, employment, and commercial activity

- Includes a major regional hospital, medical center or institution of higher education located outside of a designated regional growth centers

- Is located outside other designated regional growth centers at a transit hub served by three or more all-day routes.

The size of these transit activity centers varies, but all transit activity centers represent concentrations of activity in comparison to the surrounding area. Transit activity centers are listed below:

Alaska Junction
Aurora Village Transit Center
Ballard
(Ballard Ave NW/NW Market St)
Beacon Hill Station
Black Diamond
Bothell (UW Bothell/Cascadia Community College)
Carnation
Central District
(23rd Ave E/E Jefferson St)
Children's Hospital

Columbia City Station
Covington
(172nd Ave SE/SE 272nd St)
Crossroads
(156th Ave NE/NE 8th St)
Crown Hill
(15th Ave NW/NW 85th St)
Des Moines
(Marine View Dr/S 223rd St)
Duvall
Eastgate (Bellevue College)
Enumclaw

Factoria
(Factoria Blvd SE/SE Eastgate Wy)
Fairwood
(140th Ave SE/SE Petrovitsky Rd)
Maple Valley
(Four Corners, SR-169/Kent-Kangley Rd)
Fremont
(Fremont Ave N/N 34th St)
Georgetown
(13th Ave S/S Bailey St)
Green River Community College

Greenwood
(Greenwood Ave N/N 85th St)

Harborview Medical Center

Highline College

Issaquah Highlands

Issaquah
(Issaquah Transit Center)

Juanita
(98th Ave NE/NE 116th St)

Kenmore
(Kenmore Park and Ride)

Kent East Hill
(104th Ave SE/SE 240th St)

Kirkland (Kirkland Transit Center)

Kirkland (South Kirkland Park and Ride)

Lake City

Lake Forest Park

Lake Washington Institute of Technology

Madison Park
(42nd Ave E/E Madison St)

Magnolia
(34th Ave W/W McGraw St)

Mercer Island

Mount Baker Station

Newcastle

North Bend

North City (15th Ave NE/NE 175th St)

Oaktree (Aurora Ave N/N 105th St)

Othello Station

Rainier Beach Station

Renton Highlands
(NE Sunset Blvd/NE 12th St)

Renton Technical College

Roosevelt
(12th Ave NE/NE 65th St)

Sammamish
(228th Ave NE/NE 8th St)

Sand Point
(Sand Point Way/NE 70th St)

Shoreline
(Shoreline Community College)

Snoqualmie

SODO
(SODO Busway/Lander St)

South Mercer Island

South Park
(14th Ave S/S Cloverdale St)

South Seattle College

Tukwila International Blvd Station

Twin Lakes
(21st Ave SW/SW 336th St)

Valley Medical Center

Vashon

Wallingford
(Wallingford Ave N/N 45th St)

Westwood Village

Woodinville
(Woodinville Park and Ride)

APPENDIX 2: CORRIDORS EVALUATED FOR ALL-DAY AND PEAK NETWORK

Note: Shaded corridors do not currently have service on them.

Connections		
Between	And	Via
Admiral District	Southcenter	California Ave SW, Military Rd, TIBS
Alki	SODO Station	Alaska Junction
Auburn	Burien	Kent, SeaTac
Auburn	Pacific	Algona
Auburn/GRCC	Federal Way	15th St SW, Lea Hill Rd
Aurora Village	Northgate	Meridian Ave N
Aurora Village	Seattle CBD	Aurora Ave N
Avondale	Kirkland	NE 85th St, Redmond Way, Avondale Rd NE
Ballard	Northgate	Holman Road
Ballard	Seattle CBD	15th Ave W
Ballard	Seattle CBD	Fremont, South Lake Union
Ballard	University District	Green Lake, Greenwood
Ballard	University District	Wallingford (N 45th St)
Beacon Hill	Seattle CBD	Beacon Ave
Bellevue	Eastgate	Lake Hills Connector
Bellevue	Redmond	NE 8th St, 156th Ave NE
Bellevue	Renton	Newcastle, Factoria
Burien	Seattle CBD	1st Ave S, South Park
Burien	Seattle CBD	Delridge, Ambaum
Burien	Seattle CBD	Des Moines Mem Dr S, South Park
Capitol Hill	Seattle CBD	15th Ave E
Capitol Hill	Seattle CBD	Madison St
Capitol Hill	White Center	South Park, Georgetown, Beacon Hill, First Hill
Central District	Seattle CBD	E Jefferson St
Colman Park	Seattle CBD	Leschi, Yesler Way
Discovery Park	Seattle CBD	Gilman Ave W, 22nd Ave W, Thorndyke Ave W
Eastgate	Bellevue	Newport Way , S. Bellevue, Beaux Arts
Eastgate	Bellevue	Somerset, Factoria, Woodridge
Eastgate	Overlake	Phantom Lake
Enumclaw	Auburn	Auburn Way S, SR 164
Fairwood	Renton	S Puget Dr, Royal Hills
Federal Way	Kent	Military Road S
Federal Way	SeaTac	SR-99
Fremont	Broadview	8th Ave NW
Fremont	Seattle CBD	Dexter Ave N
Fremont	University District	N 40th St
Green River CC	Kent	132nd Ave SE
Greenwood	Seattle CBD	Greenwood Ave N
High Point	Seattle CBD	35th Ave SW
Issaquah	Eastgate	SE Newport Way
Issaquah	North Bend	Fall City, Snoqualmie

Connections		
Between	**And**	**Via**
Issaquah	Overlake	Sammamish, Bear Creek
Kenmore	Kirkland	Juanita
Kenmore	Shoreline	Lake Forest Park, Aurora Village TC
Kenmore	Totem Lake	Finn Hill, Juanita
Kennydale	Renton	Edmonds Ave NE
Kent	Burien	Kent-DM Rd, S. 240th St, 1st Ave S
Kent	Maple Valley	SE Kent-Kangley Road
Kent	Renton	84th Ave S, Lind Ave SW
Kent	Renton	Kent East Hill
Kent	Seattle CBD	Tukwila
Kirkland	Bellevue	South Kirkland
Kirkland	Factoria	Overlake, Crossroads, Eastgate
Lake City	Seattle CBD	NE 125th St, Northgate, I-5
Lake City	University District	35th Ave NE
Lake City	University District	Lake City, Sand Point
Laurelhurst	University District	NE 41st St
Madison Park	Seattle CBD	Madison St
Madrona	Seattle CBD	Union St
Magnolia	Seattle CBD	34th Ave W, 28th Ave W
Mercer Island	S Mercer Island	Island Crest Way
Mirror Lake	Federal Way	S 312th St
Mount Baker	Seattle CBD	31st Ave S, S Jackson St
Mount Baker	University District	23rd Ave E
Mount Baker Transit Ctr	Seattle Center	Martin Luther King Jr Way, E John St, Denny Way
Mountlake Terrace	Northgate	15th Ave NE, 5th Ave NE
Northeast Tacoma	Federal Way	SW 356th St, 9th Ave S
Northgate	Seattle CBD	Green Lake, Wallingford
Northgate	University District	Roosevelt Way NE
Othello Station	SODO	Columbia City Station
Overlake	Bellevue	Bell-Red Road
Overlake	Bellevue	Sammamish Viewpoint, Northup Way
Queen Anne	Seattle CBD	Queen Anne Ave N
Queen Anne	Seattle CBD	Taylor Ave N
Rainier Beach	Capitol Hill	Rainier Ave S
Rainier Beach	Mount Baker Transit Ctr	Martin Luther King Jr Way S
Rainier Beach	Seattle CBD	Rainier Ave S
Redmond	Duvall	Avondale Rd NE
Redmond	Eastgate	148th Ave, Crossroads, Bellevue College
Redmond	Totem Lake	Willows Road
Renton	Burien	S 154th St
Renton	Enumclaw	Maple Valley, Black Diamond
Renton	Rainier Beach	West Hill, Rainier View
Renton	Renton Highlands	NE 4th St, Union Ave NE
Renton	Seattle CBD	Martin Luther King Jr Way S, I-5
Renton	Seattle CBD	Skyway, S. Beacon Hill
Renton Highlands	Renton	NE 7th St, Edmonds Ave NE
Richmond Beach	Northgate	Richmond Beach Rd, 15th Ave NE
Roosevelt	UW	University Way

Connections		
Between	And	Via
Sand Point	Cowen Park	View Ridge, NE 65th St
Sand Point	University District	NE 55th St
Shoreline	University District	Jackson Park, 15th Ave NE
Shoreline CC	Greenwood	Greenwood Ave N
Shoreline CC	Lake City	N 155th St, Jackson Park
Shoreline CC	Northgate	N 130th St, Meridian Ave N
Totem Lake	Seattle CBD	Kirkland, SR-520
Tukwila	Des Moines	McMicken Heights, Sea-Tac
Tukwila	Fairwood	S 180th St, Carr Road
Tukwila	Seattle CBD	Pacific Hwy S, 4th Ave S
Twin Lakes	Federal Way	S 320th St
Twin Lakes	Federal Way	SW Campus Dr, 1st Ave S
University District	Bellevue	SR-520
University District	Seattle CBD	Broadway
University District	Seattle CBD	Eastlake, Fairview
UW Bothell	Redmond	Woodinville, Cottage Lake
UW Bothell	University District	Kenmore, Lake Forest Park, Lake City
UW Bothell/CCC	Kirkland	132nd Ave NE, Lake Washington Tech
Vashon	Tahlequah	Valley Center
West Seattle	Seattle CBD	Fauntleroy, Alaska Junction
White Center	Seattle CBD	16th Ave SW, South Seattle College
Woodinville	Kirkland	Kingsgate

APPENDIX 3: GLOSSARY

Access service: *See Paratransit (Access) service.*

ADA: Americans with Disabilities Act of 1990: Civil rights legislation that provides a national mandate for the elimination of discrimination against individuals with disabilities with specific requirements for public transit agencies. ADA requires the provision of demand response transportation service for individuals with disabilities who are unable to use fixed route transportation systems.

All-day service: Routes that operate in two directions throughout the majority of the day. These routes are the basis of Metro's network and account for the most service resources. All-day services operate during the peak, off-peak, and night time periods on weekdays and weekends.

Alternative services: Transportation services tailored to community needs that Metro plans and provides with partners throughout King County. Often, these communities lack the infrastructure, density or land use to support traditional, fixed-route bus service. Metro's alternative services include VanPool, VanShare, Community Access Transportation (CAT), Dial-A-Ride Transit (DART), Community Shuttles, Community Hub, TripPool, Community Van, and Real Time Rideshare. Additional alternative services will be developed as market conditions and technology evolves.

Base: A site where buses are fueled, stored, and maintained. Bases include parking, maintenance bays, parts storage, fuel storage, cleaning facilities, and operation facilities. Bases also include facilities to support employees such as office space, driver lockers, and meeting rooms.

Boarding: *See Ride.*

Centers: Activity nodes throughout King County that form the basis for the countywide transit network. See Manufacturing/industrial center, Regional growth center and Transit activity center.

Community Access Transportation (CAT): A program that complements paratransit (Access) service by filling service gaps in partnership with nonprofit agencies, such as those serving seniors or people with disabilities.

Community Shuttle: A route that Metro provides through a community partnership; these shuttles can have flexible service areas if it meets the community needs.

Corridor: A major transit pathway that connects regional growth, manufacturing/industrial, and/or activity centers; park-and-rides and transit hubs; and major destinations throughout King County.

Crowding: A transit trip that, on average, has more passengers than the acceptable passenger load, based on each type of bus. The acceptable passenger load calculation is based on the number of seats and an allowance of four square feet of floor space per standing passenger. A transit trip is considered crowded when, on average, it has a passenger load over the acceptable passenger load. Trips with standing loads for 20 minutes or longer are also considered to be crowded. This can also be referred to as "overcrowding" or "passenger crowding."

Dial-A-Ride Transit (DART) service: Scheduled transit routes in which individual trips may deviate from the fixed route to pick up or drop off a passenger closer to their origin or destination. All current DART routes include a fixed route portion in which passengers can access service from regular bus stops. DART routes can also be referred to as Demand Area Response Transit routes.

Equity and Social Justice (ESJ): King County's Equity and Social Justice work is grounded in the 2010 "fair and just" ordinance (Ordinance 16948), which requires King County to intentionally consider equity and integrate it into our decisions and policies, county practices and engagement with the organization as well as communities. Equity is defined as all people having full and equal access to opportunities that enable them to attain their full potential. Social justice is defined as all aspects of justice, including legal, political and economic, and requires the fair distribution of public goods, institutional resources and life opportunities for all people.

Fixed-route service: Scheduled transit service in which trips follow a specified path and passengers can access service from regular bus stops.

Geographic value: Providing public transportation products and services throughout King County, connecting centers, and facilitating access to jobs, education and other destinations for as many people as possible. Metro provides services that are appropriate to the land use, employment and housing densities and transit demand in various communities.

Headway: The time interval between buses traveling on the same route in the same direction. This can also be referred to as "frequency."

Layover: Time built into a schedule between arrival at the end of a route and the departure for the return trip, used for the recovery of delays and preparation for the return trip. Layover can also be used to describe a designated location for a transit vehicle at or near the end of the route where the vehicle operates out of service and takes its scheduled layover time.

Load: The number of passengers on the bus at a given time. This is a method of measuring the ridership demand on a bus trip at a given time.

Long-range plan: The King County Metro Long Range Public Transportation Plan is a 25-year service, capital and financial plan for transit services operated, or planned by King County Metro. Along with the near-term needs identified through the service guidelines, the long-range plan guides future service and capital investments and forecasted financial needs.

Low income: A household earning less than 200 percent of the federal poverty level.

Low-income census tract: A census tract in which the percentage of the population that is low-income is greater than that of the county as a whole.

Low-income corridor: A corridor in which the percentage of inbound weekday boardings in low-income census tracts is greater than the average percentage of inbound weekday boardings in low-income census tracts for the county.

Low-income route: A route in which the percentage of inbound weekday boardings in low-income census tracts is greater than the average percentage of inbound weekday boardings in low-income census tracts for the county.

Manufacturing/industrial center: As defined in Puget Sound Regional Council's (PSRC) Vision 2040 plan, an area of intensive manufacturing and/or industrial activity. PSRC expects these centers to accommodate a significant share of the region's manufacturing industrial employment growth.

Maximum (Max) load: The highest number of passengers on the bus at a given time, averaged on a per trip basis over the course of a service change. This is a method of measuring the highest demand for a specific bus trip.

Minority census tract: A census tract in which the minority population percentage is greater than that of the county as a whole.

Minority corridor: A corridor in which the percentage of inbound weekday boardings in minority census tracts is greater than the average percentage of inbound weekday boardings in minority census tracts for the county.

Minority route: A route in which the percentage of inbound weekday boardings in minority census tracts is greater than the average percentage of inbound weekday boardings in minority census tracts for the county.

Night: *See Time period.*

Off-peak: *See Time period.*

On-time: An arrival at a timepoint that is no more than five minutes late or one minute early relative to the scheduled arrival time.

Overcrowding: *See Crowding.*

Paratransit (Access) service: King County Metro's ADA service, which is a primarily van-operated, demand responsive service with variable routes and schedules. Access provides trips to eligible people with disabilities who are unable to use Metro's fixed-route or DART service. Passengers must apply and be found eligible to use Access service in advance of making a trip.

Park-and-ride: A facility where transit passengers may park their personal vehicles and catch a bus, train, vanpool or carpool to reach their final destination. Park-and-ride lots are built, owned, leased, and maintained by a number of different agencies.

Partner: Any organization external to King County Metro that shares resources with Metro to help advance opportunities and conditions for using alternatives to driving alone. Metro has worked with partners to design and deliver services, facilities, access, policies, program/product design, and incentives. Partners have included local, regional and state agencies; employers, institutions and schools; community and human service organizations; other transit providers, property owners or managers; and other businesses and entities.

Partnership: A relationship in which King County Metro and an external organization work together to help advance opportunities and conditions for travelers to use alternatives to driving alone. Partnerships enable Metro to leverage public and private resources to design and deliver services, facilities, access, policies, program/product design and incentives. Partners have included local, regional and state agencies; employers, institutions and schools; community and human service organizations; other transit providers, property owners or managers; and other businesses and entities. Partnerships as described in the Service Guidelines do not indicate a legal relationship and are not the same as vendor or contractor relationships.

Passenger miles per platform mile: Total miles traveled by all passengers divided by the total miles the bus operates from the time it leaves its base until it returns. One of two measures Metro uses to assess the service performance of each route. *See also, Base and Rides per platform hour.*

Passenger-minutes: The total number of minutes traveled by all passengers on the bus.

Passenger crowding: *See Crowding.*

Peak-only service: Routes that operate primarily during peak travel periods on weekdays from 5:00-9:00 a.m. and 3:00-7:00 p.m., primarily in one direction. Peak-only service connects passengers between residential areas and job centers and back.

Productivity: Making the most efficient use of resources and targeting transit service to the areas of the county with the most potential for use. Metro uses the term productivity in two important ways in the service guidelines:

1. **Corridor productivity:** The potential market for transit based on the number of households, park-and-ride stalls, jobs and students along the corridor. Higher concentrations of people support higher use of transit.

2. **Route productivity:** The actual use of transit, determined using two performance measures of ridership—rides per platform hour and passenger miles per platform mile.

Real-Time Rideshare: An on-demand carpool program using mobile and web-based applications to match up drivers with passengers who want to share a ride. Riders pay a small fare through the app, and drivers earn a per-mile fee. The program is being piloted in Southeast Redmond and Willows Road. This is one of Metro's alternative services.

Regional growth center: As defined in PSRC's Vision 2040 plan, a defined focal area within a city or community that has a mix of housing, employment, retail, services and entertainment uses, and that is pedestrian-oriented. PSRC expects these centers to receive a significant portion of the region's growth in population and jobs.

Ride: Every time a passenger boards a bus. This can also be referred to as a "boarding."

Ridership: Sum of rides over a specified time period. For purposes of the Service Guidelines corridor analysis, ridership is accounted for by measuring passenger loads. *See Load.*

Rides per platform hour: Total number of rides divided by the total hours a bus travels from the time it leaves its base until it returns. One of two measures Metro uses to assess the service performance of each route. *See also, Base and Passenger miles per platform mile.*

Route: A single path of travel, with identified stops and scheduled service. Routes are typically identified with numbers, such as Route 1.

Schedule adherence: *See Schedule reliability.*

Schedule reliability: A measure used to determine how often a route is late, measured as the percentage of trips that, on average, arrive more than 5 minutes late. This threshold allows for variations in travel time, congestion and ridership.

Service restructure: Changes to multiple Metro routes along a corridor or within a large area consistent with the service design criteria in the Service Guidelines. Restructures may be prompted by a variety of circumstances, and in general are made to improve the efficiency and effectiveness of transit service as a whole, to better integrate with the regional transit network, or to reduce Metro's operating costs because of budget constraints.

Service types: Categories of service based on chosen criteria. Metro's current service types are Urban and Suburban.

- **Urban** routes primarily serve the densest parts of the county, including Seattle Downtown, First Hill/Capitol Hill, South Lake Union, the University Community, or Uptown

- **Suburban** routes primarily serve passengers in suburban and rural areas in Seattle and King County

- **Dial-a-Ride Transit and shuttles** are those that provide flexible, community-based service that has different characteristics than the fixed-route system. These services are held to different standards than those outlined for the fixed-route network below. These standards are under development and will be included in Metro's annual service guidelines reports. These services are described in more detail in the Alternative Services section of the guidelines on page 25.

Service span: The span of hours over which service is operated. Service span often varies by weekday. For example, a route's service span could be from 5 a.m. to 9 p.m.

Social equity: All people having full and equal access to opportunities that enable them to attain their full potential. As applied to transit, social equity involves ensuring there are travel opportunities for historically disadvantaged populations, such as people of low-income, students, youth, seniors, minorities, people with disabilities, and others with limited transportation options. Metro measures social equity in a quantitative way using low-income and minority populations, in accordance with federal law.

Span: *See Service span.*

Standing load time: The number of consecutive minutes where there are more people on the bus than the number of seats provided.

Target service level: A goal amount of service Metro assigns each corridor in the All-Day and Peak-Only Network, based on measures of productivity, social equity and geographic value. The All-Day and Peak-Only Network analysis compares the target service levels to existing service to determine whether a corridor is below, at, or above the target levels. Target service levels are Very Frequent, Frequent, Local, Hourly, Peak-only, and Alternative Services (defined below). If a corridor is below its target service level, it is identified for investment need. *See also, Productivity, Social Equity and Geographic Value.*

- **Very frequent** corridors serve very large employment and transit activity centers and very dense residential areas.

- **Frequent** corridors generally serve major employment and transit activity centers and very dense residential areas.

- **Local** corridors generally serve regional growth centers and residential areas with low- to medium-density.

- **Hourly** corridors generally connect low-density residential areas to regional growth centers.

- **Peak-only** services provide specialized service in the periods of highest demand for travel. Peak-only services generally provide service to a major employment center in the morning and away from a major employment center in the afternoon.

- **Alternative Services** *(see entry on p.41)*

Title VI of the Civil Rights Act of 1964: The Civil Rights Act of 1964 outlaws discrimination based on race, color, religion, sex, or national origin. Title VI prevents discrimination by government agencies that received federal funds.

Transit priority treatment: Any operational practice or infrastructure element that helps buses move more quickly along a street or along their route, with more consistent travel times. Within this definition there are four categories of strategies—bus operations, traffic control, infrastructure and bus lanes.

TripPool: Real-time ridesharing in which neighbors share a ride to the Park-and-Ride in a Metro van using a smartphone app to coordinate rides. TripPool vans get reserved parking at Park-and-Rides.

Through-route: When a bus on one route reaches the end of its route and immediately begins service on another route within a layover. Passengers can remain on the bus and continue from one route to the other without transferring or paying another fare.

Time period: An interval of time that identifies different passenger travel patterns and service levels. Metro has three time periods: Peak, Off-Peak, and Night (defined below).

- **Peak** period is from 5-9 a.m. and 3-7 p.m. on weekdays. This is the highest demand time period for the road network and transit service.

- **Off-Peak** period is from 9 a.m.-3 p.m. on weekdays and 5 am-7 pm on weekends.

- **Night** period is from 7 p.m.-5 a.m. every day of the week.

Trip: A single journey from one place to another. There are two types of trips that Metro considers: a person trip and a vehicle trip.

- **Person trip:** An individual's journey from an origin to a destination; can involve multiple rides and multiple modes.

- **Vehicle trip:** The scheduled movement of a transit vehicle from an origin (often a route start point) to a destination (often a route end point) at a particular time on a particular day (weekday, Saturday, or Sunday).

Transit activity centers: Areas of activity that include major destinations and transit attractions, such as large employment sites, significant healthcare institutions and major social service agencies. Transit activity centers form the basis for an interconnected transit network throughout the urban growth area and support geographic value in the distribution of the network. See p. 34 for a list of Metro-defined transit activity centers.

VanPool: A high-occupancy transportation mode in which groups of five or more commuters share a ride to work, using a Metro-supplied van.

VanShare: A high-occupancy transportation mode in which groups of five or more commuters share the ride between home or work and a public transit link or transit hub.